

Simulation Facility	<u>Byron</u>	Scenario	Operating Test No.: <b>2012 NRC Exam</b>	
Examiners:		No.: <b>NRC 10-1</b>		
	_____	Applicant:	_____	SRO
	_____		_____	RO
	_____		_____	BOP
Initial Conditions:	IC-18			
Turnover:	Unit 1 is at 76% power, steady state, equilibrium xenon, MOL with control rods in manual. RCS boron concentration is 950 ppm. Online risk is green. Rod control is in manual because the Nuc. Engineers are performing thermography in the rod drive cabinets. 0 CC pump is mechanically and electrically aligned to Unit 2 due to OOS on 2B CC pump.			

Event No.	Malf. No.	Event Type*	Event Description
Preload	IMF FW35C MRF CC42 RO IMF RP15A MRF RP83 OPEN TRGSET 2 ZLO1SI01PB(3).eq.1 IMF CV01B (2 0) MRF ED059C OPEN MRF ED063E OPEN		1C HD pump Trip/fail to start 0 CC pump aligned to bus 242 1A CV pump auto start failure  1B CV pump trip
1	IMF PA0253 ON IOR ZDI1MS018A CLS	TS (US)	SG PORV 1MS018A inoperable (Tech Spec)
2	IMF RX13A 0 15	I (RO, US) TS (US)	Pressurizer level channel 1LT-459 fails low (Tech Spec)
3	IMF RX03B 4.8 30	I (BOP, US)	Steam flow channel 1FI-513A fails high
4	IMF FW35A	C (BOP, US)	1A Heater Drain Pump trip.
4a.	None	N (BOP) R (RO, US)	Runback Main Turbine
5	IMF CV03	C (RO, US) TS (US)	Boric acid transfer pump trip.
6	IMF RX05 1500	I (BOP, US)	PT-507 fails high
7	IMF TH03B 350	M (ALL)	Ruptured 1B SG
8	Preload	C (RO, US)	1B CV pump trips/1A CV pump fails to auto start.

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

## SCENARIO OVERVIEW

Unit 1 is at 76% power, steady state, equilibrium xenon, MOL with control rods in manual. RCS boron concentration is 950 ppm. Online risk is green. 0 CC pump is mechanically and electrically aligned to Unit 2 due to OOS on 2B CC pump.

**After completing shift turnover and relief**, steam generator 1A atmospheric relief valve 1MS018A, will develop a hydraulic leak. The Unit Supervisor will enter Tech Spec 3.7.4, Condition A and Tech Spec 3.6.3, Condition C. The crew will dispatch an operator to close 1MS019A to comply with TS 3.6.3, condition C. 1MS018A will remain unavailable for the remainder of the scenario. On line risk remains green.

**After the 1MS018A failure has been addressed**, the controlling pressurizer level channel will fail low. Letdown will automatically isolate and the RO will take manual control of charging flow. 1BOA INST 2, OPERATION WITH A FAILED INSTRUMENT CHANNEL, Attachment C, will be implemented. The RO will restore pressurizer level control to automatic after letdown is reestablished and pressurizer level is restored to normal. Technical specification 3.3.1 conditions A and K will be entered. On line risk remains green.

**After the pressurizer level channel failure has been addressed**, the controlling steam flow channel on the 1A SG fails high. The BOP will take manual control of feedwater flow. 1BOA INST 2, OPERATION WITH A FAILED INSTRUMENT CHANNEL, Attachment H, will be implemented. The BOP will restore feedwater flow control to automatic when SG level is restored to normal. On line risk remains green.

**After the feedwater flow channel failure has been addressed**, 1A Heater Drain Pump will trip. 1BOA SEC-1, SECONDARY PUMP TRIP, Attachment C, will be entered. The BOP will attempt a start of the 1C HDP but it will not start. The BOP will then initiate a turbine load reduction to 780 MW at 20 MW/minute. The RO will borate the RCS as necessary to stabilize RCS temperature. On line risk remains green.

**While borating in response to the 1A Heater Drain Pump trip**, the Unit 1 Boric Acid pump motor bearing will seize while the pump is running. MCC 133X3, cubicle A4 will open, causing a trip of the Unit 1 Boric Acid Transfer Pump. The crew will align the Unit 0 Boric Acid Transfer Pump to Unit 1 per BOP AB-17, UNIT 0 BORIC ACID TRANSFER PUMP OPERATIONS step F.1.

**After the Boric Acid Transfer Pump alignment is complete**, 1PT507 will Fail High. This will require the BOP to take manual control of TDFW pump speed. Actions will be directed by BAR 1-15-A-D 9 (SG Level deviation Hi/Lo)

**After the PT-507 failure and Boric Acid Pump trip have been addressed**, the 1B SG will develop a 350 gpm SGTR. The crew will implement 1BEP-0, REACTOR TRIP OR SAFETY INJECTION. When safety injection is actuated, the 1B CV pump will trip. The 1A CV pump must be manually started to establish high head ECCS flow.

After determining 1B SG has a tube rupture the crew will transition to 1BEP-3, STEAM GENERATOR TUBE RUPTURE.

The scenario is complete when the crew isolates high head injection at step 22 of 1BEP-3.

### Critical Tasks

1. Manually start the 1B CV pump prior to completion step 6 of 1BEP-0.  
(ERG Critical Task number - E-0--I) (K/A number - 013000A4.01 importance – 4.5/4.8)
2. Isolate feedwater flow into and steam flow from the ruptured SG before a transition to ECA-3.1 occurs  
(ERG Critical Task number - E-3--A) (K/A number - EPE038EA2.03 importance - 4.4/4.6)
3. Cooldown to establish RCS subcooling margin, but prevent entry into 1BFR-P.1  
(ERG Critical Task number - E-3--B (K/A number - EPE038EA2.07importance - 4.4/4.8)

## **SIMULATOR SETUP GUIDE:**

- Verify/perform TQ-BY-201-0113, BYRON TRAINING DEPARTMENT SIMULATOR EXAMINATION SECURITY ACTIONS CHECKLIST.
- Establish the conditions of IC 18, 75% power, steady state, equilibrium xenon.
- Complete items on Simulator Ready for Training Checklist.
- Verify/remove any Equipment Status Tags and Danger Tags not applicable to the scenario.
- Place simulator in RUN (allow simulator to run during board walk down and turnover).
- Ensure horns are turned ON. Set BA and PW controllers to Rema numbers or 0 and reset.
- Place Rod Control in Manual
- Verify/Place 0 CC pump control switches for 141 and 142 in PTL.
- Turn over placards for 1CC9473A & B stating deenergized closed per BOP CC-10.
- Update ReMa placard
- **Verify 1A EH pump is running and 1B EH pump is in standby.**
- **ENSURE THIS IS DONE PRIOR TO RUNNING CAEP FILE:**
- **Verify 1B CV pump is running and 1A CV pump is in standby.**
- Run cae E:\NRC 10-1.cae to insert the CAEP that contains the commands for the scenario. **CHANGE THIS**
  - **IMF FW35C**
  - **MRF CC42 RO**
  - **IMF RP15A**
  - **MRF RP83 OPEN**
  - **TRGSET 2 "ZLO1SI01PB(3).eq.1"**
  - **IMF CV01B (2 0)**
  - **MRF ED059C OPEN**
  - **MRF ED063E OPEN**
- Provide examinees with turnover sheets.

**Event 1: SG PORV 1MS018A inoperable (Tech Spec)**

Insert the following from the CAEP and verify the following actuate:

- **IMF PA0252 ON**
- **IMF PA0253 ON**
- **IOR ZDI1MS018A CLS**

As SM acknowledge the failure, LCO 3.6.3, condition C and LCO 3.7.4, condition A, and requests for on line risk assessment, maintenance support, and IR initiation.

If dispatched as EO, report 1MS018A has a cracked hydraulic line, it is still dripping into a small puddle of hydraulic fluid that is present beneath the valve.

As WEC supervisor. acknowledge request for EST for 1MS018A C/S, if EST is requested.

If dispatched as EO to close 1MS019A, perform the following:

- **MRF MS51 0**

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**Event 2: Pressurizer level channel 1LT-459 failed low.**

Insert **IMF RX13A 0 15** to fail 1LT-459 low over a 15 second period.

If lead examiner desires the bistables tripped, participate in brief and perform the following:

- As assist NSO contact Unit 1 (X-2208)
- Insert the following:
  - **MRF RP20 OPEN** (open protection cabinet #1 door)
  - **MRF RX029 TRIP** (trip PZR hi water level Rx trip bistable LB459A)
  - **MRF RP20 CLOSE** (close protection cabinet #1 door)

As SM acknowledge the failure, LCOs 3.3.1, conditions A and K entry, on line risk assessment, request for maintenance support, and IR requests.

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**Event 3: Steam flow channel 1FT-513A fails high**

Insert **IMF RX03B 4.8 30** to fail 1FT-513A high over a 30 second period.

As SM acknowledge the failure, on line risk assessment, request for maintenance support, and IR requests.

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**Event 4: 1A Heater Drain Pump trip**

Insert **IMF FW35A** to trip the 1A Heater Drain Pump.

Acknowledge as SM the 1A HD pump trip, 1BOA SEC-1 entry, request for E Plan evaluation, and requests for on line risk assessment, maintenance support, and IR initiation.

If dispatched as EO, report **1A** Heater Drain pump is seized and report ground overcurrent flag at breaker cubicle. Report that **1C** HD pump appears normal, no obvious problem.

Acknowledge as Power Team load reduction and estimated duration of derate.

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### Event 5: Boric acid transfer pump trip

**Note: Ensure a boration is in progress prior to inserting the next malfunction.**

Insert **IMF CV03** to trip the Unit 1 boric acid pump.

If dispatched as EO, report Unit 1 AB pump breaker 133X3 is tripped and does not appear to be damaged. If breaker reclosure is requested, report breaker is closed. **DO NOT DELETE MALFUNCTION.** If pump restart is attempted, report the breaker is open.

If dispatched as EO, report the Unit 1 AB pump bearing is hot and appears to be damaged.

If contacted as Unit 2, report Unit 0 AB pump is NOT supplying Unit 2 demands and is NOT electrically aligned to Unit 2.

If dispatched as EO, align the Unit 0 AB pump to Unit 1 demands per BOP AB-17 as follows:

- Verify w/MCR AB pump 1 + 0 c/s is in PTL (BOP AB-17, step F.1.a)
- Verify w/MCR U-1 makeup c/s is in STOP (BOP AB-17, step F.1.b)
- Insert **IOR ZLO0AB03P ON**
- Wait approximately two minutes then perform the following:
  - Delete malfunction **DMF CV03**
- Report Unit 0 AB pump aligned for Unit 1 demands (BOP AB-17 is complete up to step F.1.j)

As SM, acknowledge the failure and requests for on line risk assessment, maintenance support, and IR initiation.

**If the crew asks** about desired state of U-1 Boric Acid state as SM that U-0 boric acid pump needs to be aligned in place of the failed U-1 Boric Acid pump. In addition, the SM does NOT want to use the RWST as a boric acid source. The SM desires the Unit to remain on-line.

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### Event 6: 1PT507 fails High

Insert **IMF RX05 1500** to fail 1PT507 to 1500 psig.

As SM, acknowledge the failure and requests for on line risk assessment, maintenance support, and IR initiation.

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### Event 7: Ruptured 1B SG

Insert **IMF TH03B 350** to cause a rupture in the 1B SG steam generator.

Acknowledge as SM procedure changes, E Plan evaluations, and STA request.

After STA requested, as STA report CSF status:

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### Event 8: 1B CV pump trips/1A CV pump fails to auto start (preload)

If dispatched as EO to investigate 1B CV pump, report ground overcurrent flag at breaker cubicle.

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Scenario No: <b>NRC 10-1</b>		Event No: <b>1</b>
Event Description: SG PORV 1MS018A inoperable		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>• Annunciator S/G 1A PORV TROUBLE (1-15-A10).</li> <li>• SER 0252, 1A PORV HYDRAULIC FLUID RESERVOIR LOW.</li> <li>• SER 0253, S/G PORV 1A ACCUMULATOR PRESSURE LOW.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Identify/report trouble alarm on 1MS018A.</li> <li>• Refer to BAR 1-15-A10.</li> <li>• Dispatch operator to 1MS018A.</li> <li>• Place 1MS018A C/S in close at 1PM04J to stop hydraulic pump. <ul style="list-style-type: none"> <li>◦ Request Equipment Status Tag for 1MS018A.</li> </ul> </li> </ul>
	RO	<ul style="list-style-type: none"> <li>• Assist BOP as requested. Refer to BARs as available.</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Identify entry conditions for TS 3.7.4, condition A <u>Restore to Operable in 30 days</u></li> <li>• Identify entry conditions for TS 3.6.3, condition C.: <u>Close 1MS019A in 72 hours and verify closed once per 31 days</u></li> <li>• Direct operator to close 1MS019A</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Inform SM of 1MS018A status, TS Status, request IR, On Line Risk Assessment, maintenance support, and clearance order/EST for 1MS019A.</li> </ul>
		<b>EVALUATOR NOTE: After the actions for the 1MS018A failure are complete and with lead examiners concurrence, insert the next event.</b>

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Scenario No: <b>NRC 10-1</b>		Event No: <b>2</b>
Event Description: <b>Pressurizer level channel 1LT-459 fails low</b>		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>• Annunciator PZR LVL LOW HTRS OFF LTDWN SECURED (1-12-A4)</li> <li>• Annunciator PZR HTR TRIP (1-12-A5)</li> <li>• Annunciator PZR LEVEL CONT DEV LOW (1-12-B4)</li> <li>• Annunciator CHG LINE FLOW HIGH LOW (1-9-D3)</li> <li>• PZR level indicators 1LI-460 and 461 rising.</li> </ul>
	RO	<ul style="list-style-type: none"> <li>• Identify 1LT-459 is failing low.</li> <li>• Identify letdown is isolated.</li> <li>• Report failure to US.</li> <li>• Perform the following at 1PM05J: <ul style="list-style-type: none"> <li>• Place 1FK-121, CV pumps flow control valve, <u>AND/OR</u> 1LK-459, PZR master level controller, in manual.</li> <li>• Lower demand on 1FK-121 <u>OR</u> 1LK-459 in conjunction with lowering demand on 1CV182 to lower charging flow to the minimum required for RCP seal injection. <ul style="list-style-type: none"> <li>○ Isolate the charging line to minimize thermal shock to the charging nozzle:</li> <li>○ Close 1CV8105 and/or 1CV8106.</li> </ul> </li> <li>• Operate 1FK-121 <u>OR</u> 1LK-459 in manual to minimize PZR level rise and adjust 1CV182 as necessary to maintain 8-13 gpm RCP seal injection flow.</li> </ul> </li> </ul>
	CREW	<ul style="list-style-type: none"> <li>○ Refer to BARs.</li> <li>• Identify entry conditions for 1BOA INST-2, "OPERATION WITH A FAILED INSTRUMENT CHANNEL".</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry.</li> <li>• Request evaluation of Emergency Plan conditions.</li> <li>• Implement 1BOA INST-2 "OPERATION WITH A FAILED INSTRUMENT CHANNEL", Attachment C "PRESSURIZER LEVEL CHANNEL FAILURE" and direct operator actions of 1BOA INST -2 to establish the following conditions:</li> </ul>
	RO	<ul style="list-style-type: none"> <li>• Check PZR level at 1PM05J: <ul style="list-style-type: none"> <li>• PZR level – above program level <ul style="list-style-type: none"> <li>• Verify/place 1FK-121 or 1LK-459 in manual and lower demand.</li> </ul> </li> <li>• Select operable PZR level control channel: <ul style="list-style-type: none"> <li>• Place PZR level control select C/S to CH-461/CH-460.</li> </ul> </li> <li>• Select operable recorder at 1PM05J: <ul style="list-style-type: none"> <li>• Place PZR level select switch to CH-460 or CH-461.</li> </ul> </li> </ul> </li> </ul>

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Scenario No: <b>NRC 10-1</b>		Event No: <b>2</b>
Event Description: <b>Pressurizer level channel 1LT-459 fails low</b>		
Time	Position	Applicant's Actions or Behavior
	BOP/ RO	<ul style="list-style-type: none"> <li>• Check letdown and PZR heaters at 1PM05J: <ul style="list-style-type: none"> <li>• PZR level &gt; 17%.</li> <li>• Letdown isolated.</li> <li>• Restore PZR heaters to normal. <ul style="list-style-type: none"> <li>• Verify PZR backup heaters in auto</li> <li>• Cycle PZR variable heater control switch to restore to auto.</li> </ul> </li> </ul> </li> </ul>
		<b>EVALUATOR NOTE: The unit supervisor may elect to continue on in 1BOA INST-2 while the BOP reestablishes CV letdown per 1BOA ESP-2.</b>
	BOP	<ul style="list-style-type: none"> <li>• Restore normal letdown flow per 1BOA ESP-2, REESTABLISHING CV LETDOWN DURING ABNORMAL CONDITIONS.</li> <li>• Perform the following at 1PM05J: <ul style="list-style-type: none"> <li>• Check Letdown Isolated: <ul style="list-style-type: none"> <li>• Verify 1CV8149A, B, &amp; C closed.</li> <li>• Verify 1CV459 &amp; 1CV460 closed. <ul style="list-style-type: none"> <li>• Manually close 1CV460</li> </ul> </li> </ul> </li> <li>• Check letdown flow path: <ul style="list-style-type: none"> <li>• Verify 1CV8401A, 1CV8324A, 1CV8389A, 1CV8152, and 1CV8160 open.</li> </ul> </li> <li>• Verify BTRS mode select switch OFF.</li> <li>• Align letdown controllers: <ul style="list-style-type: none"> <li>• Place 1CV-131 in MANUAL and raise demand to 40%.</li> <li>• Place 1CV-130 in MANUAL and raise demand to 60%.</li> </ul> </li> <li>• Verify charging flow established: <ul style="list-style-type: none"> <li>• Verify 1CV8105 &amp; 1CV8106 open.</li> </ul> </li> <li>• Throttle 1CV182 and 1CV121 to establish 8-13 gpm seal inj and 100 gpm charging flows.</li> <li>• Establish letdown flow: <ul style="list-style-type: none"> <li>• Open 1CV459 and 1CV460.</li> <li>• Open 1CV8149A/B/C to establish 120 gpm letdown.</li> <li>• Adjust 1CV131 controller to 360 psig and place in AUTO</li> <li>• Adjust 1CC130A/B controller to 90° to 115°F and place in AUTO</li> </ul> </li> <li>• Verify 1PR06J in service at RM-11 console.</li> </ul> </li> </ul>
	RO/ BOP	<ul style="list-style-type: none"> <li>• Check PZR level control in auto: <ul style="list-style-type: none"> <li>• Place 1CV-121 and 1CV-459 in automatic when PZR level is restored to normal.</li> </ul> </li> </ul>

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Scenario No: <b>NRC 10-1</b>		Event No: <b>2</b>
Event Description: <b>Pressurizer level channel 1LT-459 fails low</b>		
Time	Position	Applicant's Actions or Behavior
		<b>EVALUATOR NOTE: The evaluator may choose to bypass the tripping of the bistable steps included below and have the SRO candidate only determine the Tech. Spec. conditions that apply.</b>
	US	<ul style="list-style-type: none"> <li>o Perform pre-job brief per HU-AA-1211 for bistable tripping.</li> <li>o Complete 1BOL 3.1, Attachment A, "INSTRUMENT CONDITION TRACKING LOG".</li> </ul>
	Extra NSO/RO	<ul style="list-style-type: none"> <li>o Locally trip bistable for 1LT-459/RO verifies correct bistable operation. <ul style="list-style-type: none"> <li>o LB459A - C1-751 BS-1.</li> </ul> </li> </ul>
	US	<ul style="list-style-type: none"> <li>• Determine TS 3.3.1 conditions A and K are applicable: <ul style="list-style-type: none"> <li>• A: <u>Enter the condition referenced in table for the affect channel or train-Immediately</u></li> <li>• K: <u>Place channel in Trip within 72 hours OR Reduce thermal power to &lt; P-7 within 78 hours.</u></li> </ul> </li> <li>o Determine TS 3.3.3 and 3.3.4 are NOT applicable – minimum channels operable requirement is met.</li> <li>o Contact SM to perform risk assessment, initiate IR, and contact maintenance to investigate/correct instrument failure.</li> <li>o Contingency discussion with the crew should another channel fail.</li> </ul>
		<b>EVALUATOR NOTE: After the actions for the pressurizer level channel failure are complete and with lead examiners concurrence, insert the next event.</b>

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Scenario No: <b>NRC 10-1</b>		Event No: <b>3</b>
Event Description: <b>Steam flow channel 1FI-513A fails High</b>		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>○ Annunciator 1A SG FLOW MISMATCH FW FLOW LOW(1-15-A4)</li> <li>○ Annunciator 1A SG FLOW MISMATCH STM FLOW LOW(1-15-A3)</li> <li>○ Annunciator 1A SG LEVEL DEVIATION HI/LOW(1-15-A9)</li> <li>○ Steam flow indicator 1FI-513A rising</li> <li>○ FWRV 1FW-510 opening</li> <li>○ SG level indicators 1LI-517, 518, 519, 556 rising</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>● Identify 1FT-513A failed high</li> <li>● Report failure to US</li> <li>● Perform the following at 1PM04J <ul style="list-style-type: none"> <li>● Place 1FW-510 in MANUAL</li> <li>● Lower FW flow to match or slightly lower than steam flow</li> <li>● Monitor 1A SG level and control 1FW-510 in MANUAL</li> <li>● Place Master FW pump speed controller in MANUAL</li> <li>● Verify adequate feedwater delta-P</li> </ul> </li> </ul>
	RO	<ul style="list-style-type: none"> <li>● Assist BOP as requested</li> <li>● Monitor reactor panel for reactivity changes</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>○ Refer to BARs</li> <li>● Identify entry conditions for 1BOA INST 2, OPERATION WITH A FAILED INSTRUMENT CHANNEL, Attachment G.</li> </ul>
	US	<ul style="list-style-type: none"> <li>● Notify SM of plant status and procedure entry.</li> <li>● Request evaluation of Emergency Plan conditions.</li> <li>● Enter/Implement "1BOA INST-2, "OPERATION WITH A FAILED INSTRUMENT CHANNEL", Attachment G.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>● Select operable SG flow channel F-512</li> <li>● Check 1A SG level – normal on 1LI-517, 518, 519, 556</li> <li>● Place 1FW-510 in AUTOMATIC</li> <li>● Verify steam pressure channels normal</li> </ul>
		<b>EVALUATOR NOTE: Ensure auto control is reestablished prior to inserting the next event. After the actions for the steam flow channel failure are complete and with lead examiners concurrence, insert the next event.</b>

