

	SIMULATOR EXERCISE GUIDE (SEG)
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SITE: MONTICELLO**SEG #** ILT-SS-27E**SEG TITLE:** 2015 ILT NRC SCENARIO 1**REV. #** 0**PROGRAM:** INITIAL LICENSE TRAINING**#:** MT-ILT**COURSE:** NRC SIMULATOR EVALUATION**#:** N/A**TOTAL TIME:** 45-90 MINUTES

Additional site-specific signatures may be added as desired.

Developed by:	_____	_____
	<i>Instructor</i>	<i>Date</i>
Reviewed by:	_____	_____
	<i>Instructor</i> <i>(Simulator Scenario Development Checklist.)</i>	<i>Date</i>
Validated by:	_____	_____
	<i>Validation Lead Instructor</i> <i>(Simulator Scenario Validation Checklist.)</i>	<i>Date</i>
Approved by:	_____	_____
	<i>Training Supervision</i>	<i>Date</i>

QUANTITATIVE ATTRIBUTES

Malfunctions:

Before EOP Entry:

1. CRD Pump trip
2. SRV G fails open (mechanically)
3. 2R Transformer oil leak
4. SRV G fails open (mechanically)

After EOP Entry:

1. One Control Rod stuck out

Abnormal Events:

1. Loss of CRD Flow
2. Stuck Open Relief Valve
3. Emergency transfer from 2R to 1R XFMR

Major Transients:

1. Torus rupture requiring Emergency Depressurization

Critical Tasks:

1. **CT 6:** When an SRV is stuck open and can **NOT** be closed then insert a manual reactor scram.
2. **CT 26:** When torus water level can **NOT** be maintained above -3.3', then scram and execute Emergency Depressurization per C.5-2002.

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SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
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Event 1	1. <u>SHIFT RUNNING RBCCW PUMPS</u>		
Booth Operator	a. Respond as RBO that you are standing by at the RBCCW pumps	CRS	Directs BOP to Transfer RBCCW to #12 RBCCW Pump IAW B.02.05-05.E.1
Booth Operator	b. Respond as RBO that the #12 RBCCW pump suction and discharge valves are fully open	BOP CR208.102	Directs RBO to be stationed by the RBCCW pumps
Booth Operator	c. Respond as RBO that the #12 RBCCW pump is operating normally	BOP	Directs RBO to verify suction and discharge valves for #12 RBCCW pump are fully open (Step 3)
Booth Operator	d. When directed by the BOP to close the #11 RBCCW pump discharge valve, INSERT MANUAL TRIGGER 1 . When ramp is complete, immediately notify the BOP that the #11 RBCCW pump discharge valve is CLOSED	BOP	BOP starts #12 RBCCW pump from C-06
Booth Operator	e. When directed to OPEN the #11 RBCCW pump discharge valve, INSERT MANUAL TRIGGER 3 and verify the valve opens. Once OPEN, notify the BOP that the discharge valve for #11 RBCCW pump is OPEN	BOP	Directs RBO to locally check pump and motor performance of #12 RBCCW pump
		BOP	Directs RBO to slowly CLOSE discharge valve on #11 RBCCW pump and then immediately secures the pump
		BOP	Directs RBO to fully open the discharge valve for #11 RBCCW pump
		BOP	Reports to the CRS that the #12 RBCCW pump is running and that #11 RBCCW pump is secured
		BOP	Places #11 RBCCW pump in auto-standby

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Event 2	2. #11 CRD PUMP SHAFT SHEAR		
Booth Operator	<p>a. When directed by the Lead Evaluator, insert MANUAL TRIGGER 5 and verify CH26A activates:</p> <p>Key Parameter Response: CRDH pressures and flows lower</p> <p>Key Expected Alarms: 5-B-17 (Charging Water Lo Press)</p> <p>Automatic Actions: None</p>	SS315.102 CR200.147	
Booth Operator	b. As the RB Operator, wait one minute and respond as follows:	OATC	Responds to annunciators and notifies CRS of the degraded CRDH parameters.
Booth Operator	<p>1) 11 CRD Pump is running but has an extremely high pitch sound.</p> <p>2) #12 Pump is running normally</p>	CRS OATC OATC	Direct / Perform C.4-B.01.03.A (Loss Of CRD Pump Flow) Starts 12 CRD Pump Verifies CRDH parameters are restored
Booth Operator	c. Acknowledge any investigation / notification requests to Engineering, Maintenance and Plant Management.	OATC BOP	Secures 11 CRDH pump Monitors and controls system pressures and flows and adjust as necessary per B.01.03 Initiates investigation

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Event 3	3. <u>STUCK OPEN "G" SRV</u>		
Booth Operator	<p>a. When directed by the Lead Evaluator, Insert Manual Trigger 7 and verify Malfunction AP01G goes active.</p> <p>Key Parameter Response: C-03 Amber light for G SRV will be ON. MWe and B steam line flow will lower</p> <p>Key Expected Alarms: 5-A-46 (SRV OPEN)</p> <p>Auto Actions: None</p>	BOP	Implement C.4-B.03.03.A (Stuck Open Relief Valve)
		BOP	<ul style="list-style-type: none"> Place handswitch 2E-S4G for SRV "G" in OPEN and then return to the normal position. Place handswitch 2E-S4G for SRV "G" in CLOSE.
		CR200.154 BOP	
		BOP	<ul style="list-style-type: none"> On C-253D, Place HS-S3B in BYPASS
		BOP	<ul style="list-style-type: none"> On C-253D, VERIFY HS-S43 in Off.
		CRS SS315.109 SS315.159	Direct Rapid Power Reduction C.4-F when the SRV fails to close
Booth Operator	3 seconds after the OATC takes the #12 Recirc Pump to lower, VERIFY EVENT TRIGGER 9 goes active and APO1G is deleted. This will cause SRV "G" to CLOSE.	OATC CR200.203	Reduces recirculation flow as needed
Booth Operator	<p>b. Acknowledge any investigation / notification requests to Engineering, Maintenance and Plant Management.</p> <p>NOTE: If SRV left open long enough, the crew may place Torus cooling in service.</p>	CRS SS299.354 CR299.356	<p>Evaluates TS 3.3.6.3 (LLS INST) as NOT MET with the switch in OFF (Div 1) and Div 2 circuits bypassed.</p> <ul style="list-style-type: none"> Condition A applies which requires the channels to be restored within 72 hours <p>May also evaluate TS 3.6.1.5 (LLS Valves) & TRM 3.4.4 (SRVs) as NOT MET</p> <ul style="list-style-type: none"> Determines that Conditions A applies which requires the valve be restored in 14 days

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SCENARIO TIME-LINE:			
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Event 4 Booth Operator Booth Operator	4. <u>Oil leak on 2R / Emergency transfer to 1R</u> a. When directed by the Lead Examiner, insert Manual Trigger 11 and verify C-08-B01, 2TR Trouble goes active <u>Key Parameter Response:</u> None <u>Key Expected Alarms:</u> 8-B-01 (No. 2R XFMR TROUBLE) <u>Auto Actions:</u> None <u>NOTE:</u> The following cue must make it clear that it is imperative to do the emergency transfer operation. b. Role Play the dispatched operator or as security if called: Wait 2 minutes and then report that a steady stream of oil is gushing out of 2R and a large pool of oil has already formed	BOP CRS BOP CR262.133	<ul style="list-style-type: none"> • Clears all personnel from area near 2R • Verify that 2R Voltages appear normal • Dispatch an operator to check the 2R transformer or request security to observe 2R transformer with cameras • Relay information about the oil leak to the CRS Directs performance of B.09.06-05.E.1 (Transfer of Plant Buses From 2R to 1R – Emergency Method) Performs emergency closed bus transfer from 2R to 1R <ul style="list-style-type: none"> • Makes plant page to clear all personnel from vicinity of 2R • Bus 13 <ul style="list-style-type: none"> ○ Place 152-302/CS to CLOSE ○ Place 152-301/CS to TRIP

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Booth Operator	<p>NOTE: Verify the BOP has opened the knife switch on C-31. If not, then DO NOT open 3N4 with the following actions.</p> <p>c. Role Play the equipment operator dispatched to open 3N4 as necessary. Wait 10 minutes and:</p> <ol style="list-style-type: none"> 1) Activate Manual Trigger 13 2) Verify Remote Function ED06, 3N4 Local operation, to OPEN 		<ul style="list-style-type: none"> • Bus 14 <ul style="list-style-type: none"> ○ Place 152-402/CS to CLOSE ○ Place 152-401/CS to TRIP • Bus 11 <ul style="list-style-type: none"> ○ Place 152-107/CS to CLOSE ○ Place 152-101/CS to TRIP • Bus 12 <ul style="list-style-type: none"> ○ Place 152-207/CS to CLOSE ○ Place 152-201/CS to TRIP • Open knife switch 16 on panel C-31
Booth Operator			<ul style="list-style-type: none"> • Open 3N4 34.5KV Circuit Breaker • As time allows dispatch an operator to 4 kV rooms to reset relay flags • Notify the System Dispatcher (TSO) of the Transfer to the 1R Transformer <p>Evaluates LCO 3.8.1 as NOT met</p> <ul style="list-style-type: none"> • Condition A is applicable

