

## Appendix D

## Scenario Outline

## Form ES-D-1

Facility:	St. Lucie	Scenario No.:	1	Op-Test No.:	L-19-1
Examiners:			Operators:	Unit Supervisor:	
				BRCO:	
				DRCO:	
Initial Conditions:	2-3% power, MOC, no scheduled surveillances, all Mode 1 preps complete				
Turnover:	2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green. A Reactor Start-up is in progress following a Forced Outage for Feed Water control Valve issues, on main feedwater and SBCS, raise reactor power to 10-12%.				
Critical Tasks:	<p>1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. Take action to close PCV-1100E prior to reaching RPS setpoint for reactor trip.</p> <p>2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY-Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. Actuation of "B" Train of Containment Spray within 15 minutes of entering 2-EOP-03 to prevent unnecessary entry into Functional Recovery procedure and escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators, or 15 minute post CSAS if after 2-EOP-03 entry.</p>				

Event No.	Malf. No.	Event Type*	Event Description
1		R/ATC /SRO	Raise Power to 10-15%
2	1	C/ATC BOP/SRO TS/SRO	<b>Malf:</b> PCV-1100E fails open <b>Action:</b> Select PCV-1100F <b>T.S.</b> 3.2.5 DNB <b>CT-1:</b> Failure to control RCS pressure will result in reactor trip
3	2	I/BOP/SRO TS/SRO	<b>Malf:</b> RWT LEVEL LIS-07-2C fails Low <b>Action:</b> Bypass ESFAS bistables <b>T.S.</b> 3.3.2
4	3	I/ATC/SRO	<b>Malf:</b> PIC-2201 LD Pressure Controller Auto fails <b>Action:</b> Take <b>MANUAL</b> control of PIC-2201
5	4	C/ATC N/BOP/SRO TS/SRO	<b>Malf:</b> RCS leakage develops (≈20 gpm) <b>Action:</b> Quantify leakage and determine TS limit for RCS unidentified leak rate is exceeded and Shutdown the plant <b>T.S.</b> 3.4.6.2
6	5	M/ALL	<b>Malf:</b> LOCA Ramped in over 6 minutes <b>Action:</b> Trip RX, Perform 2-EOP-01, Diagnose LOCA and enter 2-EOP-03 On RX Trip 2-HVS-1A Containment Fan Cooler trips unrecoverable, On CSAS 2A CS pump shaft seizes
7	6	C/ATC/SRO	<b>Malf:</b> PCV-1100F fails open on RX trip <b>Action:</b> SECURE 2B1 RCP
8	7	C/BOP/SRO	<b>Malf:</b> A CSAS pump trips on high amps, B Train of CSAS fails to auto actuate <b>Action:</b> Manually actuate B Train of CSAS to get adequate flow. <b>CT-2</b> MANUALLY ACTUATE SAFEGUARDS EQUIPMENT

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

**SITE:** ST. LUCIE

**Revision #:** 0

**LMS ID:** N/A

**LMS Rev. Date:** N/A

**SEG TITLE:** L-19-1 SCENARIO 1

**SEG TYPE:** ☐ Training ☒ Evaluation

**PROGRAM:** ☐ LOCT ☒ LOIT ☐ Other:

**DURATION:** 90 minutes

**Developed by:**

\_\_\_\_\_  
Instructor/Developer

\_\_\_\_\_  
Date

**Reviewed by:**

\_\_\_\_\_  
Instructor (Instructional Review)

\_\_\_\_\_  
Date

**Validated by:**

\_\_\_\_\_  
SME (Technical Review)

\_\_\_\_\_  
Date

**Approved by:**

\_\_\_\_\_  
Training Supervision

\_\_\_\_\_  
Date

**Approved by:**

\_\_\_\_\_  
Training Program Owner (Line)

\_\_\_\_\_  
Date

**Scenario Outline**

Facility: St. Lucie Scenario No.: 1 Op-Test No.: L-19-1

Examiners: \_\_\_\_\_ Operators: SRO:  
\_\_\_\_\_ ATC:  
\_\_\_\_\_ BOP:

Initial Conditions: 2-3% power, MOC, no scheduled surveillances, all Mode 1 preps complete

Turnover: 2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green. A Reactor Start-up is in progress following a Forced Outage for Feed Water control Valve issues, on main feedwater and SBSCS, raise reactor power to 10-12%.

Critical Tasks: 1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. Take action to close PCV-1100E prior to reaching RPS setpoint for reactor trip.  
2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY-Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. Actuation of "B" Train of Containment Spray within 15 minutes of entering 2-EOP-03 to prevent unnecessary entry into Functional Recovery procedure and escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators, or 15 minute post CSAS if after 2-EOP-03 entry.

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3	2	I/BOP/SRO TS/SRO	<b>Malf:</b> RWT LEVEL LIS-07-2C fails Low <b>Action:</b> Bypass ESFAS bistables <b>T.S.</b> 3.3.2
4	3	I/ATC/SRO	<b>Malf:</b> PIC-2201 LD Pressure Controller Auto fails <b>Action:</b> Take <b>MANUAL</b> control of PIC-2201
5	4	C/ATC N/BOP/SRO TS/SRO	<b>Malf:</b> RCS leakage develops (~20 gpm) <b>Action:</b> Quantify leakage and determine TS limit for RCS unidentified leak rate is exceeded and Shutdown the plant <b>T.S.</b> 3.4.6.2
6	5	M/ALL	<b>Malf:</b> LOCA Ramped in over 6 minutes <b>Action:</b> Trip RX, Perform 2-EOP-01, Diagnose LOCA and enter 2-EOP-03 On RX Trip 2-HVS-1A Containment Fan Cooler trips unrecoverable, On CSAS 2A CS pump shaft seizes
7	6	C/ATC/SRO	<b>Malf:</b> PCV-1100F fails open on RX trip <b>Action:</b> SECURE 2B1 RCP
8	7	C/BOP/SRO	<b>Malf:</b> A CSAS pump trips on high amps, B Train of CSAS fails to auto actuate <b>Action:</b> Manually actuate B Train of CSAS to get adequate flow. <b>CT-2</b> MANUALLY ACTUATE SAFEGUARDS EQUIPMENT

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

## SIMULATOR EXERCISE GUIDE REQUIREMENTS

**Terminal Objective**      Given specific plant conditions, the students will be able to mitigate events in accordance with plant procedures.

**Enabling Objectives:**      None

**Prerequisites:**            1. Simulator  
2. Applicants enrolled in Initial License Program

**Training Resources:**      1. Floor Instructor as Shift Technical Advisor  
2. Simulator Booth Operator  
3. NRC Evaluators

**References:**                1. 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1  
2. 2-AOP-01.10, Pressurizer Pressure and Level  
3. 2-AOP-99.01, Loss of Tech Spec Instrumentation  
4. 2-AOP-02.03, Charging and Letdown  
5. 2-AOP-01.08, RCS Leakage Abnormal Operations  
6. 2-AOP-22.01, Rapid Downpower  
7. 2-EOP-01, Standard Post Trip Actions  
8. 2-EOP-03, Loss of Coolant Accident  
9. 2-EOP-99, Appendices / Figures / Tables /Data Sheets  
10. Unit-2 Technical Specifications

**Protected Content:**      **NONE**

**Evaluation Method:**      Simulator performance will be evaluated in accordance with NUREG 1021 rev. 11.

**Risk Significant Operator Actions:**

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions made to the material after initial approval.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				REVIEWER	DATE



### **L-19-1 NRC SCENARIO 1 OVERVIEW/SEQUENCE OF EVENTS**

The crew will assume the shift at 2-3% power with direction to raise power to 10-12% using 2-GOP-201 Reactor Plant Start-up Mode2-Mode1 starting at step 4.3.10.b.

After the required power change has been observed by the evaluators, PCV-1100E Pressurizer Spray Control valve opens causing RCS pressure to lower rapidly. The crew will select PCV-1100F using the Spray valve selector switch to force PCV-1100E closed, they will then enter 2-AOP-01.10 Pressurizer Pressure and Level and enter Tech Spec 3.2.5 for DNB. This event is a Critical task in that the crew will be required to close PCV-1100 and RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points.

When the plant has been stabilized RWT Level instrument LIS-07-2C fails Low, the crew will identify the failure and enter 2-AOP-99.01 Loss of Tech Spec Instrumentation and bypass the required channels of ESFAS and enter Tech Spec 3.3.2.

After the crew brief, Letdown Pressure Controller PIC-2201 fails to operate in auto mode the crew will place PIC-2201 in manual mode, manually control letdown pressure and return to pre-failure values, enter 2-AOP-01.10 Pressurizer Pressure and Level.

When the plant has been stabilized an RCS leak of approximately 20 gpm will start, the crew will identify the failure, Quantify leakage, enter 2-AOP-01.08 RCS Leakage Abnormal and determine the Tech Spec limit for RCS unidentified leakage is exceeded. The SRO will recognize the current power level limits the crews options relating to reducing power and will direct a reactor trip or enter 2-AOP-22.01 Rapid Downpower to proceed to the step requiring a reactor trip to conform with Tech Spec 3.4.6.2 for RCS Leakage

After the reactor trip a LOCA will Ramp in over 6 minutes and HVS-1A will trip, the crew will perform 2-EOP-01 Standard Post Trip Action and transition to 2-EOP-03 LOCA

Upon the Reactor trip PCV-1100F fails open causing rapid RCS depressurization, the crew will identify the failure and will be required to secure the 2B1 RCP to prevent any further RCS depressurization.

Upon Containment Spray Actuation the A CSAS pump will trip on high amps , the B Train of CSAS will fails to auto actuate requiring the crew to Manually actuate B Train of CSAS to get adequate Containment Spray flow This event is a Critical task in that the crew will be required to INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY, Actuation of "B" Train of Containment Spray within 15 minutes of entering 2-EOP-03 to prevent unnecessary entry into Functional Recovery procedure and escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators, or 15 minute post CSAS if after 2-EOP-03 entry.

**Procedures Used**
**Tech Specs Entered**

- 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1
- 2-AOP-01.10, Pressurizer Pressure and Level
- 2-AOP-99.01, Loss of Tech Spec Instrumentation
- 2-AOP-02.03, Charging and Letdown
- 2-AOP-01.08, RCS Leakage Abnormal Operations
- 2-AOP-22.01, Rapid Downpower
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-03, Loss of Coolant Accident
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets
- Unit-2 Technical Specifications

- 3.2.5
- 3.3.2
- 3.4.6.2

**Scenario Setup and Booth Operator Instructions:**


- **ENSURE** Examination Security has been established.
- **PROVIDE** a copy of 2-GOP-201 marked up to step 4.3.10b. Give reactivity turnover to crew to allow them to pre-brief before they come in the simulator.
- **ENSURE** the Simulator is unloaded
- **ENSURE** IC #205 from Exam Flash drive is loaded as follows:
  - **Open**, folder L-19-1 NRC SCENARIO ICs
  - **Copy**, CY18B#205.ic and CY18B#205.rlp
  - **Open**, IC folder on simulator operator station desk top
  - **Paste**, CY18B#205.ic and CY18B#205.rlp into IC Master
  - **Open**, folder L-19-1 NRC SCENARIO ICs
  - **Copy**, xr205.dat
  - **Open**, IC folder on simulator operator station desk top
  - **Paste**, xr205.dat into IC Data
- **ENSURE** Lesson for SCENARIO 1 from Exam Flash drive is loaded as follows:
  - **Open**, folder L-19-1 S-1 Isn
  - **Copy**, L-19-1 S-1.Isn
  - **Open**, Lessons folder on simulator operator station desk top
  - **Paste**, L-19-1 S-1.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#205
  - **RUN** the Simulator
  - Place the 2A Screen wash pump off
  - Place a Clearance tag on the 2A Screen wash pump
    - Start the 2B Screen wash pump
  - **ENSURE** the A Train Protected sign and OLRM sign are placed RTGB-203.
  - **ENSURE** the GREEN OLRM sign is placed RTGB-203.
  - **ENSURE** the CHEMISTRY sheet for MOC is placed on the Unit Supervisor Desk.
  - **FREEZE** the simulator
- **OPEN** and **EXECUTE** L-19-1 S- 1.Isn
- **RUN** the Simulator and allow for stabilization
- **FREEZE** the simulator
- **UNFREEZE** the simulator prior to the candidates entering the simulator

**Post scenario simulator restoration:**

- **ENSURE** L-19-1 NRC SCENARIO 1.Isn are deleted from Simulator in accordance with Attachment 2 of Training Department Policy PSL-TRNG 142

**BRIEF / TURNOVER INFORMATION**


- Conduct simulator crew pre-scenario brief using TR-AA-L-19-10-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-L-19-10-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached

		L-19-1 NRC EXAM SCENARIO 1 REV. 0					<b>SEG</b> Page 8 of 57	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	1	Event #	1		
Event Description:		Raise Power to 10-12%						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>None</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If the crew is not moving forward with the power escalation, call as the SM and prompt to continue raising power to 10 – 12%.</li> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> <li>If calls are made for NPO support due to alarms on the 2A feedwater pump, then report back in 5 minutes that are no issues with the 2A feedwater pump.</li> </ul>			
<b>Indications:</b> <b>Annunciators: L-12 SBCS AWP, G-10 2A Feedwater Pump trouble, K-17 Tavg/Tref Delta</b>			
2-GOP-201		The following actions are taken from 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1	
<b>4.6 Raising Reactor power</b>			
	SRO	<b>PERFORMS 4.3.10.b RAISE and MAINTAIN reactor power between 10% and 12%</b> RAISE reactor power at a sustained startup rate of less than .5 DPM	<i><b>SRO DIRECTS the ATC to RAISE reactor power at a sustained startup rate of less than .5 DPM</b></i>
	ATC		<i><b>ATC starts dilution IAW 2-NOP-02.24</b></i> <i><b>ATC Raises power using CEA motion on the lead group</b></i> <i><b>ATC Resets Variable High Power setpoints during the uppower</b></i>
2-NOP-02.24		The following actions are taken from 2-NOP-02.24, Section 4.2, Boron Concentration Control	
<p style="text-align: center;"><u><b>NOTE</b></u></p> <p><input type="checkbox"/> An Operator Aid has been placed at RTGB-205 PNL “M”. Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Operator Aid placard.</p> <p><input type="checkbox"/> Accuracy of FIC-2210X, PMW FLOW, is plus or minus 0.5 gpm, and the recommended minimum flow rate is 2 gpm. (Section 7.1.2, Developmental Reference 12)</p> <p><input type="checkbox"/> IF FCV-2210X, REACTOR MAKEUP, does NOT OPEN, THEN PERFORM Attachment 2, FIC-2210 X/Y Controllers Hard Manual Operating Instructions to adjust flow.</p> <p><input type="checkbox"/> Pressing M as needed will keep display for FIC-2210X illuminated.</p>			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	1	
Event Description:		Raise Power to 10-12%				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	ATC	<b>1. REVIEW</b> Section 2.0, PRECAUTIONS AND LIMITATIONS and Section 3.0, PREREQUISITES AND INITIAL CONDITIONS, at least once per shift.	<b>ATC REVIEWS</b> precautions and limitations.
	ATC	<b>2. ENSURE</b> DCS calorimetric power is less than 100.00%. (Section 7.1.3, Management Directive 2)	<b>ATC ACKNOWLEDGES</b> this step is N/A.
	ATC	<b>3. DETERMINE</b> the volume of primary water to be added.	<b>ATC DETERMINES</b> the volume of primary water to be added from reactivity plan.
	ATC	<b>4. IF</b> performing a constant dilution, <b>THEN DETERMINE</b> and <b>RECORD</b> the primary water flow rate.	<b>ATC DETERMINES</b> and <b>RECORDS</b> the primary water flow rate from the reactivity plan.
	ATC	<b>5. ENSURE</b> FQI-2210X, WATER FLOW TOTALIZER, is RESET to zero	<b>ATC ENSURES</b> FQI-2210X, WATER FLOW TOTALIZER, is RESET to zero
	ATC	<b>6. ENSURE</b> MAKEUP MODE SELECTOR switch is in MANUAL.	<b>ATC ENSURES</b> MAKEUP MODE SELECTOR switch is in MANUAL.
	ATC	<b>7. ENSURE</b> FIC-2210X, PMW FLOW, is in MANUAL AND controller output is at MINIMUM.	<b>ATC ENSURES</b> FIC-2210X, PMW FLOW, is in MANUAL AND controller output is at MINIMUM.
	ATC	<b>8. ENSURE</b> FCV-2210Y, BORIC ACID, control switch is CLOSED.	<b>ATC ENSURES</b> FCV-2210Y, BORIC ACID, control switch is CLOSED.
	ATC	<b>9. PLACE</b> FCV-2210X, REACTOR MAKEUP, control switch in AUTO.	<b>ATC PLACES</b> FCV-2210X, REACTOR MAKEUP, control switch in AUTO.
	ATC	<b>10. IF</b> diluting to the VCT, <b>THEN OPEN</b> V2512, REACTOR MAKEUP WATER STOP VLV.	<b>ATC RECOGNIZES</b> this step is N/A.
	ATC	<b>11. IF</b> diluting to the charging pump suction, <b>THEN OPEN</b> V2525, BORON LOAD CONTROL VALVE.	<b>ATC OPENS</b> V2525, BORON LOAD CONTROL VALVE.

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>				<b>SEG</b> Page 10 of 57	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	1	Event #	1
Event Description:		Raise Power to 10-12%					
Time	Position	Procedure Step				Applicant's Actions or Behavior	
	Competency						

**CAUTION**

**Allowing PMW flow rate to exceed the running charging pump(s) capacity while using V2525, BORON LOAD CONTROL VALVE may cause the VCT relief valve to lift.**

	ATC	<b>12.</b> IF using V2525, BORON LOAD CONTROL VALVE, THEN <b>ENSURE</b> the flow rate on FIA-2212, CHARGING TO REGEN HX, for the number of running charging pumps is <b>NOT</b> exceeded.	<b>ATC ENSURES</b> the flow rate on FIA-2212, CHARGING TO REGEN HX, for the number of running charging pumps is <b>NOT</b> exceeded.
	ATC	<b>13. ADJUST</b> FIC-2210X, PMW FLOW, in AUTO or MANUAL to provide flow rate based on volume of primary water to be added.	<b>ATC ADJUSTS</b> FIC-2210X, PMW FLOW, in MANUAL to provide flow rate based on volume of primary water to be added.
<b>2-GOP-201</b>		<b>The following actions are taken from 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1</b>	
<b>4.6 Raising Reactor power</b>			
	SRO	<b>Declares MODE 1 at 5% power</b>	<b>SRO Determines</b> Reactor power is > 5% and declares Mode 1 entry <b>SRO DIRECTS</b> the <b>BOP</b> to announce Mode 1 entry over Gaitronics
	SRO	<b>PERFORMS STEP 4.6.9</b> STABILIZE reactor power indicated on the higher reading of RPS Nuclear or Delta-T power by one of the following: IF AFW is in service, THEN MAINTAIN reactor power between 10% and 12%	<b>SRO DIRECTS</b> the <b>ATC</b> to <b>MAINTAIN</b> reactor power between 10% and 12% indicated on the higher reading of RPS Nuclear or Delta-T power
<b>After required Power change has been observed at the Lead Evaluator's direction, PROCEED to Event 2.</b>			

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>				<b>SEG</b> Page 11 of 57	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	1	Event #	2	
Event Description:		<b>PCV-1100E Pressurizer Spray Control valve ramps open</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


T.S.	The following DNB-related parameters shall be maintained within the limits:
3.2.5 DNB	<b>b. Pressurizer Pressure*</b> as shown on Table 3.2-2 of the COLR, (2225 psia) <b>ACTION:</b> Restore parameter within limits within 2 hours or reduce THERMAL POWER to < 5% of RATED THERMAL POWER within the next 4 hours
CT-1	<b>RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION</b> – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. Take action to close PCV-1100E prior to reaching RPS setpoint for reactor trip.

<b>Note to Evaluator:</b> PCV-1100E FAILS OPEN is a malfunction initiated from the Booth upon direction by the evaluator.			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 2: Spray Valve PCV-1100E Fails Open</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>EXAMINER:</b> The crew may elect to stop the dilution when PCV-1100E fails open.			
<b>Indications:</b> PCV-1100E indicates full open, pressurizer Pressure lowering rapidly <b>Annunciators:</b> Potential H-9/10, PZR CHANNEL PRESS HIGH/LOW (2100psia)			
	ATC/BOP		<b>IDENTIFIES</b> main spray valve PCV-1100E is open and RCS pressure lowering rapidly, announces the failure to the SRO and states intended actions of taking Spray valve selector switch to 1100F position
	SRO		<b>DIRECTS</b> the ATC the place Spray valve selector switch to PCV-1100F position and verify PCV-1100E closes
	BOP		<b>EVALUATES</b> plant for being stable
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	SRO		<b>ANNOUNCES</b> and enters 2-AOP-01.10, Pressurizer Pressure and Level
	SRO		<b>DIRECTS</b> actions of 2-AOP-01.10, Pressurizer Pressure and Level
<b>2-AOP-01.10</b>		<b>The following actions are taken from 2-AOP-01.10, Pressurizer Pressure and Level</b>	
<b>4.1 Immediate Operator Actions:</b>			
	ATC	<b>1. IF</b> at Normal Operating Pressure, THEN VERIFY PIC-1100X(Y), PRESSURIZER PRESSURE, stable	<b>1.1 CONTINGENCY ACTIONS</b> N/A




Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	2	
Event Description:		<b>PCV-1100E Pressurizer Spray Control valve ramps open</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	ATC	<b>2. VERIFY</b> selected Pressurizer pressure control channel PIC-1100X(Y), PRESSURE, NORMAL	<b>2.1 CONTINGENCY ACTIONS</b> N/A
	SRO	<b>3. IF</b> either of the following conditions are met: <ul style="list-style-type: none"> <li>Pressurizer pressure is less than 2275 psia</li> <li>Pressurizer pressure is lowering uncontrollably</li> </ul> <b>THEN VERIFY</b> spray valves CLOSED: <ul style="list-style-type: none"> <li>PCV-1100E, SPRAY VALVE 2B2, status lights</li> <li>PCV-1100F, SPRAY VALVE 2B1, status lights</li> <li>TIA-1103, 2B1 SPRAY LINE (Water Temperature), and TIA-1104, 2B2 SPRAY LINE (Water Temperature), indicate approximately equal temperatures</li> </ul>	<b>3.1 CONTINGENCY ACTIONS</b> <b>3.1 IF</b> both PCV-1100E, SPRAY VALVE 2B2 and PCV-1100F, SPRAY VALVE 2B1, are OPEN, THEN: <b>A. PLACE</b> HIC-1100, PZR PRESSURE SPRAY CNTL VLV, in MANUAL <b>B. OPERATE</b> spray controller HIC-1100, PZR PRESSURE SPRAY CNTL VLV <b>C. OPERATE</b> Pressurizer Heaters as necessary <b>3.2 IF PCV-1100E, SPRAY VALVE 2B2, is OPEN, THEN PLACE Pressurizer spray valve selector switch in 1100F</b> <b>3.3 IF PCV-1100F, SPRAY VALVE 2B1, is OPEN, THEN PLACE Pressurizer spray valve selector switch in 1100E</b> <b>The SRO DIRECTS</b> the ATC to PLACE Pressurizer spray valve selector switch in 1100F
<b>4.2 Subsequent Operator Actions</b> <b>4.2.1 General Actions:</b>			
	SRO	<b>1. PERFORM</b> applicable section per Table 1.	<b>SRO EVALUATES</b> the indications determines the failure to be PCV-1100E and proceeds to section 4.2.4
<b>4.2.4 Pressurizer Spray or Auxiliary Spray Valves OPEN or Leaking:</b>			
	SRO	<b>1. IF</b> either of the following conditions are met: <ul style="list-style-type: none"> <li>Pressurizer pressure is less than 2275 psia</li> <li>Pressurizer pressure is lowering uncontrollably</li> </ul> <b>THEN VERIFY</b> spray valves CLOSED: <ul style="list-style-type: none"> <li>PCV-1100E, SPRAY VALVE 2B2, status lights</li> <li>PCV-1100F, SPRAY VALVE 2B1, status lights</li> <li>TIA-1103, 2B1 SPRAY LINE (Water Temperature), and TIA-1104, 2B2 SPRAY LINE (Water Temperature), indicate approximately equal temperatures</li> </ul>	<b>SRO DETERMINES</b> this step was performed in the immediate operator actions

		L-19-1 NRC EXAM SCENARIO 1 REV. 0					SEG Page 13 of 57	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	1	Event #	2	
Event Description:		PCV-1100E Pressurizer Spray Control valve ramps open						
Time	Position Competency	Procedure Step				Applicant's Actions or Behavior		

	SRO	<b>2. VERIFY</b> auxiliary spray valves are CLOSED: <ul style="list-style-type: none"> <li>SE-02-3, AUX SPRAY VALVE</li> <li>SE-02-4, AUX SPRAY VALVE</li> </ul>	<b>SRO VERIFIES</b> auxiliary spray valves are CLOSED
	SRO	<b>3. VERIFY</b> Pressurizer pressure stable OR trending to Pressurizer pressure setpoint: <ul style="list-style-type: none"> <li>PR-1100, PRESSURE</li> <li>PIC-1100X, PRESSURE</li> <li>PIC-1100Y, PRESSURE</li> </ul>	<b>SRO VERIFIES</b> Pressurizer pressure stable OR trending to Pressurizer pressure setpoint
	SRO	<b>4. GO TO</b> Section 4.2.1, Step 2.	<b>SRO GOES TO</b> Section 4.2.1, Step 2.
4.2.1 General Actions:			
	SRO	<b>2. WHEN</b> plant conditions have stabilized, THEN <b>REVIEW</b> Tech Specs for any required actions.	<b>SRO REVIEWS</b> Tech Specs for any required actions IF Pressurizer pressure reached $\leq 2225$ psia the TS 3.2.5 for DNB will be addressed and the SM notified
	SRO	<b>3. WHEN</b> Section 3.0, EXIT CONDITIONS, are met, THEN <b>EXIT</b> this procedure.	<b>SRO EXITS</b> the AOP
	SRO	<b>Performs Crew Brief</b>	<b>SRO PERFORMS</b> crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM
At the Lead Evaluator's direction, PROCEED to Event 3.			

	<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>	<b>SEG</b> Page 14 of 57
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Operator Action	
	Scenario # 1      Event # 3	
Event Description: <b>LIS-07-2C Refueling Water Tank Level Indicating Switch will fail low</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

<b>T.S. 3.3.2</b>	<p>The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3.3 shall be <b>OPERABLE</b> with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.</p> <p>Action b, Functional Unit 5b: With the number of <b>OPERABLE</b> Channels one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:</p> <p>Action 19a: Within 1 hour the inoperable channel is placed in either the bypassed or tripped condition. If <b>OPERABILITY</b> can not be restored within 48 hours, be in at least <b>HOT STANDBY</b> within 6 hours and in <b>HOT SHUTDOWN</b> within the following 6 hours.</p>
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<b>Note to Evaluator:</b> LIS-07-2C Refueling Water Tank Level Indicating Switch fails low is a malfunction initiated from the Booth upon direction by the evaluator.			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 3: RWT Level Instrument LIS-07-2C Fails Low</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications:</b> <b>Annunciators:</b> Q-2 ESFAS ATI Fault, S-19 RWT Level RAS Channel Trip <b>EXAMINER:</b> The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.			
	BOP/ATC		<b>Acknowledges</b> annunciators and <b>Communicates</b> IAW plant policies
	BOP/ATC		<b>Diagnoses</b> that LIS-07-2C is failed low and <b>Communicates</b> status IAW plant policies
	BOP		<b>Complies</b> with ARPs for Q-2, S-19 and <b>Communicates</b> and/or takes action as directed by ARP
	SRO		<b>Diagnoses, Interprets,</b> that LIS-07-2C is failed low <b>Communicates</b> agreement with the ATCs diagnoses and <b>Directs</b> entry into 2-AOP-99.01 Loss of Tech Spec Instrumentation
	SRO		<b>Updates</b> crew and <b>Enters</b> 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		<b>Directs</b> actions of 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		<b>Notifies</b> SM of entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation
2-AOP-99.01		The following actions are taken from 2-AOP-99.01, Loss of Tech Spec Instrumentation	

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	3	
Event Description:		<b>LIS-07-2C Refueling Water Tank Level Indicating Switch will fail low</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**4.1 Immediate Operator Actions: NONE**

**4.2 Subsequent Operator Actions**

**4.2.1 General Actions:**

**NOTE**


A TRANSMITTER failure can be discriminated from a METER failure by the presence of annunciators and protection and control actuations.

	SRO	<b>1. CONFIRM</b> failed channel by any of the following methods: <ul style="list-style-type: none"> <li>Channel check comparison with redundant channels</li> <li>Annunciators</li> <li>Bistable or status lights</li> <li>Any instrument-related testing or surveillance procedure in progress</li> </ul>	<i><b>Interprets</b> the indications and determines the failure to be LIS-07-2C Refueling Water Tank Level Indicating Switch is failed low</i>
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**NOTE**

BISTABLE TRIP UNIT is abbreviated as BTU in this AOP.

	SRO	<b>2.</b> IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 7.	<b>N/A</b>
	SRO	<b>3.</b> Using Attachment 5, Channel Failure Impact Table, PERFORM the following: <b>A.</b> LOCATE table row for affected instrument or channel.	<i><b>Locates</b> correct table row for LIS-07-2C Refueling Water Tank Level</i>
	SRO	<b>3.</b> Using Attachment 5, Channel Failure Impact Table, PERFORM the following: <b>B.</b> REFER TO applicable Tech Specs.	<i><b>Refers to applicable Tech Spec 3.3.2, Functional Unit 5b, Action 19b</b></i>
	SRO	<b>3.</b> Using Attachment 5, Channel Failure Impact Table, PERFORM the following: <b>C.</b> PERFORM applicable procedure section for affected instrument.	<i><b>PERFORMs</b> section 4.2.18 for LIS-07-2C failure</i>

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>				<b>SEG</b> Page 16 of 57	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	1	Event #	3		
Event Description:		<b>LIS-07-2C Refueling Water Tank Level Indicating Switch will fail low</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	<b>4. Using Attachment 6, Instrumentation, for Tech Spec applicability.</b>	<b>PERFORMs</b> Attachment 6, Instrumentation, for Tech Spec applicability. <b>DETERMINES</b> Tech Spec 3.3.2, Functional Unit 5b, Action 19a is applicable
<b>4.2.18 RWT Level Channel Failure</b>			
<b><u>NOTE</u></b>			
<ul style="list-style-type: none"> <li>Bypassing ESFAS BTUs will require Key 114 for ESFAS cabinet door.</li> <li>The ESFAS bypass keyswitch and associated bistable trip unit are NOT in a true vertical alignment from each other in some cases.</li> <li>Per ADM-11.16, Transient Procedure Use and Adherence, an RWT level channel in the TRIPPED condition shall be limited to 48 hours minus the time the channel has been in bypass.</li> <li>The following are expected annunciators when bypassing ESFAS BTUs:            R-7, ENGINEERED SAFEGUARDS CABINET DOOR OPEN            Q-2, ENGINEERED SAFEGUARDS ATI FAULT         </li> </ul>			
	SRO	<b>1. CIRCLE</b> affected instrument: <ul style="list-style-type: none"> <li>LIS-07-2A</li> <li>LIS-07-2B</li> <li>LIS-07-2C</li> <li>LIS-07-2D</li> </ul>	<b>PERFORMs</b> section 4.2.18 and CIRCLES affected instrument LIS-07-2C Refueling Water Tank Level
	SRO	<b>2. PERFORM</b> one of the following for the affected BTUs listed: RAS (Key 131)	<b>SRO DIRECTS</b> the BOP to <b>BYPASS</b> the affected BTU using keyswitch.
	BOP	<b>A. BYPASS</b> affected BTU using keyswitch. <b>B. TRIP</b> affected BTU per Attachment 3, Tripping and Restoring Protection Bistables.	<b>BOP BYPASSES</b> the affected BTU using keyswitch as follows; <ul style="list-style-type: none"> <li>RAS (Key 131), Using ESFAS door (Key 114)</li> </ul>
	BOP	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section <b>4.2.18 RWT Level Channel Failure</b> Step 2. and direction from the Unit Supervisor <b>BYPASS</b> affected BTUs using keyswitch	<b>PERFORMs</b> section 4.2.18 as directed by the SRO; Obtains keys, unlocks cabinets and inserts keys:131 for ESFAS <b>BOP</b> relieves the ATC

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>				<b>SEG</b> Page 17 of 57	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	1	Event #	3		
Event Description:		<b>LIS-07-2C Refueling Water Tank Level Indicating Switch will fail low</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section <b>4.2.18 RWT Level Channel Failure</b> Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitch	<i><b>ATC PERFORMs</b> section 4.2.18 as directed by the Unit Supervisor; IVs inserted key: 131 for ESFAS and rotates key to bypass MC RAS</i> <i><b>ATC Reports</b> to SRO that the affected BTU has been BYPASSED using keyswitch</i> <i><b>ATC relieves</b> the BOP</i>
<b>4.2.1 General Actions:</b>			
	SRO	<b>5. INITIATE</b> work request for affected instrument or channel and <b>NOTIFY</b> I&C or EM as applicable.	<i><b>PERFORMS</b> section 4.2.1 Step 4 <b>NOTIFIES</b> I&amp;C as applicable and Notifies the SM of the failure and the Tech Spec 3.3.2, Functional Unit 5b, Action 19a entry</i>
	SRO	<b>6. DOCUMENT</b> problem as required: <ul style="list-style-type: none"> <li>EOOS Log</li> <li>Condition report</li> <li>Ops narrative log</li> </ul>	<i><b>PERFORMS</b> section 4.2.1 Step 5 and Documents issue as appropriate in:</i> <ul style="list-style-type: none"> <li>EOOS Log</li> <li>Condition report</li> <li>Ops narrative log</li> </ul>
	SRO	<b>7. WHEN</b> ready to restore affected channel, THEN <b>PERFORM</b> Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> <li>Instrumentation Channels.</li> </ul>	<i><b>IDENTIFIES</b> step as N/A</i>
	SRO	<b>8. VERIFY</b> Exit Conditions are met. <b>9. EXIT</b> this procedure.	<i><b>VERIFIES</b> Exit conditions are met by:</i> <ul style="list-style-type: none"> <li>Applicable Tech Spec LCO action requirements have been implemented.</li> <li>Affected channel has been bypassed or tripped as required by Tech Specs and exits 2-AOP-99.01</li> </ul>
	SRO	<b>Performs Crew Brief</b>	<i><b>SRO PERFORMs</b> crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM</i>
<b>At the Lead Evaluator's direction, PROCEED to Event 4.</b>			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	4	
Event Description:		<b>Letdown Pressure Controller PIC-2201 fails to operate in auto mode</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**Note to Evaluator:** PIC-2201 Letdown Pressure controller is a malfunction initiated from the Booth upon direction by the evaluator; this failure simulates a controller cycling erratically.

**Booth Operator Instructions:**

- Upon cue from Lead Examiner, trigger Event 4: L/D Press Cont PIC-2201 AUTO Fails erratically

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**Indications:** Letdown flow swings and Pressurizer Level swings

**Annunciators:** M-5 Letdown Press High/Low

	ATC		Identifies controller issue with PIC-2201 and recommends taking manual control
	SRO		Directs the ATC to take manual control of PIC-2201 maintain 430 PSI
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	ATC		Evaluates plant for being stable
	BOP		Pulls ARP's and communicates/takes action as directed
	SRO		Announces and enters 2-AOP-02.03, Charging And Letdown
	SRO		Directs actions of 2-AOP-02.03, Charging And Letdown

**2-AOP-02.03** The following actions are taken from 2-AOP-02.03, Charging And Letdown

**4.1 Immediate Operator Actions:** None applicable

**4.2 Subsequent Operator Actions**


**4.2.1 General Actions:**

	SRO	1. IF charging and letdown flow has been lost, THEN, <b>PERFORM</b> the following:	<i>Step is not applicable</i>
	SRO	2. <b>VERIFY</b> all applicable automatic actions have occurred. Attachment 1, Charging and Letdown Automatic Responses, contains a listing of expected automatic action	<i>Step is not applicable</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	4	
Event Description:		<b>Letdown Pressure Controller PIC-2201 fails to operate in auto mode</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	3. IF charging and letdown flow has been lost, <b>THEN DETERMINE</b> the cause	<i>Step is not applicable</i>
	SRO	4. IF a charging system leak has occurred, <b>THEN ISOLATE</b> the leak and refer to applicable Technical Specifications for guidance	<i>Step is not applicable</i>
	SRO	5. <b>PERFORM</b> applicable section per Table 1	<b>SRO EVALUATES</b> the indications determines the failure to be PIC 2201 failed and proceeds to section 4.2.7 Letdown Pressure Control Malfunction
<b>4.2.7 General Actions: Letdown Pressure Control Malfunction</b>			
	SRO	1. IF letdown pressure control is malfunctioning, <b>THEN PERFORM</b> the following: <b>A. VERIFY</b> the output of PIC-2201, LETDOWN PRESSURE, is responding as expected for current plant conditions	<b>SRO VERIFIES</b> that the ATC has PIC-2201 in manual and is controlling Letdown Pressure <b>SRO DIRECTS</b> system walk downs observing for leaks or lifting relief valves
	ATC	<b>B. VERIFY</b> the selected pressure control valve is responding as expected to PIC-2201, LETDOWN PRESSURE, output	<b>ATC ADJUSTS</b> PIC-2201 to clear the letdown press hi/low alarm. (Normal pressure setting is ~430psai)
	SRO	<b>SRO VERIFIES</b> Normal Charging and Letdown parameters are established with Letdown Pressure stable	<b>SRO EXITS</b> this procedure
	SRO	<b>Performs Crew Brief</b>	<b>SRO PERFORMs</b> crew brief on status of failed instrument and Notifies the SM
<b>At the Lead Evaluator's direction, PROCEED to Event 5.</b>			



	<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>	<b>SEG</b> Page 20 of 57
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 1    Event # 5	
Event Description: <b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	Procedure Step

<b>T.S.</b> <b>3.4.6.2</b>	Reactor Coolant System operational leakage shall be limited to: b. 1 gpm UNIDENTIFIED LEAKAGE <b>ACTION: b.</b> With any Reactor Coolant System operational leakage greater than any one of the limits, excluding primary-to-secondary leakage, PRESSURE BOUNDARY LEAKAGE, and leakage from Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
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**Note to Evaluator:** RCS leak of approximately 20 gpm is a malfunction initiated from the Booth upon direction by the evaluator the leak is located on the 2A1 cold leg using Leak Valve LV06.

**Booth Operator Instructions:**


- Upon cue from Lead Examiner, trigger Event 5: RCS Leak of Approx 20gpm

**Role Play:**


- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**Indications:**  
 Charging and Letdown mismatch  
 RCS Pressure slowly lowering  
**Annunciators:** N-46 RX CAVITY LEAKAGE HIGH  
**EXAMINER:** The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.


	ATC		<b>DIAGNOSES</b> Charging and Letdown mismatch, RCS Pressure slowly lowering and Pressurizer level lowering and communicates observations to Unit Supervisor IAW plant policies.
	SRO/ATC		<b>DIAGNOSES, INTERPRETS, CONCURS</b> with the ATC observations and <b>DIRECTS</b> a Leak Rate Calculation to commence. <b>ATC PERFORMS</b> a Leak Rate Calculation
	ATC		<b>ATC CALCULATES</b> leak rate as follows: <ul style="list-style-type: none"> <li>Verifies RCS temp stable</li> <li>Records Pressurizer Level, VCT Level at one minute intervals</li> <li>Calculates Deltas over time to ascertain the leak rate</li> <li>Using VCT=33.8gal/% PZR=67.04 gal/%</li> <li>OR</li> <li>Uses Charging/Letdown Mismatch</li> </ul> <b>BOP CALCULATES</b> Confirmatory leak rate

	<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>	<b>SEG</b> Page 21 of 57
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 1    Event # 5	
Event Description: <b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	ATC,BOP		ATC AND BOP COMMUNICATE leak rate of approximately 20 gpm to the SRO
	SRO		UPDATES crew and enters 2-AOP-01.08, RCS Leakage Abnormal Operation
NOTE to Evaluator: The crew may implement 2-AOP-01.10, Pressurizer Pressure and Level, which is acceptable and will eventually guide them to into 2-AOP-01.08, RCS Leakage Abnormal Operation			
2-AOP-01.08		The following actions are taken from 2-AOP-01.08, RCS Leakage Abnormal Operations	
4.1 Immediate Operator Actions: NONE APPLICABLE			
4.2 Subsequent Operator Actions			
4.2.1 General Actions:			
	SRO	Makes Notifications	SRO NOTIFIES SM of entry into 2-AOP-01.08, RCS Leakage Abnormal Operation and request MM assistance
	SRO	1. ADD RCS makeup per applicable section(s) of Table 1 as directed by US while CONTINUING with this AOP:	
	SRO	2. MAINTAIN RCS level stable OR rising	SRO may DIRECT starting additional Charging pump as needed
	ATC		ATC may START additional Charging pump as needed
	SRO	3. Verify pressurizer pressure stable within the required pressure bands	SRO DIRECTS manually OPERATE pressurizer heaters to maintain pressure
	ATC		ATC MANUALLY OPERATES pressurizer heaters to maintain pressure
NOTE			
<ul style="list-style-type: none"> <li>Thumb rule for estimating leak rate is that 1" level rise on LI-07-6, RX CAVITY LEVEL, on RTGB-205 is about 46 gallons.</li> <li>A Hard Card is available at RTGB-205 for reference in estimating leak rate based on differences in VCT and pressurizer level.</li> </ul>			

	<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>	<b>SEG</b> Page 22 of 57				
<b>Appendix D</b>		<b>Form ES-D-2</b>				
Op Test No.: L-19-1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Operator Action</td> </tr> <tr> <td style="width: 30%;">Scenario # 1</td> <td style="width: 70%;">Event # 5</td> </tr> </table>		Operator Action		Scenario # 1	Event # 5
Operator Action						
Scenario # 1	Event # 5					
Event Description: <b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>						
Time	Position	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Procedure Step</td> <td style="width: 50%;">Applicant's Actions or Behavior</td> </tr> <tr> <td style="height: 20px;">Competency</td> <td></td> </tr> </table>	Procedure Step	Applicant's Actions or Behavior	Competency	
Procedure Step	Applicant's Actions or Behavior					
Competency						

	SRO	<b>4. DETERMINE RCS</b> leak rate by any of the following methods: <ul style="list-style-type: none"> <li><b>ESTIMATE</b> leak rate based on gross charging-letdown mismatch.</li> <li>IF desired, THEN <b>CONTROL</b> letdown flow in manual to aid in leak rate determination.</li> <li><b>ESTIMATE</b> leak rate based on abnormal tank or sump level rise rates.</li> <li><b>CALCULATE</b> leak rate per 2-OSP-01.03, Reactor Coolant System Inventory Balance.</li> <li><input type="checkbox"/> <b>ESTIMATE</b> leak rate based on differences in VCT and pressurizer level.</li> </ul>	<i><b>SRO DIRECTS</b> Leak rate calculations</i>
	ATC		<i><b>ATC PERFORMS</b> Leak rate calculation per hardcard 2-NOP-99.07</i>
<b>NOTE</b> <ul style="list-style-type: none"> <li>To aid in classifying RCS leaks for E-Plan purposes, Attachment 1, defines certain terms to ensure classifications are made consistently within this context.</li> </ul>			
	SRO	<b>5. VERIFY</b> all of the following conditions are met <ul style="list-style-type: none"> <li><b>UNIDENTIFIED LEAKAGE</b> less than or equal to 1 gpm</li> <li><b>IDENTIFIED LEAKAGE</b> less than or equal to 10 gpm</li> <li><b>NO</b> secondary plant radiation alarms or rising trends on any of the following</li> </ul>	<i><b>DETERMINES</b> that the Leakage is greater than 1 gpm and refers to tech spec 3.4.6.2, action b and notifies the SM to implement the E-Plan</i>
	SRO	<b>6. IF</b> both conditions exist: <ul style="list-style-type: none"> <li>Unit 2 is in MODE 1,2 or 3</li> <li>SIAS not blocked</li> </ul> <b>THEN PERFORM</b> Section 4.2.2, Actions for Modes 1 Through 3 With SIAS Available	<i><b>SRO Performs Section 4.2.2</b></i>
<b>4.2.2 Actions for Modes 1 Through 3 With SIAS Available</b>			

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>				<b>SEG</b> Page 23 of 57	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	1	Event #	5		
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<b>NOTE</b>			
<ul style="list-style-type: none"> <li>Section 4.2.2, Step 2.A through Section 4.2.2, Step 11 may be done in any order based on priorities determined in Section 4.2.2, Step 1. At US discretion, only steps applicable to the leak in progress need be performed.</li> </ul>			
	SRO	<b>1.</b> At US discretion, <b>USE</b> Table 2 to prioritize order of performance of applicable leak identification and isolation steps:	<b>SRO EVALUATES</b> table 2 and proceeds to section 4.2.2 step 2
	SRO	<b>4.2.2.2 VERIFY</b> conditions INSIDE containment are NORMAL by inspecting the following containment parameters: <ul style="list-style-type: none"> <li>Temperature and pressure</li> <li>Atmospheric radioactivity</li> <li>Area radiation</li> <li>Containment sump levels</li> <li>LIS-07-6, RX CAVITY LEVEL (RTGB-205)</li> <li>N-21, RX CAVITY SUMP LEVEL HIGH-HIGH, CLEAR</li> <li>N-46, RX CAVITY LEAKAGE HIGH, CLEAR</li> </ul>	<b>SRO DETERMINES</b> that N-46, RX CAVITY LEAKAGE HIGH, is not CLEAR and goes to Contingency Actions to monitor containment parameters <b>SRO DIRECTS</b> at least one of the following valves is CLOSED: Due to reactor cavity sump level rising, <input type="checkbox"/> LCV07-11A, RX CAVITY SUMP <input type="checkbox"/> LCV07-11B, RX CAVITY SUMP  <b>SRO GOES TO</b> Section 4.2.2, Step 13.
	SRO	<b>13. IF</b> unit in <b>MODE 1 or 2</b> , <b>THEN VERIFY</b> continued operation is permitted by Tech Specs: <ul style="list-style-type: none"> <li>3.4.6.2, Reactor Coolant System Leakage</li> <li>3.5.1, Safety Injection Tanks</li> </ul>	<b>SRO DIRECTS</b> plant shutdown per 2-AOP-22.01, RAPID DOWNPOWER
<b>NOTE to EVALUATOR</b>			
<ul style="list-style-type: none"> <li>Due to the power level being less than 25% the crew may TRIP the unit upon entering 2-AOP-22.01 Rapid Down Power per step 4.2.26 which states "IF Reactor is to be tripped at current power level (20% to 25%) THEN PERFORM the following:             <ul style="list-style-type: none"> <li>RECORD Main Gen. KW Hrs in the narrative logs as indicated on WHM/881, GENERATOR NO. 2 KWH.</li> <li>TRIP reactor</li> <li>TRIP turbine</li> <li>EXIT to 2-EOP-01, Standard Post Trip Actions</li> </ul> </li> </ul>			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	5	
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**Booth Operator Instructions:**

- NONE

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**Indications:**

**Annunciators:**

	SRO		<b>ANNOUNCES</b> and enters 2-AOP-22.01, Rapid Downpower as directed
	SRO		<b>DIRECTS</b> actions of 2-AOP-22.01, Rapid Downpower

**2-AOP-22.01**

The following actions are taken from 2-AOP-22.01, Rapid Downpower

**4.1 Immediate Operator Actions: NONE**

**4.2 Subsequent Operator Actions**

	SRO	<b>1. BEGIN</b> boration per operator aid OR Attachment 1, RCS Boration Guidance.	<b>SRO DIRECTS ATC</b> to make boration 15 gallons per minute from a Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance.
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**ATTACHMENT 1 RCS Boration Guidance NOTE**

- Step 1 in this attachment is applicable when the CVCS is normally aligned, with NO RCS boration or dilution in progress. If other than normal alignment, use guidance of 2-NOP-02.24, Boron Concentration Control.
- An Operator Aid has been placed at RTGB-205. Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Operator Aid Placard.

	ATC	<b>1. BORATE</b> the RCS by the following: <b>A. START</b> either Boric Acid Pump 2A or 2B.	<b>ATC STARTS</b> Boric Acid Pump <b>ATC VERIFIES</b> Boric Acid Pump <b>STARTS</b>
	ATC	<b>1. BORATE</b> the RCS by the following: <b>B. PLACE</b> FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO.	<b>ATC PLACES</b> FCV-2210Y, BORIC ACID control switch in AUTO

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	5	
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	ATC	1. <b>BORATE</b> the RCS by the following: C. IF borating to the Charging Pump suction, THEN <b>OPEN</b> V2525, BORON LOAD CONTROL VALVE	<b>ATC PLACES</b> V2525, BORON LOAD control switch in OPEN <b>ATC IDENTIFIES</b> V2525, BORON LOAD <b>ATC REPORTS</b>
	SRO		<b>SRO DIRECTS ATC</b> <i>The SRO may alternately</i>
	ATC	1. <b>BORATE</b> the RCS by the following: D. IF borating to the VCT, THEN <b>OPEN</b> V2512, REACTOR MAKEUP WATER STOP VLV	<b>ATC PLACES</b> V2512, REACTOR MAKEUP WATER STOP VLV control switch in OPEN <b>ATC VERIFIES</b> V2512, REACTOR MAKEUP WATER STOP VLV is OPEN
	ATC	1. <b>BORATE</b> the RCS by the following: E. <b>ADJUST</b> FIC-2210Y, BORIC ACID, to the desired flowrate.	<b>ATC ADJUSTS</b> FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm
	ATC	1. <b>BORATE</b> the RCS by the following: E. <b>ADJUST</b> FIC-2210Y, BORIC ACID, to the desired flowrate. (1) IF FCV-2210Y, BORIC ACID, fails to OPEN , THEN <b>PERFORM</b> the following: a. <b>PLACE</b> FCV-2210Y, BORIC ACID (RTGB-205), control switch in <b>CLOSED</b> . b. <b>OPEN</b> V2514, EMERGENCY BORATE (RTGB-205). c. <b>CYCLE</b> the boric acid pump as required to control boration rate.	<b>ATC DETERMINES</b> not required
	ATC	1. <b>BORATE</b> the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN <b>CLOSE</b> the running BAM pump recirc valve. • V2650, TANK 2A RECIRC VALVE • V2651, TANK 2B RECIRC VALVE	<b>ATC DETERMINES</b> not required

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	1	Event #	5		
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	1. <b>BORATE</b> the RCS by the following: G. <b>CYCLE</b> V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	<b>ATC CYCLES</b> V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig
	ATC	1. <b>BORATE</b> the RCS by the following: H. <b>CYCLE</b> V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	<b>ATC CYCLES</b> V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level
	ATC		<b>ATC UPDATES</b> crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER	
	SRO	2. <b>PREPARE</b> turbine for load reduction per operations hard cards.	<b>SRO DETERMINES</b> this step is N/A as the turbine is not running.
	SRO	3. <b>INSERT</b> the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards.	<b>SRO DIRECTS ATC</b> to insert lead group CEAs ~3 inches in Manual Sequential
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	
2-NOP-99.07 OPERATIONS HARD CARDS			
ATTACHMENT 1 CEDMCS OPERATIONS			
<u>Critical Parameters</u>			
This activity affects reactivity. The SM/US shall be notified of any abnormal indications.			
<input type="checkbox"/> Reactor Power <input type="checkbox"/> CEA POSITION <input type="checkbox"/> RCS Temp <input type="checkbox"/> ASI <input type="checkbox"/> MW (Load) <input type="checkbox"/> DCS Power <input type="checkbox"/> Pzr Level			
	ATC	Moving CEAs in group 1. On CEDMCS Control Panel Group Select Switch, <b>SELECT</b> target group.	<b>ATC SELECTS</b> Target Group 5


Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	5	
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**CAUTION**


When performing a rapid downpower due to a dropped CEA, then MANUAL GROUP (MG) shall be selected. This will prevent multiple CEA groups from moving.

	ATC	<b>Moving CEAs in group</b> 2. On CEDMCS Control Panel Mode Select Switch, <b>SELECT</b> mode of movement: <ul style="list-style-type: none"> <li>MANUAL GROUP (MG)</li> <li>OR</li> <li>MANUAL SEQUENTIAL (MS)</li> </ul>	<b>ATC SELECTS MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel</b>
	ATC	<b>Moving CEAs in group</b> 3. IF CEA Motion Inhibit is present, THEN PERFORM the following: <ul style="list-style-type: none"> <li>A. PRESS and HOLD CMI BYPASS pushbutton.</li> <li>B. PRESS and RELEASE BYPASS ENABLE pushbutton.</li> </ul>	<b>STEP will be N/A NO CEA Motion Inhibit is present</b>
	ATC	<b>Moving CEAs in group</b> 4. IF withdrawing the CEAs AND the shutdown groups are not at UEL, THEN DEPRESS and HOLD S/D GROUP INTLK BYPASS button	<b>STEP will be N/A, shutdown groups will be at UEL.</b>
	ATC	<b>Moving CEAs in group</b> 5. <b>POSITION</b> group as desired using INSERT/WITHDRAW Manual Control lever.	<b>ATC POSITIONS group as directed to 3" inserted from previous position using INSERT/WITHDRAW Manual Control lever</b>
	ATC	<b>Moving CEAs in group</b> 6. IF CMI BYPASS pushbutton is being held, THEN <b>RELEASE</b> CMI BYPASS pushbutton.	<b>STEP will be N/A NO CEA Motion Inhibit is present</b>
	ATC	<b>Moving CEAs in group</b> 7. <b>OBSERVE</b> RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment.	<b>ATC OBSERVES RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position</b>



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	1	Event #	5		
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	<b>Moving CEAs in group</b> 8. On CEDMCS Control Panel, <b>SELECT</b> OFF on Mode Select Switch when the desired height is reached.	<b>ATC SELECTS OFF</b> on Mode Select Switch when the desired height is reached
	ATC	<b>Moving CEAs in group</b> 9. <b>ENSURE</b> RSPT and Pulse Counter indications match.	<b>ATC ENSURES</b> RSPT and Pulse Counter indications match
	ATC		<b>ATC Updates crew on Reactivity Addition</b>
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
4.2 Subsequent Operator Actions			
	SRO	4. <b>WHEN</b> Tavg begins to lower and is less than Tref, THEN <b>TOUCH</b> GO from RAMP INTERFACE group. (OVATION display 5551)	<b>SRO DETERMINES</b> this step is N/A as the turbine is not running.
	SRO/ATC	SRO directs ATC to MAINTAIN T-avg and T-ref	8. <b>MAINTAIN</b> T-avg and T-ref as close as possible during load changes by adjusting either or both of the following: <ul style="list-style-type: none"><li>• Reactivity rate</li><li>• Turbine load rate</li></ul>
	SRO	5. <b>NOTIFY</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____."	<b>DIRECTS BOP to NOTIFY</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to excessive RCS leakage."
	BOP		<b>NOTIFIES</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to excessive RCS leakage."
	SRO	6. <b>NOTIFY</b> System of the rapid downpower load reduction.	<b>DIRECTS BOP to NOTIFY</b> System of the rapid downpower
	BOP		<b>NOTIFIES</b> System of the rapid downpower, via dedicated RED phone.