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Scenario No:	<b>NRC 10-1</b>	Event No:	4/4a
Event Description: 1A Heater Drain Pump trip			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>Annunciator HD PUMP TRIP (1-17-D2).</li> <li>HD Tank level rising.</li> <li>HD Pump discharge valves opening.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Recognizes 1A HD pump tripped. <ul style="list-style-type: none"> <li>Refer to BAR 1-17-D2.</li> </ul> </li> <li>Reports failure to US.</li> <li>Recognizes one Heater Drain Pump running.</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Identify entry conditions for 1BOA SEC-1, "SECONDARY PUMP TRIP".</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Acknowledge 1A HD pump trip.</li> <li>Contact SM to perform risk assessment, initiate IR, and contact maintenance to investigate/correct failure.</li> <li>Implement 1BOA SEC-1, "SECONDARY PUMP TRIP" Attachment C "HD PUMP TRIP" and direct operator actions of 1BOA SEC-1 to establish the following conditions.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Recognizes standby HD pump NOT AVAILABLE.</li> <li>Check HD pump status at 1PM03J. <ul style="list-style-type: none"> <li>ONLY 1B HD pump running. <ul style="list-style-type: none"> <li>Initiate HD runback on OWS graphic 5512 at 1PM02J.</li> <li>Verify turbine load lowering.</li> </ul> </li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Check HD Tank level at 1PM03J: <ul style="list-style-type: none"> <li>Level &gt; 72% and rising.</li> <li>Maintain HD tank level. <ul style="list-style-type: none"> <li>Verify 1HD046A &amp; B in AUTO.</li> <li>Open 1CB113A-D.</li> <li>Manually open 1HD117, HD tank overflow valve.</li> <li>Lower turbine load as necessary to maintain HD tank level &lt;72%.</li> </ul> </li> </ul> </li> <li>Check 1HD117, HD tank overflow valve in auto and closed at 1PM03J. <ul style="list-style-type: none"> <li>Lower turbine load as necessary to close 1HD117.</li> </ul> </li> <li>Check 1B HD pump parameters at 1PM03J. <ul style="list-style-type: none"> <li>1B HD pump amps &lt; 168 amps.</li> <li>1B HD pump flow &lt; 2950 KLB/HR. <ul style="list-style-type: none"> <li>Lower turbine load as necessary to restore 1C HD pump parameters.</li> </ul> </li> </ul> </li> <li>Deactivate turbine runback: <ul style="list-style-type: none"> <li>Depress STOP HD RUNBACK softkey at OWS graphic 5512 at 1PM02J.</li> </ul> </li> </ul>	
	US/RO	<ul style="list-style-type: none"> <li>Check PDMS operable. <ul style="list-style-type: none"> <li>Annunciator PDMS INOPERABLE not lit (1-10-E8).</li> <li>1BOL 3.h not implemented.</li> <li>Annunciator PDMS LIMIT EXCEEDED not lit (1-10-D7).</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-1</b>	Event No:	4/4a
Event Description: 1A Heater Drain Pump trip			
Time	Position	Applicant's Actions or Behavior	
	RO	<ul style="list-style-type: none"> <li>• Control <math>\Delta I</math> near target. <ul style="list-style-type: none"> <li>• Operate control rods in manual/or auto, as necessary to restore <math>\Delta I</math> to desired value at 1PM05J.</li> </ul> </li> <li>• Monitor RCS parameters. <ul style="list-style-type: none"> <li>○ If RCS pressure lowers &lt; 2209 psig, notify US.</li> <li>○ If control rods &lt; low – 2 rod insertion limit, notify US.</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>○ Enter TS 3.4.1, RCS DNB Limits, Condition A- <u>Restore RCS Pressure to within limit within 2 hours.</u></li> <li>○ Enter TS 3.1.6, Control Bank Insertion Limits Condition A and <u>(1)- verify SDM is within limit in 1 hour OR (2) initiate boration to restore SDM to w/i limit in 1 hour AND (3) restore control banks to w/i limits in 2 hours.</u></li> </ul>	
	RO	<p><b>NOTE TO EVALUATOR: The boric acid pump will trip during this event-see event 5 for specifics.</b></p> <ul style="list-style-type: none"> <li>• Initiate RCS boration at 1PM05J:</li> <li>• Determine required boric acid volume (approximate band: 50 gal – 200 gal). <ul style="list-style-type: none"> <li>○ Determine from Rema.</li> </ul> </li> <li>• Determine desired boric acid flow rate.</li> <li>• Set 1FK-110 BA Flow Control to desired boration rate.</li> <li>• Set 1FY-0110 BA Blender Predet Counter to desired volume.</li> <li>• Place MAKE-UP MODE CONT SWITCH to STOP position.</li> <li>• Place MODE SELECT SWITCH to BORATE position.</li> <li>• Place MAKE-UP MODE CONT SWITCH to START.</li> <li>• Verify proper operation of valves and BA transfer pump (1CV110B open, Boric Acid Transfer Pump running, 1CV110A throttles open, proper BA flow indicated on recorder).</li> <li>○ Turn on PZR backup heaters.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Verify running CB pump recirc valves in auto. <ul style="list-style-type: none"> <li>• 1CB113A-D on running pumps.</li> </ul> </li> <li>• Dispatch operators to perform BOP HD-2 for 1A HD pump.</li> <li>• Shutdown CD/CB pump (if started during procedure performance).</li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Notify chemistry to monitor secondary plant chemistry.</li> <li>• Notify SM to perform risk assessment.</li> <li>• Check reactor power change &gt; 15% in one hour. <ul style="list-style-type: none"> <li>○ Notify chemistry to perform TS 3.4.16 sampling.</li> <li>○ Notify rad protection to perform TS sampling.</li> </ul> </li> <li>○ Contact Power Team and inform Power Team of load reduction and estimated duration of power derate.</li> </ul>	
		<p><b>The next event is to be inserted with lead examiners concurrence while a boration is in progress in response to the heater drain pump trip.</b></p>	

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Scenario No:	<b>NRC 10-1</b>	Event No:	<b>5</b>
Event Description: Boric acid transfer pump trip (from event 3)			
Time	Position	Applicant's Actions or Behavior	
		<b>EVALUATOR NOTE: If the crew would like to borate via the RWST, the Shift Manager will inform the crew to place the U-0 Boric Acid pump in service on Unit 1.</b>	
	CUE	<ul style="list-style-type: none"> <li>Annunciator BA FLOW DEVIATION (1-9-A6)</li> <li>Trip/yellow disagreement light on Boric Acid Transfer pump 1 + 0 C/S (if pump control switch is taken to start)</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Identify/report trip of Unit 1 Boric Acid Transfer pump</li> <li>Refer to BAR 1-9-A6 and/or 1-9-A4</li> <li>Dispatch operator to Unit 1 Boric Acid Transfer pump and breaker</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Notify SM of Unit 1 Boric Acid Transfer pump trip.</li> <li>Direct operators to align the Unit 0 Boric Acid Transfer pump for Unit 1 demand <ul style="list-style-type: none"> <li>Direct BOP to control load ramp</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Determine Unit 1 Boric Acid Transfer pump bearing is damaged <ul style="list-style-type: none"> <li>Report from EO</li> </ul> </li> <li>Align 0AB03P, Boric Acid Transfer pump 0 for Unit 1 demands per BOP AB-17 <ul style="list-style-type: none"> <li>Verify 0AB03P NOT supplying Unit 2 boric acid demands</li> <li>Verify 0AB03P NOT connected to Unit 2 power supply</li> </ul> </li> <li>MAKE-UP MODE CONT SWITCH to STOP at 1PM05J.</li> <li>Place Boric Acid Transfer pump 1 + 0 C/S in PULL OUT at 1PM05J.</li> <li>Dispatch operator to align 0AB03P to Unit 1 per BOP AB-17</li> <li>Verify 1CV110A in AUTO at 1PM05J.</li> <li>Place Boric Acid Transfer pump 1 + 0 C/S in AFTER TRIP at 1PM05J.</li> <li>Return Unit 1 RMCS to AUTO at 1PM05J.</li> </ul>	
		<b>EVALUATOR NOTE: After the actions for the boric acid pump trip are complete and with lead examiners concurrence, insert the next event.</b>	

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Scenario <b>NRC 10-1</b>		Event No. 6
Event Description: 1PT507 Fails High		
Time	Position	Applicant's Actions or Behavior
		<b>EVALUATOR NOTE: With 1PT-507 failed high, and if the steam dumps were placed in the steam pressure mode before taking the controller to manual and lowering the output to 0, ALL steam dump valves (12) will fail open until the P-12 interlock at Tave at 550 degrees RCS temperature will send a signal to close all steam dump valves.</b>
	CUE	<ul style="list-style-type: none"> <li>• Annunciators S/G 1_ LEVEL DEVIATION HIGH LOW (1-15-A/B/C/D 9)</li> <li>• 1PK507 MS HDR PRESSURE CONTROLLER METER @ 100%</li> <li>• 1PI-507 SG HDR PRESS - 1500 psig</li> <li>• 1PI-508 FW HTR DISCH. PRESSURE RISING</li> <li>• 1PI-509 MS/FW HDR D/P LOWERING TO "0"</li> <li>• 1PI-MS021 STM HDR PRESS – 1500 psig</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Identify/report Failure of 1PT-507</li> <li>• Refer to BAR 1-15-A/B/C/D 9</li> <li>• Inform US of instrument failure <ul style="list-style-type: none"> <li>○ Take manual control of FW pp turbine speed control</li> </ul> </li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of instrument failure. <ul style="list-style-type: none"> <li>○ Direct BOP To take manual control of FW pp speed control</li> <li>○ Direct BOP to stop load ramp</li> <li>○ Discuss effects of failure on Steam Dump Control System</li> </ul> </li> </ul>
		<b>EVALUATOR NOTE: After the actions for PT-507 failure are complete and with lead examiners concurrence, insert the next event.</b>

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Scenario No:	<b>NRC 10-1</b>	Event No.	7 and 8
Event Description:	1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.		
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>• PZR LEVEL CONT DEV LOW (1-12-B4).</li> <li>• PZR PRESS LOW (1-12-B1)</li> <li>• S/G TUBE LEAK RATE EXCEEDED (1-16-A5)</li> <li>• CHG LINE FLOW HIGH LOW (1-9-D3)</li> <li>• PZR Level and Pressure dropping. <ul style="list-style-type: none"> <li>○ 1B SG level rising or 1FW520 open less than other 3 FWRVs</li> <li>○ Possible RM-11 Rad Monitor ALERT/HI RAD Alarms. <ul style="list-style-type: none"> <li>○ 1AR 22/23B 1B Main steam line.</li> <li>○ 1PR27J SJAE</li> </ul> </li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Reports lowering PZR level and pressure <ul style="list-style-type: none"> <li>○ Recommends Reactor trip and Safety Injection</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Directs <ul style="list-style-type: none"> <li>• Manual reactor trip</li> <li>• Initiate a manual SI.</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry.</li> <li>• Request evaluation of Emergency Plan conditions.</li> <li>• Enter/Implement 1BEP-0 and direct operator actions of 1BEP-0.</li> </ul>	
	RO	Perform immediate operator actions of 1BEP-0 at 1PM05J: <ul style="list-style-type: none"> <li>• Verify reactor trip. <ul style="list-style-type: none"> <li>• Rod bottom lights - ALL LIT.</li> <li>• Reactor trip &amp; Bypass breakers – OPEN.</li> <li>• Neutron flux – DROPPING.</li> </ul> </li> </ul>	
	BOP	Perform immediate operator actions of 1BEP-0 at 1PM02J or OWS drop 210: <ul style="list-style-type: none"> <li>• Verify Turbine Trip. <ul style="list-style-type: none"> <li>• All Turbine throttle valves – CLOSED.</li> <li>• All Turbine governor valves – CLOSED.</li> </ul> </li> </ul>	
	BOP	Perform immediate operator actions of 1BEP-0 at 1PM01J: <ul style="list-style-type: none"> <li>• Verify power to 4KV busses. <ul style="list-style-type: none"> <li>• ESF Buses – BOTH ENERGIZED (141 &amp; 142).</li> </ul> </li> </ul>	
	CREW	(If manual SI not previously performed) Recognize and respond to conditions requiring a Safety Injection in accordance with 1BEP-0 “REACTOR TRIP OR SAFETY INJECTION”, Step 4: <ul style="list-style-type: none"> <li>• PZR pressure cannot be maintained &gt; 1829 psig. <ul style="list-style-type: none"> <li>• Manually actuate SI.</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check SI Status at 1PM05J/1PM06J: <ul style="list-style-type: none"> <li>○ SI ACTUATED Permissive Light – LIT.</li> <li>○ SI Equipment – AUTOMATICALLY ACTUATED. <ul style="list-style-type: none"> <li>○ Either SI pumps – RUNNING.</li> <li>○ Either CV pump to cold leg isolation valve OPEN – 1SI8801A/B.</li> </ul> </li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Step 5: Direct BOP to perform Attachment B of 1BEP-0</li> </ul>	

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Scenario No:	<b>NRC 10-1</b>	Event No.	7 and 8
Event Description:	1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.		
Time	Position	Applicant's Actions or Behavior	
		<b>EVALUATOR NOTE: US and RO will continue in 1BEP-0 while BOP is performing Attachment B:</b>	
	BOP	<ul style="list-style-type: none"> <li>• Perform 1BEP-0 Attachment B</li> <li>• Verify FW isolated at 1PM04J: <ul style="list-style-type: none"> <li>• FW pumps – TRIPPED.</li> <li>• Isolation monitor lights – LIT.</li> <li>• FW pumps discharge valves - CLOSED (or going closed) 1FW002A-C.</li> </ul> </li> <li>• Verify DGs running at 1PM01J: <ul style="list-style-type: none"> <li>• DGs – BOTH DGs running</li> <li>• 1SX169A &amp; B OPEN.</li> <li>• Dispatch operator locally to check operation</li> </ul> </li> <li>• Verify Generator Trip at 1PM01J: <ul style="list-style-type: none"> <li>• OCB 3-4 and 4-5 open.</li> <li>• PMG output breaker open.</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Verify Control Room ventilation aligned for emergency operations at 0PM02J: <ul style="list-style-type: none"> <li>• VC Rad Monitors – LESS THAN HIGH ALARM SETPOINT.</li> <li>• Operating VC train equipment – RUNNING. <ul style="list-style-type: none"> <li>• Supply fan</li> <li>• Return fan</li> <li>• M/U fan</li> <li>• Chilled water pump</li> <li>• Chiller</li> </ul> </li> <li>• Operating VC train dampers – ALIGNED. <ul style="list-style-type: none"> <li>• M/U fan outlet damper – NOT FULLY CLOSED.</li> <li>• VC train M/U filter light – LIT.</li> </ul> </li> <li>• Operating VC train Charcoal Absorber aligned. <ul style="list-style-type: none"> <li>• Bypass damper – CLOSED</li> <li>• Inlet damper - OPEN</li> <li>• Outlet damper - OPEN</li> </ul> </li> <li>• Control Room pressure greater than +0.125 inches water on 0PDI-VC038.</li> <li>• Verify Auxiliary Building ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Two inaccessible filter plenums aligned. <ul style="list-style-type: none"> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Flow Control damper – NOT FULLY CLOSED</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-1</b>	Event No:	7 and 8
Event Description: 1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• Flow Control damper - NOT FULLY CLOSED</li> <li>• Bypass Isolation damper – CLOSED</li> <li>• Check Aux Building Supply and exhaust fan(s) running <ul style="list-style-type: none"> <li>• One Exhaust Fan running foreach Supply running fan</li> </ul> </li> <li>• Verify FHB ventilation aligned at OPM02J: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Inlet Isolation damper - OPEN</li> <li>• Flow Control damper – NOT FULLY OPEN</li> <li>• Bypass Isolation damper – CLOSED</li> </ul> </li> </ul>	
		<b>EVALUATOR NOTE: The remaining steps of Attachment B may be designated to be performed by WEC personnel or the Field Supervisor and extra operators.</b>	
		<ul style="list-style-type: none"> <li>○ Trip all running HD Pumps</li> <li>○ Shutdown FW pump as necessary using BOP FW-2 for a TDFP or BOP FW-8 for the MDFP</li> <li>○ Shutdown unnecessary CD/CB Pumps using BOP CD/CB-2</li> <li>○ Align SX MDCT per BOP SX-T2 <ul style="list-style-type: none"> <li>○ Maintain SX Basin level &gt; 80%</li> </ul> </li> <li>○ Align NDCT <ul style="list-style-type: none"> <li>○ Verify CW intake bay level within band</li> <li>○ Dispatch operator to locally verify NDCT basin level acceptable</li> <li>○ Align NDCT per BOP CW-25</li> </ul> </li> <li>○ Shutdown all unnecessary CW pumps per BOP CW-2</li> <li>○ Initiate periodic checking of spent fuel cooling <ul style="list-style-type: none"> <li>○ Locally verify Spent fuel pool level is &gt; 420 Elev</li> <li>○ Locally verify SFP temperature stable</li> <li>○ Notify STA of SFP cooling status</li> </ul> </li> <li>○ Notify US that Attachment B is complete</li> </ul>	
	RO <b>[CT] E-0--I</b>	<ul style="list-style-type: none"> <li>• Verify ECCS pumps running at 1PM05J/1PM06J: <ul style="list-style-type: none"> <li>• CV pumps - NONE RUNNING. <ul style="list-style-type: none"> <li>• Manually start the 1A CV pump prior to completion of step 6 of 1BEP-0.</li> </ul> </li> <li>• Both RH pumps – RUNNING.</li> <li>• Both SI pumps – RUNNING.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Perform the following at 1PM06J: <ul style="list-style-type: none"> <li>• Verify RCFCs running in Accident Mode: <ul style="list-style-type: none"> <li>• Group 2 RCFC Accident Mode lights – LIT.</li> </ul> </li> <li>• Verify Phase A isolation: <ul style="list-style-type: none"> <li>• Group 3 Cnmt Isol monitor lights – LIT.</li> </ul> </li> <li>• Verify Cnmt Vent isolation: <ul style="list-style-type: none"> <li>• Group 6 Cnmt Vent Isol monitor lights – LIT.</li> </ul> </li> <li>• Verify AF system:</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-1</b>	Event No:	7 and 8
Event Description: 1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• AF pumps – BOTH RUNNING.</li> <li>• AF isolation valves – OPEN.</li> <li>• 1AF13A-H.</li> <li>• AF flow control valves – THROTTLED:</li> <li>• 1AF005A-H.</li> <li>• Verify CC pumps – BOTH RUNNING.</li> <li>• Verify SX pumps- - BOTH RUNNING.</li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Check Main Steamline Isolation not required at 1PM06J: <ul style="list-style-type: none"> <li>• Check pressures. <ul style="list-style-type: none"> <li>○ SG pressures &gt; 640 psig – continue on in 1BEP-0.</li> <li>○ SG pressures &lt; 640 psig - verify MSIVs and MSIV bypass valves closed.</li> </ul> </li> <li>• CNMT pressure &lt; 8.2 psig.</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Check CS not required at 1PM06J.</li> <li>• CNMT pressure remained &lt; 20 psig.</li> </ul>	
	BOP/ RO	<ul style="list-style-type: none"> <li>• Verify Total AF flow at 1PM06J: <ul style="list-style-type: none"> <li>• AF flow &gt; 500 gpm.</li> <li>• Check S/G NR levels-NOT rising uncontrolled. <ul style="list-style-type: none"> <li>○ The B S/G may be identified as being ruptured, if it is: <ul style="list-style-type: none"> <li>• If ruptured S/G level is &gt; 10% then CLOSE 1AF013B &amp; F.</li> </ul> </li> </ul> </li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Verify ECCS valve alignment at 1PM06J: <ul style="list-style-type: none"> <li>• Group 2 Cold Leg Injection monitor lights required for injection – LIT.</li> </ul> </li> <li>• Verify ECCS flow at 1PM05J: <ul style="list-style-type: none"> <li>• High Head SI flow &gt;100 gpm (1FI-917).</li> <li>○ RCS pressure &lt; 1700 psig. <ul style="list-style-type: none"> <li>○ SI pump discharge flow &gt; 200 gpm.</li> </ul> </li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check at least ONE PZR PORV relief path available at 1PM05J: <ul style="list-style-type: none"> <li>• PORV CLOSED.</li> <li>• PORV isolation valves – At least 1 ENERGIZED</li> <li>• PORV relief paths – At least 1 PORVs in AUTO, PORV isolation valves OPEN.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check PZR sprays &amp; PORVs at 1PM05J: <ul style="list-style-type: none"> <li>• Normal spray valves – CLOSED.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Maintain RCS temperature control at 1PM05J: <ul style="list-style-type: none"> <li>○ RCPs – RUNNING: <ul style="list-style-type: none"> <li>• Verify RCS average temperature stable at or trending to 557°F. <ul style="list-style-type: none"> <li>○ Throttle AF flow.</li> </ul> </li> </ul> </li> <li>○ RCPs – NONE RUNNING: <ul style="list-style-type: none"> <li>• Verify RCS cold leg temperatures stable at or trending to 557°F. <ul style="list-style-type: none"> <li>○ Throttle AF flow.</li> </ul> </li> </ul> </li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-1</b>	Event No.	7 and 8
Event Description: 1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.			
Time	Position	Applicant's Actions or Behavior	
	RO	<ul style="list-style-type: none"> <li>• Check status of RCPs: at 1PM05J <ul style="list-style-type: none"> <li>• All RCPs – RUNNING.</li> <li>• Check RCP trip criteria: <ul style="list-style-type: none"> <li>○ Phase B isolation NOT actuated.</li> <li>• If RCS pressure &gt; 1425 psig – continue on in 1BEP-0.</li> <li>• If RCS pressure &lt; 1425 psig and high head injection flow (1FI-917) &gt; 100 gpm, THEN Trip RCPs</li> </ul> </li> </ul> </li> </ul>	
	BOP/ RO	<ul style="list-style-type: none"> <li>• Check if SG secondary pressure boundaries are intact at 1PM04J: <ul style="list-style-type: none"> <li>• Check pressure in all SGs:</li> <li>• No SG pressure decreasing in an uncontrolled manner.</li> <li>• No SG completely depressurized</li> </ul> </li> </ul>	
	BOP/ RO	<ul style="list-style-type: none"> <li>• Check S/G tubes are NOT intact at RM-11 console: <ul style="list-style-type: none"> <li>○ 1PR08J SG Blowdown</li> <li>○ 1PR27J SJAE/GS – IN ALERT/ALARM</li> <li>• 1AR22/23B Main steam Lines – Trending up or in ALERT/ALARM</li> </ul> </li> </ul>	
	CREW	Transition to 1BEP-3, Steam Generator Tube Rupture	
	US	Implement 1BEP-3 "STEAM GENERATOR TUBE RUPTURE" and direct operator actions. <ul style="list-style-type: none"> <li>• Notifies SM of BEP entry and calls for STA</li> <li>• Requests Emergency Plan evaluation</li> </ul>	
	RO	Check status of RCPs and determine all running <ul style="list-style-type: none"> <li>○ If any running, Check trip criteria NOT satisfied <ul style="list-style-type: none"> <li>• HHSI flow &gt;100 gpm OR SI flow &gt; 200 gpm</li> <li>AND</li> <li>• RCS pressure &gt; 1425 psig</li> </ul> </li> </ul>	
	CREW	Identify 1B as the ruptured SG <ul style="list-style-type: none"> <li>○ Unexpected rise in NR level</li> <li>○ Main steamline rad monitor <ul style="list-style-type: none"> <li>○ 1RT-AR022 Grid 1 4AB122</li> <li>○ 1RT-AR023 Grid 1 4AB123</li> </ul> </li> <li>○ High activity for any SG sample <ul style="list-style-type: none"> <li>• Reset CNMT isol Phase A</li> <li>• Notify Chem to locally sample</li> <li>• Open SG blowdown sample valves at Chem request</li> </ul> </li> </ul>	
	RO/ BOP [CT]	Isolate flow from 1B SG by verifying <ul style="list-style-type: none"> <li>• SG PORV MS018B in AUTO</li> <li>• Check SG PORV MS018B closed</li> </ul>	