CRS
SS299.358
CR299.358

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Booth Operator	d. Role Play as necessary to inform the crew that another operator will be called in to perform OSP-MSC-0542	CRS	<ul style="list-style-type: none"> Required Action A.1: Initiate SR 3.8.1.1 (OSP-MSC-0542), Weekly Breaker Alignment, Indicated Power Availability, and Voltage to AC & DC Power Distribution Checks) within 1 hour Required Action A.2: Declare required features INOP within 24 hours when redundant feature is INOP – This action is N/A for these conditions. Required Action A.3: Restore an Offsite Circuit within 72 hours Make notifications for the LCO Entry. <p>May also evaluate TLCO 3.8.1 as NOT met, however, the LCO 3.8.1 actions are more limiting.</p>
Booth Operator	e. For notifications, Role Play Single Point of Contact and plant support personnel as necessary		

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Event 5	<p>5. <u>STUCK OPEN "G" SRV</u></p> <p>a. When directed by the Lead Evaluator, Insert Manual Trigger 15 and verify Malfunction AP01G goes active.</p> <p>Key Parameter Response: C-03 Amber light for G SRV will be ON. MWe and B steam line flow will lower</p> <p>Key Expected Alarms: 5-A-46 (SRV OPEN)</p> <p>Auto Actions: None</p> <p>Instructor/Evaluator Note: AOP Immediate actions have already been completed and will not be re-performed.</p>		
Booth Operator			
CT-6	<p>When an SRV is stuck open and can <u>NOT</u> be closed then insert a manual reactor scram prior to reaching 110°F bulk torus water temperature.</p>	<p>CRS SS315.109 SS315.159</p> <p>OATC CR200.203</p> <p>OATC</p>	<p>Direct Rapid Power Reduction C.4-F when the SRV fails to close</p> <p>REDUCEs recirculation flow as needed</p> <p>When the G SRV remains open, direct a manual scram of the reactor</p> <ul style="list-style-type: none"> When directed, manually scrams the reactor

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Booth Operator	<p>6. <u>IMMEDIATE REACTOR SHUTDOWN</u></p> <p>a. When the Mode switch is placed in SHUTDOWN verify Event Trigger 17 goes active. This will close the stuck open SRV and initiate the Torus leak.</p> <p>The OATC may address the stuck rod before proceeding with the remaining C.4.A actions (See Event 7).</p>	CRS SS315.164	May direct reactor scram or an Immediate Reactor Shutdown IAW C.4.K (Immediate Reactor Shutdown)
		OATC CR200.208	<ul style="list-style-type: none"> May reduce Recirc Flow to minimum Depresses pushbuttons for REACTOR SCRAM A and B
		CRS SS315.101	Supervises response to a Reactor Scram
		OATC CR200.146	C.4-A (Reactor Scram) actions: <ul style="list-style-type: none"> Place Mode Switch in SHUTDOWN.
		OATC	<ul style="list-style-type: none"> Verifies all Control Rods are inserted to or beyond position 04 and notices 1 Rod remains full out Provides scram script to CRS and reports EOP entry condition RPV level less than 9" Controls Reactor water level between +11-46". When reactor water level starts to increase: <ul style="list-style-type: none"> Place CV-6-13 Manual Loading Station Low Flow Valve in AUTO set between 15 and 20 inches Close both Main FW Reg Valves Verify CV-6-13 is closed when RPV level reaches +15 to +20 inches

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SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
		OATC	<ul style="list-style-type: none"> • Monitor Reactor Power <ul style="list-style-type: none"> ○ Insert SRM and IRM detectors. ○ Switch recorders from APRM to IRM. ○ Range down on IRMs as necessary. • Verify SDV Vent and Drain Valves closed. • Verify Recirc pumps have runback to minimum speed • Verify RPS power supplies are available • Place DISCH VOL ISOL TEST switch in ISOL • Verify the REACTOR MODE switch in SHUTDOWN • Place SDV HIGH WATER LEVEL BYPASS in BYPASS • Reset the Scram using the SCRAM RESET switch • Reset the Rod Drift alarms • Evacuate personnel from the RB Floor and Equipment Drain Tank Room • When all scram valves are CLOSED place the DISCH VOL ISOL TEST switch in NORM • Verify the SDV Vent and Drain Valves open • Verify the accumulators recharge

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	<p>NOTE: The remaining BOP actions may not be taken based on the Torus level priority.</p>	BOP	<ul style="list-style-type: none"> When Annunciator 5-B-30 (Disch Volume Tank Not Drained) and 5-B-21 (Disch Volume Water Level Scram Tip) IS RESET, Place SDV HIGH WATER LEVEL BYPASS in NORMAL <p>Starts performance of Part B of C.4.A</p> <ul style="list-style-type: none"> Announce over the plant paging system that a Reactor Scram has occurred. Open Main Generator output breakers 8N7 & 8N8. Trip the Main Turbine. Verify the Generator Field Breaker Open. Start the Turbine Aux Oil Pump. Verify Turbine Exhaust Hood Sprays in service. Check the Turbine Stop Valves CLOSED Start the Turbine Bearing Lift Pumps (P-64A-F) Verify Main Steam Pressure Control or Low-Low Set is controlling Reactor Pressure. At C-25, Place the POST SCRAM switch in ON and verify all available Drywell Recirculation Fans are operating Verify 4500 gpm through each operating Feed Pump Verify Vapor Extractor and Auxiliary Oil Pump running on any non-operating Feed Pump

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Event 6 Booth Operator	<p>7. UNISOLABLE TORUS LEAK</p> <p>a. Verify Event Trigger 17 is active and verify Malfunction PC05 at 100%.</p> <p>Key Parameter Response: Torus Level on LI-2996 (C-04) or PLR 7251A/B (C-03) lowering</p> <p>Key Expected Alarms: 6-B-9/10 (High Water Level In RHR Rooms) 4-B-4 (Torus Hi-Low Level), 4-B-19/24 (Torus Vacuum Breakers Open) and 5-A-49 (Radwaste Trouble)</p> <p>Auto Actions: Torus to Drywell Vacuum breakers begin to cycle</p> <p>NOTE: It takes ~19 minutes to reach -3.3 ft which is the decision point for a Reactor Scram and Emergency depressurization</p> <p>8. UNISOLABLE TORUS LEAK/ EOP 1300 ACTIONS</p> <p>NOTE: The RHR Room water Level is never reported as having reached Max Safe Level (15 inches) and the timeline of local reports allows the Torus water level to be the critical parameter.</p>	<p>BOP OATC</p> <p>BOP OATC</p>	<ul style="list-style-type: none"> Verify 4100 gpm through each operating Condensate Pump Notify Duty Chemist, Turbine Building Operator and Reactor Building Operator to perform scram actions <p>Respond to annunciators</p> <ul style="list-style-type: none"> Notify Rad Protection that a harsh environment or increase radiation environment may exist in the RHR rooms and that entry is required Dispatches an operator to investigate

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SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Booth Operator	<p>a. Role Play in-plant operator. When dispatched, WAIT 2 MINUTES then report that the water level is approximately 8 inches in both RHR rooms.</p> <p>NOTE: Torus Level can be monitored on Insight File pct112.</p>		<ul style="list-style-type: none"> Receive the report from the plant and relay the information to the CRS. Reports EOP 1300 Entry Condition of RHR Room water levels above 0 inches.
Booth Operator	<p>b. Role Play in-plant operator. If asked to report the source of the leak, WAIT UNTIL Torus Water Level is -1 feet, then report that the Leak is unisolable from a weld at the ring header in Bay 4.</p>	CRS	Enters and directs actions from EOP1300 Secondary Containment Control
		BOP OATC	<ul style="list-style-type: none"> Verify the Reactor Bldg Floor drain Sump Pump is running Attempt to identify and isolate the source of the water
		CRS	Monitor Area Water Levels approach to Max Safe
	9. <u>UNISOLABLE TORUS LEAK/ EOP 1200 ACTIONS</u>	SS304.194	
		BOP	Respond to 4-B-4, (Suppression Water Level Hi/Low) <ul style="list-style-type: none"> Check LI-2996 on C-04 or PLR-7251A/B on C-03 Identifies and reports the lowering trend Reports EOP 1200 Entry Condition when Torus water level (Narrow Range) is < -4 inches Monitors and reports Torus water level throughout
	NOTE: It takes approximately 3 minutes to reach -4 inches Torus water level	CRS	Enters and directs actions from EOP-1200 (Primary Containment Control)