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>				<b>SEG</b> Page 29 of 57	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	1	Event #	5		
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<b>NOTE</b>  OPS-530, Pre-Planned Power Change Guidance, delineates operations department policy for the use of pre-planned downpower profiles provided by the Plant Physics Curve Book.			
	SRO	<b>7. PERFORM</b> a Crew update to include the following: <ul style="list-style-type: none"> <li>Expected final power level</li> <li>Initial boration rate</li> <li>Initial load rate</li> <li>Expected amount of boric acid addition</li> <li>Expected amount of CEA motion using pre-planned downpower profiles in the Plant Physics Curve Book</li> </ul>	<b>SRO UPDATES</b> crew with the following information: <ul style="list-style-type: none"> <li>Expected final power level Offline</li> <li>Initial boration rate 15 GPM</li> <li>Initial load rate of 10 MW/MIN</li> <li>Expected amount of boric acid addition Per preplanned power guidance</li> <li>Expected amount of CEA motion Per preplanned power guidance</li> </ul>
	SRO	<b>8. PLACE</b> Pressurizer on recirculation per operations hard cards.	<b>SRO should recognize</b> heaters are all on to maintain pressure from PZR safety valve leak. Recirculation should not be directed as this will lower pressure
	SRO	<b>9. START</b> additional charging pump as required per operations hard cards.	<b>SRO DIRECTS ATC to START</b> a second charging pump per operations hard cards, if not previously started
<b>2-NOP-99.07</b>		<b>The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS</b>	
<b>2-NOP-99.07 OPERATIONS HARD CARDS</b>  <b>ATTACHMENT 8 CHARGING PUMP OPERATIONS WHILE IN AN AOP</b>			
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW</b>  1. IF in MODE 1 or 2, THEN PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS to minimize reactivity effects of changing letdown temperature.	<b>BOP PLACES V2520, ION EXCHANGER BYPASS VALVE, in BYPASS</b>


Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	5	
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW**


**NOTE**

- When starting OR stopping a charging pump with LIC-2110, LETDOWN LEVEL, in Single Element Mode, it may be necessary to place the controller in Manual Mode to prevent pressurizer level from deviating too far from setpoint.
- In Manual Mode, the letdown flow should be adjusted as necessary to maintain pressurizer level at setpoint. The controller should be returned to Auto when it reaches setpoint with the desired number of charging pumps running.

	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> 2. <b>START</b> charging pump by placing its control switch in START.	<b>BOP STARTS</b> Second charging pump by placing its control switch in START
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> 3. <b>PLACE</b> CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid.	<b>BOP PLACES</b> CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> 4. <b>WHEN</b> 3 minutes has elapsed since pump start, THEN <b>ENSURE</b> associated recirc valve is CLOSED.	<b>BOP ENSURES</b> Second Charging Pp recirc valve is CLOSED
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> 5. WHEN letdown temperature stabilizes, THEN <b>ENSURE</b> V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO.	<b>BOP ENSURES</b> V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO after temp stabilizes
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> 6. <b>NOTIFY</b> RP and SNPO of current charging pump alignment.	<b>BOP NOTIFIES</b> RP and SNPO of starting of the Second charging pump

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Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	1	Event #	5		
Event Description:		<b>Unidentified RCS leak of approximately 20 gpm / Rapid Downpower</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
<p style="text-align: center;"><b>NOTE</b></p> <ul style="list-style-type: none"><li>• The procedural limit for ASI control is +/- 0.5 of ESI. It is desired to maintain ASI within a control band of +/- 0.2 of ESI.</li><li>• US may direct temporary operation outside of ASI limit. (Note: Band stops &lt;50% power)</li></ul>			
	SRO	<b>10. MAINTAIN</b> Axial Shape Index ±0.5 of ESI using CEAs.	<b>DIRECTS ATC</b> to maintain ASI to within +/- 0.2 of ESI using the sliding scale with lead group CEAs IAW 0-NOP-100.02 Axial Shape Index Control unless recommended otherwise by Reactor Engineering
	ATC		<b>POSITIONS</b> lead group CEAs to control ASI to within +/- 0.2 from the ESI on the sliding scale IAW 0-NOP-100.02 Axial Shape Index Control
<p style="text-align: center;"><b>NOTE</b></p> <p>The procedural limit for Tave-Tref mismatch is +/- 6.6 degrees °F. It is desired to maintain a control band of +/- 2 degrees °F</p>			
	SRO	<b>11. MAINTAIN</b> Tref and Tavg within 6.6 °F.	<b>DIRECTS ATC</b> to maintain Tave-Tref mismatch within +/- 2 degrees °F
	SRO	<b>12. IF</b> reducing power by more than 20%, THEN <b>NOTIFY</b> SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition.	<b>DIRECTS BOP</b> to dispatch a SNPO to secure Zinc injection
<p style="text-align: center;"><b>NOTE</b></p> <p>Condenser back pressure is provided on OVATION displays 5559, TURBINE EXHAUST HOOD SPRAY AND CONDENSER VACUUM and 5605, CONDENSER VACUUM MONITORING. The condenser back pressure trip and alarm setpoints are variables that are dependent on power level.</p>			
	SRO	<b>13. VERIFY</b> Condenser Back Pressure less than 8.859 inHgA.	<b>DIRECTS BOP</b> to report Condenser Backpressure
<p style="text-align: center;"><b>NOTE</b></p> <p>OVATION displays 5559, TURBINE EXHAUST HOOD SPRAY AND CONDENSER VACUUM and 5605, CONDENSER VACUUM MONITORING, indicate time remaining before an automatic Turbine Trip is initiated by DEH, when operating in the Restricted Operating Region.</p>			
	SRO	<b>14. VERIFY</b> Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations.  <b>OR</b> OVATION display 5605, CONDENSER VACUUM MONITORING.	<b>DIRECTS BOP</b> to monitor Condenser Backpressure

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Appendix D			Operator Action				Form ES-D-2		
Op Test No.:		L-19-1		Scenario #	1	Event #	5		
Event Description:		Unidentified RCS leak of approximately 20 gpm / Rapid Downpower							
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								

	SRO	<b>15. VERIFY</b> CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)	<i><b>DIRECTS BOP</b> to monitor Condenser differential pressure</i>
	SRO	<b>16. VERIFY</b> parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits.	<i><b>DIRECTS BOP</b> to monitor parameters listed on Attachment 3</i>
<b>NOTE</b> Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.			
	SRO	<b>17. MAINTAIN</b> PZR pressure between 2225 and 2275 psia.	<i><b>DIRECTS ATC</b> to <b>MAINTAIN PZR</b> pressure between 2225 and 2275 psia by controlling HIC-1100</i>
<b>NOTE</b> A large rate of change in Tav <sub>g</sub> may cause transient level variance.			
	SRO	<b>18. MAINTAIN</b> PZR level between 27% and 68%.	<i><b>DIRECTS ATC</b> to <b>MAINTAIN PZR</b> level between 27% and 68%</i>
	SRO	<b>19. WHEN</b> Final power level is achieved, THEN <b>GO TO</b> Section 4.2, Step 35 to STABILIZE the unit.	<i><b>SRO</b> will continue with procedure to remove the unit offline</i>
Proceed to Event 6.			

<b>Appendix D</b>		<b>Operator Action</b>				<b>Form ES-D-2</b>			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		<b>LOCA / 2-HVS-1A trip</b>							
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								

**Note to Evaluator: RCS LOCA is a malfunction initiated from the Booth upon direction by the evaluator the leak is located on the 2A1 cold leg using Leak Valve LV06 with a 360 sec ramp. 2-HVS-1A trip is also triggered on this step.**

**Booth Operator Instructions:**

- After Crew secures RCP for failed spray valve or at lead evaluator's direction trigger event 6: S-1 LOCA 6 min Ramp to Approx 600gpm and 2-HVS-1A trip

**Role Play:**


- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**Indications:**


**Annunciators:**

**Multiple**

	SRO		<b>DIRECTS</b> Reactor trip
	ATC		<b>CONFIRMS</b> reactor power is lowering and startup rate is negative <b>REPORTS "REACTOR TRIPPED"</b> <b>States evaluating CEAs or that all CEAs are inserted</b>
	ATC		Performs Scan of RTGBs to quickly assess the plant status by systematically reviewing key safety parameters/system conditions of the control boards. <b>RECOGNIZES: PVC-1100F is failed OPEN SEE Event 7 (pg 45)</b>
	BOP		<b>VERIFIES</b> all governor and throttle valves closed <b>REPORTS "Turbine Tripped"</b>
	BOP		<b>ANNOUNCE</b> on the Gaitronics: Unit 1 (2) Reactor has tripped <b>NOTIFY</b> the NPO to perform Appendix X, Section 1 of 2-EOP-99 <b>CONTACT</b> the SM, STA and Shift Comm. to report to the Control Room
	SRO		Performs Scan of RTGBs to quickly assess the plant status by systematically reviewing key safety parameters/system conditions of the control boards.
	ATC		<b>REPORTS "All CEAs INSERTED" if not reported previously</b>
	SRO		<b>DIRECTS</b> ATC to start remaining Charging Pumps as necessary

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 1      Event # 6	
Event Description: <b>LOCA / 2-HVS-1A trip</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	SRO		DIRECTS Implementation Of EOP-01, Standard Post Trip Actions
<b>2-EOP-01</b>		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
<b>4.1 Immediate Operator Actions:</b> <ul style="list-style-type: none"> <li>• <b>ATC: Verifies Reactor power lowering, Negative Startup rate, all CEAs and verifies no dilution is in progress inserted and communicates status to the Unit Supervisor. Starts backup charging pumps as necessary.</b></li> <li>• <b>BOP: Verifies all governor and throttle valves closed and communicates status to the Unit Supervisor. Makes plant announcements and trip notifications.</b></li> </ul>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>1. VERIFY reactor trip:</b>	<b>SRO DIRECTS VERIFY reactor trip, ATC Verifies:</b> <input type="checkbox"/> Reactor power LOWERING <input type="checkbox"/> Startup Rate NEGATIVE <input type="checkbox"/> All CEAs are fully INSERTED <input type="checkbox"/> NO dilution is in progress
	SRO	<b>2. VERIFY turbine trip:</b>	<b>SRO DIRECTS VERIFY turbine trip, BOP Verifies:</b> <input type="checkbox"/> All governor and throttle valves CLOSED. <input type="checkbox"/> Main Generator breakers are OPEN <input type="checkbox"/> Turbine speed LOWERING
	SRO	<b>3. VERIFY Maintenance of Vital Auxiliaries:</b>	<b>SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies:</b> <input type="checkbox"/> VERIFY station loads transferred to offsite electrical power <input type="checkbox"/> VERIFY all Vital and Non-Vital AC buses transfer from Auxiliary to Start-up Transformers AND are ENERGIZED <input type="checkbox"/> VERIFY all Vital and Non Vital DC Buses are ENERGIZED <input type="checkbox"/> VERIFY seal cooling to RCPs: <b>IF SIAS has occurred the SRO will DIRECT two RCPs to be tripped and perform 2-EOP-99 App.J to restore CCW to the RCPs</b>
<b>NOTE</b> Rising pressurizer level with concurrent lowering RCS subcooled margin are symptoms of a pressurizer steam space LOCA.			


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<b>Appendix D</b>		<b>Form ES-D-2</b>
Op Test No.: L-19-1	Scenario # 1    Event # 6	
Event Description: <b>LOCA / 2-HVS-1A trip</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	SRO	<b>4. VERIFY RCS Inventory Control:</b>	<b>SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35% <b>SRO may DIRECT:</b> <input type="checkbox"/> Isolating Letdown <input type="checkbox"/> Starting 3rd Charging pump <b>Pressurizer level will be abnormally low due to the RCS leak. This parameter will drive the crew to enter 2-EOP-03</b>
	ATC		<b>ATC may PERFORM:</b> <input type="checkbox"/> Isolating Letdown <input type="checkbox"/> Starting 3rd Charging pump
	SRO	<b>5. VERIFY RCS Pressure Control:</b>	<b>SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia <b>RCS Pressure will be abnormally low due to PCV-1100F failing open on trip; see event 7 (pg 45).</b> <b>IF SIAS has occurred the SRO will DIRECT two RCPs to be tripped and perform 2-EOP-99 App.J to restore CCW to the RCPs</b>
	SRO	<b>6. VERIFY Core Heat Removal:</b>	<b>SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies:</b> <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW <input type="checkbox"/> Loop $\Delta T$ is less than 10°F <input type="checkbox"/> RCS subcooling greater than or equal to 20°F <input type="checkbox"/> NO indication of RCP cavitation




Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		<b>LOCA / 2-HVS-1A trip</b>							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

	SRO	<p><b>7. VERIFY RCS Heat Removal:</b></p>	<p><b>SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies:</b></p> <p><input type="checkbox"/> <i>VERIFY the following conditions exist on at least one S/G:</i></p> <ul style="list-style-type: none"> <li>S/G NR level is between 20 and 81%</li> <li>Feedwater is being supplied</li> </ul> <p><input type="checkbox"/> <i>IF 2A or 2B AFW Pump is the ONLY source of Feedwater, THEN STOP one RCP in each loop</i></p> <p><input type="checkbox"/> <i>VERIFY at least ONE of the following is supplying feedwater to the S/G(s):</i></p> <ul style="list-style-type: none"> <li>Main or Auxiliary Feedwater</li> </ul> <p><b>BOP RESTORES AFW using 2A and 2B AFW pumps IAW 2-NOP-99.07, Operations Hard Cards (pg 53).</b></p> <p><input type="checkbox"/> <i>VERIFY RCS TAVG is between 525 and 535°F RCS Temp will be lower due to lower power level</i></p> <p><input type="checkbox"/> <i>VERIFY S/G pressure is between 850 and 930 psia (835 and 915 psig)</i></p> <p><b>IF MSIS has actuated the SRO will direct placing the ADVs in service</b></p> <p><input type="checkbox"/> <b>BOP PLACES ADVs in service</b></p>
	SRO	<p><b>8. VERIFY containment conditions:</b></p>	<p><b>SRO DIRECTS VERIFY containment conditions, BOP Verifies:</b></p> <p><input type="checkbox"/> <i>Containment pressure is less than 2 psig</i></p> <p><input type="checkbox"/> <i>Containment temperature is less than 120°F</i></p> <p><b>BOP RECOGNIZES Containment temperature is high and evaluates the status of the Containment Cooling Fans</b></p> <p><b>BOP RECOGNIZES 2-HVS1A is tripped</b></p> <p><input type="checkbox"/> <i>Containment radiation level less than alarm values AND stable or lowering:</i></p> <ul style="list-style-type: none"> <li>CIS Radiation Monitors</li> <li>Containment Atmospheric Monitors</li> </ul> <p><b>Containment Atmospheric Monitors will be abnormally high due to the RCS leak. This parameter will drive the crew to enter 2-EOP-03</b></p> <p><input type="checkbox"/> <i>Secondary plant radiation levels less than alarm values AND stable or lowering:</i></p> <ul style="list-style-type: none"> <li>Condenser Air Ejector Monitor</li> <li>S/G Blowdown Monitors</li> <li>Main Steamline Monitors</li> </ul>

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 1    Event # 6	
Event Description: <b>LOCA / 2-HVS-1A trip</b>		
Time	Position Competency	Procedure Step                      Applicant's Actions or Behavior

	SRO	<b>9. DIRECT a field operator to perform the following:</b>	<b>SRO DIRECTS BOP to perform step 9, BOP performs step 9:</b> <input type="checkbox"/> Directs NPO to perform Section 1 of Appendix X, Secondary Plant Post Trip Actions <input type="checkbox"/> Directs SNPO to VERIFY SFP inventory and temperature are normal on all available indications
	SRO	<b>10. DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.</b>	<b>SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an LOCA is in progress</b>
	SRO	<b>11. GO TO the appropriate Emergency Operating Procedure.</b>	<b>SRO Performs a crew brief and transitions to 2-EOP-03 LOCA</b>

<b>2-EOP-03</b>	<b>The following actions are taken from 2-EOP-03, LOSS OF COOLANT ACCIDENT</b>
<b><u>NOTE</u></b>	
<ul style="list-style-type: none"> <li>Instruments should be channel checked when one or more confirmatory indications are available. Reg Guide 1.97 designated instruments should be used for diagnosis of events and confirmation of safety functions.</li> <li>Steps designated with an * may be performed non-sequentially or are to be performed continuously.</li> </ul>	
<b><u>CAUTION</u></b>	
<p>A harsh containment condition exists if containment temperature is greater than 200°F. Figure 1A should be used for determination of subcooling when indicated containment temperature is <b>less</b> than or <b>equal</b> to 200°F. Figure 1B should be used when indicated containment temperature is <b>greater</b> than 200°F. Figure 1A should also be used if containment temperature had exceeded 200°F during event progression but was lowered to 200°F or less by containment cooling systems.</p>	
<b>4.0 Operator Actions:</b>	
SRO	<b>1. MONITOR</b> the SFSCs and <b>VERIFY</b> the SFSC acceptance criteria are MET every 15 minutes.
SRO	<b>2. IMPLEMENT</b> the Emergency Plan.

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 1    Event # 6	
Event Description: <b>LOCA / 2-HVS-1A trip</b>		
Time	Position Competency	Procedure Step    Applicant's Actions or Behavior

	SRO	<b>3. IMPLEMENT</b> placekeeping.	<i>The <b>SRO Pulls the Place Keeper</b> from the back of 2-EOP-03 and begins tracking his progress on the placekeeper</i>
<b>EXAMINER: The implementation of the following step “Sampling Steam Generators” is located in the appendices after Event 8</b>			
	SRO	<b>4. SAMPLE</b> steam generators for activity per Appendix A, Sampling Steam Generators.	<i>The <b>SRO DIRECTS</b> the BOP to <b>PERFORM</b> Appendix A of 2-EOP-99, Sampling Steam Generators</i>
	SRO	<b>5. VERIFY</b> SIAS is ACTUATED.	<i><b>This is a continuous step and will be performed after SIAS actuation conditions are met</b>  <b>SRO VERIFIES</b> SIAS actuated when either of the following conditions are met:</i> <ul style="list-style-type: none"> <li>• Pressurizer pressure is less than 1736 psia</li> <li>• Containment Pressure is greater than 3.5 psig</li> </ul>
<b>NOTE</b>  Per Flowserve Engineering evaluation, during an emergency, the High Pressure Safety Injection pumps can be operated for up to 24 hours with no Component Cooling Water supplied to the seal heat exchangers without resulting in a significant increase in seal leakage.			
	SRO	<b>6. OPTIMIZE</b> SI as follows: <b>A. VERIFY</b> SIAS is ACTUATED. <b>B. VERIFY</b> all available SI pumps are RUNNING. <b>C. VERIFY</b> SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure. <b>D. VERIFY</b> all available charging pumps are RUNNING.	<b>SRO VERIFIES:</b> <ul style="list-style-type: none"> <li>• SIAS is ACTUATED.</li> <li>• SI pumps are OPERATING.</li> <li>• SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure.</li> <li>• All available charging pumps are RUNNING.</li> <li>• Charging header is available</li> </ul>
	SRO	<b>7. IMPLEMENT</b> RCP trip strategy as follows: <b>A. VERIFY</b> pressurizer pressure is less than 1736 psia. <b>B. ENSURE</b> ONE RCP in each loop is STOPPED. <b>C. VERIFY</b> RCS subcooling is greater than minimum RCS subcooling	<b>SRO IMPLEMENTS</b> RCP Trip Strategy <i>When subcooling is lost the <b>SRO will DIRECT</b> Secure all RCPs</i>
<b>EXAMINER: The implementation of the following step “Restore CCW to the RCPs” is located in the appendices after Event 8</b>			

Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		<b>LOCA / 2-HVS-1A trip</b>							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

	SRO	<p><b>8. CHECK</b> RCP seal cooling as follows:</p> <p><b>A. VERIFY</b> CCW to the RCPs.</p> <p><b>B. IF</b> both of the following conditions exist:</p> <ul style="list-style-type: none"> <li>RCPs have CCW flow</li> <li>CIAS has isolated the normal RCP bleed off flow path to the VCT</li> </ul> <p>THEN <b>ESTABLISH</b> the alternate RCP bleedoff flow path to the quench tank by <b>OPENING</b> V2507, RCP Bleed off Relief Stop Vlv.</p>	<p><i><b>May Have been previously completed</b></i></p> <p><i><b>SRO DIRECTS</b> the BOP to Restore CCW to the RCPs per Appendix J of 2-EOP-99:</i></p> <p><i><b>The BOP</b> restores CCW to the RCPs with Appendix J of 2-EOP-99</i></p>
	SRO	<p><b>9. CHECK</b> if RCPs are operating within limits:</p> <p><b>A. VERIFY</b> at least one RCP is OPERATING.</p> <p><b>B. For</b> all operating RCPs, <b>VERIFY</b> RCP operating limits are MET per Table 13, RCP Operating Limits.</p>	<p><i><b>SRO DIRECTS ATC to VERIFY</b> operating limits are MET per Table 13, RCP Operating Limits for any running RCPs.</i></p> <p><i><b>The ATC to VERIFIES</b> operating limits are MET per Table 13, RCP Operating Limits for any running RCPs.</i></p>
	SRO	<p><b>10. ISOLATE</b> potential LOCA locations as follows:</p> <p><b>A. VERIFY</b> both PORVs are CLOSED.</p> <p><b>B. VERIFY</b> Letdown is ISOLATED.</p> <p><b>C. VERIFY</b> all SIX RCS sample valves are CLOSED.</p> <p><b>D. VERIFY</b> RCS-to-CCW boundary is INTACT as follows:</p> <ul style="list-style-type: none"> <li>CCW high radiation monitor alarms are CLEAR. (Annunciators PLP-101 and PLP 102)</li> <li>CCW surge tank high level alarm is CLEAR. (Annunciator LB-10)</li> <li><b>ENSURE</b> sample flow to the CCW radiation monitors.</li> </ul> <p><b>E. VERIFY</b> LOCA is inside Containment by evaluating the following:</p> <ul style="list-style-type: none"> <li>RAB radiation monitor trends and alarms - NORMAL.</li> <li>RAB sump level alarms are CLEAR. (Annunciators LA-2, LA-8, LB-2 and LB-8)</li> </ul>	<p><i><b>SRO EVALUATES</b> plant conditions and takes appropriate actions to isolate the RCS leak</i></p>

Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		<b>LOCA / 2-HVS-1A trip</b>							
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								

	SRO	<p><b>11. ENSURE</b> Containment isolation and Containment cooling as follows:</p> <p><b>A. VERIFY</b> one of the following conditions is MET:</p> <ul style="list-style-type: none"> <li>Containment pressure is greater than 3.5 psig</li> <li>Containment radiation greater than 10 R/hr</li> <li>SIAS is ACTUATED</li> </ul> <p><b>B. VERIFY</b> CIAS is ACTUATED.</p> <p><b>C. IF</b> Containment pressure is greater than 3.5 psig, THEN <b>VERIFY</b> MSIS is ACTUATED.</p> <p><b>D. ENSURE</b> all available Emergency Containment HVAC systems are RUNNING:</p> <ul style="list-style-type: none"> <li>At least ONE train of SBVS</li> <li>At least ONE train of Containment Fan Coolers</li> </ul>	<i><b>SRO EVALUATES</b> plant conditions and Verifies required ESFAS actuations have occurred</i>
	SRO	<p><b>12. CHECK</b> if containment spray actuation is required:</p> <p><b>A. VERIFY</b> Containment pressure is greater than 5.4 psig.</p> <p><b>B. VERIFY</b> CSAS is ACTUATED.</p> <p><b>C. VERIFY</b> Containment Spray flow is at least 2700 gpm from <u>each</u> header.</p>	<i><b>SRO EVALUATES</b> step and <b>DIRECTS</b> Verification of CSAS if required</i> <b>"2A"CS pump will be tripped and "B" CSAS will fail to actuate CSAS; see event 8.</b>
	SRO	<b>13. VERIFY</b> circulating water flow to the Main Condenser.	<i><b>SRO VERIFIES</b> circulating water flow to the main condenser</i>
	SRO	<b>14. STABILIZE</b> the secondary plant per Appendix X, Secondary Plant Post Trip Actions, Section 2.	<i><b>SRO DIRECTS</b> the BOP to Perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits</i> <b>The BOP PERFORMS</b> Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits

Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		LOCA / 2-HVS-1A trip							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

	SRO	<p><b>15.</b> IF a LOOP has occurred, THEN <b>PERFORM</b> both of the following to restore Instrument Air:</p> <p><b>A. ENSURE</b> 2AB 480V Load Center is aligned to an energized bus.</p> <p><b>B. DISPATCH</b> an operator to restore Instrument Air per Appendix H, Operation of the 2A and 2B Instrument Air Compressors.</p>	<i>SRO EVALUATES step and Determines it is not required</i>
	SRO	<p><b>16.</b> Within one hour of CSAS actuation, <b>CHECK</b> if early containment spray flow reduction criteria are MET:</p> <p><b>A. VERIFY</b> all containment spray pumps are operating.</p> <p><b>B. VERIFY</b> all of the following criteria are MET:</p> <ul style="list-style-type: none"> <li>Containment pressure less than 42 psig.</li> <li>At least two containment cooling fans are in operation.</li> <li>Safety injection is actuated.</li> <li>SI flow is within Figure 2, SI Flow vs. RCS Pressure.</li> </ul> <p><b>C. STOP</b> a Containment Spray Pump.</p> <p><b>D. VERIFY</b> containment pressure remains less than 42 psig.</p>	<i>SRO EVALUATES step and Determines it is not required</i>
	SRO	<p><b>17.</b> Within 1 hour of CSAS actuation, <b>VERIFY</b> only ONE Hydrazine Pump is RUNNING.</p>	<i>SRO EVALUATES step and Determines it is not required</i>
	SRO	<p><b>18. VERIFY</b> LOCA is still in PROGRESS.</p>	<i>SRO EVALUATES step and Determines the RCS leak has not been terminated</i>
<p align="center"><b>NOTE</b></p> <p align="center">Cooldown rates up to 100°F in any 1 hour period are permitted to regain or maintain minimum subcooling.</p>			


Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		<b>LOCA / 2-HVS-1A trip</b>							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

SRO/ATC	<p><b>19. COOLDOWN</b> the RCS (to SDC) as follows:</p> <p><b>A. COOLDOWN</b> the RCS using SBCS.</p> <p><b>B.</b> IF RCPs are operating, THEN <b>COOLDOWN</b> at a rate <b>NOT</b> to exceed 100°F in any 1 hour period per 2-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown.</p> <p><b>C.</b> IF all RCPs are STOPPED, THEN <b>COOLDOWN</b> at a rate <b>NOT</b> to exceed 50°F in any 1 hour period per 2-AOP-01.13, Natural Circulation Cooldown.</p>	<p><b>SRO DIRECTS</b> the ATC to initiate an RCS cooldown using SBCS</p> <p><b>The ATC</b> will plot cooldown IAW OPS Policy 539 and place the SBCS permissive switch to manual and begin an RCS cooldown using PCV8801 in manual control to attain a cooldown as directed by the SRO. When MSIS actuates the SRO will direct the cooldown to be performed using 1 ADV in each Steam Generator.</p>
	<p align="center"><b>NOTE</b></p> <p align="center">Maintaining subcooling as low as possible while still within the limits of Figure 1A or 1B will lower the break flow rate and minimize the severity of the accident.</p>	
SRO	<p><b>20. DEPRESSURIZE</b> the RCS to SDC entry conditions as follows:</p> <p><b>A. OPERATE</b> main or auxiliary pressurizer sprays.</p> <p><b>B. VERIFY</b> HPSI throttle criteria are MET.</p> <p><b>C.</b> IF in service, THEN <b>CONTROL</b> letdown.</p> <p><b>D. THROTTLE</b> SI flow as necessary per Appendix S, Safety Injection Throttling and Restoration.</p>	<p><b>SRO DIRECTS</b> the ATC to initiate an RCS depressurization using Main or Auxiliary sprays</p> <p><b>The ATC</b> will initiate an RCS depressurization using Main or Auxiliary sprays while maintaining subcooled margin</p>
<p align="center"><b>The Scenario can be terminated once RCS cooldown and depressurization has commenced</b></p>		
<p align="center"><b>CAUTION</b></p> <p>RCS inventory and containment conditions safety functions should be under positive control prior to blocking safeguards signals. Safety functions should be closely monitored for degradation. Manual actuation of ESFAS may be necessary should conditions warrant.</p>		

Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	1	Event #	6				
Event Description:		<b>LOCA / 2-HVS-1A trip</b>							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

	SRO	<p><b>21. WHEN</b> permissive conditions are MET, THEN <b>BLOCK</b> automatic MSIS and SIAS actuation signals as follows:</p> <p><b>A. IF</b> MSIS is ABSENT, THEN <b>BLOCK</b> automatic actuation of MSIS.</p> <p><b>B. IF</b> SIAS is ABSENT, THEN <b>BLOCK</b> automatic actuation of SIAS.</p>	When Containment pressure reaches 3.5 psi MSIS cannot be blocked
	SRO	<p><b>22. CHECK</b> if HPSI throttle criteria are MET:</p> <p><b>A. VERIFY</b> at least ONE HPSI pump is OPERATING.</p> <p><b>B. VERIFY</b> all of the following HPSI throttle criteria are MET:</p> <ul style="list-style-type: none"> <li>RCS subcooling is greater than or equal to minimum subcooling</li> <li>Pressurizer level is greater than 30% and stable or rising</li> <li>At least one S/G is available for RCS heat removal with level being restored to OR maintained between 60 and 70% NR</li> <li>Rx Vessel level indicates sensors 4 through 8 are covered,</li> </ul> <p>or</p> <p><b>NO</b> abnormal differences (greater than 20°F) between Thot and Rep CET temperature</p> <p><b>C. THROTTLE</b> SI flow per Appendix S, Safety Injection Throttling and Restoration.</p>	<b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant
	SRO	<p><b>23. CHECK</b> HPSI pump restart criteria:</p> <p><b>A. VERIFY</b> HPSI throttling criteria are being maintained.</p>	<b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant



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Appendix D			Operator Action				Form ES-D-2		
Op Test No.: L-19-1			Scenario #	1	Event #	6			
Event Description:			<b>LOCA / 2-HVS-1A trip</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								

	SRO	<b>24. CHECK</b> LPSI pump stop criteria: <b>A. VERIFY</b> pressurizer pressure is greater than 250 psia AND CONTROLLED. <b>B. STOP</b> the LPSI pumps. <b>C. CLOSE</b> the LPSI injection valves. <b>D. PLACE</b> LPSI pump handswitches in AUTO.	<b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant
	SRO	<b>25. CHECK</b> LPSI pump restart criteria: <b>A. VERIFY</b> both LPSI pumps are STOPPED. <b>B. VERIFY</b> RAS is ABSENT. <b>C. VERIFY</b> pressurizer pressure is less than 250 psia. <b>D. START</b> LPSI pumps as necessary. <b>E. OPEN</b> the LPSI injection valves.	<b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant
<b>NOTE</b> All of the following are necessary for restoration of Letdown: <ul style="list-style-type: none"> <li>Instrument Air</li> <li>Non-essential sections of MCCs 2A6 and 2B6 energized (for Q valves)</li> <li>SIAS and CIAS reset</li> </ul>			
	SRO	<b>26. VERIFY</b> Letdown IN SERVICE.	<b>SRO evaluates</b> step and Determines takes actions as plant conditions warrant

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #	7	
Event Description:		<b>PCV-1100F will fail open</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**Note to Evaluator: PCV-1100F fails open is a malfunction an auto trigger when RX power lowers to .05%.**

**Booth Operator Instructions:**

- Upon Reactor Trip Event 7, PCV-1100F fails open, will be auto inserted.

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**Indications:**

**Annunciators:**

	ATC		<b>RECOGNIZES</b> PVC-1100F is failed OPEN
	ATC		<b>ATTEMPTS</b> to close all spray valves in manual
	ATC		<b>RECOGNIZES</b> the need to secure the 2B1 RCP to stop the de-pressurization
	ATC		<b>RECOMMENDS</b> securing the 2B1 RCP
	SRO		<b>DIRECTS</b> the ATC the secure the 2B1 RCP
	ATC		<b>SECURES</b> the 2B1 RCP


**2-EOP-01**


The following actions are taken from 2-EOP-01, Standard Post Trip Actions

**4.2 Immediate Operator Actions:**

- **ATC:** Verifies Reactor power lowering, Negative Startup rate, all CEAs and verifies no dilution is in progress inserted and communicates status to the Unit Supervisor. Starts backup charging pumps as necessary.
- **BOP:** Verifies all governor and throttle valves closed and communicates status to the Unit Supervisor. Makes plant announcements and trip notifications.

**4.0 Operator Actions:**

		<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>					<b>SEG</b> Page 46 of 57	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-19-1		Scenario #	1	Event #	7			
Event Description:		<b>PCV-1100F will fail open</b>						
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior			
	SRO	Step 5 VERIFY RCS Pressure Control:			<b>SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies:</b> <input type="checkbox"/> <i>Pressurizer pressure is between 1800 and L-19-100 psia</i> <input type="checkbox"/> <i>Pressurizer pressure is trending to between 2225 and 2275 psia</i> <b>IF SIAS</b> has occurred the <b>SRO</b> will <b>DIRECT</b> two RCPs to be tripped and perform 2-EOP-99 App.J to restore CCW to the RCPs			

	<b>L-19-1 NRC EXAM SCENARIO 1 REV. 0</b>	<b>SEG</b> Page 47 of 57				
<b>Appendix D</b>		<b>Form ES-D-2</b>				
Op Test No.: L-19-1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Operator Action</td> </tr> <tr> <td style="width: 33%;">Scenario # 1</td> <td style="width: 33%;">Event # 8</td> </tr> </table>		Operator Action		Scenario # 1	Event # 8
Operator Action						
Scenario # 1	Event # 8					
Event Description: <b>B train of CSAS does not actuate</b>						
Time	Position	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Procedure Step</td> <td style="width: 50%;">Applicant's Actions or Behavior</td> </tr> <tr> <td style="height: 40px;"></td> <td style="height: 40px;"></td> </tr> </table>	Procedure Step	Applicant's Actions or Behavior		
Procedure Step	Applicant's Actions or Behavior					
	Competency					

<b>CT-2</b>	<b>INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY-Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. Actuation of "B" Train of Containment Spray within 15 minutes of entering 2-EOP-03 to prevent unnecessary entry into Functional Recovery procedure and escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators, or 15 minute post CSAS if after 2-EOP-03 entry.</b>		
<b>Note to Evaluator: "B" CSAS Actuation module FAILED AS-IS, is an auto trigger that is inserted upon loading the scenario and is cleared when the applicant cycles the THINK push button and the CSAS actuation switch simultaneously.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li><b>NONE: Event 8, "A" Containment Spray Pump fails and "B" CSAS Actuation module FAILED AS-IS, is an auto trigger</b></li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li><b>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</b></li> </ul>			
<b>Evaluator Time Tracking:</b> Time containment pressure reaches 5.4psig (actuation setpoint) _____ Time "B" containment spray actuated and spray pump running _____			
<b>Indications: Safety Injection Actuation Alarms and supporting plant parameters</b> <b>Annunciators: Multiple</b>			
	BOP		Recognizes plant parameters require CSAS and validates its actuation
	BOP		Identifies that "A" CS pump is tripped and B train CSAS did not actuate and takes action to actuate B train CSAS
	BOP		Pushes the "B" CSAS push button and turns the "B" CSAS actuation switch, then verifies the 2B CS pump started and adequate containment spray flow
	BOP		Updates the crew on the actuation status of CSAS

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

<b>2-EOP-99 APP "A"</b>		<b>The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"</b>	
	BOP	<p>1. If a LOOP has occurred, Then PERFORM <b>BOTH</b> of the following:</p> <p>A. ENSURE 2AB 480V Load Center is aligned to an energized bus.</p> <p>B. DISPATCH an operator to restore Instrument Air. <b>REFER TO</b> Appendix H, Operation of the 2A and 2B Instrument Air Compressors.</p>	<p><b>2AB Bus energized when 2A EDG output breaker is closed. Determines no additional action required</b></p>
<p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open</li> <li>When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset</li> </ul>			
	BOP	<p>2. If an <b>INADVERTENT</b> SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following:</p> <p><input type="checkbox"/> RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8A HCV-14-9</p> <p><b>OR</b></p> <p><input type="checkbox"/> RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8B HCV-14-10</p>	<p><b>Determines no action required, no inadvertent SIAS</b></p>
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.</p>			

Appendix D			Operator Action			Form ES-D-2
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	<p>3. If a <b>VALID</b> SIAS has closed the 'N' Header valves, Then PERFORM the following:</p> <p>A. VERIFY both safety related CCW headers are operational.</p> <p>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</p> <p>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing either of the following:</p> <p>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8A, HCV-14-9</p> <p><b>OR</b></p> <p>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8B, HCV-14-10</p>	BOP restores "N" header flow
	BOP	<p>4. If the 'N' Header has been restored, Then OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves by performing the following:</p> <p>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-L-19-1-7 and FCV-L-19-1-9 by PLACING the control switch to CLOSE / OVERRIDE.</p> <p>B. OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves.</p>	BOP restores SGBD sample flow.
	BOP	<p>5. If the 'N' Header is in service, Then DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.</p>	BOP directs chemistry to perform required samples
	BOP	<p>6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.</p>	BOP determines step is N/A

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step	Applicant's Actions or Behavior			

**NOTE**

**The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.**

	BOP	7. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	BOP informs US to declare CCW header inoperable
	BOP	8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS, <ul style="list-style-type: none"> <li>Seismic event</li> <li>'N' Header is found NOT intact</li> <li>The operable Safety Related CCW header becomes inoperable</li> </ul> Then ISOLATE the 'N' header.	BOP monitors for these conditions, determines N/A at this time
<b>2-EOP-99 APP "J"</b>		<b>The following actions are for Restoring CCW to the RCPs Using 2-EOP-99, APPENDIX "J".</b>	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: <input type="checkbox"/> A. ENSURE 2AB480V Load Center is aligned to an energized bus. <input type="checkbox"/> B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	BOP determines LOOP has not occurred, the was 2AB bus energized with the 2A EDG breaker closure
	BOP	2. ENSURE Instrument Air to Containment is available by PLACING HCV-18-1 to CLOSE / OVERRIDE and then to OPEN.	BOP opens HCV-18-1

**NOTE**

- HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open.
- When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset.

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	<p>3. If an <b>INADVERTENT</b> SIAS has occurred, Then RESTORE flow from <b>EITHER</b> 'A' or 'B' CCW Header to the 'N' Header by placing the control switches for the desired train to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8A 'N' Hdr Isol Discharge HCV-14-9 'N' Hdr Isol Suction</p> <p><b>OR</b></p> <p>HCV-14-8B 'N' Hdr Isol Discharge HCV-14-10 'N' Hdr Isol Suction</p>	BOP determines no inadvertent SIAS occurred
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.</p>			
	BOP	<p>4. If a <b>VALID</b> SIAS has closed the 'N' Header valves, <u>Then</u> PERFORM the following:</p> <p>A. VERIFY <u>both</u> safety related CCW headers are operational.</p> <p>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</p> <p>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing <u>either</u> of the following:</p> <p>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A, HCV-14-9</p> <p><b>OR</b></p> <p>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B, HCV-14-10</p>	BOP realigns the "N" header restoring CCW flow



<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step	Applicant's Actions or Behavior			

	BOP	5. OPEN ALL of the following CCW to / from the RCP valves: <input type="checkbox"/> HCV-14-1, CCW To RC PUMP <input type="checkbox"/> HCV-14-2, CCW From RC PUMP <input type="checkbox"/> HCV-14-7, CCW To RC PUMP <input type="checkbox"/> HCV-14-6, CCW From RC PUMP	<b>BOP</b> opens valves restoring CCW flow to RCPs
	BOP	6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.	<b>BOP</b> opens V2507
<b><u>CAUTION</u></b>  RCP Seal Cooler isolation valves automatically close on high Seal Cooler outlet temperature of 200°F. Maintaining the control switch in the OPEN position will override this function. CCW radiation monitors should be closely monitored for indication of RCS to CCW leakage should conditions warrant the valve(s) to be maintained in the open position. Consideration should be given to returning the control switch(es) to the AUTO position once the valves have been opened.			
	BOP	7. ENSURE ALL RCP Seal Cooler Isolation valves are OPEN: HCV-14-11-A1,CCW From 2A1 RCP Seal Cooler HCV-14-11-A2,CCW From 2A2 RCP Seal Cooler HCV-14-11-B1,CCW From 2B1 RCP Seal Cooler HCV-14-11-B2,CCW From 2B2 RCP Seal Cooler	<b>BOP</b> verifies valves are open
<b><u>NOTE</u></b>  Reactor Coolant Pumps must be secured if CCW flow is not restored within 10 minutes.			
	BOP	8. VERIFY CCW flow to running RCPs by any of the following: <input type="checkbox"/> DCS RCP Overview Screen <input type="checkbox"/> FIS-14-15A/B/C/D, CCW From RCP Hx Flow <input type="checkbox"/> L6, RCP CCW Flow Low Trip, Annunciator clear.	<b>BOP</b> verifies CCW flow to RCPs
<b><u>NOTE</u></b>  The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	<b>BOP</b> informs US to declare CCW header is inoperable
	BOP	10. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS, <input type="checkbox"/> Seismic event <input type="checkbox"/> N' Header is found NOT intact <input type="checkbox"/> The operable Safety Related CCW header becomes inoperable Then ISOLATE the 'N' header.	<b>BOP</b> monitors for these conditions, not present at this time
<b>2-NOP-99.07</b>		<b>The following actions are for restoring AFW using 2-NOP-99.07, Operations Hard Cards</b>	
<b><u>NOTE</u></b> <input type="checkbox"/> The discharge valves may be taken off the open seat to expedite acknowledgement of their alarms. <input type="checkbox"/> Feeding with the electric pump is preferred over the steam driven pump. <input type="checkbox"/> A trip from 100% power (Post EPU) will require ~500 gpm total AFW flow.			
<b><u>CAUTION</u></b> <input type="checkbox"/> Initial feedwater flow should be controlled to less than 150 gpm for the first 5 minutes when using Aux Feed for water hammer and thermal shock concerns. Failure to control flow to less than 150 gpm for at least five minutes or until a level rise is observed may require a visual inspection of the feed ring prior to startup. If Steam Generator level never lowered to below 35% NR, the 150 gpm limit is not applicable. (Section 7.1.3, Management Directive 2) <input type="checkbox"/> During emergencies, this flow limit can be exceeded to restore an EOP Safety Function prior to requiring transition to the Functional Recovery procedure or to prevent escalation of an Emergency Declaration.			
	BOP	<b>1. PERFORM</b> any of the following steps as necessary to restore Steam Generator levels: <b>A.</b> IF a steam generator has a tube leak/rupture, THEN <b>CONSIDER</b> the following: <b>(1) PLACE</b> the control switch to CLOSE for the steam supply from the MOST affected S/G: <input type="checkbox"/> MV-08-13, S/G 2A STM TO AFW PP 2C <input type="checkbox"/> MV-08-12, S/G 2B STM TO AFW PP 2C	<b>BOP DETERMINES</b> this step is N/A

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	1	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<b>B. FEED</b> the 2A Steam Generator using the 2A AFW Pump: <b>(1) START PUMP 2A.</b>	<b>BOP STARTS</b> the 2A AFW pump.
	BOP	<b>(2) OPEN</b> SE-09-2, 2A PUMP DISCH TO 2A S/G VLV. (KEY 83)	<b>BOP OPENS</b> SE-09-2, 2A PUMP DISCH TO 2A S/G VLV, using KEY 83.
	BOP	<b>(3) THROTTLE</b> MV-09-9, PUMP 2A DISCH TO SG 2A VALVE, as necessary to establish and maintain desired AFW flow to 2A S/G.	<b>BOP THROTTLES</b> MV-09-9, PUMP 2A DISCH TO SG 2A VALVE, as necessary to establish and maintain desired AFW flow to 2A S/G.
	BOP	<b>C. FEED</b> the 2B Steam Generator using the 2B AFW Pump: <b>(1) START PUMP 2B.</b>	<b>BOP STARTS</b> the 2B AFW pump.
	BOP	<b>(2) OPEN</b> SE-09-3, 2B PUMP DISCH TO 2B S/G VLV. (KEY 84)	<b>BOP OPENS</b> SE-09-3, 2B PUMP DISCH TO 2B S/G VLV, using KEY 84.
	BOP	<b>(3) THROTTLE</b> MV-09-10, PUMP 2B DISCH TO SG 2B VALVE, as necessary to establish and maintain desired AFW flow to 2B S/G.	<b>BOP THROTTLES</b> MV-09-10, PUMP 2B DISCH TO SG 2B VALVE, as necessary to establish and maintain desired AFW flow to 2B S/G.

**SIMULATOR LESSON LAYOUT**



## QUANTITATIVE ATTRIBUTES

### **Malfunctions:**

*Before EOP Entry:*

1. PCV-1100E fails open
2. RWT LEVEL LIS-07-2C fails Low
3. PIC-2201 LD Pressure Controller Auto fails
4. RCS leakage develops

*After EOP Entry:*

1. PCV-1100F fails open
2. A CSAS pump trips on high amps
3. B Train of CSAS fails to auto

### **Abnormal Events:**

1. PCV-1100E fails open
2. RWT LEVEL LIS-07-2C fails Low
3. PIC-2201 LD Pressure Controller Auto fails
4. RCS leakage develops

### **Major Transients:**

1. LOCA Ramped in over 6 minutes

### **Critical Tasks:**

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION –Take action to close PCV-1100E prior to reaching RPS setpoint for reactor trip.
2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY-Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. Actuation of "B" Train of Containment Spray within 15 minutes of entering 2-EOP-03 to prevent unnecessary entry into Functional Recovery procedure and escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators, or 15 minute post CSAS if after 2-EOP-03 entry.

## OPERATIONS SHIFT TURNOVER REPORT

DAYS

Today

UNIT 2 CONTROL ROOM

**Desk RCO:** \_\_\_\_\_ **Board RCO:** \_\_\_\_\_

**Protected**

**Train:** A **Online Risk:** GREEN

**Unit 2 Identified RCS Leakage:** .02 gpm **Unit 2 Unidentified RCS Leakage:** .06 gpm

**Unit 2 Scheduled Activities per the OSP:**

No scheduled surveillances

**Unit 2 Unscheduled Surveillances:**

No unscheduled surveillances

**Upcoming ECOs to Hang or Release:**

None

**Tech Spec Action Statement:**

1. NONE

**Operator Work Around:**

None

**Locked in Annunciators:**

1. NONE

**Current Status:**

1. 2-3% power, MOC, no scheduled surveillances, all Mode 1 preps complete. Permission has been obtained.
2. 2A Screen Wash Pump OOS.
3. Small amounts of sea grass have been observed in the intake, 2B Screen wash pump is running, 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green.
4. A Reactor Start-up is in progress following a Forced Outage for Feed Water Control Valve issues, on main feedwater and SBCS.
5. Raise reactor power to 10-12% IAW 2-GOP-201 step 4.3.10b and declared Mode 1

**Longstanding Problems:**

None

**Reactivity Turnover:**

Per Procedure guidance and Reactor Engineering guidance letter

Facility:	St. Lucie	Scenario No.:	2	Op-Test No.:	L-19-1
Examiners:			Operators:	Unit Supervisor:	
				BRCO:	
				DRCO:	
Initial Conditions:	45% power, MOC, no scheduled surveillances, return the unit to 100%.				
Turnover:	2A Screen Wash Pump OOS, 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green.				
Critical Tasks:	1 RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip. 2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Restore 2A CS pump and flow prior to exceeding 44 psig design pressure of containment.				

Event No.	Malf. No.	Event Type*	Event Description
1		R/ATC/SRO	<b>Action:</b> Raise Power to 100%
2	1	I/ATC/SRO TS/SRO	<b>Malf:</b> 2B S/G PT-8023D fails high <b>Action:</b> Bypass RPS/AFAS bistables <b>T.S.</b> 3.3.1, 3.3.2
3	2	C/ BOP/SRO TS/SRO	<b>Malf:</b> HVS-1C trips <b>Action:</b> start B/U fan <b>T.S.</b> 3.6.2.1
4	3	I /ATC/SRO TS/SRO	<b>Malf:</b> LIC 2110 L/D flow controller fails to Minimum flow in auto <b>Action:</b> Manually control letdown flow
5	4	M/ALL	<b>Malf:</b> 2A Main Feed Reg valve fails open requiring manual control then 2A Main Feed Reg valve fails open requiring RX trip, ESD in Containment from the 2A S/G and 2B3 4.16kv bus Lock Out on trip, <b>Action:</b> Trip RX <b>CT-1:</b> RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip.
6	5	C/ATC/SRO	<b>Malf:</b> On trip 2 CEAs remain out of core <b>Action:</b> Emergency Borate
7	6	C/ BOP/SRO TS/SRO	<b>Malf:</b> On RX trip FB 2, Exciter Supply Breaker fails to open <b>Action:</b> Open FB 2, Exciter Supply Breaker
8	7	C/ATC/SRO TS/SRO	<b>Malf:</b> 2A CS Pp breaker fails to auto close <b>Action:</b> Manually start 2A CS Pp <b>CT-2.</b> INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION in AUTO– Restore 2A CS pump and flow prior to exceeding 44 psig containment pressure

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

**SITE:** ST. LUCIE**Revision #:** 0**LMS ID:** N/A**LMS Rev. Date:** N/A**SEG TITLE:** L-19-1 SCENARIO 2**SEG TYPE:** ☐ Training ☒ Evaluation**PROGRAM:** ☐ LOCT ☒ LOIT ☐ Other:**DURATION:** 90 minutes**Developed by:**\_\_\_\_\_  
Instructor/Developer\_\_\_\_\_  
Date**Reviewed by:**\_\_\_\_\_  
Instructor (Instructional Review)\_\_\_\_\_  
Date**Validated by:**\_\_\_\_\_  
SME (Technical Review)\_\_\_\_\_  
Date**Approved by:**\_\_\_\_\_  
Training Supervision\_\_\_\_\_  
Date**Approved by:**\_\_\_\_\_  
Training Program Owner (Line)\_\_\_\_\_  
Date



**Scenario Outline**

Facility:	St. Lucie	Scenario No.:	2	Op-Test No.:	L-19-1
Examiners:			Operators:	SRO:	
				ATC:	
				BOP:	
Initial Conditions:	45% power, MOC, no scheduled surveillances, return the unit to 100%.				
Turnover:	2A Screen Wash Pump OOS, 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green.				
Critical Tasks:	<p>1 RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip.</p> <p>2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Restore 2A CS pump and flow prior to exceeding 44 psig design pressure of containment.</p>				

Event No.	Malf. No.	Event Type*	Event Description
1		R/ATC/SRO	<b>Action:</b> Raise Power to 100%
2	1	I/ATC/SRO TS/SRO	<b>Malf:</b> 2B S/G PT-8023D fails high <b>Action:</b> Bypass RPS/AFAS bistables <b>T.S.</b> 3.3.1, 3.3.2
3	2	C/ BOP/SRO TS/SRO	<b>Malf:</b> HVS-1C trips <b>Action:</b> start B/U fan <b>T.S.</b> 3.6.2.1
4	3	I /ATC/SRO TS/SRO	<b>Malf:</b> LIC 2110 L/D flow controller fails to Minimum flow in auto <b>Action:</b> Manually control letdown flow
5	4	M/ALL	<b>Malf:</b> 2A Main Feed Reg valve fails open requiring manual control then 2A Main Feed Reg valve fails open requiring RX trip, ESD in Containment from the 2A S/G and 2B3 4.16kv bus Lock Out on trip, <b>Action:</b> Trip RX <b>CT-1:</b> RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip.
6	5	C/ATC/SRO	<b>Malf:</b> On trip 2 CEAs remain out of core <b>Action:</b> Emergency Borate
7	6	C/ BOP/SRO TS/SRO	<b>Malf:</b> On RX trip FB 2, Exciter Supply Breaker fails to open <b>Action:</b> Open FB 2, Exciter Supply Breaker
8	7	C/ATC/SRO TS/SRO	<b>Malf:</b> 2A CS Pp breaker fails to auto close <b>Action:</b> Manually start 2A CS Pp <b>CT-2.</b> INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION in AUTO– Restore 2A CS pump and flow prior to exceeding 44 psig containment pressure

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

## SIMULATOR EXERCISE GUIDE REQUIREMENTS

**Terminal Objective**      Given specific plant conditions, the students will be able to mitigate events in accordance with plant procedures.

**Enabling Objectives:**      None

**Prerequisites:**            1. Simulator  
2. Applicants enrolled in Initial License Program

**Training Resources:**      1. Floor Instructor as Shift Technical Advisor  
2. Simulator Booth Operator  
3. NRC Evaluators

**References:**                1. 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1  
2. 2-AOP-99.01, Loss of Tech Spec Instrumentation  
3. 2-AOP-25.01 Loss of RCB Cooling Fans  
4. 2-AOP-02.03, Charging and Letdown  
5. 2-EOP-01, Standard Post Trip Actions  
6. 2-EOP-05, Excessive Steam Demand  
7. 2-EOP-99, Appendices / Figures / Tables /Data Sheets  
8. Unit-2 Technical Specifications

**Protected Content:**      **NONE**

**Evaluation Method:**      Simulator performance will be evaluated in accordance with NUREG 1021 rev. 11.

**Risk Significant Operator Actions Contribution to CDF:**      Perform Emergency Boration to Shut down Reactor 0.5%

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions made to the material after initial approval.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				REVIEWER	DATE

## L-19-1 NRC SCENARIO 2 OVERVIEW/SEQUENCE OF EVENTS

The crew assumes the shift at 45% power with no scheduled surveillances.

- 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green 2B Screen wash Pump and traveling screens running
- 2A Screen wash Pump inoperable on Clearance

Raise Power to 100%; The SRO will direct the ATC and BOP to commence a unit up-power using the guidance of 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1. The ATC will begin RCS dilution and withdraw CEAs, as directed to raise reactor power; The BOP will operate the Turbine Control System, as directed, to raise turbine load.

After the needed power change has been observed the 2B S/G PT-8023D fails high, requiring entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation. The failure should be recognized and reported by the BOP. The SRO will direct the BOP to bypass the affected RPS/AFAS/ESFAS bistables. Requires a Tech Spec evaluation and entry into LCO 3.3.1, and 3.3.2.

HVS-1C Containment Cooler Fan trips the BOP will evaluate and Start the standby fan cooler

T.S. 3.6.2.1 action 1b

Level controller LIC 2110 fails to max letdown flow in auto, the ATC will identify the failure and take manual control of LIC-2110 to restore letdown flow to normal pre-event values. The SRO will implement 2-AOP-02.03, Charging And Letdown.

2A Main Feed Reg Valve fails open requiring manual control to restore S/G level before RX trip.

CT-1: RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip.

2A Main Feed Reg Valve fails open leading to a Reactor trip, upon the trip a Lock –out of the 2B3 4160 bus will occur and an ESD develops in Containment on the 2A S/G,

The crew will Enter 2-EOP-01 transition to 2-EOP-05 ESD

On reactor trip, 2 CEAs do not fully insert. The ATC will identify the failure and Emergency Borate IAW 2-EOP-01, Standard Post Trip Actions, Verify Reactor Trip, contingency steps.

On turbine trip the Exciter Supply Breaker FB 2 does not open, The BOP will identify the failure and OPEN Exciter Supply Breaker FB 2

On CSAS the breaker for the 2A CS Pp fails to auto close, B Train of CSAS unavailable due to 2B3 4160 bus L/O, the ATC/BOP will evaluate and Manually start the 2A CS Pp to get adequate spray flow

CT-2: INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Restore 2A CS pump and flow prior to exceeding 44 psig design pressure of containment.