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Scenario No:	<b>NRC 10-1</b>	Event No.	7 and 8
Event Description: 1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.			
Time	Position	Applicant's Actions or Behavior	
	<b>E-3--A</b>	<ul style="list-style-type: none"> <li>• Verify closed when SG pressure &lt; 1115 psig</li> <li>• Verify SG blowdown valves closed unless open for sampling <ul style="list-style-type: none"> <li>• 1SD002E</li> <li>• 1SD002F</li> </ul> </li> <li>• Close MSIV and MSIV bypass valves for 1B SG</li> <li>• Check PORVs on intact SGs available for RCS cooldown (C thru D will be available)</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Check ruptured SG level <ul style="list-style-type: none"> <li>• Narrow Range &gt;10%</li> </ul> </li> <li>• Verify/Close AF isol valves (should have been closed earlier in 1BEP-0) <ul style="list-style-type: none"> <li>• 1AF013B</li> <li>• 1AF013F</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Check ruptured SG pressure <ul style="list-style-type: none"> <li>• Ruptured SG pressure greater than 320 psig</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Determine required CETC from table (step 6a)</li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Check Pzr Pressure - &gt;1930 #</li> <li>• When &lt; 1930#, block Steamline Isol SI</li> </ul>	
	BOP <b>[CT]</b> <b>E-3--B</b>	<ul style="list-style-type: none"> <li>• Dump steam to condenser from intact SG at maximum rate <ul style="list-style-type: none"> <li>• Check steam dumps available</li> <li>• Place MS controller in Manual, reduce demand to 0</li> <li>• Select Steam Pressure Mode</li> <li>• Adjust MS controller to initiate cooldown</li> </ul> </li> </ul>	
	Crew	<ul style="list-style-type: none"> <li>• Dispatch operators to standby <ul style="list-style-type: none"> <li>• 1SI8801A/B</li> <li>• MCC 131X1 (F4) and 132X5 (A4)</li> </ul> </li> </ul>	
	Crew	<ul style="list-style-type: none"> <li>• Check average of 10 highest CETC - &lt; required temperature from step 6a</li> </ul>	
	Crew	<ul style="list-style-type: none"> <li>• Stop RCS cooldown</li> <li>• Maintain CETC temps. &lt; required temp.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Check intact SG levels &gt; 10%</li> <li>• Control FF to maintain NR levels 30 – 50%</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check Pzr PORVs and isolation valves <ul style="list-style-type: none"> <li>• PORV isolation valves energized</li> <li>• PORVs closed</li> <li>• PORV isolation valves both open</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Reset SI <ul style="list-style-type: none"> <li>• Verify SI actuated permissive light NOT LIT</li> <li>• Verify Auto SI blocked light LIT</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Reset Phase A isolation</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Verify all AC busses energized by offsite power <ul style="list-style-type: none"> <li>• Bus 141 and 142</li> <li>• Bus 143 and 144</li> <li>• Bus 156,157,158,159</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Establish IA to containment</li> </ul>	

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-1</b>	Event No.	7 and 8
Event Description:	1B SG Rupture, 1B CV pump trips/1A CV pump fails to auto start.		
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• Check SACs- any running</li> <li>• Open 1IA065 and 1IA066</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check if RH pumps should be stopped</li> <li>• Any RH pump running and aligned to RWST</li> <li>• RCS pressure &gt;325#</li> <li>• Stop both RH pumps</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check if RCS Cooldown should be stopped</li> <li>• Ave of 10 highest CETC &lt; required temperature in Step 6</li> <li>• When met, stop cooldown and maintain temperature &lt; required temperature</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check ruptured SG pressure – stable or rising</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check RCS subcooling – acceptable by using CETC, RCS WR Press. and Fig. 1BEP 3-2</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Depressurize RCS using PZR spray valves until <ul style="list-style-type: none"> <li>○ RCS Pressure &lt; Ruptured SG pressure and Pzr level &gt; 12%</li> <li>○ Pzr level &gt; 69%</li> <li>○ RCS subcooling NOT acceptable</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check if ECCS flow should be terminated</li> <li>• RCS subcooling – Acceptable</li> <li>• Secondary heat sink <ul style="list-style-type: none"> <li>○ &gt; 500 FF to SG – available</li> <li>○ At least 1 intact SG &gt; 10% NR</li> </ul> </li> <li>• RCS pressure – rising</li> <li>• Pzr level &gt; 12%</li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Stop both SI pumps</li> <li>• Reset SI Recirc Sump Isolation Valves</li> <li>• Reset CV pp mini-flow valves</li> <li>• Verify open: <ul style="list-style-type: none"> <li>• 1CV8110, 8111, 8114 and 8116</li> </ul> </li> <li>• Close 1SI8801A and B</li> </ul>	
		<b>EVALUATOR NOTE: When the CREW isolates High Head Injection the scenario should be terminated..</b>	

Comments: \_\_\_\_\_

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Simulation Facility	<u>Byron</u>	Scenario No.:	Operating Test No.:	<b>2012 NRC Exam NRC 10-2</b>
Examiners:	_____	Applicant:	_____	SRO
	_____		_____	RO
	_____		_____	BOP
Initial Conditions:	IC-182			
Turnover:	Unit 1 is at 90% power, steady state, equilibrium xenon, MOL. RCS boron concentration is 914 ppm. On line risk is green. 1A MDFW pump has been OOS for the last 2 days for motor replacement and is expected back in 2 shifts. At the end of last shift, following an ASME run of the 1A AF pump it was noticed that the temperature on the 1A Train of AFW to the 1A S/G has elevated temperature of 160 degrees. No actions have been taken.			

Event No.	Malf. No.	Event Type	Event Description
Preload	IMF FW44 IOR ZDI1FW01PA ptl IOR ZDI1FW002A cls IOR ZLO1FW002A1 off IOR ZDI1FW012A cls IOR ZLO1FW012A1 off IOR ZDI1FW01PAB ptl MRF FW027 0 IOR ZLO1FW002A off	C	1B AF pump fail to start 1A MDFW pp O.O.S.
1	None	C (BOP, US) TS (US)	Local report of hot AFW piping at 1AF005A
2	IMF CV01A	C (RO, US) TS (US)	1A CV pump trip.
3	IMF ED07A	C (US, BOP) TS (US)	Loss of bus 141
4	IMF FW02A	C (BOP, US)	1B FW pp Trips requiring a main turbine runback.
5	IMF RD09 1	R (RO, US)	Auto rod speed fails to 1 SPM
6	IMF RX21A 2500 10 IMF TH11A 25 90	I (RO, US)	Pressurizer pressure channel 1PT-455 fails high 1RY455A stuck partially open
7	Preload	M (ALL)	Loss of heat sink

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

## SCENARIO OVERVIEW

Unit 1 is at 90% power, steady state, equilibrium xenon, MOL. RCS boron concentration in 914 ppm. Control bank D rods are at 194 steps. On line risk is green. The crew will come in and during their turnover will discover that 1AF005A has elevated temperature of 160 degrees.

**After completing shift turnover and relief**, the crew will assess the AFW elevated temperature condition and enter 1BOA SEC-7, Auxiliary Feedwater Check Valve Leakage. The BOP will be directed to close 1AF013A. The SRO will refer to Tech. Spec. 3.7.5 Condition A, making one train of AF inoperable and must restore within 72 hours.

**After completing the initial actions of 1BOA SEC-7**, 1A CV pump trips. The RO will verify suction path and start the 1B CV pump to restore charging flow. The Unit Supervisor will determine that entry into TS 3.5.2 Condition A is necessary.

**Following the CV pump trip**, a ground fault will occur on Bus 141. The crew will enter 1BOA ELEC-3, LOSS OF 4KV ESF BUS. The 1B SX pump must be manually started along with 1D RCFC.

**After the Bus 141 fault has been addressed**, the 1B MFW pp will trip which will require a turbine runback to 700 MWe due to the MDFW pp being out of service. The crew will enter 1BOA SEC-1, SECONDARY PUMP TRIP.

**During the runback**, Auto Rod Speed will fail to 1 SPM, manual rod speed will be available at 48 SPM. This will require the RO to borate during the "runback" and manually drive rods in.

**After stabilization of SG levels due to the runback**, the controlling pressurizer pressure channel will fail high. Pressurizer PORV 1RY-455A will open and fail to fully close. The PORV Isolation valve, 1RY8000A, is deenergized due to the Bus 141 fault, resulting in the control room inability to isolate the failed PZR PORV. The crew will manually Trip the reactor and initiate Safety Injection due to lowering pressurizer pressure.

The 1B AF pump engine will seize. The crew will perform 1BEP-0, REACTOR TRIP OR SAFETY INJECTION, and either transition to 1BFR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, at step 15 of 1BEP-0, or after transitioning to 1BEP-1 LOSS OF REACTOR OR SECONDARY COOLANT, they will commence monitoring the STATUS TREES which will direct them to 1BFR-H.1. Feedwater isolation must be manually completed. The scenario is complete when the crew has established adequate feedwater pump flow from the Startup Feedwater pump to the non-faulted SGs in step 9 of 1BFR-H.1.

### Critical Tasks

1. Manually start an SX pump before plant and scenario specific criteria are exceeded:
  - CV pump high temperature alarm
  - CC HX outlet temperature high alarm
  - D/G High Jacket Water temperature alarm(ERG Critical Task number – E-0 –L)
2. Establish feedwater flow into at least one SG before RCS bleed and feed is required.  
(ERG Critical Task number - FR-H.1--A)

## SIMULATOR SETUP GUIDE:

- Verify/perform TQ-BY-201-0113, BYRON TRAINING DEPARTMENT SIMULATOR EXAMINATION SECURITY ACTIONS CHECKLIST.
- Establish the conditions of IC IC-182, 90% power, MOL, steady state, equilibrium xenon.
- Complete items on Simulator Ready for Training Checklist.
- Verify/remove any Equipment Status Tags and Danger Tags not applicable to the scenario.
- Place simulator in RUN (allow simulator to run during board walk down and turnover).
- Ensure Rod Control is in auto.
- Verify/Place 1A CV pump in service, shut down 1B CV pump.
- Verify/Place 0B VC Train in service
- Verify/Place 1B VP Chiller in service
- Verify/Place Div. 12 AB supply and return fan in service.
- Place 1A MDFW pp C/S in Pull-Out
- Place 1A MDFW pp Aux. L/O pp C/S in Pull-Out
- Verify/Close 1FW002A: 1A FW pump discharge valve
- Verify RM-11 is on grid 1. Ensure horns are turned ON. Set BA and PW controllers to Rema numbers or 0 and reset.
- Place Turnover and ReMa, 1BGP 100-4T3, Load Change Instruction Sheet on the Unit Desk
- Run **caep: NRC 10-2.cae** from thumb drive and verify the following actuate:
  - IMF FW44
  - IOR ZDI1FW01PA ptl
  - IOR ZDI1FW002A cls
  - IOR ZLO1FW002A1 off
  - IOR ZDI1FW012A cls
  - IOR ZLO1FW012A1 off
  - IOR ZDI1FW01PAB ptl
  - MRF FW027 0
  - IOR ZLO1FW002A off
- Run **CAE F:\N10-2.cae** from the thumb drive to insert MF and RF in the Run Aid Guide.



**Event 1: Elevated AF piping temperature**

**As SM** Acknowledge entry into 1BOA SEC-7 and performing risk assessment and making appropriate notifications.

If called as Aux. Building E.O. report that temperature at the 1AF005A and 1A AF Pp discharge are slowly lowering after 1AF013A was closed.

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**Event 2: 1A CV Pump Trip****IMF CV01A**

**As EO**, report overcurrent trip on 1A CV pump, and 1B CV pump is running normally after the start.

**As SM** Acknowledge request for writing IR, performing risk assessment and making appropriate notifications.

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Acknowledge as Shift Manager commencement and completion of all procedures performed by the crew when notified.

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**Event 3: Loss of 4KV ESF Bus 141**

Insert **IMF ED07A** to cause a loss of Bus 141

As EO inform crew that a ground overcurrent relay target for the BKR 1412 has dropped, after being dispatched

If requested and at Lead Examiners discretion as Equipment Operator to cross-tie 125 VDC bus 111 to 125VDC bus 211 wait five minutes and call the Control Room as the EO and say you are ready to cross-tie.

Insert the following:

- o **MRF ED111 CLOSE**

If dispatched as Equipment Operator to depress 1A DG emergency stop push button insert the following:

- **MRF EG19 TRIP**

As SM acknowledge the failure, on line risk assessment, request for maintenance support, and IR requests.

SM Acknowledge entry into Tech Specs

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NOTE to EVALUATORS: **Events 4 and 5 (next page) will be run simultaneously.**

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**Event 4: 1B FW pp Trip**

Insert **IMF FW02A** to trip the 1B FW pump..

If dispatched as Equipment Operator to the FW pumps, report no abnormal indications present.

As SM acknowledge the failure, on line risk assessment, request for maintenance support, and IR requests.

Acknowledge as chemistry/rad protection requests for RCS samples and surveillance performance.

**Event 5: Auto Rod speed failure to 1 step per minute in auto**

Insert **IMF RD09 1** to fail rod speed to 1 SPM in auto.

Unit 1 will lower power to 700 MW at 250 MW/min due to FW pump trip

Acknowledge as chemistry/rad protection requests for RCS samples (if required).

**As SM acknowledge the failure, on line risk assessment, request for maintenance support, and IR requests.**

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**Event 6: Pressurizer pressure channel 1PT-455 fails high: resulting in a Reactor trip due to failed partially open PZR PORV**

Insert **IMF RX21A 2500 10** to fail 1PT-455 high over a 10 second period.

Insert **IMF TH11A 25 90** to fail 1RY455A to 25% open over 90 seconds

As SM acknowledge the entry into 1BEP-0

Acknowledge as SM procedure changes, E Plan evaluations, and STA request.

After STA requested, as STA report CSF status – Red path on heat sink (until feed flow established).

If dispatched as Equipment Operator, report 1B AF pump has large lube oil leak and engine damage.

Acknowledge as U2 NSO request to remove FW isolation fuses insert the following:

- **MRF FW150 REMOVED**
- **MRF FW151 REMOVED**

Acknowledge as Equipment Operator to start Startup FW pump aux oil pump and insert the following:

- **MRF FW149 START**

To complete Phase A isolation as requested

- Set chv1wo006A=0 (1WO006A)
- Set chv1wo020A=0 (1WO020A)
- MRF CV17 0 (1CV8100)

If directed to close 1WO056B as E.O. inform the crew that the WEC is working on it.

Scenario No: <b>NRC 10-2</b>		Event No: <b>1</b>
Event Description: <b>Elevated AF piping temperatures</b>		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>From turnover that AFW piping has elevated temperature at 1AF005A of 160 degrees</li> </ul>
	US	<ul style="list-style-type: none"> <li>Notify SM of plant status and procedure entry.</li> <li>Request evaluation of Emergency Plan conditions.</li> <li>Request On-Line risk evaluation.</li> <li>Enter/Implement 1BOA SEC-7 AUXILIARY FEEDWATER CHECK VALVE LEAKAGE, and direct operator actions of 1BOA SEC-7.</li> </ul>
	US	<ul style="list-style-type: none"> <li>Directs BOP to close 1AF013A</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Close 1AF013A</li> </ul>
	US	<ul style="list-style-type: none"> <li>Refers to Tech. Spec. 3.7.5 <ul style="list-style-type: none"> <li>Determines 1A AF Train is inoperable: Enters <b>Condition A</b>: Action: <b>Restore train within 72 hours</b></li> </ul> </li> </ul>
<b>EVALUATOR NOTE: After the actions of Elevated AF line temperature are complete and with lead examiners concurrence, insert the next event.</b>		

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-2</b>	Event No:	2
Event Description: 1A CV Pump Trip			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>• Annunciator CHG PUMP TRIP (1-9-A3) is LIT</li> <li>• Annunciator CHG LINE FLOW HIGH LOW (1-9-D3) is LIT</li> <li>• 1PR06J loss of flow alarm</li> </ul>	
	US	<ul style="list-style-type: none"> <li>○ Direct use of BAR 1-9-A3</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Identifies 1A CV pump trip</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Identifies Letdown needs to be isolated</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Close 1CV8149A and 1CV8149B, Orifice Isol Valves</li> <li>• Close 1CV459 and 1CV460, Letdown Isol Valves</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Verify available suction path with no gas binding concerns <ul style="list-style-type: none"> <li>○ VCT level is adequate</li> <li>○ 1CV112B and 1CV112C are open</li> <li>○ Check computer group TR28</li> </ul> </li> <li>• Verify 1CV8110 and 1CV8116 are open</li> <li>• Adjust 1CV121 to 10% open</li> <li>• Start 1B CV pump <ul style="list-style-type: none"> <li>○ Adjust charging flow to minimize PZR level rise</li> </ul> </li> </ul>	
<b>EVALUATOR NOTE: The steps to restore letdown per 1BOA ESP-2 follow below.</b>			
	CREW	<ul style="list-style-type: none"> <li>• Enter 1BOA ESP-2, Re-establishing CV Letdown</li> <li>• Verify/Close 1CV8149A-C and 1CV459 and 1CV460</li> <li>• Verify/Open 1CV8401A</li> <li>• Verify/Open 1CV8324A</li> <li>• Verify/Open 1CV8389A</li> <li>• Verify/Open 1CV8152 and 1CV8160</li> <li>• Verify BTRS Mode Selector Switch is OFF</li> <li>• Place 1CV131 Controller to MANUAL at 40% demand</li> <li>• Place 1CC130A Controller to MANUAL at 60% demand</li> <li>• Verify/Open 1CV8105 and 1CV8106</li> <li>• Throttle 1CV182 to maintain seal injection flow at 8-13 GPM per pump</li> <li>• Throttle 1CV121 to raise charging flow to 100 GPM</li> <li>• Open 1CV459 and 1CV460</li> <li>• Open 1CV8149A and 1CV8149B/C</li> <li>• Adjust 1CV131 to control letdown pressure at 360 PSIG and place in AUTO</li> <li>• Ensure 1CC130 is maintaining temperature at 105° to 115° and place in AUTO</li> <li>• Adjust 1CV121 to match charging and letdown flow and restore PZR level to Program Level and place in AUTO</li> <li>• Throttle 1CV182 to maintain seal injection flow at 8-13 GPM per pump</li> <li>• Verify 1PR06J is in service</li> </ul>	

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Scenario No: <b>NRC 10-2</b>		Event No: <b>2</b>
Event Description: <b>1A CV Pump Trip</b>		
Time	Position	Applicant's Actions or Behavior
	Crew	<ul style="list-style-type: none"> <li>○ Dispatch EO to check 1A CV pump breaker</li> <li>○ Dispatch EO to check 1B CV pump after start for normal operation</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>● Assist in monitoring primary plant while RO starts 1B CV pump</li> <li>● Provide assistance in diagnosis and BAR response.</li> </ul>
	US	<ul style="list-style-type: none"> <li>● Notify SM of pump trip and request IR and request an on-line risk assessment.</li> <li>● Evaluate TS 3.5.2 Condition A: <u>Restore train to operable in 7 days</u></li> <li>● Evaluate TRM 3.1.d Condition A: <u>Restore CV pump to operable in 7 days</u></li> </ul>
<b>EVALUATOR NOTE: After the actions for the pump trip are complete and with lead examiner concurrence, enter next event.</b>		

Comments: \_\_\_\_\_

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Scenario No: <b>NRC 10-2</b>		Event No: <b>3</b>
Event Description: <b>Loss of 4KV ESF Bus 141</b>		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>Annunciator BUS 141 FD BRKR 1412 TRIP (1-21-A7)</li> <li>ESF bus alive light (141) NOT lit.</li> <li>No voltage indicated on Bus 141.</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Determine Bus 141 deenergized.</li> <li>Reference BARs.</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>Identify entry conditions for 1BOA ELEC-3, "LOSS OF 4KV ESF BUS."</li> <li>Dispatch operators to investigate status of bus 141.</li> </ul>
	US	<ul style="list-style-type: none"> <li>Notify SM of plant status and procedure entry.</li> <li>Request evaluation of Emergency Plan conditions.</li> <li>Enter/Implement 1BOA ELEC-3 "LOSS OF 4KV ESF BUS " and direct operator actions of 1BOA ELEC-3 to establish the following conditions:</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Check ESF Buses energized: <ul style="list-style-type: none"> <li>Bus 141 (<b>Deenergized</b>)</li> </ul> </li> </ul>
	BOP RO BOP	<p>Verify required ESF loads energized on Bus 142</p> <ul style="list-style-type: none"> <li>Bus 132X and 132Z</li> <li>1B CV pump</li> <li>1B RH pump</li> <li>1B SI pump</li> <li>1B and 1D RCFC <ul style="list-style-type: none"> <li>(Start 1D RCFC)</li> </ul> </li> <li>1B CS pump</li> <li>1B CC pump</li> </ul>
<b>CT-E-0-L</b>	BOP	<ul style="list-style-type: none"> <li>1B SX pump <ul style="list-style-type: none"> <li>(Start 1B SX pump)</li> </ul> </li> <li>0B VC Train</li> <li>VA Supply and Exhaust fans</li> </ul>
	BOP	<p>Check Bus 141 not faulted</p> <ul style="list-style-type: none"> <li>Place ACB 1413 in Pull Out</li> <li>Place ACB 1411 in Pull Out</li> <li>Place ACB 1412 in Pull Out</li> <li>Place ACB 1414 in Pull Out</li> </ul>

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Scenario No:	<b>NRC 10-2</b>	Event No:	3
Event Description: Loss of 4KV ESF Bus 141			
Time	Position	Applicant's Actions or Behavior	
	BOP	<ul style="list-style-type: none"> <li>• Check Bus 141 lock out alarms NOT lit: <ul style="list-style-type: none"> <li>• Bus 141 FD BRKR 1412 TRIP (1-21-A7). <b>(THIS WILL BE LIT)</b></li> <li>• BRKR 1414 CROSS-TIE OVERCURRENT (1-21-B8).</li> <li>• DG 1A OVERLOAD (1-21-B9).</li> </ul> </li> </ul>	
	US	GO TO STEP 6 of 1BOA ELEC-3 ATTACHMENT A <ul style="list-style-type: none"> <li>• Direct WEC to X-tie DC Buses with U-2 within 1 hour</li> <li>• Refer to Tech Specs 3.8.1 and others as applicable</li> <li>○ Refer to Table A (pgs 45-48) for containment isolation valves affected</li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Determines TS 3.8.9 condition A is applicable.: <u>Restore bus 141 in 8 hours or be in Mode 3 in the next 6 hours and Mode 5 in 36 hours</u></li> <li>• Determine TS 3.8.1 is applicable on Unit 1 and Unit 2 Condition A: <u>Perform SR 3.8.1.1 w/in 1 hour and every 8 hours thereafter; restore w/in 72 hours</u></li> <li>• Determine TS 3.8.1 is applicable on Unit 1 Condition B: <u>Verify both opposite-unit DGs operable in 1 hour and once per 24 hours thereafter AND : Perform SR 3.8.1.1 w/in 1 hour and every 8 hours thereafter. AND Declare required features supported by the inoperable DG inop when its required redundant feature(s) is inoperable within 4 hours of discovery of Condition B AND Determine Operable DG is not inop due to a common cause failure within 24 hours OR perform SR 3.8.1.2 for operable DG within 24 hours AND restore DG to operable within 14 days.</u></li> <li>• Determine TS 3.8.1 is applicable on Unit 1, Condition E: <u>Restore required qualified circuits to operable status w/in 12 hours.</u></li> <li>• Determine TS 3.8.4 is applicable on Unit 1: <u>Condition A is applicable: X-tie DC bus within 2 hours and restore terminal voltage to limits within next 2 hours, verify float current is &lt; 3 amps every 12 hours</u></li> <li>• Determine TS 3.8.4 is applicable on Unit 2: <u>Condition B is applicable: Open at least one crosstie breaker between crosstied divisions within 204 hours</u></li> <li>• Contact SM to perform risk assessment, initiate IR, and contact maintenance to investigate/correct failure.</li> </ul>	
		<b>EVALUATOR NOTE: After the actions for the Loss of Bus 141 are complete and with lead examiners concurrence, insert the next event.</b>	