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Booth Operator	<p>a. Role Play the out-plant operator if assigned to perform C.5-3401: Wait 2 minutes and report that he must find boots as PPE for the water on the floor.</p>	<p>SS314.115</p> <p>BOP CR314.119</p>	<ul style="list-style-type: none"> • Directs performance of C.5-3401 (Torus Water Level Makeup) • May direct an in-plant operator to perform C.5-3401 steps for Core Spray and RHR. (May choose not to perform due to safety concerns) • Verifies the HPCI CST Suction, MO-2063 Open • Opens the HPCI Pump Minimum Flow Valve CV-2065 • Verifies the RCIC CST Suction, MO-2102 Open • Opens the RCIC Pump Minimum Flow Valve CV-2104
CT 26	<p>10. <u>EMERGENCY DEPRESSURIZATION</u></p> <p>When torus water level can <u>NOT</u> be maintained above -3.3', then scram and execute <u>EMERGENCY DEPRESSURIZATION</u> per C.5-2002.</p>	<p>CRS</p> <p>CRS</p> <p>CRS</p>	<p>CRS May anticipate Blowdown per a C.5-1100 Override Statement and direct RPV pressure be lowered using the Turbine Bypass Valves</p> <p>When it is determined that Torus Water Level can <u>NOT</u> be maintained above -3.3 ft, Blowdown and enter EOP 2002.</p> <ul style="list-style-type: none"> • Recognizes when Torus Water Level can <u>NOT</u> be maintained above -3.3 ft • Enters and directs EOP-2002 (Blowdown) • Verifies Torus level > -5.9 ft. • Directs that 3 ADS SRVs be opened

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SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 7	11. CONTROL ROD 14-27 FAILS TO INSERT <u>Key Parameter Response:</u> Control Rod remains at position 48 and RWM indicates one rod still out. <u>Key Expected Alarms:</u> None <u>Auto Actions:</u> None	BOP	If directed to ANTICIPATE BLOWDOWN and lower RPV pressure using the Turbine Bypass Valves
		CR304.145	<ul style="list-style-type: none"> At C-07, places PRESS REG OVERRIDE in OPEN until both Bypass valves are open
		BOP	Perform Emergency Depressurization <ul style="list-style-type: none"> When directed by CRS, place 3 ADS SRVs to OPEN and verifies they have opened Monitor RPV Pressure and Level
		OATC	<ul style="list-style-type: none"> Identifies that Rod 14-27 did not fully insert Informs the CRS and performs actions to insert Control Rod 14-27
			<ul style="list-style-type: none"> May reset the scram and insert the control rod <ol style="list-style-type: none"> Direct an out-plant operator to manually close CRD-14 Bypass the RWM Select and insert the full out rod
Booth Operator	a. Role Play the Reactor Bldg Operator as necessary and, as requested wait 1 minute and insert MANUAL TRIGGER 19 to close CRD-14		
Booth Operator	1) Verify REMOTE FUNCTION CH22 goes active to close CRD-14		
Booth Operator	b. If the OATC places the ROD MOVEMENT CONTROL switch to ROD IN to insert Rod 14-27, verify EVENT TRIGGER 21 goes active and MALFUNCTION CH02_058 DELETES.		
Booth Operator	c. If the OATC uses EMERG ROD IN to insert Rod 14-27, verify EVENT TRIGGER 23 goes active and MALFUNCTION CH02_058 DELETES.		

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	12. <u>SCENARIO TERMINATION</u> a. The scenario may be terminated when actions are taken to insert the control rods and an Emergency Depressurization has been performed. b. The scenario may be also terminated at the discretion of lead instructor/evaluator c. End the scenario by placing the simulator in FREEZE .	 Crew Crew	 <ul style="list-style-type: none">• Remain in simulator for potential questions from evaluator.• No discussion of scenario or erasing of procedure marking is allowed.

	SIMULATOR EXERCISE GUIDE (SEG)
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SITE: MONTICELLO**SEG #** ILT-SS-28E**SEG TITLE:** 2015 ILT NRC SCENARIO 2**REV. #** 0**PROGRAM:** INITIAL LICENSE TRAINING**#:** MT-ILT**COURSE:** NRC SIMULATOR EVALUATION**#:** N/A**TOTAL TIME:** 45-90 MINUTES

Additional site-specific signatures may be added as desired.

Developed by:	_____	_____
	<i>Instructor</i>	<i>Date</i>
Reviewed by:	_____	_____
	<i>Instructor</i> (<i>Simulator Scenario Development Checklist.</i>)	<i>Date</i>
Validated by:	_____	_____
	<i>Validation Lead Instructor</i> (<i>Simulator Scenario Validation Checklist.</i>)	<i>Date</i>
Approved by:	_____	_____
	<i>Training Supervision</i>	<i>Date</i>

QUANTITATIVE ATTRIBUTES**Malfunctions:**

Before EOP Entry:

1. RBM B Upscale failure
2. RPV Flange Leak
3. Control Rod Drift out
4. 12 Stator Water Cooling Pump trip
5. Scram Discharge Volume failure to isolate

After EOP Entry:

1. ADS Valves fail to open on ED

Abnormal Events:

1. Control Rod Drifting
2. Loss of Stator Water Cooling

Major Transients:

1. Unisolable leak from SDV resulting in a RPV blowdown

Critical Tasks:

1. **CT-ADS** When two or more ADS valves fail to open when Emergency Depressurization is required, open additional SRVs until a total of three SRVs are open.
2. **CT-34** When a primary system is discharging into the secondary containment through an unisolable break; perform an Emergency Depressurization per C.5-2002 when max safe operating values are exceeded in two or more areas.

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Event 1	1. <u>PLACE THE 2ND MFRV IN SERVICE AND REACTOR WATER LEVEL CONTROL IN 3 ELEMENT CONTROL</u>	<p>CRS</p> <p>BOP CR259.103</p>	<p>Directs BOP to place the 2nd MFRV in service IAW Form 2167 (PLANT STARTUP) and B.05.07-05.D.4 (PLACE REMAINING B MAIN FW REG VALVE CV-6-12B IN SERVICE)</p> <ul style="list-style-type: none"> Verifies MO-1134 is OPEN. Verifies MTS-6-84B bias (vertical scale) is set at ZERO Using MTS-6-84B, OPENS CV-6-12B Monitors Vessel level and FW flow as CV-6-12B OPENS When MTS-6-84B output (horizontal scale) matches demand signal (vertical scale), then places MTS-6-84B in AUTO.
Event 2 BOOTH INST	<p>2. <u>RBM B FAILS UPSCALE</u></p> <p>a. When directed by the lead evaluator, Insert MANUAL TRIGGER 1 and verify NI17B activates.</p> <p><u>Key Parameter Response:</u> RBM B indicates upscale</p>		

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	<p><u>Key Expected Alarms:</u> 5-A-3 (ROD WITHDRAW BLOCK), 5-A-43 (RBM DOWNSCALE/TROUBLE), 5-A-51 (RBM HI/INOP)</p> <p><u>Auto Actions:</u> Rod Withdraw Block</p>	OATC	<ul style="list-style-type: none"> • Reports alarm and rod block to the CRS
		<p>CRS</p> <p>SS299.351 CR299.353</p>	<ul style="list-style-type: none"> • Takes action IAW 5-A-51 (RBM HI/INOP) • Presses the Trip Status softkey and Contributions softkey to determine source of INOP trip. • Determines equipment failure is a Critical Self-Test Fault • Bypasses RBM B using Joystick 7B-S2 <p>Evaluates LCO 3.3.2.1-A as still MET</p> <ul style="list-style-type: none"> • Condition A is still met because the plant is not below the limit specified in the COLR.
<p>Event 3</p> <p>BOOTH INST</p>	<p>3. <u>VESSEL FLANGE SEAL LEAK</u></p> <p>a. When directed by the lead evaluator, Insert MANUAL TRIGGER 3.</p> <p>b. Verify C-04-A35 MALFUNCTION (Annunciator) goes active:</p> <p><u>Key Parameter Response:</u> None</p> <p><u>Key Expected Alarms:</u> 4-A-35 (VESSEL FLANGE SEAL LEAK)</p> <p><u>Auto Actions:</u> None.</p>	BOP	<p>Responds to annunciator and reports to the CRS</p>

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SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	c. When CV-2369 is placed in OPEN, verify Event Trigger 29 activates . This will delete the Vessel Flange Seal Leak alarm after a 2 minute delay.	BOP	Places CV-2369 in OPEN
BOOTH INST	d. If confirmatory indication requested, state as the RBO that PS 2-102 reads 616 psig.		Alarm will clear after 2 minutes and 1 minute later CV-2369 is placed back in the closed position.
BOOTH INST	e. Acknowledge as Plant Technical Staff the receipt of the annunciator.		Notifies Plant Technical Staff of the receipt of the annunciator
Event 4 BOOTH INST	4. <u>CONTROL ROD 18-19 DRIFTS OUT</u> When directed by the Lead Evaluator, insert MANUAL TRIGGER 5 and verify 03-S72-02 activates for 2 seconds and CH01_034 activates. <u>Key Parameter Response:</u> Control Rod 18-19 drifting out <u>Key Expected Alarms:</u> 5-A-27 (ROD DRIFT) <u>Automatic Actions:</u> None	OATC CR200.226 SS315.167	Acknowledges the alarm and informs the CRS that Control Rod 18-19 is drifting out. Enters C.4-B.01.03.C (CONTROL ROD DRIFTING) <ul style="list-style-type: none"> Places Rod Select Power Switch to OFF and back to ON Reselects Control Rod 18-19 and inserts to position 00 May hold the Rod Insert Switch to IN or release it.
BOOTH INST	a. Once the OATC holds the Rod Insert switch to IN for 5 seconds, verify the control rod drift malfunction CH01_034 deletes.	CRS/ BOP	Directs the Reactor Building Operator to hydraulically isolate and/or electrically disarm HCU 18-19 IAW B.01.03-05.G.2 (HYDRAULIC CONTROL UNIT ISOLATION).
BOOTH INST	b. As the Reactor Building Operator; when directed to isolate and/or disarm Control Rod 26-27, wait 3 minutes, insert Manual Trigger 7 and report that the control rod is isolated and/or disarmed.		
		CRS	Evaluates LCO 3.1.3-C as NOT MET