**Procedures Used****Tech Specs Entered**

- 2-GOP-201, Reactor Plant Startup – Mode 2 to Mode 1
- 2-AOP-99.01, Loss of Tech Spec Instrumentation
- 2-AOP-25.01 Loss of RCB Cooling Fans
- 2-AOP-02.03, Charging and Letdown
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-05, Excessive Steam Demand
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets
- Unit-2 Technical Specifications

- 3.3.2, 3.3.2
- 3.6.2.1

**Scenario Setup and Booth Operator Instructions:**


- **ENSURE** Examination Security has been established.
- **ENSURE** placekept copy of 2-GOP-101 at US desk.
- **ENSURE** the Simulator is unloaded
- **ENSURE** IC #205 from Exam Flash drive is loaded as follows:
  - **Open**, folder L-19-1 NRC SCENARIO ICs
  - **Copy**, CY18B#205.ic and CY18B#205.rlp
  - **Open**, IC folder on simulator operator station desk top
  - **Paste**, CY18B#205.ic and CY18B#205.rlp into IC Master
  - **Open**, folder L-19-1 NRC SCENARIO ICs
  - **Copy**, xr205.dat
  - **Open**, IC folder on simulator operator station desk top
  - **Paste**, xr205.dat into IC Data
- **ENSURE** Lesson for SCENARIO 1 from Exam Flash drive is loaded as follows:
  - **Open**, folder L-19-1 S-2 Isn
  - **Copy**, L-19-1 S-2.Isn
  - **Open**, Lessons folder on simulator operator station desk top
  - **Paste**, L-19-1 S-2.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#205
  - **RUN** the Simulator
  - Place the 2A Screen wash pump off
  - Place a Clearance tag on the 2A Screen wash pump
  - Start the 2B Screen wash pump
  - **ENSURE** the A Train Protected sign and OLRM sign are placed RTGB-203.
  - **ENSURE** the GREEN OLRM sign is placed RTGB-203.
  - **ENSURE** the CHEMISTRY sheet for MOC is placed on the Unit Supervisor Desk.
  - **FREEZE** the simulator
- **OPEN** and **EXECUTE** L-19-1 S- 2.Isn
- **RUN** the Simulator and allow for stabilization
- **FREEZE** the simulator
- **UNFREEZE** the simulator prior to the candidates entering the simulator
- 

**Post scenario simulator restoration:**


- **ENSURE** L-19-1 NRC SCENARIO 2.Isn are deleted from Simulator in accordance with Attachment 2 of Training Department Policy PSL-TRNG 142

**BRIEF / TURNOVER INFORMATION**

- Conduct simulator crew pre-scenario brief using TR-AA-L-19-10-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-L-19-10-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached

		L-19-1 NRC EXAM SCENARIO 2 REV. 0					<b>SEG</b> Page 8 of 51	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	2	Event #	1		
Event Description:		Raise Power to 50%						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

<b>Booth Operator Instructions: NONE</b> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications:</b> <b>Annunciators:</b>			
2-GOP-101	The following actions are taken from 2-GOP-101, Reactor Operating Guidelines During Steady State and Scheduled Load Changes		
<b>4.1 Power Level Escalations</b>			
	SRO	<b>PERFORMS</b> A Crew Brief	<i>SRO briefs the crew on the pending up power</i>
	SRO	<b>1. MAINTAIN</b> T-avg at T-ref during main generator loading as follows: <input type="checkbox"/> CEA withdrawal in Manual Sequential. <input type="checkbox"/> Boron concentration changes per 2-NOP-02.24, Boron Concentration Control.	<i>SRO will direct the <b>ATC MAINTAIN</b> T-avg at T-ref during main generator loading using Boron concentration changes per 2-NOP-02.24, Boron Concentration Control.</i>
<b><u>NOTE</u></b>			
<ul style="list-style-type: none"> <li>Attachment 2, Fuel Preconditioning Guidelines contains guidance for power escalation rates.</li> <li>Reactor Engineering may provide clarification for power escalation rates from Attachment 2, Fuel Preconditioning Guidelines.</li> </ul>			
	SRO	<b>2. IF</b> greater than or equal to 50% power OR 30% power during shape annealing factor test, THEN RAISE power as follows: A. <b>USE</b> boration or dilution per 2-NOP-02.24, Boron Concentration Control for all planned reactivity additions. B. <b>USE</b> CEAs for ASI control per 0-NOP-100.02, Axial Shape Index Control.	<i>SRO EVALUATES step and determines it to be N/A until greater than 50% power</i>
	SRO	<b>3. IF</b> available, <b>THEN ENSURE</b> two Charging Pumps are operating per 2-NOP-02.02, Charging and Letdown.	<i>SRO ACKNOWLEDGES this step is N/A as 2 Charging pumps are running.</i>
	SRO	<b>4. PLACE</b> the Pressurizer on recirculation per Attachment 1, Pressurizer Recirculation Guidelines.	<i>SRO DETERMINES this step is N/A as Pressurizer is on recirc.</i>

		L-19-1 NRC EXAM SCENARIO 2 REV. 0					<b>SEG</b> Page 9 of 51	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	2	Event #	1		
Event Description:		Raise Power to 50%						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>5. CONTINUE</b> to load Main Generator per 2-GOP-201, Reactor Plant Startup - MODE 2 to MODE 1.	<b>SRO DIRECTS</b> up power per 2-GOP -201, Reactor Plant Startup - MODE 2 to MODE 1
2-GOP-201		The following actions are taken from 2-GOP-201, Reactor Plant Startup – Mode 2 To Mode 1 AND RE guidance	
4.8 Raising Reactor Power from 45% to 100%			
	SRO	PERFORMS A Crew Brief	SRO briefs the crew on the pending up power
NOTE			
The System Load Dispatch shall be notified as soon as practical, but within 30 minutes of a change in status of the Power System Stabilizer (PSS). (Section 7.2, Commitment 2)			
	SRO	<b>STEP 4.8.13 PLACE</b> PSS in service as follows A. PLACE POWER SYSTEM STABILIZER control switch in ON. B. VERIFY red PSS light is ON. C. RECORD time PSS placed in service in Narrative log. D. NOTIFY System Load Dispatch that the PSS has been placed in service. E. RECORD time System Load Dispatch is notified in narrative log. F. NOTIFY Unit 1 that the Unit 2 PSS is in service, reactive load should be adjusted as necessary	<b>SRO will direct the BOP</b> to the PSS in service and notify System Load Dispatch
	SRO	SRO refers to the Reactor Engineering power change guidance for the up power	<b>SRO EVALUATES RE</b> guidance and directs reactivity changes as directed in the letter
	SRO	SRO directs the ATC to setup a dilution per RE guidance and IAW 2-NOP-02.24	<b>The ATC begins a dilution</b> IAW 2-NOP-02.24
2-NOP-02.24		The following actions are taken from 2-NOP-02.24, Section 4.2, Boron Concentration Control	



Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	1	
Event Description:		Raise Power to 50%				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


**NOTE**

- ☐ An Operator Aid has been placed at RTGB-205 PNL "M". Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Operator Aid placard.
- ☐ Accuracy of FIC-2210X, PMW FLOW, is plus or minus 0.5 gpm, and the recommended minimum flow rate is 2 gpm. (Section 7.1.2, Developmental Reference 12)
- ☐ IF FCV-2210X, REACTOR MAKEUP, does NOT OPEN, THEN PERFORM Attachment 2, FIC-2210 X/Y Controllers Hard Manual Operating Instructions to adjust flow.
- ☐ Pressing M as needed will keep display for FIC-2210X illuminated.


	ATC	<b>1. REVIEW</b> Section 2.0, PRECAUTIONS AND LIMITATIONS and Section 3.0, PREREQUISITES AND INITIAL CONDITIONS, at least once per shift.	<b>ATC REVIEWS</b> precautions and limitations.
	ATC	<b>2. ENSURE</b> DCS calorimetric power is less than 100.00%. (Section 7.1.3, Management Directive 2)	<b>ATC ACKNOWLEDGES</b> this step is N/A.
	ATC	<b>3. DETERMINE</b> the volume of primary water to be added.	<b>ATC DETERMINES</b> the volume of primary water to be added from reactivity plan.
	ATC	<b>4. IF</b> performing a constant dilution, <b>THEN DETERMINE</b> and <b>RECORD</b> the primary water flow rate.	<b>ATC DETERMINES</b> and <b>RECORDS</b> the primary water flow rate from the reactivity plan.
	ATC	<b>5. ENSURE</b> FQI-2210X, WATER FLOW TOTALIZER, is RESET to zero	<b>ATC ENSURES</b> FQI-2210X, WATER FLOW TOTALIZER, is RESET to zero
	ATC	<b>6. ENSURE</b> MAKEUP MODE SELECTOR switch is in MANUAL.	<b>ATC ENSURES</b> MAKEUP MODE SELECTOR switch is in MANUAL.
	ATC	<b>7. ENSURE</b> FIC-2210X, PMW FLOW, is in MANUAL AND controller output is at MINIMUM.	<b>ATC ENSURES</b> FIC-2210X, PMW FLOW, is in MANUAL AND controller output is at MINIMUM.
	ATC	<b>8. ENSURE</b> FCV-2210Y, BORIC ACID, control switch is CLOSED.	<b>ATC ENSURES</b> FCV-2210Y, BORIC ACID, control switch is CLOSED.


Appendix D			Operator Action				Form ES-D-2
Op Test No.:		L-19-1	Scenario #	2	Event #	1	
Event Description:		Raise Power to 50%					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	<b>9. PLACE</b> FCV-2210X, REACTOR MAKEUP, control switch in AUTO.	<b>ATC PLACES</b> FCV-2210X, REACTOR MAKEUP, control switch in AUTO.
	ATC	<b>10. IF</b> diluting to the VCT, THEN <b>OPEN</b> V2512, REACTOR MAKEUP WATER STOP VLV.	<b>ATC RECOGNIZES</b> this step is N/A.
	ATC	<b>11. IF</b> diluting to the charging pump suction, THEN <b>OPEN</b> V2525, BORON LOAD CONTROL VALVE.	<b>ATC OPENS</b> V2525, BORON LOAD CONTROL VALVE.
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p><b>Allowing PMW flow rate to exceed the running charging pump(s) capacity while using V2525, BORON LOAD CONTROL VALVE may cause the VCT relief valve to lift.</b></p>			
	ATC	<b>12. IF</b> using V2525, BORON LOAD CONTROL VALVE, THEN <b>ENSURE</b> the flow rate on FIA-2212, CHARGING TO REGEN HX, for the number of running charging pumps is <b>NOT</b> exceeded.	<b>ATC ENSURES</b> the flow rate on FIA-2212, CHARGING TO REGEN HX, for the number of running charging pumps is <b>NOT</b> exceeded.
	ATC	<b>13. ADJUST</b> FIC-2210X, PMW FLOW, in AUTO or MANUAL to provide flow rate based on volume of primary water to be added.	<b>ATC ADJUSTS</b> FIC-2210X, PMW FLOW, in MANUAL to provide flow rate based on volume of primary water to be added.
		<b>14. MAINTAIN</b> PIA-2225, (VCT) PRESSURE $\leq 30$ psig by opening and closing V2513, (VCT) VENT VALVE.	<b>ATC OPENS</b> V2513 VENT VALVE as required to maintain VCT pressure $\leq 30$ psig.
		<b>15. IF</b> diverting to maintain VCT level, THEN <b>PERFORM</b> the following: <b>A. PLACE</b> V2500, (VCT) DIVERT VALVE, in the WMS position, and <b>VERIFY</b> valve indicates OPEN. <b>B. When</b> normal level on LIC-2226, (VCT) LEVEL, is reached, THEN <b>PLACE</b> V2500, (VCT) DIVERT VALVE, in AUTO, and <b>VERIFY</b> valve indicates CLOSED.	<b>ATC OPENS</b> V2500 VCT DIVERT VALVE, then <b>CLOSES</b> V2500 to restore VCT level as required.
<b>2-GOP-201</b>		<b>The following actions are taken from 2-GOP-201, Reactor Plant Startup – Mode 2 To Mode 1 AND RE guidance</b>	

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	2	Event #	1	
Event Description:		Raise Power to 50%						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							


<b>4.8 Raising Reactor Power from 45% to 100%</b>			
	SRO	<b>SRO directs BOP to setup the turbine for a up power at a rate as described in the RE guidance letter</b>	<i>The BOP sets the Turbine up for an up power at the directed target and rate using the Hard Card</i>
<b>2-NOP-99.07</b>		<b>The following actions are taken from 2-NOP-99.07, Operations Hard Cards</b>	
<b><u>Critical Parameters</u></b> This activity affects reactivity. The SM/US shall be notified of any abnormal indications. <input type="checkbox"/> Reactor Power <input type="checkbox"/> CEA POSITION <input type="checkbox"/> RCS Temp <input type="checkbox"/> ASI <input type="checkbox"/> MW (Load) <input type="checkbox"/> DCS Power <input type="checkbox"/> Pzr Level			
	BOP	<b>1. ENSURE</b> Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open.	<b>BOP ENSURES</b> Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open.
	BOP	<b>2. TOUCH</b> MODIFY from RAMP INTERFACE group.	<b>BOP TOUCHES</b> MODIFY from RAMP INTERFACE group.
	BOP	<b>3. ADJUST</b> values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <input type="checkbox"/> TARGET SELECT <input type="checkbox"/> RATE SELECT	<b>BOP ADJUSTS</b> values for the TARGET and RATE, as directed by SM/US, on MODIFY RAMP SETPOINTS. (display 7055)
	BOP	<b>4. VERIFY</b> values for the following are as directed by US/SM on RAMP INTERFACE group: (display 5551) <input type="checkbox"/> TARGET <input type="checkbox"/> RATE	<b>BOP VERIFIES</b> values for the TARGET and RATE as directed by US/SM on RAMP INTERFACE group. (display 5551)
	SRO	<b>5. TOUCH</b> GO from RAMP INTERFACE group. (display 5551)	<b>SRO DIRECTS</b> placing the turbine in GO.
	BOP		<b>BOP TOUCHES</b> GO from RAMP INTERFACE group and performs a crew update.

		<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>				<b>SEG</b> Page 13 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	2	Event #	1	
Event Description:		Raise Power to 50%					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	BOP	<b>6. MONITOR</b> turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551)			<b>BOP MONITORS</b> turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551)		
<b>2-GOP-201</b>		The following actions are taken from 2-GOP-201, Reactor Plant Startup – Mode 2 To Mode 1 AND RE guidance					
<b>4.8 Raising Reactor Power from 45% to 100%</b>							
	SRO	SRO directs ATC to maintain ASI per prescribe guidance			<i>The ATC maintain ASI per prescribe guidance</i>		
At the Lead Evaluator's direction, PROCEED to Event 2.							


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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	2	Event #	2		
Event Description:		<b>2B S/G PT-8023D fails high</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

<b>T.S. 3.3.1</b>	<p>As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be OPERABLE.</p> <p><b><u>Functional units:</u></b></p> <p>6. Steam Generator Pressure – Low– Total Channels 4/SG, Channels to TRIP 2/SG, MIN OPERABLE 3/SG</p> <p>7. Steam Generator Pressure Difference – High- Total Channels 4/SG, Channels to TRIP 2/SG, MIN OPERABLE 3/SG</p> <p><b><u>Action 2</u></b> - With the number of channels OPERABLE one less than the Total Number of Channels, STARTUP and/or POWER OPERATION may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.</p>
<b>T.S. 3.3.2</b>	<p>The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.</p> <p>b. With an ESFAS instrumentation channel inoperable, take the ACTION shown in Table 3.3-3</p> <p><b><u>Functional units:</u></b></p> <p>4.b. MSIS Steam Generator Pressure – Low– Total Channels 4/SG Channels to TRIP 2/SG MIN OPERABLE 3/SG</p> <p>8.a AFAS SG 2A – SG 2B Diff Press– Total Channels 4/SG Channels to TRIP 2/SG MIN OPERABLE 3/SG</p> <p><b><u>ACTION 20</u></b> - With the number of channels OPERABLE one less than the Total Number of Channels, operation may proceed provided the following conditions are satisfied:</p> <p>a. The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel can not be restored to OPERABLE status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition. If an inoperable SG DP or FW Header DP channel can not be restored to OPERABLE status within 48 hours, then both AFAS-1 and AFAS-2 in the inoperable channel shall be placed in the bypassed condition. The channel shall be returned to OPERABLE status no later than during the next COLD SHUTDOWN.</p> <p>b With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.</p>

**Note to Evaluator:** 2B S/G PT-8023D Fails High is a malfunction initiated from the Booth upon direction by the evaluator.

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	2	Event #	2	
Event Description:		<b>2B S/G PT-8023D fails high</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 2: 2B S/G PT-8023D Fails High</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications:</b> PI-8023D will indicate high scale on RTGB 203 MD RPS bistable for TM/LP will be in trip. <b>Annunciators:</b> H-4 TM/LP CHANNEL D SETPOINT HIGH/LOW L-36 TM/LP CHANNEL TRIP L-44 TM/LP CHANNEL PRE TRIP SG <b>EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.</b> <b>The crew may reduce dilution to 0 gpm and place the turbine on hold during this event.</b>			
	BOP/ATC		Acknowledges annunciators and Communicates IAW plant policies.
	BOP/ATC		Diagnoses PT-8023D has failed high; RPS bistable TM/LP tripped and Communicates status IAW plant policies.
	BOP		Complies with ARPs and Communicates and/or takes action as directed by ARP.
	SRO		Directs Power stabilization at current power level
	SRO		Diagnoses, Interprets, that PT-8023D has failed high, Communicates agreement with the ATCs diagnoses and Directs entry into 2-AOP-99.01 Loss of Tech Spec Instrumentation
	SRO		Updates crew and Enters 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		Directs actions of 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		Notifies SM of entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation
2-AOP-99.01		The following actions are taken from 2-AOP-99.01, Loss of Tech Spec Instrumentation	

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	2	Event #	2	
Event Description:		<b>2B S/G PT-8023D fails high</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

<b>4.1 Immediate Operator Actions: NONE</b>			
<b>4.2 Subsequent Operator Actions</b>			
<b>4.2.1 General Actions:</b>			
<b><u>NOTE</u></b>  A TRANSMITTER failure can be discriminated from a METER failure by the presence of annunciators and protection and control actuations.			
	SRO	<b>1. CONFIRM</b> failed channel by any of the following methods: <ul style="list-style-type: none"> <li>Channel check comparison with redundant channels</li> <li>Annunciators</li> <li>Bistable or status lights</li> <li>Any instrument-related testing or surveillance procedure in progress</li> </ul>	<i><b>Interprets</b> the indications and determines the failure to be PT-8023D 2B Steam Generator Pressure Transmitter for MD channel</i>
<b><u>NOTE</u></b>  BISTABLE TRIP UNIT is abbreviated as BTU in this AOP			
	SRO	<b>2.</b> IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 7.	<b>N/A</b>

<b>Appendix D</b>		<b>Operator Action</b>				<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	2	Event #	2		
Event Description:		<b>2B S/G PT-8023D fails high</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	<div>3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: A. LOCATE table row for affected instrument or channel.</div> <table><thead><tr><th>Channel Indicator (source device)</th><th>RPS Trip</th><th>ESFAS Trip</th><th>Other Functions</th><th>Tech Specs</th><th>AOP Section</th></tr></thead><tbody><tr><td>Linear Power Range Safety NI MA/MB/MC/MD</td><td>HI POWER &gt; 107% ± 9.61% (VHP) LOC PWR DEN (variable) (LPD) TM/LO PRESS</td><td>N/A</td><td>VHP, LPD, TM/LP CWPs LIN 1 15% Input to TM/LP setpt (ASI) Input to HI RATE/LOSS LOAD trip blocks</td><td>3.3.1 3.2.4</td><td>Section 4.2.6</td></tr><tr><td>Pressurizer Pressure PI-1102A/B/C/D</td><td>Pwr Press &gt; 2370 psia TM/LO PRESS (TM/LP)</td><td>SIAS &lt; 1736 psia</td><td>DSS &gt; 2450 psia (ATWS)</td><td>3.3.1 3.3.2</td><td>Section 4.2.6</td></tr><tr><td>T-cold TI-1102A/B/C/D (TY-1112CA/CB/CC/CD TY-1122CA/CB/CC/CD)</td><td>N/A</td><td>N/A</td><td>Input to ΔT Power Input to TM/LP setpt (Q Pwr) Input to LPD CWP</td><td>3.3.1</td><td>Section 4.2.7</td></tr><tr><td>T-hot TI-1102A/B/C/D (TY-1112HA/HB/HC/HD TY-1122HA/HB/HC/HD)</td><td>N/A</td><td>N/A</td><td>Input to ΔT Power Input to TM/LP setpt (Q Pwr) Input to LPD CWP</td><td>3.3.1</td><td>Section 4.2.8</td></tr><tr><td>TM/LP Setpoint Generator PIA-1102A/B/C/D</td><td>N/A</td><td>N/A</td><td>Variable between 1900 and 2370 psia. Set to 2500 psia for ASGT</td><td>3.3.1</td><td>Section 4.2.9</td></tr><tr><td>S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D</td><td>S/G Press ≤ 626 psia (auct low) TM/LO PRES (ASGT &gt; 120 psid)</td><td>MSIS &lt; 600 psia</td><td>Input to AFAS</td><td>3.3.1 3.3.2</td><td>Section 4.2.10</td></tr></tbody></table>	Channel Indicator (source device)	RPS Trip	ESFAS Trip	Other Functions	Tech Specs	AOP Section	Linear Power Range Safety NI MA/MB/MC/MD	HI POWER > 107% ± 9.61% (VHP) LOC PWR DEN (variable) (LPD) TM/LO PRESS	N/A	VHP, LPD, TM/LP CWPs LIN 1 15% Input to TM/LP setpt (ASI) Input to HI RATE/LOSS LOAD trip blocks	3.3.1 3.2.4	Section 4.2.6	Pressurizer Pressure PI-1102A/B/C/D	Pwr Press > 2370 psia TM/LO PRESS (TM/LP)	SIAS < 1736 psia	DSS > 2450 psia (ATWS)	3.3.1 3.3.2	Section 4.2.6	T-cold TI-1102A/B/C/D (TY-1112CA/CB/CC/CD TY-1122CA/CB/CC/CD)	N/A	N/A	Input to ΔT Power Input to TM/LP setpt (Q Pwr) Input to LPD CWP	3.3.1	Section 4.2.7	T-hot TI-1102A/B/C/D (TY-1112HA/HB/HC/HD TY-1122HA/HB/HC/HD)	N/A	N/A	Input to ΔT Power Input to TM/LP setpt (Q Pwr) Input to LPD CWP	3.3.1	Section 4.2.8	TM/LP Setpoint Generator PIA-1102A/B/C/D	N/A	N/A	Variable between 1900 and 2370 psia. Set to 2500 psia for ASGT	3.3.1	Section 4.2.9	S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D	S/G Press ≤ 626 psia (auct low) TM/LO PRES (ASGT > 120 psid)	MSIS < 600 psia	Input to AFAS	3.3.1 3.3.2	Section 4.2.10	<div>Locates correct table row for PT-8023D</div> <table><tr><td>S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D</td><td>S/G Press ≤ 626 psia (auct low) TM/LO PRES (ASGT &gt; 120 psid)</td><td>MSIS &lt; 600 psia</td><td>Input to AFAS</td><td>3.3.1 3.3.2</td><td>Section 4.2.10</td></tr></table>	S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D	S/G Press ≤ 626 psia (auct low) TM/LO PRES (ASGT > 120 psid)	MSIS < 600 psia	Input to AFAS	3.3.1 3.3.2	Section 4.2.10
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	SRO	<div>3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: B. REFER TO applicable Tech Specs.</div>	<div>Refers to applicable Tech Specs 3.3.1, functional units 6 &amp; 7, action 2a and 3.3.2, functional units 4b &amp; 8a, actions 20a, and 20b.</div>																																																
	SRO	<div>3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: C. PERFORM applicable procedure section for affected instrument.</div>	<div>PERFORMs section 4.2.10</div>																																																
	SRO	<div>4. Using Attachment 6, Instrumentation, for Tech Spec applicability.</div>	<div>PERFORMs Attachment 6, Instrumentation, for Tech Spec applicability. DETERMINES TS 3.3.1 &amp; 3.3.2 are applicable</div>																																																
4.2.10 S/G Pressure Channel Failure																																																			
	SRO	<div>1. CIRCLE affected instrument and channel:<ul style="list-style-type: none"><li>PI-8013 A / B / C / D</li><li>PI-8023 A / B / C / D</li></ul></div>	<div>PERFORMs section 4.2.10 1. CIRCLE affected instrument and channel:<ul style="list-style-type: none"><li>PI-8013 A / B / C / D</li><li>PI-8023 A / B / C / D</li></ul></div>																																																




Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	2	
Event Description:		<b>2B S/G PT-8023D fails high</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


**NOTE**

- Bypassing ESFAS BTUs will require door Key 114 and either Key 134 or 136.
- Bypassing AFAS will require Key 202 and one of the following keys; 203, 204, 205, or 206.
- If it is necessary to TRIP the RPS and ESFAS bistable trip units (BTUs), then it is preferable to leave the AFAS BTUs in BYPASS. (Section 6.1.3, Management Directive 1)
- An AFAS channel in the TRIPPED condition is limited to 48 hours per Tech Spec 3.3.2 Table 3.3-3. (Section 6.1.3, Management Directive 1)
- The following are expected annunciators when bypassing ESFAS BTUs:
  - ☐ R-7, ENGINEERED SAFEGUARDS CABINET DOOR OPEN
  - ☐ Q-2, ENGINEERED SAFEGUARDS ATI FAULT
- G-33, AFAS-1/AFAS-2 BYPASS, is an expected annunciator when bypassing AFAS.

	SRO	<p><b>2. PERFORM</b> one of the following for the affected BTUs listed:</p> <ul style="list-style-type: none"> <li>• LOW PRES SG (RPS) (Key 105)</li> <li>• TM/LO PRESS (RPS) (Key 107)</li> <li>• <u>For PI-8013 OR PI-8023</u> AFAS-1</li> <li>• <u>For PI-8013 OR PI-8023</u> AFAS-2</li> <li>• <u>For PI-8013 only</u> S/G 2A PRESS (MSIS)(Key 134)</li> <li>• <u>For PI-8023 only</u> S/G 2B PRESS (MSIS)(Key 136)</li> </ul> <p><b>A. BYPASS</b> affected BTUs using keyswitches and pushbuttons. OR <b>B. TRIP</b> affected BTUs per Attachment 3, Tripping and Restoring Protection Bistables.</p>	<p><b>SRO DIRECTS the BOP to BYPASS the affected BTUs using keyswitches and pushbuttons for Channel D as follows;</b></p> <ul style="list-style-type: none"> <li>• LOW PRES SG (RPS) (Key 105)</li> <li>• TM/LO PRESS (RPS) (Key 107)</li> <li>• For PI-8023 AFAS-1</li> <li>• For PI-8023 AFAS-2</li> <li>• For PI-8023 only S/G 2B PRESS (MSIS) (Key 136)</li> </ul>
	BOP	<p>Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section <b>4.2.10 S/G Pressure Channel Failure</b> Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitches and pushbuttons</p>	<p><b>PERFORMs</b> section 4.2.10 as directed by the SRO; Obtains keys, unlocks cabinets and inserts keys: 114&amp;136 for ESFAS, 202&amp;206 for AFAS and keys 105&amp;107 for RPS. <b>BOP relieves the ATC</b></p>


		L-19-1 NRC EXAM SCENARIO 2 REV. 0					<b>SEG</b> Page 19 of 51	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	2	Event #	2		
Event Description:		<b>2B S/G PT-8023D fails high</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	ATC	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section <b>4.2.10 S/G Pressure Channel Failure</b> Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitches and pushbuttons	<p><b>ATC PERFORMs</b> section 4.2.10 as directed by the Unit Supervisor; IVs inserted keys: 136 for ESFAS and rotates key to bypass MD MSIS, 202&amp;206 for MD AFAS Door and bypass compartment and keys 105&amp;107 for MD RPS.</p> <p><b>ATC Reports</b> to SRO that the affected BTUs have been BYPASSED using keyswitches and pushbuttons</p> <p><b>ATC relieves</b> the BOP</p>
<b>4.2.1 General Actions:</b>			
	SRO	<b>5. INITIATE</b> work request for affected instrument or channel and <b>NOTIFY</b> I&C or EM as applicable.	<b>PERFORMs</b> section 4.2.1 Step 4 <b>NOTIFIES</b> I&C or EM as applicable and Notifies the SM of the failure and the Tech Spec entry
	SRO	<b>6. DOCUMENT</b> problem as required: <ul style="list-style-type: none"> <li>EOOS Log</li> <li>Condition report</li> <li>Ops narrative log</li> </ul>	<b>PERFORMs</b> section 4.2.1 Step 5 and Documents issue as appropriate in: <ul style="list-style-type: none"> <li>EOOS Log</li> <li>Condition report</li> <li>Ops narrative log</li> </ul>
	SRO	<b>7. WHEN</b> ready to restore affected channel, THEN <b>PERFORM</b> Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> <li>Instrumentation Channels</li> </ul>	<b>IDENTIFIES</b> step as N/A
	SRO	<b>8. VERIFY</b> Exit Conditions are met. <b>9. EXIT</b> this procedure.	<b>VERIFIES</b> Exit conditions are met by: <ul style="list-style-type: none"> <li>Applicable Tech Spec LCO action requirements have been implemented.</li> <li>Affected channel has been bypassed as required by Tech Specs and exits 2-AOP-99.01</li> </ul>
	SRO	<b>Performs Crew Brief</b>	<b>SRO PERFORMs</b> crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM.
At the Lead Evaluator's direction, PROCEED to Event 3.			

	<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>	<b>SEG</b> Page 20 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2    Event # 3	
Event Description: <b>HVS-1C trips</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

<b>T.S.</b> <b>3.6.2.1</b>	<b>Two containment spray trains and two containment cooling trains shall be OPERABLE.</b> <b>Action 1b. With one containment cooling train inoperable, restore the inoperable cooling train to OPERABLE status within 7 days; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.</b>
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<b>Note to Evaluator: HVS-1C Containment Cooler Fan TRIPS is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 3: HVS-1C Trips</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action</li> <li>If called as the SNPO to check breaker 2-42701, then after 5 minutes report the breaker is tripped</li> <li>If called as the SNPO to check breaker 2-40506, then after 5 minutes report the breaker is tripped</li> <li>If called as EM to check above breakers, after 30 minutes report that the breaker 2-42701 needs to be pulled and inspected and request an ECO</li> </ul>			
<b>Indications:</b> <b>Lights for HVS-1C breaker/ fan extinguish</b> <b>Annunciators: T-12 CNTMT FAN CLR HVS-1C OVRLD/TRIP</b>			
	BOP/ATC		<b>Acknowledges</b> annunciators and <b>Communicates</b> IAW plant policies
	BOP/ATC		<b>Diagnoses</b> that HVS-1C Containment Cooler Fan tripped <b>Communicates</b> status IAW plant policies
	BOP		<b>Complies</b> with ARP for T-12 and <b>Communicates</b> and/or takes action as directed by ARP
	SRO		<b>Diagnoses, Interprets,</b> that HVS-1C Containment Cooler Fan tripped <b>Communicates</b> agreement with the ATCs diagnoses and <b>Directs</b> entry into 2-AOP-25.01 Loss of RCB Cooling Fans <b>Directs</b> the starting of the standby fan cooler
	SRO		<b>Updates</b> crew and <b>Enters</b> AOP-25.01 Loss of RCB Cooling Fans
	SRO		<b>Directs</b> actions of AOP-25.01 Loss of RCB Cooling Fans

	<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>	<b>SEG</b> Page 21 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2	Event # 3
Event Description: <b>HVS-1C trips</b>		
Time	Position Competency	Applicant's Actions or Behavior

	SRO		Notifies SM of entry into AOP-25.01 Loss of RCB Cooling Fans
<b>2-ARP-01-T11</b>		<b>The following actions are taken from 2-ARP-01-T12, Control Room Panel T HVCB</b>	
	BOP	<b>ALARM CONFIRMATION</b> 1. IF HVS-1C, CONTAINMENT COOLER C, was running, green indicating light ON indicates thermal overload condition. 2. HVS-1C indicating lights OFF indicates either the control power fuse is blown or either of the following breakers are open 2-42701 2-40506	<i><b>BOP EVALUATES</b> HVS-1C indications and determines the indicating lights to be off</i>
	BOP/SRO	<b>OPERATOR ACTIONS</b> 1. <b>GO TO</b> 2-AOP-25.01, Loss of RCB Cooling Fans.	<i><b>BOP EVALUATES</b> HVS-1C indications and determines the fan to be tripped  <b>BOP INFORMS</b> the SRO that the ARP directs entry into 2-AOP-25.01, Loss of RCB Cooling</i>
	SRO		Announces and enters 2-AOP-25.01, Loss of RCB Cooling Fans
	SRO		Directs actions of 2-AOP-25.01, Loss of RCB Cooling Fans
<b>2-AOP-25.01</b>		<b>The following actions are taken from 2-AOP-25.01, Loss of RCB Cooling Fans</b>	
4.1 Immediate Operator Actions: NONE			
4.2 Subsequent Operator Actions			
4.2.1 General Actions:			
	SRO	1. <b>PERFORM</b> applicable section per Table 1	<i><b>SRO EVALUATES</b> Table 1 and <b>DETERMINES</b> that section 4.2.5 Loss of Containment Fan Cooler is applicable</i>
4.2.5 Loss of Containment Fan Cooler:			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	3	
Event Description:		<b>HVS-1C trips</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**CAUTION**

- HVS-1B should only be operated to perform the monthly surveillance to minimize run time until SL2-23 per AR 2078105,U2 HVS-1B Motor Bearing Lubrication Issue.
- Sufficient Containment Fan Coolers are required to be operating to maintain Containment air temperature less than or equal to 120°F to maintain the reactor vessel support structure within its design basis. On loss of Containment Fan Coolers, operator action is required within 45 minutes from the time Containment air temperature exceeds 120°F to restore air temperature to less than or equal to 120°F OR initiate reactor trip and cooldown to at least Hot Shutdown. The total time allowed from the time Containment air temperature exceeds 120°F to reaching Hot Shutdown is 5 hours. (Section 6.2, Commitment 1, Section 6.2, Commitment 2)


	SRO	<b>1. START</b> standby Containment Fan Cooler:	<b>SRO DIRECTS</b> the SNPO to start the standby Containment Fan Cooler
	BOP	<ul style="list-style-type: none"> <li>• HVS-1A</li> <li>• HVS-1B</li> <li>• HVS-1C</li> <li>• HVS-1D</li> </ul>	<b>BOP STARTS</b> the standby Containment Fan Cooler (HVS-1D)
	SRO	<b>2. MONITOR</b> Containment air temperature less than or equal to 120°F as average of following (RTGB-206): <ul style="list-style-type: none"> <li>• TI-07-3A, TEMPERATURE</li> <li>• UR-07-1B, CNTMT &amp; SUMP PRESS/TEMP Channel 1, TE-07-3B,CNTMT AIR TEMP</li> </ul>	<b>SRO DIRECTS</b> the SNPO to <b>MONITOR</b> Containment air temperature less than or equal to 120°F as average of following (RTGB-206): <ul style="list-style-type: none"> <li>• TI-07-3A, TEMPERATURE</li> <li>• UR-07-1B, CNTMT &amp; SUMP PRESS/TEMP Channel 1, TE-07-3B,CNTMT AIR TEMP</li> </ul>
	SRO	<b>3. VERIFY</b> Attachment 4, Containment Cooling Fan Local Breaker Operations, performed.	<b>SRO DIRECTS</b> the SNPO to perform Attachment 4

**ATTACHMENT 4**

	SRO	<b>1. VERIFY</b> electrical alignment of stopped Containment Fan Cooler as follows: <ul style="list-style-type: none"> <li>• Bkr 2-40506, FDR BKR FOR MCC-2B9 2HVS-1C, CLOSED.</li> <li>• Bkr 2-42701, CONTAINMENT FAN COOLER 2HVS-1C, CLOSED. (Cubicle 1A, MCC-2B9)</li> </ul>	<b>SRO DIRECTS</b> the SNPO to inspect the following breaker for status and indication <ul style="list-style-type: none"> <li>• Bkr 2-40506, FDR BKR FOR MCC-2B9 2HVS-1C, CLOSED.</li> <li>• Bkr 2-42701, CONTAINMENT FAN COOLER 2HVS-1C, CLOSED. (Cubicle 1A, MCC-2B9)</li> </ul> <b>After 5 minutes report that both breakers are tripped</b>
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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	3	
Event Description:		<b>HVS-1C trips</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>2. TROUBLESHOOT</b> stopped Containment Fan Cooler's 480 V load center breaker and fuses per 0-NOP-47.02, 480V Load Center Breaker Operation.	<b>SRO DIRECTS</b> 480 V load center breaker and fuses per 0-NOP-47.02, 480V Load Center Breaker Operation be implemented
	SRO	<b>3. ENSURE</b> fuses of stopped Containment Fan Cooler are checked and <ul style="list-style-type: none"> <li>Replaced as necessary</li> </ul>	<b>SRO DIRECTS electrical</b> to inspect the fuses for HVS-1C and replace as necessary
	SRO	<b>4. NOTIFY</b> Control Room of breaker status.	<b>SRO DIRECTS</b> the SNPO to Control Room of breaker status
	SRO	<b>4. IF</b> breaker is tripped, THEN <b>IMPLEMENT</b> 0-NOP-99.05, Valve, Breaker, Motor and Instrument Instructions	<b>SRO IMPLEMENTS</b> 0-NOP-99.05, Valve, Breaker, Motor and Instrument Instructions
<b>4.2.5 Loss of Containment Fan Cooler:</b>			
	SRO	<b>4. VERIFY</b> tripped Containment Fan Cooler OPERABLE	<b>SRO IDENTIFIES</b> HVS-1C is inoperable, <b>Notifies</b> the SM and <b>REVIEWS</b> Tech Specs 3.6.2.1, action 1b, Containment Spray and Cooling Systems.
	SRO	<b>5. WHEN</b> Section 3.0, EXIT CONDITIONS, are met, THEN <b>EXIT</b> this procedure	<b>SRO RECOGNIZES the</b> Containment Fan Cooler is not restored to normal operation and remains in the AOP
	SRO	<b>Performs</b> Crew Brief	<b>SRO PERFORMS</b> crew brief on status of failed Component, the Tech Spec entry and Notifies the SM
<b>At the Lead Evaluator's direction, PROCEED to Event 4.</b>			

		<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>				<b>SEG</b> Page 24 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	2	Event #	4		
Event Description:		<b>LIC 2110 L/D flow controller fails to Minimum flow in auto</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<b>Note to Evaluator: LIC 2110 Letdown flow control Auto output fails Minimum is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 4: LIC 2110 L/D Flow Contrl Auto output fails Low</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications: Letdown flow goes high and Pressurizer Level slowly lowers</b>			
<b>Annunciators: M-5 Letdown Press High/Low</b>			
	ATC		Identifies controller issue with LIC-2110 and recommends taking manual control
	SRO		Directs the ATC to take manual control of LIC-2110
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	ATC		Evaluates plant for being stable
	BOP		Pulls ARPs and communicates/takes action as directed
	SRO		Announces and enters 2-AOP-02.03, Charging And Letdown
	SRO		Directs actions of 2-AOP-02.03, Charging And Letdown
<b>2-AOP-02.03</b>		<b>The following actions are taken from 2-AOP-02.03, Charging And Letdown</b>	
<b>4.1 Immediate Operator Actions: None applicable</b>			
<b>4.2 Subsequent Operator Actions</b>			
<b>4.2.1 General Actions:</b>			
	SRO	1. IF charging and letdown flow has been lost, THEN, <b>PERFORM</b> the following:	<i>Step is not applicable</i>
	SRO	2. <b>VERIFY</b> all applicable automatic actions have occurred. Attachment 1, Charging and Letdown Automatic Responses, contains a listing of expected automatic action	<i>Step is not applicable</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	4	
Event Description:		LIC 2110 L/D flow controller fails to Minimum flow in auto				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**NOTE**

All of the following are required for letdown operation:

- Instrument Air
- Non-essential sections of MCCS 2A6 and 2B6 energized (for Q valves)
- SIAS and CIAS reset


	SRO	3 . IF charging and letdown flow has been lost, THEN <b>DETERMINE</b> the cause	<i>Step is not applicable</i>
	SRO	4. IF a charging system leak has occurred, THEN <b>ISOLATE</b> the leak and refer to applicable Technical Specifications for guidance	<i>Step is not applicable</i>
	SRO	5. <b>PERFORM</b> applicable section per Table	<b>SRO EVALUATES</b> the indications determines the failure to be LIC-2110 failed and proceeds to section 4.2.6

**4.2.6 General Actions: Letdown Level Control Malfunction**


	SRO	1. IF letdown level control is malfunctioning, THEN <b>PERFORM</b> the following: <b>VERIFY</b> the output of LIC-2110, LETDOWN LEVEL, is responding as expected to current plant conditions	<b>SRO VERIFIES</b> that the ATC has PLACED LIC-2110 in manual and is controlling Pressurizer Level <b>SRO DIRECTS</b> system walk downs observing for leaks or lifting relief valves
	SRO	<b>SRO VERIFIES</b> Normal Charging and Letdown parameters are established with pressurizer level stable	<b>SRO Exits this procedure</b>
	SRO	<b>PERFORMS CREW BRIEF</b>	

**At the Lead Evaluator's direction, PROCEED to Event 5.**




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Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	2	Event #	5		
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


<b>CT-1</b>	<b>RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip.</b>		
<p><b>Note to Evaluator:</b> FCV-9011 2A Main Feed Reg valve fails open is a malfunction initiated from the Booth upon direction by the evaluator. The ESD in Containment and the 2B3 4.16kv L/O are triggered upon either RX trip push buttons being pressed; the steam leak is located on 2A Main Steam Line using Leak Valve LV1 with a 2400 sec ramp.</p>			
<p><b>Booth Operator Instructions:</b></p> <ul style="list-style-type: none"> <li>• Upon cue from Lead Examiner, trigger Event 5a: 2A HPFW Contrl Vlv Fails open- recoverable</li> <li>• When control of the 2A HPFW Contrl Vlv is such that 2A S/G level is being restored in manual, then at Lead Examiner's cue trigger Event 5b: 2A HPFW Contrl Vlv Fails open- unrecoverable</li> </ul> <p><b>Role Play:</b></p> <ul style="list-style-type: none"> <li>• If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<p><b>Indications:</b> 2A S/G level rising</p> <p><b>Annunciators:</b></p> <p><b>Multiple</b></p>			
	ATC		Identifies 2A S/G level rising and takes manual control of S/G 2A level. <b>CT to ensure that S/G level is responded to prior to exceeding RPS Trip Setpoints (35% Low or 81% High)</b>
	SRO		Directs the ATC to take manual control of 2A S/G Main Feed Reg valve
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	ATC		Identifies 2A S/G level rising with 2A S/G Main Feed Reg valve in manual.
	SRO		<b>DIRECTS</b> Reactor trip when S/G levels approach 75%
	ATC		Trips the Reactor
	ATC		<b>CONFIRMS</b> reactor power is lowering and startup rate is negative <b>REPORTS “REACTOR TRIPPED”</b> <b>States evaluating CEAs or that 2 CEAs not fully inserted CEAs</b>
	ATC		Performs Scan of RTGBs to quickly assess the plant status by systematically reviewing key safety parameters/system conditions of the control boards.

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2    Event # 5	
Event Description: <b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>		
Time	Position Competency	Procedure Step                      Applicant's Actions or Behavior

	BOP		<b>VERIFIES</b> all governor and throttle valves closed <b>REPORTS “Turbine Tripped”</b>
	BOP		<b>ANNOUNCE</b> on the Gaitronics: Unit 2 Reactor has tripped <b>NOTIFY</b> the NPO to perform Appendix X, Section 1 of 2-EOP-99 <b>CONTACT</b> the SM, STA and Shift Comm. to report to the Control Room
	SRO		Performs Scan of RTGBs to quickly assess the plant status by systematically reviewing key safety parameters/system conditions of the control boards.
	ATC		<b>REPORTS “2 CEAs not fully INSERTED” if not reported previously</b>
	SRO		<b>DIRECTS ATC</b> to start remaining Charging Pumps as necessary
	SRO		<b>DIRECTS</b> Implementation of EOP-01, Standard Post Trip Actions
<b>2-EOP-01</b>		<b>The following actions are taken from 2-EOP-01, Standard Post Trip Actions</b>	
<b>4.1 Immediate Operator Actions:</b> <ul style="list-style-type: none"><li><b>ATC:</b> Verifies Reactor power lowering, Negative Startup rate, all CEAs and verifies no dilution is in progress inserted and communicates status to the Unit Supervisor. Starts backup charging pumps as necessary.</li><li><b>BOP:</b> Verifies all governor and throttle valves closed and communicates status to the Unit Supervisor. Makes plant announcements and trip notifications.</li></ul>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>Step 1 VERIFY reactor trip:</b>	<b>SRO DIRECTS VERIFY</b> reactor trip, ATC Verifies: <input type="checkbox"/> Reactor power LOWERING <input type="checkbox"/> Startup Rate NEGATIVE <input type="checkbox"/> All CEAs are fully INSERTED <b>Two CEAs will not be inserted in the core requiring Emergency Boration see Event 6</b> <input type="checkbox"/> NO dilution is in progress

		<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>				<b>SEG</b> Page 28 of 51	
<b>Appendix D</b>			<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.: L-19-1		Scenario # 2	Event # 5				
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		

	SRO	<b>Step 2 VERIFY turbine trip:</b>	<b>SRO DIRECTS VERIFY turbine trip, BOP Verifies:</b> <input type="checkbox"/> All governor and throttle valves <b>CLOSED</b> . <input type="checkbox"/> Main Generator breakers are <b>OPEN</b> <b>FB-2 Exciter Field Breaker will be closed see Event 7</b> <input type="checkbox"/> Turbine speed <b>LOWERING</b> Per Contingency Action 2.1.D: <input type="checkbox"/> BOP <b>ENSURES</b> FB 2, Exciter Supply Breaker <b>OPEN</b>
	SRO	<b>Step 3 VERIFY Maintenance of Vital Auxiliaries:</b>	<b>SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies:</b> <input type="checkbox"/> VERIFY station loads transferred to offsite electrical power <input type="checkbox"/> VERIFY all Vital and Non-Vital AC buses transfer from Auxiliary to Start-up Transformers AND are <b>ENERGIZED</b> <b>The 2B3 4160 bus will be Locked Out and non-recoverable.</b> <input type="checkbox"/> VERIFY all Vital and Non Vital DC Buses are <b>ENERGIZED</b> <input type="checkbox"/> VERIFY sealcooling to RCPs
	SRO	<b>Step 4 VERIFY RCS Inventory Control:</b>	<b>SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35%
	ATC		<b>ATC may ISOLATE letdown due to:</b> <b>Pressurizer level will be abnormally low due to the Steam leak. This parameter will drive the crew to enter 2-EOP-05</b>
	SRO	<b>Step 5 VERIFY RCS Pressure Control:</b>	<b>SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia <b>RCS Pressure will be abnormally low due to the Steam leak. This parameter will drive the crew to enter 2-EOP-05</b> <b>IF SIAS has occurred the SRO will DIRECT two RCPs to be tripped and will not perform 2-EOP-99 App.J to restore CCW to the RCPs due to the loss of 2B CCW pump</b>

		<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>					<b>SEG</b> Page 29 of 51	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	2	Event #	5			
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

	SRO	<b>Step 6 VERIFY Core Heat Removal:</b>	<b>SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies:</b> <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW <input type="checkbox"/> Loop $\Delta T$ is less than 10°F <input type="checkbox"/> RCS subcooling greater than or equal to 20°F <input type="checkbox"/> NO indication of RCP cavitation
	SRO	<b>Step 7 VERIFY RCS Heat Removal:</b>	<b>SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies:</b> <input type="checkbox"/> VERIFY the following conditions exist on at least one S/G: <ul style="list-style-type: none"> <li>S/G NR level is between 20 and 81%</li> <li>Feedwater is being supplied</li> </ul> <input type="checkbox"/> IF 2A or 2B AFW Pump is the ONLY source of Feedwater, THEN STOP one RCP in each loop <input type="checkbox"/> VERIFY at least ONE of the following is supplying feedwater to the S/G(s): <ul style="list-style-type: none"> <li>Main or Auxiliary Feedwater</li> </ul> <input type="checkbox"/> VERIFY RCS TAVG is between 525 and 535°F <b>RCS Temperature will be abnormally low due to the Steam leak. This parameter will drive the crew to enter 2-EOP-05</b> <input type="checkbox"/> VERIFY S/G pressure is between 850 and 930 psia (835 and 915 psig)

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	5	
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	<p><b>Step 8 VERIFY containment conditions:</b></p>	<p><b>SRO DIRECTS</b> VERIFY containment conditions, BOP Verifies:</p> <p><input type="checkbox"/> Containment pressure is less than 2 psig  <b>Containment Pressure will be abnormally high due to the Steam leak. This parameter will drive the crew to enter 2-EOP-05</b></p> <p><input type="checkbox"/> Containment temperature is less than 120°F  <b>Containment Temperature will be abnormally high due to the Steam leak. This parameter will drive the crew to enter 2-EOP-05</b></p> <p><b>BOP RECOGNIZES</b> Containment temperature is high and evaluates the status of the Containment Cooling Fans</p> <p><input type="checkbox"/> Containment radiation level less than alarm values AND stable or lowering:</p> <ul style="list-style-type: none"> <li>CIS Radiation Monitors</li> <li>Containment Atmospheric Monitors</li> </ul> <p><input type="checkbox"/> Secondary plant radiation levels less than alarm values AND stable or lowering:</p> <ul style="list-style-type: none"> <li>Condenser Air Ejector Monitor</li> <li>S/G Blowdown Monitors</li> <li>Main Steamline Monitors</li> </ul>
	SRO	<p><b>Step 9 DIRECT a field operator to perform the following:</b></p>	<p><b>SRO DIRECTS BOP</b> to perform step 9, BOP performs step 9:</p> <p><input type="checkbox"/> Directs NPO to perform Section 1 of Appendix X, Secondary Plant Post Trip Actions</p> <p><input type="checkbox"/> Directs SNPO to VERIFY SFP inventory and temperature are normal on all available indications</p>
	SRO	<p><b>Step 10 DIAGNOSE</b> the event using Attachment 1, Diagnostic Flow Chart.</p>	<p><b>SRO DIAGNOSE</b> the event using Attachment 1, Diagnostic Flow Chart and determines an ESD is in progress</p>
	SRO	<p><b>Step 11 GO TO</b> the appropriate Emergency Operating Procedure.</p>	<p><b>SRO Performs</b> a crew brief and transitions to 2-EOP-5 ESD</p>

**Booth Operator Instructions:**

- None

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2    Event # 5	
Event Description: <b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

<b>Indications:</b> Tcold lowering rapidly, S/G pressure lowering rapidly, Containment pressure rising, Pressurizer pressure and level lowering Annunciators: Multiple			
2-EOP-05	The following actions are taken from 2-EOP-05, EXCESS STEAM DEMAND ESD		
<b><u>CAUTION</u></b>			
A harsh containment condition exists if containment temperature is greater than 200°F. Figure 1A should be used for determination of subcooling when indicated containment temperature is <b>less</b> than or <b>equal</b> to 200°F. Figure 1B should be used when indicated containment temperature is <b>greater</b> than 200°F. Figure 1A should also be used if containment temperature had exceeded 200°F during event progression but was lowered to 200°F or less by containment cooling systems.			
<b><u>NOTE</u></b>			
<ul style="list-style-type: none"> <li>Instruments should be channel checked when one or more confirmatory indications are available. Reg Guide 1.97 designated instruments should be used for diagnosis of events and confirmation of safety functions.</li> <li>Steps designated with an * may be performed non-sequentially or are to be performed continuously.</li> </ul>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>1. MONITOR</b> the SFSCs and <b>VERIFY</b> the SFSC acceptance criteria are MET every 15 minutes	<i>The <b>SRO DIRECTS</b> the STA to perform SFSCs now and every fifteen minutes</i>
	SRO	<b>2. IMPLEMENT</b> the Emergency Plan	<i>The <b>SRO DIRECTS</b> the SM to <b>IMPLEMENT</b> the Emergency Plan</i>
	SRO	<b>3. IMPLEMENT</b> placekeeper	<i>The <b>SRO Pulls</b> the <b>Place Keeper</b> from the back of 2-EOP-05 and begins tracking progress on the place keeper</i>
<b>EXAMINER: The implementation of the following step "Sampling Steam Generators" is located after Event 8 in the APPENDIX section</b>			
	SRO	<b>4. SAMPLE</b> steam generators for activity per Appendix A, Sampling Steam Generators	<i>The <b>SRO DIRECTS</b> the BOP to <b>PERFORM</b> Appendix A of 2-EOP-99, Sampling Steam Generators</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	5	
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>5. VERIFY</b> SIAS is ACTUATED  <i>This is a continuous step and will be performed after SIAS actuation conditions are met</i> <b>SRO VERIFIES</b> SIAS actuated when either of the following conditions are met: <ul style="list-style-type: none"> <li>• Pressurizer pressure is less than 1736 psia</li> <li>• Containment Pressure is greater than 3.5 psig</li> </ul>
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**NOTE**

Per Flowserve Engineering evaluation, during an emergency, the High Pressure Safety Injection pumps can be operated for up to 24 hours with no Component Cooling Water supplied to the seal heat exchangers without resulting in a significant increase in seal leakage.