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Scenario No:	<b>NRC 10-2</b>	Event No.	4 and 5
Event Description:	MFW pp Trip and auto rod control fails to 1 step per minute		
Time	Position	Applicant's Actions or Behavior	
	CUE	Annunciators: 1-16-B1 FW PUMP 1B TRIP 1-16-D2 FW PUMP DSCH FLOW LOW Rod "IN" lit is LIT with 1SPM indicated (after runback is initiated)  Feed flow dropping	
	ALL	<ul style="list-style-type: none"> <li>Identify/report loss of 1B FW pump</li> </ul>	
	US/BOP	Direct implementation of 1BOA SEC-1, SECONDARY PUMP TRIP <ul style="list-style-type: none"> <li>Close 1B FW pump recirc valve- 1FW012B</li> <li>Check turbine load &gt; 700MW</li> <li>Verify 1C FW Pump is running- recognize 1A FW pump is not available</li> <li>Initiate turbine runback- pushbutton on 1PM03J OR select CD/FW Runback on OWS panel Graphic 5512 and select execute.</li> <li>Check turbine load dropping</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Verify Rod Control in AUTO</li> <li>Recognizes rod speed is improper for conditions (<b>@ 1 spm and should be much greater</b>)</li> <li>Takes manual control after boration is started and drives rods in, in manual</li> <li>Initiate boration as necessary- per REMA plaque <b>Note: value should be between 150 and 280 gallons of boric acid</b></li> <li>Determine required boric acid volume. <ul style="list-style-type: none"> <li>Refer to Rema for ramp.</li> </ul> </li> <li>Perform the following at 1PM05J: <ul style="list-style-type: none"> <li>Set 1FK-110 BA Flow Control to desired boration rate.</li> <li>Verify/Set 1FY-0110 BA Blender Predet Counter to desired volume.</li> <li>Place MAKE-UP MODE CONT SWITCH to STOP position.</li> <li>Place MODE SELECT SWITCH to BORATE position.</li> <li>Place MAKE-UP MODE CONT SWITCH to START.</li> <li>Verify proper operation of valves and BA transfer pump (1CV110B open, Boric Acid Transfer Pump running, 1CV110A throttles open, proper BA flow indicated on recorder).</li> <li>Turn on PZR backup heaters</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Start standby CD/CB pump <ul style="list-style-type: none"> <li>Start aux. oil pump for standby CD/CB pump</li> <li>Start standby CD/CB pump</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Check FW PUMP NPSH LOW alarm LIT <ul style="list-style-type: none"> <li>Check CP bypass valves 1CD210A and B open</li> <li>Check standby CD/CB pump running</li> <li>Verify Heater Drain pump discharge valves responding- 1HD046A and B</li> <li>Check CB pump recirc valves in auto- 1CB113A-D</li> <li>Check CD pump recirc valve closed-1CD152</li> <li>Check Gland steam condenser valves open- 1CD157A and B</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-2</b>	Event No:	4 and 5
Event Description: MFW pp Trip and auto rod control fails to 1 step per minute			
Time	Position	Applicant's Actions or Behavior	
	BOP	<ul style="list-style-type: none"> <li>• Check Feed Flow Restored <ul style="list-style-type: none"> <li>○ Feed flow greater than or equal to steam flow (unless operator action is taken to prevent overfeeding)</li> <li>○ SG levels stable at or trending to normal</li> </ul> </li> <li>• Turbine runback not lit</li> <li>• FW PUMP DSCH FLOW HIGH not lit <ul style="list-style-type: none"> <li>○ If LIT, reduce turbine load at 20 MW/min as required to reduce FW pump disc. flow</li> </ul> </li> </ul>	
	RO	Check Plant Status <ul style="list-style-type: none"> <li>• PDMS Inoperable alarm (1-10-E8)- NOT lit</li> <li>• 1BOL 3.h, power distribution monitoring system, condition B- not implemented</li> <li>• PDMS limit exceeded (1-10-D7) not lit</li> <li>• Control delta I near target</li> <li>• Rod bank low insertion limit (1-10-B6) not lit.</li> <li>• Loss of turbine load interlock C7 (1BP-4.6) not lit <ul style="list-style-type: none"> <li>○ When all steam dumps are closed then momentarily place the Steam Dump Mode Selector to reset.</li> </ul> </li> </ul>	
	RO	Restore plant conditions <ul style="list-style-type: none"> <li>○ Adjust boron concentration as necessary</li> </ul>	
	US	Notify Shift Manager to perform the following: <ul style="list-style-type: none"> <li>• Risk evaluation</li> <li>• Initiate an IR/WR <ul style="list-style-type: none"> <li>• FW pump trip</li> <li>• Auto Rod speed program</li> </ul> </li> <li>○ Evaluate for reactivity management event</li> <li>○ Notify QNE and other appropriate personnel</li> </ul>	
	BOP	Restore plant conditions <ul style="list-style-type: none"> <li>○ Verify FW pump recirc. valve 1FW12C in modulate</li> <li>○ Verify HD/CB/CD recirc valves and GS condenser bypasses in auto <ul style="list-style-type: none"> <li>• 1CB113D placed in auto</li> </ul> </li> <li>○ Shutdown unnecessary CD/CB pump pump per BOP CD/CB-2 (coordinate with WEC supervisor)</li> <li>○ Completed SD of tripped FW pp (coordinate with WEC supervisor)</li> <li>○ Adjust SG blowdown flows and calorimetric inputs as necessary</li> <li>○ Verify DEHC feedback loop in service: Impulse or MW</li> </ul>	
		<b>EVALUATOR NOTE: After the actions for the FW pump trip, and rod control malfunction complete and with lead examiners concurrence, insert the next event.</b>	
	US	<ul style="list-style-type: none"> <li>○ Notify Chemistry to monitor secondary</li> <li>○ Complete applicable actions of 1BGP 100-4</li> <li>○ Notify Chemistry to perform 1BCSR 4.16.2-1</li> <li>○ Notify Rad Protection to perform</li> <li>○ 1BRSR 11.f.1-3 (Gaseous effluents)</li> </ul>	

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Scenario No:	<b>NRC 10-2</b>	Event No.	4 and 5
Event Description:	MFW pp Trip and auto rod control fails to 1 step per minute		
Time	Position	Applicant's Actions or Behavior	
		o 1BRSR 11.f.2-7 (Radioactive iodine and part. Effluents)	

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Scenario No:	<b>NRC 10-2</b>	Event No:	6
Event Description:	Pressurizer pressure channel 1PT-455 fails high resulting in a Reactor Trip due to failed partially open PZR PORV.		
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>• Annunciator PZR PRESS HIGH RX TRIP STPT ALERT (1-12-A2)</li> <li>• Annunciator PZR PORV OR SAFETY VALVE OPEN (1-12-B2)</li> <li>• Annunciator PZR PRESS CONT DEV HIGH (1-12-D2)</li> <li>• Annunciator PZR PORV DSCH TEMP HIGH (1-9-C6)</li> <li>• PZR pressure indicators 1PI-456, 457, and 458 lowering</li> <li>• PZR PORV 1RY-455A open light lit at 1PM05J.</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>○ Identify 1PT-455 is failing high.</li> <li>• Identify 1RY455A is open.</li> <li>• Report failure to US.</li> <li>• Perform the following at 1PM05J: <ul style="list-style-type: none"> <li>• Place 1RY455A, PZR PORV, C/S in close prior to reactor trip or SI occurring.</li> <li>○ Place 1PK-455A, master PZR pressure controller, in manual.</li> <li>○ Lower demand on 1PK-455A sufficiently to close PZR spray valves and energize PZR heaters.</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>○ Refer to BARs</li> <li>• Monitor secondary panels</li> <li>• Assist RO as requested</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check PZR PORVS, spray valves, and heaters at 1PM05J: <ul style="list-style-type: none"> <li>• PZR PORVs closed. <ul style="list-style-type: none"> <li>• 1RY455A indicates partially open</li> <li>• Recognizes can not close 1RY8000A</li> <li>• Determines PZR Pressure can not be maintained then:</li> <li>• Recommend/TRIP the reactor and manually Safety Inject</li> </ul> </li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Concur/Direct CREW actions</li> <li>• GO to 1BEP 0 REACTOR TRIP OR SAFETY INJECTION</li> </ul>	

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Scenario No: <b>NRC 10-2</b>		Event No: <b>7</b>
Event Description: <b>Rx Trip/Loss of Heat Sink</b>		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>o Annunciator MANUAL RX TRIP (1-11-A1)</li> <li>o Annunciator MANUAL SI/RX TRIP (1-11-A2)</li> <li>o Annunciator PZR PRESS LOW SI/RX TRIP (1-11-C1)</li> <li>• Reactor trip indications at 1PM05J.</li> </ul>
	CREW	Identify entry conditions for 1BEP-0, "REACTOR TRIP OR SAFETY INJECTION".
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry.</li> <li>• Request evaluation of Emergency Plan conditions.</li> <li>• Enter/Implement 1BEP-0 and direct operator actions of 1BEP-0 to establish the following conditions:</li> </ul>
	RO	Perform immediate operator actions of 1BEP-0 at 1PM05J: <ul style="list-style-type: none"> <li>• Verify reactor trip:               <ul style="list-style-type: none"> <li>• Rod bottom lights - ALL LIT.</li> <li>• Reactor trip &amp; Bypass breakers – OPEN.</li> <li>• Neutron flux – DROPPING.</li> </ul> </li> </ul>
	BOP	Perform immediate operator actions of 1BEP-0 at 1PM02J Verify Turbine Trip: <ul style="list-style-type: none"> <li>• All Turbine throttle valves – CLOSED.</li> <li>• All Turbine governor valves – CLOSED.</li> </ul>
	BOP	Perform immediate operator actions of 1BEP-0 at 1PM01J: <ul style="list-style-type: none"> <li>• Verify power to 4KV busses:               <ul style="list-style-type: none"> <li>• ESF bus 141 – DEENERGIZED.</li> <li>• ESF bus 142 – ENERGIZED.</li> </ul> </li> </ul>
	CREW	<ul style="list-style-type: none"> <li>• Manually actuate SI at 1PM05J &amp; 1PM06J. (If not already performed)</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Step 5: Direct BOP to perform Attachment B of 1BEP-0</li> </ul>
		<b>EVALUATOR NOTE: US and RO will continue in 1BEP-0 while BOP is performing Attachment B. Only 1 train of ESF equipment will be operating</b>

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Scenario No:	<b>NRC 10-2</b>	Event No:	7
Event Description: Rx Trip/Loss of Heat Sink			
Time	Position	Applicant's Actions or Behavior	
	BOP	<ul style="list-style-type: none"> <li>• Perform 1BEP-0 Attachment B</li> <li>• Verify FW isolated at 1PM04J: <ul style="list-style-type: none"> <li>• FW pumps – TRIPPED.</li> <li>• Isolation monitor lights – NOT ALL LIT. <ul style="list-style-type: none"> <li>• Manually close 1FW006B</li> </ul> </li> <li>• FW pumps discharge valves - CLOSED (or going closed) 1FW002A-C.</li> </ul> </li> <li>• Verify DGs running at 1PM01J: <ul style="list-style-type: none"> <li>• DGs – BOTH DGs running</li> <li>• 1SX169A &amp; B OPEN.</li> <li>• Dispatch operator locally to check operation</li> </ul> </li> <li>• Verify Generator Trip at 1PM01J: <ul style="list-style-type: none"> <li>• OCB 3-4 and 4-5 open.</li> <li>• PMG output breaker open.</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Verify Control Room ventilation aligned for emergency operations at 0PM02J: <ul style="list-style-type: none"> <li>• VC Rad Monitors – LESS THAN HIGH ALARM SETPOINT.</li> <li>• Operating VC train equipment – RUNNING. <ul style="list-style-type: none"> <li>• Supply fan</li> <li>• Return fan</li> <li>• M/U fan</li> <li>• Chilled water pump</li> <li>• Chiller</li> </ul> </li> <li>• Operating VC train dampers – ALIGNED. <ul style="list-style-type: none"> <li>• M/U fan outlet damper – NOT FULLY CLOSED.</li> <li>• VC train M/U filter light – LIT.</li> </ul> </li> <li>• Operating VC train Charcoal Absorber aligned for train B. <ul style="list-style-type: none"> <li>• Bypass damper - CLOSED</li> <li>• Inlet damper - OPEN</li> <li>• Outlet damper - OPEN</li> </ul> </li> <li>• Control Room pressure greater than +0.125 inches water on 0PDI-VC038.</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-2</b>	Event No:	7
Event Description:		Rx Trip/Loss of Heat Sink	
Time	Position	Applicant's Actions or Behavior	
	BOP	<ul style="list-style-type: none"> <li>• Verify Auxiliary Building ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Two inaccessible filter plenums aligned. <ul style="list-style-type: none"> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan – RUNNING</li> <li>• Flow Control damper – OPEN</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> </ul> </li> </ul> </li> <li>• Verify FHB ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Inlet Isolation damper - OPEN</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper – CLOSED</li> </ul> </li> </ul>	
		<p><b>EVALUATOR NOTE: The remaining steps of Attachment B may be designated to be performed by WEC personnel or the Field Supervisor and extra operators.</b></p>	
	BOP	<ul style="list-style-type: none"> <li>○ Trip all running HD Pumps</li> <li>○ Shutdown FW pump as necessary using BOP FW-2 for a TDFP or BOP FW-8 for the MDFP</li> <li>○ Shutdown unnecessary CD/CB Pumps using BOP CD/CB-2</li> <li>○ Align SX MDCT per BOP SX-T2 <ul style="list-style-type: none"> <li>○ Maintain SX Basin level &gt; 80%</li> </ul> </li> <li>○ Align NDCT <ul style="list-style-type: none"> <li>○ Verify CW intake bay level within band</li> <li>○ Dispatch operator to locally verify NDCT basin level acceptable</li> <li>○ Align NDCT per BOP CW-25</li> </ul> </li> <li>○ Shutdown all unnecessary CW pumps per BOP CW-2</li> <li>○ Initiate periodic checking of spent fuel cooling <ul style="list-style-type: none"> <li>○ Locally verify Spent fuel pool level is &gt; 420 Elev</li> <li>○ Locally verify SFP temperature stable</li> <li>○ Notify STA of SFP cooling status</li> </ul> </li> <li>○ Notify US that Attachment B is complete</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Verify ECCS pumps running at 1PM05J/1PM06J: <ul style="list-style-type: none"> <li>• CV pumps – 1B RUNNING.</li> <li>• RH pumps – 1B RUNNING.</li> <li>• SI pumps – 1B RUNNING.</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-2</b>	Event No:	7
Event Description: Rx Trip/Loss of Heat Sink			
Time	Position	Applicant's Actions or Behavior	
	RO	<ul style="list-style-type: none"> <li>• Perform the following at 1PM06J: <ul style="list-style-type: none"> <li>• Verify RCFCs running in Accident Mode: <ul style="list-style-type: none"> <li>• Group 2 RCFC Accident Mode lights – LIT.</li> </ul> </li> <li>• Verify Phase A isolation - Group 3 Cnmt Isol monitor lights – NOT ALL LIT: <ul style="list-style-type: none"> <li>• Manually actuate phase A. <ul style="list-style-type: none"> <li>• Dispatch operators to close the following: <ul style="list-style-type: none"> <li>• 1WO006A</li> <li>• 1WO020A</li> <li>• 1CV8100</li> </ul> </li> <li>• Cannot close 1WO056B – inside containment</li> </ul> </li> </ul> </li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Perform the following at 1PM06J: <ul style="list-style-type: none"> <li>• Verify Cnmt Vent isolation: <ul style="list-style-type: none"> <li>• Group 6 Cnmt Vent Isol monitor lights – LIT.</li> </ul> </li> <li>• Verify AF system: <ul style="list-style-type: none"> <li>• AF pumps – NONE RUNNING. <ul style="list-style-type: none"> <li>• Attempt to start 1B AF pump.</li> </ul> </li> <li>• AF isolation valves – 1AF13A-H OPEN. (1AF013A-D are deenergized)</li> <li>• AF flow control valves - 1AF005A-H are THROTTLED.</li> </ul> </li> <li>• Verify CC pumps running: <ul style="list-style-type: none"> <li>• 1B CC pump - RUNNING</li> </ul> </li> <li>• Verify SX pumps running: <ul style="list-style-type: none"> <li>• 1B SX pump RUNNING.</li> </ul> </li> <li>• Check if Main Steamline Isolation required: <ul style="list-style-type: none"> <li>○ 1C S/G pressures &lt; 640 psig at 1PM04J.</li> <li>○ CNMT pressure &lt; 8.2 psig at 1PM06J.</li> </ul> </li> <li>• Check CS not required: <ul style="list-style-type: none"> <li>• CNMT pressure remained &lt; 20 psig.</li> </ul> </li> <li>• Verify Total AF flow: <ul style="list-style-type: none"> <li>• AF flow &lt; 500 gpm</li> <li>• SG levels &lt; 10%</li> </ul> </li> </ul> </li> </ul>	
		<p><b>Note to evaluator:</b> NR SG Level may not be &lt;10% at this point. This will require the Unit Supervisor to make a decision to enter BFR H-1 now or when procedural conditions are met.</p>	
		<p><b>The following italicized steps consist of the rest of the steps of 1BEP-0 until the transition is made to 1BEP-1.</b></p>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• <i>Step 16: Verify ECCS valve alignment</i> <ul style="list-style-type: none"> <li>• <i>Determine Group 2 Cold Leg Injection monitor lights required for injection - All lit</i></li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-2</b>	Event No:	7
Event Description: Rx Trip/Loss of Heat Sink			
Time	Position	Applicant's Actions or Behavior	
	RO/ BOP	<ul style="list-style-type: none"> <li>• <i>Step 17: Verify ECCS flow</i> <ul style="list-style-type: none"> <li>• <i>High Head SI flow &gt;100 gpm (1FI-917)</i></li> <li>• <i>RCS pressure &lt; 1700 psig</i> <ul style="list-style-type: none"> <li>• <i>Both (depending on C/S position of 1A SI pp) SI pump discharge flow &gt; 200 gpm</i></li> </ul> </li> <li>• <i>RCS pressure &lt; 325 psig</i></li> <li>• <i>RH flow &gt; 1000 GPM</i></li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• <i>Step 18: Check PZR PORVs and SPRAY VALVES at 1PM05J:</i> <ul style="list-style-type: none"> <li>• <i>1RY455A &amp; 1RY456 CLOSED (1RY455A is open)</i></li> <li>• <i>PORV isol valves – 1RY8000A &amp; 1RY8000B BOTH ENERGIZED (1RY800A is deenergized)</i></li> <li>• <i>PORV relief path – Both PORVs in AUTO, Both isolation valves – OPEN.</i></li> <li>• <i>Normal PZR Spray Valves CLOSED</i></li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Identify transition to 1BEP-1, LOSS OF REACTOR OR SECONDARY COOLANT</li> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP-1 and direct operator actions of 1BEP-1</li> <li>• Request STA to initiate monitoring of the status trees</li> </ul>	
		<p style="text-align: center;"><b>Evaluator Note:</b></p> <p style="text-align: center;">Once the transition is made to 1BEP-1 LOSS OF REACTOR OR SECONDARY COOLANT, the STA will be monitoring Status Trees for transition to 1BFR-H.1 RESPONSE TO LOSS OF SECONDARY HEAT SINK. (ALL WE ARE WAITING FOR IS ALL SG NR LEVELS TO BE &lt; 10%) The 1BEP 1 actions (italicized) below are contained until it is anticipated that a transition will be made to 1BFR-H.1</p>	
	RO	<ul style="list-style-type: none"> <li>• <i>Step 1: Check Status of RCPs:</i> <ul style="list-style-type: none"> <li>• <i>RCPs – ALL RUNNING</i></li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• <i>Step 2: Check if SG secondary pressure boundaries are intact:</i> <ul style="list-style-type: none"> <li>• <i>Check pressure in all SGs:</i> <ul style="list-style-type: none"> <li>• <i>None dropping in an uncontrolled manner</i></li> <li>• <i>None completely depressurized</i></li> </ul> </li> </ul> </li> <li>• <i>Step 3: Check intact SG levels</i> <ul style="list-style-type: none"> <li>• <i>SG levels maintained between 10% (31%) and 50%</i></li> <li>• <i>SG NR levels – NOT rising in an uncontrolled manner</i></li> </ul> </li> <li>• <i>Step 4: Check secondary radiation normal.</i> <ul style="list-style-type: none"> <li>• <i>Reset Phase A</i> <ul style="list-style-type: none"> <li>• <i>Depress BOTH Phase A Reset Pushbuttons at 1PM06J</i></li> </ul> </li> <li>• <i>OPEN 1SD005A-D at 1PM11J</i></li> <li>• <i>At RM-11 or HMI Check secondary rad trends on :</i> <ul style="list-style-type: none"> <li>• <i>1PR08J SG Blowdown</i></li> <li>• <i>1PR27J SJAE/GS</i></li> <li>• <i>1AR22/23A-D Main steam lines</i></li> </ul> </li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-2</b>	Event No:	<b>7</b>
Event Description: Rx Trip/Loss of Heat Sink			
Time	Position	Applicant's Actions or Behavior	
	RO	<ul style="list-style-type: none"> <li>Step 5: Check at least ONE PZR PORV relief path available: <ul style="list-style-type: none"> <li>PORV isol valves – BOTH ENERGIZED (1RY8000A is deenergized)</li> <li>PORV relief path – BOTH PORVs in AUTO, 1RY8000A &amp; B – OPEN (PORV 1RY455A is OPEN)</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 6: Check if ECCS flow should be reduced <ul style="list-style-type: none"> <li>RCS subcooling –(will be acceptable)</li> <li>Secondary heatsink (may or may not be acceptable-if NOT transition to 1BFR-H.1)</li> <li>RCS stable or rising</li> <li>PZR level &gt;12%</li> </ul> </li> <li>Transition to 1BEP ES-1.1</li> </ul>	
		<ul style="list-style-type: none"> <li><b>NOTE to evaluator: If a transition is made to 1BEP ES-1.1 the STA monitoring of status trees will direct the crew to 1BFR-H.1. NO STEPS FOR S.I. TERMINATION USING 1BEP ES-1.1 ARE INCLUDED WITH THIS DRILL GUIDE</b></li> <li><b>NOTE: If the crew stays in 1BEP-1, the actions continue below.</b></li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 7: Check if CS should be stopped <ul style="list-style-type: none"> <li>Both CS pumps –BOTH RUNNING</li> <li>Reset CS signal</li> <li>Check Spray Add Tank Lo-2 lights – NOT lit</li> <li>CS termination criteria NOT met – for LOCA, operating time at least 8 hours</li> </ul> </li> <li>Step 8: Check if RH pumps should be stopped <ul style="list-style-type: none"> <li>Reset SI <ul style="list-style-type: none"> <li>Depress BOTH SI Reset Pushbuttons at 1PM06J</li> <li>Verify SI ACTUATED BP light NOT lit at 1PM05J</li> <li>Verify AUTO SI BLOCKED BP light NOT lit at 1PM05J</li> </ul> </li> <li>RCS pressure - NOT&gt; 325 psig &amp; stable</li> </ul> </li> <li>Step 9: Determine there are no faulted SGs</li> <li>Step 10: Stop running Diesel Generators</li> <li>Step 11: Initiate evaluation of plant status</li> </ul>	
		<b>EVALUATOR NOTE: When ALL NR levels are &lt;10% the crew will transition to 1BFR-H.1.</b>	
	CREW	Identify entry conditions for 1BFR-H.1, "RESPONSE TO LOSS OF SECONDARY HEAT SINK".	
	US	<ul style="list-style-type: none"> <li>Notify SM of plant status and procedure entry.</li> <li>Request evaluation of Emergency Plan conditions.</li> <li>Request STA evaluation of status trees.</li> <li>Enter/Implement 1BFR-H.1, "RESPONSE TO LOSS OF SECONDARY HEAT SINK" and direct operator actions of 1BFR-H.1 to establish the following conditions:</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Check if secondary heat sink is required: <ul style="list-style-type: none"> <li>RCS pressure &gt; intact SG pressures.</li> <li>RCS temperature &gt; 350°F.</li> </ul> </li> </ul>	