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
		SS299.349 CR299.351	<ul style="list-style-type: none"> Action C.1: Fully insert control rod within 3 hours Action C.2: Disarm CRD within 4 hours
Event 5 BOOTH INST	<p>5. <u>12 STATOR WATER COOLING PUMP TRIP WITH REACTOR SCRAM</u></p> <p>a. When directed by the lead evaluator, INSERT MANUAL TRIGGER 9 and verify EG02B activates.</p> <p><u>Key Parameter Response:</u> Loss of Stator Water Cooling</p> <p><u>Key Expected Alarms:</u> 8-A-17 (NO. 1 GENERATOR COOLING WTR FAILURE)</p> <p><u>Auto Actions:</u> Turbine Generator Runback. An automatic scram will occur if both Main Turbine Bypass Valves go full open due to the Runback.</p>	<p>BOP</p> <p>SS315.126</p> <p>CR200.171</p> <p>OATC CR200.166 SS315.164</p> <p>OATC SS315.101 CR200.146</p>	<p>Announces that a complete loss of Stator Water Cooling has occurred.</p> <p>Enters procedure C.4-B.06.02.04.A (STATOR COOLING WATER FAILURE).</p> <p>Recommends that a Manual Reactor Scram be inserted.</p> <p>Inserts a manual Reactor scram.</p> <p>Takes actions IAW C.4-A (Reactor Scram) PART A:</p> <ul style="list-style-type: none"> Place Mode Switch in SHUTDOWN.
			<ul style="list-style-type: none"> Verify all Control Rods are inserted to or beyond position 04.

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
	<p>NOTE: The remaining ATC actions in C.4-A may NOT be performed depending on when the SDV leak is recognized.</p>	BOP	<ul style="list-style-type: none"> Provides scram script to CRS. Reports RPV less than 9" EOP entry condition. Controls Reactor water level between +9 and +48 inches. When RPV water level starts to increase: <ul style="list-style-type: none"> Place CV-6-13 Manual Loading Station Low Flow Valve in AUTO set between 15 and 20 inches Close both Main FW Reg Valves Close MO-1133 and MO-1134 (HP Feedwater Line Block valves Verify CV-6-13 is closed when RPV level reaches +15 to +20 inches Monitor Reactor Power <ul style="list-style-type: none"> Insert SRM and IRM detectors. Switch recorders from APRM to IRM. Range down on IRMs as necessary. Verify SDV Vent and Drain Valves closed. Verify Recirc Pumps have run back to minimum <p>Takes actions IAW C.4-A (Reactor Scram) PART B:</p> <ul style="list-style-type: none"> Plant page that a Reactor Scram has occurred. Open Main Generator output breakers 8N7 & 8N8. Trip the Main Turbine.

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SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
	<p>NOTE: The remaining BOP actions in C.4-A may NOT be performed depending on when the SDV leak is recognized.</p>		<ul style="list-style-type: none"> • Verify the Generator Field Breaker Open. • Start the Turbine Aux Oil Pump. • Verify Turbine Exhaust Hood Sprays in service. • Start the Turbine Bearing Lift Pumps • Verify Main Steam Pressure Control or Low-Low Set is controlling Reactor Pressure. • At C-25, Place the POST SCRAM switch in ON and verify all available Drywell Recirculation Fans are operating • Verify 3300 gpm through each operating Feed Pump • Verify Auxiliary Oil Pump running on any non-operating Feed Pump • Verify 3000 gpm through each operating Condensate Pump
Event 6	<p>10. <u>SDV Vent and Drain Valve Failure to Isolate</u></p> <p>a. The malfunctions for SDV vent and drain valve failures, CH22A and CH22B, are inserted during the initial setup.</p> <p><u>Key Parameter Response:</u> Scram Discharge Volume Vents and Drains remain open</p>		
	<p><u>Key Expected Alarms:</u> 3-B-56 (HIGH AREA TEMP STEAM LEAK), 4-A-11 (REACTOR BUILDING HI RADIATION)</p>		

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SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
	<p><u>Auto Actions:</u> None</p> <p><u>NOTE:</u> It takes approximately 4 minutes for area A-11, West CRD HCU, to reach Max Safe Rad levels (1R/hr). It takes an additional 4 minutes for the second area, A-15 Reactor Bldg Drain Tank, to reach Max Safe (1R/hr).</p> <p><u>NOTE:</u> The SDV isolation valves will NOT be able to be reset due to a malfunction on the SDV high level bypass circuitry.</p>	<p>Crew SS304.196 SS304.239 CR304.105 CR304.153</p> <p>OATC</p> <p>CRS</p> <p>CRS</p>	<ul style="list-style-type: none"> The BOP will respond to annunciators and report to the CRS EOP 1300 Entry Conditions <p>Perform the actions of EOP-1300 (Secondary Containment Control)</p> <ul style="list-style-type: none"> Directs evacuation of area or entire reactor building. Reports Reactor Building radiation levels and temperatures are rising Keeps the CRS informed of Secondary Containment parameter values and trends Attempts to manually close SDV isolation valves <p>Enters EOP-1300 (Secondary Containment Control)</p> <ul style="list-style-type: none"> Direct isolation of the SDV Monitors Secondary Containment parameters
CT-34	<p>When a primary system is discharging into the secondary containment through an unisolable break, perform an Emergency Depressurization per C.5-2002 when max safe operating values are exceeded in two or more areas.</p>	<p>Crew SS304.198 CR314.101</p>	<ul style="list-style-type: none"> Recognizes when 2 area radiation levels have exceeded Max Safe

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
<u>CT-ADS</u>	When two or more ADS valves fail to open when Emergency Depressurization is required, open additional SRVs until a total of three SRVs are open.	CRS BOP CRS BOP	<ul style="list-style-type: none"> Enters and directs EOP-2002 (Blowdown) Verifies Torus level > -5.9 ft. Directs that 3 ADS SRVs be opened Perform Emergency Depressurization Enters EOP-1300 (Secondary Containment Control) <ul style="list-style-type: none"> Directs opening of all 3 ADS SRVs. Recognizes that C & D SRVs failed to open Opens additional SRVs until a total of 3 are open
FLOOR INST	8. <u>SCENARIO TERMINATION</u> The scenario may be terminated when Emergency Depressurization has been performed. The scenario may be also terminated at the discretion of lead instructor/evaluator End the scenario by placing the simulator in FREEZE .	Crew: Crew:	<ul style="list-style-type: none"> Remain in simulator for potential questions from evaluator. No discussion of scenario or erasing of procedure marking is allowed.

	SIMULATOR EXERCISE GUIDE (SEG)
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SITE: MONTICELLO**SEG #** ILT-SS-29E**SEG TITLE:** 2015 ILT NRC SCENARIO 3**REV. #** 0**PROGRAM:** INITIAL LICENSE TRAINING**#:** MT-ILT**COURSE:** NRC SIMULATOR EVALUATION**#:** N/A**TOTAL TIME:** 45-90 MINUTES

Additional site-specific signatures may be added as desired.

Developed by:	_____	_____
	<i>Instructor</i>	<i>Date</i>
Reviewed by:	_____	_____
	<i>Instructor</i> <i>(Simulator Scenario Development Checklist.)</i>	<i>Date</i>
Validated by:	_____	_____
	<i>Validation Lead Instructor</i> <i>(Simulator Scenario Validation Checklist.)</i>	<i>Date</i>
Approved by:	_____	_____
	<i>Training Supervision</i>	<i>Date</i>

QUANTITATIVE ATTRIBUTES**Malfunctions:***Before EOP Entry:*

1. RCIC Steam Leak with Group 5 Isolation failure
2. ADS Timer Malfunction
3. CRD Flow Control Valve failure
4. Main Turbine Vibrations

After EOP Entry:

1. ARI Failure
2. SBLC Pump failure

Abnormal Events:

1. Group 5 Isolation.
2. Inadvertent ECCS Initiation
3. Rapid Power Reduction

Major Transients:

1. Hydraulic ATWS

Critical Tasks:

1. **CT-46:** During failure to scram conditions with reactor power above 4.0%, terminate and prevent injection from all sources except SBLC, RCIC, and CRD until level lowers to at least -33".
2. **CT-48:** During failure to scram conditions with a critical reactor, insert control rods using one or more methods contained within C.5-3101 to achieve reactor shutdown under all conditions.