	SRO	<b>6. OPTIMIZE</b> SI as follows: <b>A. VERIFY</b> SIAS is ACTUATED <b>B. VERIFY</b> all available SI pumps are RUNNING <b>C. VERIFY</b> SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure <b>D. VERIFY</b> all available charging pumps are RUNNING <b>E. VERIFY</b> charging header is available.	<b>SRO VERIFIES:</b> <ul style="list-style-type: none"> <li>• SIAS is ACTUATED</li> <li>• SI pumps are OPERATING</li> <li>• SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure</li> <li>• All available charging pumps are RUNNING</li> <li>• Charging header is available</li> </ul>
	SRO	<b>7. CLOSE</b> the following valves: <input type="checkbox"/> MSIVs <input type="checkbox"/> MFIVs	<b>SRO DIRECTS</b> the BOP to CLOSE <input type="checkbox"/> MSIVs <input type="checkbox"/> MFIVs
	SRO	<b>8. IF</b> S/G pressure is less than 600 psia (585 psig), or Containment pressure is greater than 3.5 psig, THEN <b>VERIFY</b> MSIS is ACTUATED	The <b>SRO DIRECTS</b> the BOP to <b>VERIFY</b> MSIS is ACTUATED
	SRO	<b>9. IMPLEMENT</b> RCP trip strategy as follows: <b>A. VERIFY</b> pressurizer pressure is less than 1736 psia <b>B. ENSURE</b> ONE RCP in each loop is STOPPED <b>C. VERIFY</b> RCS subcooling is greater than minimum RCS subcooling <b>D. VERIFY</b> RCS subcooling greater than minimum subcooling.	<b>SRO IMPLEMENTS</b> RCP Trip Strategy – Securing 1 RCP due to RCS temperature being less than 500F

**EXAMINER: The crew should not restore CCW to the RCPs due to the loss of a safety related AC bus however, the implementation of the following step "Restore CCW to the RCPs" is located after Event 8 in the APPENDIX section**



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Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	2	Event #	5			
Event Description:		2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							


	SRO	<b>10. VERIFY</b> RCP seal cooling as follows: <b>A. VERIFY</b> CCW to the RCPs <b>B. IF</b> both of the following conditions exist: <ul style="list-style-type: none"> <li>• RCPs have CCW flow</li> <li>• CIAS has isolated the normal RCP bleed off flow path to the VCT</li> </ul> <b>THEN ESTABLISH</b> the alternate RCP bleedoff flow path to the quench tank by <b>OPENING</b> V2507, RCP Bleed off Relief Stop Vlv	<b>SRO RECOGNIZES</b> due to the loss of a safety related AC bus, and having only 1 CCW header available, they will not restore CCW to the RCPs
	SRO	<b>11. CHECK</b> if RCPs are operating within limits: <b>A. VERIFY</b> at least one RCP is OPERATING <b>B. For</b> all operating RCPs, <b>VERIFY</b> RCP operating limits are MET per Table 13, RCP Operating Limits	<b>SRO DIRECTS ATC to VERIFY</b> operating limits are MET per Table 13, RCP Operating Limits for any running RCPs  <b>The ATC VERIFIES</b> operating limits are MET per Table 13, RCP Operating Limits for any running RCPs
	SRO	<b>12. VERIFY</b> circulating water flow to the Main Condenser	<b>SRO VERIFIES</b> circulating water flow to the main condenser
	SRO	<b>13. STABILIZE</b> the secondary plant per Appendix X, Secondary Plant Post Trip Actions, Section 2	<b>SRO DIRECTS</b> the BOP to Perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits  <b>The BOP PERFORMS</b> Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits
	SRO	<b>14. DETERMINE</b> the most affected S/G by evaluating the following indications: <input type="checkbox"/> High steam flow from one S/G <input type="checkbox"/> Dropping S/G pressure <input type="checkbox"/> Dropping S/G level <input type="checkbox"/> Dropping RCS T <sub>COLD</sub>	<b>SRO EVALUATES</b> plant conditions and <b>DETERMINES</b> the 2A S/G is the most affected
	SRO	<b>15. ISOLATE</b> the most affected S/G as follows: <b>A. VERIFY</b> break flow is still in PROGRESS <b>B. ISOLATE</b> the <u>most</u> affected S/G per Appendix R, Steam Generator Isolation	<b>SRO EVALUATES</b> plant conditions and <b>DETERMINES</b> the 2A S/G is the most affected and <b>DIRECTS</b> the <b>BOP</b> to <b>ISOLATE</b> the 2A S/G IAW Appendix R, Steam Generator Isolation section 1

<b>Indications: When directed to Isolate the 2A S/G</b> <b>Annunciators: NONE</b>	
2-EOP-99 APP "R"	The following actions are for Isolating Steam Generator 2A Using 2-EOP-99, APPENDIX "R" Section 1



<b>Appendix D</b>		<b>Operator Action</b>				<b>Form ES-D-2</b>	
Op Test No.: L-19-1		Scenario #	2	Event #	5		
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	BOP	<b>1. ENSURE</b> HCV-08-1A, Main Steam Header 'A' Isolation Valve (MSIV), is CLOSED.	<b>BOP ENSURES</b> HCV-08-1A, Main Steam Header 'A' Isolation Valve (MSIV), is CLOSED
	BOP	<b>3. ENSURE</b> MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED.	<b>BOP ENSURES</b> MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED
	BOP	<b>4. ENSURE</b> HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED.	<b>BOP ENSURES</b> HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED.
	BOP	<b>5. ENSURE</b> HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED.	<b>BOP ENSURES</b> HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED.
	BOP	<b>6. If BOTH</b> HCV-09-1A and HCV-09-1B, Main Feedwater Isolation Valves to S/G 2A, are NOT CLOSED or suspected of leaking, Then PERFORM <b>ANY</b> of the following <b>AS NECESSARY</b> : <ul style="list-style-type: none"> <li>• <b>A. ENSURE</b> ALL of the following valves are CLOSED: <ul style="list-style-type: none"> <li>• MV-09-5, Stm Gen 2A Reg Block Valve</li> <li>• LCV-9005, 2A 15% Bypass</li> <li>• MV-09-3, 2A 100% Bypass</li> </ul> </li> <li>• <b>B. STOP</b> BOTH Main Feedwater Pumps</li> </ul>	<b>BOP VERIFIES</b> this step is N/A
	BOP	<b>7. ENSURE</b> FCV-23-3, 2A SG Blowdown, is CLOSED.	<b>BOP ENSURES</b> FCV-23-3, 2A SG Blowdown, is CLOSED
	BOP	<b>8. ENSURE</b> FCV-23-4, 2A SG Blowdown, is CLOSED.	<b>BOP ENSURES</b> FCV-23-4, 2A SG Blowdown, is CLOSED
	BOP	<b>9. ENSURE</b> MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED.	<b>BOP ENSURES</b> MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED <b>BOP RECOGNIZES</b> MV-08-18A, 2A is failed open and reports the condition to the SRO
	BOP	<b>10. CLOSE</b> MV-08-14, 2A S/G ADV Isol. (Key 79)	<b>BOP ENSURES</b> MV-08-14, 2A S/G ADV Isol. (Key 79) CLOSED IF not closed by ATC the BOP closes MV-08-14

	<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>	<b>SEG</b> Page 35 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2      Event # 5	
Event Description: <b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	Procedure Step

	BOP	<b>11. PLACE</b> the control switch for auxiliary feed, Pump 2A, in STOP.	<b>BOP ENSURES</b> the control switch for auxiliary feed, Pump 2A, is <i>PLACED</i> in STOP
	BOP	<b>12. ENSURE</b> MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED.	<b>BOP ENSURES</b> MV-09-9, Pump 2A Disch to SG 2A Valve, is <i>CLOSED</i>
	BOP	<b>13. ENSURE</b> MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED.	<b>BOP ENSURES</b> MV-09-11, Pump 2C Disch to SG 2A Valve, is <i>CLOSED</i>
	BOP	<b>14. PLACE</b> MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.	<b>BOP PLACES</b> MV-08-13, SG 2A Stm to AFW PP 2C, in <i>CLOSE</i> . STEP 15 If MV-08-13, S/G 2A Steam to AFW Pump 2C, is NOT CLOSED or suspected of leaking, AND feed flow from 2C AFW pump is NOT required, Then CLOSE MV 08-3, 2C Pump to ISOLATE steam to 2C AFW Pump. (Key 78)
	BOP	<b>16. ENSURE</b> MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED.	<b>BOP ENSURES</b> MV-08-19A, 2A S/G Atmos Dump Vlv, is <i>CLOSED</i>
	BOP	<b>17. CLOSE</b> MV-08-15, 2A S/G ADV Isol. (Key 80)	<b>BOP ENSURES</b> MV-08-15, 2A S/G ADV Isol. (Key 80) <i>CLOSED</i>
	BOP	<b>18.</b> If a SGTR is in progress, <b>Then NOTIFY</b> the SM that Control Room steps to isolate the affected S/G are complete for E-Plan purposes.	<b>BOP NOTIFIES</b> the SRO that the control room steps for isolating the 2A S/G are <i>complete</i>
	BOP	<b>19. PERFORM</b> the following LOCAL operations:	<b>BOP DIRECTS</b> the field operator action to isolate the 2A S/G
<b>The Scenario can be terminated after the control room actions for 2A SG isolation are complete.</b>			
<b>2-EOP-05</b>		<b>The following actions are taken from 2-EOP-05, EXCESS STEAM DEMAND ESD</b>	
	SRO	<b>16. VERIFY</b> the most affected S/G is isolated by evaluating the following: <input type="checkbox"/> S/G pressures <input type="checkbox"/> S/G levels <input type="checkbox"/> RCS TCOLD	<b>SRO EVALUATES</b> plant conditions and <b>DETERMINES</b> the 2A S/G was the most affected S/G and it is now isolated

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	5	
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<p><b>17. STABILIZE</b> RCS temperature within the limits of Figure 1A or 1B, RCS Pressure Temperature, as follows:</p> <p><b>A. STEAM</b> the least affected S/G using the ADV.</p> <p><b>A.1 STEAM</b> using 2C AFW Pump and alternate steaming flowpaths</p> <p><b>1. REFER TO</b> Table 12, Alternate S/G Heat Removal paths</p> <p><b>B. CONTROL</b> feedwater flow to the least affected S/G</p> <p><b>C. STABILIZE</b> RCS temperature within the limits of Figure 1A or 1B, RCS Pressure Temperature</p> <p><b>D. IF both</b> of the following conditions are met,</p> <p><input type="checkbox"/> <b>NO</b> RCPs are RUNNING</p> <p><input type="checkbox"/> The limits of Figure 1A or 1B, RCS Pressure Temperature, were exceeded</p> <p>THEN <b>PERFORM</b> both of the following:</p> <p><b>(1) RECORD</b> the time, temperature and pressure when control of RCS temperature was regained</p> <p><b>(2) MAINTAIN</b> RCS Pressure and Temperature stable for a minimum of two hours</p>	<p><b>SRO DIRECTS the ATC to STABILIZE</b> RCS temperature within the limits of Figure 1A or 1B, RCS Pressure Temperature, by <b>STEAMING</b> the least affected S/G using the ADVs</p> <p>When plant indications present that the 2A S/G has reached dryout conditions (Tc temperature rises, S/G WR level near 0%), the ATC will stabilize temperature by fully opening both ADVs on the 2A S/G, then adjusting the setpoint for the lowest Tc observed, and placing the controllers in automatic</p>
	SRO	<p><b>18. IF</b> a LOOP has occurred, THEN <b>PERFORM</b> both of the following to restore Instrument Air:</p> <p><b>A. ENSURE</b> 2AB 480V Load Center is aligned to an energized bus</p> <p><b>B. DISPATCH</b> an operator to restore Instrument Air per Appendix H, Operation of the 2A and 2B Instrument Air Compressors</p>	<p><b>SRO EVALUATES</b> step and Determines it is not applicable</p>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	5	
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	<p><b>19. CHECK</b> if HPSI throttle criteria are MET:  <b>A. VERIFY</b> at least <u>one</u> HPSI pump is OPERATING.  <b>B. VERIFY</b> all of the following HPSI throttle criteria are MET:</p> <ul style="list-style-type: none"> <li>RCS subcooling is greater than or equal to minimum subcooling</li> <li>Pressurizer level is greater than 30% and stable or rising</li> <li>At least one S/G is available for RCS heat removal with level being restored to OR maintained between 60 and 70% NR</li> <li>Rx Vessel level indicates sensors 4 through 8 are covered, or  <b>NO</b> abnormal differences (greater than 20°F) between Thot and Rep CET temperature</li> </ul> <p><b>C. THROTTLE</b> SI flow per Appendix S, Safety Injection Throttling and Restoration or  <b>STOP</b> one HPSI pump at a time.</p>	<i><b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant</i>
	SRO	<p><b>20. CHECK</b> HPSI pump restart criteria:  <b>A. VERIFY</b> HPSI throttle criteria are being maintained</p>	<i><b>SRO EVALUATES</b> step and Determines it is not required</i>
	SRO	<p><b>21. CHECK</b> LPSI pump stop criteria:  <b>A. VERIFY</b> pressurizer pressure is greater than 250 psia and CONTROLLED  <b>A.1 GO TO</b> Section 4.0, Step 22  <b>B. STOP</b> the LPSI pumps  <b>C. CLOSE</b> the LPSI injection valves  <b>D. PLACE</b> the LPSI Pump handswitches in AUTO</p>	<i><b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	2	Event #	5	
Event Description:		<b>2A Main Feed Reg valve fails open, RX trip, ESD in Contmnt on the 2A S/G and 2B3 4.16kv bus Lock Out</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>22. CHECK</b> LPSI pump restart criteria: <b>A. VERIFY</b> both LPSI pumps are STOPPED <b>B. VERIFY</b> pressurizer pressure is less than 250 psia <b>C. VERIFY</b> RAS has <b>NOT</b> ACTUATED <b>D. START</b> LPSI pumps as necessary <b>E. OPEN</b> the LPSI injection valves	<b>SRO EVALUATES</b> step and Determines takes actions as plant conditions warrant
	SRO/ATC	<b>23. ENSURE</b> at least one S/G has level being restored to or maintained between 60 and 70% NR with main or auxiliary feedwater	<b>SRO DIRECTS</b> the <b>ATC</b> to <b>ENSURE</b> at least one S/G has level being restored to or maintained between 60 and 70% NR with main or auxiliary feedwater <b>The ATC</b> will <b>ENSURE</b> at least one S/G has level being restored to or maintained between 60 and 70% NR with main or auxiliary feedwater
	SRO	<b>24. MAINTAIN</b> RCS within Figure 1A or 1B, RCS Pressure Temperature, as follows: <b>A. OPERATE</b> main or auxiliary pressurizer sprays <b>B. VERIFY</b> HPSI throttle criteria are MET <b>C. IF</b> in service, THEN <b>CONTROL</b> letdown <b>D. THROTTLE</b> SI flow as necessary per Appendix S, Safety Injection Throttling and Restoration <b>E. VERIFY</b> RCS is within Figure 1A or 1B, RCS Pressure Temperature	<b>SRO DIRECTS</b> the <b>ATC</b> to <b>MAINTAIN</b> RCS within Figure 1A or 1B, RCS <b>The ATC</b> will <b>MAINTAIN</b> RCS within Figure 1A or 1B, RCS

**The Scenario can be terminated after the control room actions for 2A SG isolation are complete.**

**Proceed to Event 6.**

	<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>	<b>SEG</b> Page 39 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2    Event # 6	
Event Description: <b>On trip 2 CEAs remain out of core</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	


<b>Note to Evaluator: On trip 2 CEAs remain out of core is an auto trigger upon either RX trip push buttons being pressed.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>On trip 2 CEAs remain out of core is an auto trigger, no booth operator action required.</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications: CEAs not inserted in the core post trip</b> <b>Annunciators: Multiple</b>			
<b>2-AOP-02.02    The following actions are taken from 2-AOP-02.02, Emergency Boration</b>			
<b>4.1 Immediate Operator Actions: NONE</b>			
<b>NOTE</b>  This Procedure may contain steps that could adversely affect reactivity. Proper consideration and appropriate briefings shall occur prior to performance of steps that could challenge reactivity.  The following information is posted as an Operator Aid at RTGB-205 Panel "M". Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, an assignment to Ops Support Labeling Specialist to update and install revised Operator Aids must be initiated to incorporate these changes on a new Operator Aid placard.			
<b>4.2 Subsequent Operator Actions</b>			
	ATC	1. <b>VERIFY</b> at least one charging pump is running with control switch in START	<i><b>ATC VERIFIES</b> at least one charging pump is running with control switch in START</i>
<b>NOTE</b>  The MAKEUP MODE SELECTOR switch is required to be in MANUAL prior to switching the Boric Acid Pump control switches to preclude pump breaker trips			
	ATC	1. <b>VERIFY</b> at least one charging pump is running with control switch in START	<i><b>ATC VERIFIES</b> at least one charging pump is running with control switch in START</i>
	ATC	2. <b>VERIFY</b> the MAKEUP MODE SELECTOR switch is in MANUAL	<i><b>ATC VERIFIES</b> the MAKEUP MODE SELECTOR switch is in MANUAL</i>
	ATC	3. <b>ENSURE</b> V2525, BORON LOAD CONTROL VALVE is CLOSED	<i><b>ATC ENSURES</b> V2525, BORON LOAD CONTROL VALVE is CLOSED</i>

Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	2	Event #	6				
Event Description:		On trip 2 CEAs remain out of core							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

**NOTE**


Both Boric Acid Pumps are required to be placed in service when the combined Boric Acid Makeup Tank volumes are being credited as a borated water source. Otherwise, the pump associated with the Boric Acid Makeup Tank being credited as the borated water source should be started.

ATC	<p><b>4. PERFORM</b> the following to Emergency Borate using V2514, EMERGENCY BORATE:</p> <p><b>A. START</b> at least one of the following:</p> <ul style="list-style-type: none"> <li>2A (BORIC ACID PUMP)</li> <li>2B (BORIC ACID PUMP)</li> </ul> <p><b>B. IF</b> 2A BORIC ACID PUMP was started, THEN <b>CLOSE</b> V2650, TANK 2A RECIRC VALVE.</p> <p><b>C. IF</b> 2B BORIC ACID PUMP was started, THEN <b>CLOSE</b> V2651, TANK 2B RECIRC VALVE</p> <p><b>D. OPEN</b> V2514, EMERGENCY BORATE</p>	<p><b>ATC PERFORMS</b> the following</p> <p><b>STARTS</b> at least one BORIC ACID PUMP</p> <p><b>CLOSES</b> the BORIC ACID TANK RECIRC VALVE for the pump started and</p> <p><b>OPENS</b> V2514, EMERGENCY BORATE VALVE</p>
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	<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>	<b>SEG</b> Page 41 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 2    Event # 7	
Event Description: <b>On RX trip FB 2, Exciter Supply Breaker fails to open</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

<b>Note to Evaluator:</b> Field Breaker FB-2 fails to open is an auto trigger that is inserted upon loading the scenario and is cleared when the applicant manually opens the breaker.			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon Reactor Trip Event 7 Field Breaker FB-2 fails to open will be auto inserted.</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications:</b> <b>Annunciators:</b>			
	BOP		RECOGNIZES Field Breaker FB-2 failed to open
	BOP		OPENS Field Breaker FB-2
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
<b>4.2 Immediate Operator Actions:</b> <ul style="list-style-type: none"> <li>ATC: Verifies Reactor power lowering, Negative Startup rate, all CEAs and verifies no dilution is in progress inserted and communicates status to the Unit Supervisor. Starts backup charging pumps as necessary.</li> <li>BOP: Verifies all governor and throttle valves closed and communicates status to the Unit Supervisor. Makes plant announcements and trip notifications.</li> </ul>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>Step 5 VERIFY RCS Pressure Control:</b>	<b>SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer pressure is between 1800 and 1900 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia <b>IF SIAS</b> has occurred the <b>SRO</b> will <b>DIRECT</b> two RCPs to be tripped and perform 2-EOP-99 App.J to restore CCW to the RCPs



		<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>				<b>SEG</b> Page 42 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	2	Event #	8		
Event Description:		<b>2A CS Pp breaker fails to auto close</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<b>CT-2</b>	<b>INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Restore 2A CS pump and flow prior to exceeding 44 psig design pressure of containment.</b>		
<b>Note to Evaluator: “2A” CS Pump fails to Auto start is an auto trigger that is inserted upon loading the scenario and is cleared when the applicant manually starts the component.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li><b>NONE: “2A” CS Pump fails to Auto start and “B” train CS is unavailable due to the 2B3 4160 bus Lock out, is an auto trigger</b></li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li><b>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</b></li> </ul>			
<b>Indications: Safety Injection Actuation Alarms and supporting plant parameters</b>			
<b>Annunciators: Multiple</b>			
	BOP		Recognizes plant parameters require CSAS and validates its actuation
	BOP		Identifies that “2A” CS pump did not start and B train CSAS is unavailable due to the loss of the 2B3 4160 bus and takes action to start the “2A” CS pump
	BOP		Manually starts the 2A CS pump and verifies adequate containment spray flow
	BOP		Updates the crew on the actuation status of CSAS

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	2	Event #	
Event Description:		<b>APPENDICES</b>			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

<b>2-EOP-99 APP "A"</b>		<b>The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"</b>	
	BOP	<p><b>1.</b> If a LOOP has occurred, Then PERFORM <b>BOTH</b> of the following:</p> <p><b>A.</b> ENSURE 2AB 480V Load Center is aligned to an energized bus.</p> <p><b>B.</b> DISPATCH an operator to restore Instrument Air. <b>REFER TO</b> Appendix H, Operation of the 2A and 2B Instrument Air Compressors.</p>	<p><i>2AB Bus energized when 2A EDG output breaker is closed. Determines no additional action required</i></p>
<b><u>NOTE</u></b>			
<ul style="list-style-type: none"> <li>HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open</li> <li>When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset</li> </ul>			
	BOP	<p><b>2.</b> If an <b>INADVERTENT</b> SIAS has closed the 'N' Header valves, Then PERFORM <b>EITHER</b> of the following:</p> <p><input type="checkbox"/> RESTORE flow to the A" CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8A HCV-14-9</p> <p><b>OR</b></p> <p><input type="checkbox"/> RESTORE flow to the B" CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</p> <p>HCV-14-8B HCV-14-10</p>	<p><i>Determines no action required, no inadvertent SIAS</i></p>
<b><u>CAUTION</u></b>			
<p>Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.</p>			

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	2	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	<p><b>3. If a <u>VALID</u> SIAS has closed the 'N' Header valves, <u>Then</u> PERFORM the following:</b></p> <p><b>A. VERIFY <u>both</u> safety related CCW headers are operational.</b></p> <p><b>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</b></p> <p><b>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing <u>either</u> of the following:</b></p> <ul style="list-style-type: none"> <li>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A, HCV-14-9</li> <li><b>OR</b></li> <li>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B, HCV-14-10</li> </ul>	BOP restores "N" header flow
	BOP	<p><b>4. If the 'N' Header has been restored, <u>Then</u> OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves by performing the following:</b></p> <p><b>A. If CIAS or high radiation has closed the SGBD Sample Valves, <u>Then</u> OPEN FCV-L-19-1-7 and FCV-L-19-1-9 by PLACING the control switch to CLOSE / OVERRIDE.</b></p> <p><b>B. OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves.</b></p>	BOP restores SGBD sample flow.
	BOP	<p><b>5. If the 'N' Header is in service, <u>Then</u> DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.</b></p>	BOP directs chemistry to perform required samples
	BOP	<p><b>6. If S/Gs cannot be sampled, <u>Then</u> DIRECT Health Physics to conduct secondary plant local area radiation surveys.</b></p>	BOP determines step is N/A

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	2	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**NOTE**

The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.

	BOP	7. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	BOP informs US to declare CCW header inoperable
	BOP	8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS, <ul style="list-style-type: none"> <li>Seismic event</li> <li>'N' Header is found NOT intact</li> <li>The operable Safety Related CCW header becomes inoperable</li> </ul> Then ISOLATE the 'N' header.	BOP monitors for these conditions, determines N/A at this time
<b>2-EOP-99 APP "J"</b>		<b>The following actions are for Restoring CCW to the RCPs Using 2-EOP-99, APPENDIX "J".</b>	
	BOP	1. If a LOOP has occurred, Then PERFORM <b>BOTH</b> of the following: <input type="checkbox"/> A. ENSURE 2AB 480V Load Center is aligned to an energized bus. <input type="checkbox"/> B. DISPATCH an operator to restore Instrument Air. <b>REFER TO</b> Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	BOP determines LOOP has not occurred, the was 2AB bus energized with the 2A EDG breaker closure
	BOP	2. ENSURE Instrument Air to Containment is available by PLACING HCV-18-1 to CLOSE / OVERRIDE and then to OPEN.	BOP opens HCV-18-1

**NOTE**


- ☐ HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open.
- ☐ When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset.

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	2	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	<p><b>3. If an <u>INADVERTENT</u> SIAS has occurred, <u>Then</u> RESTORE flow from <b>EITHER</b> 'A' or 'B' CCW Header to the 'N' Header by placing the control switches for the desired train to CLOSE and then to OVERRIDE:</b></p> <p>HCV-14-8A 'N' Hdr Isol Discharge HCV-14-9 'N' Hdr Isol Suction</p> <p><b>OR</b></p> <p>HCV-14-8B 'N' Hdr Isol Discharge HCV-14-10 'N' Hdr Isol Suction</p>	BOP determines no inadvertent SIAS occurred
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.</p>			
	BOP	<p><b>4. <u>If</u> a VALID SIAS has closed the 'N' Header valves, <u>Then</u> PERFORM the following:</b></p> <p><b>A. VERIFY <u>both</u> safety related CCW headers are operational.</b></p> <p><b>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</b></p> <p><b>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing <u>either</u> of the following:</b></p> <p>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A, HCV-14-9</p> <p><b>OR</b></p> <p>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B, HCV-14-10</p>	BOP realigns the "N" header restoring CCW flow

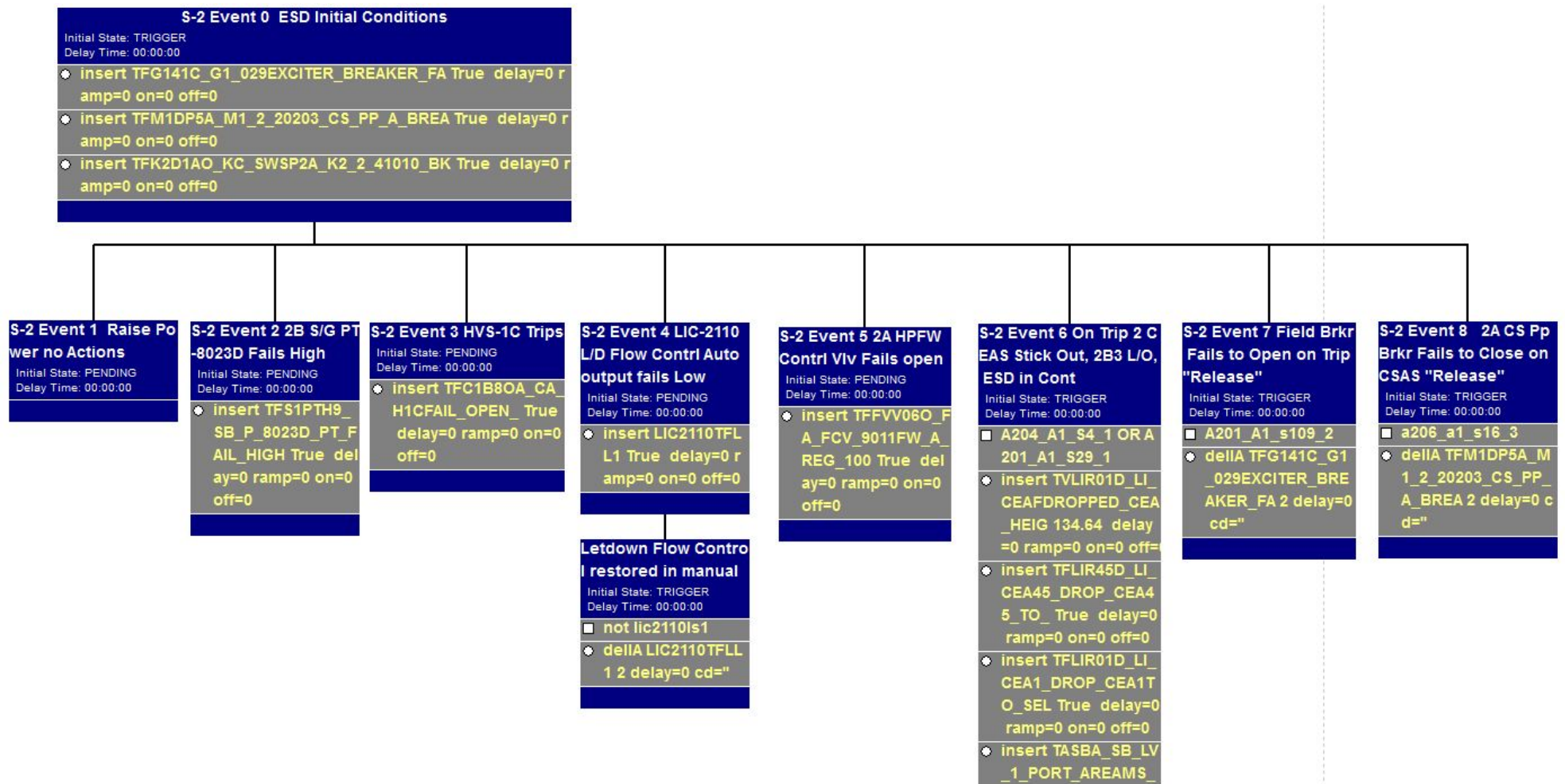
<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	2	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<b>5. OPEN ALL</b> of the following CCW to / from the RCP valves: <input type="checkbox"/> HCV-14-1, CCW To RC PUMP <input type="checkbox"/> HCV-14-2, CCW From RC PUMP <input type="checkbox"/> HCV-14-7, CCW To RC PUMP <input type="checkbox"/> HCV-14-6, CCW From RC PUMP	<b>BOP</b> opens valves restoring CCW flow to RCPs
	BOP	<b>6. ENSURE</b> V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.	<b>BOP</b> opens V2507
<b><u>CAUTION</u></b>  RCP Seal Cooler isolation valves automatically close on high Seal Cooler outlet temperature of 200°F. Maintaining the control switch in the OPEN position will override this function. CCW radiation monitors should be closely monitored for indication of RCS to CCW leakage should conditions warrant the valve(s) to be maintained in the open position. Consideration should be given to returning the control switch(es) to the AUTO position once the valves have been opened.			
	BOP	<b>7. ENSURE ALL</b> RCP Seal Cooler Isolation valves are OPEN: HCV-14-11-A1,CCW From 2A1 RCP Seal Cooler HCV-14-11-A2,CCW From 2A2 RCP Seal Cooler HCV-14-11-B1,CCW From 2B1 RCP Seal Cooler HCV-14-11-B2,CCW From 2B2 RCP Seal Cooler	<b>BOP</b> verifies valves are open
<b><u>NOTE</u></b>  Reactor Coolant Pumps must be secured if CCW flow is not restored within 10 minutes.			
	BOP	<b>8. VERIFY</b> CCW flow to running RCPs by any of the following: <input type="checkbox"/> DCS RCP Overview Screen <input type="checkbox"/> FIS-14-15A/B/C/D, CCW From RCP Hx Flow <input type="checkbox"/> L6, RCP CCW Flow Low Trip, Annunciator clear.	<b>BOP</b> verifies CCW flow to RCPs
<b><u>NOTE</u></b>  The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			

		<b>L-19-1 NRC EXAM SCENARIO 2 REV. 0</b>				<b>SEG</b> Page 48 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario # 2		Event #			
Event Description:		<b>APPENDICES</b>					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		

	BOP	9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	BOP informs US to declare CCW header is inoperable
	BOP	10. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS, <input type="checkbox"/> Seismic event <input type="checkbox"/> N' Header is found NOT intact <input type="checkbox"/> The operable Safety Related CCW header becomes inoperable <u>Then</u> ISOLATE the 'N' header.	BOP monitors for these conditions, not present at this time

**SIMULATOR LESSON LAYOUT**





## QUANTITATIVE ATTRIBUTES

### **Malfunctions:**

#### *Before EOP Entry:*

1. 2B S/G PT-8023D fails high
2. HVS-1B trips
3. LIC 2110 L/D flow controller fails to Minimum flow
4. 2A Main Feed Reg valve fails open

#### *After EOP Entry:*

1. ESD in Containment from the 2A S/G
2. 2B3 4.16kv bus Lock Out
3. 2 CEAs remain out of core
4. FB 2, Exciter Supply Breaker fails to open
5. 2A CS Pp breaker fails to auto close

### **Abnormal Events:**

1. 2B S/G PT-8023D fails high
2. HVS-1B trips
3. LIC 2110 L/D flow controller fails to Minimum flow

### **Major Transients:**

2A Main Feed Reg valve fails open requiring RX trip, ESD in Containment

### **Critical Tasks:**

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain S/G level within the bounds of the RPS S/G level trip setpoints. Take action to manually control 2A MFRV prior to reaching RPS setpoints for reactor trip.
2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Restore 2A CS pump and flow prior to exceeding 44 psig design pressure of containment.

## OPERATIONS SHIFT TURNOVER REPORT

DAYS

Today

**UNIT 2 CONTROL ROOM**

**Desk RCO:** \_\_\_\_\_ **Board RCO:** \_\_\_\_\_

**Protected**

**Train:** A **Online Risk:** GREEN

**Unit 2 Identified RCS Leakage:** .02 gpm **Unit 2 Unidentified RCS Leakage:** .06 gpm

**Unit 2 Scheduled Activities per the OSP:**

No scheduled surveillances

**Unit 2 Unscheduled Surveillances:**

No unscheduled surveillances

**Upcoming ECOs to Hang or Release:**

None

**Tech Spec Action Statement:**

1. NONE

**Operator Work Around:**

None

**Locked in Annunciators:**

1. NONE

**Current Status:**

1. The Unit is at 45% power, 2B MFW pump repaired and the clearance is currently being released after 5-day maintenance window, in 2-GOP-201 Step 4.8.13, up power is on hold for turnover.
2. Raise power to 50% and hold until the 2B Feedwater pump has been signed off.
3. 2A Screen Wash Pump OOS,
4. Small amounts of sea grass has been observed in the intake, 2B Screen wash pump is running 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green.
5. RP has been notified that the second Charging Pump was started for the up power.

**Longstanding Problems:**

None

**Reactivity Turnover:**

15 gpm dilution is in progress to maintain current power level for turnover

Facility:	St. Lucie	Scenario No.:	4	Op-Test No.:	L-19-1
Examiners:			Operators:	Unit Supervisor:	
				BRCO:	
				DRCO:	
Initial Conditions: 100% power, MOC, no scheduled surveillances, maintain 100% power					
Turnover: 2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green. 2B Charging Pp is OOS, 2A AFW Pp OOS, LIC-1110Y OOS					
Critical Tasks: <ol style="list-style-type: none"> <li>1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. - Manually isolate lifting PORV prior to reaching an automatic reactor trip.</li> <li>2. RESTORE AC POWER – Restore power to a vital AC 480 V AB bus. Align 2AB 480V LC to 'B' train to power to 2C Charging Pp and Start the 2C charging pp to meet fig 2 within 15 minutes of 2A3 4.16KV bus lockout to prevent unnecessary escalation of the EALs..</li> </ol>					

Event No.	Malf. No.	Event Type*	Event Description
1	1	I/BOP/SRO TS/SRO	<b>Malf:</b> LT-9023A ("A" Channel Feedwater Level transmitter for 2B S/G) fails low <b>Action:</b> Bypass bistables <b>T.S.</b> 3.3.1, 3.3.2
2	2	C/ATC/SRO TS/SRO	<b>Malf:</b> PORV V1474 ramps open <b>Action:</b> Close PORV block valve. <b>CT-1</b> RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points.
3	3	I/ATC/SRO	<b>Malf:</b> LIC-1110X oscillations LIC-1110Y Inop on Turnover <b>Action:</b> Manually Control LIC-1100X or LIC-2110
4	4	C/ATC/ R/ATC/BOP/ SRO TS/SRO	<b>Malf:</b> 2B SGTL ( approx. 200 gpd) <b>Action:</b> ATC calculates leak rate; SRO enters SGTL, Commences a rapid downpower <b>T.S.</b> 3.4.6.2, 3.4.5
5	5	M/ALL	<b>Malf:</b> 2A2 RCP shaft slowly seizes, SGTR of 300 gpm on trip <b>Action:</b> Trip RX and trip RCP perform 2-EOP-01 go to 2-EOP-04
6	6	C/BOP/SRO	<b>Malf:</b> 2A3 4160 bus locks out on trip <b>Action:</b> Align 2AB 480V LC to 'B' train <b>CT-2</b> Action: Align 2AB 480V LC to 'B' train to power to 2C Charging Pp and start the 2C charging pp to meet fig 2 to prevent going to a SAE
7	7	M/ALL	<b>Malf:</b> 2A Steam Generator MS line break upstream of MSIV <b>Action:</b> Transition to 2-EOP-15,direct isolation of 2A S/G due to ESD
8	8	C/BOP/SRO	<b>Malf:</b> During isolation of 2A S/G, MV-08-13,S/G 2A Steam to AFW Pump 2C breaker trips when the valve is taken closed <b>Action:</b> Close MV-08-3 using key 78

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

SITE: ST. LUCIE

Revision #: 0

LMS ID: N/A

LMS Rev. Date: N/A

SEG TITLE: L-19-1 SCENARIO 4

SEG TYPE: ☐ Training ☒ EvaluationPROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

<b>Developed by:</b>	<u>JOSH BROWN</u>	<u>3/4/2019</u>
	Instructor/Developer	Date
<b>Reviewed by:</b>	<u>SEAN WYLIE</u>	<u>3/4/2019</u>
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<u>TERRY BENTON</u>	<u>3/4/2019</u>
	SME (Technical Review)	Date
<b>Approved by:</b>	<u>TRAVIS OURET</u>	<u>3/4/2019</u>
	Training Supervision	Date
<b>Approved by:</b>	<u>TERRY BENTON</u>	<u>3/4/2019</u>
	Training Program Owner (Line)	Date

**Scenario Outline**

Facility:	St. Lucie	Scenario No.:	4	Op-Test No.:	L-19-1
Examiners:		Operators:	SRO:		
			ATC:		
			BOP:		
Initial Conditions:	100% power, MOC, no scheduled surveillances, maintain 100% power				
Turnover:	2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green. 2B Charging Pp is OOS, 2A AFW Pp OOS, LIC-1110Y OOS				
Critical Tasks:	1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. - Manually isolate lifting PORV prior to reaching an automatic reactor trip. 2. RESTORE AC POWER – Restore power to a vital AC 480 V AB bus. Align 2AB 480V LC to 'B' train to power to 2C Charging Pp and Start the 2C charging pp to meet fig 2 within 15 minutes of 2A3 4.16KV bus lockout to prevent unnecessary escalation of the EALs..				

Event No.	Malf. No.	Event Type*	Event Description
1	1	I/BOP/SRO TS/SRO	<b>Malf:</b> LT-9023A ("A" Channel Feedwater Level transmitter for 2B S/G) fails low <b>Action:</b> Bypass bistables <b>T.S.</b> 3.3.1, 3.3.2
2	2	C/ATC/SRO TS/SRO	<b>Malf:</b> PORV V1474 ramps open <b>Action:</b> Close PORV block valve. <b>CT-1</b> RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points.
3	3	I/ATC/SRO	<b>Malf:</b> LIC-1110X oscillations LIC-1110Y Inop on Turnover <b>Action:</b> Manually Control LIC-1100X or LIC-2110
4	4	C/ATC/ R/ATC/BOP/ SRO TS/SRO	<b>Malf:</b> 2B SGTL ( approx. 200 gpd) <b>Action:</b> ATC calculates leak rate; SRO enters SGTL, Commences a rapid downpower <b>T.S.</b> 3.4.6.2, 3.4.5
5	5	M/ALL	<b>Malf:</b> 2A2 RCP shaft slowly seizes, SGTR of 300 gpm on trip <b>Action:</b> Trip RX and trip RCP perform 2-EOP-01 go to 2-EOP-04
6	6	C/BOP/SRO	<b>Malf:</b> 2A3 4160 bus locks out on trip <b>Action:</b> Align 2AB 480V LC to 'B' train <b>CT-2</b> Action: Align 2AB 480V LC to 'B' train to power to 2C Charging Pp and start the 2C charging pp to meet fig 2 to prevent going to a SAE
7	7	M/ALL	<b>Malf:</b> 2A Steam Generator MS line break upstream of MSIV <b>Action:</b> Transition to 2-EOP-15, direct isolation of 2A S/G due to ESD
8	8	C/BOP/SRO	<b>Malf:</b> During isolation of 2A S/G, MV-08-13, S/G 2A Steam to AFW Pump 2C breaker trips when the valve is taken closed <b>Action:</b> Close MV-08-3 using key 78

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

## SIMULATOR EXERCISE GUIDE REQUIREMENTS

**Terminal Objective**      Given specific plant conditions, the students will be able to mitigate events in accordance with plant procedures.

**Enabling Objectives:**      None

**Prerequisites:**            1. Simulator  
2. Applicants enrolled in Initial License Program

**Training Resources:**      1. Floor Instructor as Shift Technical Advisor  
2. Simulator Booth Operator  
3. NRC Evaluators

**References:**                1. 2-AOP-99.01, Loss of Tech Spec Instrumentation  
2. 2-AOP-01.10, Pressurizer Pressure and Level  
3. 2-AOP-02.01, Charging and Letdown  
4. 2-AOP-08.02, Steam Generator Tube Leak  
5. 2-AOP-22.01, Rapid Downpower  
6. 2-EOP-01, Standard Post Trip Actions  
7. 2-EOP-04, Steam Generator Tube Rupture  
8. 2-EOP-15, Functional Recovery  
9. 2-EOP-99, Appendices / Figures / Tables /Data Sheets  
10. Unit-2 Technical Specifications

**Protected Content:**      **NONE**

**Evaluation Method:**      Simulator performance will be evaluated in accordance with NUREG 1021 rev. 11.

**Operating Experience:**      N/A

**Risk Significant Operator Actions:**      Isolate PORV Relief Path After PORV Fails Open

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions made to the material after initial approval.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				REVIEWER	DATE

**L-19-1 NRC SCENARIO 4 OVERVIEW/SEQUENCE OF EVENTS**

Event	Description
1	LT-9023 ("A" Channel Feedwater NR Level transmitter for the 2B S/G) fails low; the BOP will respond to the annunciators, evaluate the failure and report. The SRO will evaluate the failure and enter 2 AOP-99.01 and direct the BOP to bypass the appropriate RPS and AFAS channel IAW section 4.2.12. Tech Spec evaluation and entry into T.S. 3.3.1 and 3.3.2.
2	THIS IS A CRITICAL TASK; PORV V1474 leaks by on ramp to 50% open; The ATC will identify the failure by RCS parameters changing and indications PORV tail pipe temperature rising and Acoustic monitors system trends. The SRO will direct the ATC to place the PORV to off and then close PORV block valve V1476 and implement 2-AOP-01.10. CT-1 RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points.
3	THIS IS A MANUAL CONTROL OF AN AUTO SYSTEM FAILURE; LIC-1110X, X channel pressurizer level controller has oscillations in auto LIC-1110Y, Y channel pressurizer level controller is Inoperable on Turnover The ATC will Manually Control LIC-1100X, X channel pressurizer level controller or LIC-2110 Letdown flow controller.
4	THIS IS A REACTIVITY EVENT; A 2B SGTL (approx. 200 gpd) will begin, the ATC will recognize pressurizer level lowering, letdown lower, main steam radiation levels rising (3 min to see) and RCS pressure lowering. Report the conditions and begin a leak rate calculation. The SRO will enter 2-AOP-08.02 SGTL, quantify leakage and commence a down power using 2-AOP-22.01 Rapid Downpower. Tech Spec evaluation and entry into LCO 3.4.6.2 and 3.4.5 required.
5	After adequate power maneuvers are observed the 2A2 RCP vibrations alarm will be received followed by a slow rise in RCP amps to indicate the RCP shaft slowly seizing. The ATC will identify the failure and report, the SRO will direct the ATC to trip the RX and then to secure the 2A2 RCP. 2-EOP-01 will be implemented. On the trip the SGTL is ramped up to 300gpm, the SRO will transition to 2-EOP-04 SGTR.
6	THIS IS A CRITICAL TASK; On the trip the 2A3 4160 bus locks out the BOP will Align the 2AB 480V LC to 'B' train to provide power to the 2C Charging pp IAW 2-EOP-01 CT-2 Action: Align 2AB 480V LC to 'B' train to power to 2C Charging Pp and start 2C charging pump to meet fig 2 to prevent escalation of the EALs.
7	After the crew enters 2-EOP-04 SGTR A MS line safety lifts (occurs when the RO takes the SBCS permissive switch to manual to begin RCS cooldown) on the 2A Steam Generator The SRO will re-evaluate the plant conditions and transition to 2-EOP-15 and direct the BOP to isolate the 2A S/G due to the ESD.
8	MV-08-13, S/G 2A Steam to AFW Pump 2C breaker will trip when the valve is taken to the closed direction during App R to isolate the 2A S/G, the BOP will recognize the failure and report. The SRO will direct the BOP to perform the action of 2-EOP-99, APP R and close MV-08-3 using key 78.
Termination Criteria	The scenario will be terminated after the crew Isolates the 2A S/G IAW 2-EOP-99 App. R or at the lead evaluators discretion.

**Procedures Used**
**Tech Specs Entered**

- 2-AOP-99.01, Loss of Tech Spec Instrumentation
- 2-AOP-01.10, Pressurizer Pressure and Level
- 2-AOP-02.01, Charging and Letdown
- 2-AOP-08.02, Steam Generator Tube Leak
- 2-AOP-22.01, Rapid Downpower
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-04, Steam Generator Tube Rupture
- 2-EOP-15, Functional Recovery
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets
- Unit-2 Technical Specifications

- 3.2.5
- 3.3.1
- 3.3.2
- 3.4.6.2
- 3.4.5



**Scenario Setup and Booth Operator Instructions:**


- **ENSURE** Examination Security has been established.
- **ENSURE** the Simulator is unloaded
- **ENSURE** Lesson for SCENARIO 4 from Exam Flash drive is loaded as follows:
  - **Open**, folder L-19-1 NRC SCENARIO 4 Isn
  - **Copy**, L-19-1 NRC SCENARIO 4.Isn
  - **Open**, Lessons folder on simulator operator station desk top
  - **Paste**, L-19-1 NRC SCENARIO 4.Isn into the Instructor Lessons folder; NRC; L-19-1
- **LOAD** the Simulator
- **RESTORE** IC#1
  - **RUN** the Simulator
  - Place the 2A AFW pump control switch in the STOP position and Hang an ECO tag on switch
  - Place the 2B Charging pump control switch in the STOP position and Hang an ECO tag on switch
  - Hang an ECO tag on LIC-1110Y Y Pressurizer Level Controller
  - Place the 2A Screen wash pump off
  - Place a Clearance tag on the 2A Screen wash pump
  - Start the 2B Screen wash pump
  - Place GUARDED EQUIPMENT as outlined Guarded Equipment procedure
  - Place a marked up copy of 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION on the US desk
  - ENSURE the A Train Protected sign and a GREEN OLRM sign are placed RTGB-203.
  - ENSURE the CHEMISTRY sheet for MOC is placed on the Unit Supervisor Desk.
  - **FREEZE** the simulator
- **OPEN** and **EXECUTE** L-19-1 NRC SCENARIO 4.Isn
- **RUN** the Simulator and allow for stabilization
- **FREEZE** the simulator
- **UNFREEZE** the simulator prior to the candidates entering the simulator

**Post scenario simulator restoration:**

- **ENSURE** L-19-1 NRC SCENARIO 4.Isn are deleted from Simulator in accordance with Attachment 2 of Training Department Policy PSL-TRNG 142


**BRIEF / TURNOVER INFORMATION**

- Conduct simulator crew pre-scenario brief using TR-AA-L-19-10-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-L-19-10-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached


		<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>				<b>SEG</b> Page 8 of 63	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	4	Event #	1
Event Description:		<b>2B S/G LT-9023A FAILS LOW ("A" Channel Level transmitter for the 2B S/G) fails low</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

T.S. 3.3.1	<p>As a minimum, the reactor protective instrumentation channels and bypasses of Table 3.3-1 shall be <b>OPERABLE</b>.</p> <p><b>Functional Unit 8. Steam Generator Level – Low Total Channels 4/SG Channels to TRIP 2/SG MIN OPERABLE 3/SG</b></p> <p><b>ACTION: 2.</b> With the number of channels <b>OPERABLE</b> one less than the Total Number of Channels, <b>STARTUP</b> and/or <b>POWER OPERATION</b> may continue provided the inoperable channel is placed in the bypassed or tripped condition within 1 hour. The channel shall be returned to <b>OPERABLE</b> status no later than during the next <b>COLD SHUTDOWN</b>.</p>
T.S. 3.3.2	<p>The Engineered Safety Features Actuation System (ESFAS) instrumentation channels and bypasses shown in Table 3.3-3 shall be <b>OPERABLE</b> with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.</p> <p><b>Functional Unit 7. AUXILIARY FEEDWATER c. SG Level (2A/2B) – Low Channels 4/SG Channels to TRIP 2/SG MIN OPERABLE 3/SG</b></p> <p><b>ACTION: 20a.</b> The inoperable channel is placed in either the bypassed or tripped condition within 1 hour. If an inoperable SG level channel cannot be restored to <b>OPERABLE</b> status within 48 hours, then AFAS-1 or AFAS-2 as applicable in the inoperable channel shall be placed in the bypassed condition</p> <p><b>Action 20b.</b> With a channel process measurement circuit that affects multiple functional units inoperable or in test, bypass or trip all associated functional units as listed in ACTION 13.</p>


<b>Note to Evaluator:</b> The 2B S/G LT-9023A fails low is a malfunction initiated from the Booth upon direction by the evaluator.			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 1: LT-9023A Fails Low</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul> <p><b>EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.</b></p>			
<b>Indications:</b> PI-8023A will indicate low scale on RTGB 202 MC RPS bistables for 2B S/G Low Level will be in trip. <b>Annunciators:</b> L-3 S/G LEVEL LOW CHANNEL TRIP L-11 S/G LEVEL LOW CHANNEL PRE- TRIP			
	BOP/ATC		<b>Acknowledges</b> annunciators and <b>Communicates</b> IAW plant policies
	BOP/ATC		<b>Diagnoses</b> 2B S/G LT-9023A has failed low; RPS bistables Lo SG level have tripped and <b>Communicates</b> status IAW plant policies
	BOP		<b>Complies</b> with ARP's for L-3, L-11 and <b>Communicates</b> and/or takes action as directed by ARP

		L-19-1 NRC EXAM SCENARIO 4 REV. 0					<b>SEG</b> Page 9 of 63	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	4	Event #	1		
Event Description:		<b>2B S/G LT-9023A FAILS LOW ("A" Channel Level transmitter for the 2B S/G) fails low</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							


	SRO		Diagnoses, Interprets, that 2B S/G LT-9023A has failed low, Communicates agreement with the ATCs diagnoses and Directs entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		Updates crew and Enters 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		Directs actions of 2-AOP-99.01, Loss of Tech Spec Instrumentation
	SRO		Notifies SM of entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation
<b>2-AOP-99.01</b>		<b>The following actions are taken from 2-AOP-99.01, Loss of Tech Spec Instrumentation</b>	
<b>4.1 Immediate Operator Actions: NONE</b>			
<b>4.2 Subsequent Operator Actions</b>			
<b>4.2.1 General Actions:</b>			
<b>NOTE</b>			
A TRANSMITTER failure can be discriminated from a METER failure by the presence of annunciators and protection and control actuations.			
	SRO	<b>1. CONFIRM</b> failed channel by any of the following methods: <ul style="list-style-type: none"> <li>Channel check comparison with redundant channels</li> <li>Annunciators</li> <li>Bistable or status lights</li> <li>Any instrument-related testing or surveillance procedure in progress</li> </ul>	Interprets the indications and determines the failure to be 2B S/G LT-9023A 2B Steam Generator Level Transmitter for MA channel
<b>NOTE</b>			
<b>BISTABLE TRIP UNIT is abbreviated as BTU in this AOP</b>			
	SRO	<b>2. IF</b> entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 7	N/A

		L-19-1 NRC EXAM SCENARIO 4 REV. 0					<b>SEG</b> Page 10 of 63	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	4	Event #	1	
Event Description:		<b>2B S/G LT-9023A FAILS LOW ("A" Channel Level transmitter for the 2B S/G) fails low</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>3.</b> Using Attachment 5, Channel Failure Impact Table, PERFORM the following: <b>A.</b> LOCATE table row for affected instrument or channel	<b>Locates</b> correct table row for LT-9023A
	SRO	<b>3.</b> Using Attachment 5, Channel Failure Impact Table, PERFORM the following: <b>B.</b> REFER TO applicable Tech Specs	<i><b>Refers to applicable Tech Specs 3.3.2</b></i>
	SRO	<b>3.</b> Using Attachment 5, Channel Failure Impact Table, PERFORM the following: <b>C.</b> PERFORM applicable procedure section for affected instrument	<i><b>PERFORMs</b> section 4.2.11</i>
	SRO	<b>4.</b> Using Attachment 6, Instrumentation, for Tech Spec applicability.	<i><b>PERFORMs</b> Attachment 6, Instrumentation, for Tech Spec applicability.  <b>DETERMINES</b> TS 3.3.1, functional unit 8, action 2 and 3.3.2, functional unit 7, actions 20a and 20b are applicable</i>
<b>4.2.11 S/G Level Channel Failure</b>			
	SRO	<b>1. CIRCLE</b> affected instrument and channel: <ul style="list-style-type: none"> <li>• LIC-9013 A / B / C / D</li> <li>• LIC-9023 A / B / C / D</li> </ul>	<i><b>PERFORMs</b> section 4.2.11.1. CIRCLE affected instrument and channel:</i> <ul style="list-style-type: none"> <li>• LIC-9013 A / B / C / D</li> <li>• LIC-9023 <b>A</b> / B / C / D</li> </ul>
NOTE			
<ul style="list-style-type: none"> <li>• Bypassing AFAS will require Key 202 and one of the following keys; 203, 204, 205, or 206.</li> <li>• If it is necessary to TRIP the RPS and ESFAS bistable trip units (BTUs), then it is preferable to leave the AFAS BTUs in BYPASS. (Section 6.1.3, Management Directive 1)</li> <li>• An AFAS channel in the TRIPPED condition is limited to 48 hours per Tech Spec 3.3.2 Table 3.3-3. (Section 6.1.3, Management Directive 1)</li> </ul>			


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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	4	Event #	1	
Event Description:		<b>2B S/G LT-9023A FAILS LOW ("A" Channel Level transmitter for the 2B S/G) fails low</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>2. PERFORM</b> one of the following for the affected BTUs listed: <ul style="list-style-type: none"> <li>LO LVL SG (RPS) (Key 104)</li> <li>For LIC-9013 only AFAS-1</li> <li>For LIC-9023 only AFAS-2</li> </ul> <b>A. BYPASS</b> affected BTUs using keyswitch and pushbuttons <b>B. TRIP</b> affected BTUs per Attachment 3, Tripping and Restoring Protection Bistables	<b>SRO DIRECTS the BOP to BYPASS the affected BTUs using keyswitches and pushbuttons as follows;</b> <ul style="list-style-type: none"> <li>LO LVL SG (RPS) (Key 104)</li> <li>For LIC-9023 only AFAS-2</li> </ul>
	SRO	<b>3. PLACE</b> S/G HI LEVEL OVERRIDE keyswitch for affected channel in BYPASS: (rear of RTGB-202) <ul style="list-style-type: none"> <li>Channel A (Key 15)</li> <li>Channel B (Key 16)</li> <li>Channel C (Key 17)</li> <li>Channel D (Key 18)</li> </ul>	<b>SRO DIRECTS the BOP to BYPASS the affected BTUs using keyswitches and pushbuttons as follows;</b> <ul style="list-style-type: none"> <li>Channel A (Key 15)</li> </ul>
	BOP	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section <b>4.2.11 S/G Level Channel Failure</b> Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitches and pushbuttons	<b>PERFORMs</b> section 4.2.11 as directed by the SRO; Obtains keys, unlocks cabinets and inserts keys: LO LVL SG (RPS) (Key 104) 202&203 for AFAS and key 15 S/G HI LEVEL OVERRIDE <b>BOP</b> relieves the ATC
	ATC	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section <b>4.2.11 S/G Level Channel Failure</b> Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitches and pushbuttons	<b>ATC PERFORMs</b> section 4.2.11 as directed by the Unit Supervisor; IVs inserted keys: 104 for RPS and rotates key to bypass MD LO LVL SG, key 15 rotates key to bypass f S/G HI LEVEL OVERRIDE and 202&203 for MA AFAS Door and bypass compartment and pushes the bypass button <b>ATC Reports</b> to SRO that the affected BTUs have been BYPASSED using keyswitches and pushbuttons <b>ATC relieves</b> the BOP
<b>4.2.1 General Actions:</b>			
	SRO	<b>5. INITIATE</b> work request for affected instrument or channel and <b>NOTIFY</b> I&C or EM as applicable	<b>PERFORMS</b> section 4.2.1 Step 4 <b>NOTIFIES</b> I&C or EM as applicable and <b>Notifies</b> the SM of the failure and the Tech Spec entry

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	4	Event #	1		
Event Description:		<b>2B S/G LT-9023A FAILS LOW ("A" Channel Level transmitter for the 2B S/G) fails low</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>6. DOCUMENT</b> problem as required: <ul style="list-style-type: none"> <li>EOOS Log</li> <li>Condition report</li> <li>Ops narrative log</li> </ul>	<b>PERFORMS</b> section 4.2.1 Step 5 and Documents issue as appropriate in: <ul style="list-style-type: none"> <li>EOOS Log</li> <li>Condition report</li> <li>Ops narrative log</li> </ul>
	SRO	<b>7. WHEN</b> ready to restore affected channel, THEN <b>PERFORM</b> Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> <li>Instrumentation Channels</li> </ul>	<b>IDENTIFIES</b> step as N/A
	SRO	<b>8. VERIFY</b> Exit Conditions are met <b>9. EXIT</b> this procedure	<b>VERIFIES</b> Exit conditions are met by: <ul style="list-style-type: none"> <li>Applicable Tech Spec LCO action requirements have been implemented</li> <li>Affected channel has been bypassed or tripped as required by Tech Specs and exits 2-AOP-99.01</li> </ul>
	SRO	<b>Performs Crew Brief</b>	<b>SRO PERFORMs</b> crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM


At the Lead Evaluator's direction, PROCEED to Event 2.