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-2</b>	Event No:	7
Event Description: Rx Trip/Loss of Heat Sink			
Time	Position	Applicant's Actions or Behavior	
	US/RO	<ul style="list-style-type: none"> <li>Check CV pump status at 1PM05J: <ul style="list-style-type: none"> <li>CV pumps – 1 RUNNING.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Check if Bleed and Feed is required <ul style="list-style-type: none"> <li>Wide range level in any 3 SGs &lt;27% or</li> <li>PZR pressure &gt; 2335</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Try to establish AF flow to at least 1 SG (Note: 1A AF pump has no electrical power and 1 B AF pump is inoperable) <ul style="list-style-type: none"> <li>All SG BD iso. Valves (1SD002A-H) closed</li> <li>All SG sample isolation valves (1SD005A-D) closed <ul style="list-style-type: none"> <li>Review attachment B prior to FW flow initiation</li> </ul> </li> <li>Check AF pump SX suction valves armed alarm NOT Lit (1-3-E7)</li> <li>Check AF test valves open (1AF004A and B)</li> <li>Check AF pumps-Both running</li> <li>Dispatch an operator to locally start</li> <li>Check AF isol. valves (1AF013A-H)for selected SG open</li> <li>Check AF flow control valves (1AF005A-H) throttled</li> <li>Check total feed flow to SG &gt;500 gpm.</li> </ul> </li> <li>GO TO STEP 5</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Stop all RCPs.</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>GO TO STEP 7</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Check at least 1 CD/CB pump running</li> <li>Place FWRV (1FW510,20,30,and 40) in manual at 0</li> <li>Place FWRV Bypass valves (1FW510A,20A,30A,and 40A) in manual at 0</li> <li>Place Tempering Flow control valves (1FW034A,B,C and D) in manual at 0.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Reset FW Isolation <ul style="list-style-type: none"> <li>Check FW Isol. Aux. relays light any lit. (go to step 8.f.)</li> <li>Dispatch an operator to pull Feedwater Isolation Aux. Relay Fuses <ul style="list-style-type: none"> <li>1PA 27J: FU 24 and 27</li> <li>1PA 28J: FU 24 and 27</li> </ul> </li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Try to establish FW flow to at least 1 SG: <ul style="list-style-type: none"> <li>Open FW Tempering iso valve on selected SG(s) (1FW035A-D)</li> <li>Check S/U FW pump available</li> <li>Check at least 2 CD/CB running</li> </ul> </li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Prepare SU FW pump for operation: <ul style="list-style-type: none"> <li>Bus 159 energized</li> <li>Dispatch operator to start aux oil pump for S/U FW pp.</li> <li>Check 1FW059 (disc. valve ) open</li> <li>Place recirc valve in modulate (1FW076)</li> <li>Close MFW pp recirc valves (1FW012A,B, C)</li> <li>Start S/U FW pp.</li> <li>Review Attachment B</li> </ul> </li> </ul>	

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-2</b>	Event No.	7
Event Description: Rx Trip/Loss of Heat Sink			
Time	Position	Applicant's Actions or Behavior	
	Crew	<ul style="list-style-type: none"> <li>• Determine the SGs are NOT DRY</li> <li>• Determine SG feed lines are NOT VOIDED</li> <li>• Determine that a minimum of 2 SG's must be fed.</li> </ul>	
<b>C. T. FR-H.1--A)</b>	BOP	<ul style="list-style-type: none"> <li>• Establish and throttle Tempering Flow Control Valve(s) on selected SGs <ul style="list-style-type: none"> <li>○ 1FW034A</li> <li>○ 1FW034B</li> <li>○ 1FW034C</li> <li>○ 1FW034D</li> </ul> </li> <li>• Maintain hotwell level &gt; 7 inches</li> <li>• S/G NR Level rising</li> </ul>	
<b>NOTE: At Evaluators discretion this scenario may be terminated</b>			

(Final)

Comments: \_\_\_\_\_  
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Simulation Facility	<u>Byron</u>	Scenario No.:	Operating Test No. <b>2012 NRC</b>
Examiners:	_____	<b>10-3</b>	<b>Examination</b>
	_____	Applicant:	_____
	_____		SRO
			RO
			BOP
Initial Conditions:	IC-22		
Turnover:	Unit 1 is at 100% power, steady state, equilibrium xenon, MOL. Unit output is 1230 MW. Boron concentration is 888 ppm. Online risk is green. A TV/GV surveillance is scheduled to be performed. The unit will be ramped to 89% power at 3MW/min for the surveillance.		

Event No.	Malf. No.	Event Type*	Event Description
Preload	IMF RP26C IMF RP28C Trgset 1 "zdi1cv129(1).gt.0" Trg 1 "ior zlo1cv1291 on" Trgset 2 "zdi1cv129(1).gt.0" Trg 2" ior zlo1cv1292 off" IOR zlo1cv1292 on IOR zlo1cv1291 off Trgset 3 "zdi1fw012c(1).gt.0" Trg 3 "ramp fwv1fw012c 1 0 7" Trgset 4 "zdi1fw012c(1).gt.0" Trg 4 "dor zlo1fw012c1" Trgset 5 "fwv1fw012c.gt.0.9" Trg 5 "ior zlo1fw012c1 off"		ESF relay failure of 1A RH pump ESF relay failure of 1B RH pump
1		R (RO) (SRO)  N (BOP, SRO)	Ramp down for TV/GV surveillance
2	IMF FW16 1500	I (BOP, SRO)	1PT508 fails high
3	CC 130 caep file	C (RO, SRO)	1CV130 controller temperature element will fail low causing rising letdown temperatures
4	IMF RX10A 0 30	I (RO, SRO) TS (SRO)	1PT 505 fails low
5	None	TS (SRO)	Notified that SI pump failed ASME surveillance
6	Ramp fwv1FW012C 1 1 08:00:00	C (BOP, SRO)	1FW012C recirc fails open
7	MF TH04C 540000	M (all)	LB LOCA terminating in transfer to Cold Leg Recic
8	Pre-load	C (all)	ESF relay failure of 1A & B RH pumps – manual start required

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

## SCENARIO OVERVIEW

Unit 1 is at 100% power, steady state, equilibrium xenon, MOL. Online risk is green. CBD @ 221 steps, and boron concentration is 888 ppm. 1BOSR 3.g.4-1, Turbine Throttle and Governor Valve surveillance is scheduled later on in this shift and requires the unit to be ramped to 89% power at 3MW/min.

**After completing shift turnover and relief**, the crew will ramp the unit to 89% power at 3MW/min

**After the ramp is in-progress**, 1PT 508 will fail high causing feed pump speed to lower. The BOP will respond and manual FW pp speed control will be available. AUTOMATIC operation of Feedwater pump speed control will not be available for the remainder of the scenario.

**After the 1PT-508 failure has been addressed**, 1CC 130 controller will fail 1CC130 closed in AUTOMATIC. The RO will take manual control and restore normal letdown temperature. The divert valve around the CV demins fails to divert automatically and will require the RO to manually divert. Normal letdown temperature indication will be lost.

**After letdown temperature is restored**, turbine impulse pressure channel 1PT-505 will fail low over a 30 second period. Control rods will begin automatically inserting. After recognizing the instrument failure and checking turbine power stable, the RO will place rod control in manual to stop the inward rod motion. 1BOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL, Attachment D, will be implemented. The crew will defeat the failed instrument and the RO will restore Tave – Tref deviation. Technical specification 3.3.1, conditions A and P apply.

**After the PT-505 failure is addressed**, the Unit Supervisor will be called by Engineering stating that after reviewing the previously run ASME surveillance the 1A SI pump has failed the acceptance criteria. The US will evaluate Tech Specs. 3.5.2 Condition A and notify to restore w/in 7 days.

**After the Unit Supervisor has evaluated the failed ASME acceptance criteria associated with the 1A SI pump**, 1FW-012C fails open. The BOP will take manual control and restore normal feedwater flow.

**After normal feedwater flow is restored and the plant stabilized**, a LB LOCA occurs in the 1C hot leg. The crew will respond utilizing 1BEP-0, 1BEP-1 and will eventually transition to 1BEP ES-1.3 Transfer to Cold Leg Recirculation. 1A and B RH pumps will fail to start on the SI signal but start if a manual start is attempted. The cause of the auto start failure is two ESF relay failures. Containment pressure will rise to the phase B actuation setpoint requiring the RCP to be tripped.

**Completion criteria** is selection of and transition to 1BEP ES-1.3, Transfer to Cold Leg Recirculation and completion of the first 7 steps.

### Critical Tasks

1. Manually start at least 1 RH pump.  
(ERG Critical Task number – E-0--H)
2. Swap to Cold Leg Recirc.  
(ERG Critical Task number – ES-1.3--A)

## **SIMULATOR SETUP GUIDE:**

- Verify/perform TQ-BY-201-0113, BYRON TRAINING DEPARTMENT SIMULATOR EXAMINATION SECURITY ACTIONS CHECKLIST.
- Establish the conditions of IC 22, 100% power, MOL, steady state, equilibrium xenon.
- Complete items on Simulator Ready for Training Checklist.
- Verify/remove any Equipment Status Tags and Danger Tags not applicable to the scenario.
- Place simulator in RUN (allow simulator to run during board walk down and turnover).
- Verify RM-11 is on grid 1. Ensure horns are turned ON. Set BA and PW controllers to Rema numbers or 0 and reset.
- Place Turnover and ReMa, 1BGP 100-4T3 and Load Change Instruction Sheet on desk
- Ensure Rema placard is updated
- Ensure rods are in auto.

In **caep NRC 10-3.cae** from thumb drive and verify the following:

- IMF RP26C
- IMF RP28C
- Trgset 1 "zdi1cv129(1).gt.0"
- Trg 1 "ior zlo1cv1291 on"
- Trgset 2 "zdi1cv129(1).gt.0"
- Trg 2" ior zlo1cv1292 off"
- IOR zlo1cv1292 on
- IOR zlo1cv1291 off
- Trgset 3 "zdi1fw012c(1).gt.0"
- Trg 3 "ramp fvw1fw012c 1 0 7"
- Trgset 4 "zdi1fw012c(1).gt.0"
- Trg 4 "dor zlo1fw012c1"
- Trgset 5 "fwv1fw012c.gt.0.9"
- Trg 5 "ior zlo1fw012c1 off"

**Event 1: Ramp to 89% power for TV/GV surveillance**

SM acknowledge start of ramp when notified.  
TSO acknowledge start of ramp when notified.

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**Event 2: Feedwater header pressure 1PT508 fails high.**

**As WEC or Extra NSO**, acknowledge request to trip bistables.

SM Acknowledge entry into TS

SM Acknowledge request for writing IR, performing risk assessment and making appropriate notifications.

**SM is to prompt the crew to stop the ramp and place control systems into automatic (specifically Rod Control) if they have not done this previously. SM states his desire to “stabilize” the plant.**

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**Event 3: Temperature element 1CC130 fails low causing rising letdown temperatures without divert valve 1CV129 bypassing the demineralizers automatically**

Run separate CC130 caep file contained on thumb drive but referenced in the NRC 10-3 caep.

To reset the CC to CNMT Penetration Cooling alarm, **MRF CC50 to RESET**

If Chemistry is contacted state “we will call you when we want to place the demin back on line”.

SM acknowledge the failure, TS entry, on line risk assessment, request for maintenance support, and IR requests.

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**Event 4: Turbine impulse pressure 1PT505 fails low**

**NOTE: Ensure control rods are in AUTO before inserting this MF.**

Insert **IMF RX10A 0 30** to fail 1PT-505 low over a 30 second period.

If lead examiner desires the bistables tripped, participate in brief and perform the following:

- As extra NSO contact Unit 1 (X-2209)
- Insert the following:
  - **MRF RP20 OPEN** (open protection cabinet #1 door)
  - **MRF RX143 TRIP** (trip turbine power P-13 bistable PB505A)
  - **MRF RP20 CLOSE** (close protection cabinet #1 door)

If lead examiner desires the AMS bistables tripped, participate in brief and perform the following:

- As extra NSO contact Unit 1 (X-2209)
- Insert the following:
  - **MRF RX 149 SW12 to TIP1**
  - **MRF RP91 Test-Trip Switch to Test-Trip** (place operating bypass input switch 11 to test-trip)

Acknowledge as Shift Manager the failure, LCOAR entry, on line risk assessment, EAL evaluation, request for maintenance support, and IR request.

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**At Lead Examiners discretion Event 5 (SI pump Tech. Spec.) may be bypassed**

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**Event 5: Unit Supervisor is notified that SI pump has failed ASME acceptance criteria**

SM acknowledge T/S 3.5.2 entry conditions

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**Event 6: 1C FW pump recirc valve (1FW012C) fails open in auto, manual closure will function**

**Ramp FWV1FW012C I I 08:00:00**

**Have trigger ramp 1FW012C closed over 7 seconds (stroke time) when CS taken to close**

If dispatched as EO to investigate 1FW-012C, report valve is responding normally.

SM acknowledge failure, online risk evaluation and IR initiation

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**Event 7: Large Break LOCA with failure of ESF start relays on both RH pumps, requiring manual start, which functions**

**IMF TH04C Large Break LOCA on 1C Hot leg.**

SM acknowledge procedure entry and E Plan evaluations.

**After entering 1BEP-1, at about step 5, the STA notifies the crew that a red path condition exists and recommends 1BFR P.1 be implemented.**

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**Event 8: LOCA**

**1A and 1B RH pump relay failure requiring manual start**

**(In Preload) IMF RP26C and RP28C to prevent SI auto start of 1A and 1B RH pumps.**

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Scenario No:	<b>NRC 10-3</b>	Event No.	1
Event Description: Ramp unit to 89% power			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>• Provide candidates with 1BGP 100-4T3, Load Change Instruction Sheet and ReMa</li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Implement 1BGP 100-4T3 for a normal ramp <ul style="list-style-type: none"> <li>• Instruct RO and BOP to review P, P, L &amp; A of 1BGP 100-4.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Set up boration IAW ReMa and BOP CV-6</li> <li>• Initiate boration using BOP CV-6 or BOP CV-6T1 checklist <ul style="list-style-type: none"> <li>• Select STOP on RMCS Makeup Control Switch</li> <li>• Select BORATE on RMCS Mode Select Switch</li> <li>• Enter desired boration amount in BA totalizer</li> <li>• Turn ON RMCS Makeup Control Switch</li> <li>• Verify 1CV110B OPEN</li> <li>• Verify 1CV110A MODULATING</li> <li>• Verify 1AB03P STARTS</li> <li>• Verify proper AB flow on 1FR110</li> </ul> </li> <li>• Coordinate boration with start of unit ramp by BOP</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Set up DEH for ramp IAW 1BGP 100-4T3 <ul style="list-style-type: none"> <li>• Enter desired ramp rate (from Rema) in the RATE window</li> <li>• Press ENTER</li> <li>• Enter desired MW output (from Rema) in the REF DEMAND window</li> <li>• Press ENTER</li> <li>• Press GO/HOLD</li> <li>• Press GO and verify load lowers</li> </ul> </li> <li>• Initiate ramp</li> <li>• Coordinate ramp with boration by RO.</li> </ul>	
<b>EVALUATOR NOTE: When reactivity ramp observation is accomplished and at evaluators cue, the second event will be inserted.</b>			

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-3</b>	Event No:	2
Event Description: 1PT508 fails High			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>• Annunciator SG 1_ FLOW MISMATCH FW FLOW LOW (1-15-A4/B4/C4/D4)</li> <li>• FWRVs (1FW510/20/30/40) opening</li> <li>• 1B/1C FW turbine speed lowering</li> <li>• 1A/B/C/D SG levels lowering</li> </ul>	
	RO/BOP	<ul style="list-style-type: none"> <li>• Determine 1PT508 is failing High</li> <li>• Reference BARs as time permits</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Determine all SG levels are lowering</li> <li>• Take manual control of Feed Pump Speed <ul style="list-style-type: none"> <li>○ Master Controller</li> <li>○ Individual Feed Pump Speed Controllers</li> </ul> </li> <li>• Raise feed pump speed to recover S/G levels <ul style="list-style-type: none"> <li>○ Uses alternate pressure indication (1PI-FW015)</li> <li>○ Establishes proper d/p for power level using alternate indication per placard</li> <li>○ Remove controller integral by momentarily going to manual on each FWRV</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Notify SM of PT-508 failure, request IR, and maintenance.</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check SG levels normal and stable</li> </ul>	
		<b>NOTE: FW pp speed control will be in manual for the remainder of the scenario</b>	
		<b>NOTE: Ensure ramp is stopped and rods are placed back in auto before continuing.</b>	
		<b>EVALUATOR NOTE: After the actions for PT-508 are complete and with lead examiner concurrence, enter next event.</b>	

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-3</b>	Event No:	3
Event Description:	1TI130 Failed Low		
Time	Position	Applicant's Actions or Behavior	
		<b>EVALUATOR NOTE: When annunciator 1-9-E2 alarms, 1CV129 will not automatically divert to the VCT. If the operators recognize the failure before getting any alarms some steps after taking manual control of 1CV130 may not be performed.</b>	
	CUE	<ul style="list-style-type: none"> <li>• 1TK-130 output signal lowering</li> <li>• Annunciator 1-8-C5, LETDOWN HX OUTLET TEMP HIGH</li> <li>o Annunciator 1-9-E2, LETDOWN TEMP HIGH</li> </ul>	
	RO/BOP	o Check BAR 1-8-C5	
	RO/BOP	• Take manual control of 1CV130 and raise demand	
	RO/BOP	<ul style="list-style-type: none"> <li>• Recognize 1CV129 did not divert to the VCT position</li> <li>• Manually position 1CV129 to VCT position</li> </ul>	
	CREW	o Dispatch EO to locally report letdown temperature	
	RO/BOP	<ul style="list-style-type: none"> <li>• Monitor panels and assist other operator as required</li> <li>o Monitor letdown temperature utilizing VCT temperature indication:1TI-116</li> </ul>	
	US	• Notify SM of failures (1TI-130 and 1CV129) request IRs.	
		<b>NOTE: Crew may isolate letdown, and may also put on excess letdown. Steps for each follow in <i>italics</i>.</b>	
		<i>To isolate letdown</i>	
	US	<ul style="list-style-type: none"> <li>• <i>Close 1CV8149A/B/C</i></li> <li>• <i>Close 1CV459/460</i></li> </ul>	
		<i>To place excess letdown in service per BOP CV-17</i>	
		• <i>Verify/open 1CV8100 &amp; 1CV8112</i>	
		• <i>Open 1CC9437A/B</i>	
		• <i>Verify closed 1CV123</i>	
		• <i>Open 1RC8037A/B/C or D</i>	
		• <i>Open 1CV8153A or B</i>	
		• <i>Open 1CV123 while maintaining outlet temp &lt;165°</i>	
		<b>EVALUATOR NOTE: When High Temp alarm clears or at lead examiner's discretion, continue with next event</b>	

Comments: \_\_\_\_\_

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Scenario No:	NRC 10-3	Event No:	4
Event Description: 1PT505 fails low			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>• Annunciator 1-14-D1, TAVE CONT DEV HIGH</li> <li>• 1PI-505, first stage pressure, indication lowering.</li> <li>• Control rod inward motion.</li> <li>• 1TR-0412, Auct Tave/Tref recorder, Tref indication dropping</li> <li>• 1SI-412, Rod Speed, indicates 72 step per minute</li> <li>• Steam Dump Actuated light LIT on 1PM02J</li> </ul>	
	RO/BOP	<ul style="list-style-type: none"> <li>• Perform the following at 1PM05J:</li> <li>• Determine control rods inserting.</li> <li>• Identify 1PT-505 is failing low.</li> <li>• Report failure to US</li> <li>• Determine turbine power stable at 1PM06J or OWS drop 210.</li> <li>• Place rod bank select switch to manual at 1PM05J to stop uncontrolled rod insertion.</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Reference BARs 1-14-D1.</li> <li>• Identify entry conditions for 1BOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL. <ul style="list-style-type: none"> <li>○ The crew may enter 1BOA ROD-1, Uncontrolled Rod Motion, if they do the steps they will take are italicized below <ul style="list-style-type: none"> <li>• <i>Check turbine power stable</i></li> <li>• <i>Check Rods in manual, if not place in manual</i></li> <li>• <i>Check power range N.I.s operable</i></li> <li>• <i>Check Tave instruments operable</i></li> <li>• <i>Check Turbine first stage pressure operable</i> <ul style="list-style-type: none"> <li>• <i>Go to 1BOA Inst. 2 Operation with a failed Instrument Channel, Attachment D</i></li> </ul> </li> </ul> </li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Implement 1BOA INST-2 "OPERATION WITH A FAILED INSTRUMENT CHANNEL", Attachment D "TURBINE IMPULSE PRESSURE CHANNEL FAILURE" and direct operator actions of 1BOA INST -2 to establish the following conditions. <ul style="list-style-type: none"> <li>○ Direct BOP/RO to stop load ramp/boration.</li> </ul> </li> </ul>	
	RO/BOP	<ul style="list-style-type: none"> <li>• Restore steam dumps. <ul style="list-style-type: none"> <li>• Check C-7 bypass permissive NOT LIT at 1PM05J.</li> </ul> </li> <li>• Perform the following at 1PM02J: <ul style="list-style-type: none"> <li>• Place 1PK-507, MS header pressure controller, in manual.</li> <li>• Lower 1PK-507 demand to 0%.</li> <li>• Place steam dump mode select switch to STM PRESS mode.</li> <li>• Place 1PK-507 in auto.</li> </ul> </li> <li>• Defeat 1PT-505 at 1PM05J</li> </ul>	