NOTE: Table may be modified as needed to include all scenario time-line items

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 1	<p>1. <u>RESTORE RCIC SUCTION TO THE CSTS</u></p> <p><u>Optional:</u> This normal evolution has been validated as an optional event. If the BOP operator does not need a normal evolution, this event may be omitted from the scenario.</p> <p><u>NOTE:</u> Based on initial conditions, this TS has already been entered for restoring the suction to the CSTs</p> <p><u>NOTE:</u> Without an automatic transfer signal, MO-2102 must be manually opened.</p>	<p>CRS</p> <p>BOP CR217.111</p> <p>CRS</p>	<p>May perform refocus brief</p> <p>Performs B.02.03-05.G.2 (MANUAL SWITCHOVER OF RCIC SUCTION FROM THE TORUS TO THE CONDENSATE STORAGE TANKS).</p> <ul style="list-style-type: none"> • Verifies Torus level <+2" and CST level >2'8" • Notifies CRS to evaluate TS 3.5.3 for RCIC • Concurrently closes MO-2100 and MO-2101 • Once dual indication is observed on MO-2100 & MO-2101, opens MO-2102 manually. • Verifies closed MO-2100 and MO-2101 • Notifies CRS to exit TS 3.5.3 <p>Exits TS 3.5.3 for RCIC</p>
Event 2 BOOTH INST	<p>2. <u>IN-SERVICE CRD FLOW CONTROL VALVE FAILS</u></p> <p>a. When directed by the lead instructor, insert Manual Trigger 1 and verify CH07B goes active</p> <p><u>Key Parameter Response:</u> Reduced CRD cooling water flow</p> <p><u>Key Expected Alarm:</u> 5-B-41 (CRD HI TEMPERATURE)</p> <p><u>NOTE:</u> It will take three minutes for the alarm to come in.</p> <p><u>Auto Actions:</u> None</p>	OATC	Responds to annunciator and informs CRS

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SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	<p>b. If directed to investigate CRD temperatures, wait 2 minutes and report that many CRD temperatures are rising and that CRD 26-15 is in alarm. The highest reading temperature is 255°F.</p>	CRS	<p>Sends Reactor Building Operator to investigate CRD temperature recorder. Recognizes CRD FCV failure</p>
	<p>c. When directed to report to the CRD FCV station to support shift of FCV, WAIT 1 minute and report you are standing by.</p> <p>d. When directed to OPEN CRD-18-2 and CRD-16-2, WAIT 1 minute then use Manual Trigger 3 to modify REMOTE FUNCTION CH17 to OPEN and report this action to the Control room.</p>	OATC CR201.111	<p>Directs performance of B.01.03-05.E.4 (PLACING THE STANDBY CRD FLOW CONTROL VALVE INTO SERVICE)</p> <p>Coordinates with Reactor Building Operator (RBO) and performs the following:</p> <ul style="list-style-type: none"> • Directs RBO to OPEN CRD-18-2 & CRD-16-2 • Places CRD Flow Controller in MANUAL • Closes CV-3-19A with the flow controller • Places the CRD Flow Selector to the B position • Slowly opens CV-3-19B to 55-58 gpm • Places CRD Flow Control in auto • Closes CRD-16-1 & CRD-18-1
BOOTH INST	<p>e. When directed to CLOSE CRD-16-1 and CRD-18-1, WAIT 1 minute, then use Manual Trigger 5 to modify REMOTE FUNCTION CH16 to CLOSE and report this action complete.</p> <p>f. If directed to report CRD temperatures, report all alarms are clear and all temperatures are lowering to normal.</p>		<ul style="list-style-type: none"> • Acknowledge annunciator 5-B-41 clear and informs Shift Supervision.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 3	3. <u>RCIC STEAM LEAK WITH GROUP 5 FAILURE</u>		
BOOTH INST	<p>a. When directed by the Lead Examiner, insert Manual Trigger 7 and verify RC07 activates</p> <p><u>Key Parameter Response:</u> Rising temperatures and radiation levels in the RCIC room</p> <p><u>Key Expected Alarms:</u> 4-A-11 (REACTOR BUILDING HI RADIATION), 3-B-56 (HIGH AREA TEMP STEAM LEAK) @ 130°F</p> <p><u>Auto Actions:</u> Group 5 Isolation (Disabled)</p>	BOP	<p>Monitors and reports rising RCIC area temperatures and radiation level.</p> <ul style="list-style-type: none"> May direct the RBO to investigate the leak.
BOOTH INST	<p>b. If sent as the RBO to investigate the steam leak, wait one minute and report that it appears there is a steam leak coming from the vicinity of MO-2078.</p>		<p>Enters C.4-B.02.04.A (STEAM LEAKS OUTSIDE PRIMARY CONTAINMENT)</p> <ul style="list-style-type: none"> Evacuates RCIC room or entire Reactor Building
		CRS SS315.106 SS315.116	Enters C.5-1300 (SECONDARY CONTAINMENT CONTROL) and directs isolation of RCIC (Group 5)
		BOP CR200.151 CR200.161	Enters C.4-B.04.01.E (PRIMARY CONTAINMENT ISOLATION – GROUP 5)
BOOTH INST	c. When MO-2075 is closed, verify Event Trigger 29 activates. This will delete the RCIC leak (RC07)		Closes MO-2075 and MO-2076

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	d. If directed as the RBO to provide status after RCIC isolation valves have been shut, state that there is NO steam flow noise and steam is clearing from the room.	CRS	Evaluates TS LCO 3.5.3 Condition A as NOT MET
		SS299.353 CR299.355	<ul style="list-style-type: none"> Action A.1 – Verify HPCI operable immediately Action A.2 – Restore RCIC within 14 days
Event 4 BOOTH INST	<p>4. <u>INADVERTENT ADS TIMER INITIATION</u></p> <p><u>Optional:</u> This event has been validated as an optional event. If the BOP/CRS does not need an Instrument Malfunction/Tech Spec call, this event may be omitted from the scenario.</p> <p>a. When directed by the lead evaluator, Insert Manual Trigger 9 verify AP07 activates.</p> <p><u>Key Parameter Response:</u> 107 second timer initiates</p> <p><u>Key Expected Alarms:</u> 3-A-25 (AUTO BLOWDOWN TIMER ACTIVATED)</p> <p><u>Auto Actions:</u> None</p> <p>NOTE: With the Inhibit switches in INHIBIT the ADS system is non-functional. CRS should not wait the 1 hour as allowed by LCO 3.3.5.1.</p>	<p>BOP</p> <p>SS315.160 CR200.204</p> <p>CRS</p> <p>SS299.351 CR299.353</p>	<p>Announces alarm</p> <p>Enters C.4-G (INADVERTENT ECCS INITIAION)</p> <ul style="list-style-type: none"> Verifies alarm and timer initiation is inadvertent Places ADS Inhibit Switched to INHIBIT <p>Evaluates TS LCO 3.3.5.1 Condition A & G as NOT MET</p> <ul style="list-style-type: none"> Action G.1 – Declare ADS valves inoperable in 1 hour Action G.2 – Restore to operable in 96 hours <p>Evaluates TS LCO 3.5.1 K & L as NOT MET</p> <ul style="list-style-type: none"> Action L – Mode 3 in 12 hours / Mode 4 in 36 hours

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 5 BOOTH INST	<p>5. MAIN TURBINE VIBRATIONS</p> <p>a. When directed by the Lead Examiner, insert Manual Trigger 11 and verify TU03A/B/C activates.</p> <p>Key Parameter Response: Rising vibrations on Main Turbine shaft bearings 1, 2 and 3.</p> <p>Key Expected Alarms: 7-B-33 (TURBINE VIBRATION HIGH)</p> <p>Auto Actions: None</p> <p>NOTE: Lowering Reactor power will NOT be successful in reducing turbine vibration.</p>	<p>BOP</p> <p>CRS SS315.159</p> <p>OATC CR200.203</p>	<p>Follows ARP 7-B-33 (TURBINE VIBRATION HIGH)</p> <ul style="list-style-type: none"> If power reduction is necessary then perform C.4-F (Rapid Power Reduction) If sustained Turbine-Generator vibration levels approach 15 Mils, then reduce recirculation flow to minimum, initiate a manual reactor scram and manually trip the Turbine <p>Directs C.4-F (Rapid Power Reduction)</p> <ul style="list-style-type: none"> Lowers reactor power by lowering recirc flow in an attempt to mitigate turbine vibrations.
BOOTH INST	<p>6. CONTINUED VIBRATIONS – REACTOR SCRAM</p> <p>NOTE: When the Mode switch is placed in SHUTDOWN, verify EVENT TRIGGER 28 activates TC02 tripping the turbine and TU03A/B/C turbine vibrations ramp to 0%.</p>	<p>CRS SS315.164</p> <p>OATC CR200.208</p>	<p>Directs a reactor scram IAW C.4.K (Immediate Reactor Shutdown)</p> <p>Depresses pushbuttons for REACTOR SCRAM A and B and places the Mode Switch in SHUTDOWN</p>