		<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>					<b>SEG</b> Page 13 of 63	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-19-1	Scenario #	4	Event #	2		
Event Description:		<b>PORV V1474 leaks by on ramp to 50% open</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

T.S.	The following DNB-related parameters shall be maintained within the limits: <b>3.2.5 DNB</b> (If Pzr reaches <2225 psia) <b>b. Pressurizer Pressure*</b> as shown on Table 3.2-2 of the COLR, (2225 psia) <b>ACTION:</b> Restore parameter within limits within 2 hours or reduce THERMAL POWER to < 5% of RATED THERMAL POWER within the next 4 hours
CT-1	<b>RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. - Manually isolate lifting PORV prior to reaching an automatic reactor trip.</b>

<b>Note to Evaluator:</b> The PORV V1474 leaks by on ramp to 50% open is a malfunction initiated from the Booth upon direction by the evaluator.			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 2: PORV V1474 Leaks By Seat</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul> <b>EXAMINER Note:</b> The ATC may energize B/U heaters due to lowering RCS pressure.			
<b>Indications:</b> RCS pressure lowering rapidly <b>Annunciators:</b> H-35, PORV V1474 TEST/OVERRIDE H-42, PORV V1474 NORM RANGE CONDITION SELECT NORM H-16, QUENCH TANK PRESS HIGH			
	ATC		<b>IDENTIFIES</b> RCS pressure lowering rapidly, announces the failure to the SRO and states intended actions to place the PORV to off position and then close PORV block valve
	SRO		<b>DIRECTS</b> the ATC to place the PORV to off and then close PORV block valve
	BOP		<b>EVALUATES</b> plant for being stable
	BOP		Acknowledge annunciators and communicates status IAW plant policies.
	SRO		<b>ANNOUNCES</b> and enters 2-AOP-01.10, Pressurizer Pressure and Level



		<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>					<b>SEG</b> Page 14 of 63	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-19-1	Scenario #	4	Event #	2		
Event Description:		<b>PORV V1474 leaks by on ramp to 50% open</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO		DIRECTS actions of 2-AOP-01.10, Pressurizer Pressure and Level
<b>2-AOP-01.10</b>		<b>The following actions are taken from 2-AOP-01.10, Pressurizer Pressure and Level</b>	
<b>4.1 Immediate Operator Actions:</b>			
	ATC	<b>1. IF</b> at Normal Operating Pressure, THEN <b>VERIFY</b> PIC-1100X(Y), PRESSURIZER PRESSURE, stable.	<b>4.1.1 CONTINGENCY ACTIONS</b> <i>SRO VERFIES PORVs leakage has been stopped</i>
	ATC	<b>2. VERIFY</b> selected Pressurizer pressure control channel PIC-1100X(Y), PRESSURE, NORMAL.	<b>4.1.2 CONTINGENCY ACTIONS PLACE PRESSURE CONTROL CHANNEL</b> <i>SRO DETERMINES PIC-1100 is operating correctly</i>
	SRO	<b>3. IF</b> either of the following conditions are met: <input type="checkbox"/> Pressurizer pressure is less than 2275 psia <input type="checkbox"/> Pressurizer pressure is lowering uncontrollably	<i>The SRO DETERMINES the STEP is N/A</i>
	ATC	<b>4. VERIFY</b> selected RRS channel Pressurizer level setpoint NORMAL as indicated on LR-1110, PRESSURIZER LEVEL.	<i>The SRO DETERMINES the STEP is N/A</i>
	ATC	<b>5. VERIFY</b> selected Pressurizer level control channel LIC-1110X(Y), LEVEL, NORMAL.	<i>The SRO DETERMINES the STEP is N/A</i>
<b>4.2 Subsequent Operator Actions</b>			
<b>4.2.1 General Actions:</b>			
	SRO	<b>1. PERFORM</b> applicable section per Table 1.	<i>SRO EVALUATES the indications determines the failure to be PORV V1474 and proceeds to section 4.2.2</i>
<b>4.2.2 Pressurizer PORV or Safety Valve OPEN or Leaking</b>			
	SRO	<b>1. VERIFY</b> any Pressurizer PORV or safety is OPEN or leaking using any of the following:	<i>SRO EVALUATES failure and determines PORV V1474 was open</i>
	SRO	<b>2. IF</b> safety valve leakage is identified, THEN <b>GO TO</b> Section 4.2.2, Step 9.	<i>SRO EVALUATES and DETERMINES the STEP is N/A</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	2	
Event Description:		<b>PORV V1474 leaks by on ramp to 50% open</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>3. IF PORV flow is indicated, THEN VERIFY</b> TI-1115, 2A1 COLD LEG TEMPERATURE, AND TI-1125, 2B1 COLD LEG TEMPERATURE, indicate RCS temperature is greater than the following: <input type="checkbox"/> 255F during heatup <input type="checkbox"/> 240F during cooldown	<b>SRO EVALUATES</b> and moves to step 4.2.4
	SRO	<b>4 IF V1474, PORV, indicates flow AND Pressurizer pressure is less than 2300 psia, THEN ENSURE</b> the following: <input type="checkbox"/> V1474, PORV, in OVERRIDE. <input type="checkbox"/> V1476, PORV BLOCK VALVE, CLOSED	<b>SRO VERIFIES</b> V1474, PORV, in OVERRIDE. And V1476, PORV BLOCK VALVE, CLOSED.
	SRO	<b>5. IF V1475, PORV, indicates flow AND Pressurizer pressure is less than 2300 psia, THEN ENSURE</b> the following: <input type="checkbox"/> V1475, PORV, in OVERRIDE. <input type="checkbox"/> V1477, PORV BLOCK VALVE, CLOSED	<b>SRO EVALUATES and DETERMINES the STEP is N/A</b>
	SRO	<b>6. IF affected PORV can NOT be Identified AND Pressurizer pressure is less than 2300 psia,</b>	<b>SRO EVALUATES and DETERMINES the STEP is N/A</b>
	SRO	<b>7. VERIFY</b> both PORV Mode Select switches in NORMAL: <input type="checkbox"/> V1474, MODE SELECT <input type="checkbox"/> V1475, MODE SELECT	<b>SRO EVALUATES and DETERMINES to consult plant management prior to proceeding</b>
<b>At the Lead Evaluator's direction, PROCEED to Event 3.</b>			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	3	
Event Description:		<b>Pressurizer level transmitter LT 1110X oscillates in Auto</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

<b>Note to Evaluator: Oscillating LT 1110X is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 3: LIC-1110X Oscillations</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications: Oscillations on LIC-1110X, Pressurizer level swings and letdown flow oscillations</b> <b>Annunciators:</b> <b>H-17 PZR CHANNEL X LEVEL HIGH/LOW</b> <b>LA-5 PZR CHANNEL X LEVEL HIGH</b>			
	ATC		<b>IDENTIFIES</b> Pressurizer level swings, letdown flow oscillations and oscillations on LIC-1110X, <b>RECOGNIZES</b> LIC-1110Y is INOP announces the failure to the SRO and states intended actions of taking manual control of LIC-1110X
	SRO		<b>DIRECTS</b> the ATC to take <b>manual control of LIC-1110X or LIC-2110</b> and stabilizes Pressurizer level and letdown Flow
	BOP		<b>EVALUATES</b> plant for being stable
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	SRO		<b>ANNOUNCES</b> and enters 2-AOP-01.10, Pressurizer Pressure and Level
	SRO		<b>DIRECTS</b> actions of 2-AOP-01.10, Pressurizer Pressure and Level
<b>2-AOP-01.10</b>		<b>The following actions are taken from 2-AOP-01.10, Pressurizer Pressure and Level</b>	
<b>4.1 Immediate Operator Actions:</b>			
	ATC	<b>1. IF</b> at Normal Operating Pressure, THEN VERIFY PIC-1100X(Y), PRESSURIZER PRESSURE, stable	<b>1.1 CONTINGENCY ACTIONS</b> N/A
	ATC	<b>2. VERIFY</b> selected Pressurizer pressure control channel PIC-1100X(Y), PRESSURE, NORMAL	<b>2.1 CONTINGENCY ACTIONS</b> N/A

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	3	
Event Description:		<b>Pressurizer level transmitter LT 1110X oscillates in Auto</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	ATC	<b>3. IF either of the following conditions are met:</b> <ul style="list-style-type: none"> <li>Pressurizer pressure is less than 2275 psia</li> <li>Pressurizer pressure is lowering uncontrollably</li> </ul> <b>THEN VERIFY</b> spray valves CLOSED: <ul style="list-style-type: none"> <li>PCV-1100E, SPRAY VALVE 2B2, status lights</li> <li>PCV-1100F, SPRAY VALVE 2B1, status lights</li> <li>TIA-1103, 2B1 SPRAY LINE (Water Temperature), and TIA-1104, 2B2 SPRAY LINE (Water Temperature), indicate approximately equal temperatures</li> </ul>	<b>3.1 CONTINGENCY ACTIONS</b> N/A
	ATC	<b>4. VERIFY</b> selected RRS channel Pressurizer level setpoint NORMAL as indicated on LR-1110, PRESSURIZER LEVEL.	<b>4.1 CONTINGENCY ACTIONS</b> N/A
	ATC	<b>5. VERIFY</b> selected Pressurizer level control channel LIC-1110X(Y), LEVEL, NORMAL.	<b>5.1 CONTINGENCY ACTIONS</b> N/A <b>ATC DETERMINES</b> the failure is the Auto control section of LIC-1110X and with LIC-1110Y INOP, Takes <b>manual</b> control of <b>LIC-1110X or LIC-2110</b>
<b>4.2 Subsequent Operator Actions</b> <b>4.2.1 General Actions:</b>			
	SRO	<b>4.2.1 General Actions:</b> <b>1. PERFORM</b> applicable section per Table 1.	<b>SRO EVALUATES</b> the indications determines the failure to be LIC-1110X and with LIC-1110Y INOP, proceeds to section 4.2.6

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	3	
Event Description:		<b>Pressurizer level transmitter LT 1110X oscillates in Auto</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**4.2.6 Selected Pressurizer Level Control Channel Failure:**

	SRO	1. <b>VERIFY</b> LEVEL CONTROL CHANNEL selector switch selected to non-affected level control channel.	<b>1.1 CONTINGENCY ACTIONS</b> N/A
	SRO	2. <b>VERIFY</b> Pressurizer level stable OR trending to Pressurizer level setpoint: <ul style="list-style-type: none"> <li>LR-1110, PRESSURIZER LEVEL</li> <li>PR1108/LR1110X, LEVEL PRESSURE</li> <li>LIC-1110X(Y), LEVEL</li> </ul>	<b>2.1 CONTINGENCY ACTIONS</b> <b>PLACE</b> selected Pressurizer level indicating controller in MANUAL. <b>SRO DETERMINES</b> the failure is the Auto control section of LIC-1110X and with LIC-1110Y INOP, <b>DIRECTS manual</b> control be taken of <b>LIC-1110X or LIC-2110</b> <b>2.2 OPERATE</b> selected Pressurizer level indicating controller to maintain Pressurizer level within 2% of setpoint <b>SRO DIRECTS the ATC</b> to maintain Pressurizer level within 2% of setpoint
	SRO	4. <b>GO TO</b> Section 4.2.1, Step 2.	<b>SRO GOES TO</b> Section 4.2.1, Step 2

**4.2.1 General Actions:**


	SRO	2. WHEN plant conditions have stabilized, THEN <b>REVIEW</b> Tech Specs for any required actions.	<b>SRO REVIEWS</b> Tech Specs for any required actions
	SRO	3. WHEN Section 3.0, EXIT CONDITIONS, are met, THEN <b>EXIT</b> this procedure.	<b>SRO EXITS</b> the AOP
	SRO	<b>Performs Crew Brief</b>	<b>SRO PERFORMs</b> crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM

**At the Lead Evaluator's direction, PROCEED to Event 4.**

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #	4	
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

<b>T.S. 3.4.5</b>	<b>SG tube integrity shall be maintained AND All SG tubes satisfying the tube repair criteria shall be plugged or repaired in accordance with the SG Program. Repair applies only to the original SGs.</b>  <b>Action b. With the requirements and associated allowable outage time of Action a above not met or SG tube integrity not maintained, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.</b>
<b>T.S. 3.4.6.2</b>	<b>Reactor Coolant System operational leakage shall be limited to:</b> <b>c. 150 gallons per day primary-to-secondary leakage through any one steam generator (SG),</b>  <b>ACTION a: With any PRESSURE BOUNDARY LEAKAGE or with primary-to-secondary leakage not within limit, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.</b>

<b>Note to Evaluator: 2B SGTL is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 4: 2B SGTL of Approx 200 gpd</li> <li><b>*Note:</b> It takes ~3.5 min after triggering event 4 to receive radiation alarm.</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> <li>When called for Chemistry samples and Radiation surveys report back in 6 minutes that activity is present in the 2B S/G</li> <li>If requested to perform quick frisks of the S/G sample columns, report back in 6 minutes that 2B S/G shows elevated activity and 2A S/G is normal.</li> <li>When directed as NWE to perform Attachment 7, report back in 10 minutes that Attachment 7 is complete. Att 7 contains:  <u>In SGBTF:</u> Ensuring SGBTF rollup door is closed and Verifying SGBTF ventilation equipment is operating.  <u>In the Turbine Building:</u> Ensuring CTCS sponge balls are collected, verifying condenser air ejector is aligned to plant vent, ensuring Aux stm to Aux priming ejectors are closed, and verifying the gland steam condensate receiver tank is aligned to the condenser. </li> </ul>			
<b>Indications: Main steam line radiations levels rising and SJAE radiations levels rising</b>  <b>Annunciators:</b> <b>RMCS</b>			
	BOP		Acknowledge rad monitor alarm (RMCS) and communicates status IAW plant policies.
	SRO		May direct the ATC to perform a Leak rate calculation
	ATC		Evaluates plant for being stable and calculates leak rate
	SRO		Announces and enters 2-AOP-08.02, Steam Generator Tube Leak

		<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>				<b>SEG</b> Page 20 of 63	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	4	Event #	4		
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO		Directs actions of 2-AOP-08.02, Steam Generator Tube Leak
2-AOP-08.02		The following actions are taken from 2-AOP-08.02, Steam Generator Tube Leak	
4.1 Immediate Operator Actions: NONE			
4.2 Subsequent Operator Actions			
4.2.1 General Actions:			
	SRO/ATC	1. <b>VERIFY</b> pressurizer level stable or rising and pressure normal	<i><b>SRO DIRECTS ATC to VERIFY</b> pressurizer level stable or rising and pressure normal. And to start charging pumps and operate heaters as necessary to stabilize pressurizer level and pressure</i>
	SRO	<b>Makes Notifications</b>	<i><b>SRO NOTIFIES</b> the Shift Manager</i>
	SRO	2. <b>NOTIFY</b> Chemistry of probable S/G tube leakage and to begin sampling for activity	<i><b>SRO DIRECTS Chemistry</b> to sample S/Gs for activity</i>
	SRO	3. <b>REQUEST</b> Radiation Protection conduct secondary area radiation surveys	<i><b>SRO DIRECTS Radiation Protection</b> conduct secondary area radiation surveys</i>
	SRO	4. IF Air Ejector or Steam Generator Blowdown monitor is NOT spiking, THEN ESTIMATE leakage by comparing Air Ejector Monitor or Steam Generator Blowdown Monitor reading with Daily Chemistry Report	<i><b>SRO DIRECTS BOP</b> to collect reading from the SJAE rad monitor, the SRO evaluates the data to determine the leak rate. <b>The SRO determines</b> the leak rate to be greater than 150 gpd and evaluates T.S. 3.4.6.2 action a and 3.4.5 action b</i>
	BOP		<i><b>BOP DETERMINES</b> leak rate by comparing radiation readings to secondary chemistry sheet.</i>
	SRO	5. IF unable to estimate primary to secondary leakage or the radiation monitors are out of service, THEN ESTIMATE leak rate from Chemistry sample	<i><b>SRO DETERMINES</b> the leak rate to be greater than 150 gpd on previous step</i>
	SRO	6. <b>DETERMINE</b> primary to secondary leak rate by one of the following methods:	<i><b>SRO DIRECTS ATC</b> to report leak rate calculation results</i>


Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	4	
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	7. IF sample flow is available to the radiation monitors, THEN LOG Air Ejector monitor or Steam Generator Blowdown Radiation Monitor readings every 15 minutes on Attachment 6, Steam Jet Air Ejector/Steam Generator Blowdown Monitoring	<b>SRO DIRECTS BOP</b> to begin Logging Air Ejector monitor or Steam Generator Blowdown Radiation Monitor readings every 15 minutes on Attachment 6
	SRO	8. <b>CONFIRM</b> S/G tube leakage using any of the following: <input type="checkbox"/> Plant response <input type="checkbox"/> Secondary radiation monitors rising <input type="checkbox"/> High activity or rising trends on any of the following radiation monitors: <ul style="list-style-type: none"> <li>• S/G liquid sample</li> <li>• Main steam line</li> <li>• S/G blowdown</li> <li>• Chemistry analysis</li> <li>• Rising S/G water level</li> </ul>	<b>SRO EVALUATES</b> data and determines the 2B S/G has the tube leak at a rate of 150 gpd
	SRO	9. IF at any time S/G blowdown sample flow isolates on high radiation, THEN PERFORM the following as necessary to support S/G sampling by Chemistry: <input type="checkbox"/> PLACE FCV-23-7, 9, SAMPLE, in CLOSE/OVRD <input type="checkbox"/> OPEN FCV-23-7, 9, SAMPLE	<b>SRO DIRECTS</b> step as necessary
	SRO	10. <b>DIRECT</b> NWE to perform Attachment 7, Field Operator Actions.	<b>SRO DIRECTS BOP</b> to perform this step Att 7 contains: <b>In SGBTF:</b> Ensuring SGBTF rollup door is closed and Verifying SGBTF ventilation equipment is operating. <b>In the Turbine building:</b> Ensuring CTCS sponge balls are collected, verifying condenser air ejector is aligned to plant vent, ensuring Aux stm to Aux priming ejectors are closed, and verifying the gland steam condensate receiver tank is aligned to the condenser.
	SRO	11. <b>EVALUATE</b> isolating blowdown and vacuum drag on Unit 1	<b>SRO CONTACTS</b> Unit-1 and advises



Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	4	
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	<b>12. VERIFY</b> steam generator blowdown aligned to Monitor Storage Tanks	<b>SRO VERIFIES</b> steam generator blowdown aligned to Monitor Storage Tanks
	SRO	<b>13. IF</b> in MODE 1 through 3 and SIAS is NOT blocked, THEN GO TO Section 4.2.2	<b>SRO PROCEEDS</b> to section 4.2.2
<b>4.2.2 Mode 1 through 3 - SIAS Not Blocked</b>			
	SRO	<b>1. VERIFY</b> leak rate is LESS THAN 100 gpd.	<b>SRO DETERMINES</b> the leak rate exceeds 200gpd and <b>IMPLEMENTS</b> a rapid downpower at 10 MW/min per 2-AOP-22.01, Rapid Downpower, to attain the following: <input type="checkbox"/> Power equal to or LESS THAN 50% in 1 hour <input type="checkbox"/> Mode 3 within next 2 hours While continuing to step 4.2.4.7
	SRO	<b>7.A.</b> IF plant conditions require, THEN INITIATE the Emergency Plan <b>B.</b> ENSURE Chemistry is implementing the Contaminated Water Plan per CY-SL-108-0002, High Activity In A Steam Generator <b>C.</b> IF radiation monitors indicate conditions are changing, THEN EVALUATE stabilizing the plant to facilitate leak rate determination	<b>SRO DIRECTS</b> these steps <b>SRO BRIEFS</b> the crew on the down power and clarifies parameters
	SRO		<b>ANNOUNCES</b> and enters 2-AOP-22.01, Rapid Downpower as directed
	SRO		<b>DIRECTS</b> actions of 2-AOP-22.01, Rapid Downpower
<b>2-AOP-22.01</b>		The following actions are taken from 2-AOP-22.01, Rapid Downpower	
<b>4.1 Immediate Operator Actions: NONE</b>			
<b>4.2 Subsequent Operator Actions:</b>			

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 4    Event # 4	
Event Description: <b>2B S/G Tube Leak/Commence plant shutdown</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	SRO	1. <b>BEGIN</b> boration per operator aid OR Attachment 1, RCS Boration Guidance.	<i><b>SRO DIRECTS ATC</b> to make boration 15 gallons per minute from a Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance.</i>
<p style="text-align: center;"><b>ATTACHMENT 1 RCS Boration Guidance NOTE</b></p> <ul style="list-style-type: none"> <li>Step 1 in this attachment is applicable when the CVCS is normally aligned, with NO RCS boration or dilution in progress. If other than normal alignment, use guidance of 2-NOP-02.24, Boron Concentration Control.</li> <li>An Operator Aid has been placed at RTGB-205. Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Operator Aid Placard.</li> </ul>			
	ATC	1. <b>BORATE</b> the RCS by the following: <b>A. START</b> either Boric Acid Pump 2A or 2B.	<i><b>ATC STARTS</b> Boric Acid Pump <b>ATC VERIFIES</b> Boric Acid Pump <b>STARTS</b></i>
	ATC	1. <b>BORATE</b> the RCS by the following: <b>B. PLACE</b> FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO.	<i><b>ATC PLACES</b> FCV-2210Y, BORIC ACID control switch in AUTO</i>
	ATC	1. <b>BORATE</b> the RCS by the following: <b>C. IF</b> borating to the Charging Pump suction, THEN <b>OPEN</b> V2525, BORON LOAD CONTROL VALVE	<i><b>ATC PLACES</b> V2525, BORON LOAD control switch in OPEN <b>ATC IDENTIFIES</b> V2525, BORON LOAD <b>ATC REPORTS</b></i>
	SRO		<i><b>SRO DIRECTS ATC</b> <b>The SRO may alternately</b></i>
	ATC	1. <b>BORATE</b> the RCS by the following: <b>D. IF</b> borating to the VCT, THEN <b>OPEN</b> V2512, REACTOR MAKEUP WATER STOP VLV	<i><b>ATC PLACES</b> V2512, REACTOR MAKEUP WATER STOP VLV control switch in OPEN <b>ATC VERIFIES</b> V2512, REACTOR MAKEUP WATER STOP VLV is OPEN</i>
	ATC	1. <b>BORATE</b> the RCS by the following: <b>E. ADJUST</b> FIC-2210Y, BORIC ACID, to the desired flowrate.	<i><b>ATC ADJUSTS</b> FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm</i>


<b>Appendix D</b>		<b>Operator Action</b>				<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #	4		
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	1. <b>BORATE</b> the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN <b>CLOSE</b> the running BAM pump recirc valve. <ul style="list-style-type: none"><li>• V2650, TANK 2A RECIRC VALVE</li><li>• V2651, TANK 2B RECIRC VALVE</li></ul>	<b>ATC DETERMINES</b> not required
	ATC	1. <b>BORATE</b> the RCS by the following: G. <b>CYCLE</b> V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	<b>ATC CYCLES</b> V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig
	ATC	1. <b>BORATE</b> the RCS by the following: H. <b>CYCLE</b> V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	<b>ATC CYCLES</b> V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level
	ATC		<b>ATC UPDATES</b> crew on Reactivity Addition
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER</b>	
	SRO	2. <b>PREPARE</b> turbine for load reduction per operations hard cards.	<b>SRO DIRECTS BOP</b> to set up the turbine for a target of 100 MW and load rate at 10 megawatts per minute per operations hard cards
<b>2-NOP-99.07</b>		<b>The following actions are taken from 2-NOP-99.07 OPERATIONS HARD CARDS</b>	
<b>2-NOP-99.07 OPERATIONS HARD CARDS</b>			
<b>ATTACHMENT 3 TURBINE ADJUSTMENTS TO MAINTAIN POWER NOTE</b>			
<b>A Hard Card has been placed at RTGB-201. Any revision to this section of the procedure shall verify the validity of the Hard Card and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Hard Card placecard.</b>			
	BOP	<b>TURBINE ADJUSTMENTS TO MAINTAIN POWER</b>	<b>BOP ENSURES</b> Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open
	BOP	<b>TURBINE ADJUSTMENTS TO MAINTAIN POWER TOUCH MODIFY</b> from RAMP INTERFACE group.	<b>BOP TOUCHES MODIFY</b> from RAMP INTERFACE group

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	4	Event #	4			
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

	BOP	<b>TURBINE ADJUSTMENTS TO MAINTAIN POWER</b> <b>ADJUST</b> values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> <li>TARGET SELECT</li> <li>RATE SELECT</li> </ul>	<b>BOP ADJUSTS</b> values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> <li>TARGET SELECT set at 100 MW</li> <li>RATE SELECT set at 10 MW/min</li> </ul>
	BOP		<b>BOP NOTIFIES SRO</b> that the Turbine is set up with a Target of 100 MW at a rate of 10 MW/min
2-AOP-22.01		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER</b>	
	SRO	<b>3. INSERT</b> the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards.	<b>SRO DIRECTS ATC</b> to insert lead group CEAs 6 inches in Manual Sequential
2-NOP-99.07		<b>The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS</b>	
<b>2-NOP-99.07 OPERATIONS HARD CARDS</b> <b>ATTACHMENT 1 CEDMCS OPERATIONS NOTE</b> <b>A Hard Card has been placed at RTGB-204. Any revision to this section of the procedure shall verify the validity of the Hard Card and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Hard Card placard.</b>			
	ATC	<b>Moving CEAs in group</b> On CEDMCS Control Panel Group Select Switch, <b>SELECT</b> target group.	<b>ATC SELECTS</b> Target Group 5
<b>CAUTION</b> When performing a rapid downpower due to a dropped CEA, then MANUAL GROUP (MG) shall be selected. This will prevent multiple CEA groups from moving.			

		<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>				<b>SEG</b> Page 26 of 63	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	4	Event #	4		
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	<b>Moving CEAs in group</b> On CEDMCS Control Panel Mode Select Switch, <b>SELECT</b> mode of movement: MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS)	<b>ATC SELECTS MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel</b>
	ATC	<b>Moving CEAs in group</b> IF CEA Motion Inhibit is present, THEN PERFORM the following: PRESS and HOLD CMI BYPASS pushbutton. PRESS and RELEASE BYPASS ENABLE pushbutton.	<b>STEP will be N/A NO CEA Motion Inhibit is present</b>
	ATC	<b>Moving CEAs in group</b> <b>POSITION</b> group as desired using INSERT/WITHDRAW Manual Control lever.	<b>ATC POSITIONS</b> group as directed to 6" inserted from previous position using INSERT/WITHDRAW Manual Control lever
	ATC	<b>Moving CEAs in group</b> IF CMI BYPASS pushbutton is being held, THEN <b>RELEASE</b> CMI BYPASS pushbutton.	<b>STEP will be N/A NO CEA Motion Inhibit is present</b>
	ATC	<b>Moving CEAs in group</b> <b>OBSERVE</b> RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment.	<b>ATC OBSERVES</b> RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position
	ATC	<b>Moving CEAs in group</b> On CEDMCS Control Panel, <b>SELECT</b> OFF on Mode Select Switch when the desired height is reached.	<b>ATC SELECTS OFF</b> on Mode Select Switch when the desired height is reached
	ATC	<b>Moving CEAs in group</b> <b>ENSURE</b> RSPT and Pulse Counter indications match.	<b>ATC ENSURES</b> RSPT and Pulse Counter indications match
	ATC		<b>ATC Updates crew on Reactivity Addition</b>
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER</b>	

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	4	
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>4. WHEN</b> Tav <sub>g</sub> begins to lower and is less than T <sub>ref</sub> , THEN <b>TOUCH</b> GO from RAMP INTERFACE group. (OVATION display 5551)	<b>DIRECTS ATC</b> to monitor Tav <sub>g</sub> and to notify him when it is lowering and less than T <sub>ref</sub>
	ATC		<b>ATC NOTIFIES</b> the SRO that Tav <sub>g</sub> is lowering and less than T <sub>ref</sub>
	SRO		<b>DIRECTS BOP</b> to <b>TOUCH GO</b> from RAMP INTERFACE group. (OVATION display 5551)
	BOP		<b>BOP</b> to <b>TOUCHES GO</b> on the RAMP INTERFACE group to begin turbine load reduction per operations hard cards as follows: 5. <b>TOUCH GO</b> from RAMP INTERFACE group. (display 5551) 6. <b>MONITOR</b> turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551) <b>BOP Updates crew on load reduction initiation.</b>
	SRO/ATC	SRO directs ATC to <b>MAINTAIN</b> T-avg and T-ref	<b>8. MAINTAIN</b> T-avg and T-ref as close as possible during load changes by adjusting either or both of the following: <ul style="list-style-type: none"> <li>Reactivity rate</li> <li>Turbine load rate</li> </ul>
	SRO	<b>5. NOTIFY</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____."	<b>DIRECTS BOP</b> to <b>NOTIFY</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to excessive RCS leakage."
	BOP		<b>NOTIFIES</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to excessive RCS leakage."
	SRO	<b>6. NOTIFY</b> System of the rapid downpower load reduction.	<b>DIRECTS BOP</b> to <b>NOTIFY</b> System of the rapid downpower
	BOP		<b>NOTIFIES</b> System of the rapid downpower, via dedicated RED phone.

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	4	
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**NOTE**

OPS-530, Pre-Planned Power Change Guidance, delineates operations department policy for the use of pre-planned downpower profiles provided by the Plant Physics Curve Book.

	SRO	<b>7. PERFORM</b> a Crew update to include the following: <ul style="list-style-type: none"><li>Expected final power level</li><li>Initial boration rate</li><li>Initial load rate</li><li>Expected amount of boric acid addition</li><li>Expected amount of CEA motion using pre-planned downpower profiles in the Plant Physics Curve Book</li></ul>	<b>SRO UPDATES</b> crew with the following information: <ul style="list-style-type: none"><li>Expected final power level Offline</li><li>Initial boration rate 15 GPM</li><li>Initial load rate of 10 MW/MIN</li><li>Expected amount of boric acid addition Per preplanned power guidance</li><li>Expected amount of CEA motion Per preplanned power guidance</li></ul>
	SRO	<b>8. PLACE</b> Pressurizer on recirculation per operations hard cards.	<b>SRO should recognize</b> heaters are all on to maintain pressure from PZR safety valve leak.
	SRO	<b>9. START</b> additional charging pump as required per operations hard cards.	<b>SRO DIRECTS ATC to START</b> a second charging pump per operations hard cards, if not previously started
<b>2-NOP-99.07</b>		<b>The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS</b>	
<b>2-NOP-99.07 OPERATIONS HARD CARDS</b>			
<b>ATTACHMENT 8 CHARGING PUMP OPERATIONS WHILE IN AN AOP NOTE</b>			
<b>A Hard Card has been placed at RTGB-201. Any revision to this section of the procedure shall verify the validity of the Hard Card and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Hard Card placard.</b>			
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW</b> IF in MODE 1 or 2, THEN PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS to minimize reactivity effects of changing letdown temperature.	<b>BOP PLACES</b> V2520, ION EXCHANGER BYPASS VALVE, in BYPASS



Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	4	
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


**START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW**

**NOTE**


- When starting OR stopping a charging pump with LIC-2110, LETDOWN LEVEL, in Single Element Mode, it may be necessary to place the controller in Manual Mode to prevent pressurizer level from deviating too far from setpoint.
- In Manual Mode, the letdown flow should be adjusted as necessary to maintain pressurizer level at setpoint. The controller should be returned to Auto when it reaches setpoint with the desired number of charging pumps running.

	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: START</b> charging pump by placing its control switch in START.	<b>BOP STARTS</b> Second charging pump by placing its control switch in START
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: PLACE</b> CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid.	<b>BOP PLACES</b> CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN</b> 3 minutes has elapsed since pump start, THEN ENSURE associated recirc valve is CLOSED.	<b>BOP ENSURES</b> Second Charging Pp recirc valve is CLOSED
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN</b> letdown temperature stabilizes, THEN ENSURE V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO.	<b>BOP ENSURES</b> V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO after temp stabilizes
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: NOTIFY</b> RP and SNPO of current charging pump alignment.	<b>BOP NOTIFIES</b> RP and SNPO of starting of the Second charging pump
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER</b>	



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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	4	Event #	4		
Event Description:		<b>2B S/G Tube Leak/Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<b>NOTE</b>			
<ul style="list-style-type: none"> <li>The procedural limit for ASI control is +/- 0.5 of ESI. It is desired to maintain ASI within a control band of +/- 0.2 of ESI.</li> <li>US may direct temporary operation outside of ASI limit.</li> </ul>			
	SRO	<b>10. MAINTAIN</b> Axial Shape Index $\pm 0.5$ of ESI using CEAs.	<i><b>DIRECTS ATC</b> to maintain ASI to within +/- 0.2 of ESI using the sliding scale with lead group CEAs IAW 0-NOP-100.02 Axial Shape Index Control unless recommended otherwise by Reactor Engineering</i>
	ATC		<i><b>POSITIONS</b> lead group CEAs to control ASI to within +/- 0.2 from the ESI on the sliding scale IAW 0-NOP-100.02 Axial Shape Index Control</i>
<b>NOTE</b>			
The procedural limit for Tave-Tref mismatch is +/- 6.6 degrees °F. It is desired to maintain a control band of +/- 2 degrees °F			
	SRO	<b>11. MAINTAIN</b> Tref and Tav <sub>g</sub> within 6.6 °F.	<i><b>DIRECTS ATC</b> to maintain Tave-Tref mismatch within +/- 2 degrees °F</i>
	SRO	<b>12. IF</b> reducing power by more than 20%, THEN <b>NOTIFY</b> SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition.	<i><b>DIRECTS BOP</b> to dispatch a SNPO to secure Zinc injection</i>
<b>NOTE</b>			
Condenser back pressure is provided on OVATION displays 5559, TURBINE EXHAUST HOOD SPRAY AND CONDENSER VACUUM and 5605, CONDENSER VACUUM MONITORING. The condenser back pressure trip and alarm setpoints are variables that are dependent on power level.			
	SRO	<b>13. VERIFY</b> Condenser Back Pressure less than 8.859 inHgA.	<i><b>DIRECTS BOP</b> to report Condenser Backpressure</i>
<b>NOTE</b>			
OVATION displays 5559, TURBINE EXHAUST HOOD SPRAY AND CONDENSER VACUUM and 5605, CONDENSER VACUUM MONITORING, indicate time remaining before an automatic Turbine Trip is initiated by DEH, when operating in the Restricted Operating Region.			
	SRO	<b>14. VERIFY</b> Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations. <b>OR</b> OVATION display 5605, CONDENSER VACUUM MONITORING.	<i><b>DIRECTS BOP</b> to monitor Condenser Backpressure</i>

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	4	Event #	4	
Event Description:		2B S/G Tube Leak/Commence plant shutdown						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>15. VERIFY</b> CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)	<i><b>DIRECTS BOP</b> to monitor Condenser differential pressure</i>
	SRO	<b>16. VERIFY</b> parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits.	<i><b>DIRECTS BOP</b> to monitor parameters listed on Attachment 3</i>
<b>NOTE</b> Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.			
	SRO	<b>17. MAINTAIN</b> PZR pressure between 2225 and 2275 psia.	<i><b>DIRECTS ATC</b> to <b>MAINTAIN PZR</b> pressure between 2225 and 2275 psia by controlling HIC-1100</i>
<b>NOTE</b> A large rate of change in Tav <sub>g</sub> may cause transient level variance.			
	SRO	<b>18. MAINTAIN</b> PZR level between 27% and 68%.	<i><b>DIRECTS ATC</b> to <b>MAINTAIN PZR</b> level between 27% and 68%</i>
	SRO	<b>19. WHEN</b> Final power level is achieved, THEN <b>GO TO</b> Section 4.2, Step 35 to STABILIZE the unit.	<i><b>SRO</b> will continue with procedure to remove the unit offline</i>
Proceed to Event 5 when crew reaches step 9 on page 30 to notify the SNPO to secure zinc injection, and at Lead Examiner discretion.			

<b>Appendix D</b>		<b>Operator Action</b>				<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #	5		
Event Description:		<b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

**Note to Evaluator: 2A2 RCP shaft slowly seizes is a malfunction initiated from the Booth upon direction by the evaluator, the 2B SGTR is an auto triggered step initiated when reactor power is < .5%**

**Booth Operator Instructions:**

- Proceed to Event 5 when crew reaches step 9 on page 30 to notify the SNPO to secure zinc injection. Upon cue from Lead Examiner, trigger Event 5: 2A2 RCP shaft slowly seizes, 2B SGTR on Trip Approx 250 gpm.

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**EVALUATOR note: The crew may isolate the steam supply valve from the 2B S/G to the 2C AFW pump, utilizing the caution and step 1 in Attachment 5 of 2-NOP-99.07, Operations Hard Cards.**

**The crew should secure 1 RCP in each loop following SIAS.**


**Indications:**

**Pressurizer pressure and level lowering, Radiation Monitor levels rising**


**Annunciators:**

**J-10, 2A2 RCP HI VIBRATION HIGH THRUST BRG TEMP**


	ATC		<b>RECOGNIZES</b> 2A2 RCP high amps and recommends Reactor trip
	SRO		<b>DIRECTS</b> Reactor trip
	ATC		<b>TRIPS</b> Reactor
	ATC		<b>CONFIRMS</b> reactor power is lowering and startup rate is negative. <b>REPORTS "REACTOR TRIPPED"</b> States evaluating CEAs or that all CEAs are inserted
	SRO		<b>DIRECTS</b> securing of 2A2 RCP
	ATC		<b>TRIPS</b> 2A2 RCP
	BOP		<b>VERIFIES</b> all governor and throttle valves closed <b>REPORTS "Turbine Tripped"</b>

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 4	Event # 5
Event Description: <b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	


	BOP		<b>ANNOUNCE</b> on the Gaitronics: Unit 2 Reactor has tripped <b>NOTIFY</b> the NPO to perform Appendix X, Section 1 of EOP-99 <b>CONTACT</b> the SM, STA and Shift Comm. to report to the Control Room
	SRO		<b>PERFORMS</b> Scan of RTGBs to quickly assess the plant status by systematically reviewing key safety parameters/system conditions of the control boards
	ATC		<b>REPORTS</b> "All CEAs INSERTED" if not reported previously
	SRO		<b>DIRECTS</b> IMPLEMENTATION OF EOP-01 STANDARD POST TRIP ACTIONS
	ATC		<b>RECOGNIZES</b> RCS lowering pressures and communicates to SRO
<b>2-EOP-01</b>		<b>The following actions are taken from 2-EOP-01, Standard Post Trip Actions</b>	
<b>4.1 Immediate Operator Actions:</b> <ul style="list-style-type: none"> <li><b>ATC: Verifies</b> Reactor power lowering, Negative Startup rate, all CEAs and verifies no dilution is in progress inserted and communicates status to the Unit Supervisor. Starts backup charging pumps as necessary.</li> <li><b>BOP: Verifies</b> all governor and throttle valves closed and communicates status to the Unit Supervisor. Makes plant announcements and trip notifications.</li> </ul>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>Step 1 VERIFY</b> reactor trip:	<b>SRO DIRECTS VERIFY</b> Reactor trip, ATC Verifies: <input type="checkbox"/> Reactor power LOWERING <input type="checkbox"/> Startup Rate NEGATIVE <input type="checkbox"/> All CEAs are fully INSERTED <input type="checkbox"/> NO dilution is in progress
	SRO	<b>Step 2 VERIFY</b> turbine trip:	<b>SRO DIRECTS VERIFY</b> turbine trip, BOP Verifies: <input type="checkbox"/> All governor and throttle valves CLOSED <input type="checkbox"/> Main Generator breakers are OPEN <input type="checkbox"/> Turbine speed LOWERING

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario #	4	Event #	5			
Event Description:		<b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

	SRO	<b>Step 3 VERIFY Maintenance of Vital Auxiliaries:</b>  <b>SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies:</b> <input type="checkbox"/> VERIFY station loads transferred to offsite electrical power <input type="checkbox"/> VERIFY all Vital and Non-Vital AC buses transfer from Auxiliary to Start-up Transformers AND are ENERGIZED <input type="checkbox"/> VERIFY all Vital and Non Vital DC Buses are ENERGIZED <b>EVENT 6 will present itself at this point 2A3 4160 bus locks out</b> <input type="checkbox"/> VERIFY seal cooling to RCPs Due to on not being able to restore CCW to the "A" side, Appendix J cannot be completed, and All RCPs should be secured after SIAS actuation.
	SRO	<b>Step 4 VERIFY RCS Inventory Control:</b>  <b>SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35% <b>Pressurizer level will be abnormally low due to the Steam Generator Tube Rupture. This parameter will drive the crew to enter 2-EOP-04</b>
	SRO	<b>Step 5 VERIFY RCS Pressure Control:</b>  <b>SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies:</b> <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia <b>RCS Pressure will be abnormally low due to the Steam Generator Tube Rupture. This parameter will drive the crew to enter 2-EOP-04</b>
	SRO	<b>Step 6 VERIFY Core Heat Removal:</b>  <b>SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies:</b> <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW. (Following SIAS, all RCPs will be secured) <input type="checkbox"/> Loop $\Delta T$ is less than 10°F <input type="checkbox"/> RCS subcooling greater than or equal to 20°F <input type="checkbox"/> NO indication of RCP cavitation

		<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>					<b>SEG</b> Page 35 of 63	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-19-1		Scenario #	4	Event #	5			
Event Description:		<b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

	SRO	<b>Step 7 VERIFY RCS Heat Removal:</b>	<b>SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies:</b> <input type="checkbox"/> <i>VERIFY the following conditions exist on at least one S/G:</i> <ul style="list-style-type: none"> <li>S/G NR level is between 20 and 81%</li> <li>Feedwater is being supplied</li> </ul> <input type="checkbox"/> <i>IF 2A or 2B AFW Pump is the ONLY source of Feedwater, THEN STOP one RCP in each loop</i> <input type="checkbox"/> <i>VERIFY at least ONE of the following is supplying feedwater to the S/G(s):</i> <ul style="list-style-type: none"> <li>Main or Auxiliary Feedwater</li> </ul> <input type="checkbox"/> <i>VERIFY RCS TAVG is between 525 and 535°F.</i> <input type="checkbox"/> <i>VERIFY S/G pressure is between 850 and 930 psia (835 and 915 psig)</i>
	SRO	<b>Step 8 VERIFY containment conditions:</b>	<b>SRO DIRECTS VERIFY containment conditions, BOP Verifies:</b> <input type="checkbox"/> <i>Containment pressure is less than 2 psig.</i> <input type="checkbox"/> <i>Containment temperature is less than 120°F</i> <input type="checkbox"/> <i>Containment radiation level less than alarm values AND stable or lowering:</i> <ul style="list-style-type: none"> <li>CIS Radiation Monitors</li> <li>Containment Atmospheric Monitors</li> </ul> <input type="checkbox"/> <i>Secondary plant radiation levels less than alarm values AND stable or lowering:</i> <ul style="list-style-type: none"> <li>Condenser Air Ejector Monitor</li> <li>S/G Blowdown Monitors</li> <li>Main Steamline Monitors</li> </ul> <p style="color: red;"><b>Secondary Radiation Monitors will be abnormally high due to the Steam Generator Tube Rupture. This parameter will drive the crew to enter 2-EOP-04</b></p>
	SRO	<b>Step 9 DIRECT a field operator to perform the following:</b>	<b>SRO DIRECTS BOP to perform step 9, BOP performs step 9:</b> <input type="checkbox"/> <i>Directs NPO to perform Section 1 of Appendix X, Secondary Plant Post Trip Actions</i> <input type="checkbox"/> <i>Directs SNPO to VERIFY SFP inventory and temperature are normal on all available indications</i>
	SRO	<b>Step 10 DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.</b>	<b>SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an SGTR is in progress</b>


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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 4    Event # 5	
Event Description: <b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	


	SRO	Step 11 GO TO the appropriate Emergency Operating Procedure.	SRO PERFORMS a crew brief and transitions to 2-EOP-04
	ALL		RECOGNIZE 2B Steam Generator level and radiations are abnormal
	SRO		Enter 2-EOP-04
2-EOP-04		The following actions are taken from 2-EOP-04, Steam Generator Tube Rupture	
4.2 Immediate Operator Actions: <ul style="list-style-type: none"><li>NONE</li></ul>			
4.0 Operator Actions:			
	SRO	Step 1 MONITOR the SFSCs and VERIFY the SFSC acceptance criteria are MET every 15 minutes.	SRO DIRECTS MONITOR the SFSCs and VERIFY the SFSC acceptance criteria are MET every 15 minutes <input type="checkbox"/> STAor Extra RCO performs SFSCs
	SRO	Step 2 IMPLEMENT the Emergency Plan.	SRO NOTIFIES the Shift Manager to IMPLEMENT the Emergency Plan
	SRO	Step 3 IMPLEMENT place keeping.	SRO IMPLEMENTS the place keeper
	SRO	Step 4 SAMPLE steam generators for activity per Appendix A, Sampling Steam Generators.	SRO DIRECTS the BOP to perform Appendix A of 2-EOP-99 to SAMPLE steam generators for activity: The BOP performs Appendix A of 2-EOP-99 (pg 55)
	SRO	Step 5 VERIFY SIAS is ACTUATED.	This is a continuous step and will be performed after SIAS actuation conditions are met. SRO VERIFIES SIAS actuated when either of the following conditions are met: <input type="checkbox"/> Pressurizer pressure is less than 1736 psia <input type="checkbox"/> Containment Pressure is greater than 3.5 psig

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	5	
Event Description:		<b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	<p><b>Step 6 OPTIMIZE SI as follows:</b></p>	<p><b>SRO VERIFIES:</b></p> <p><input type="checkbox"/> SIAS is ACTUATED</p> <p><input type="checkbox"/> SI pumps are OPERATING</p> <p><input type="checkbox"/> SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure</p> <p><input type="checkbox"/> All available charging pumps are RUNNING</p> <p><input type="checkbox"/> Charging header is available</p>
	SRO	<p><b>Step 7 IMPLEMENT RCP Trip Strategy as follows:</b></p> <ul style="list-style-type: none"> <li>• VERIFY pressurizer pressure is less than 1736 psia.</li> <li>• VERIFY SIAS is ACTUATED.</li> <li>• ENSURE one RCP in each loop is STOPPED.</li> <li>• VERIFY RCS subcooling greater than minimum subcooling.</li> </ul>	<p><b>SRO IMPLEMENTS RCP Trip Strategy</b></p> <p><b>IF</b> prior to LOOP trip 2 leave 2 running</p> <p><b>IF</b> post LOOP then N/A</p>
	SRO/ATC/ BOP	<p><b>Step 8 VERIFY RCP Seal Cooling as follows:</b></p> <ul style="list-style-type: none"> <li>• VERIFY CCW to the RCPs.</li> </ul>	<p><b>WHEN SIAS occurs CCW will be lost 2A3 4160 bus is locked out leaving 1 CCW pump the crew should not restore CCW to the RCPs due to only having one train of CCW operable.</b></p> <p><b>SRO DIRECTS ATC to secure all remaining RCPs.</b></p> <p><b>SRO DIRECTS BOP to ensure all four to/from RCP valves are closed and ensure the two RCP bleedoff valves are closed.</b></p>
	SRO	<p><b>Step 9 CHECK if RCPs are operating within limits:</b></p> <ul style="list-style-type: none"> <li>• VERIFY at least one RCP OPERATING.</li> <li>• For all operating RCPs, VERIFY operating limits are MET per Table 13, RCP Operating Limits.</li> </ul>	<p><b>SRO VERIFIES</b> this step is N/A as RCPs are secured.</p>
	SRO	<p><b>Step 10 INITIATE lowering RCS Thot to less than 510°F using SBCS.</b></p>	<p><b>SRO DIRECTS ATC to INITIATE lowering RCS Thot to less than 510°F using SBCS</b></p> <p><b>TRIGGER EVENT 7 WHEN THE RCO INITIATES THE RCS COOLDOWN IN EOP-04</b></p>



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Appendix D				Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario # 4		Event # 5					
Event Description:		<b>2A2 RCP Shaft Seizure / S/G Tube Rupture</b>							
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								
	SRO	<b>The SRO Will evaluate the plant and determine that a dual event is in progress and re-evaluates</b>				<i>SRO exits to 2-EOP-15 Functional Recovery</i>			
<b>The Scenario can be terminated once the 2A S/G is isolated by the control room steps or at the lead evaluator's discretion.</b>									

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Appendix D			Operator Action				Form ES-D-2		
Op Test No.: L-19-1			Scenario #	4	Event #	6			
Event Description:			2A3 4.16 Bus Lockout						
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								

CT-2	RESTORE AC POWER – Restore power to a vital AC 480 V AB bus. Align 2AB 480V LC to ‘B’ train to power to 2C Charging Pp and Start the 2C charging pp to meet fig 2 within 15 minutes of 2A3 4.16KV bus lockout to prevent unnecessary escalation of the EALs.		
<b>Note to Evaluator:</b> 2A3 4160 bus locks out is an auto triggered step initiated when reactor power is < .5%			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>None; 2A3 4160 bus locks out on trip</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications:</b> <b>Annunciators:</b>			
2-EOP-01	The following actions are taken from 2-EOP-01		
<b>3. VERIFY Maintenance of Vital Auxiliaries:</b>			
	BOP/SRO	<b>A. VERIFY station loads transferred to offsite electrical power:</b> (1) VERIFY all Vital and Non-Vital AC buses transfer from Auxiliary to Start-up Transformers AND are ENERGIZED.	<i><b>RECOGNIZES</b> The 2A3 4.16 kv Bus is de-energized and Locked –out  <b>COMMUNICATES</b> to the SRO  <b>SRO DIRECTS ENSURING 2AB 480V Load Center is aligned to an energized bus.</b></i>
	BOP		<b>ALIGNS</b> the 2AB 480V Load Center to the “B” train
	BOP		<b>COMMUNICATES</b> to the <b>SRO</b> the status of the 2AB Load Center
TRIGGER EVENT 7 WHEN THE RCO INITIATES THE RCS COOLDOWN IN EOP-04			

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	4	Event #	7	
Event Description:		2A S/G Main Steam Line Break						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

<b>Note to Evaluator: 2A S/G Main Steam Line Break is triggered when the operator takes the control switch for steam bypass to the manual position. This a failed open main steam safety valve located on the 2A main steam header.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li><b>NONE: 2A S/G Main Steam Line Break</b></li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> <li>If called as the NPO to report on any steaming from the secondary, wait 1 minute and report "Steam is coming from the 2A main steam header"</li> </ul>			
2-EOP-15		The following actions are taken from 2-EOP-15 "Functional Recovery"	
<b>4.0 Operator Actions:</b>			
	SRO	<b>Step 1 Classify Event</b> EVALUATE EPIP Classification criteria for present plant conditions and Emergency Plan Actions <b>REFER TO</b> EPIP-01, Classification of Emergencies.	<b>SRO DIRECTS</b> Sm to EVALUATE EPIP Classification criteria for present plant conditions and Emergency Plan Actions
	SRO	<b>Step 2 Implement Place keeping</b> OPEN the Place keeper and NOTE the time of EOP entry.	<b>SRO IMPLEMENTS</b> the placekeeper

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>Step 3 RCP Trip Strategy</b> <b>A.</b> If <b>ANY</b> of the following conditions exist, <input type="checkbox"/> 2A or 2B AFW Pump is the <b>ONLY</b> source of Feedwater <input type="checkbox"/> RCS pressure is less than 1736 psia <input type="checkbox"/> RCS Temperature is less than 500°F Then STOP <b>ONE</b> RCP in <b>EACH</b> loop <b>B.</b> If <b>ANY</b> of the following conditions exist, <input type="checkbox"/> Main or Auxiliary Feedwater flow can NOT be re-established <input type="checkbox"/> RCS subcooling is less than minimum subcooling <input type="checkbox"/> CCW is LOST to the RCPs for greater than 10 minutes Then STOP <b>ALL</b> RCPs.	<b>SRO IMPLEMENTS RCP Trip Strategy</b> <b>IF SIAS has occurred the crew will trip 2 RCPs and Leave 2 RCPs running CCW will be lost 2A3 4160 bus is locked out leaving 1 CCW pump the crew should not restore CCW to the RCPs due to only having one train of CCW operable</b>
	SRO	<b>Step 4 Ensure RCP Seal Cooling</b> <b>A.</b> VERIFY CCW to the RCPs. <b>B.</b> If <b>BOTH</b> of the following conditions exist, <input type="checkbox"/> RCPs have CCW flow <input type="checkbox"/> CIAS has isolated the normal RCP bleed off flow path to the VCT Then ESTABLISH the alternate RCP bleed off flow path to the Quench Tank by OPENING V2507, RCP Bleed off Relief Stop Vlv.	<b>WHEN SIAS occurs CCW will be lost 2A3 4160 bus is locked out leaving 1 CCW pump the crew should not restore CCW to the RCPs due to only having one train of CCW operable</b>
	SRO	<b>Step 5 Verify RCP Operating Limits</b> If RCPs are RUNNING, Then VERIFY RCP operating limits are satisfied <b>REFER TO</b> Table 13, RCP Operating Limits	<b>SRO DIRECTS ATC to VERIFY</b> operating limits are MET per Table 13, RCP Operating Limits for any running RCPs <b>The ATC to VERIFIES</b> operating limits are MET per Table 13, RCP Operating Limits for any running RCPs

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>Step 6 Sample S/Gs</b> Sample <b>BOTH</b> S/Gs for activity and boron <b>REFER TO</b> Appendix A, Sampling Steam Generators	<i>The <b>SRO DIRECTS</b> the BOP to <b>PERFORM</b> Appendix A of 2-EOP-99, Sampling Steam Generators (pg 55)</i>
	SRO	<b>Step 7 Protect Main Condenser</b> PERFORM <b>BOTH</b> of the following: <b>A.</b> If Circulating Water flow to the Main Condenser has been lost, Then PERFORM <b>BOTH</b> of the following to protect the Secondary Plant: 1. ENSURE MSIVs are CLOSED. 2. ENSURE SGBD is ISOLATED. <b>B.</b> STABILIZE the Secondary Plant <b>AS NECESSARY. REFER TO</b> Appendix X, Secondary Plant Post Trip Actions, Section 2	<i><b>SRO VERIFIES</b> circulating water flow to the main condenser</i> <i><b>SRO DIRECTS</b> the BOP to Perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits</i> <i><b>The BOP PERFORMS</b> Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits</i>
	SRO	<b>Step 8 Restore Instrument Air</b> If a LOOP has occurred, Then PERFORM <b>BOTH</b> of the following: <b>A.</b> ENSURE 2AB 480V Load Center is aligned to an energized bus <b>B.</b> DISPATCH an operator to restore Instrument Air. <b>REFER TO</b> Appendix H, Operation of the 2A and 2B Instrument Air Compressors	<i><b>SRO IDENTIFIES</b> step is N/A</i>
	SRO	<b>Step 9 Perform Safety Function Status Checks</b> PERFORM the Safety Function Status Checks every 15 minutes <b>REFER TO</b> Attachment 1, Safety Function Status Check Sheet	<i>The <b>SRO DIRECTS</b> the STA to perform SFSCs now and every fifteen minutes</i>

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	<b>Step 10 Identify Success Paths</b> IDENTIFY the success paths to be used to satisfy each safety function <b>REFER TO</b> Attachment 3, Functional Recovery Success Paths	<i><b>SRO UTILIZES</b> to evaluate safety function Status</i>
<b>2-EOP-15 ATT 3</b>		<b>The following actions from 2-EOP-15 ATT 3</b>	
	SRO	<b>Reactivity Control</b> RC-1, CEA Insertion RC-2, Boration via CVCS RC-3, Boration via SIAS	<i><b>SRO EVALUATES</b> and <b>DETERMINES Reactivity Control</b> is met by RC-3</i>
	SRO	<b>Maint of Vital Aux – DC</b> MVA-DC-1, Batteries/Chargers	<i><b>SRO EVALUATES</b> and <b>DETERMINES Maint of Vital Aux – DC</b> is met by MVA-DC-1</i>
	SRO	<b>Maint of Vital Aux – AC</b> MVA-AC-1, Startup Transformers MVA-AC-2, EDGs MVA-AC-3, Unit Crosstie	<i><b>SRO EVALUATES</b> and <b>DETERMINES Maint of Vital Aux – AC</b> is met by MVA-AC-1</i>
	SRO	<b>RCS Inventory Control</b> IC-1, CVCS IC-2, Safety Injection	<i><b>SRO EVALUATES</b> and <b>DETERMINES RCS Inventory Control</b> is met by IC-2</i>
	SRO	<b>RCS Pressure Control</b> PC-1, Subcooled Control PC-2, PORVs/Pzr Vent PC-3, Saturated Control	<i><b>SRO EVALUATES</b> and <b>DETERMINES RCS Pressure Control</b> is met by PC-3</i>
	SRO	<b>RCS &amp; Core Heat</b> HR-1, S/G Without SIAS HR-2, S/G With SIAS HR-3, Once Through Cooling	<i><b>SRO EVALUATES</b> and <b>DETERMINES RCS &amp; Core Heat</b> is met by HR-2</i>
	SRO	<b>Containment Isol</b> CI-1, Automatic/Manual Isol	<i><b>SRO EVALUATES</b> and <b>DETERMINES Containment Isol</b> is <b>NOT</b> met</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>Cntmt Press &amp; Temp</b> CTPC-1, Normal Cntmt Fans CTPC-2, Cntmt Fan Coolers CTPC-3, Cntmt Spray	<b>SRO EVALUATES and DETERMINES Cntmt Press &amp; Temp</b> <i>Is met by CTPC-1</i>
	SRO	<b>Step 11 Perform Success Path Instructions</b> PERFORM <b>ALL</b> of the following <b>IN THE ORDER LISTED.</b> <b>A.</b> Instructions for a success path <b>MOST LIKELY</b> to be met for safety functions that are NOT met by <b>ANY</b> success path. <b>B.</b> Instructions for success paths for safety functions that are NOT met by Success Path 1. <b>C.</b> Instructions for <b>ALL</b> other success paths for safety functions met by Success Path 1.	<b>SRO DETERMINES CI-1 is the success path to be addressed first and PERFORMS CI-1</b>
<b>2-EOP-15 CI-1</b>		<b>The following actions from 2-EOP-15 CONTAINMENT ISOLATION –CI-1</b>	
	SRO	<b>1. Ensure Containment Isolation and Cooling</b> If <b>ANY</b> of the following conditions exist, <input type="checkbox"/> Containment pressure greater than 3.5 psig <input type="checkbox"/> Containment radiation greater than 10 R/hr <input type="checkbox"/> SIAS is ACTUATED Then PERFORM <b>ALL</b> the following: <b>A. VERIFY BOTH</b> the following: 1. VERIFY CIAS has ACTUATED 2. If Containment pressure is greater than 3.5 psig, Then VERIFY MSIS has ACTUATED <b>B. ENSURE ALL</b> available Emergency Containment HVAC systems are RUNNING: <input type="checkbox"/> At least <b>ONE</b> train of SBVS <input type="checkbox"/> At least <b>ONE</b> train of Containment Fan Coolers	<b>SRO EVALUATES and DETERMINES SIAS is ACTUATED</b>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**CAUTION**

If there is a conflict between isolating a S/G with indications of S/G tube leakage or isolating a S/G with an unisolable steam leak, Then the S/G with the ESD should be isolated. At least **ONE** S/G must remain available for heat removal.