Comments: \_\_\_\_\_

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Scenario No:	NRC 10-3	Event No:	4
Event Description: 1PT505 fails low			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• Place 1PS505Z, turbine impulse pressure defeat C/S, to DEFEAT 505</li> </ul>	
	US	<ul style="list-style-type: none"> <li>o Direct or perform pre-job brief per HU-AA-1211 for bistable tripping.</li> </ul>	
	Extra NSO/BOP	<ul style="list-style-type: none"> <li>• Locally trip bistable for PT-505/BOP verifies correct bistable operation at 1PM05J. <ul style="list-style-type: none"> <li>• PB505A - C1-742 BS-1.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check if rod control can be placed in auto <ul style="list-style-type: none"> <li>• Check C-5 bypass permissive LIT at 1PM05J.</li> <li>• Check Tave/Tref stable and within 1°F. <ul style="list-style-type: none"> <li>• 1TR-412 at 1PM05J</li> <li>• PPC display</li> </ul> </li> </ul> </li> <li>o Adjust Tave – Tref within 1°F by manually withdrawing control rods at 1PM05J</li> <li>o Place rod bank select switch in AUTO.</li> </ul>	
	Extra NSO	<ul style="list-style-type: none"> <li>• Check status of AMS system</li> <li>• Operating Bypass switch in OFF locally.</li> </ul>	
	Extra NSO/BOP	<ul style="list-style-type: none"> <li>• Locally trip bistables for AMS/BOP verifies correct bistable operation at 1PM05J.</li> <li>• Place Operating Bypass switch to TIP-1 locally. <ul style="list-style-type: none"> <li>• Place Operating Bypass Input to TEST-TRIP locally.</li> </ul> </li> </ul>	
	RO/BOP	<ul style="list-style-type: none"> <li>• Check P13 interlock <ul style="list-style-type: none"> <li>• Turbine power &gt; 10%</li> <li>• Check P-13 bypass permissive NOT LIT at 1PM05J</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Determine TS 3.3.1 conditions A and P are applicable: <u>Verify interlock is in required state for existing unit conditions in 1 hour or be in MODE 2 in 7 hours.</u></li> <li>• Contact SM to perform risk assessment, initiate IR, and contact maintenance to investigate/correct instrument failure and rod control malfunction</li> </ul>	
		<p><b>NOTE: After the actions for the turbine impulse pressure channel failure are complete and with lead examiners concurrence, insert the next event.</b></p>	

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Scenario No:	<b>NRC 10-3</b>	Event No.	5
Event Description:	Unit Supervisor notified of 1A SI pump ASME surveillance failure		
Time	Position	Applicant's Actions or Behavior	
		<b>NOTE: At Lead Evaluators Discretion this event may be bypassed.</b>	
	CUE	<ul style="list-style-type: none"> <li>US called by Engineering that 1A SI pump ASME surveillance acceptance criteria has NOT been met.</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Refers to TS 3.5.2 determines that <u>Condition A</u> applies: <u>Restore pump to operable w/i 7 days</u></li> <li>Calls SM and informs same of condition. Requests, evaluation for on-line risk, IR initiation and maintenance informed. <ul style="list-style-type: none"> <li>May request BOP/RO to place affected pump in PTL.</li> </ul> </li> </ul>	
		<b>EVALUATOR NOTE: After the Tech. Spec. condition has been determined and with lead examiners concurrence, insert the next event.</b>	

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Scenario <b>NRC 10-3</b>		Event <b>6</b>
No:		No.
Event Description: 1FW012C fails open		
Time	Position	Applicant's Actions or Behavior
		<b>EVALUATOR NOTE: Depending on how far the crew has ramped the unit, will determine if all actions listed below will occur. The automatic actions associated with FW pp NPSH low alarm will only occur if FW pump suction pressure reaches 400 psig</b>
	CUE	<ul style="list-style-type: none"> <li>• Annunciator 1-16-D2, FW PUMP DISC FLOW HIGH</li> <li>○ Annunciator 1-16-E1, FW PUMP NPSH LOW</li> <li>• Annunciator 1-15-A/B/C/D4, SG 1_ FLOW MISMATCH FW FLOW LOW</li> <li>• Open light lit on 1FW012C</li> <li>• FW flow to all SG LOWERING</li> <li>• SG level LOWERING</li> <li>• FWRVs OPENING</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Recognizes 1C FW pp recirc valve, 1FW12C, OPEN</li> <li>• Takes 1FW012C control switch to close</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>○ Review BARs</li> <li>• Monitor primary and secondary panels as BOP responds to FW malfunction</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>○ Reviews automatic actions for NPSH LOW annunciator <ul style="list-style-type: none"> <li>○ Standby Cond/Cond Bstr pump STARTS</li> <li>○ 1CD157A/B, GS Cond. Bypass valves, OPEN</li> <li>○ 1CD152, Cond. PPs Recirc Valve CLOSSES</li> <li>○ 1HD046A/B, Heater Drain PP Combined Disch. Valves OPEN</li> </ul> </li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM for IR</li> </ul>
		<b>EVALUATOR NOTE: After the actions to close 1FW012C are complete and with lead examiners concurrence, insert the next event.</b>
		<b>EVALUATOR NOTE: If the crew trips the unit based on the FW transient the LOCA will be inserted at step 2 of 1BEP ES 0.1. The first 4 steps of 1BEP-0 along with the transition to ES 0.1 step 2 are included below.</b>
	CUE	<ul style="list-style-type: none"> <li>• Reactor Trip first out annunciator</li> <li>• Rod Bottom Lights</li> <li>• Automatic or manual reactor trip</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>• Identify entry conditions for 1BEP-0, "REACTOR TRIP OR SAFETY INJECTION"</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP-0 and direct operator actions of 1BEP-0</li> </ul>
	RO	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>• Step 1: Verify reactor trip <ul style="list-style-type: none"> <li>• Rod bottom lights - ALL LIT</li> <li>• Reactor trip &amp; Bypass breakers - OPEN</li> </ul> </li> <li>• Neutron flux – DROPPING</li> </ul>
	BOP	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>• Step 2: Verify Turbine Trip <ul style="list-style-type: none"> <li>• All Turbine throttle valves - CLOSED</li> <li>• All Turbine governor valves - CLOSED</li> </ul> </li> </ul>

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Scenario No: <b>NRC 10-3</b>		Event No: <b>6</b>
Event Description: <b>1FW012C fails open</b>		
Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• Step 3: Verify power to 4KV busses <ul style="list-style-type: none"> <li>• ESF Buses – BOTH ENERGIZED (141 &amp; 142)</li> </ul> </li> </ul>
	CREW	<ul style="list-style-type: none"> <li>• Check SI Status</li> <li>• SI First OUT annunciator –NOT LIT</li> <li>• SI ACTUATED Permissive Light – NOTLIT</li> <li>• SI Equipment – NOT ACTUATED</li> <li>• Check if SI is required <ul style="list-style-type: none"> <li>○ Pzr Press &gt; 1829 psig</li> <li>○ Steam Line Press &gt; 640 psig</li> <li>○ Cont. Pressure &lt; 3.4 psig</li> </ul> </li> </ul>
	Crew	<ul style="list-style-type: none"> <li>• Transition to 1BEP ES-0.1 Reactor Trip Response, step 1</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP ES-0.1 and direct operator actions</li> <li>• Request STA to monitor Status Trees</li> </ul>
	RO	<ul style="list-style-type: none"> <li>• Check RCS Average Temperature stable or trending to 557 degrees</li> </ul>
		<ul style="list-style-type: none"> <li>• Check Shutdown reactivity status <ul style="list-style-type: none"> <li>• Rod bottom lights-All Lit</li> <li>• RCPs- Any Running</li> </ul> </li> </ul>
<b>EVALUATOR NOTE: If the crew tripped due to the feedwater transient, then initiate the next event (Large Break LOCA).</b>		

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Scenario No:	<b>NRC 10-3</b>	Event No:	<b>7</b>
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>Pzr level is dropping</li> <li>Annunciator CNMT PRESS HIGH (0-33-D6) is LIT</li> <li>Automatic reactor trip and/or safety injection actuation</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Identify entry conditions for 1BEP-0, "REACTOR TRIP OR SAFETY INJECTION"</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Notify SM of plant status and procedure entry</li> <li>Request evaluation of Emergency Plan conditions</li> <li>Enter/Implement 1BEP-0 and direct operator actions of 1BEP-0</li> </ul>	
	RO	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>Step 1: Verify reactor trip               <ul style="list-style-type: none"> <li>Rod bottom lights - ALL LIT</li> <li>Reactor trip &amp; Bypass breakers - OPEN</li> <li>Neutron flux – DROPPING</li> </ul> </li> </ul>	
	BOP	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>Step 2: Verify Turbine Trip               <ul style="list-style-type: none"> <li>All Turbine throttle valves - CLOSED</li> <li>All Turbine governor valves - CLOSED</li> </ul> </li> <li>Step 3: Verify power to 4KV busses               <ul style="list-style-type: none"> <li>ESF Buses – BOTH ENERGIZED (141 &amp; 142)</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Check SI Status</li> <li>SI First OUT annunciator –LIT</li> <li>SI ACTUATED Permissive Light –LIT</li> <li>SI Equipment – ACTUATED               <ul style="list-style-type: none"> <li>Either SI pump – RUNNING</li> <li>Either CV pump to cold leg isolation valve – OPEN – 1SI8801A/B</li> </ul> </li> <li>Recognize SI Actuated</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Step 5: Direct BOP to perform Attachment B of 1BEP-0</li> </ul>	
		<b>EVALUATOR NOTE: US and RO will continue in 1BEP-0 while BOP is performing Attachment</b>	
		<b>EVALUATOR NOTE: The crew may identify 1A/B RH pumps are not running and may start them before step 6.</b>	
	BOP	<ul style="list-style-type: none"> <li>Verify FW isolated at 1PM04J:               <ul style="list-style-type: none"> <li>FW pumps – TRIPPED.</li> <li>Isolation monitor lights – LIT.</li> <li>FW pumps discharge valves - CLOSED (or going closed) 1FW002A-C.</li> </ul> </li> <li>Verify DGs running at 1PM01J:               <ul style="list-style-type: none"> <li>DGs – BOTH DG running</li> <li>1SX169A &amp; B OPEN.</li> <li>Dispatch operator locally to check operation</li> </ul> </li> <li>Verify Generator Trip at 1PM01J:               <ul style="list-style-type: none"> <li>OCB 3-4 and 4-5 open.</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• PMG output breaker open.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Trip all running HD pumps.</li> <li>• Verify Control Room ventilation aligned for emergency operations at 0PM02J: <ul style="list-style-type: none"> <li>• VC Rad Monitors – LESS THAN HIGH ALARM SETPOINT.</li> <li>• Operating VC train equipment – RUNNING. <ul style="list-style-type: none"> <li>• Supply fan</li> <li>• Return fan</li> <li>• M/U fan</li> <li>• Chilled water pump</li> <li>• Chiller</li> </ul> </li> <li>• Operating VC train dampers – ALIGNED. <ul style="list-style-type: none"> <li>• M/U fan outlet damper – NOT FULLY CLOSED.</li> <li>• VC train M/U filter light – LIT.</li> </ul> </li> <li>• Operating VC train Charcoal Absorber aligned for train B. <ul style="list-style-type: none"> <li>• Bypass damper - CLOSED</li> <li>• Inlet damper - OPEN</li> <li>• Outlet damper - OPEN</li> </ul> </li> <li>• Control Room pressure greater than +0.125 inches water on 0PDI-VC038.</li> <li>• Verify Auxiliary Building ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Two inaccessible filter plenums aligned. <ul style="list-style-type: none"> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> </ul> </li> </ul> </li> <li>• Verify FHB ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Inlet Isolation damper - OPEN</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper – CLOSED</li> </ul> </li> </ul> </li></ul>	
		<b>EVALUATOR NOTE: The remaining steps of Attachment B may be designated to be performed by WEC personnel or the Field Supervisor and extra operators.</b>	
		<ul style="list-style-type: none"> <li>○ Trip all running HD Pumps</li> <li>○ Shutdown FW pump as necessary using BOP FW-2 for a TDFP or BOP FW-8 for the MDFP</li> <li>○ Shutdown unnecessary CD/CB Pumps using BOP CD/CB-2</li> <li>○ Align SX MDCT per BOP SX-T2 <ul style="list-style-type: none"> <li>○ Maintain SX Basin level &gt; 80%</li> </ul> </li> </ul>	

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Scenario No: <b>NRC 10-3</b>		Event No: <b>7</b>
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start		
Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>○ Align NDCT <ul style="list-style-type: none"> <li>○ Verify CW intake bay level within band</li> <li>○ Dispatch operator to locally verify NDCT basin level acceptable</li> <li>○ Align NDCT per BOP CW-25</li> </ul> </li> <li>○ Shutdown all unnecessary CW pumps per BOP CW-2</li> <li>○ Initiate periodic checking of spent fuel cooling <ul style="list-style-type: none"> <li>○ Locally verify Spent fuel pool level is &gt; 420 Elev</li> <li>○ Locally verify SFP temperature stable</li> <li>○ Notify STA of SFP cooling status</li> </ul> </li> <li>○ Notify US that Attachment B is complete</li> </ul>
	RO/ BOP [CT] E-0--J	<ul style="list-style-type: none"> <li>• Step 6: Verify ECCS pumps running <ul style="list-style-type: none"> <li>• Both CV pumps – RUNNING</li> <li>• Both SI pump – RUNNING</li> <li>• Both RH pumps – RUNNING <ul style="list-style-type: none"> <li>• Manually start 1A and/or 1B RH pumps prior to completion of step 6 of 1BEP-0.</li> </ul> </li> </ul> </li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>• Perform the following at 1PM06J: <ul style="list-style-type: none"> <li>• Step 7: Verify RCFCs running in Accident Mode: <ul style="list-style-type: none"> <li>• Group 2 RCFC Accident Mode lights – 4 LIT.</li> </ul> </li> <li>• Step 8: Verify Phase A isolation: <ul style="list-style-type: none"> <li>• Group 3 Cnmt Isol monitor lights – ALL LIT.</li> </ul> </li> <li>• Step 9: Verify Cnmt Vent isolation: <ul style="list-style-type: none"> <li>• Group 6 Cnmt Vent Isol monitor lights – ALL LIT.</li> <li>○ Verify MSIV and Bypass Valves – CLOSED</li> </ul> </li> </ul> </li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>• Step 10: Verify AF system: <ul style="list-style-type: none"> <li>• AF pumps – BOTH AF pumps RUNNING.</li> <li>• AF isolation valves – 1AF13A-H OPEN.</li> <li>• AF flow control valves – 1AF005A-H THROTTLED.</li> </ul> </li> <li>• Step 11: Verify CC pumps – BOTH RUNNING.</li> <li>• Step 12: Verify SX pumps – BOTH RUNNING.</li> <li>• Step 13: Check if Main Steamline Isolation –required: <ul style="list-style-type: none"> <li>○ All S/G pressures &gt; 640 psig (at 1PM04J).</li> <li>○ CNMT pressure &gt; 8.2 psig.</li> </ul> </li> </ul>
		<b>EVALUATOR'S NOTE: CS may have an actuation signal at this time. If it has not, the crew must return to this step to verify proper alignment when CNMT pressure exceeds 20 psig</b>
	BOP/ RO	<ul style="list-style-type: none"> <li>• Step 14: Check if CS is required. <ul style="list-style-type: none"> <li>• CNMT pressure has NOT risen &gt; 20 psig.</li> <li>• Group 6 CS monitor lights – ALL LIT.</li> <li>• Group 6 phase B lights – ALL LIT.</li> <li>• Verify/Stop ALL RCPs (at 1PM05J).</li> </ul> </li> </ul>

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>CS eductor suction flow - &gt; 15 gpm on 1FI-CS013 &amp; 1FI-CS014.</li> <li>CS eductor additive flow - &gt; 5 gpm on 1FI-CS015 &amp; 1FI-CS016.</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Recognize and announce ADVERSE CNMT</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Align SX Towers <ul style="list-style-type: none"> <li>8 Riser valves OPEN</li> <li>All 4 Bypass valves CLOSED</li> </ul> </li> <li>8 fans running in HIGH speed</li> </ul>	
	BOP/ RO	<ul style="list-style-type: none"> <li>Step 15: Verify Total AF flow: <ul style="list-style-type: none"> <li>AF flow &gt; 500 gpm</li> <li>S/G NR levels – NOT rising in an uncontrolled manner</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>Step 16: Verify ECCS valve alignment <ul style="list-style-type: none"> <li>Determine Group 2 Cold Leg Injection monitor lights required for injection - All lit</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>Step 17: Verify ECCS flow <ul style="list-style-type: none"> <li>High Head SI flow &gt;100 gpm (1FI-917)</li> <li>RCS pressure &lt; 1700 psig <ul style="list-style-type: none"> <li>Both (depending on C/S position of 1A SI pp) SI pump discharge flow &gt; 200 gpm</li> </ul> </li> <li>RCS pressure &lt; 325 psig</li> <li>RH flow &gt; 1000 GPM</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Step 18: Check PZR PORVs and SPRAY VALVES at 1PM05J: <ul style="list-style-type: none"> <li>1RY455 &amp; 1RY456 CLOSED</li> <li>PORV isol valves – 1RY8000A &amp; 1RY8000B BOTH ENERGIZED</li> <li>PORV relief path – Both PORVs in AUTO, Both isolation valves – OPEN.</li> <li>Normal PZR Spray Valves CLOSED</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Step 19: Maintain RCS temperature control at 1PM05J: <ul style="list-style-type: none"> <li>Check RCP's – NONE RUNNING.</li> <li>Verify RCS average temperature stable at or trending to 557°F.</li> <li>Throttle AF maintaining &gt;500 GPM until SG minimum level is met</li> <li>MSIVs closed</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Step 20: Check status of RCPs at 1PM05J: <ul style="list-style-type: none"> <li>All RCP's – NONE RUNNING.</li> <li>Any RCPs still running – TRIP All RCPs</li> </ul> </li> </ul>	
	BOP/ RO	<ul style="list-style-type: none"> <li>Step 21: Check if SG secondary pressure boundaries are intact at 1PM04J: <ul style="list-style-type: none"> <li>Check pressure in all SGs: <ul style="list-style-type: none"> <li>None dropping in an uncontrolled manner.</li> <li>None completely depressurized.</li> </ul> </li> </ul> </li> </ul>	
	BOP/ RO	<ul style="list-style-type: none"> <li>Step 22: Check S/G tubes are intact at RM-11 console: <ul style="list-style-type: none"> <li>1PR08J SG Blowdown.</li> <li>1PR27J SJAE/GS.</li> <li>1AR22/23A-D Main steam Lines.</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 23: Determine RCS is NOT intact: <ul style="list-style-type: none"> <li>CNMT area rad monitors &gt; alert alarm setpoint at RM-11 console.</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>○ CNMT pressure &gt; 3.4 psig (1PI-CS 934-937) at 1PM06J.</li> <li>○ CNMT floor drain sump level &gt; 46 inches (1LI-PC002/003) at 1PM06J.</li> </ul>	
	CREW	Transition to 1BEP-1, 'LOSS OF REACTOR OR SECONDARY COOLANT'	
		<b>EVALUATORS NOTE: The crew will transition to 1BEP ES-1.3 when RWST Lo-2 level (&lt;46%) is reached. May occur before step 13. 1BEP ES-1.3 actions are listed in <i>italics</i> below.</b>	
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP-1 and direct operator actions of 1BEP-1</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Step 1: Check Status of RCPs: <ul style="list-style-type: none"> <li>• RCPs – NONE RUNNING</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Step 2: Check if SG secondary pressure boundaries are intact: <ul style="list-style-type: none"> <li>• Check pressure in all SGs: <ul style="list-style-type: none"> <li>• None dropping in an uncontrolled manner</li> <li>• None completely depressurized</li> </ul> </li> </ul> </li> <li>• Step 3: Check intact SG levels <ul style="list-style-type: none"> <li>• SG levels maintained between 10% (31%) and 50%</li> <li>• SG NR levels – NOT rising in an uncontrolled manner</li> </ul> </li> <li>• Step 4: Check secondary radiation normal. <ul style="list-style-type: none"> <li>• Reset Phase A <ul style="list-style-type: none"> <li>• Depress BOTH Phase A Reset Pushbuttons at 1PM06J</li> </ul> </li> <li>• OPEN 1SD005A-D at 1PM11J</li> <li>• At RM-11 or HMI Check secondary rad trends on : <ul style="list-style-type: none"> <li>• 1PR08J SG Blowdown</li> <li>• 1PR27J SJAE/GS</li> <li>• 1AR22/23A-D Main steam lines</li> </ul> </li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Step 5: Check at least ONE PZR PORV relief path available: <ul style="list-style-type: none"> <li>• PORV isol valves – BOTH ENERGIZED</li> <li>• PORV relief path – BOTH PORVs in AUTO, 1RY8000A &amp; B – OPEN</li> </ul> </li> </ul>	
		<b>EVALUATORS Prompt booth to have the STA report a RED PATH exists for 1BFR P-1.</b>	
	US	<ul style="list-style-type: none"> <li>• When informed of the red path on 1BFR-P.1 the U.S. should <ul style="list-style-type: none"> <li>• Inform the SM of the transition to P.1 and request evaluation of the Emergency Plan</li> <li>• Direct crew actions contained below in italic</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• <i>Check RCS pressure greater than 325 psig</i></li> <li>• <i>Check RH flow Greater than 1000 GPM</i></li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Transitions back to 1BEP-1 Step 6</li> <li>• Informs SM of procedure transition and requests evaluation of Emergency Plan.</li> <li>• Direct crew actions beginning at step 6</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Step 6: Check if ECCS flow should be reduced <ul style="list-style-type: none"> <li>• RCS subcooling – NOT acceptable</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Step 7: Check if CS should be stopped <ul style="list-style-type: none"> <li>• Both CS pumps –BOTH RUNNING</li> <li>• Reset CS signal</li> <li>• Check Spray Add Tank Lo-2 lights – NOT lit</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>CS termination criteria NOT met – for LOCA, operating time at least 8 hours</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 8: Check if RH pumps should be stopped <ul style="list-style-type: none"> <li>Reset SI <ul style="list-style-type: none"> <li>Depress BOTH SI Reset Pushbuttons at 1PM06J</li> <li>Verify SI ACTUATED BP light NOT lit at 1PM05J</li> <li>Verify AUTO SI BLOCKED BP light NOT lit at 1PM05J</li> </ul> </li> <li>RCS pressure - NOT &gt; 325 psig &amp; stable</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 10: Check if DGs should be stopped <ul style="list-style-type: none"> <li>Stop DGs and place in standby</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 11: Initiate evaluation of plant status <ul style="list-style-type: none"> <li>Check cold leg recirc capability – BOTH trains available</li> <li>Check AB rad trends normal</li> <li>Obtain samples</li> <li>Evaluate equipment for long term recovery</li> <li>Shutdown chiller on non-operating VC trains</li> <li>Start additional plant equipment as required</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 12: RCS pressure – NOT &gt; 325 PSIG</li> <li>RH pump flow &gt; 1000 GPM</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 13: Check if transfer to 1BEP ES-1.3 required <ul style="list-style-type: none"> <li>RWST level – &lt; 46%</li> <li>ECCS – aligned in injection mode</li> <li>Identify need to perform 1BEP ES-1.3</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>Transition to 1BEP ES-1.3, "Cold Leg Recirculation"</li> <li>Notify SM of procedure entry and request EAL evaluation</li> </ul>	
		<b>EVALUATOR NOTE: If at any time RWST level lowers to 9% any pump taking suction on the RWST must be taken to PTL</b>	
	CREW	<ul style="list-style-type: none"> <li>Check/Open 1CC9473 &amp; B</li> <li>Check 2 CC Pumps – running</li> <li>Open 1CC9412A &amp; B</li> <li>Check CC to RH HX flows - &gt;5000GPM</li> <li>Check CNMT floor water level – at least 13 inches</li> </ul>	
	CREW [CT] ES-1.3 -- A	<ul style="list-style-type: none"> <li>Place control switches for SVAG Valve 480V busses – CLOSE</li> <li>Check both RH pumps – running</li> <li>Check both 1SI8811A &amp; B – OPEN</li> <li>Close both 1SI8812A &amp; B</li> <li>Check any SI pump – running, or both 1SI8801A &amp; B – OPEN</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Align SI and CV pumps for cold leg recirc <ul style="list-style-type: none"> <li>Verify closed: 1CV8111, 1CV8114, 1CV8110, 1CV8116</li> <li>Close 1SI8813, 1SI8814, 1SI8920</li> <li>Close 1RH8716A &amp; B</li> <li>Open 1SI8807A &amp; B, 1SI8924</li> <li>Check 1A RH Pump running</li> <li>Open 1CV8804A</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-3</b>	Event No.	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• <i>Check 1B RH Pump running</i></li> <li>• <i>Open 1SI8804B</i></li> <li>• <i>Start CV pumps and SI pumps as necessary</i></li> </ul>	
		<b>EVALUATOR NOTE: The scenario can be terminated after the first 6 steps of 1BEP ES-1.3 are completed or at lead examiner's discretion.</b>	

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Simulation Facility	<u>Byron</u>	Scenario No.:	Operating Test No. <b>2012 NRC</b>
Examiners:	_____	<b>10-3</b>	<b>Examination</b>
	_____	Applicant:	_____
	_____		SRO
			RO
			BOP
Initial Conditions:	IC-22		
Turnover:	Unit 1 is at 100% power, steady state, equilibrium xenon, MOL. Unit output is 1230 MW. Boron concentration is 888 ppm. Online risk is green. A TV/GV surveillance is scheduled to be performed. The unit will be ramped to 89% power at 3MW/min for the surveillance.		