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
	<p>7. <u>Hydraulic ATWS</u></p> <p><u>NOTE:</u> The CRS may wait to direct this action as time permits.</p> <p><u>NOTE:</u> The CRS may wait to direct this action during the Level Leg actions.</p>	<p>OATC</p> <p>CRS SS304.213 SS304.201 SS304.244 CR314.129 CR314.104</p> <p>BOP</p> <p>SS314.111 CR314.115</p> <p>SS314.108 CR314.112</p>	<p>Provides a Scram Report</p> <ul style="list-style-type: none"> Reactor Scram, Mode Switch is in Shutdown, all rods are <u>NOT</u> in, Reactor power is >4%, EOP Entry <p>Enters EOP 1100 RPV Control, transitions to EOP 2007, Failure to Scram, and directs the following:</p> <ul style="list-style-type: none"> ○ Inhibit ADS ○ C.5-3301 (Defeat MSIV Low-Low Level Isolation) <ul style="list-style-type: none"> ○ Places 4 Key switches to BYPASS on C-15 and C-17. ○ C.5-3205 (Prevent Core Spray injection) <ul style="list-style-type: none"> - Place the A & B CS INJECTION BYPASS Switches to BYPASS - Close MO-1751 (1752) Injection Outboard - Place A and B CS Pump switches to PTL - Close MO-1753 (1754) Injection Inboard

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
CT-48	<p>8. <u>Hydraulic ATWS Power Leg Actions</u></p> <p>During failure to scram conditions with a critical reactor, insert control rods using one or more methods contained within C.5-3101 to achieve reactor shutdown under all conditions.</p> <p><u>NOTE:</u> ARI will NOT work for this scenario.</p> <p><u>NOTE:</u> C.5-3101 Part C and/or Part D may be performed. If only one part is performed, the actions from the other part are not applicable</p>	<p>OATC CR314.105</p> <p>SS314.101</p> <p>CR212.105</p> <p>OATC</p>	<ul style="list-style-type: none"> Performs C.5-3101 (Alternate Rod Insertion) Verifies Recirc pumps are at minimum speed and trips the pumps Arms and Actuates A/B ATWS and determines if ARI is having success. <p><u>Performs PART C (INCREASE COOLING WATER DIFFERENTIAL PRESSURE AND USE RMCS)</u></p> <ul style="list-style-type: none"> Bypasses RWM Verifies 12 CRD pump is running Fully open the CRD Flow Control Valve <ul style="list-style-type: none"> Place FC 3-301 in MAN Adjust output of FC 3-301 to 100% Opens MO-3-20 (Drive Pressure to CRD) Directs Reactor Building Operator to CLOSE CRD-168, CRD-79-1 & CRD-79-2 When control rods no longer drift in, Drive rods using RMCS <p>Establish Drive Pressure as high as possible below 400 psig by one or more of the following:</p>
	<p>a. When requested to close CRD-168, activate Manual Trigger 13 and verify CH34 goes active. Wait 1 minute and report it as closed.</p>		
BOOTH INST			

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST BOOTH INST	<p>b. If requested to close CRD-14, activate Manual Trigger 15 and verify CH22 is modified to 0.</p> <p>NOTE: C.5-3101 Part C and/or Part D may be performed. If only one part is performed, the actions from the other part are not applicable</p>		<ul style="list-style-type: none"> ○ Throttle closed the CRD Flow Control Valve ○ Throttle closed Open MO-3-20 Drive Pressure to CRD ○ Directs the Reactor Bldg Operator to CLOSE CRD-14 to raise drive pressure • Select and insert rods in non-peripheral core regions with few or no rods inserted • Attempt to achieve a “Black and White” pattern <p><u>Performs PART D (RESCRAM CONTROL RODS)</u></p>
BOOTH INST	<p>c. When requested to deenergize the ARI valves insert Manual Trigger 17, this modifies RR18 is to Open. Wait 1 minute and report the ATWS 125 VDC Breakers Open.</p> <p>NOTE: These contacts are modeled in the simulator. The jumpers are included with the C.5-3101 procedure.</p>		<ul style="list-style-type: none"> • Evacuate personnel from the RB 896’ Floor and the Equipment Drain tank Room • Directs the in-Plant operator to deenergize the ATWS 125 VDC Valves by opening D-21 & D-11. • Installs jumpers to bypass all automatic scram signals in C-15 & C-17 • Resets the scram • Directs the Reactor Bldg Operator to open CRD-14
BOOTH INST	<p>d. If requested to open CRD-14, modify Remote Function CH22 is to Open, wait 1 minute and report CRD-14 Open.</p> <p>NOTE: This may take up to 7 minutes.</p>		<ul style="list-style-type: none"> • Verifies SDV Vent and drain valves Open • When Annunciator C-05-B-21 clears, closes the SDV vent and drain valves

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	e. IF THE SCRAM IS RESET and a Manual Reactor Scram is inserted for Part D, INSERT MANUAL TRIGGER 19 to deleted CH16 allowing the control rods to insert.		<ul style="list-style-type: none"> Inserts a Manual Reactor Scram Verifies all control rods fully inserted and informs the CRS
BOOTH INST	<p>9. <u>SBLC Initiation Problems</u></p> <p>NOTE: Event Triggers 28 or 29 will auto activate to clear the trip on the second SBLC pump that is started.</p> <p>a. If #11 SBLC is attempted to be started first, verify Event Trigger 27 goes True and SL01B deletes after 1 second so #12 SBLC pump will start.</p> <p>b. If #12 SBLC is attempted to be started first, verify Event Trigger 26 goes True and SL01A deletes after 1 second so #11 SBLC pump will start.</p> <p>Key Parameter Response: Selected pump Green light stays on and Red light stays off, SBLC discharge pressure remains at 0 psig</p> <p>Key Expected Alarms: None</p> <p>Auto Actions: RWCU isolates and pumps trip ONLY when the second pump starts.</p>	<p>CRS</p> <p>OATC CR211.106</p>	<p>Directs SBLC initiation before Torus temp reaches 110°F using the SBLC Hard Card, B.03.05-05.G.1 (SBLC Manual Initiation)</p> <p>Places 11A-S1 SBLC System Selector Switch to SYS 1 or SYS 2 and recognizes that the first pump fails to start.</p> <ul style="list-style-type: none"> Starts the other SBLC pump Verifies the RWCU Pumps trip and the Group 3 isolation valves close. Verifies SBLC Pump running light is ON and, discharge pressure is slightly higher than RPV pressure with SBLC Tank level decreasing.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
CT-46	10. <u>Hydraulic ATWS Level Leg Actions</u> During failure to scram conditions with reactor power above 4%, terminate and prevent injection from all sources except SBLC, RCIC, and CRD until level lowers to at least -33".	CRS	Verify needed auto actions Identifies that power >4% & RPV level above -33" and directs Terminate and Prevent actions
		BOP CR314.112	<ul style="list-style-type: none"> Prevents injection from Condensate & Feedwater by placing the FRV Controllers in Manual and closing the Reg Valves
		BOP	<ul style="list-style-type: none"> Prevents injection form HPCI by placing the Aux Oil Pump in PTL
		CRS	<ul style="list-style-type: none"> Prevents LPCI injection as follows Open Knife switches (C-03): 10A-S31A/B Verify LPCI OBD Valves are closed, MO-2012/13 Lets level drop until <ul style="list-style-type: none"> Power is <4% or All SRVs stay closed and DW pressure is < 1.84 psig or RPV Level reaches -126 inches Records final level and sets level band
	For level control, the CRS should direct condensate and feedwater injection re-established and used to maintain level in the desired band.		<ul style="list-style-type: none"> Uses Condensate & Feedwater as necessary to maintain established level band.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
	11. <u>Hydraulic ATWS Pressure Leg Actions</u>	CRS/ BOP	<ul style="list-style-type: none"> Stabilize RPV pressure below 1056 psig using the one remaining Bypass Valve and/or SRVs (LL-SET)
	12. <u>(PRIMARY CONTAINMENT CONTROL)</u> NOTE: Based on Crew priorities and Torus water temperature EOP-1200 actions may be taken.	BOP CRS BOP	Monitor Primary Containment Parameters <ul style="list-style-type: none"> If Torus Water Temperature exceeds 90°F, notify the CRS of the EOP C.5-1200 entry condition. Enters EOP C.5-1200 Primary (Containment Control) <ul style="list-style-type: none"> Directs start of all available Torus Cooling Starts all available Torus Cooling IAW the Hard Card. <ul style="list-style-type: none"> Verify CV-1728 (1729), RHR HX SW Outlet, controller set at 20%. START No 11(12) and/or No 13(14) RHRSW pumps as needed. Adjust flow for ~3500 gpm per pump using CV-1728 (CV-1729). Verify 11(12) and/or 13 (14) RHR pumps running. Partially OPEN MO-2008 (2009), Torus Cooling Inj/Test Inboard, by holding handswitch in OPEN position for 8 seconds. Give MO-2006 (2007) an OPEN signal by momentarily placing RHR Div 1 Disch to Torus Otbd handswitch 10A-S14A (B) to OPEN.
			<ul style="list-style-type: none"> THROTTLE OPEN MO-2008 (2009) to provide ~4000 gpm per pump.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	When control rods are being inserted using Part C AND when directed by the Lead Examiner, INSERT MANUAL TRIGGER 19 to deleted CH16 allowing the control rods to insert.		<ul style="list-style-type: none"> • CLOSE MO-2002 (2003), HX Bypass. • Verify V-AC-5(4), A(B) RHR RM COOLER in operation.
	13. <u>SCENARIO TERMINATION</u> <ol style="list-style-type: none"> The scenario may be terminated as follows: <ol style="list-style-type: none"> 1) Actions are being taken to insert control Rods or ALL rods are inserted. 2) RPV level and pressure are being restored following the all rods in condition. The scenario may be also terminated at the discretion of lead instructor/evaluator End the scenario by placing the simulator in FREEZE. 	Crew	<ul style="list-style-type: none"> • Remain in simulator for potential questions from evaluator.
		Crew	<ul style="list-style-type: none"> • No discussion of scenario or erasing of procedure marking is allowed.