	SRO	<p><b>2. Determine If SGTR Present</b> If a SGTR has occurred as indicated by <b>ANY</b> of the following,</p> <ul style="list-style-type: none"> <li>• S/G activity</li> <li>• Main steam piping radiation</li> <li>• S/G level change when NOT feeding</li> <li>• S/G blowdown activity</li> <li>• <b>ONE</b> S/G level rising faster than the other with feed and steaming rates being essentially the same for <b>BOTH</b></li> <li>• Feedflow mismatch between S/Gs</li> <li>• Steam flow vs. feed flow mismatch in a S/G <b>PRIOR</b> to the trip</li> </ul> <p>Then IDENTIFY and ISOLATE the <b>MOST</b> affected S/G. <b>REFER TO</b> Heat Removal Success Path HR- 1 Steps 1 through 24 or HR- 2 Steps 1 through 28, and <b>RETURN TO</b> this success path when the MOST affected S/G is ISOLATED.</p>	<p><b>SRO EVALUATES and DETERMINES 2B has a SGTR and REFERS TO</b> Heat Removal Success Path HR- 2 Steps 1 through 28</p>
<b>2-EOP-15 HR-2</b>		<b>The following actions from 2-EOP-15 RCS and CORE HEAT REMOVAL – HR-2</b>	
	SRO	<p><b>1. Ensure Safety Injection Actuation</b> If <b>ANY</b> of the following conditions exist,</p> <p><input type="checkbox"/> RCS pressure is less than 1736 psia</p> <p><input type="checkbox"/> Containment pressure is greater than 3.5 psig</p> <p>Then VERIFY SIAS has ACTUATED.</p>	<p><b>SRO EVALUATES and DETERMINES Safety Injection has actuated</b></p>



Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	<b>2. Maximize SI Flow</b> If SIAS is present, Then PERFORM ALL of the following: <b>A. VERIFY</b> ALL available SI Pumps are RUNNING. <b>B. VERIFY</b> adequate SI flow. REFER TO Figure 2, Safety Injection Flow vs. RCS Pressure <b>C. VERIFY</b> ALL available Charging Pumps are RUNNING	<b>SRO EVALUATES and DETERMINES</b> Safety Injection flow is adequate ALL available SI Pumps are RUNNING Figure 2, Safety Injection Flow vs. RCS Pressure is met ALL available Charging Pumps are RUNNING
	SRO	<b>3. Depressurize RCS for SI Flow</b> If Safety Injection flow is inadequate due to high RCS pressure, Then DEPRESSURIZE the RCS: <b>A. CONTROL</b> RCS temperature <b>B. CONTROL</b> pressurizer heaters and main or auxiliary spray <b>C. OPERATE</b> the PORVs or Pressurizer Vents AS NECESSARY	<b>SRO EVALUATES and DETERMINES</b> Safety Injection flow is adequate
	SRO	<b>4. Maintain RCS Subcooling (SBO)</b> If Station Blackout has occurred, and at least <b>ONE</b> vital 4.16 KV AC bus is NOT energized, Then MAINTAIN RCS subcooling: <b>A. PERFORM</b> a plant cooldown <b>AS NECESSARY</b> to maintain RCS subcooling based on Rep CET temperature <b>B. VERIFY</b> the reactor will remain shutdown for 50°F less than the indicated TCOLD and boron concentration at the time of the event initiation, at 50°F intervals	<b>SRO DETERMINES</b> step is N/A

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>5. Cooldown RCS</b> If at least <b>ONE</b> Vital 4.16 KV bus is energized, Then PERFORM the following: <b>A. COOLDOWN</b> the RCS using SBCS <b>1.</b> If RCPs are operating, Then COOLDOWN not to exceed 100°F in <b>ANY</b> 1 hour period <b>2.</b> If RCPs are NOT operating, Then COOLDOWN not to exceed 50°F in <b>ANY</b> 1 hour period <b>3.</b> If RCPs are NOT operating and a S/G is ISOLATED for a SGTR event, Then COOLDOWN not to exceed 30°F in <b>ANY</b> 1 hour period <b>B. BORATE</b> the RCS until Shutdown Margin is greater than the value required by the COLR <b>REFER TO</b> 2-NOP-02.24, Boron Concentration Control	<b>SRO DIRECTS the ATC to COOLDOWN</b> not required due to a cooldown associated with the 2A MSSV being open
	SRO	<b>6. Verify Single Phase Natural Circulation</b> If <b>NO</b> RCPs are operating, Then VERIFY natural circulation flow in at least <b>ONE</b> loop by <b>ALL</b> of the following: <ul style="list-style-type: none"> <li>• Loop <math>\Delta T</math> (THOT-TCOLD) less than 50°F</li> <li>• Hot leg temperature constant or lowering</li> <li>• Cold leg temperature constant or lowering</li> <li>• RCS subcooling is greater than minimum subcooling, based on Rep CET temperature</li> <li>• NO abnormal difference (greater than 20°F) between THOT and Rep CET temperature</li> </ul>	<b>SRO EVALUATES and DETERMINES</b> Step is N/A

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>7. Ensure Two Phase Natural Circulation</b> If <b>NO</b> RCPs are operating, and single phase natural circulation can NOT be maintained, Then ENSURE <b>ALL</b> of the following conditions exist, <ul style="list-style-type: none"> <li>• <b>ALL</b> available Charging pumps are RUNNING</li> <li>• SI flow is within the SI flow delivery curve. <b>REFER TO</b> Figure 2. Safety Injection Flow vs. RCS Pressure</li> <li>• At least <b>ONE</b> S/G is available for RCS heat removal with level being restored to or maintained between 60 and 70% NR</li> <li>• Rep CET temperature is less than 22°F superheated</li> </ul>	<b>SRO EVALUATES and DETERMINES this step is N/A</b>
<p align="center"><b>CAUTION</b></p> <p>Containment Conditions safety functions should be under <b>positive control</b> prior to blocking safeguards signals. Safety functions should be closely monitored for degradation. Manual actuation of ESFAS may be necessary should conditions warrant.</p>			
	SRO	<b>8. Block MSIS</b> As the RCS cooldown and depressurization proceed, PERFORM the following: <b>A.</b> If MSIS is NOT present, Then BLOCK automatic initiation of MSIS.	<b>SRO EVALUATES and DETERMINES this step is N/A</b>
<p align="center"><b>CAUTION</b></p> <p>If there is a conflict between isolating a S/G with indications of S/G tube leakage or isolating a S/G with an unisolable steam leak, Then the S/G with the ESD should be isolated. At least <b>ONE</b> S/G must remain available for heat removal.</p>			

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	4	Event #	7		
Event Description:		2A S/G Main Steam Line Break						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>9. Determine If ESD Present</b> If an ESD has occurred as indicated by <b>ANY</b> of the following, <ul style="list-style-type: none"><li>• High steam flow from S/G</li><li>• Lowering S/G pressure</li><li>• Lowering S/G level</li><li>• Lowering RCS cold leg temperature</li><li>• Lowering Pressurizer pressure</li><li>• Lowering Pressurizer level</li></ul> Then DETERMINE the <b>MOST</b> affected steam generator.	<b>SRO EVALUATES</b> and DETERMINES an ESD is present and the most affected S/G is the 2A
	SRO	<b>10. If No ESD, GO TO Step 15</b> <b>If there are NO ESD indications,</b> <b>Then GO TO Step 15.</b>	<b>SRO EVALUATES</b> and DETERMINES this step is N/A
	SRO	<b>11. Isolate the MOST Affected S/G</b> If MSIS has NOT isolated the leak, Then ISOLATE the <b>MOST</b> affected S/G. <b>REFER TO</b> Appendix R, Steam Generator Isolation.	<b>SRO EVALUATES</b> and DETERMINES the 2A S/G is to be isolated and <b>DIRECTS</b> the BOP to ISOLATE the 2A S/G
<b>2-EOP-99 APP “R”</b>		<b>The following actions are for Isolating Steam Generator 2A Using 2-EOP-99 APPENDIX “R” Section 1</b>	
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"><li>• When called to perform the field operator steps for isolating the 2A S/G, Trigger: NPO ACTIONS FOR isolate 2A S/G</li></ul> <b>Role Play:</b> <ul style="list-style-type: none"><li>• When called as NPO to perform the field operator steps for isolating the 2A S/G then report back in 10 minutes that the steps are complete</li></ul>			
	BOP	<b>1. ENSURE</b> HCV-08-1A, Main Steam Header 'A' Isolation Valve (MSIV), is CLOSED.	<b>BOP ENSURES HCV-08-1A, Main Steam Header 'A' Isolation Valve (MSIV), is CLOSED</b> STEP 2 If HCV-08-1A did not close remotely, Then PERFORM local closure. REFER TO Appendix I, MSIV Local Closure

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
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Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<b>3. ENSURE</b> MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED.	<b>BOP ENSURES MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED</b>
	BOP	<b>4. ENSURE</b> HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED.	<b>BOP ENSURES HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED</b>
	BOP	<b>5. ENSURE</b> HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED.	<b>BOP ENSURES ENSURE HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED.</b> Step 6.If BOTH HCV-09-1A and HCV-09-1B, Main Feedwater Isolation Valves to S/G 2A, are NOT CLOSED or suspected of leaking, Then PERFORM ANY of the following AS NECESSARY: <input type="checkbox"/> A. ENSURE ALL of the following valves are CLOSED: <input type="checkbox"/> MV09-5, Stm Gen 2A Reg Block Valve <input type="checkbox"/> LCV9005, 2A 15% Bypass <input type="checkbox"/> MV09-3, 2A 100% Bypass <input type="checkbox"/> B. STOP BOTH Main Feedwater Pumps
	BOP	<b>7. ENSURE</b> FCV-23-3, 2A SG Blowdown, is CLOSED.	<b>BOP ENSURES FCV-23-3, 2A SG Blowdown, is CLOSED</b>
	BOP	<b>8. ENSURE</b> FCV-23-4, 2A SG Blowdown, is CLOSED.	<b>BOP ENSURES FCV-23-4, 2A SG Blowdown, is CLOSED</b>
	BOP	<b>9. ENSURE</b> MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED.	<b>BOP ENSURES MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED</b>
	BOP	<b>10. CLOSE</b> MV-08-14, 2A S/G ADV Isol. (Key 79)	<b>BOP ENSURES MV-08-14, 2A S/G ADV Isol. (Key 79) CLOSED</b>
	BOP	<b>11. PLACE</b> the control switch for auxiliary feed, Pump 2A, in STOP.	<b>BOP ENSURES the control switch for auxiliary feed, Pump 2A, is PLACED in STOP</b>
	BOP	<b>12. ENSURE</b> MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED.	<b>BOP ENSURES MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED</b>
	BOP	<b>13. ENSURE</b> MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED.	<b>BOP ENSURES MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED</b>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**NOTE to EVALUATOR: EVENT 8 Will present itself on the following step**

	BOP	<b>14. PLACE</b> MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.	<b>BOP PLACES</b> MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.
	BOP		<b>RECOGNIZES</b> MV-08-13, SG 2A Stm to AFW PP 2C, did <b>NOT</b> CLOSE
	BOP	<b>STEP 15</b> If MV-08-13, S/G 2A Steam to AFW Pump 2C, is NOT CLOSED or suspected of leaking, AND feed flow from 2C AFW pump is NOT required, Then CLOSE MV 08-3, 2C Pump to ISOLATE steam to 2C AFW Pump. (Key 78)	<b>CLOSES</b> MV-08-13, SG 2A Stm to AFW PP 2C <b>SEE EVENT 8</b>
	BOP	<b>16. ENSURE</b> MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED.	<b>BOP ENSURES</b> MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED
	BOP	<b>17. CLOSE</b> MV-08-15, 2A S/G ADV Isol. (Key 80)	<b>BOP ENSURES</b> MV-08-15, 2A S/G ADV Isol. (Key 80) CLOSED
	BOP	<b>18.</b> If a SGTR is in progress, <b>Then NOTIFY</b> the SM that Control Room steps to isolate the affected S/G are complete for E-Plan purposes.	<b>BOP NOTIFIES</b> the SRO that the control room steps for isolating the 2A S/G are complete
	BOP	<b>19. PERFORM</b> the following LOCAL operations:	<b>BOP DIRECTS</b> the field operator action to isolate the 2A S/G

**The Scenario can be terminated once control room actions to isolate 2A SG have been completed**

<b>2-EOP-15 HR-2</b>	<b>The following actions from 2-EOP-15 RCS and CORE HEAT REMOVAL –HR-2</b>		
	SRO	<b>12. Verify Correct S/G was Isolated</b> VERIFY the <b>MOST</b> affected S/G is isolated by observing <b>ALL</b> of the following: <ul style="list-style-type: none"> <li>S/G pressures</li> <li>S/G levels</li> <li>RCS cold leg temperatures</li> </ul>	<b>SRO EVALUATES</b> and <b>DETERMINES</b> the correct 2AS/G has been isolated

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	<p><b>13. Stabilize RCS Temperature</b> If there are <b>NO</b> indications of a LOCA or SGTR, Then STABILIZE RCS temperature by performing <b>ALL</b> of the following:</p> <ul style="list-style-type: none"> <li><b>A.</b> STEAM the <b>LEAST</b> affected S/G using the ADV.</li> <li><b>B.</b> CONTROL feedwater to the <b>LEAST</b> affected S/G.</li> <li><b>C.</b> ENSURE the RCS is within the limits of Figure 1A or 1B, RCS Pressure Temperature.</li> <li><b>D.</b> If <b>BOTH</b> of the following conditions are met, <ul style="list-style-type: none"> <li>• NO RCPs are RUNNING</li> <li>• The limits of Figure 1A or 1B were exceeded</li> </ul> </li> </ul> <p>Then PERFORM <b>BOTH</b> of the</p> <ol style="list-style-type: none"> <li>1. RECORD the temperature, pressure and time when control of RCS temperature was regained.</li> <li>2. MAINTAIN RCS Pressure and Temperature stable for a minimum of <b>TWO</b> hours.</li> </ol>	<p><b>SRO DIRECTS</b> upon MSSV closure Stabilize RCS temp by fully opening both ADVs in Auto/Manual on the 2B S/G and setting the saturation pressure for the lowest indicated RCS Tcold and place the ADV controllers are in auto</p>
	SRO	<p><b>14. Cooldown RCS</b> If indication of a LOCA or SGTR exists, Then PERFORM the following:</p> <ul style="list-style-type: none"> <li><b>A.</b> COOLDOWN the RCS using SBSCS. <ol style="list-style-type: none"> <li>1. If RCPs are operating, Then COOLDOWN not to exceed 100°F in <b>ANY</b> 1 hour period.</li> <li>2. If RCPs are NOT operating, Then COOLDOWN not to exceed 50°F in <b>ANY</b> 1 hour period.</li> <li>3. If RCPs are NOT operating, and a S/G is ISOLATED for a SGTR event, Then COOLDOWN not to exceed 30°F in <b>ANY</b> 1 hour period..</li> </ol> </li> <li><b>B.</b> BORATE the RCS until Shutdown Margin is greater than the value required by the COLR.</li> </ul> <p><b>REFER TO</b> 2-NOP-02.24, Boron Concentration Control.</p>	<p><b>SRO EVALUATES</b> and <b>DETERMINES</b> a SGTR is in progress and <b>DIRECTS</b> a cooldown be commenced</p>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	7	
Event Description:		<b>2A S/G Main Steam Line Break</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**CAUTION**

If there is a conflict between isolating a S/G with indications of S/G tube leakage or isolating a S/G with an unisolable steam leak, Then the S/G with the ESD should be isolated. At least **ONE** S/G must remain available for heat removal.

	SRO	<b>15. Determine If SGTR Present</b> If a SGTR has occurred as indicated by <b>ANY</b> of the following, <ul style="list-style-type: none"> <li>• S/G sample activities</li> <li>• Main Steam Line radiation monitoring trending prior to the trip</li> <li>• S/G level change when NOT feeding</li> <li>• SGBD radiation monitoring</li> <li>• <b>ONE</b> S/G level rising faster than the other with feed and steaming rates being essentially the same</li> <li>• Feed flow mismatch between S/Gs</li> <li>• Steam flow vs. feed flow mismatch in a S/G prior to the trip</li> </ul> Then DETERMINE the MOST affected S/G.	<b>SRO EVALUATES and DETERMINES a SGTR is in progress</b>
	SRO	<b>16. If No SGTR, GO TO Step 29</b> <b>If there are NO SGTR indications, Then GO TO Step 29.</b>	<b>SRO EVALUATES and DETERMINES a SGTR is in progress</b>



Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	4	Event #	8	
Event Description:		<b>MV-08-13 failed OPEN</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

**Note to Evaluator: MV-08-13 failed open is a trip of the valves breaker the malfunction is initiated when the operator places the control switch for MV-08-13 in the closed position.**

**Booth Operator Instructions:**

- None;

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.


	BOP	<b>14. PLACE</b> MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.	<b>BOP PLACES</b> MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.
	BOP		<b>RECOGNIZES</b> MV-08-13, SG 2A Stm to AFW PP 2C, De-energizes and did <b>NOT</b> CLOSE
	BOP	<b>STEP 15</b> If MV-08-13, S/G 2A Steam to AFW Pump 2C, is NOT CLOSED or suspected of leaking, AND feed flow from 2C AFW pump is NOT required, Then CLOSE MV 08-3, 2C Pump to ISOLATE steam to 2C AFW Pump. (Key 78)	<b>CLOSES</b> MV-08-3, SG 2A Stm to AFW PP 2C

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	4	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

<b>2-EOP-99 APP "A"</b>		<b>The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"</b>	
	BOP	<b>1. If a LOOP has occurred, Then PERFORM BOTH of the following:</b> <b>A. ENSURE 2AB 480V Load Center is aligned to an energized bus.</b> <b>B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.</b>	<b>2AB Bus energized when 2A EDG output breaker is closed. Determines no additional action required</b>
<b>NOTE</b>			
<input type="checkbox"/> HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open <input type="checkbox"/> When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset			
	BOP	<b>2. If an INADVERTENT SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following:</b> <input type="checkbox"/> RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: <b>HCV-14-8A</b> <b>HCV-14-9</b> <b>OR</b> <input type="checkbox"/> RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: <b>HCV-14-8B</b> <b>HCV-14-10</b>	<b>Determines no action required, no inadvertent SIAS</b>
<b>CAUTION</b>			
<b>Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.</b>			

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position Competency	Procedure Step	Applicant's Actions or Behavior			

	BOP	<p><b>3. If a VALID SIAS has closed the 'N' Header valves, Then PERFORM the following:</b></p> <p><b>A. VERIFY both safety related CCW headers are operational.</b></p> <p><b>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</b></p> <p><b>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing either of the following:</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;"><b>HCV-14-8A, HCV-14-9</b></p> <p style="padding-left: 20px;"><b>OR</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;"><b>HCV-14-8B, HCV-14-10</b></p>	<p><b>BOP restores "N" header flow</b></p>
	BOP	<p><b>4. If the 'N' Header has been restored, Then OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves by performing the following:</b></p> <p><b>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-L-19-1-7 and FCV-L-19-1-9 by PLACING the control switch to CLOSE / OVERRIDE.</b></p> <p><b>B. OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves.</b></p>	<p><b>BOP restores SGBD sample flow.</b></p>
	BOP	<p><b>5. If the 'N' Header is in service, Then DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.</b></p>	<p><b>BOP directs chemistry to perform required samples</b></p>

	<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>	<b>SEG</b> Page 57 of 63
Appendix D		Form ES-D-2
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Event Description: <b>APPENDICES</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	BOP	<b>6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.</b>	BOP determines step is N/A
<b>NOTE</b> The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			
	BOP	<b>7. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.</b>	BOP informs US to declare CCW header inoperable
	BOP	<b>8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS,</b> <ul style="list-style-type: none"> <li>Seismic event</li> <li>'N' Header is found NOT intact</li> <li>The operable Safety Related CCW header becomes inoperable</li> </ul> <b>Then ISOLATE the 'N' header.</b>	BOP monitors for these conditions, determines N/A at this time
<b>2-EOP-99 APP "J"</b>		<b>The following actions are for Restoring CCW to the RCPs Using 2-EOP-99, APPENDIX "J".</b>	
	BOP	<b>1. If a LOOP has occurred, Then PERFORM BOTH of the following:</b> <input type="checkbox"/> A. ENSURE 2AB 480V Load Center is aligned to an energized bus. <input type="checkbox"/> B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	BOP determines LOOP has not occurred, the was 2AB bus energized with the 2A EDG breaker closure
	BOP	<b>2. ENSURE Instrument Air to Containment is available by PLACING HCV-18-1 to CLOSE / OVERRIDE and then to OPEN.</b>	BOP opens HCV-18-1

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	4	Event #	
Event Description:		<b>APPENDICES</b>			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

**NOTE**

- ☐ HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open.
- ☐ When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset.

BOP	<p><b>3. If an INADVERTENT SIAS has occurred, Then RESTORE flow from Either 'A' or 'B' CCW Header to the 'N' Header by placing the control switches for the desired train to CLOSE and then to OVERRIDE:</b></p> <p>HCV-14-8A HCV-14-9 OR HCV-14-8B HCV-14-10</p>	BOP determines no inadvertent SIAS occurred
-----	---	---

**CAUTION**


Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	4	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<p><b>4. If a VALID SIAS has closed the 'N' Header valves, Then PERFORM the following:</b></p> <p><b>A. VERIFY both safety related CCW headers are operational.</b></p> <p><b>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</b></p> <p><b>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing either of the following:</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;">HCV-14-8A, HCV-14-9</p> <p style="text-align: center;"><b>OR</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;">HCV-14-8B, HCV-14-10</p>	<p><b>BOP</b> realigns the "N" header restoring CCW flow</p>
	BOP	<p><b>5. OPEN ALL of the following CCW to / from the RCP valves:</b></p> <p><input type="checkbox"/>HCV-14-1, CCW To RC PUMP</p> <p><input type="checkbox"/>HCV-14-2, CCW From RC PUMP</p> <p><input type="checkbox"/>HCV-14-7, CCW To RC PUMP</p> <p><input type="checkbox"/>HCV-14-6, CCW From RC PUMP</p>	<p><b>BOP</b> opens valves restoring CCW flow to RCPs</p>
	BOP	<p><b>6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.</b></p>	<p><b>BOP</b> opens V2507</p>

**CAUTION**

RCP Seal Cooler isolation valves automatically close on high Seal Cooler outlet temperature of 200°F. Maintaining the control switch in the OPEN position will override this function. CCW radiation monitors should be closely monitored for indication of RCS to CCW leakage should conditions warrant the valve(s) to be maintained in the open position. Consideration should be given to returning the control switch(es) to the AUTO position once the valves have been opened.

	<b>L-19-1 NRC EXAM SCENARIO 4 REV. 0</b>	<b>SEG</b> Page 60 of 63
Appendix D		Form ES-D-2
Op Test No.:	L-19-1	Scenario # 4    Event #
Event Description: <b>APPENDICES</b>		
Time	Position Competency	Procedure Step                      Applicant's Actions or Behavior

	BOP	<b>7. ENSURE ALL RCP Seal Cooler Isolation valves are OPEN:</b> HCV-14-11-A1,CCW From 2A1 RCP Seal Cooler HCV-14-11-A2,CCW From 2A2 RCP Seal Cooler HCV-14-11-B1,CCW From 2B1 RCP Seal Cooler HCV-14-11-B2,CCW From 2B2 RCP Seal Cooler	BOP verifies valves are open
<b>NOTE</b> Reactor Coolant Pumps must be secured if CCW flow is not restored within 10 minutes.			
	BOP	<b>8. VERIFY CCW flow to running RCPs by any of the following:</b> <input type="checkbox"/> DCS RCP Overview Screen <input type="checkbox"/> FIS-14-15A/B/C/D, CCW From RCP Hx Flow <input type="checkbox"/> L6, RCP CCW Flow Low Trip, Annunciator clear.	BOP verifies CCW flow to RCPs
<b>NOTE</b> The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			
	BOP	<b>9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.</b>	BOP informs US to declare CCW header is inoperable
	BOP	<b>10. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS,</b> <input type="checkbox"/> Seismic event <input type="checkbox"/> N' Header is found NOT intact <input type="checkbox"/> The operable <b>Safety Related CCW header becomes inoperable</b> <b>Then ISOLATE the 'N' header.</b>	BOP monitors for these conditions, not present at this time

**SIMULATOR LESSON LAYOUT**





## QUANTITATIVE ATTRIBUTES

### **Malfunctions:**

*Before EOP Entry:*

1. LT-9023A ("A" Channel Feedwater Level transmitter for 2B S/G) fails low
2. PORV V1474 ramps open
3. LIC-1110X oscillations
4. 2B SGTL ( approx. 200 gpd)
5. 2A2 RCP shaft slowly seizes

*After EOP Entry:*

1. SGTR of 300 gpm
2. 2A3 4160 bus locks out
3. 2A Steam Generator MS line break
4. MV-08-13,S/G 2A Steam to AFW Pump 2C breaker trips

### **Abnormal Events:**

1. LT-9023A ("A" Channel Feedwater Level transmitter for 2B S/G) fails low
2. PORV V1474 ramps open
3. LIC-1110X oscillations
4. 2B SGTL ( approx. 200 gpd)

### **Major Transients:**

1. 2A2 RCP shaft slowly seizes
2. 2A Steam Generator MS line break upstream of MSIV

### **Critical Tasks:**

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) trip set points. - Manually isolate lifting PORV prior to reaching an automatic reactor trip.
2. RESTORE AC POWER – Restore power to a vital AC 480 V AB bus. Align 2AB 480V LC to 'B' train to power to 2C Charging Pp and Start the 2C charging pp to meet fig 2 within 15 minutes of 2A3 4.16KV bus lockout to prevent unnecessary escalation of the EALs.

## OPERATIONS SHIFT TURNOVER REPORT

DAYS

Today

**UNIT 2 CONTROL ROOM**

**Desk RCO:** \_\_\_\_\_

**Board RCO:** \_\_\_\_\_

**Protected**

**Train:** A

**Online Risk:** GREEN

**Unit 2 Identified RCS Leakage:** .02 gpm

**Unit 2 Unidentified RCS Leakage:** .06 gpm

**Unit 2 Scheduled Activities per the OSP:**

No scheduled surveillances

**Unit 2 Unscheduled Surveillances:**

No unscheduled surveillances

**Upcoming ECOs to Hang or Release:**

None

**Tech Spec Action Statement:**

1. 3.7.1.2 for 2A AFW Pp
2. 3.1.2.2, 3.1.2.4, 3.5.2 for 2B CHG Pp

**Operator Work Around:**

None

**Locked in Annunciators:**

1. G-44 2A AFW PUMP BKR FAILURE/ CS STOP/ SS ISOL
2. M-47 2B CHARGING PUMP SS ISOL/ V2554 OVRLD

**Current Status:**

1. 100% power, MOC, no scheduled surveillances, maintain 100% power
2. 2A Screen Wash Pump OOS,
3. Small amounts of sea grass has been observed in the intake, 2B Screen wash pump is running 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green.
4. 2A AFW Pp OOS, Expected back this shift
5. 2B CHG Pp OOS, Clearance has just been hung due to an oil leak
6. LIC-1100Y OOS, FIN I&C trouble Shooting

**Longstanding Problems:**

None

**Reactivity Turnover:**

Adding 20 gallons of Primary Water every 4 hours. 60 total gallons added last shift. Expect to add another 60 gallons this shift.

Facility:	St. Lucie	Scenario No.:	5	Op-Test No.:	L-19-1
Examiners:			Operators:	Unit Supervisor:	
				BRCO:	
				DRCO:	
Initial Conditions:	100% power, MOC, no scheduled surveillances, maintain 100% power				
Turnover:	2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green 2A AFW Pp OOS				
Critical Tasks:	<ol style="list-style-type: none"> <li>1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain Reactor Power in the bounds of the RPS Variable High Power trip set points. - Manually isolate leaking steam bypass valve prior to reaching an automatic reactor trip.</li> <li>2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY - Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. 'A' HPSI pump does not start on SIAS and must be manually started to meet Figure 2 of 2- EOP-99 to prevent unnecessary escalation of EAL. Initiate Once Through Cooling: When both S/G level are &lt;15% WR and prior to causing Pzr PORVs to open due to loss of heat sink.</li> </ol>				

Event No.	Malf. No.	Event Type*	Event Description
1	1	I/ATC/SRO TS/SRO N/BOP	<b>Malf:</b> LT1110X fails low <b>Action:</b> Select operable channel, restore heaters <b>T.S.</b> 3.4.3 Heaters, 3.3.3.6 Accident monitoring and 3.2.5 DNB
2	2	C/BOP/SRO	<b>Malf:</b> V8802 fails open causing RX power to rise <b>Action:</b> SBSCS permissive switch to 'OFF' to close V8802 <b>CT-1</b> Manually close leaking steam bypass valve prior to reaching an automatic reactor trip.
3	3	C/ATC/SRO TS/SRO	<b>Malf:</b> 2B Charging Pump Reducing Unit oil leak <b>Action:</b> Place 2B Chg Pp to stop TS 3.2.2. 3.2.4, 3.5.2
4	4	I/ATC/SRO	<b>Malf:</b> TIC-2223 Letdown Temperature Controller fails low <b>Action:</b> Manually Control TIC-2223 Letdown Temperature
5	5	C/BOP/SRO R/ATC/SRO	<b>Malf:</b> 2A Heater drain pp trip <b>Action:</b> Rapid Down Power
6	6	M/ALL	<b>Malf:</b> 2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure <b>Action:</b> Trip Reactor, Attempt to restore 2B EDG
7	7	C/BOP/SRO	<b>Malf:</b> 2C AFW Pp mech trips on start non-recoverable <b>Action:</b> Enter AOP and attempt to restore feedwater
8	8	M/ALL C/BOP/SRO	<b>Action:</b> Initiate Once Through Cooling, 2A HPSI pump does not start <b>CT-2</b> When both S/G level are <15% WR and prior to causing Pzr PORVs to open.

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

**L-19-1 NRC EXAM SCENARIO 5 REV. 0****SEG**  
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Appendix D

Scenario Outline

Form ES-D-2

**SITE:** ST. LUCIE**Revision #:** 0**LMS ID:** N/A**LMS Rev. Date:** N/A**SEG TITLE:** L-19-1 SCENARIO 5**SEG TYPE:** ☐ Training☒ Evaluation**PROGRAM:** ☐ LOCT ☒ LOIT ☐ Other:**DURATION:** 90 minutes**Developed by:***JOSH BROWN**3/4/2019*

Instructor/Developer

Date

**Reviewed by:***SEAN WYLIE**3/4/2019*

Instructor (Instructional Review)

Date

**Validated by:***TERRY BENTON**3/4/2019*

SME (Technical Review)

Date

**Approved by:***TRAVIS OURET**3/4/2019*

Training Supervision

Date

**Approved by:***TERRY BENTON**3/4/2019*

Training Program Owner (Line)

Date

**Appendix D**
**Scenario Outline**
**Form ES-D-2**

Facility:	St. Lucie	Scenario No.:	5	Op-Test No.:	L-19-1
Examiners:			Operators:	SRO:	
				ATC:	
				BOP:	
Initial Conditions:	100% power, MOC, no scheduled surveillances, maintain 100% power				
Turnover:	2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green 2A AFW Pp OOS				
Critical Tasks:	<ol style="list-style-type: none"> <li>1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain Reactor Power in the bounds of the RPS Variable High Power trip set points. - Manually isolate leaking steam bypass valve prior to reaching an automatic reactor trip.</li> <li>2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY - Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. 'A' HPSI pump does not start on SIAS and must be manually started to meet Figure 2 of 2- EOP-99 to prevent unnecessary escalation of EAL. Initiate Once Through Cooling: When both S/G level are &lt;15% WR and prior to causing Pzr PORVs to open due to loss of heat sink.</li> </ol>				

Event No.	Malf. No.	Event Type*	Event Description
1	1	I/ATC/SRO TS/SRO N/BOP	<b>Malf:</b> LT1110X fails low <b>Action:</b> Select operable channel, restore heaters <b>T.S.</b> 3.4.3 Heaters, 3.3.3.6 Accident monitoring and 3.2.5 DNB
2	2	C/BOP/SRO	<b>Malf:</b> V8802 fails open causing RX power to rise <b>Action:</b> SBCS permissive switch to 'OFF' to close V8802 <b>CT-1</b> Manually close leaking steam bypass valve prior to reaching an automatic reactor trip.
3	3	C/ATC/SRO TS/SRO	<b>Malf:</b> 2B Charging Pump Reducing Unit oil leak <b>Action:</b> Place 2B Chg Pp to stop TS 3.2.2, 3.2.4, 3.5.2
4	4	I/ATC/SRO	<b>Malf:</b> TIC-2223 Letdown Temperature Controller fails low <b>Action:</b> Manually Control TIC-2223 Letdown Temperature
5	5	C/BOP/SRO R/ATC/SRO	<b>Malf:</b> 2A Heater drain pp trip <b>Action:</b> Rapid Down Power
6	6	M/ALL	<b>Malf:</b> 2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure <b>Action:</b> Trip Reactor, Attempt to restore 2B EDG
7	7	C/BOP/SRO	<b>Malf:</b> 2C AFW Pp mech trips on start non-recoverable <b>Action:</b> Enter AOP and attempt to restore feedwater
8	8	M/ALL C/BOP/SRO	<b>Action:</b> Initiate Once Through Cooling, 2A HPSI pump does not start <b>CT-2</b> When both S/G level are <15% WR and prior to causing Pzr PORVs to open.

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

## SIMULATOR EXERCISE GUIDE REQUIREMENTS

**Terminal Objective**      Given specific plant conditions, the students will be able to mitigate events in accordance with plant procedures.

**Enabling Objectives:**      None

**Prerequisites:**            1. Simulator  
2. Applicants enrolled in Initial License Program

**Training Resources:**      1. Floor Instructor as Shift Technical Advisor  
2. Simulator Booth Operator  
3. NRC Evaluators

**References:**                1. 2-AOP-01.10, PRESSURIZER PRESSURE AND LEVEL  
2. 2-AOP-08.01, STEAM LEAK  
3. 2-AOP-08.03, STEAM BYPASS CONTROL SYSTEM  
4. 2-AOP-09.02, AUXILIARY FEEDWATER  
5. 2-AOP-02.03, CHARGING AND LETDOWN  
6. 2-AOP-09.04, FEEDWATER, CONDENSATE, AND HEATER DRAIN PUMP ABNORMAL OPERATIONS  
7. 2-AOP-22.01, RAPID DOWNPOWER  
8. 2-EOP-01, Standard Post Trip Actions  
9. 2-EOP-06, TLOF  
10. 2-EOP-99, Appendices / Figures / Tables /Data Sheets  
11. Unit-2 Technical Specifications

**Protected Content:**      **NONE**

**Evaluation Method:**      Simulator performance will be evaluated in accordance with NUREG 1021 rev. 11.

**Operating Experience:**      N/A

**Risk Significant Operator Actions:**

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions made to the material after initial approval.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				REVIEWER	DATE

## SCENARIO 5 OVERVIEW/SEQUENCE OF EVENTS

The crew will assume the shift at 100% power; 2A Screen Wash Pump OOS, 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green 2A AFW Pp OOS. LT1110X level transmitter for X Pressurizer Level control will fail low requiring the ATC will Select the operable (Y) pressurizer level control channel and then restore heaters. The SRO will enter 2-AOP-01.10 Pressurizer pressure and level control, verify the immediate operator actions are complete and direct restoration of the pressurizer heaters, Tech Specs 3.4.3 Pressurizer Heaters, 3.3.3.6 Accident monitoring and 3.2.5 DNB apply.

Steam Bypass control valve V8802 fails open on causing RCS temperature to lower and Reactor power to increase. The BOP will evaluate the secondary plant, identify the failed open valve and take the SBCS permissive switch to 'OFF' which will close V8802 and terminate the transient. The crew will enter 2-AOP-08.01 Steam Leak section 4.2.3. and/or 2-AOP-08.03, Steam Bypass Control System, section 4.2.3.

The crew will receive Ann M-31 for the 2B Charging Pump, dispatch a field operator and get a report of oil around the base of the 2B Charging pump and Reducing Unit oil level is low. The crew will place 2B Charging Pump to stop and declare it Out Of Service

Tech Specs 3.2.2. 3.2.4, 3.5.2 apply.

TIC-2223 Letdown Temperature Controller will fail low; the ATC will take manual control of TIC-2223 and restore letdown temperature to pre failure value.

2A Heater drain pump will indicate a seized shaft and will trip on high amps if not identified by the BOP and manually tripped. The crew will enter 2-AOP-22.01 Rapid Down Power and begin reducing power to ensure plant parameters are maintained within operating guidelines.

During the downpower the 2B Main Feedwater Pump recirc valve will fail open requiring a manual reactor trip due to insufficient S/G level. The SRO will direct a unit trip prior to automatic RPS actuation on low S/G level. On the trip a Loss Of Offsite Power occurs and the 2B Emergency Diesel Generator will trip on overspeed (non-recoverable). The crew will enter 2-EOP-01 Standard Post Trip Actions transition to 2-EOP-06 Total Loss Of Feedwater.

Upon Aux feedwater actuation the 2C AFW Pp will experience a mechanical overspeed trip. The crew will transition to 2-EOP-06 Total Loss Of Feedwater. The BOP will use 2-AOP-09.02 and attempt to restore feedwater, the field operator will report that the reset linkage has been destroyed and non-recoverable.

Upon both S/Gs reaching <15% wide range level the crew will Initiate Once Through Cooling, the 2A HPSI pump fails to auto start when SIAS is initiated and will require the BOP to manually start the 2A HPSI pump to regain SI flow for OTC

**Procedures Used**
**Tech Specs Entered**

- 2-AOP-01.10, PRESSURIZER PRESSURE AND LEVEL
- 2-AOP-08.01, STEAM LEAK
- 2-AOP-08.03, STEAM BYPASS CONTROL SYSTEM
- 2-AOP-09.02, AUXILIARY FEEDWATER
- 2-AOP-02.03, CHARGING AND LETDOWN
- 2-AOP-09.04, FEEDWATER, CONDENSATE, AND HEATER DRAIN PUMP ABNORMAL OPERATIONS
- 2-AOP-22.01, RAPID DOWNPOWER
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-06, TLOF
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets
- Unit-2 Technical Specifications

- 3.4.3, 3.3.3.6 , possible 3.2.5
- 3.2.2. 3.2.4, 3.5.2



**Scenario Setup and Booth Operator Instructions:**


- **ENSURE** Examination Security has been established.
- **ENSURE** the Simulator is unloaded
- **ENSURE** Lesson for SCENARIO 5 from Exam Flash drive is loaded as follows:
  - **Open**, folder L-19-1 NRC SCENARIO 5 Isn
  - **Copy**, L-19-1 NRC SCENARIO 5.Isn
  - **Open**, Lessons folder on simulator operator station desk top
  - **Paste**, L-19-1 NRC SCENARIO 5.Isn into the Instructor Lessons folder; NRC; L-19-1
- **LOAD** the Simulator
- **RESTORE** IC#1
  - **RUN** the Simulator
  - Place the 2A AFW pump control switch in the STOP position and Hang an ECO tag on switch
  - Place GUARDED EQUIPMENT as outlined Guarded Equipment procedure
  - Place the 2A Screen wash pump off
  - Place a Clearance tag on the 2A Screen wash pump
  - Start the 2B Screen wash pump
  - Place a marked up copy of 2-NOP-21.15 INTAKE INTRUSION MONITORING AND MITIGATION on the US desk
  - ENSURE the A Train Protected sign and a GREEN OLRM sign are placed RTGB-203.
  - ENSURE the CHEMISTRY sheet for MOC is placed on the Unit Supervisor Desk.
  - **FREEZE** the simulator
- **OPEN** and **EXECUTE** L-19-1 NRC SCENARIO 5.Isn
- **RUN** the Simulator and allow for stabilization
- **FREEZE** the simulator
- **UNFREEZE** the simulator prior to the candidates entering the simulator

**Post scenario simulator restoration:**

- **ENSURE** L-19-1 NRC SCENARIO 5.Isn are deleted from Simulator in accordance with Attachment 2 of Training Department Policy PSL-TRNG 142

**BRIEF / TURNOVER INFORMATION**

- Conduct simulator crew pre-scenario brief using TR-AA-L-19-10-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-L-19-10-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>					<b>SEG</b> Page 8 of 51	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	5	Event #	1	
Event Description:		<b>LT1110X fails low</b>						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

T.S. 3.4.3	The pressurizer shall be OPERABLE with a minimum water level of greater than or equal to 27% indicated level and a maximum water level of less than or equal to 68% indicated level and at least two groups of pressurizer heaters capable of being powered from 1E buses each having a nominal capacity of at least 150 kW. ACTION: a. With one group of the above required pressurizer heaters inoperable, restore at least two groups to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
T.S. 3.3.3.6	The accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE. INSTRUMENT 5 ACTION: a.* With the number of OPERABLE accident monitoring channels less than the Required Number of Channels shown in Table 3.3-10, either restore the inoperable channel to OPERABLE status within 7 days, or be in HOT STANDBY in 6 hours and HOT SHUTDOWN in 12 hours.
T.S. 3.2.5 DNB (If Pzr Press <2225 psia)	The following DNB-related parameters shall be maintained within the limits: b. Pressurizer Pressure* as shown on Table 3.2-2 of the COLR, (2225 psia) ACTION: Restore parameter within limits within 2 hours or reduce THERMAL POWER to < 5% of RATED THERMAL POWER within the next 4 hours

**Note to Evaluator:** The LT-1110X Pressurizer Level fails low is a malfunction initiated from the Booth upon direction by the evaluator.

**Booth Operator Instructions:**

- Upon cue from Lead Examiner, trigger Event 1: LT1110X fails low

**Role Play:**

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.

**EXAMINER: The crew may take manual control of letdown to restore pressurizer level to normal, then restore to automatic.**

**Indications:**  
 LT1110X will indicate low scale on RTGB 203  
 All Pressurizer heaters will De-energize and Letdown go to minimum.

**Annunciators:**  
 LA-11, H-17,29,30, M-5, B-9

**EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.**

	BOP/ATC		Acknowledge annunciators and communicate IAW plant policies.
--	---------	--	--

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	1	
Event Description:		LT1110X fails low				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	ATC		Recognize LT failed low,																		
	ATC		Recognizes the need for immediate operator action to select the operable Level control channel, announces their intention and takes the required immediate operator action to select the operable Level Control Channel																		
	SRO		Concurs with the announced immediate operator action announced by the ATC to select the operable Level Control Channel																		
	ATC/BOP		Evaluates plant response to actions taken																		
	BOP		Pulls ARP's and communicates/takes action as directed																		
	SRO		Announces and enters 2-AOP-01.10 Pressurizer Pressure and Level																		
	SRO		Directs actions of 2-AOP-01.10 Pressurizer Pressure and Level																		
2-AOP-01.10		The following actions are taken from 2-AOP-01.10 “Pressurizer Pressure and Level”																			
4.1 Immediate Operator Actions:																					
	ATC	4.1 Immediate Operator Actions 4. VERIFY selected Pressurizer level control channel LIC-1110X(Y), LEVEL, NORMAL.	4.1.4 CONTINGENCY ACTIONS ATC PLACES LEVEL CONTROL CHANNEL selector switch to non-affected level control channel.																		
4.2 Subsequent Operator Actions																					
4.2.1 General Actions:																					
	SRO	1. PERFORM applicable section per Table 1. <table><tr><th colspan="2">Table 1</th></tr><tr><th>Abnormal Condition</th><th>Section</th></tr><tr><td>Pressurizer PORV or safety valve OPEN or leaking</td><td>Section 4.2.2</td></tr><tr><td>Selected Pressurizer pressure control channel failure</td><td>Section 4.2.3</td></tr><tr><td>Pressurizer Spray or Auxiliary Spray Valves OPEN or leaking</td><td>Section 4.2.4</td></tr><tr><td>Selected RRS channel failure</td><td>Section 4.2.5</td></tr><tr><td>Selected Pressurizer level control channel failure</td><td>Section 4.2.6</td></tr><tr><td>Pressurizer pressure or level abnormal</td><td>Section 4.2.7</td></tr><tr><td>Pressurizer heaters deenergized</td><td>Attachment 5</td></tr></table>	Table 1		Abnormal Condition	Section	Pressurizer PORV or safety valve OPEN or leaking	Section 4.2.2	Selected Pressurizer pressure control channel failure	Section 4.2.3	Pressurizer Spray or Auxiliary Spray Valves OPEN or leaking	Section 4.2.4	Selected RRS channel failure	Section 4.2.5	Selected Pressurizer level control channel failure	Section 4.2.6	Pressurizer pressure or level abnormal	Section 4.2.7	Pressurizer heaters deenergized	Attachment 5	SRO EVALUATES the indications determines the failure to be to the in-service Level control channel X failed low and proceeds to section 4.2.6
Table 1																					
Abnormal Condition	Section																				
Pressurizer PORV or safety valve OPEN or leaking	Section 4.2.2																				
Selected Pressurizer pressure control channel failure	Section 4.2.3																				
Pressurizer Spray or Auxiliary Spray Valves OPEN or leaking	Section 4.2.4																				
Selected RRS channel failure	Section 4.2.5																				
Selected Pressurizer level control channel failure	Section 4.2.6																				
Pressurizer pressure or level abnormal	Section 4.2.7																				
Pressurizer heaters deenergized	Attachment 5																				

Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	5	Event #	1	
Event Description:		LT1110X fails low						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

#### 4.2.6 Selected Pressurizer Level Control Channel Failure


	SRO	<b>1. VERIFY LEVEL CONTROL CHANNEL</b> selector switch selected to non-affected level control channel.	<b>ATC PLACES LEVEL CONTROL CHANNEL</b> selector switch to non-affected level control channel ATC performed this step as an immediate operator action
	SRO	<b>2. VERIFY</b> Pressurizer level stable OR trending to Pressurizer level setpoint: <input type="checkbox"/> LR-1110, PRESSURIZER LEVEL <input type="checkbox"/> PR1108/LR1110X, LEVEL PRESSURE <input type="checkbox"/> LIC-1110X(Y), LEVEL	<b>ATC VERIFIES</b> pressurizer level is trending towards setpoint and controlled
	SRO	<b>3. VERIFY</b> power to Pressurizer heaters.	<b>BOP IMPLEMENTS</b> Attachment 5, Recovering Power to Pressurizer Heaters.
<b>2-AOP-01.10 ATT 5</b>		<b>The following actions are taken from Attachment 5 “Recovering Power to Pressurizer Heaters” of 2-AOP-01.10 “Pressurizer Pressure and Level”</b>	
	BOP	<b>1. VERIFY</b> all the following conditions are met: <input type="checkbox"/> IF SIAS has actuated, THEN SIAS is RESET. <input type="checkbox"/> Pressurizer level is greater than 27%. <input type="checkbox"/> At least one 4160V vital bus is energized: <input type="checkbox"/> 2A3 <input type="checkbox"/> 2B3	<b>BOP VERIFIES</b> SIAS has not actuated, Pressurizer level is >27%, and Both 4160V vital buses are energized
	BOP	<b>2. IF</b> any of the following control channels failed, THEN <b>ENSURE</b> non-affected control channel(s) selected: <input type="checkbox"/> Reactor Regulating System <input type="checkbox"/> Level <input type="checkbox"/> Pressure	<b>BOP ENSURES</b> the Y channel for PZR level control is selected.

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	1	
Event Description:		LT1110X fails low				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<p>3. IF Bkr 2-20204, PRZR HEATER TRANSFORMER 2A3, is OPEN AND all of the following conditions are met:</p> <p><input type="checkbox"/> LIC-1110X, LEVEL, indicates greater than 27%</p> <p><input type="checkbox"/> Vital4160 V bus 2A3 is energized</p> <p><input type="checkbox"/> SIAS A is RESET</p> <p>THEN <b>PERFORM</b> the following:</p>	<b>BOP VERIFIES</b> that this step is N/A due to LIC-1110X is failed low.
	BOP	<p>4. IF Bkr 2-20403, PRZR HEATER TRANSFORMER 2B3, is OPEN AND all of the following conditions are met:</p> <p><input type="checkbox"/> LIC-1110Y, LEVEL, indicates greater than 27%</p> <p><input type="checkbox"/> Vital4160 V bus 2B3 is energized</p> <p><input type="checkbox"/> SIAS B is RESET</p> <p>THEN <b>PERFORM</b> the following:</p> <p>A. <b>ENSURE</b> Bkr 2-20403, PRZR HEATER TRANSFORMER 2B3, control switch indicates green flag.</p>	<b>BOP VERIFIES</b> the conditions are met and <b>ENSURES</b> Bkr 2-20403, PRZR HEATER TRANSFORMER 2B3, control switch indicates green flag.
	BOP	B. <b>CLOSE</b> Bkr 2-20403, PRZR HEATER TRANSFORMER 2B3.	<b>BOP CLOSES</b> Bkr 2-20403, PRZR HEATER TRANSFORMER 2B3.
<p style="text-align: center;"><b>NOTE</b></p> <p>The Backup Interlock Bypass Key Switch, selected to the LEVEL position, allows the 480V heater power supply contactors controlled by the selected channel to be reset.</p>			
	BOP	<p>5. IF only one Pressurizer heater bus has power available OR only one Pressurizer level control channel is functioning, THEN <b>PLACE</b> B/U INTLK B/P (Key 98) in LEVEL.</p>	<b>BOP PLACES</b> B/U INTLK B/P (Key 98) in LEVEL.
	BOP	<p>6. IF EDG is powering vital bus(es), THEN <b>RESET</b> only Backup Banks B-1 and/or B-4 by placing heater control switch(es) to OFF / RESET and to AUTO or ON.</p>	<b>BOP DETERMINES</b> this step is N/A

<b>Appendix D</b>		<b>Operator Action</b>				<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	5	Event #	1		
Event Description:		<b>LT1110X fails low</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	BOP	<b>7. IF A Pressurizer Heater Bus is energized from offsite power, THEN <b>RESET</b> the following Pressurizer heaters by placing heater control switches to OFF / RESET and to AUTO or ON:</b>  <input type="checkbox"/> PROPORTIONAL BANK P-1 <input type="checkbox"/> BACKUP BANK B-1 <input type="checkbox"/> BACKUP BANK B-2 <input type="checkbox"/> BACKUP BANK B-3	<b>BOP RESETS P-1, B-1, B-2, B-3 heaters.</b>
	BOP	<b>8. IF B Pressurizer Heater Bus is energized from offsite power, THEN <b>RESET</b> the following Pressurizer heaters by placing heater control switches to OFF / RESET and to AUTO or ON:</b>  <input type="checkbox"/> PROPORTIONAL BANK P-2 <input type="checkbox"/> BACKUP BANK B-4 <input type="checkbox"/> BACKUP BANK B-5 <input type="checkbox"/> BACKUP BANK B-6	<b>BOP RESETS P-2, B-4, B-5, B-6 heaters.</b>
<b>2-AOP-01.10</b>		<b>The following actions are taken from 2-AOP-01.10 "Pressurizer Pressure and Level"</b>	
	SRO	<b>4. IF letdown is in service AND two or more charging pumps are operating, THEN NOTIFY Radiation Protection of the current charging pump alignment.</b>	<b>SRO Makes notifications as needed</b>
	SRO	<b>5. GO TO</b> Section 4.2.1, Step 2.	<b>SRO PROCEEDS to appropriate step</b>
<b>4.2.1 General Actions:</b>			
	SRO	<b>2. WHEN</b> plant conditions have stabilized, THEN REVIEW Tech Specs for any required actions.	<b>SRO EVALUATES T.S 3.4.3 action a, 3.3.3.6 Instrument 5, action a &amp; 3.2.5.b as required</b>
	SRO	<b>3. WHEN</b> Section 3.0, EXIT CONDITIONS, are met, THEN EXIT this procedure.	<b>SRO EXISTS this procedure</b>
<b>At the Lead Evaluator's direction, PROCEED to Event 2.</b>			

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 13 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	5	Event #	2	
Event Description:		<b>V8802 fails open causing RX power to rise</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

CT-1	RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain Reactor Power in the bounds of the RPS Variable High Power trip set points. -Manually isolate leaking steam bypass valve prior to reaching an automatic reactor trip.
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<b>Note to Evaluator: The PCV-V8802 Steam Bypass To Condenser fails open is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 2: V8802 Fails Open</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> <li>When called as the NPO to isolate V8802 go to the schematic for Main Steam, double click on V8307 and input selected value of 0 and click on insert</li> </ul>			
<b>Indications:</b> Reactor Power trending up, RCS pressure and temp lowering <b>Annunciators:</b>			
	ATC		<b>IDENTIFIES</b> power rising and V8802 open
	SRO		<b>DIRECTS</b> the ATC to take action to close V8802 using the controller
	BOP		<b>PLACES</b> the controller for V8802 to the manual position and attempts to close V8802 <b>IDENTIFIES</b> no result and <b>PLACES</b> the PERMISSIVE Switch for SBCS to the <b>OFF</b> position
	BOP		<b>VERIFIES</b> that V8802 is closed and <b>EVALUATES</b> plant for being stable
	BOP		Acknowledge annunciators and communicates status IAW plant policies.
	SRO		<b>ANNOUNCES</b> and enters 2-AOP-08.03 Steam Bypass Control System
	SRO		<b>DIRECTS</b> actions of 2- AOP-08.03 Steam Bypass Control System
<b>2-AOP-08.03 Steam Bypass Control System</b>		The following actions are taken from 2-AOP-08.03 Steam Bypass Control System	
<b>4.1 Immediate Operator Actions:</b>			



		L-19-1 NRC EXAM SCENARIO 5 REV. 0					SEG Page 14 of 51	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1		Scenario #	5	Event #	2	
Event Description:		<b>V8802 fails open causing RX power to rise</b>						
Time	Position Competency	Procedure Step				Applicant's Actions or Behavior		

	SRO	<b>1. VERIFY NO</b> SBCS valves have FAILED OPEN.	<b>SRO EVALUATES</b> and determines V8802 is OPEN and DIRECTS Contingency Actions as follows:
	SRO	<b>1.1.A TAKE</b> the following actions as necessary to stabilize the plant: <b>PLACE</b> affected SBCS valve in <b>MANUAL</b> and <b>CLOSE</b> .	<b>SRO DIRECTS</b> determines V8802 is OPEN and DIRECTS the BOP to PLACE SBCS valve V8802 in MANUAL and CLOSE. <b>BOP PLACES</b> the controller for V8802 to the manual position and attempts to close V8802, IDENTIFIES no result
	SRO	<b>1.1.B TAKE</b> the following actions as necessary to stabilize the plant: <b>PLACE SBCS</b> permissive switch in <b>OFF</b> .	<b>SRO DIRECTS</b> the BOP to PLACE SBCS permissive switch in OFF BOP OBSERVES V8802 going CLOSED
	SRO	<b>1.1.C IF</b> all valves did <b>NOT CLOSE, THEN</b> PERFORM the FOLLOWING	<b>SRO OBSERVES</b> V8802 is <b>CLOSED</b> and Determines the step is N/A
	SRO	<b>1.1.D DISPATCH</b> a field operator to manually isolate affected SBCS valve per Attachment 5 Local Action to Isolate Steam Bypass Valves	<b>SRO DIRECTS NPO</b> to Perform Att. 5 page 2 of 5 step 2 and isolate V8802
	SRO/BOP	<b>1.2 IF</b> SBCS permissive switch has been placed in OFF, and a failed SBCS valve has been manually isolated, THEN <b>PLACE</b> the SBCS permissive switch in AUTO.	<b>SRO DIRECTS BOP</b> to place the SBCS permissive switch to AUTO.