Event No.	Malf. No.	Event Type*	Event Description
Preload	IMF RP26C IMF RP28C Trgset 1 "zdi1cv129(1).gt.0" Trg 1 "ior zlo1cv1291 on" Trgset 2 "zdi1cv129(1).gt.0" Trg 2" ior zlo1cv1292 off" IOR zlo1cv1292 on IOR zlo1cv1291 off Trgset 3 "zdi1fw012c(1).gt.0" Trg 3 "ramp fwv1fw012c 1 0 7" Trgset 4 "zdi1fw012c(1).gt.0" Trg 4 "dor zlo1fw012c1" Trgset 5 "fwv1fw012c.gt.0.9" Trg 5 "ior zlo1fw012c1 off"		ESF relay failure of 1A RH pump ESF relay failure of 1B RH pump
1		R (RO) (SRO)  N (BOP, SRO)	Ramp down for TV/GV surveillance
2-delete	IMF FW16 1500	I (BOP, SRO)	1PT508 fails high
3-delete	CC 130 caep file	C (RO, SRO)	1CV130 controller temperature element will fail low causing rising letdown temperatures
4	IMF RX10A 0 30	I (RO, SRO) TS (SRO)	1PT 505 fails low
5	None	TS (SRO)	Notified that SI pump failed ASME surveillance
6-delete	<del>Ramp fwv1FW012C 1 1 08:00:00</del>	<del>C (BOP, SRO)</del>	<del>1FW012C recirc fails open</del>
7	MF TH04C 540000	M (all)	LB LOCA terminating in transfer to Cold Leg Recic
8	Pre-load	C (all)	ESF relay failure of 1A & B RH pumps – manual start required

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



## SCENARIO OVERVIEW

Unit 1 is at 100% power, steady state, equilibrium xenon, MOL. Online risk is green. CBD @ 221 steps, and boron concentration is 888 ppm. 1BOSR 3.g.4-1, Turbine Throttle and Governor Valve surveillance is scheduled later on in this shift and requires the unit to be ramped to 89% power at 3MW/min.

**After completing shift turnover and relief**, the crew will ramp the unit to 89% power at 3MW/min

**After the ramp is in-progress**, 1PT 508 will fail high causing feed pump speed to lower. The BOP will respond and manual FW pp speed control will be available. AUTOMATIC operation of Feedwater pump speed control will not be available for the remainder of the scenario.

**After the 1PT-508 failure has been addressed**, 1CC 130 controller will fail 1CC130 closed in AUTOMATIC. The RO will take manual control and restore normal letdown temperature. The divert valve around the CV demins fails to divert automatically and will require the RO to manually divert. Normal letdown temperature indication will be lost.

**After letdown temperature is restored**, turbine impulse pressure channel 1PT-505 will fail low over a 30 second period. Control rods will begin automatically inserting. After recognizing the instrument failure and checking turbine power stable, the RO will place rod control in manual to stop the inward rod motion. 1BOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL, Attachment D, will be implemented. The crew will defeat the failed instrument and the RO will restore Tave – Tref deviation. Technical specification 3.3.1, conditions A and P apply.

**After the PT-505 failure is addressed**, the Unit Supervisor will be called by Engineering stating that after reviewing the previously run ASME surveillance the 1A SI pump has failed the acceptance criteria. The US will evaluate Tech Specs. 3.5.2 Condition A and notify to restore w/in 7 days.

**After the Unit Supervisor has evaluated the failed ASME acceptance criteria associated with the 1A SI pump**, 1FW-012C fails open. The BOP will take manual control and restore normal feedwater flow.

**After normal feedwater flow is restored and the plant stabilized**, a LB LOCA occurs in the 1C hot leg. The crew will respond utilizing 1BEP-0, 1BEP-1 and will eventually transition to 1BEP ES-1.3 Transfer to Cold Leg Recirculation. 1A and B RH pumps will fail to start on the SI signal but start if a manual start is attempted. The cause of the auto start failure is two ESF relay failures. Containment pressure will rise to the phase B actuation setpoint requiring the RCP to be tripped.

**Completion criteria** is selection of and transition to 1BEP ES-1.3, Transfer to Cold Leg Recirculation and completion of the first 7 steps.

### Critical Tasks

1. Manually start at least 1 RH pump.  
(ERG Critical Task number – E-0--H)
2. Swap to Cold Leg Recirc.  
(ERG Critical Task number – ES-1.3--A)

## **SIMULATOR SETUP GUIDE:**

- Verify/perform TQ-BY-201-0113, BYRON TRAINING DEPARTMENT SIMULATOR EXAMINATION SECURITY ACTIONS CHECKLIST.
- Establish the conditions of IC 22, 100% power, MOL, steady state, equilibrium xenon.
- Complete items on Simulator Ready for Training Checklist.
- Verify/remove any Equipment Status Tags and Danger Tags not applicable to the scenario.
- Place simulator in RUN (allow simulator to run during board walk down and turnover).
- Verify RM-11 is on grid 1. Ensure horns are turned ON. Set BA and PW controllers to Rema numbers or 0 and reset.
- Place Turnover and ReMa, 1BGP 100-4T3 and Load Change Instruction Sheet on desk
- Ensure Rema placard is updated
- Ensure rods are in auto.

In **caep NRC 10-3.cae** from thumb drive and verify the following:

- IMF RP26C
- IMF RP28C
- Trgset 1 "zdi1cv129(1).gt.0"
- Trg 1 "ior zlo1cv1291 on"
- Trgset 2 "zdi1cv129(1).gt.0"
- Trg 2" ior zlo1cv1292 off"
- IOR zlo1cv1292 on
- IOR zlo1cv1291 off
- Trgset 3 "zdi1fw012c(1).gt.0"
- Trg 3 "ramp fwv1fw012c 1 0 7"
- Trgset 4 "zdi1fw012c(1).gt.0"
- Trg 4 "dor zlo1fw012c1"
- Trgset 5 "fwv1fw012c.gt.0.9"
- Trg 5 "ior zlo1fw012c1 off"

**Event 1: Ramp to 89% power for TV/GV surveillance**

SM acknowledge start of ramp when notified.  
TSO acknowledge start of ramp when notified.

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**Event 2: Feedwater header pressure 1PT508 fails high.**

**As WEC or Extra NSO**, acknowledge request to trip bistables.

SM Acknowledge entry into TS

SM Acknowledge request for writing IR, performing risk assessment and making appropriate notifications.

**SM is to prompt the crew to stop the ramp and place control systems into automatic (specifically Rod Control) if they have not done this previously. SM states his desire to “stabilize” the plant.**

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**Event 3: Temperature element 1CC130 fails low causing rising letdown temperatures without divert valve 1CV129 bypassing the demineralizers automatically**

Run separate CC130 caep file contained on thumb drive but referenced in the NRC 10-3 caep.

To reset the CC to CNMT Penetration Cooling alarm, **MRF CC50 to RESET**

If Chemistry is contacted state “we will call you when we want to place the demin back on line”.

SM acknowledge the failure, TS entry, on line risk assessment, request for maintenance support, and IR requests.

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**Event 4: Turbine impulse pressure 1PT505 fails low**

**NOTE: Ensure control rods are in AUTO before inserting this MF.**

Insert **IMF RX10A 0 30** to fail 1PT-505 low over a 30 second period.

If lead examiner desires the bistables tripped, participate in brief and perform the following:

- As extra NSO contact Unit 1 (X-2209)
- Insert the following:
  - **MRF RP20 OPEN** (open protection cabinet #1 door)
  - **MRF RX143 TRIP** (trip turbine power P-13 bistable PB505A)
  - **MRF RP20 CLOSE** (close protection cabinet #1 door)

If lead examiner desires the AMS bistables tripped, participate in brief and perform the following:

- As extra NSO contact Unit 1 (X-2209)
- Insert the following:
  - **MRF RX 149 SW12 to TIP1**
  - **MRF RP91 Test-Trip Switch to Test-Trip** (place operating bypass input switch 11 to test-trip)

Acknowledge as Shift Manager the failure, LCOAR entry, on line risk assessment, EAL evaluation, request for maintenance support, and IR request.

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**At Lead Examiners discretion Event 5 (SI pump Tech. Spec.) may be bypassed**

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**Event 5: Unit Supervisor is notified that SI pump has failed ASME acceptance criteria**

SM acknowledge T/S 3.5.2 entry conditions

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**Event 6: 1C FW pump recirc valve (1FW012C) fails open in auto, manual closure will function**

**Ramp FWV1FW012C I I 08:00:00**

**Have trigger ramp 1FW012C closed over 7 seconds (stroke time) when CS taken to close**

If dispatched as EO to investigate 1FW-012C, report valve is responding normally.

SM acknowledge failure, online risk evaluation and IR initiation

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**Event 7: Large Break LOCA with failure of ESF start relays on both RH pumps, requiring manual start, which functions**

**IMF TH04C Large Break LOCA on 1C Hot leg.**

SM acknowledge procedure entry and E Plan evaluations.

**After entering 1BEP-1, at about step 5, the STA notifies the crew that a red path condition exists and recommends 1BFR P.1 be implemented.**

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**Event 8: LOCA**

**1A and 1B RH pump relay failure requiring manual start**

**(In Preload) IMF RP26C and RP28C to prevent SI auto start of 1A and 1B RH pumps.**

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Scenario No:	<b>NRC 10-3</b>	Event No.	1
Event Description: Ramp unit to 89% power			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>Provide candidates with 1BGP 100-4T3, Load Change Instruction Sheet and ReMa</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Implement 1BGP 100-4T3 for a normal ramp <ul style="list-style-type: none"> <li>Instruct RO and BOP to review P, P, L &amp; A of 1BGP 100-4.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>Set up boration IAW ReMa and BOP CV-6</li> <li>Initiate boration using BOP CV-6 or BOP CV-6T1 checklist <ul style="list-style-type: none"> <li>Select STOP on RMCS Makeup Control Switch</li> <li>Select BORATE on RMCS Mode Select Switch</li> <li>Enter desired boration amount in BA totalizer</li> <li>Turn ON RMCS Makeup Control Switch</li> <li>Verify 1CV110B OPEN</li> <li>Verify 1CV110A MODULATING</li> <li>Verify 1AB03P STARTS</li> <li>Verify proper AB flow on 1FR110</li> </ul> </li> <li>Coordinate boration with start of unit ramp by BOP</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>Set up DEH for ramp IAW 1BGP 100-4T3 <ul style="list-style-type: none"> <li>Enter desired ramp rate (from Rema) in the RATE window</li> <li>Press ENTER</li> <li>Enter desired MW output (from Rema) in the REF DEMAND window</li> <li>Press ENTER</li> <li>Press GO/HOLD</li> <li>Press GO and verify load lowers</li> </ul> </li> <li>Initiate ramp</li> <li>Coordinate ramp with boration by RO.</li> </ul>	
<b>EVALUATOR NOTE: When reactivity ramp observation is accomplished and at evaluators cue, the second event will be inserted.</b>			

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Scenario No: <b>NRC 10-3</b>		Event No: <b>2</b>
Event Description: <b>1PT508 fails High</b>		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>• Annunciator SG 1_ FLOW MISMATCH FW FLOW LOW (1-15-A4/B4/C4/D4)</li> <li>• FWRVs (1FW510/20/30/40) opening</li> <li>• 1B/1C FW turbine speed lowering</li> <li>• 1A/B/C/D SG levels lowering</li> </ul>
	RO/BOP	<ul style="list-style-type: none"> <li>• Determine 1PT508 is failing High</li> <li>• Reference BARs as time permits</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Determine all SG levels are lowering</li> <li>• Take manual control of Feed Pump Speed <ul style="list-style-type: none"> <li>○ Master Controller</li> <li>○ Individual Feed Pump Speed Controllers</li> </ul> </li> <li>• Raise feed pump speed to recover S/G levels <ul style="list-style-type: none"> <li>○ Uses alternate pressure indication (1PI-FW015)</li> <li>○ Establishes proper d/p for power level using alternate indication per placard</li> <li>○ Remove controller integral by momentarily going to manual on each FWRV</li> </ul> </li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of PT-508 failure, request IR, and maintenance.</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>• Check SG levels normal and stable</li> </ul>
		<b>NOTE: FW pp speed control will be in manual for the remainder of the scenario</b>
		<b>NOTE: Ensure ramp is stopped and rods are placed back in auto before continuing.</b>
		<b>EVALUATOR NOTE: After the actions for PT-508 are complete and with lead examiner concurrence, enter next event.</b>

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Scenario No:	<b>NRC 10-3</b>	Event No:	3
Event Description:	1TI130 Failed Low		
Time	Position	Applicant's Actions or Behavior	
		<b>EVALUATOR NOTE: When annunciator 1-9-E2 alarms, 1CV129 will not automatically divert to the VCT. If the operators recognize the failure before getting any alarms some steps after taking manual control of 1CV130 may not be performed.</b>	
	CUE	<ul style="list-style-type: none"> <li>• 1TK-130 output signal lowering</li> <li>• Annunciator 1-8-C5, LETDOWN HX OUTLET TEMP HIGH</li> <li>o Annunciator 1-9-E2, LETDOWN TEMP HIGH</li> </ul>	
	RO/BOP	o Check BAR 1-8-C5	
	RO/BOP	• Take manual control of 1CV130 and raise demand	
	RO/BOP	<ul style="list-style-type: none"> <li>• Recognize 1CV129 did not divert to the VCT position</li> <li>• Manually position 1CV129 to VCT position</li> </ul>	
	CREW	o Dispatch EO to locally report letdown temperature	
	RO/BOP	<ul style="list-style-type: none"> <li>• Monitor panels and assist other operator as required</li> <li>o Monitor letdown temperature utilizing VCT temperature indication:1TI-116</li> </ul>	
	US	• Notify SM of failures (1TI-130 and 1CV129) request IRs.	
		<b>NOTE: Crew may isolate letdown, and may also put on excess letdown. Steps for each follow in <i>italics</i>.</b>	
		<i>To isolate letdown</i>	
	US	<ul style="list-style-type: none"> <li>• <i>Close 1CV8149A/B/C</i></li> <li>• <i>Close 1CV459/460</i></li> </ul>	
		<i>To place excess letdown in service per BOP CV-17</i>	
		• <i>Verify/open 1CV8100 &amp; 1CV8112</i>	
		• <i>Open 1CC9437A/B</i>	
		• <i>Verify closed 1CV123</i>	
		• <i>Open 1RC8037A/B/C or D</i>	
		• <i>Open 1CV8153A or B</i>	
		• <i>Open 1CV123 while maintaining outlet temp &lt;165°</i>	
		<b>EVALUATOR NOTE: When High Temp alarm clears or at lead examiner's discretion, continue with next event</b>	

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Scenario No: NRC 10-3		Event No: 4
Event Description: 1PT505 fails low		
Time	Position	Applicant's Actions or Behavior
	CUE	<ul style="list-style-type: none"> <li>• Annunciator 1-14-D1, TAVE CONT DEV HIGH</li> <li>• 1PI-505, first stage pressure, indication lowering.</li> <li>• Control rod inward motion.</li> <li>• 1TR-0412, Auct Tave/Tref recorder, Tref indication dropping</li> <li>• 1SI-412, Rod Speed, indicates 72 step per minute</li> <li>• Steam Dump Actuated light LIT on 1PM02J</li> </ul>
	RO/BOP	<ul style="list-style-type: none"> <li>• Perform the following at 1PM05J:</li> <li>• Determine control rods inserting.</li> <li>• Identify 1PT-505 is failing low.</li> <li>• Report failure to US</li> <li>• Determine turbine power stable at 1PM06J or OWS drop 210.</li> <li>• Place rod bank select switch to manual at 1PM05J to stop uncontrolled rod insertion.</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>• Reference BARs 1-14-D1.</li> <li>• Identify entry conditions for 1BOA INST-2, OPERATION WITH A FAILED INSTRUMENT CHANNEL. <ul style="list-style-type: none"> <li>○ The crew may enter 1BOA ROD-1, Uncontrolled Rod Motion, if they do the steps they will take are italicized below <ul style="list-style-type: none"> <li>• <i>Check turbine power stable</i></li> <li>• <i>Check Rods in manual, if not place in manual</i></li> <li>• <i>Check power range N.I.s operable</i></li> <li>• <i>Check Tave instruments operable</i></li> <li>• <i>Check Turbine first stage pressure operable</i> <ul style="list-style-type: none"> <li>• <i>Go to 1BOA Inst. 2 Operation with a failed Instrument Channel, Attachment D</i></li> </ul> </li> </ul> </li> </ul> </li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Implement 1BOA INST-2 "OPERATION WITH A FAILED INSTRUMENT CHANNEL", Attachment D "TURBINE IMPULSE PRESSURE CHANNEL FAILURE" and direct operator actions of 1BOA INST -2 to establish the following conditions. <ul style="list-style-type: none"> <li>○ Direct BOP/RO to stop load ramp/boration.</li> </ul> </li> </ul>
	RO/BOP	<ul style="list-style-type: none"> <li>• Restore steam dumps. <ul style="list-style-type: none"> <li>• Check C-7 bypass permissive NOT LIT at 1PM05J.</li> </ul> </li> <li>• Perform the following at 1PM02J: <ul style="list-style-type: none"> <li>• Place 1PK-507, MS header pressure controller, in manual.</li> <li>• Lower 1PK-507 demand to 0%.</li> <li>• Place steam dump mode select switch to STM PRESS mode.</li> <li>• Place 1PK-507 in auto.</li> </ul> </li> <li>• Defeat 1PT-505 at 1PM05J</li> </ul>

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Scenario No:	NRC 10-3	Event No:	4
Event Description: 1PT505 fails low			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• Place 1PS505Z, turbine impulse pressure defeat C/S, to DEFEAT 505</li> </ul>	
	US	<ul style="list-style-type: none"> <li>○ Direct or perform pre-job brief per HU-AA-1211 for bistable tripping.</li> </ul>	
	Extra NSO/BOP	<ul style="list-style-type: none"> <li>• Locally trip bistable for PT-505/BOP verifies correct bistable operation at 1PM05J. <ul style="list-style-type: none"> <li>• PB505A - C1-742 BS-1.</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check if rod control can be placed in auto <ul style="list-style-type: none"> <li>• Check C-5 bypass permissive LIT at 1PM05J.</li> <li>• Check Tave/Tref stable and within 1°F. <ul style="list-style-type: none"> <li>• 1TR-412 at 1PM05J</li> <li>• PPC display</li> </ul> </li> </ul> </li> <li>○ Adjust Tave – Tref within 1°F by manually withdrawing control rods at 1PM05J</li> <li>○ Place rod bank select switch in AUTO.</li> </ul>	
	Extra NSO	<ul style="list-style-type: none"> <li>• Check status of AMS system</li> <li>• Operating Bypass switch in OFF locally.</li> </ul>	
	Extra NSO/BOP	<ul style="list-style-type: none"> <li>• Locally trip bistables for AMS/BOP verifies correct bistable operation at 1PM05J.</li> <li>• Place Operating Bypass switch to TIP-1 locally. <ul style="list-style-type: none"> <li>• Place Operating Bypass Input to TEST-TRIP locally.</li> </ul> </li> </ul>	
	RO/BOP	<ul style="list-style-type: none"> <li>• Check P13 interlock <ul style="list-style-type: none"> <li>• Turbine power &gt; 10%</li> <li>• Check P-13 bypass permissive NOT LIT at 1PM05J</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Determine TS 3.3.1 conditions A and P are applicable: <u>Verify interlock is in required state for existing unit conditions in 1 hour or be in MODE 2 in 7 hours.</u></li> <li>• Contact SM to perform risk assessment, initiate IR, and contact maintenance to investigate/correct instrument failure and rod control malfunction</li> </ul>	
		<p><b>NOTE: After the actions for the turbine impulse pressure channel failure are complete and with lead examiners concurrence, insert the next event.</b></p>	

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Scenario No:	<b>NRC 10-3</b>	Event No.	5
Event Description:	Unit Supervisor notified of 1A SI pump ASME surveillance failure		
Time	Position	Applicant's Actions or Behavior	
		<b>NOTE: At Lead Evaluators Discretion this event may be bypassed.</b>	
	CUE	<ul style="list-style-type: none"> <li>US called by Engineering that 1A SI pump ASME surveillance acceptance criteria has NOT been met.</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Refers to TS 3.5.2 determines that <u>Condition A</u> applies: <u>Restore pump to operable w/i 7 days</u></li> <li>Calls SM and informs same of condition. Requests, evaluation for on-line risk, IR initiation and maintenance informed. <ul style="list-style-type: none"> <li>May request BOP/RO to place affected pump in PTL.</li> </ul> </li> </ul>	
		<b>EVALUATOR NOTE: After the Tech. Spec. condition has been determined and with lead examiners concurrence, insert the next event.</b>	