	SIMULATOR EXERCISE GUIDE (SEG)
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SITE: MONTICELLO**SEG #** ILT-SS-30E**SEG TITLE:** 2015 ILT NRC SCENARIO 4**REV. #** 0**PROGRAM:** INITIAL LICENSE TRAINING**#:** MT-ILT**COURSE:** NRC SIMULATOR EVALUATION**#:** N/A**TOTAL TIME:** 45-90 MINUTES

Additional site-specific signatures may be added as desired.

Developed by:	_____	_____
	<i>Instructor</i>	<i>Date</i>
Reviewed by:	_____	_____
	<i>Instructor</i> (<i>Simulator Scenario Development Checklist.</i>)	<i>Date</i>
Validated by:	_____	_____
	<i>Validation Lead Instructor</i> (<i>Simulator Scenario Validation Checklist.</i>)	<i>Date</i>
Approved by:	_____	_____
	<i>Training Supervision</i>	<i>Date</i>

QUANTITATIVE ATTRIBUTES

Malfunctions:

Before EOP Entry:

1. Main Turbine Bypass Valve fails CLOSED
2. RBCCW Pump trip
3. 11 Recirc Pump trip
4. RMCS Normal Rod insertion failure
5. Dual Recirc Pump Trip

After EOP Entry:

1. Loss of High Pressure Feed (Reactor Feed Pumps, HPCI and RCIC)

Abnormal Events:

1. Loss of RBCCW Flow
2. Trip of One Recirc Pump
3. Trip of Two Recirc Pumps

Major Transients:

1. LOCA requiring Emergency Depressurization

Critical Tasks:

1. **CT-16:** Inhibit ADS to avoid auto initiation that would result in a violation of cooldown rate or a loss of adequate core cooling.
2. **CT-22:** When RPV water level can **NOT** be maintained $>-149''$, Emergency Depressurize the reactor.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 1	<p>1. <u>EXERCISE MAINTURBINE BYPASS VALVES</u></p> <p>Optional: This normal evolution has been validated as an optional event. If the BOP/CRS does not need a Normal Evolution/Tech Spec call, this event may be omitted from the scenario.</p>	BOP	Performs Test OSP-TRB-0570 (EXERCISE MAIN TURBINE BYPASS VALVES)
BOOTH INST	a. Acknowledge report of changing radiological conditions.	BOP	Notifies RP of changing radiological conditions
FLOOR INST	<p>NOTE: Depending on how long BV-1 is OPEN; the receipt of 5-B-32 (Main Steam Line Leakage) will be expected based on difference in total steam flow and steam flow to the turbine.</p>		<p>Notifies CRS to enter TS 3.7.7.A</p> <p>Cycles BV-1 by performing the following:</p> <ul style="list-style-type: none"> • Selects BV-1 with BYPASS VALVE TEST switch • Presses BYPASS VALVE TEST pushbutton • Times and records valve travel to the OPEN position (15-25 seconds) and generator gross load (MWe) • Releases BYPASS VALVE TEST pushbutton • Times and records valve travel to the CLOSED position (15-25 seconds) • Returns BYPASS VALVE TEST switch to OFF <p>Cycles BV-2 by performing the following:</p> <ul style="list-style-type: none"> • Selects BV-2 with BYPASS VALVE TEST switch • Presses BYPASS VALVE TEST pushbutton • Times and records valve travel to the OPEN position (15-25 seconds) and generator gross load (MWe) • Notifies CRS that BV-2 will NOT open

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	b. Acknowledge BV-2 failure as Operations Management.	CRS	Instructs BOP to stop test and reevaluates TS 3.7.7 <ul style="list-style-type: none"> Enters Condition A Required Action A.1 – Restore BV-2 to operable within 2 hours.
Event 2 BOOTH INST	<p>2. #11 RBCCW PUMP TRIP</p> <p>Optional: This event has been validated as an optional event. If the BOP does not need a component malfunction, this event may be omitted from the scenario.</p> <p>a. When directed by the Lead Examiner, insert MANUAL TRIGGER 1</p> <p>1) Verify the following Malfunction goes active: SW01A, #11 RBCCW Pump Trip</p> <p>Key Parameter Response: #11 RBCCW Pump trips and the Standby #12 RBCCW Pump fails to auto start.</p> <p>Key Expected Alarms: 6-B-32 (RBCCW LOW DISCH PRES)</p> <p>Automatic Actions: None</p> <p>b. When notified to investigate, wait 2 minutes and report as the Outplant operator that the breaker for #11 RBCCW pump has tripped on overcurrent and that there is an acrid odor near the breaker.</p>	BOP CR200.152	<p>Takes action IAW C.4-B.02.05A (LOSS OF RBCCW)</p> <ul style="list-style-type: none"> Verify a RBCCW pump is running <ul style="list-style-type: none"> Notifies that #12 RBCCW Pump failed to auto start and manually starts the pump Notifies Reactor Building and/or Turbine Building Operator(s) to investigate the cause of the trip.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
BOOTH INST	<p>c. Depending on how rapidly the BOP starts #12 RBCCW Pump, RWCU may or may not isolate on high temperature.</p> <p>d. If notified, acknowledge the report.</p> <p>NOTE: This SEG is NOT validated for RWCU restoration.</p>		<ul style="list-style-type: none"> Notifies Engineering and/or Maintenance of the failure of 11 RBCCW Pump and the failure of 12 RBCCW Pump to auto start. Verifies RWCU isolates on high temperature
FLOOR INST	Once the Loss of RBCCW actions are taken and at the discretion of the lead evaluator, MOVE ON TO THE NEXT EVENT.	CRS SS315.107	Notifies Ops Management and performs crew brief.
Event 3 BOOTH INST	<p>3. 11 RECIRC PUMP LOCKOUT</p> <p>a. When directed by the Lead Examiner, insert MANUAL TRIGGER 3, and verify RR05A activates.</p> <p>Key Parameter Response: Loss of flow in the A Recirc Loop and Reactor power lowering.</p> <p>Key Expected Alarms: 4-C-1 (RECIRC A LOCKOUT)</p> <p>Automatic Actions: None</p> <p>b. When contacted as engineering, maintenance or plant management, state that the appropriate investigations and/or notifications will be initiated.</p>	<p>BOP</p> <p>OATC</p>	<p>Takes actions IAW C.4-B.01.04.A (TRIP OF ONE RECIRC PUMP)</p> <ul style="list-style-type: none"> Notifies CRS Closes 11 Recirc Pump Discharge valve After 5 minutes, re-opens 11 Recirc Pump Discharge Valve <p>Takes actions IAW C.4-B.05.01.02.A (CONTROL OF NEUTRON FLUX OSCILLATIONS)</p> <ul style="list-style-type: none"> Determines plant is operating in the Unanalyzed Region of the P-F map

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
	NOTE: Based on validation, the crew should decide to lower power to approximately 45-55%.	CRS	<p>Takes action IAW C.4-F (RAPID POWER REDUCTION)</p> <ul style="list-style-type: none"> Inserts control rods to exit Unanalyzed Region <p>Evaluates TS LCO 3.4.1 as NOT met.</p> <ul style="list-style-type: none"> Condition A applies for mismatched Recirc flows
			<ul style="list-style-type: none"> 24 hours to match flows or establish single loop operations.
Event 4	<p>4. <u>RMCS NORMAL ROD INSERTION FAILURE</u></p> <p>a. When the OATC attempts to insert the second control rod, the Rod Insert Switch will fail to respond. Verify Event Trigger 25 (03-S72-01) activates when the second control rod (34-31) is selected.</p> <p><u>Key Parameter Response:</u> No indicating light response from the directional solenoid valves or CRDH.</p> <p><u>Key Expected Alarms:</u> None</p> <p><u>Auto Actions:</u> None</p> <p>NOTE: The crew is also allowed to use EMERG ROD IN based on entry into C.4-F (RAPID POWER REDUCITON). These procedures may NOT be used.</p>	OATC	<p>B.01.03-05.H.1 (INOPERABLE CONTROL RODS)</p> <p>If the Control Rod is NOT at position 00, then attempt to insert the control rod using the following:</p> <ul style="list-style-type: none"> Place Rod Out Notch Override Switch in EMERG ROD IN. <p>B.05.05-05.H.1 (RMCS FAILURE)</p> <ul style="list-style-type: none"> If RMCS failure detected and normal rod insertion capability is lost then place Rod Out Notch Override Switch in EMERG ROD IN.