  

<b>4.2 Subsequent Operator Actions</b> <b>4.2.1 General Actions:</b>	
<b>At the Lead Evaluator's direction, PROCEED to Event 3.</b>	


<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	5	Event #	3	
Event Description:		<b>2B Charging Pump Reducing Unit oil leak</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

T.S. 3.1.2.2	<p>At least two of the following three boron injection flow paths shall be OPERABLE:</p> <p><b>ACTION:</b> With only one of the above required boron injection flow paths to the Reactor Coolant System OPERABLE, restore at least two boron injection flow paths to the Reactor Coolant System to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to its COLR limit at 200 °F within the next 6 hours</p>
T.S. 3.1.2.4	<p>At least two charging pumps shall be OPERABLE.</p> <p><b>ACTION:</b> With only one charging pump OPERABLE, restore at least two charging pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to its COLR limit at 200°F within the next 6 hours</p>
T.S. 3.5.2	<p>Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of:</p> <p>d. One OPERABLE charging pump*.</p> <p><b>ACTION:</b> a.2. With one ECCS subsystem inoperable for reasons other than condition a.1., restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6</p>

<b>Note to Evaluator: The 2B Charging Pump Oil Level Low is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>• Upon cue from Lead Examiner, trigger Event 3: 2B Charging Pp Oil Level Low</li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>• If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> <li>• When the SNPO is dispatched to the 2B Charging pump report back in 5 minutes that the 2B Charging cubicle has oil on the floor and you can't see any oil in the pump.</li> </ul>			
<b>Indications:</b> <b>Annunciators:</b> <b>M-31 2B CHARGING PUMP TROUBLE</b>			
	ATC		<b>IDENTIFIES</b> Annunciators from the 2B Charging pump and reports to the SRO
	SRO		<b>DIRECTS</b> the ATC to dispatch a SNPO to the 2B Charging pump
	BOP		Acknowledges annunciators and communicates status IAW plant policies
	ATC		Evaluates plant for being stable
	SRO		Announces and enters 2-AOP-02.03, Charging And Letdown
	SRO		Directs actions of 2-AOP-02.03, Charging And Letdown

	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 16 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 5    Event # 3	
Event Description: <b>2B Charging Pump Reducing Unit oil leak</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

<b>2-AOP-02.03</b>	The following actions are taken from 2-AOP-02.03, Charging And Letdown		
<b>4.1 Immediate Operator Actions: NONE APPLICABLE</b>			
<b>4.2 Subsequent Operator Actions</b>			
<b>4.2.1 General Actions: NONE APPLICABLE</b>			
	SRO	Dispatch SNPO to evaluate the 2B Charging pump	DIRECTS the ATC to dispatch a SNPO to the 2B Charging pump
	SRO	DIRECT placing the 2B Charging pump to stop	DIRECTS the ATC to place the 2B Charging pump to stop
	ATC	POSITIONS the CHRG PUMP SEL RUNNING – B/U PP switch selected to 2A-2C.	ATC POSITIONS the CHRG PUMP SEL RUNNING – B/U PP switch selected to 2A-2C.
	SRO	DECLARE the 2B Charging pump inoperable	SRO Evaluates Tech Specs
	SRO	ENTER appropriate Tech Specs for the condition	SRO Enters T.S. <ul style="list-style-type: none"> <li>3.1.2.2 Boration Flow Paths</li> <li>3.1.2.4 Charging pp</li> <li>3.5.2 ECCS Subsystems</li> </ul>
	SRO	Performs a Crew brief	SRO BRIEFS the crew on the status of the 2B Charging pump
At the Lead Evaluator's direction, PROCEED to Event 4.			

	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 17 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 5      Event # 4	
Event Description: <b>TIC-2223 Letdown Temperature Controller fails low</b>		
Time	Position Competency	Procedure Step      Applicant's Actions or Behavior

<b>Note to Evaluator: The TIC 2223 Letdown Temp Fails High is a malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 4: TIC-2223 Auto Control Malfunction</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action</li> </ul> <b>EXAMINER NOTE: The TIC-2223 controller is reverse acting</b>			
<b>Indications: CCW to L/D heat exchanger flow lowers, TIC-2223 LED is lit, TIC-2223 output indicates full closed</b> <b>Annunciators: M-12 LETDOWN HX OUTLET TEMP HIGH/LOW</b>			
	ATC		Identifies controller issue with TIC 2223 and recommends taking manual control
	SRO		Directs the ATC to take manual control of TIC 2223
	BOP		Acknowledge annunciators and communicates status IAW plant policies.
	ATC		Evaluates plant for being stable
	BOP		Pulls ARPs and communicates/takes action as directed
	SRO		Announces and enters 2-AOP-02.03, Charging And Letdown
	SRO		Directs actions of 2-AOP-02.03, Charging And Letdown
<b>2-AOP-02.03</b>		<b>The following actions are taken from 2-AOP-02.03, Charging And Letdown</b>	
<b>4.1 Immediate Operator Actions: None applicable</b>			
<b>4.2 Subsequent Operator Actions</b>			
<b>4.2.1 General Actions:</b>			
	SRO	1. IF charging and letdown flow has been lost, THEN, <b>PERFORM</b> the following:	<i>Step is not applicable</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	4	
Event Description:		<b>TIC-2223 Letdown Temperature Controller fails low</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	2. <b>VERIFY</b> all applicable automatic actions have occurred. Attachment 1, Charging and Letdown Automatic Responses, contains a listing of expected automatic actions	<i>Step is not applicable</i>
	SRO	3. <b>IF charging and letdown flow has been lost, THEN DETERMINE the cause</b>	<i>Step is not applicable</i>
	SRO	4. IF a charging system leak has occurred, THEN <b>ISOLATE</b> the leak and refer to applicable Technical Specifications for guidance	<i>Step is not applicable</i>
	SRO	5. <b>PERFORM</b> applicable section per Table	<b>SRO EVALUATES</b> the indications determines the failure to be TIC 2223 failed and proceeds to section 4.2.8


#### 4.2.8 Letdown HX Temperature Control Malfunction

##### CAUTION


- ☐ Loss of component cooling water flow through the letdown heat exchanger can result in severe thermal stress and flashing in the heat exchanger unless letdown flow is immediately isolated.
- ☐ Component cooling water flow to the letdown heat exchanger shall be reestablished slowly with letdown flow still isolated to minimize the thermal stress on the heat exchanger.

	SRO	1. <b>VERIFY</b> TIC-2223, TEMPERATURE, is responding as expected	<b>SRO DIRECTS</b> the ATC to <b>PLACE</b> V2520, ION EXCHANGER BYPASS VALVE, in BYPASS RESET to bypass letdown ion exchangers <b>SRO DIRECTS</b> the ATC to <b>PLACE</b> TIC-2223, TEMPERATURE, in MANUAL or HARD MANUAL <b>SRO VERIFIES</b> that the ATC has PLACED V2520 in BYPASS and PLACED TIC-2223 in manual and adjust the controller to maintain normal letdown temperature <b>SRO DIRECTS</b> system walk downs observing for leaks or lifting relief valves
	SRO	<b>SRO NOTIFIES</b> the SM and requests I&C support	
	SRO		<b>SRO Exits this procedure</b>
	SRO	<b>SRO PERFORMS</b> CREW BRIEF	

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 19 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	5	Event #	4		
Event Description:		<b>TIC-2223 Letdown Temperature Controller fails low</b>					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
<div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> <b>At the Lead Evaluator's direction, PROCEED to Event 5.</b> </div>							

	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 20 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 5      Event # 5	
Event Description: <b>2A Heater drain pp trip; Commence plant shutdown</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

<b>Note to Evaluator: The 2A Heater Drain Pp High amps/trip malfunction initiated from the Booth upon direction by the evaluator.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li>Upon cue from Lead Examiner, trigger Event 5: 2A Heater Drain Pp bearing friction and Trips</li> </ul> <b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> </ul>			
<b>Indications: High AMPS on the 2A Heater Drain Pp</b> <b>Annunciators:</b> <b>F-25 4A LP HTR LEVEL HIGH/LOW</b> <b>F-33 5A HP HTR LEVEL HIGH</b> <b>F-35, 2A HTR DRN PUMP OVRLD/TRIP</b>			
	ATC		IDENTIFIES 2A Heater Drain Pp High amps and places the pump to stop
	SRO		DIRECTS the ATC to stop 2A Heater Drain Pp
<b>2-AOP-09.04</b>		<b>The following actions are taken from 2-AOP-09.04, FEEDWATER, CONDENSATE, AND HEATER DRAIN PUMP ABNORMAL OPERATIONS</b>	
<b>4.1 Immediate Operator Actions:</b>			
	SRO	<b>1. VERIFY</b> S/G NR levels between 60% and 70%.	<i>SRO EVALUATES and determines S/G NR levels are between 60% and 70%.</i>
<b>4.2.1 General Actions:</b>			
	SRO	<b>1. PERFORM</b> applicable section per Table 1.	<i>SRO EVALUATES and determines and proceeds to section 4.2.2</i>
<b>4.2.2 MFW, Condensate, or Heater Drain Pump Trip</b>			
<b>NOTE</b>			
<input type="checkbox"/> SIAS trips the MFW pumps and the Heater Drain Pumps <input type="checkbox"/> MFW pump low suction pressure alarms at 305 psig lowering and MFW pump low suction pressure trip occurs at 230 psig lowering.			


	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 21 of 51				
<b>Appendix D</b>		<b>Form ES-D-2</b>				
Op Test No.: L-19-1	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">Operator Action</td> </tr> <tr> <td style="width: 50%;">Scenario # 5</td> <td style="width: 50%;">Event # 5</td> </tr> </table>		Operator Action		Scenario # 5	Event # 5
Operator Action						
Scenario # 5	Event # 5					
Event Description: <b>2A Heater drain pp trip; Commence plant shutdown</b>						
Time	Position	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Procedure Step</td> <td style="width: 50%;">Applicant's Actions or Behavior</td> </tr> <tr> <td style="height: 20px;">Competency</td> <td></td> </tr> </table>	Procedure Step	Applicant's Actions or Behavior	Competency	
Procedure Step	Applicant's Actions or Behavior					
Competency						

	SRO	<b>1. VERIFY SIAS NOT Present.</b> <input type="checkbox"/> R-6, SIAS CHANNEL A/B ACTUATION is CLEAR.	<b>SRO EVALUATES</b> and determines R-6, SIAS CHANNEL A/B ACTUATION is CLEAR.
	SRO	<b>2. VERIFY</b> current power level can be supported by number of running MFW, condensate, and heater drain pumps.	<b>SRO EVALUATES</b> and determines 2A HDP is unavailable and <b>DIRECTS</b> a RAPID DOWNPOWER
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, Rapid Downpower</b>	
<b>4.1 Operator Actions:</b>			
	SRO		<b>DIRECTS</b> Immediate Operator Actions for 2-AOP-22.01, RAPID DOWNPOWER
	SRO	<b>1. BEGIN</b> boration per operator aid OR Attachment 1, RCS Boration Guidance.	<b>SRO DIRECTS ATC</b> to make boration 15 gallons per minute from a Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance.
<b>ATTACHMENT 1 RCS Boration Guidance NOTE</b>			
<ul style="list-style-type: none"> <li>Step 1 in this attachment is applicable when the CVCS is normally aligned, with NO RCS boration or dilution in progress. If other than normal alignment, use guidance of 2-NOP-02.24, Boron Concentration Control.</li> <li>An Operator Aid has been placed at RTGB-205. Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Operator Aid Placard.</li> </ul>			
	ATC	<b>1. BORATE</b> the RCS by the following: <b>A. START</b> either Boric Acid Pump 2A or 2B.	<b>ATC STARTS</b> Boric Acid Pump <b>ATC VERIFIES</b> Boric Acid Pump STARTS
	ATC	<b>1. BORATE</b> the RCS by the following: <b>B. PLACE</b> FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO.	<b>ATC PLACES</b> FCV-2210Y, BORIC ACID control switch in AUTO
	ATC	<b>1. BORATE</b> the RCS by the following: <b>C. IF</b> borating to the Charging Pump suction, THEN <b>OPEN</b> V2525, BORON LOAD CONTROL VALVE	<b>ATC PLACES</b> V2525, BORON LOAD control switch in OPEN <b>ATC IDENTIFIES</b> V2525, BORON LOAD <b>ATC REPORTS</b>




Appendix D			Operator Action				Form ES-D-2	
Op Test No.:	L-19-1		Scenario #	5	Event #	5		
Event Description:		<b>2A Heater drain pp trip; Commence plant shutdown</b>						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							


	SRO		<b>SRO DIRECTS ATC</b> <i>The SRO may alternately</i>
	ATC	1. <b>BORATE</b> the RCS by the following: D. IF borating to the VCT, THEN <b>OPEN</b> V2512, REACTOR MAKEUP WATER STOP VLV	<b>ATC PLACES</b> V2512, REACTOR MAKEUP WATER STOP VLV control switch in OPEN <b>ATC VERIFIES</b> V2512, REACTOR MAKEUP WATER STOP VLV is OPEN
	ATC	1. <b>BORATE</b> the RCS by the following: E. <b>ADJUST</b> FIC-2210Y, BORIC ACID, to the desired flowrate.	<b>ATC ADJUSTS</b> FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm
	ATC	1. <b>BORATE</b> the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN <b>CLOSE</b> the running BAM pump recirc valve. • V2650, TANK 2A RECIRC VALVE • V2651, TANK 2B RECIRC VALVE	<b>ATC DETERMINES</b> not required
	ATC	1. <b>BORATE</b> the RCS by the following: G. <b>CYCLE</b> V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	<b>ATC CYCLES</b> V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig
	ATC	1. <b>BORATE</b> the RCS by the following: H. <b>CYCLE</b> V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	<b>ATC CYCLES</b> V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level
	ATC		<b>ATC UPDATES</b> crew on Reactivity Addition
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER</b>	
	SRO	2. <b>PREPARE</b> turbine for load reduction per operations hard cards.	<b>SRO DIRECTS BOP</b> to set up the turbine for a target of 100 MW and load rate at 10 megawatts per minute per operations hard cards
<b>2-NOP-99.07</b>		<b>The following actions are taken from 2-NOP-99.07 OPERATIONS HARD CARDS</b>	

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 23 of 51	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-19-1		Scenario # 5		Event # 5			
Event Description:		<b>2A Heater drain pp trip; Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


<b>2-NOP-99.07 OPERATIONS HARD CARDS</b>  <b>ATTACHMENT 3 TURBINE ADJUSTMENTS TO MAINTAIN POWER NOTE</b>  <b>A Hard Card has been placed at RTGB-201. Any revision to this section of the procedure shall verify the validity of the Hard Card and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Hard Card placard.</b>			
	BOP	<b>TURBINE ADJUSTMENTS TO MAINTAIN POWER</b>	<b>BOP ENSURES</b> Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open
	BOP	<b>TURBINE ADJUSTMENTS TO MAINTAIN POWER TOUCH MODIFY</b> from RAMP INTERFACE group.	<b>BOP TOUCHES MODIFY</b> from RAMP INTERFACE group
	BOP	<b>TURBINE ADJUSTMENTS TO MAINTAIN POWER ADJUST</b> values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> <li>TARGET SELECT</li> <li>RATE SELECT</li> </ul>	<b>BOP ADJUSTS</b> values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> <li>TARGET SELECT set at 100 MW</li> <li>RATE SELECT set at 10 MW/min</li> </ul>
	BOP		<b>BOP NOTIFIES SRO</b> that the Turbine is set up with a Target of 100 MW at a rate of 10 MW/min
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWNPPOWER</b>	
	SRO	<b>3. INSERT</b> the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards.	<b>SRO DIRECTS ATC</b> to insert lead group CEAs 6 inches in Manual Sequential
<b>2-NOP-99.07</b>		<b>The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS</b>	
<b>2-NOP-99.07 OPERATIONS HARD CARDS</b>  <b>ATTACHMENT 1 CEDMCS OPERATIONS NOTE</b>  <b>A Hard Card has been placed at RTGB-204. Any revision to this section of the procedure shall verify the validity of the Hard Card and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Hard Card placard.</b>			

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 24 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	5	Event #	5		
Event Description:		<b>2A Heater drain pp trip; Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	<b>Moving CEAs in group</b> On CEDMCS Control Panel Group Select Switch, <b>SELECT</b> target group.	<b>ATC SELECTS</b> Target Group 5
<b>CAUTION</b>  When performing a rapid downpower due to a dropped CEA, then MANUAL GROUP (MG) shall be selected. This will prevent multiple CEA groups from moving.			
	ATC	<b>Moving CEAs in group</b> On CEDMCS Control Panel Mode Select Switch, <b>SELECT</b> mode of movement: MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS)	<b>ATC SELECTS MANUAL GROUP (MG) OR</b> <b>MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel</b>
	ATC	<b>Moving CEAs in group</b> IF CEA Motion Inhibit is present, THEN PERFORM the following: PRESS and HOLD CMI BYPASS pushbutton. PRESS and RELEASE BYPASS ENABLE pushbutton.	<b>STEP will be N/A NO CEA Motion Inhibit is present</b>
	ATC	<b>Moving CEAs in group</b> <b>POSITION</b> group as desired using INSERT/WITHDRAW Manual Control lever.	<b>ATC POSITIONS</b> group as directed to 6" inserted from previous position using INSERT/WITHDRAW Manual Control lever
	ATC	<b>Moving CEAs in group</b> IF CMI BYPASS pushbutton is being held, THEN <b>RELEASE</b> CMI BYPASS pushbutton.	<b>STEP will be N/A NO CEA Motion Inhibit is present</b>
	ATC	<b>Moving CEAs in group</b> <b>OBSERVE</b> RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment.	<b>ATC OBSERVES</b> RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position

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Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 5    Event # 5	
Event Description: <b>2A Heater drain pp trip; Commence plant shutdown</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	ATC	<b>Moving CEAs in group</b> On CEDMCS Control Panel, <b>SELECT</b> OFF on Mode Select Switch when the desired height is reached.	<b>ATC SELECTS OFF</b> on Mode Select Switch when the desired height is reached
	ATC	<b>Moving CEAs in group</b> <b>ENSURE</b> RSPT and Pulse Counter indications match.	<b>ATC ENSURES</b> RSPT and Pulse Counter indications match
	ATC		<b>ATC Updates crew on Reactivity Addition</b>
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER</b>	
<b>4.2 Subsequent Operator Actions</b>			
	SRO	<b>1. WHEN</b> Tavg begins to lower and is less than Tref, THEN <b>TOUCH GO</b> from RAMP INTERFACE group. (OVATION display 5551)	<b>DIRECTS ATC</b> to monitor Tavg and to notify him when it is lowering and less than Tref
	ATC		<b>ATC NOTIFIES</b> the SRO that Tavg is lowering and less than Tref
	SRO		<b>DIRECTS BOP</b> to <b>TOUCH GO</b> from RAMP INTERFACE group. (OVATION display 5551)
	BOP		<b>BOP</b> to <b>TOUCHES GO</b> on the RAMP INTERFACE group to begin turbine load reduction per operations hard cards as follows: 5. <b>TOUCH GO</b> from RAMP INTERFACE group. (display 5551) 6. <b>MONITOR</b> turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551) <b>BOP Updates crew on load reduction initiation.</b>
	SRO/ATC	SRO directs ATC to MAINTAIN T-avg and T-ref	<b>8. MAINTAIN</b> T-avg and T-ref as close as possible during load changes by adjusting either or both of the following: <ul style="list-style-type: none"><li>• Reactivity rate</li><li>• Turbine load rate</li></ul>

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-19-1	Scenario #	5	Event #	5		
Event Description:		2A Heater drain pp trip; Commence plant shutdown						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	<b>2. NOTIFY</b> plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____."	<i><b>DIRECTS BOP to NOTIFY</b> plant personnel using Gai-tronics and boost function as follows:          "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to a loss of a Heater Drain Pump."</i>
	BOP		<i><b>NOTIFIES</b> plant personnel using Gai-tronics and boost function as follows:          "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to a loss of a Heater Drain Pump."</i>
	SRO	<b>3. NOTIFY</b> System of the rapid downpower load reduction.	<i><b>DIRECTS BOP to NOTIFY</b> System of the rapid downpower</i>
	BOP		<i><b>NOTIFIES</b> System of the rapid downpower, via dedicated RED phone.</i>
NOTE			
OPS-530, Pre-Planned Power Change Guidance, delineates operations department policy for the use of pre-planned downpower profiles provided by the Plant Physics Curve Book.			
	SRO	<b>4. PERFORM</b> a Crew update to include the following: <ul style="list-style-type: none"> <li>Expected final power level</li> <li>Initial boration rate</li> <li>Initial load rate</li> <li>Expected amount of boric acid addition</li> <li>Expected amount of CEA motion using pre-planned downpower profiles in the Plant Physics Curve Book</li> </ul>	<i><b>SRO UPDATES</b> crew with the following information:</i> <ul style="list-style-type: none"> <li>Expected final power level Offline</li> <li>Initial boration rate 15 GPM</li> <li>Initial load rate of 10 MW/MIN</li> <li>Expected amount of boric acid addition Per preplanned power guidance</li> <li>Expected amount of CEA motion Per preplanned power guidance</li> </ul>
	SRO	<b>5. PLACE</b> Pressurizer on recirculation per operations hard cards.	<i><b>SRO should recognize</b> heaters are all on to maintain pressure from PZR safety valve leak. Recirculation should not be directed as this will lower pressure</i>
	SRO	<b>6. START</b> additional charging pump as required per operations hard cards.	<i><b>SRO DIRECTS ATC to START</b> a second charging pump per operations hard cards, if not previously started</i>
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	5	
Event Description:		<b>2A Heater drain pp trip; Commence plant shutdown</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

2-NOP-99.07 OPERATIONS HARD CARDS

ATTACHMENT 8 CHARGING PUMP OPERATIONS WHILE IN AN AOP NOTE

A Hard Card has been placed at RTGB-201. Any revision to this section of the procedure shall verify the validity of the Hard Card and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Hard Card placecard.


	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW</b> IF in MODE 1 or 2, THEN PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS to minimize reactivity effects of changing letdown temperature.	<b>BOP PLACES V2520, ION EXCHANGER BYPASS VALVE, in BYPASS</b>
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START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW

**NOTE**


- When starting OR stopping a charging pump with LIC-2110, LETDOWN LEVEL, in Single Element Mode, it may be necessary to place the controller in Manual Mode to prevent pressurizer level from deviating too far from setpoint.
- In Manual Mode, the letdown flow should be adjusted as necessary to maintain pressurizer level at setpoint. The controller should be returned to Auto when it reaches setpoint with the desired number of charging pumps running.

	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: START</b> charging pump by placing its control switch in START.	<b>BOP STARTS</b> Second charging pump by placing its control switch in START
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: PLACE</b> CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid.	<b>BOP PLACES CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid</b>
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN</b> 3 minutes has elapsed since pump start, THEN ENSURE associated recirc valve is CLOSED.	<b>BOP ENSURES</b> Second Charging Pp recirc valve is CLOSED

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 28 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	5	Event #	5		
Event Description:		<b>2A Heater drain pp trip; Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> WHEN letdown temperature stabilizes, THEN <b>ENSURE</b> V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO.	<b>BOP ENSURES</b> V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO after temp stabilizes
	BOP	<b>START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW:</b> NOTIFY RP and SNPO of current charging pump alignment.	<b>BOP NOTIFIES</b> RP and SNPO of starting of the Second charging pump
<b>2-AOP-22.01</b>		<b>The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER</b>	
<b>NOTE</b> <ul style="list-style-type: none"><li>The procedural limit for ASI control is +/- 0.5 of ESI. It is desired to maintain ASI within a control band of +/- 0.2 of ESI.</li><li>US may direct temporary operation outside of ASI limit.</li></ul>			
	SRO	<b>7. MAINTAIN</b> Axial Shape Index ±0.5 of ESI using CEAs.	<b>DIRECTS ATC</b> to maintain ASI to within +/- 0.2 of ESI using the sliding scale with lead group CEAs IAW 0-NOP-100.02 Axial Shape Index Control unless recommended otherwise by Reactor Engineering
	ATC		<b>POSITIONS</b> lead group CEAs to control ASI to within +/- 0.2 from the ESI on the sliding scale IAW 0-NOP-100.02 Axial Shape Index Control
<b>NOTE</b> The procedural limit for Tave-Tref mismatch is +/- 6.6 degrees °F. It is desired to maintain a control band of +/- 2 degrees °F			
	SRO	<b>8. MAINTAIN</b> Tref and Tavg within 6.6 °F.	<b>DIRECTS ATC</b> to maintain Tave-Tref mismatch within +/- 2 degrees °F
	SRO	<b>9.</b> IF reducing power by more than 20%, THEN <b>NOTIFY</b> SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition.	<b>DIRECTS BOP</b> to dispatch a SNPO to secure Zinc injection
<b>NOTE</b> Condenser back pressure is provided on OVATION displays 5559, TURBINE EXHAUST HOOD SPRAY AND CONDENSER VACUUM and 5605, CONDENSER VACUUM MONITORING. The condenser back pressure trip and alarm setpoints are variables that are dependent on power level.			
	SRO	<b>10. VERIFY</b> Condenser Back Pressure less than 8.859 inHgA.	<b>DIRECTS BOP</b> to report Condenser Backpressure



		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 29 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario #	5	Event #	5		
Event Description:		<b>2A Heater drain pp trip; Commence plant shutdown</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<b>NOTE</b> OVATION displays 5559, TURBINE EXHAUST HOOD SPRAY AND CONDENSER VACUUM and 5605, CONDENSER VACUUM MONITORING, indicate time remaining before an automatic Turbine Trip is initiated by DEH, when operating in the Restricted Operating Region.			
	SRO	<b>11. VERIFY</b> Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations.  <b>OR</b> OVATION display 5605, CONDENSER VACUUM MONITORING.	<i><b>DIRECTS BOP</b> to monitor Condenser Backpressure</i>
	SRO	<b>12. VERIFY</b> CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)	<i><b>DIRECTS BOP</b> to monitor Condenser differential pressure</i>
	SRO	<b>13. VERIFY</b> parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits.	<i><b>DIRECTS BOP</b> to monitor parameters listed on Attachment 3</i>
<b>NOTE</b> Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.			
	SRO	<b>14. MAINTAIN</b> PZR pressure between 2225 and 2275 psia.	<i><b>DIRECTS ATC</b> to <b>MAINTAIN</b> PZR pressure between 2225 and 2275 psia by controlling HIC-1100</i>
<b>NOTE</b> A large rate of change in Tav <sub>g</sub> may cause transient level variance.			
	SRO	<b>15. MAINTAIN</b> PZR level between 27% and 68%.	<i><b>DIRECTS ATC</b> to <b>MAINTAIN</b> PZR level between 27% and 68%</i>
	SRO	<b>16. WHEN</b> Final power level is achieved, <b>THEN GO TO</b> Section 4.2, Step 35 to STABILIZE the unit.	<i><b>SRO</b> will continue with procedure to remove the unit offline</i>
<b>When Feed Pump suction begins to rise and at the Lead Evaluator's direction, PROCEED to Event 6.</b>			



Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-19-1	Scenario #	5	Event #	6				
Event Description:		<b>2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure</b>							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

**Note to Evaluator:** The 2B Main Feedwater Pp recirculation valve, FCV-09-1B fails open is a malfunction initiated from the Booth upon direction by the evaluator. The LOOP and 2B EDG failures are an auto trigger initiated upon reactor power lowering to <.5%

**Booth Operator Instructions:**

- When Feed Pump suction begins to rise and upon cue from Lead Examiner, trigger Event 6: 2B FW Pp recirc fails open, LOOP W/ 2B EDG overspeed trip is autotriggered on the Rx Trip

**Role Play:**


- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.
- If SNPO is dispatched to the 2B EDG report back in 5 minutes that the 2B EDG has an Over Speed Trip and the overspeed reset latch will not reset, you need mechanical assistance.

**EVALUATOR NOTE:** During 1 minute board scan post trip, Operators may place ADVs in service.


**Indications:** 2B S/G level lowering

**Annunciators:** G-9 2B S/G LEVEL HIGH/LOW


	BOP		<b>RECOGNIZES</b> the Steam Generator level lowering
	BOP/SRO		<b>COMMUNICATES</b> Steam Generator level lowering and attempts recovery, recommends Reactor Trip
	SRO		<b>DIRECTS</b> Reactor Trip on Low S/G level
	ATC		<b>TRIPS</b> Reactor
	BOP/ATC		<b>Recognizes</b> LOOP
	ATC		<b>Confirms</b> reactor power is lowering and startup rate is negative. <b>Reports "Reactor Tripped"</b> <b>States evaluating CEAs or that all CEAs are inserted</b>
	BOP		<b>Verifies</b> all governor and throttle valves closed <b>Reports "Turbine Tripped"</b>
	BOP		<b>ANNOUNCE</b> on the Gai-tronics: Unit 2 Reactor has tripped <b>NOTIFY</b> the NPO to perform Appendix X, Section 1 of 2-EOP-99 <b>CONTACT</b> the SM, STA and Shift Comm. to report to the Control Room
	SRO		Performs Scan of RTGBs to quickly assess the plant status by systematically reviewing key safety parameters/system conditions of the control boards

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Appendix D			Operator Action				Form ES-D-2		
Op Test No.: L-19-1			Scenario # 5		Event # 6				
Event Description:			2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure						
Time	Position	Procedure Step				Applicant's Actions or Behavior			
	Competency								


	ATC		<b>Reports “All CEAs INSERTED” if not reported previously</b>
	SRO		<b>Directs ATC</b> to start remaining Charging Pumps as necessary
	SRO		<b>Directs IMPLEMENTATION OF EOP-01, STANDARD POST TRIP ACTIONS</b>
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
<b>4.1 Immediate Operator Actions:</b> <ul style="list-style-type: none"> <li><b>ATC: Verifies</b> Reactor power lowering, Negative Startup rate, all CEAs and verifies no dilution is in progress inserted and communicates status to the Unit Supervisor. Starts backup charging pumps as necessary.</li> <li><b>BOP: Verifies</b> all governor and throttle valves closed and communicates status to the Unit Supervisor. Makes plant announcements and trip notifications.</li> </ul>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>Step 1 VERIFY</b> reactor trip:	<b>SRO DIRECTS VERIFY</b> reactor trip, ATC Verifies: <input type="checkbox"/> Reactor power LOWERING <input type="checkbox"/> Startup Rate NEGATIVE <input type="checkbox"/> All CEAs are <b>fully INSERTED</b> <input type="checkbox"/> NO dilution is in progress
	SRO	<b>Step 2 VERIFY</b> turbine trip:	<b>SRO DIRECTS VERIFY</b> turbine trip, BOP Verifies: <input type="checkbox"/> All governor and throttle valves CLOSED. <input type="checkbox"/> Main Generator breakers are OPEN <input type="checkbox"/> Turbine speed LOWERING

	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 32 of 51
<b>Appendix D</b>		<b>Form ES-D-2</b>
Op Test No.: L-19-1	Scenario # 5    Event # 6	
Event Description: <b>2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	SRO	<b>Step 3 VERIFY Maintenance of Vital Auxiliaries:</b>	<b>SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies:</b> <input type="checkbox"/> <i>VERIFY</i> station loads transferred to offsite electrical power <b>BOP will Update the crew on the LOOP</b> <input type="checkbox"/> <i>VERIFY</i> all Vital and Non-Vital AC buses transfer from Auxiliary to Start-up Transformers AND are ENERGIZED <b>BOP will Update the crew on the LOSS of the 2B EDG</b> <b>NOTE to EVALUATOR: the 2B EDG fails and will be unavailable for remainder of scenario,</b> <input type="checkbox"/> <i>VERIFY</i> all Vital and Non Vital DC Buses are ENERGIZED <input type="checkbox"/> <i>VERIFY</i> seal cooling to RCPs:
	SRO	<b>Step 4 VERIFY RCS Inventory Control:</b>	<b>SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies:</b> <input type="checkbox"/> <i>Pressurizer level</i> is between 10 and 68% <input type="checkbox"/> <i>Pressurizer level</i> is trending to between 30 and 35%
	SRO	<b>Step 5 VERIFY RCS Pressure Control:</b>	<b>SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies:</b> <input type="checkbox"/> <i>Pressurizer pressure</i> is between 1800 and L-19-100 psia <input type="checkbox"/> <i>Pressurizer pressure</i> is trending to between 2225 and 2275 psia <b>IF SIAS</b> has occurred the <b>SRO will DIRECT</b> two RCPs to be tripped and perform 2-EOP-99 App.J to restore CCW to the RCPs
	SRO	<b>Step 6 VERIFY Core Heat Removal:</b>	<b>SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies:</b> <input type="checkbox"/> <i>At least one RCP is RUNNING</i> and all <i>RUNNING RCPs</i> are supplied with CCW <input type="checkbox"/> <i>Loop ΔT</i> is less than 10°F <input type="checkbox"/> <i>RCS subcooling</i> greater than or equal to 20°F <input type="checkbox"/> <i>NO indication of RCP cavitation</i>

	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 33 of 51
<b>Appendix D</b>		<b>Form ES-D-2</b>
Op Test No.: L-19-1	Scenario # 5    Event # 6	
Event Description: <b>2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

	SRO	<b>Step 7 VERIFY RCS Heat Removal:</b>	<b>SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies:</b> <input type="checkbox"/> <i>VERIFY the following conditions exist on at least one S/G:</i> <ul style="list-style-type: none"> <li>S/G NR level is between 20 and 81%</li> <li>Feedwater is being supplied</li> </ul> <input type="checkbox"/> <i>IF 2A or 2B AFW Pump is the ONLY source of Feedwater, THEN STOP one RCP in each loop</i> <input type="checkbox"/> <i>VERIFY at least ONE of the following is supplying feedwater to the S/G(s):</i> <ul style="list-style-type: none"> <li>Main or Auxiliary Feedwater</li> </ul> <input type="checkbox"/> <i>VERIFY RCS TAVG is between 525 and 535°F</i> <input type="checkbox"/> <i>VERIFY S/G pressure is between 850 and 930 psia (835 and 915 psig)</i>
	SRO	<b>Step 8 VERIFY containment conditions:</b>	<b>SRO DIRECTS VERIFY containment conditions, BOP Verifies:</b> <input type="checkbox"/> <i>Containment pressure is less than 2 psig</i> <input type="checkbox"/> <i>Containment temperature is less than 120°F</i> <input type="checkbox"/> <i>Containment radiation level less than alarm values AND stable or lowering:</i> <ul style="list-style-type: none"> <li>CIS Radiation Monitors</li> <li>Containment Atmospheric Monitors</li> </ul> <input type="checkbox"/> <i>Secondary plant radiation levels less than alarm values AND stable or lowering:</i> <ul style="list-style-type: none"> <li>Condenser Air Ejector Monitor</li> <li>S/G Blowdown Monitors</li> <li>Main Steamline Monitors</li> </ul>
	SRO	<b>Step 9 DIRECT a field operator to perform the following:</b>	<b>SRO DIRECTS BOP to perform step 9, BOP performs step 9:</b> <input type="checkbox"/> <i>Directs NPO to perform Section 1 of Appendix X, Secondary Plant Post Trip Actions</i> <input type="checkbox"/> <i>Directs SNPO to VERIFY SFP inventory and temperature are normal on all available indications</i>
	SRO	<b>Step 10 DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.</b>	<b>SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines a TLOF is in progress</b>

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>						<b>SEG</b> Page 34 of 51	
Appendix D			Operator Action				Form ES-D-2		
Op Test No.: L-19-1		Scenario # 5		Event # 6					
Event Description:		<b>2B Main Feedwater Pp recirc valve fails open LOOP W/ 2B EDG start failure</b>							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								
	SRO	<b>Step 11 GO TO the appropriate Emergency Operating Procedure.</b>			<i>SRO Performs a crew brief and transitions to 2-EOP-06 TLOF</i> <b>NOTE: 2-EOP-06 TLOF is discussed in Event 8</b>				
<b>At the Lead Evaluator's direction, PROCEED to Event 7.</b>									

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	5	Event #	7
Event Description:		<b>2C AFW Pp mech trips on start non-recoverable</b>			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

**Note to Evaluator:** The 2C AFW pump trip auto trigger is linked to the illumination of the red light for valve MV-08-12, SB 2B STM TO AFW PP 2C and occurs when the AFAS timer initiates a pump start signal.

**Booth Operator Instructions:**

- Event 7 is an auto trigger: 2C AFW Pp Mechanical Trip with Linkage Damage

**Role Play:**

- If NPO is dispatched to the 2C AFW Pp report back in 5 minutes that the 2C AFW Pp has a Mechanical Over Speed Trip
- When called as the NPO to perform steps in 2-AOP-09.02 as directed using 1-3 minute intervals between directed steps. If directed to perform large sections of the procedure adjust the time intervals as needed to simulate realistic conditions and time requirements to perform the task
- When directed to reset the 2C AFW Pump report that the mechanical overspeed trip linkage is broken at the tappet and that you need mechanical maintenance.

**Indications:** No Feed flow from the 2C AFW pump

**Annunciators:** G-46 2C AFW PUMP TURBINE FAILURE/TRIP/ OVRLD/SS ISOL will be locked in, indicating a Mechanical Overspeed trip

SRO		Will direct the BOP to perform 2-AOP-0.02 AUXILIARY FEEDWATER to restore feedwater to either S/G
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**NOTE:** The SRO will direct the BOP to perform the AOP as needed to restore AFW, it is expected that as the failures occur that the BOP relay their finding to the SRO and that the SRO direct the restoration path to be addressed by the BOP. Multiple potential success paths will be ongoing simultaneously and multiple resources will be dispatched to the AFW when the area has been reported as safe to approach.

**2-AOP-09.02**

The following actions are taken from 2-AOP-09.02, AUXILIARY FEEDWATER

**4.2 Immediate Operator Actions:**


- NONE

**4.0 Operator Actions:**


BOP	<b>Step 1 IF</b> all of the following conditions exist: <input type="checkbox"/> In MODE 2 <input type="checkbox"/> All feedwater is lost,	<b>BOP RECOGNIZES</b> this step does not apply
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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	5	Event #	7
Event Description:		<b>2C AFW Pp mech trips on start non-recoverable</b>			
Time	Position Competency	Procedure Step	Applicant's Actions or Behavior		

	BOP	<b>Step 2 IF</b> all of the following conditions exist: <input type="checkbox"/> In MODE 3 <input type="checkbox"/> SIAS NOT blocked <input type="checkbox"/> All feedwater is lost <input type="checkbox"/> NOT already implementing an optimal recovery procedure.	<b>BOP RECOGNIZES</b> that the crew will proceed to 2-EOP-06
	BOP	<b>Step 3 IF</b> all of the following conditions exist: <input type="checkbox"/> In MODE 3 through MODE 6 <input type="checkbox"/> SIAS is blocked <input type="checkbox"/> NOT already implementing an optimal recovery procedure.	<b>BOP RECOGNIZES</b> this step does apply
	BOP	<b>Step 4 VERIFY</b> AFAS, if required.	<b>BOP RECOGNIZES AFAS</b> has actuated
	SRO	<b>Step 5 VERIFY</b> 2C Auxiliary Feedwater pump is NOT tripped.	<b>BOP RECOGNIZES</b> 2C AFW pump has tripped and <b>PERFORMS</b> Attachment 1, Resetting 2C AFW Pump Following Overspeed Trip
<b>Attachment 1</b>		<b>The following actions are taken from Attachment 1, Resetting 2C AFW Pump Following Overspeed Trip</b>	
<b>STEP 1: IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN PERFORM the following:</b>			
	BOP	<b>Step A CLOSE</b> MV-08-12, SG 2B STM TO AFW PP 2C.	<b>BOP CLOSES</b> MV-08-12, SG 2B STM TO AFW PP 2C
	BOP	<b>Step B CLOSE</b> MV-08-13, SG 2A STM TO AFW PP 2C.	<b>BOP CLOSES</b> MV-08-13, SG 2A STM TO AFW PP 2C

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 37 of 51	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-19-1		Scenario # 5		Event # 7			
Event Description:		<b>2C AFW Pp mech trips on start non-recoverable</b>					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	BOP	<p><b>Step C PERFORM</b> the following to reset and OPEN MV-08-3, 2C PUMP:</p> <ul style="list-style-type: none"> <li><b>CLOSE</b> MV-08-3, 2C PUMP. (RTGB-202 – Key 78)</li> <li>IF 2C AFW pump tripped due to mechanical overspeed trip, THEN <b>PERFORM</b> the following: <ul style="list-style-type: none"> <li><b>a. RESET</b> the 2C Auxiliary Feedwater Pump mechanical overspeed linkage.</li> <li><b>b. VERIFY</b> top surface of trip tappet nut is in line with the line marked on the head lever to ensure full</li> </ul> </li> <li><b>PLACE</b> MV-08-3, 2C PUMP (2C Auxiliary Feedwater Pump), in OPEN.</li> <li><b>VERIFY</b> MV-08-3, THROTTLE / TRIP VALVE FOR AFW PUMP 2C, is OPEN.</li> </ul>			<p><b>BOP CLOSSES</b> MV-08-3, 2C PUMP. (RTGB-202)  <b>BOP OPENS</b> MV-08-3, 2C PUMP. (RTGB-202)  <b>NOP REPORTS</b> The Mechanical Overspeed linkage is broken at the tappet and that you need mechanical maintenance.  <b>NOTE: The 2C AFW pump will remain unavailable, if calls are made for updates on the status of the 2C AFW pump; report that the linkage will need to be removed and taken to the shop for repairs, ETA 1 hour.</b></p>		
<b>Event 8 will present itself when the crew goes to OTC.</b>							



	<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>	<b>SEG</b> Page 38 of 51
Appendix D		Form ES-D-2
Op Test No.: L-19-1	Scenario # 5    Event # 8	
Event Description: <b>Initiate Once Through Cooling, 2A HPSI pump does not start</b>		
Time	Position	Applicant's Actions or Behavior
	Competency	

CT-2	INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY - Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. 'A' HPSI pump does not start on SIAS and must be manually started to meet Figure 2 of 2- EOP-99 to prevent unnecessary escalation of EAL Initiate Once Through Cooling: When both S/G level are <15% WR and prior to causing Pzr PORVs to open due to loss of heat sink.		
<b>Note to Evaluator: The 2A HPSI PP failure to auto start on SIAS, is a breaker fail as is malfunction that is an auto trigger inserted upon lesson execution. The breaker fail as is malfunction, is deleted when the applicant positions the control switch for the 2A HPSI pump to the start position.</b>			
<b>Booth Operator Instructions:</b> <ul style="list-style-type: none"> <li><b>NONE</b></li> </ul>			
<b>Role Play:</b> <ul style="list-style-type: none"> <li>If calls are made for information delivery or support, then verbal repeat back of information is the only required action.</li> <li>If directed to perform APP H, wait 5 mins and Trigger: INST A/C</li> </ul>			
<b>Indications: Both Steam Generator level lowering and no feedwater available</b> <b>Annunciators: Multiple</b>			
	ALL		Recognizes Both Steam Generator level lowering and no feedwater available
	SRO		Enter 2-EOP-06, TLOF
<b>2-EOP-06</b>		<b>The following actions are taken from 2-EOP-06, TLOF</b>	
<b>4.3 Immediate Operator Actions: NONE</b>			
<b>4.0 Operator Actions:</b>			
	SRO	<b>Step 1 MONITOR</b> the SFSCs and <b>VERIFY</b> the SFSC acceptance criteria are MET every 15 minutes.	<b>SRO DIRECTS</b> the STA to <b>MONITOR</b> the SFSCs and <b>VERIFY</b> the SFSC acceptance criteria are MET every 15 minutes. <input type="checkbox"/> STA or Extra RCO performs SFSCs
	SRO	<b>Step 2 IMPLEMENT</b> the Emergency Plan.	<b>SRO NOTIFIES</b> the Shift Manager to <b>IMPLEMENT</b> the Emergency Plan.
	SRO	<b>Step 3 IMPLEMENT</b> place keeping.	<b>SRO IMPLEMENTS</b> the place keeper.
	SRO	<b>Step 4 DIRECT HP</b> to perform secondary surveys.	<b>SRO DIRECTS DIRECT HP</b> to perform secondary surveys.

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	8	
Event Description:		<b>Initiate Once Through Cooling, 2A HPSI pump does not start</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<b>Step 5 Stop RCPs and Depressurize</b> <b>A. STOP</b> ALL RCPs. <b>B. COMMENCE</b> RCS depressurization to between 1800 and 1850 psia. <b>C. MAINTAIN</b> Pressurizer level between 10 and 68%.	<i><b>The SRO DIRECTS the ATC Depressurize the RCS</b></i> <i>The ATC COMMENCES RCS depressurization to between 1800 and 1850 psia using aux sprays</i> <i>The ATC MAINTAINS Pressurizer level between 10 and 68%</i>
	SRO	<b>Step 6 Restore Instrument Air</b> If a LOOP has occurred, Then <b>PERFORM BOTH of the following:</b> <b>A. ENSURE</b> 2AB 480V Load Center is aligned to an energized bus. <b>B. DISPATCH</b> an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	<i><b>SRO RECOGNIZES</b> that instrument air is not available and <b>DIRECTS APP H</b> be performed</i>
	SRO	<b>Step 7 VERIFY</b> RCP Seal Cooling as follows: <ul style="list-style-type: none"> <li><b>VERIFY</b> CCW to the RCPs.</li> </ul>	<i><b>SRO RECOGNIZES</b> that CCW is not available until IA is restored</i> <i><b>SRO DIRECTS</b> ATC to <b>ENSURE</b> all four CCW to/from RCP valves are in CLOSE.</i> <i><b>ATC ENSURES</b> all four CCW to/from RCP valves are in CLOSE.</i> <i><b>SRO DIRECTS</b> ATC to <b>ENSURE</b> the two RCP bleedoff valves are in CLOSE.</i> <i><b>ATC ENSURE S</b> the two RCP bleedoff valves are in CLOSE.</i>
	SRO	<b>Step 8 ISOLATE</b> the following flowpaths to conserve S/G inventory: A. S/G Blowdown B. Secondary sampling	<i><b>SRO DIRECTS</b> the ATC to Close Blowdown isolation and sample valves</i> <i>the ATC to Closes Blowdown isolation and sample valves (Valves will be closed on a loss of Instrument Air)</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	8	
Event Description:		Initiate Once Through Cooling, 2A HPSI pump does not start				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<p><b>Step 9 RESTORE</b> a high-pressure feedwater source to at least one S/G:</p> <p><b>A.</b> Attempt to <b>RESTORE</b> Auxiliary Feedwater to at least ONE S/G by considering ALL of the following:</p> <ol style="list-style-type: none"> <li>If <b>BOTH</b> of the following conditions exist, <ul style="list-style-type: none"> <li>S/G levels are below 19.5% NR</li> <li>AFAS has stopped timing</li> </ul> Then <b>ENSURE</b> AFAS has ACTUATED.</li> <li>If ANY of the following conditions exist, <ul style="list-style-type: none"> <li>Mechanical or electrical overspeed of the 2C AFW Pump has occurred</li> <li>Steam binding of an AFW Pump is suspected</li> <li>Crosstying of Auxiliary Feedwater Discharge Headers is desired</li> </ul> Then <b>RESTORE</b> Auxiliary Feedwater components. REFER TO 2-AOP–09.02, Auxiliary Feedwater.</li> </ol> <p><b>B.</b> If Offsite power is available, Then attempt to restore Main Feedwater to at least ONE S/G as follows:</p> <ol style="list-style-type: none"> <li><b>ENSURE</b> SIAS and MSIS are RESET. REFER TO Appendix P, Restoration of Components Actuated By ESFAS.</li> <li><b>ENSURE ONLY ONE</b> Condensate Pump is RUNNING.</li> <li><b>DEPRESS BOTH</b> pushbuttons to RESET the Low Power Feedwater Valves.</li> <li><b>ENSURE BOTH</b> Low Power Feedwater Valve Controllers are in MANUAL with MINIMUM output.</li> <li><b>ENSURE ONLY ONE</b> Main Feedwater Pump is RUNNING, with the control switch in RECIRC.</li> <li><b>ENSURE</b> the MFIVs in EACH intact feedwater header are OPEN.</li> <li><b>FEED</b> the S/G by use of ANY of the following flowpaths: <ul style="list-style-type: none"> <li>Low Power Feedwater Valve</li> <li>100% Bypass Valve</li> <li>Main Feed Regulating and associated Block Valve</li> </ul> </li> </ol>	<p><b>SRO DIRECTS BOP</b> to continue efforts to restore AFW flow to either S/G</p> <p><b>NOTE: The SRO will DIRECT the BOP to perform 2-AOP-09.02 which is described in Event 7</b></p>
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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	5	Event #	8		
Event Description:		Initiate Once Through Cooling, 2A HPSI pump does not start					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	<b>Step 10 VERIFY</b> circulating water flow to the main condenser. <ul style="list-style-type: none"> <li><b>If Circulating Water flow to the Main Condenser has been lost, Then ENSURE MSIVs are CLOSED.</b></li> <li><b>STABILIZE</b> the Secondary Plant. REFER TO Appendix X, Secondary Plant Post Trip Actions, Section 2.</li> </ul>	<i><b>The SRO RECOGNIZES</b> Circulating Water flow is unavailable and <b>DIRECTS</b> the ATC to perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits and to close the MSIVS</i> <i><b>The ATC PERFORMS</b> Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits and closes the MSIVs</i>
	SRO	<b>Step 11 STABILIZE</b> the Secondary Plant per Appendix X, Secondary Plant Post Trip Actions, Section 2.	<i><b>The SRO DIRECTS STABILIZE</b> the Secondary Plant per Appendix X as time permits</i>
	SRO	<b>Step 12 CHECK</b> if S/G heat sink is ADEQUATE:: <ul style="list-style-type: none"> <li>At least ONE S/G has a level of at least 15% WR</li> <li>RCS TCOLD is stable or lowering</li> </ul>	<i><b>The SRO RECOGNIZES</b> feedwater has been lost to both S/Gs and <b>VERIFIES</b> S/G levels approach are &lt; 15% WR and lowering</i> <i><b>The SRO DIRECTS</b> Once Through Cooling be established</i>
	SRO	<b>ESTABLISH OTC</b> <b>A.</b> IF the main condenser is available, <b>THEN ENSURE</b> all available steam bypass valves are OPEN.	<i><b>The SRO RECOGNIZES</b> the main condenser is unavailable due to the loss of offsite power</i>
	SRO	<b>ESTABLISH OTC</b> <b>B.</b> ENSURE all available atmospheric dump valves are OPEN.	<i><b>The SRO DIRECTS</b> all available atmospheric dump valves are OPEN</i> <i><b>ATC/BOP, OPENS</b> all available atmospheric dump valves</i>
	SRO	<b>ESTABLISH OTC</b> <b>C.</b> ENSURE SIAS and CIAS is ACTUATED.	<i><b>The SRO DIRECTS</b> SIAS and CIAS is ACTUATION</i> <i><b>ATC/BOP, ACTUATES</b> SIAS and CIAS</i>
	SRO	<b>ESTABLISH OTC</b> <b>D. ENSURE</b> HPSI pumps are OPERATING.	<i><b>ATC/BOP RECOGNIZES</b> 2A HPSI Pump did not <b>START, COMMUNICATES</b> failure to the SRO and <b>RECCOMENDS</b> manual start of the 2A HPSI Pp</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-19-1	Scenario #	5	Event #	8	
Event Description:		Initiate Once Through Cooling, 2A HPSI pump does not start				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO		<i>The SRO DIRECTS the ATC/BOP to manually start the 2A HPSI Pump</i>
	SRO	<b>ESTABLISH OTC</b> <b>E. ENSURE</b> all cold leg injection valves are OPEN.	<i>The SRO DIRECTS verification of all cold leg injection valves are OPEN</i> <i>ATC/BOP VERIFYS all cold leg injection valves are OPEN</i>
	SRO	<b>ESTABLISH OTC</b> <b>F. ENSURE</b> all available charging pumps are OPERATING.	<i>The SRO DIRECTS verification of all available charging</i> <i>ATC/BOP VERIFY all available charging</i>
	SRO	<b>ESTABLISH OTC</b> <b>G. ENSURE</b> both PORV block valves are OPEN.	<i>The SRO DIRECTS verification of both PORV block valves are OPEN</i> <i>ATC/BOP VERIFYS both PORV block valves are OPEN</i>
	SRO	<b>ESTABLISH OTC</b> <b>H. WHEN</b> HPSI pumps are OPERATING, THEN OPEN both PORVs as follows:	<i>The SRO DIRECTS OPEN both PORVs</i> <i>ATC/BOP OPEN both PORVs as follows:</i> <i>(1) ENSURE PORV control switches are in OFF.</i> <i>(2) PULL at least two RPS Hi Pzr Press bistables.</i> <i>(3) VERIFY both PORVs are OPEN.</i> <i>(4) IF one PORV is OPEN, THEN CONTINUE steps to initiate OTC.</i>
<b>This Scenario can be terminated when Once Through Cooling has been established</b>			

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	5	Event #	
Event Description:		<b>APPENDICES</b>			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

<b>2-EOP-99 APP "A"</b>		<b>The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"</b>	
	BOP	<b>1. If a LOOP has occurred, Then PERFORM BOTH of the following:</b> <b>A. ENSURE 2AB 480V Load Center is aligned to an energized bus.</b> <b>B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.</b>	<b>2AB Bus energized when 2A EDG output breaker is closed. Determines no additional action required</b>
<b>NOTE</b>			
<input type="checkbox"/> HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open <input type="checkbox"/> When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset			
	BOP	<b>2. If an INADVERTENT SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following:</b> <input type="checkbox"/> RESTORE flow to the A" CCW Header by placing the control switches to CLOSE and then to OVERRIDE: <b>HCV-14-8A</b> <b>HCV-14-9</b> <b>OR</b> <input type="checkbox"/> RESTORE flow to the B" CCW Header by placing the control switches to CLOSE and then to OVERRIDE: <b>HCV-14-8B</b> <b>HCV-14-10</b>	<b>Determines no action required, no inadvertent SIAS</b>
<b>CAUTION</b>			
Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.			

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	5	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<p><b>3. If a VALID SIAS has closed the 'N' Header valves, Then PERFORM the following:</b></p> <p><b>A. VERIFY both safety related CCW headers are operational.</b></p> <p><b>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</b></p> <p><b>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing either of the following:</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;"><b>HCV-14-8A, HCV-14-9</b></p> <p style="padding-left: 20px;"><b>OR</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;"><b>HCV-14-8B, HCV-14-10</b></p>	<p><b>BOP restores "N" header flow</b></p>
	BOP	<p><b>4. If the 'N' Header has been restored, Then OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves by performing the following:</b></p> <p><b>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-L-19-1-7 and FCV-L-19-1-9 by PLACING the control switch to CLOSE / OVERRIDE.</b></p> <p><b>B. OPEN FCV-L-19-1-7 and FCV-L-19-1-9, SGBD Sample Valves.</b></p>	<p><b>BOP restores SGBD sample flow.</b></p>
	BOP	<p><b>5. If the 'N' Header is in service, Then DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.</b></p>	<p><b>BOP directs chemistry to perform required samples</b></p>

		<b>L-19-1 NRC EXAM SCENARIO 5 REV. 0</b>				<b>SEG</b> Page 45 of 51	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	5	Event #			
Event Description:		<b>APPENDICES</b>					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	BOP	<b>6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.</b>	BOP determines step is N/A
<b>NOTE</b> The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			
	BOP	<b>7. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.</b>	BOP informs US to declare CCW header inoperable
	BOP	<b>8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS,</b> <ul style="list-style-type: none"> <li>Seismic event</li> <li>'N' Header is found NOT intact</li> <li>The operable Safety Related CCW header becomes inoperable</li> </ul> <b>Then ISOLATE the 'N' header.</b>	BOP monitors for these conditions, determines N/A at this time
<b>2-EOP-99 APP "J"</b>		<b>The following actions are for Restoring CCW to the RCPs Using 2-EOP-99, APPENDIX "J".</b>	
	BOP	<b>1. If a LOOP has occurred, Then PERFORM BOTH of the following:</b> <input type="checkbox"/> A. ENSURE 2AB 480V Load Center is aligned to an energized bus. <input type="checkbox"/> B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	BOP determines LOOP has not occurred, the was 2AB bus energized with the 2A EDG breaker closure
	BOP	<b>2. ENSURE Instrument Air to Containment is available by PLACING HCV-18-1 to CLOSE / OVERRIDE and then to OPEN.</b>	BOP opens HCV-18-1



Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-19-1	Scenario #	5	Event #	
Event Description:		<b>APPENDICES</b>			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

**NOTE**

- ☐ HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open.
- ☐ When SIAS is present, placing the control switches in CLOSE and then OVERRIDE will open the CCW 'N' header valves, until SIAS is reset.