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Scenario <b>NRC 10-3</b>		Event <b>6</b>
No:		No.
Event Description: 1FW012C fails open		
Time	Position	Applicant's Actions or Behavior
		<b>EVALUATOR NOTE: Depending on how far the crew has ramped the unit, will determine if all actions listed below will occur. The automatic actions associated with FW pp NPSH low alarm will only occur if FW pump suction pressure reaches 400 psig</b>
	CUE	<ul style="list-style-type: none"> <li>• Annunciator 1-16-D2, FW PUMP DISC FLOW HIGH</li> <li>○ Annunciator 1-16-E1, FW PUMP NPSH LOW</li> <li>• Annunciator 1-15-A/B/C/D4, SG 1_ FLOW MISMATCH FW FLOW LOW</li> <li>• Open light lit on 1FW012C</li> <li>• FW flow to all SG LOWERING</li> <li>• SG level LOWERING</li> <li>• FWRVs OPENING</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>• Recognizes 1C FW pp recirc valve, 1FW12C, OPEN</li> <li>• Takes 1FW012C control switch to close</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>○ Review BARs</li> <li>• Monitor primary and secondary panels as BOP responds to FW malfunction</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>○ Reviews automatic actions for NPSH LOW annunciator <ul style="list-style-type: none"> <li>○ Standby Cond/Cond Bstr pump STARTS</li> <li>○ 1CD157A/B, GS Cond. Bypass valves, OPEN</li> <li>○ 1CD152, Cond. PPs Recirc Valve CLOSES</li> <li>○ 1HD046A/B, Heater Drain PP Combined Disch. Valves OPEN</li> </ul> </li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM for IR</li> </ul>
		<b>EVALUATOR NOTE: After the actions to close 1FW012C are complete and with lead examiners concurrence, insert the next event.</b>
		<b>EVALUATOR NOTE: If the crew trips the unit based on the FW transient the LOCA will be inserted at step 2 of 1BEP ES 0.1. The first 4 steps of 1BEP-0 along with the transition to ES 0.1 step 2 are included below.</b>
	CUE	<ul style="list-style-type: none"> <li>• Reactor Trip first out annunciator</li> <li>• Rod Bottom Lights</li> <li>• Automatic or manual reactor trip</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>• Identify entry conditions for 1BEP-0, "REACTOR TRIP OR SAFETY INJECTION"</li> </ul>
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP-0 and direct operator actions of 1BEP-0</li> </ul>
	RO	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>• Step 1: Verify reactor trip <ul style="list-style-type: none"> <li>• Rod bottom lights - ALL LIT</li> <li>• Reactor trip &amp; Bypass breakers - OPEN</li> </ul> </li> <li>• Neutron flux – DROPPING</li> </ul>
	BOP	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>• Step 2: Verify Turbine Trip <ul style="list-style-type: none"> <li>• All Turbine throttle valves - CLOSED</li> <li>• All Turbine governor valves - CLOSED</li> </ul> </li> </ul>

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Scenario No:	<b>NRC 10-3</b>	Event No:	6
Event Description: 1FW012C fails open			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• Step 3: Verify power to 4KV busses <ul style="list-style-type: none"> <li>• ESF Buses – BOTH ENERGIZED (141 &amp; 142)</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Check SI Status</li> <li>• SI First OUT annunciator –NOT LIT</li> <li>• SI ACTUATED Permissive Light – NOTLIT</li> <li>• SI Equipment – NOT ACTUATED</li> <li>• Check if SI is required <ul style="list-style-type: none"> <li>○ Pzr Press &gt; 1829 psig</li> <li>○ Steam Line Press &gt; 640 psig</li> <li>○ Cont. Pressure &lt; 3.4 psig</li> </ul> </li> </ul>	
	Crew	<ul style="list-style-type: none"> <li>• Transition to 1BEP ES-0.1 Reactor Trip Response, step 1</li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP ES-0.1 and direct operator actions</li> <li>• Request STA to monitor Status Trees</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Check RCS Average Temperature stable or trending to 557 degrees</li> </ul>	
		<ul style="list-style-type: none"> <li>• Check Shutdown reactivity status <ul style="list-style-type: none"> <li>• Rod bottom lights-All Lit</li> <li>• RCPs- Any Running</li> </ul> </li> </ul>	
<b>EVALUATOR NOTE: If the crew tripped due to the feedwater transient, then initiate the next event (Large Break LOCA).</b>			

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Scenario No:	<b>NRC 10-3</b>	Event No:	<b>7</b>
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
	CUE	<ul style="list-style-type: none"> <li>Pzr level is dropping</li> <li>Annunciator CNMT PRESS HIGH (0-33-D6) is LIT</li> <li>Automatic reactor trip and/or safety injection actuation</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Identify entry conditions for 1BEP-0, "REACTOR TRIP OR SAFETY INJECTION"</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Notify SM of plant status and procedure entry</li> <li>Request evaluation of Emergency Plan conditions</li> <li>Enter/Implement 1BEP-0 and direct operator actions of 1BEP-0</li> </ul>	
	RO	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>Step 1: Verify reactor trip               <ul style="list-style-type: none"> <li>Rod bottom lights - ALL LIT</li> <li>Reactor trip &amp; Bypass breakers - OPEN</li> <li>Neutron flux – DROPPING</li> </ul> </li> </ul>	
	BOP	Perform immediate operator actions of 1BEP-0: <ul style="list-style-type: none"> <li>Step 2: Verify Turbine Trip               <ul style="list-style-type: none"> <li>All Turbine throttle valves - CLOSED</li> <li>All Turbine governor valves - CLOSED</li> </ul> </li> <li>Step 3: Verify power to 4KV busses               <ul style="list-style-type: none"> <li>ESF Buses – BOTH ENERGIZED (141 &amp; 142)</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Check SI Status</li> <li>SI First OUT annunciator –LIT</li> <li>SI ACTUATED Permissive Light –LIT</li> <li>SI Equipment – ACTUATED               <ul style="list-style-type: none"> <li>Either SI pump – RUNNING</li> <li>Either CV pump to cold leg isolation valve – OPEN – 1SI8801A/B</li> </ul> </li> <li>Recognize SI Actuated</li> </ul>	
	US	<ul style="list-style-type: none"> <li>Step 5: Direct BOP to perform Attachment B of 1BEP-0</li> </ul>	
		<b>EVALUATOR NOTE: US and RO will continue in 1BEP-0 while BOP is performing Attachment</b>	
		<b>EVALUATOR NOTE: The crew may identify 1A/B RH pumps are not running and may start them before step 6.</b>	
	BOP	<ul style="list-style-type: none"> <li>Verify FW isolated at 1PM04J:               <ul style="list-style-type: none"> <li>FW pumps – TRIPPED.</li> <li>Isolation monitor lights – LIT.</li> <li>FW pumps discharge valves - CLOSED (or going closed) 1FW002A-C.</li> </ul> </li> <li>Verify DGs running at 1PM01J:               <ul style="list-style-type: none"> <li>DGs – BOTH DG running</li> <li>1SX169A &amp; B OPEN.</li> <li>Dispatch operator locally to check operation</li> </ul> </li> <li>Verify Generator Trip at 1PM01J:               <ul style="list-style-type: none"> <li>OCB 3-4 and 4-5 open.</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• PMG output breaker open.</li> </ul>	
	BOP	<ul style="list-style-type: none"> <li>• Trip all running HD pumps.</li> <li>• Verify Control Room ventilation aligned for emergency operations at 0PM02J: <ul style="list-style-type: none"> <li>• VC Rad Monitors – LESS THAN HIGH ALARM SETPOINT.</li> <li>• Operating VC train equipment – RUNNING. <ul style="list-style-type: none"> <li>• Supply fan</li> <li>• Return fan</li> <li>• M/U fan</li> <li>• Chilled water pump</li> <li>• Chiller</li> </ul> </li> <li>• Operating VC train dampers – ALIGNED. <ul style="list-style-type: none"> <li>• M/U fan outlet damper – NOT FULLY CLOSED.</li> <li>• VC train M/U filter light – LIT.</li> </ul> </li> <li>• Operating VC train Charcoal Absorber aligned for train B. <ul style="list-style-type: none"> <li>• Bypass damper - CLOSED</li> <li>• Inlet damper - OPEN</li> <li>• Outlet damper - OPEN</li> </ul> </li> <li>• Control Room pressure greater than +0.125 inches water on 0PDI-VC038.</li> <li>• Verify Auxiliary Building ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Two inaccessible filter plenums aligned. <ul style="list-style-type: none"> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> <li>• Plenum A or B or C: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper - CLOSED</li> </ul> </li> </ul> </li> </ul> </li> <li>• Verify FHB ventilation aligned at 0PM02J: <ul style="list-style-type: none"> <li>• Fan - RUNNING</li> <li>• Inlet Isolation damper - OPEN</li> <li>• Flow Control damper - OPEN</li> <li>• Bypass Isolation damper – CLOSED</li> </ul> </li> </ul> </li></ul>	
		<b>EVALUATOR NOTE: The remaining steps of Attachment B may be designated to be performed by WEC personnel or the Field Supervisor and extra operators.</b>	
		<ul style="list-style-type: none"> <li>○ Trip all running HD Pumps</li> <li>○ Shutdown FW pump as necessary using BOP FW-2 for a TDFP or BOP FW-8 for the MDFP</li> <li>○ Shutdown unnecessary CD/CB Pumps using BOP CD/CB-2</li> <li>○ Align SX MDCT per BOP SX-T2 <ul style="list-style-type: none"> <li>○ Maintain SX Basin level &gt; 80%</li> </ul> </li> </ul>	

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Scenario No: <b>NRC 10-3</b>		Event No: <b>7</b>
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start		
Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>○ Align NDCT <ul style="list-style-type: none"> <li>○ Verify CW intake bay level within band</li> <li>○ Dispatch operator to locally verify NDCT basin level acceptable</li> <li>○ Align NDCT per BOP CW-25</li> </ul> </li> <li>○ Shutdown all unnecessary CW pumps per BOP CW-2</li> <li>○ Initiate periodic checking of spent fuel cooling <ul style="list-style-type: none"> <li>○ Locally verify Spent fuel pool level is &gt; 420 Elev</li> <li>○ Locally verify SFP temperature stable</li> <li>○ Notify STA of SFP cooling status</li> </ul> </li> <li>○ Notify US that Attachment B is complete</li> </ul>
	RO/ BOP [CT] E-0--J	<ul style="list-style-type: none"> <li>• Step 6: Verify ECCS pumps running <ul style="list-style-type: none"> <li>• Both CV pumps – RUNNING</li> <li>• Both SI pump – RUNNING</li> <li>• Both RH pumps – RUNNING <ul style="list-style-type: none"> <li>• Manually start 1A and/or 1B RH pumps prior to completion of step 6 of 1BEP-0.</li> </ul> </li> </ul> </li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>• Perform the following at 1PM06J: <ul style="list-style-type: none"> <li>• Step 7: Verify RCFCs running in Accident Mode: <ul style="list-style-type: none"> <li>• Group 2 RCFC Accident Mode lights – 4 LIT.</li> </ul> </li> <li>• Step 8: Verify Phase A isolation: <ul style="list-style-type: none"> <li>• Group 3 Cnmt Isol monitor lights – ALL LIT.</li> </ul> </li> <li>• Step 9: Verify Cnmt Vent isolation: <ul style="list-style-type: none"> <li>• Group 6 Cnmt Vent Isol monitor lights – ALL LIT.</li> <li>○ Verify MSIV and Bypass Valves – CLOSED</li> </ul> </li> </ul> </li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>• Step 10: Verify AF system: <ul style="list-style-type: none"> <li>• AF pumps – BOTH AF pumps RUNNING.</li> <li>• AF isolation valves – 1AF13A-H OPEN.</li> <li>• AF flow control valves – 1AF005A-H THROTTLED.</li> </ul> </li> <li>• Step 11: Verify CC pumps – BOTH RUNNING.</li> <li>• Step 12: Verify SX pumps – BOTH RUNNING.</li> <li>• Step 13: Check if Main Steamline Isolation –required: <ul style="list-style-type: none"> <li>○ All S/G pressures &gt; 640 psig (at 1PM04J).</li> <li>○ CNMT pressure &gt; 8.2 psig.</li> </ul> </li> </ul>
		<b>EVALUATOR'S NOTE: CS may have an actuation signal at this time. If it has not, the crew must return to this step to verify proper alignment when CNMT pressure exceeds 20 psig</b>
	BOP/ RO	<ul style="list-style-type: none"> <li>• Step 14: Check if CS is required. <ul style="list-style-type: none"> <li>• CNMT pressure has NOT risen &gt; 20 psig.</li> <li>• Group 6 CS monitor lights – ALL LIT.</li> <li>• Group 6 phase B lights – ALL LIT.</li> <li>• Verify/Stop ALL RCPs (at 1PM05J).</li> </ul> </li> </ul>

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Scenario No: <b>NRC 10-3</b>		Event No: <b>7</b>
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start		
Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>CS eductor suction flow - &gt; 15 gpm on 1FI-CS013 &amp; 1FI-CS014.</li> <li>CS eductor additive flow - &gt; 5 gpm on 1FI-CS015 &amp; 1FI-CS016.</li> </ul>
	CREW	<ul style="list-style-type: none"> <li>Recognize and announce ADVERSE CNMT</li> </ul>
	BOP	<ul style="list-style-type: none"> <li>Align SX Towers <ul style="list-style-type: none"> <li>8 Riser valves OPEN</li> <li>All 4 Bypass valves CLOSED</li> </ul> </li> <li>8 fans running in HIGH speed</li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>Step 15: Verify Total AF flow: <ul style="list-style-type: none"> <li>AF flow &gt; 500 gpm</li> <li>S/G NR levels – NOT rising in an uncontrolled manner</li> </ul> </li> </ul>
	RO/ BOP	<ul style="list-style-type: none"> <li>Step 16: Verify ECCS valve alignment <ul style="list-style-type: none"> <li>Determine Group 2 Cold Leg Injection monitor lights required for injection - All lit</li> </ul> </li> </ul>
	RO/ BOP	<ul style="list-style-type: none"> <li>Step 17: Verify ECCS flow <ul style="list-style-type: none"> <li>High Head SI flow &gt;100 gpm (1FI-917)</li> <li>RCS pressure &lt; 1700 psig <ul style="list-style-type: none"> <li>Both (depending on C/S position of 1A SI pp) SI pump discharge flow &gt; 200 gpm</li> </ul> </li> <li>RCS pressure &lt; 325 psig</li> <li>RH flow &gt; 1000 GPM</li> </ul> </li> </ul>
	RO	<ul style="list-style-type: none"> <li>Step 18: Check PZR PORVs and SPRAY VALVES at 1PM05J: <ul style="list-style-type: none"> <li>1RY455 &amp; 1RY456 CLOSED</li> <li>PORV isol valves – 1RY8000A &amp; 1RY8000B BOTH ENERGIZED</li> <li>PORV relief path – Both PORVs in AUTO, Both isolation valves – OPEN.</li> <li>Normal PZR Spray Valves CLOSED</li> </ul> </li> </ul>
	RO	<ul style="list-style-type: none"> <li>Step 19: Maintain RCS temperature control at 1PM05J: <ul style="list-style-type: none"> <li>Check RCP's – NONE RUNNING.</li> <li>Verify RCS average temperature stable at or trending to 557°F.</li> <li>Throttle AF maintaining &gt;500 GPM until SG minimum level is met</li> <li>MSIVs closed</li> </ul> </li> </ul>
	RO	<ul style="list-style-type: none"> <li>Step 20: Check status of RCPs at 1PM05J: <ul style="list-style-type: none"> <li>All RCP's – NONE RUNNING.</li> <li>Any RCPs still running – TRIP All RCPs</li> </ul> </li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>Step 21: Check if SG secondary pressure boundaries are intact at 1PM04J: <ul style="list-style-type: none"> <li>Check pressure in all SGs: <ul style="list-style-type: none"> <li>None dropping in an uncontrolled manner.</li> <li>None completely depressurized.</li> </ul> </li> </ul> </li> </ul>
	BOP/ RO	<ul style="list-style-type: none"> <li>Step 22: Check S/G tubes are intact at RM-11 console: <ul style="list-style-type: none"> <li>1PR08J SG Blowdown.</li> <li>1PR27J SJAE/GS.</li> <li>1AR22/23A-D Main steam Lines.</li> </ul> </li> </ul>
	CREW	<ul style="list-style-type: none"> <li>Step 23: Determine RCS is NOT intact: <ul style="list-style-type: none"> <li>CNMT area rad monitors &gt; alert alarm setpoint at RM-11 console.</li> </ul> </li> </ul>

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>○ CNMT pressure &gt; 3.4 psig (1PI-CS 934-937) at 1PM06J.</li> <li>○ CNMT floor drain sump level &gt; 46 inches (1LI-PC002/003) at 1PM06J.</li> </ul>	
	CREW	Transition to 1BEP-1, 'LOSS OF REACTOR OR SECONDARY COOLANT'	
		<b>EVALUATORS NOTE: The crew will transition to 1BEP ES-1.3 when RWST Lo-2 level (&lt;46%) is reached. May occur before step 13. 1BEP ES-1.3 actions are listed in <i>italics</i> below.</b>	
	US	<ul style="list-style-type: none"> <li>• Notify SM of plant status and procedure entry</li> <li>• Request evaluation of Emergency Plan conditions</li> <li>• Enter/Implement 1BEP-1 and direct operator actions of 1BEP-1</li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Step 1: Check Status of RCPs: <ul style="list-style-type: none"> <li>• RCPs – NONE RUNNING</li> </ul> </li> </ul>	
	RO/ BOP	<ul style="list-style-type: none"> <li>• Step 2: Check if SG secondary pressure boundaries are intact: <ul style="list-style-type: none"> <li>• Check pressure in all SGs: <ul style="list-style-type: none"> <li>• None dropping in an uncontrolled manner</li> <li>• None completely depressurized</li> </ul> </li> </ul> </li> <li>• Step 3: Check intact SG levels <ul style="list-style-type: none"> <li>• SG levels maintained between 10% (31%) and 50%</li> <li>• SG NR levels – NOT rising in an uncontrolled manner</li> </ul> </li> <li>• Step 4: Check secondary radiation normal. <ul style="list-style-type: none"> <li>• Reset Phase A <ul style="list-style-type: none"> <li>• Depress BOTH Phase A Reset Pushbuttons at 1PM06J</li> </ul> </li> <li>• OPEN 1SD005A-D at 1PM11J</li> <li>• At RM-11 or HMI Check secondary rad trends on : <ul style="list-style-type: none"> <li>• 1PR08J SG Blowdown</li> <li>• 1PR27J SJAE/GS</li> <li>• 1AR22/23A-D Main steam lines</li> </ul> </li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• Step 5: Check at least ONE PZR PORV relief path available: <ul style="list-style-type: none"> <li>• PORV isol valves – BOTH ENERGIZED</li> <li>• PORV relief path – BOTH PORVs in AUTO, 1RY8000A &amp; B – OPEN</li> </ul> </li> </ul>	
		<b>EVALUATORS Prompt booth to have the STA report a RED PATH exists for 1BFR P-1.</b>	
	US	<ul style="list-style-type: none"> <li>• When informed of the red path on 1BFR-P.1 the U.S. should <ul style="list-style-type: none"> <li>• Inform the SM of the transition to P.1 and request evaluation of the Emergency Plan</li> <li>• Direct crew actions contained below in italic</li> </ul> </li> </ul>	
	RO	<ul style="list-style-type: none"> <li>• <i>Check RCS pressure greater than 325 psig</i></li> <li>• <i>Check RH flow Greater than 1000 GPM</i></li> </ul>	
	US	<ul style="list-style-type: none"> <li>• Transitions back to 1BEP-1 Step 6</li> <li>• Informs SM of procedure transition and requests evaluation of Emergency Plan.</li> <li>• Direct crew actions beginning at step 6</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Step 6: Check if ECCS flow should be reduced <ul style="list-style-type: none"> <li>• RCS subcooling – NOT acceptable</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>• Step 7: Check if CS should be stopped <ul style="list-style-type: none"> <li>• Both CS pumps –BOTH RUNNING</li> <li>• Reset CS signal</li> <li>• Check Spray Add Tank Lo-2 lights – NOT lit</li> </ul> </li> </ul>	

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Scenario No:	<b>NRC 10-3</b>	Event No:	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>CS termination criteria NOT met – for LOCA, operating time at least 8 hours</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 8: Check if RH pumps should be stopped <ul style="list-style-type: none"> <li>Reset SI <ul style="list-style-type: none"> <li>Depress BOTH SI Reset Pushbuttons at 1PM06J</li> <li>Verify SI ACTUATED BP light NOT lit at 1PM05J</li> <li>Verify AUTO SI BLOCKED BP light NOT lit at 1PM05J</li> </ul> </li> <li>RCS pressure - NOT &gt; 325 psig &amp; stable</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 10: Check if DGs should be stopped <ul style="list-style-type: none"> <li>Stop DGs and place in standby</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 11: Initiate evaluation of plant status <ul style="list-style-type: none"> <li>Check cold leg recirc capability – BOTH trains available</li> <li>Check AB rad trends normal</li> <li>Obtain samples</li> <li>Evaluate equipment for long term recovery</li> <li>Shutdown chiller on non-operating VC trains</li> <li>Start additional plant equipment as required</li> </ul> </li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 12: RCS pressure – NOT &gt; 325 PSIG</li> <li>RH pump flow &gt; 1000 GPM</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Step 13: Check if transfer to 1BEP ES-1.3 required <ul style="list-style-type: none"> <li>RWST level – &lt; 46%</li> <li>ECCS – aligned in injection mode</li> <li>Identify need to perform 1BEP ES-1.3</li> </ul> </li> </ul>	
	US	<ul style="list-style-type: none"> <li>Transition to 1BEP ES-1.3, "Cold Leg Recirculation"</li> <li>Notify SM of procedure entry and request EAL evaluation</li> </ul>	
		<b>EVALUATOR NOTE: If at any time RWST level lowers to 9% any pump taking suction on the RWST must be taken to PTL</b>	
	CREW	<ul style="list-style-type: none"> <li>Check/Open 1CC9473 &amp; B</li> <li>Check 2 CC Pumps – running</li> <li>Open 1CC9412A &amp; B</li> <li>Check CC to RH HX flows - &gt;5000GPM</li> <li>Check CNMT floor water level – at least 13 inches</li> </ul>	
	CREW [CT] ES-1.3 -- A	<ul style="list-style-type: none"> <li>Place control switches for SVAG Valve 480V busses – CLOSE</li> <li>Check both RH pumps – running</li> <li>Check both 1SI8811A &amp; B – OPEN</li> <li>Close both 1SI8812A &amp; B</li> <li>Check any SI pump – running, or both 1SI8801A &amp; B – OPEN</li> </ul>	
	CREW	<ul style="list-style-type: none"> <li>Align SI and CV pumps for cold leg recirc <ul style="list-style-type: none"> <li>Verify closed: 1CV8111, 1CV8114, 1CV8110, 1CV8116</li> <li>Close 1SI8813, 1SI8814, 1SI8920</li> <li>Close 1RH8716A &amp; B</li> <li>Open 1SI8807A &amp; B, 1SI8924</li> <li>Check 1A RH Pump running</li> <li>Open 1CV8804A</li> </ul> </li> </ul>	

Comments: \_\_\_\_\_

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Scenario No:	<b>NRC 10-3</b>	Event No.	7
Event Description: Large Break LOCA with failure of 1A and B RH pumps to automatically start			
Time	Position	Applicant's Actions or Behavior	
		<ul style="list-style-type: none"> <li>• <i>Check 1B RH Pump running</i></li> <li>• <i>Open 1SI8804B</i></li> <li>• <i>Start CV pumps and SI pumps as necessary</i></li> </ul>	
		<b>EVALUATOR NOTE: The scenario can be terminated after the first 6 steps of 1BEP ES-1.3 are completed or at lead examiner's discretion.</b>	

Comments: \_\_\_\_\_

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