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 5	5. 12 RECIRC PUMP LOCKOUT When directed by the Lead Examiner, insert MANUAL TRIGGER 5 , and verify RR05B activates. <u>Key Parameter Response:</u> Loss of flow in the B Recirc Loop and Reactor power lowering.		
BOOTH INST BOOTH INST	<u>Key Expected Alarms:</u> 4-C-2 (RECIRC B LOCKOUT) <u>Automatic Actions:</u> None a. Verify Event Trigger 29 goes active when the Mode switch is placed in SHUTDOWN. This will initiate the following: 1) Trip of RFPs after 5 and 10 second delays. Verify FW16A & B activate. 2) A small break LOCA on a 2 minute ramp after a 2 minute delay. Verify RR01B activates.	OATC OATC SS315.101 CR200.146	Takes action IAW C.4-B.01.04.B (TRIP OF TWO RECIRC PUMPS) <ul style="list-style-type: none"> If in Mode 1 or 2, then manually scram the reactor IAW C.4-K (IMMEDIATE REACTOR SHUTDOWN) Takes actions IAW C.4-A (Reactor Scram) PART A: <ul style="list-style-type: none"> Place Mode Switch in SHUTDOWN. Verify all Control Rods are inserted to or beyond position 04. Provides scram script to CRS. Reports RPV less than 9" EOP entry condition. Controls Reactor water level between +9 and +48 inches. When RPV water level starts to increase: <ul style="list-style-type: none"> Place CV-6-13 Manual Loading Station Low Flow Valve in AUTO set between 15 and 20 inches Close both Main FW Reg Valves

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
			<ul style="list-style-type: none"> ○ Close MO-1133 and MO-1134 (HP Feedwater Line Block valves ○ Verify CV-6-13 is closed when RPV level reaches +15 to +20 inches • Monitor Reactor Power
			<ul style="list-style-type: none"> ○ Insert SRM and IRM detectors. ○ Switch recorders from APRM to IRM.
	<p>NOTE: The remaining BOP actions in C.4-A may NOT be performed depending on when the LOCA is recognized.</p>	BOP	<ul style="list-style-type: none"> ○ Range down on IRMs as necessary. • Verify SDV Vent and Drain Valves closed. • Verify Recirc Pumps have run back to minimum <p>Takes actions IAW C.4-A (REACTOR SCRAM) PART B:</p> <ul style="list-style-type: none"> • Plant page that a Reactor Scram has occurred. • Open Main Generator output breakers 8N7 & 8N8. • Trip the Main Turbine. • Verify the Generator Field Breaker Open. • Start the Turbine Aux Oil Pump. • Verify Turbine Exhaust Hood Sprays in service. • Start the Turbine Bearing Lift Pumps • Verify Main Steam Pressure Control or Low-Low Set is controlling Reactor Pressure.

SCENARIO TIME-LINE:

SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
			<ul style="list-style-type: none"> At C-25, Place the POST SCRAM switch in ON and verify all available Drywell Recirculation Fans are operating Verify 3300 gpm through each operating Feed Pump Verify Auxiliary Oil Pump running on any non-operating Feed Pump
			<ul style="list-style-type: none"> Verify 3000 gpm through each operating Condensate Pump
Event 6	<p>6. <u>Loss of High Pressure Feed / Alternate RPV Level Control</u></p> <p>a. Role Play in-plant operators as necessary. There is no apparent cause for the loss of the Feed Pumps.</p>	CRS	Directs performance of C.5-1100 (RPV Control)
BOOTH INST	<p>NOTE: If these start automatically they will still trip. Verify the following:</p> <ul style="list-style-type: none"> When RCIC flow reaches ~ 100 gpm, verify EVENT TRIGGER 26 activates. This will trip RCIC (RC03) after a 30 second time delay. When HPCI MO-2036 begins to open (Red Light ON), verify EVENT TRIGGER 27 activates. This will immediately trip HPCI (HP03). <p>NOTE: Both systems are set to trip on high exhaust pressure complications from the LOCA.</p>	OATC	<ul style="list-style-type: none"> Recognizes the loss of both Feed Pumps Attempts to restart the Feed Pumps Notifies CRS that Feed Pumps will not start.
		CRS	Directs RPV level control using HPCI and/or RCIC
		OATC	<ul style="list-style-type: none"> Attempts to start HPCI and RCIC
		CRS	<ul style="list-style-type: none"> Notifies CRS that HPCI and RCIC both tripped on high exhaust pressure. <p>Direct Alternate Level control Actions</p>

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
CT-16: BOOTH INST	Inhibit ADS to avoid auto initiation that would result in a violation of cooldown rate or a loss of adequate core cooling. b. If directed to Close CRD-168, insert Trigger 7 and verify remote CH34 activates	OATC/ BOP	<ul style="list-style-type: none"> Inhibits ADS May close CRD-168 IAW C.5-3204 (RPV Makeup With CRD) – Only one CRD Pump
		OATC/ BOP	<ul style="list-style-type: none"> Starts a SBLC pump for injection IAW C.5-3203 (Use of Alternate Injection Systems for RPV Makeup) <ul style="list-style-type: none"> Verifies injection Adequately monitors and reports RPV level and Pressure, both values and trends.
Event 7	7. <u>LOCA in Primary Containment (Drywell):</u> NOTE: Containment Spray/Cooling actions may not be taken if the crew prioritizes RPV water level.	BOP CRS BOP	Reports Drywell pressure rising <ul style="list-style-type: none"> Reports EOP entry conditions. <ul style="list-style-type: none"> DW pressure, DW Temp and Torus temp Directs performance of C.5-1200 (PC Control) <ul style="list-style-type: none"> Start Torus sprays Start all available Torus cooling Spray the Drywell Performs C.5 1200 actions Places Torus Sprays in service IAW C.5-3502 (Containment Sprays): <ul style="list-style-type: none"> Verifies RHR Pumps running Takes Cont Spray/Cooling LPCI Initiation Bypass (B) to BYPASS

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
		BOP	<ul style="list-style-type: none"> ○ Opens MO-2007, 2011, & 2009 (B Loop) ○ Verifies LPCI Inject Outboard Valves are closed; MO-2012 and MO-2013. ● Initiates Containment Cooling
		BOP	<ul style="list-style-type: none"> ○ RHRSW Outlet valve controller set 20% ○ Place HX Bypass in CLOSE ○ ECCS Load Shed to MANUAL OVERRIDE ○ Start RHRSW Pump(s) ○ Adjust flow to ≈3500 gpm per pump ● Start all available drywell cooling IAW C.5-3503 (Defeat Drywell Cooler Trips) <ul style="list-style-type: none"> ○ Place all D/W fan control switches to OFF ○ Open Knife switch KS3100 ○ Verify fan inlet dampers are in AUTO ○ Place all D/W fan control switches to ON ○ OPEN associated fan disch dampers ● Initiates Drywell Spray IAW C.5-3502 (Containment Sprays): <ul style="list-style-type: none"> ○ Open Drywell Spray Outboard MO-2021 ○ Open Drywell Spray Inboard MO-2023 ○ Close Torus Cooling MO-2009

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
Event 7 CON'T CT-22	8. <u>Alternate RPV Level Control / Emergency Blowdown:</u> When RPV water level can <u>NOT</u> be maintained >-149", Emergency Depressurize the reactor.	CRS SS304.226 CR304.139	Verifies two or more Injection Subsystems lined up with pumps running. When RPV level is < -126 inches and prior to -149 inches, directs performance of C.5-2002 (Emergency RPV Depressurization) <ul style="list-style-type: none"> Verifies Torus level > -5.9 ft.
BOOTH INST	a. Verify Event Trigger 28 goes active when A SRV Handswitch is taken to Open 1) Verify that Malfunction RR03B (B Loop Rupture) goes active at 3% severity.	BOP BOP/ OATC BOP BOP OATC	<ul style="list-style-type: none"> Directs opening of all 3 ADS SRVs. Directs RPV Level restoration Verifies that both Core Spray Subsystems and LPCI Pumps are available for injection Opens 3 ADS SRVs Monitor and report RPV level values and trends Controls RPV injection from RHR. Opens Knife Switch to Bypass LPCI 5 Minute Timer using C.5-3208 Throttles MO-2013. May divert LPCI flow using B.03.04-05.H (TORUS COOLING HARD CARDS) Controls RPV injection from Core Spray. <ul style="list-style-type: none"> Throttles MO-1754 Controls RPV injection from the Condensate system.

SCENARIO TIME-LINE:			
SEQ	SEQUENCE OF EVENTS / INSTRUCTOR NOTES	CREW POS	EXPECTED STUDENT RESPONSES
FLOOR INST	<p>9. <u>SCENARIO TERMINATION</u></p> <p>a. The scenario may be terminated when Emergency Depressurization has been performed OR RPV water level is recovered above TAF.</p> <p>b. The scenario may be also terminated at the discretion of lead instructor/evaluator</p> <p>c. End the scenario by placing the simulator in FREEZE.</p>	<p>Crew:</p> <p>Crew:</p>	<ul style="list-style-type: none"> • Remain in simulator for potential questions from evaluator. • No discussion of scenario or erasing of procedure marking is allowed.