BOP	<p><b>3. If an INADVERTENT SIAS has occurred, Then RESTORE flow from Either 'A' or 'B' CCW Header to the 'N' Header by placing the control switches for the desired train to CLOSE and then to OVERRIDE:</b></p> <p>HCV-14-8A HCV-14-9 OR HCV-14-8B HCV-14-10</p>	BOP determines no inadvertent SIAS occurred
-----	---	---

**CAUTION**

Under SIAS conditions, the CCW 'N' header shall only be aligned to ONE essential header. This will maintain train separation while safeguards signals are still present.

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	5	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<p><b>4. If a VALID SIAS has closed the 'N' Header valves, Then PERFORM the following:</b></p> <p><b>A. VERIFY both safety related CCW headers are operational.</b></p> <p><b>B. VERIFY 'N'-Header is intact (NO seismic event has occurred).</b></p> <p><b>C. ALIGN the 'N' Header to one Safety Related CCW Header by performing either of the following:</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;">HCV-14-8A, HCV-14-9</p> <p style="padding-left: 20px;"><b>OR</b></p> <p style="padding-left: 20px;"><b>RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE:</b></p> <p style="padding-left: 20px;">HCV-14-8B, HCV-14-10</p>	BOP realigns the "N" header restoring CCW flow
	BOP	<p><b>5. OPEN ALL of the following CCW to / from the RCP valves:</b></p> <p><input type="checkbox"/>HCV-14-1, CCW To RC PUMP</p> <p><input type="checkbox"/>HCV-14-2, CCW From RC PUMP</p> <p><input type="checkbox"/>HCV-14-7, CCW To RC PUMP</p> <p><input type="checkbox"/>HCV-14-6, CCW From RC PUMP</p>	BOP opens valves restoring CCW flow to RCPs
	BOP	<p><b>6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.</b></p>	BOP opens V2507

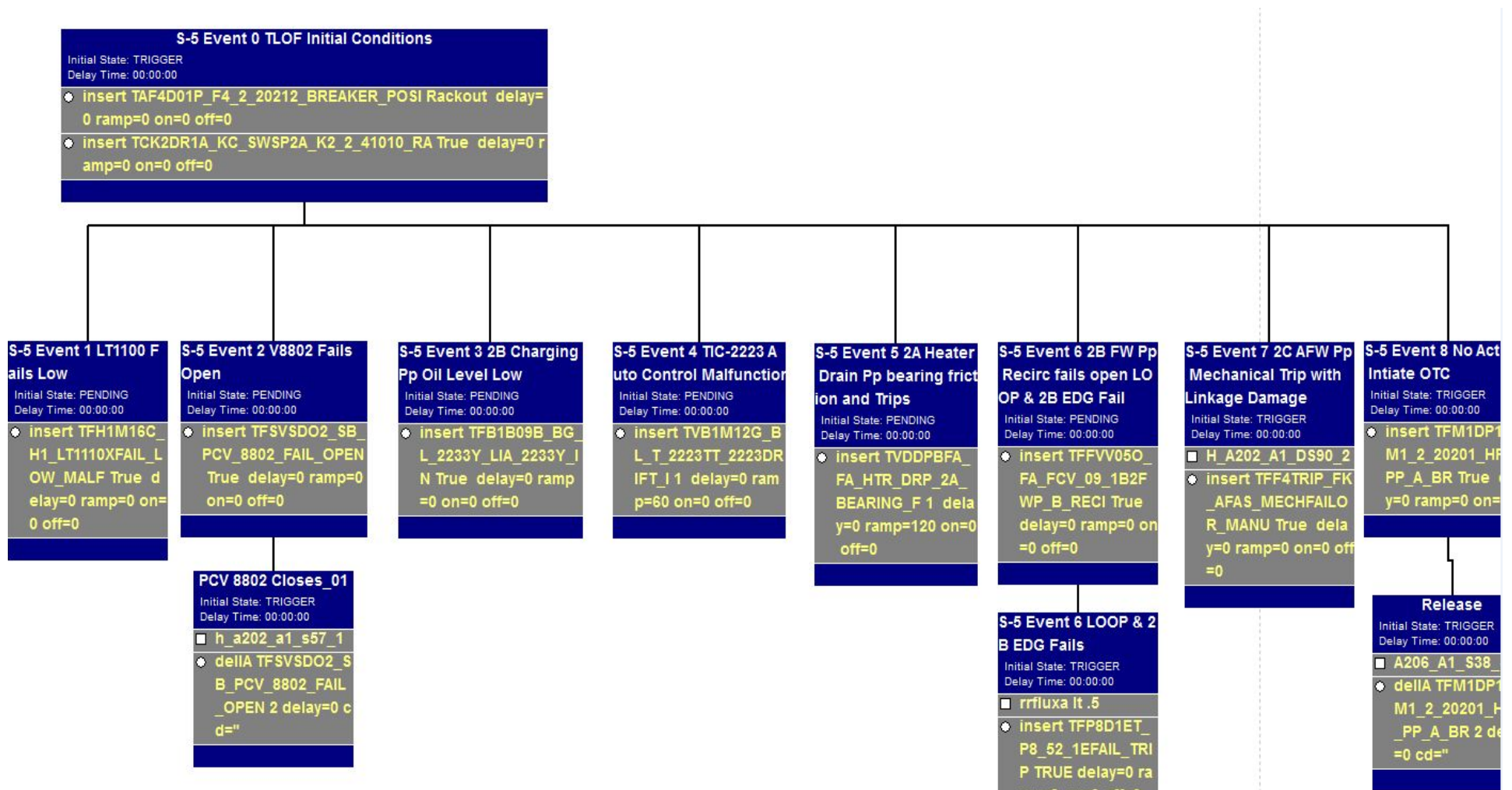
**CAUTION**

RCP Seal Cooler isolation valves automatically close on high Seal Cooler outlet temperature of 200°F. Maintaining the control switch in the OPEN position will override this function. CCW radiation monitors should be closely monitored for indication of RCS to CCW leakage should conditions warrant the valve(s) to be maintained in the open position. Consideration should be given to returning the control switch(es) to the AUTO position once the valves have been opened.

<b>Appendix D</b>		<b>Operator Action</b>			<b>Form ES-D-2</b>	
Op Test No.:	L-19-1	Scenario #	5	Event #		
Event Description:		<b>APPENDICES</b>				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	<b>7. ENSURE ALL RCP Seal Cooler Isolation valves are OPEN:</b> HCV-14-11-A1,CCW From 2A1 RCP Seal Cooler HCV-14-11-A2,CCW From 2A2 RCP Seal Cooler HCV-14-11-B1,CCW From 2B1 RCP Seal Cooler HCV-14-11-B2,CCW From 2B2 RCP Seal Cooler	BOP verifies valves are open
<b>NOTE</b> Reactor Coolant Pumps must be secured if CCW flow is not restored within 10 minutes.			
	BOP	<b>8. VERIFY CCW flow to running RCPs by any of the following:</b> <input type="checkbox"/> DCS RCP Overview Screen <input type="checkbox"/> FIS-14-15A/B/C/D, CCW From RCP Hx Flow <input type="checkbox"/> L6, RCP CCW Flow Low Trip, Annunciator clear.	BOP verifies CCW flow to RCPs
<b>NOTE</b> The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			
	BOP	<b>9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.</b>	BOP informs US to declare CCW header is inoperable
	BOP	<b>10. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS,</b> <input type="checkbox"/> Seismic event <input type="checkbox"/> N' Header is found NOT intact <input type="checkbox"/> The operable Safety Related CCW header becomes inoperable <b>Then ISOLATE the 'N' header.</b>	BOP monitors for these conditions, not present at this time

**SIMULATOR LESSON LAYOUT**



## QUANTITATIVE ATTRIBUTES

### **Malfunctions:**

*Before EOP Entry:*

1. LT1110X fails low
2. V8802 fails open
3. 2B Charging Pp oil leak
4. TIC-2223 fails low
5. 2A Heater drain pp trip
6. 2B Main Feedwater Pp recirc valve fails open

*After EOP Entry:*

1. LOOP 2B EDG start failure
2. 2B EDG start failure
3. 2C AFW Pp mech trips
4. 2A HPSI pump fails to auto start

### **Abnormal Events:**

1. LT1110X fails low
2. V8802 fails open
3. 2B Charging Pp oil leak
4. TIC-2223 fails low
5. 2A Heater drain pp trip

### **Major Transients:**

1. 2B Main Feedwater Pp recirc valve fails open
2. Initiate Once Through Cooling, 2A HPSI pump does not start

### **Critical Tasks:**

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain Reactor Power in the bounds of the RPS Variable High Power trip set points. - Manually isolate leaking steam bypass valve prior to reaching an automatic reactor trip.
2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY - Safeguards Equipment that is essential to the maintenance of Safety Functions has NOT auto-actuated when it should have. 'A' HPSI pump does not start on SIAS and must be manually started to meet Figure 2 of 2- EOP-99 to prevent unnecessary escalation of EAL. Initiate Once Through Cooling: When both S/G level are <15% WR and prior to causing Pzr PORVs to open due to loss of heat sink.

## OPERATIONS SHIFT TURNOVER REPORT

DAYS

Today

**UNIT 2 CONTROL ROOM**

**Desk RCO:** \_\_\_\_\_ **Board RCO:** \_\_\_\_\_

### **Protected**

**Train:** A **Online Risk:** GREEN

**Unit 2 Identified RCS Leakage:** .02 gpm **Unit 2 Unidentified RCS Leakage:** .06 gpm

### **Unit 2 Scheduled Activities per the OSP:**

No scheduled surveillances

### **Unit 2 Unscheduled Surveillances:**

No unscheduled surveillances

### **Upcoming ECOs to Hang or Release:**

None

### **Tech Spec Action Statement:**

1. 3.7.1.2 for 2A AFW Pp

### **Operator Work Around:**

None

### **Locked in Annunciators:**

1. G-44 2A AFW PUMP BKR FAILURE/ CS STOP/ SS ISOL

### **Current Status:**

1. 100% power, MOC, no scheduled surveillances, maintain 100% power
2. 2A Screen Wash Pump OOS.
3. Small amounts of sea grass have been observed in the intake, 2B Screen wash pump is running 2-NOP-21.15, INTAKE INTRUSION MONITORING AND MITIGATION Att. 3 has been performed and the Intake Risk Level is Green.
4. 2A AFW Pp OOS, Expected back this shift

### **Longstanding Problems:**

None

### **Reactivity Turnover:**

Adding 20 gallons of Primary Water every 4 hours. 60 total gallons added last shift. Expect to add another 60 gallons this shift.



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 14

**JPM TITLE:** Emergency Boration Using Alternate Path

**JPM NUMBER:** L-19-1 NRC JPM S-1

**REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07002650 / PERFORM SPTAs - EMERGENCY BORATION - UNIT 2

**K/A NUMBERS / K/A VALUES: (RO SRO)** 004 A2.14 / Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Emergency boration (3.8/3.9)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐

Simulator: ☒ Other: ☐

Lab: ☐

Time for Completion: 10 Minutes Time Critical: No

Alternate Path [NRC]: YES

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date

<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date

<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date

<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date

<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE



<b>UPDATE LOG:</b> Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.					
#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE

### SIMULATOR SET-UP: *(Only required for simulator JPMs)*

#### SIMULATOR SETUP INSTRUCTIONS:

1. Ensure L-19-1 NRC JPM S-1 IC-205 files and LSN are transferred to the simulator drive.
2. **RESTORE** IC-205, S-1 NRC SETUP
3. **PLACE** the Simulator in RUN.
4. **SELECT** and **OPEN** File: L-19-1 NRC JPM S-1 Isn
5. **EXECUTE** Lesson L-19-1 NRC JPM S-1.
6. **FREEZE** the Simulator
7. Ensure L-19-1 NRC JPM S-1 IC files and LSN are deleted from the simulator drive when the JPM is no longer being administered.

SIMULATOR MALFUNCTIONS: 2A EDG will TRIP when either 2A or 2B BAM Pump switches taken to RUN.

#### SIMULATOR OVERRIDES:

#### SIMULATOR REMOTE FUNCTIONS:

- |                            |  |
|----------------------------|--|
| <b>Required Materials:</b> | <ul style="list-style-type: none"> <li>▪ 2-EOP-01, Standard Post Trip Actions, Section 4.0, Operator Actions</li> <li>▪ 2-AOP-02.02, Emergency Boration Hard Card</li> </ul>   |
| <b>General References:</b> | <ul style="list-style-type: none"> <li>▪ 2-EOP-01, Standard Post Trip Actions, Section 4.0, Operator Actions</li> <li>▪ 2-AOP-02.02, Emergency Boration</li> </ul>   |
| <b>Task Standards:</b>     | <p>The applicant will perform the immediate Operator actions of 2-EOP-01 Standard Post Trip Actions, followed by responding to indications of 3 CEAs not fully inserted by Emergency Borating using an alternate path due to the loss of the “A” train power that feeds the 2A and 2B BAM Pumps.</p> |

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 was performing a up power from 95%
- A LOOP/reactor trip has just occurred

**INITIATING CUES:**

- You are the Board RCO
- The US directs you to perform the Board Operator immediate actions for 2-EOP-01, Standard Post Trip Actions

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.


**JPM PERFORMANCE INFORMATION**
**Start Time:** \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

2-EOP-01, SPTAs, Section 4.0, Operator Actions	
<b>Performance Step: 1</b> <b>Critical : NO</b>	<b>1. VERIFY</b> Reactor Trip: • Reactor power <b>LOWERING</b>
<b>Standard:</b>	Examinee will <b>VERIFY</b> reactor power is <b>LOWERING</b> using redundant indications
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE:</b> During this scenario, an instructor should play the part of the Desk RCO and keep the annunciators acknowledged to allow the candidate to focus on the task at hand.
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical : NO</b>	<b>1.VERIFY</b> Reactor Trip: • Startup Rate is <b>NEGATIVE</b>
<b>Standard:</b>	Examinee will <b>VERIFY</b> Startup Rate is <b>NEGATIVE</b> using redundant indications
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>S-1; Emergency Boration Using Alternate Path</b>	<b>JPM</b> Page 7 of 14
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<b>Performance Step: 3</b> <b>Critical: YES</b>	<b>1.VERIFY</b> Reactor Trip: • ALL CEAs are fully <b>inserted</b>
<b>Standard:</b>	Examinee will <b>DETERMINE</b> that all CEAs are NOT fully inserted using Core Mimic, DCS and CEDS Control Panel and enter the contingency action
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE: CEAs 13, 37 and 45 are FULLY WITHDRAWN</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 4</b> <b>Critical : NO</b>	<b>1.1 CONTINGENCY PERFORM</b> the following B. IF any <b>CEA is NOT fully INSERTED, THEN INITIATE</b> emergency boration to achieve adequate SDM
<b>Standard:</b>	Examinee will <b>ENTER</b> 2-AOP-02.02, Emergency Boration using the Hard Card
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>2-AOP-02.02, Emergency Boration, Section 4.2, Subsequent Operator Actions</b>	
<p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>This Procedure may contain steps that could adversely affect reactivity. Proper consideration and appropriate briefings shall occur prior to performance of steps that could challenge reactivity.</li> <li>The following information is posted as an Operator Aid at RTGB-205 Panel "M". Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, an assignment to Ops Support Labeling Specialist to update and install revised Operator Aids must be initiated to incorporate these changes on a new Operator Aid placard.</li> </ul>	
<b>Performance Step: 5</b> <b>Critical : NO</b>	<b>1.VERIFY</b> at least one charging pump is running with control switch in <b>START</b>
<b>Standard:</b>	Examinee will <b>OBSERVE</b> at least one Charging Pump is running
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

	<b>S-1; Emergency Boration Using Alternate Path</b>	<b>JPM</b> Page 8 of 14
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**NOTE**

The MAKEUP MODE SELECTOR switch is required to be in MANUAL prior to switching the Boric Acid Pump control switches to preclude pump breaker trips.

<b>Performance Step: 6</b> <b>Critical : NO</b>	<b>2. VERIFY the MAKEUP MODE SELECTOR switch is in MANUAL</b>
<b>Standard:</b>	Examinee will <b>OBSERVE</b> the <b>MAKEUP MODE SELECTOR</b> switch in <b>MANUAL</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 7</b> <b>Critical : NO</b>	<b>3. VERIFY V2525, BORON LOAD CONTROL VALVE is CLOSED</b>
<b>Standard:</b>	Examinee will recognize that V2525 is OPEN and take action to CLOSE V2525 and VERIFY it is CLOSED by observing <b>GREEN Light ON, RED Light OFF</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

	<p align="center"><b><u>NOTE</u></b></p> <p>Both Boric Acid Pumps are required to be placed in service when the combined Boric Acid Makeup Tank volumes are being credited as a borated water source. Otherwise, the pump associated with the Boric Acid Makeup Tank being credited as the borated water source should be started.</p>
<b>Performance Step: 8</b> <b>Critical : NO</b> <b>FAULTED STEP</b>	<p>4. <b>PERFORM</b> the following to Emergency Borate using <b>V2514</b>,  <b>EMERGENCY BORATE:</b></p> <p><b>A. START</b> at least one of the following:</p> <ul style="list-style-type: none"> <li>• <b>2A (Boric Acid Pump)</b></li> <li>• <b>2B (Boric Acid Pump)</b></li> </ul>
<b>Standard:</b>	Examinee will <b>START</b> either the <b>2A or 2B BAM</b> Pump by positioning their respective switch to <b>RUN</b>
<b>Evaluator Cue:</b>	<p><b>Another operator is responding to the trip of the 2A EDG</b></p> <p><b>EVALUATOR NOTE:</b> Upon the Operator taking either BAM Pump switches to <b>RUN</b> the <b>2A EDG will TRIP</b> causing the unavailability of either BAM pump due to them being "A" train powered</p>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 9</b> <b>Critical : NO</b>	<p>4.1 <b>CONTINGENCY PERFORM</b> the following <b>GO TO</b> Section 4.2, Step 5</p>
<b>Standard:</b>	Examinee will <b>PROCEED to</b> Section 4.2, Step 5
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<p align="center"><b><u>NOTE</u></b></p> <p>Both Boric Acid Gravity Feed valves are required to be placed in service when the combined Boric Acid Makeup Tank volumes are being credited as a borated water source. Otherwise, the Gravity Feed valve associated with the Boric Acid Makeup Tank being credited as the borated water source should be opened.</p>
<b>Performance Step: 10</b> <b>Critical: NO</b>	<p>5. <b>IF</b> unable to Emergency Borate using <b>V2514</b>, <b>THEN PERFORM</b> the following:</p> <p><b>A. STOP</b> the running <b>BORIC ACID PUMPS</b></p>
<b>Standard:</b>	Examinee will <b>POSITION</b> the 2A (2B) Boric Acid Pump handswitches to <b>STOP</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 11</b> <b>Critical : YES</b>	<p>5. <b>IF</b> unable to Emergency Borate using <b>V2514</b>, <b>THEN PERFORM</b> the following:</p> <p><b>B. OPEN</b> at least one of the following:  <b>V2508 VALVE, (BA Gravity Feed)</b>  <b>V2509 VALVE. (BA Gravity Feed)</b></p>
<b>Standard:</b>	Examinee will <b>POSITION V2508 AND/OR V2509</b> control switch to <b>OPEN</b>
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE:</b> Examinee may choose to open both gravity feed valves. (ONLY one is critical)
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 12</b> <b>Critical : YES</b>	<p>5. <b>IF</b> unable to Emergency Borate using <b>V2514</b>, <b>THEN PERFORM</b> the following:</p> <p><b>C. CLOSE</b> <b>V2501, VCT OUTLET VALVE</b></p>
<b>Standard:</b>	Examinee will <b>POSITION V2501</b> control switch to <b>CLOSED</b> and <b>VERIFY V2501</b> is closed
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



<b>Performance Step: 13</b> <b>Critical : NO</b>	6. <b>IF</b> the Boric Acid Makeup Tanks are unavailable OR both Gravity Feed Valves failed to Open THEN <b>PERFORM</b> the following:
<b>Standard:</b>	Examinee will <b>Recognize</b> this step is not required and proceed to the next step
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 14</b> <b>Critical : NO</b>	7. <b>ENSURE</b> Boration flow rate is greater than 40 gpm.
<b>Standard:</b>	Examinee will read Charging flow and identify that flow is greater than 40 GPM.
<b>Evaluator Cue:</b>	<b>NONE</b>  <b>EVALUATOR NOTE: Charging Flow is read on DCS screen</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 15</b> <b>Critical : NO</b>	Examinee will <b>NOTIFY</b> the US that Reactivity Control has been verified and is being met with contingencies (1) Emergency Boration is in progress due to three rods stuck out and (2) emergency boration is via the gravity feed valve(s) due to no power available to the BAM pumps.
<b>Standard:</b>	
<b>Evaluator Cue:</b>	<b>US Acknowledges</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:** The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**STOP TIME** \_\_\_\_\_



## S-1; Emergency Boration Using Alternate Path

**JPM**  
Page 12 of 14

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT: ☐

UNSAT: ☐

Remediation required:

YES

☐

NO

☐

**COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).**

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 was performing a up power from 95%
- A LOOP/reactor trip has just occurred

**INITIATING CUES:**

- You are the Board RCO
- The US directs you to perform the Board Operator immediate actions for 2-EOP-01, Standard Post Trip Actions

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 20

**JPM TITLE:** RESPOND/BYPASS/TRIP A FAILED ESFAS CHANNEL

**JPM NUMBER:** C-2 **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07069060/ Place an ESFAS Channel in trip (Unit 1)

**K/A NUMBERS / K/A VALUES: (RO SRO)** 013 K1.09 Knowledge of the physical connections and/or cause effect relationships between the ESFAS and the following systems: CIRS (3.3/3.7)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☒ Perform: ☐

**EVALUATION LOCATION:** In-Plant: ☒ Control Room: ☒

Simulator: ☐ Other: ☐

Lab: ☐

Time for Completion: 15 Minutes Time Critical: No

Alternate Path [NRC]: YES

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date

**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**
**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE



**C-2 RESPOND/BYPASS/TRIP A FAILED ESFAS CHANNEL**

**JPM**  
Page 3 of 20

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE

- Required Materials:**
- 1-AOP-99.01 LOSS of TECH SPEC INSTRUMENTATION Rev 12 page 33 of 84 and Attachment 3, pages 65-71 of 84
- General References:**
- Unit-1 Tech Specs
  - 1-AOP-99.01 LOSS of TECH SPEC INSTRUMENTATION
- Task Standards:**
- The applicant will take actions to bypass a failed ESFAS channel, recognize the bypass switch is failed, and then place the ESFAS channel to trip.



I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit-1 is 100% power
- Refueling Water Tank Level instrument LIS-07-2B is failed HIGH

**INITIATING CUES:**

- The Unit Supervisor has directed you to perform section 4.2.16 step 2 of 1-AOP-99.01 to meet the requirements of Tech Spec 3.3.2

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**
**Start Time:** \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

**Evaluator NOTE:** Provide 1-AOP-99.01, page 33 of 84 first then Att. 3 after the switch fails.

1-AOP-99.01 Section 4.2.16	
<b><u>NOTE</u></b>	
<input type="checkbox"/> Bypassing ESFAS BTUs will require Key 63 for ESFAS cabinet door. <input type="checkbox"/> The ESFAS bypass keyswitch and associated bistable trip unit are <b>NOT</b> in a true vertical alignment from each other in some cases. <input type="checkbox"/> Per ADM-11.16, Transient Procedure Use and Adherence, an RWT level channel in the TRIPPED condition shall be limited to 48 hours minus the time the channel has been in bypass.	
<b>Performance Step: 1</b> <b>Critical NO</b>	<b>1. CIRCLE</b> affected instrument: <input type="checkbox"/> LIS-07-2A <input type="checkbox"/> LIS-07-2B <input type="checkbox"/> LIS-07-2C <input type="checkbox"/> LIS-07-2D
<b>Standard:</b>	Examinee will <b>CIRCLE</b> affected instrument: LIS-07-2B
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical YES</b> <b>Faulted Step</b>	<b>2. PERFORM</b> one of the following for the affected BTU listed: RAS (Key 128) <b>A. BYPASS</b> affected BTU using keyswitch.
<b>Standard:</b>	Examinee will simulate <b>UNLOCKING</b> and opening the <b>ESFAS</b> cabinet door for the B Channel, <b>LOCATE</b> the BTU for LIS-07-2B, simulate <b>INSERTING</b> key 128 and simulate rotating the key to the <b>BYPASS</b> position
<b>Evaluator Cue:</b>	The keyswitch for LIS-07-2B will <b>NOT</b> rotate to the bypass position
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical NO</b>	<b>PLACE</b> system in a safe configuration and <b>NOTIFY</b> the US that the keyswitch for LIS-07-2B will <b>NOT</b> rotate to the bypass position
<b>Standard:</b>	Examinee will <b>REMOVE</b> the bypass key and <b>NOTIFY</b> the US that the keyswitch for LIS-07-2B will <b>NOT</b> rotate to the bypass position
<b>Evaluator Cue:</b>	<b>The Unit Supervisor Acknowledges the report, and directs applicant to perform required action to comply with Tech Specifications.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>1-AOP-99.01 Attachment 3, Tripping and Restoring Protection Bistables, Section 1.2</b>	
<b><u>NOTE</u></b>	
<input type="checkbox"/> Most ESFAS BTUs have two isolation modules, one for each train. To place one of these affected BTUs in TRIP, <u>both</u> upper and lower isolation modules must be pulled for the affected instrument channel. <input type="checkbox"/> A S/G pressure BTU is train-specific and only goes to the train associated with its respective S/G. This BTU has <u>only one isolation card</u> that must be pulled. For a failed S/G pressure channel, one of the two steps to loosen an isolation module may be considered N/A.	
<b><u>CAUTION</u></b>	
Each ESFAS initiation channel has one SG Pressure MSIS isolation module and one SG Pressure BLOCK isolation module. Ensure all human performance tools are used when pulling an isolation module to trip the affected BTU for a SG Pressure MSIS input failure.	

<b>Performance Step: 4</b> <b>Critical YES</b>	<b>2. LOOSEN</b> hold-down screws on <u>upper</u> isolation module.
<b>Standard:</b>	Examinee will simulate <b>LOOSENING</b> hold-down screws on upper isolation module
<b>Evaluator Cue:</b>	<b>Hold-down screws on upper isolation module are loose</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical YES</b>	<b>3. LOOSEN</b> hold-down screws on <u>lower</u> isolation module.
<b>Standard:</b>	Examinee will simulate <b>LOOSENING</b> hold-down screws on lower isolation module
<b>Evaluator Cue:</b>	<b>Hold-down screws on lower isolation module are loose</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical YES</b>	<b>4. Slowly PULL</b> each module out until it begins to slide freely.
<b>Standard:</b>	Examinee will simulate Slowly <b>PULLING</b> each module out until it begins to slide freely.
<b>Evaluator Cue:</b>	<b>BOTH upper and lower modules are out and slide freely.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 7</b> <b>Critical NO</b>	<b>5. VERIFY</b> any annunciators associated with this instrument being in a tripped condition are IN ALARM.
<b>Standard:</b>	Examinee will <b>VERIFY</b> the following alarms are in: R-10, ENGINEERED SAFEGUARDS ATI FAULT R-13, RWT LEVEL RAS CHANNEL TRIP S-19, RWT LEVEL HIGH-HIGH
<b>Evaluator Cue:</b>	<b>Alarms R-10, R-13, and S-19 are locked in.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical N</b>	<b>NOTIFY</b> the US that B CHANNEL RAS ESFAS BTU has been placed in the tripped configuration
<b>Standard:</b>	Examinee will <b>NOTIFY</b> the US that B CHANNEL RAS ESFAS BTU has been placed in the tripped configuration
<b>Evaluator Cue:</b>	<b>US acknowledges the communication</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

**Terminating Cues:**      **The JPM is complete.**

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**C-2 RESPOND/BYPASS/TRIP A FAILED ESFAS CHANNEL**

**JPM**  
Page 10 of 20

**Examinee:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

**Date:** \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**REMEDIATION REQUIRED:**

**YES:** ☐

**NO:** ☐

**COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).


**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET****INITIAL CONDITIONS:**

- Unit-1 is 100% power
- Refueling Water Tank Level instrument LIS-07-2B is failed HIGH

**INITIATING CUES:**

- The Unit Supervisor has directed you to perform section 4.2.16 step 2 of 1-AOP-99.01 to meet the requirements of Tech Spec 3.3.2

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



REVISION NO.: 12	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION  ST. LUCIE UNIT 1	PAGE: <div style="font-size: 48pt; opacity: 0.5; text-align: center;">1</div> 33 of 84
PROCEDURE NO.: 1-AOP-99.01		

**INSTRUCTIONS**
**CONTINGENCY ACTIONS**

**4.2.16 RWT Level Channel Failure**

**NOTE**

- Bypassing ESFAS BTUs will require Key 63 for ESFAS cabinet door.
- The ESFAS bypass keyswitch and associated bistable trip unit are **NOT** in a true vertical alignment from each other in some cases.
- Per ADM-11.16, Transient Procedure Use and Adherence, an RWT level channel in the TRIPPED condition shall be limited to 48 hours minus the time the channel has been in bypass.

☐ **1. CIRCLE** affected instrument:
 

- LIS-07-2A
- LIS-07-2B
- LIS-07-2C
- LIS-07-2D

☐ **2. PERFORM** one of the following for the affected BTU listed:
 

- RAS (Key 128)

**A. BYPASS** affected BTU using keyswitch.

**B. TRIP** affected BTU per Attachment 3, Tripping and Restoring Protection Bistables.

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**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 1 of 7)

**1.0 TRIPPING PROTECTION BISTABLES**

**NOTE**

This attachment covers (a) tripping bistables and (b) restoring from tripped or bypassed bistables. Bypassing bistables is done via their bypass keyswitches.

**1.1 Tripping an RPS Bistable**

**NOTE**

- The HI RATE bistable trip unit (BTU) may be placed in trip by (1) pulling the BTU or (2) reducing the trip setpoint. The setpoint reduction method may be used when it is desirable to maintain the >15% power bypass function. (Section 6.1.3, Management Directive 2)
- If BTU is pulled out, the intent is to pull BTU out far enough to disconnect it but **NOT** to remove it.

**Start of critical step(s).**

1. **VERIFY** that **NO** other RPS BTU is tripped that is associated with the same trip function as the instrument channel being tripped.

**End of Critical Step(s)**

2. IF BTU pull-and-disconnect method is to be used to trip any affected RPS BTU, THEN **PERFORM** the following:
  - A. **LOOSEN** the upper and lower BTU hold-down screws.
  - B. Slowly **PULL** BTU out until it begins to slide freely.
3. IF setpoint reduction method is to be used to trip an affected HI RATE BTU, THEN **CONTACT** I&C. (Section 6.1.3, Management Directive 2)
4. **VERIFY** any annunciators associated with this instrument being in a tripped condition are IN ALARM.

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**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 2 of 7)

**1.2 Tripping an ESFAS Bistable**

**Start of critical step(s).**

1. **VERIFY** that **NO** other ESFAS BTU is tripped that is associated with the same trip function as the instrument channel being tripped.

**End of Critical Step(s)**

**NOTE**

- Most ESFAS BTUs have two isolation modules, one for each train. To place one of these affected BTUs in TRIP, both upper and lower isolation modules must be pulled for the affected instrument channel.
- A S/G pressure BTU is train-specific and only goes to the train associated with its respective S/G. This BTU has only one isolation card that must be pulled. For a failed S/G pressure channel, one of the two steps to loosen an isolation module may be considered N/A.

**CAUTION**

Each ESFAS initiation channel has one SG Pressure MSIS isolation module and one SG Pressure BLOCK isolation module. Ensure all human performance tools are used when pulling an isolation module to trip the affected BTU for a SG Pressure MSIS input failure.

2. **LOOSEN** hold-down screws on upper isolation module.

3. **LOOSEN** hold-down screws on lower isolation module.

4. Slowly **PULL** each module out until it begins to slide freely.

5. **VERIFY** any annunciators associated with this instrument being in a tripped condition are IN ALARM.

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**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 3 of 7)

**1.3    Tripping an AFAS Bistable**

**Start of critical step(s).**

1.    **VERIFY** that **NO** other AFAS BTU is tripped that is associated with the same trip function as the instrument channel being tripped.

**End of Critical Step(s)**

2.    **REQUEST** I&C to place AFAS isolation module in tripped condition per 1-PMI-09.09, Placing AFAS Channel in Trip Condition/Restoring AFAS Channel From Trip Condition.

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**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 4 of 7)

**2.0 RESTORING PROTECTION BISTABLES**

**2.1 Restoring From Tripped RPS or ESFAS Bistable**

1. IF restoring an RPS or ESFAS bistable trip unit (BTU) that was placed in a TRIPPED condition, THEN **PERFORM** the following:

A. IF RPS BTU was pulled and is being restored, THEN **PERFORM** the following:

(1) Slowly **INSERT** the trip unit until it firmly engages the connecting pins.

(2) **TIGHTEN** upper and lower BTU hold-down screws.

**NOTE**

- For ESFAS BTUs, Key 63 will be required for the ESFAS cabinet door.
- The ESFAS bypass keyswitch and associated bistable trip unit are **NOT** in a true vertical alignment from each other in some cases.
- For S/G pressure channels, which have only one isolation card, Substeps (1) and (2) OR (3) and (4) may be considered to be N/A.

B. IF ESFAS upper and lower isolation modules were pulled and are being restored, THEN **PERFORM** the following:

(1) Slowly **INSERT** upper isolation module until it firmly engages the pins.

(2) **TIGHTEN** upper isolation module hold-down screws.

(3) Slowly **INSERT** lower isolation module until it firmly engages the pins.

(4) **TIGHTEN** lower isolation module hold-down screws.

C. **RESET** BTU and **VERIFY** the following:

- BTU pretrip and trip LEDs are OFF as applicable.
- Associated pretrip and trip annunciators are CLEAR.

D. **REQUEST** I&C to perform applicable functional test to verify BTU or isolation module OPERABILITY. (Section 6.1.3, Management Directive 3)

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PROCEDURE NO.: 1-AOP-99.01	ST. LUCIE UNIT 1	

**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 5 of 7)

**2.1 Restoring From Tripped RPS or ESFAS Bistable (continued)**

**NOTE**

The Containment Evacuation Alarm BYPASS / NORM switch is located at top of Radiation Alarm & Process Monitoring D Cabinet.

**2.** IF the Containment Evacuation Alarm was placed in BYPASS and is **NO** longer required, THEN **PLACE** the Containment Evacuation Alarm (Key 74), in NORM.

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PROCEDURE NO.: 1-AOP-99.01	ST. LUCIE UNIT 1	

**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 6 of 7)

**2.2    Restoring From Bypassed RPS or ESFAS Bistable**

**NOTE**

- Attachment 5, Channel Failure Impact Table, lists RPS, ESFAS, and other functions associated with each instrument channel and may be helpful in verifying no other associated channels are tripped prior to restoring the affected channel from its BYPASSED condition. This attachment also lists applicable Tech Specs for each instrument channel.
- For ESFAS BTUs, Key 63 will be required for the ESFAS cabinet door.
- The ESFAS bypass keyswitch and associated bistable trip unit are **NOT** in a true vertical alignment from each other in some cases.
- The ATI Fault light will have to be reset following restoration in order to clear Annunciator R-10. The reset must be pushed when the lights sequencing through are out and may require several attempts.

**CAUTION**

Failure to perform the next step properly at power could result in reactor trip and/or ESFAS actuations. For an inadvertent ESFAS actuation without reactor trip, it may be necessary to implement 1-AOP-69.01, Inadvertent ESFAS Actuation.

**1.    IF restoring an instrument channel that was placed in a BYPASSED condition, THEN **PERFORM** the following:**

**Start of critical step(s).**

- A.    On all other RPS or ESFAS BTUs associated with the same trip function as the instrument channel being restored, **VERIFY** all pretrips and trips are RESET/CLEAR.**
- B.    **REMOVE** affected channel from BYPASSED condition.**
- C.    **VERIFY** any annunciators associated with this instrument being in a bypassed condition are CLEAR.**

REVISION NO.: 12	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION	PAGE: 71 of 84
PROCEDURE NO.: 1-AOP-99.01	ST. LUCIE UNIT 1	

**ATTACHMENT 3**  
**Tripping and Restoring Protection Bistables**  
 (Page 7 of 7)

**2.2 Restoring From Bypassed RPS or ESFAS Bistable (continued)**

**1. (continued)**

**NOTE**

The Containment Evacuation Alarm BYPASS / NORM switch is located at top of Radiation Alarm & Process Monitoring D Cabinet.

**D.** IF the Containment Evacuation Alarm was placed in BYPASS and is **NO** longer required, THEN **PLACE** the Containment Evacuation Alarm (Key 74), in NORM.

**End of Critical Step(s)**

**2.3 Restoring From Tripped or Bypassed AFAS Bistable**

**NOTE**

AFAS Keyring 192 (five keys) will be required for this section.

- 1.** IF restoring an AFAS bistable that was placed in TRIPPED condition by I&C, THEN **REQUEST** I&C to restore AFAS isolation module to normal condition per 1-PMI-09.09, Placing AFAS Channel in Trip Condition/Restoring AFAS Channel From Trip Condition.
- 2.** IF restoring an AFAS bistable that was placed in BYPASSED condition, THEN **PRESS** and **RELEASE** BYPASS button.





### S-3; Verify RAS - Unit 2

**JPM**  
Page 1 of 15

**JPM TITLE:** Verify RAS UNIT 2

**JPM NUMBER:** L-19-1 NRC JPM S-3

**REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07200390 / ENSURE ECCS PUMPS SUCTION ARE ALIGNED TO THE CONTAINMENT SUMP  
07200450 / PERFORM ACTION ASSOCIATED WITH RAS

**K/A NUMBERS / K/A VALUES: (RO SRO)** 006 A3.03 (4.1 / 4.1)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐

Simulator: ☒ Other: ☐

Lab: ☐

Time for Completion: 10 Minutes Time Critical: No

Alternate Path [NRC]: YES

Alternate Path [INPO]: No

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date

**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**
**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

<b>REVIEW STATEMENTS</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TW R#	PREPARER	DATE
				SUPERVISOR	DATE

**SIMULATOR SET-UP:** *(Only required for simulator JPMs)*

**SIMULATOR SETUP INSTRUCTIONS:**

1. Ensure L-19-1 NRC JPM S-3 IC-205 files and LSN are transferred to the simulator drive.
2. **RESTORE** IC-205, S-3 NRC SETUP. **DO NOT UNFREEZE** the Simulator.
3. **SELECT** and OPEN File: L-19-1 NRC JPM S-3 Isn and **EXECUTE** the Lesson.
4. **UNFREEZE** the Simulator when the examiner directs to examinee to begin the task.
5. The annunciators will be reinstated. Acknowledge but do not reset non-JPM related alarms to prevent nuisance alarms.

**SIMULATOR OVERRIDES:**

None

**SIMULATOR REMOTE FUNCTIONS:**

None

**Required Materials:** 2-EOP-03, Loss of Coolant Accident

2-EOP-99, Table 4, Recirculation Actuation Signal

**General References:** 2-EOP-03, Loss of Coolant Accident

2-EOP-99, Table 4, Recirculation Actuation Signal

**Task Standards:** This JPM is complete when A / B RAS actuated, 2A LPSI Pp STOPPED, and the 2A AND A 2B LPSI Pp control switches in STOP position in accordance with 2-EOP-99, Table 4, Recirculation Actuation Signal.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 has experienced a Loss of Coolant Accident
- 2-EOP-03, Loss of Coolant Accident is in progress

**INITIATING CUES:**

- You are the Desk RCO.
- The US has directed you to Monitor for RAS Actuation per 2-EOP-03, Loss of Coolant Accident, Section 4.0, Operator Actions, Step 39, Step B, C and D

**NOTE: The Simulator will be placed in RUN once you are ready to begin the task.**

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>2-EOP-03, Loss of Coolant Accident (LOCA), Section 4.0, Step 39., CHECK if containment sump recirculation is required:</b>	
<b>Performance Step: 1</b> <b>Critical N</b>	<b>39. CHECK</b> if containment sump recirculation is required: <b>B. VERIFY</b> RWT level is less than 6 feet.
<b>Standard:</b>	Examinee <b>OBSERVES</b> that Refuel Water Tank levels are less than 6 feet
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	
<b>Performance Step: 2</b> <b>Critical Y</b>	<b>39. CHECK</b> if containment sump recirculation is required: <b>C. ENSURE</b> RAS has ACTUATED. <b>Step is critical to actuating ‘A’ Train RAS</b>
<b>Standard:</b>	Examinee <b>OBSERVES</b> “A” RAS Green light ON and Red light OFF and “B” RAS Green light OFF and Red light ON and <b>DETERMINES</b> that: <ul style="list-style-type: none"> <li>• ‘A’ RAS <b>DID NOT ACTUATE</b></li> <li>• ‘B’ RAS has <b>ACTUATED</b></li> </ul> Examinee <b>DEPRESSES</b> ‘A’ Train RAS pushbutton and <b>ROTATES</b> RAS actuation switch to the <b>RAS ON</b> position and observe Red Light ON Green Light OFF
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical N</b>	<b>39. CHECK</b> if containment sump recirculation is required: <b>D. ENSURE</b> RAS components aligned per Table 4, RAS Actuation.
<b>Standard:</b>	Examinee will <b>REFER</b> to 2-EOP-99, TABLE 4
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>2-EOP-99, APPENDICES/FIGURES/TABLES/DATA SHEETS, TABLE 4, RECIRCULATION ACTUATION SIGNAL</b>	
<b>Performance Step: 4</b> <b>Critical N</b>	<b>1. ENSURE</b> Suction from Containment Sump A/B Valves OPEN. <ul style="list-style-type: none"> <li>• MV-07-2A</li> <li>• MV-07-2B</li> </ul>
<b>Standard:</b>	Examinee <b>OBSERVES</b> MV-07-2A and MV-07-2B indicate Green lights OFF and Red lights ON and <b>DETERMINES</b> valves are OPEN
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical N</b>	<b>2. ENSURE</b> Suction from RWT A/B Valves CLOSED. <ul style="list-style-type: none"> <li>• MV-07-1A</li> <li>• MV-07-1B</li> </ul>
<b>Standard:</b>	Examinee <b>OBSERVES</b> MV-07-1A and MV-07-1B indicate Green lights ON and Red lights OFF and <b>DETERMINES</b> valves are CLOSED
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical N</b>	<b>3. ENSURE LPSI Pumps STOPPED.</b> <ul style="list-style-type: none"> <li>• 2A LPSI Pump</li> <li>• 2B LPSI Pump</li> </ul>
<b>Standard:</b>	<p>Examinee <b>OBSERVES:</b></p> <p>LPSI Pump 2A indicates: Green light OFF, Red light ON, AMMETER = 40 amps</p> <p>LPSI Pump 2B indicates: Green light ON, Red light OFF, AMMETER = 0 amps</p> <p>Examinee <b>DETERMINES</b></p> <ul style="list-style-type: none"> <li>• LPSI Pump 2A did NOT STOP</li> <li>• LPSI Pump 2B has STOPPED</li> </ul>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	



<b>Performance Step: 7</b> <b>Critical Y</b>	<b>3. ENSURE LPSI Pumps STOPPED.</b> <ul style="list-style-type: none"> <li>• 2A LPSI Pump</li> </ul> <b>Step is critical because without STOPPING LPSI pump 2A the task cannot be completed.</b>
<b>Standard:</b>	Examinee <b>POSITIONS</b> LPSI Pump 2A control switch to <b>STOP</b> Examinee <b>OBSERVES</b> LPSI Pump 2A indicates Green light ON, Red light OFF and AMMETER indicates 0 amps
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical Y</b>	<b>4. ENSURE LPSI Pump control switches in STOP.</b> <ul style="list-style-type: none"> <li>• 2A LPSI Pump</li> <li>• 2B LPSI Pump</li> </ul> <b>Step is critical because LPSI Pump could restart after LOOP</b>
<b>Standard:</b>	Examinee <b>POSITIONS</b> LPSI Pump 2A and 2B control switches to <b>STOP</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 9 Critical N</b>	<b>5. ENSURE Minimum Flow Header A/B Isolation Valves CLOSED</b> <ul style="list-style-type: none"> <li>• V3495</li> <li>• V3659</li> <li>• V3496</li> <li>• V3660</li> </ul>
<b>Standard:</b>	<p>Examinee <b>OBSERVES</b> V3495, V3659, V3496 and V3660 indicate Green lights ON, Red lights OFF.</p> <p>Examinee <b>DETERMINES</b> V3495, V3659, V3496 and V3660 are CLOSED.</p>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 10 Critical N</b>	<b>NOTIFY US of task COMPLETION and CONTINGENCIES taken.</b>
<b>Standard:</b>	<p>Examinee <b>NOTIFIES</b> US that Step 39.B, C and D are complete</p> <p>RAS has been VERIFIED IAW 2-EOP-99, APPENDICES/ FIGURES/TABLES/DATA SHEETS, Table 4, RECIRCULATION ACTUATION SIGNAL, and</p> <ol style="list-style-type: none"> <li>1. "A" RAS did not ACTUATE and</li> <li>2. LPSI Pump 2A did not auto stop and was manually STOPPED</li> </ol>
<b>Evaluator Cue:</b>	<b>US Acknowledges</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:**        **JPM is completed with US notification**

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**Stop Time:** \_\_\_\_\_



**S-3; Verify RAS - Unit 2**

**JPM**  
Page 11 of 15

**Examinee:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

**Date:** \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**REMEDIATION REQUIRED:**

**YES:** ☐

**NO:** ☐

**COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).**


**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE: \_\_**

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

## TURNOVER SHEET

### **INITIAL CONDITIONS:**

- Unit 2 has experienced a Loss of Coolant Accident
- 2-EOP-03, Loss of Coolant Accident is in progress

### **INITIATING CUES:**

- You are the Desk RCO.
- The US has directed you to Monitor for RAS Actuation per 2-EOP-03, Loss of Coolant Accident, Section 4.0, Operator Actions, Step 39, Step B, C and D

**NOTE: The Simulator will be placed in RUN once you are ready to begin the task.**

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: 39	PROCEDURE TITLE: LOSS OF COOLANT ACCIDENT (LOCA)	PAGE: 44 of 109
PROCEDURE NO.: 2-EOP-03	ST. LUCIE UNIT 2	

INSTRUCTIONS		CONTINGENCY ACTIONS	
<b>4.0 OPERATOR ACTIONS (continued)</b>			
<input type="checkbox"/> *	<b>39. CHECK</b> if containment sump recirculation is required:		
<b>A.</b>	<b>VERIFY</b> break is inside Containment.	<b>A.1</b>	<b>GO TO</b> Section 4.0, Step 40.
<b>B.</b>	<b>VERIFY</b> RWT level is less than 6 feet.	<b>B.1</b>	<b>GO TO</b> Section 4.0, Step 40.
<b>C.</b>	<b>ENSURE</b> RAS has ACTUATED.		
<b>D.</b>	<b>ENSURE</b> RAS components aligned per Table 4, RAS Actuation.		
<b>E.</b>	<b>VERIFY</b> Charging pump suction is <b>NOT</b> aligned to the RWT.	<b>E.1</b>	<b>PLACE</b> Charging pump control switches in STOP for <u>all</u> pumps with suction aligned to the RWT.
<b>F.</b>	<b>PLACE</b> any non-running CS pump control switches in STOP.		

REVISION NO.: 60	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 160 of 176
PROCEDURE NO.: 2-EOP-99		

**TABLE 4**  
**RECIRCULATION ACTUATION SIGNAL**  
(Page 1 of 1)

	<u>A Train (√)</u>	<u>B Train (√)</u>
<input type="checkbox"/> 1. ENSURE Suction from Containment Sump A/B Valves OPEN.		
• MV-07-2A	—	
• MV-07-2B		—
<input type="checkbox"/> 2. ENSURE Suction from RWT A/B Valves CLOSED.		
• MV-07-1A	—	
• MV-07-1B		—
<input type="checkbox"/> 3. ENSURE LPSI Pumps STOPPED.		
• 2A LPSI Pump	—	
• 2B LPSI Pump		—
<input type="checkbox"/> 4. ENSURE LPSI Pump control switches in STOP.		
• 2A LPSI Pump	—	
• 2B LPSI Pump		—
<input type="checkbox"/> 5. ENSURE Minimum Flow Header A/B Isolation Valves CLOSED.		
• V3495	—	
• V3659	—	
• V3496		—
• V3660		—

**END OF TABLE 4**



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 35

**JPM TITLE:** RESTORE AFW FLOW TO THE 2A AND 2B S/Gs USING 2C AFW PUMP

**JPM NUMBER:** L-19-1 NRC JPM S-4 **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07009040 / Reset AFW Pump Mechanical/Electrical Overspeed trip.

**K/A NUMBERS / K/A VALUES: (RO SRO)** 061 A2.04 / Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: pump failure or improper operation (3.4/3.8)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐

Simulator: ☒ Other: ☐

Lab: ☐

Time for Completion: 20 Minutes Time Critical: No

Alternate Path [NRC]: YES

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date



**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE



**S-4; RESTORE AFW FLOW TO THE 2A AND 2B S/Gs USING  
2C AFW PUMP**

**JPM**  
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<b>UPDATE LOG:</b> Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.					
#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE

**SIMULATOR SET-UP:** *(Only required for simulator JPMs)*

**SIMULATOR SETUP INSTRUCTIONS:**

1. Ensure L-19-1 NRC JPM S-4 IC205 files and LSN are transferred to the simulator drive.
2. **RESTORE** IC-205, S-4 NRC SETUP
3. **PLACE** the Simulator in **RUN**.
4. **SELECT** and **OPEN** File: L-19-1 NRC JPM S-4 Isn
5. **EXECUTE** Lesson L-19-1 NRC JPM S-4.
6. Ensure L-19-1 NRC JPM S-4 IC files and LSN are deleted from the simulator drive when the JPM is no longer being administered.

**PRE BRIEFING OF THIS JPM IS PREFERRED.**

**SIMULATOR MALFUNCTIONS:** ELECTRICAL overspeed trip of the 2C AFW pump with a 30 second delay, when either MV-09-11 or MV-09-12 switches are taken to the open position.

**SIMULATOR OVERRIDES:**

**SIMULATOR REMOTE FUNCTIONS:**

- |                            |   |
|----------------------------|---|
| <b>Required Materials:</b> | <ul style="list-style-type: none"> <li>▪ <b>Marked Up Copy of 2-NOP-09.02 Auxiliary Feedwater OPERATION, signed off up to begin with step 4.3.6</b></li> <li>▪ <b>2-AOP-09.02 Auxiliary Feedwater System, Section 4.2, Steps 1-5, and Att. 1, Resetting 2C AFW</b></li> </ul> |
| <b>General References:</b> | <ul style="list-style-type: none"> <li>▪ <b>2-AOP-09.02 Auxiliary Feedwater</b></li> <li>▪ <b>2-NOP-09.02 Auxiliary Feedwater System Operation</b></li> </ul>   |
| <b>Task Standards:</b>     | <p><b>The applicant will establish AFW to both S/Gs using 2-AOP-09.02 AUXILIARY FEEDWATER using the 2C AFW Pump</b></p>   |

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 is in Mode 3 NOP/NOT preparing for startup
- The 2A and 2B AFW Pumps were/are supplying their respective S/Gs when loss of power to valve SE-09-2 occurred closing the valve
- In addition, the NPO reports a high pitched noise coming from the 2B AFW pump motor, electrical maintenance has requested for the 2B AFW to be secured.
- A NPO is stationed at the 2C AFW pump and reports the pump is ready for a start

**INITIATING CUES:**

- You are the Board RCO
- The US directs you to Remove from service and then secure the 2B AFW Pump IAW 2-NOP-09.02 Auxiliary Feedwater step 4.3.6.
- Another Operator will secure the 2B AFW Pump after flow has been established with the 2C AFW Pump.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>2-NOP-09.02 AUXILIARY FEEDWATER SYSTEM OPERATION</b>	
<b>Performance Step: 1</b> <b>Critical : NO</b>	<b>4.3.6 START</b> the 2C AFW PUMP by performing the following: <ul style="list-style-type: none"> <li>• OPEN MV-08-12, SG 2B STM TO AFW PP 2C</li> <li>• OPEN MV-08-13, SG 2A STM TO AFW PP 2C</li> </ul>
<b>Standard:</b>	Examinee will <b>OPEN</b> both MV-08-12 and MV-08-13
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical : NO</b>	<b>4.3.7 VERIFY</b> turbine speed is stable between 3700 and 3800 rpm AND the governor is <b>NOT</b> hunting / oscillating.
<b>Standard:</b>	Examinee will <b>CALL</b> Field Operator to <b>VERIFY</b> turbine speed is stable between 3700 and 3800 rpm AND the governor is NOT hunting / oscillating
<b>Evaluator Cue:</b>	<b>Field Operator calls back and states turbine speed is 3700 rpm and stable.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical : NO</b>	<b>4.3.8 OPEN</b> the solenoid valve(s) in the header(s) to the S/Gs requiring feed: <ul style="list-style-type: none"> <li>• SE-09-4, 2C PUMP DISCH TO 2A S/G VLV (KEY 85)</li> <li>• SE-09-5, 2C PUMP DISCH TO 2B S/G VLV (KEY 86)</li> </ul>
<b>Standard:</b>	Examinee will <b>OPEN</b> both SE-09-4 and SE-09-5
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**CAUTION**

To avoid water hammer, when reinitiating flow to a steam generator that has lost all feedwater, the initial flow rate should be limited to less than or equal to 150 gpm for five minutes or until a level rise is observed. Failure to control flow to less than 150 gpm for at least five minutes or until a level rise is observed may require a visual inspection of the feed ring prior to startup. (Section 7.1.3, Management Directive 4)

<b>Performance Step: 4</b> <b>Critical : NO</b> <b>FAULTED STEP</b>	<b>4.3.9 THROTTLE</b> MV-09-11, PUMP 2C TO SG 2A, as necessary to establish and maintain desired flow to 2A S/G
<b>Standard:</b>	Examinee will <b>THROTTLE</b> MV-09-11, to attain initial flow to the 2A S/G.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>Evaluator NOTE:</b> When either MV-09-11 or MV-09-12 switches are taken to the open position, a 30 second delay is initiated to insert an <b>ELECTRICAL</b> overspeed trip of the 2C AFW pump. <b>Examinee should recognize electrical overspeed by:</b> <b>MV-08-3 in closed position AND annunciator G-46 clearing when reset.</b> <b>(If this was a mechanical overspeed, annunciator G-46 would have locked in).</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical : NO</b> <b>FAULTED STEP</b>	<b>4.3.10 THROTTLE</b> MV-09-12, PUMP 2C TO SG 2B, as necessary to establish and maintain desired flow to 2B S/G
<b>Standard:</b>	Examinee will <b>THROTTLE</b> MV-09-12, to attain flow to the 2B S/G.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>Evaluator NOTE:</b> When either MV-09-11 or MV-09-12 switches are taken to the open position, a 30 second delay is initiated to insert an <b>ELECTRICAL</b> overspeed trip of the 2C AFW pump. <b>Examinee should recognize electrical overspeed by:</b> <b>MV-08-3 in closed position AND annunciator G-46 clearing when reset.</b> <b>(If this was a mechanical overspeed, annunciator G-46 would have locked in).</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical: NO</b>	Refer to Annunciator summary for G-46, 2C AFW Pump Turbine Failure/Trip/OVRLD/SS Isol.
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> directions from Annunciator summary <u>If</u> 2C AFW Pump Tripped, <u>Then</u> GO TO 2-AOP-09.02 AUXILIARY FEEDWATER
<b>Evaluator Cue:</b>	<b>IF ASKED</b> , the US directs you to restore AFW flow to the 2A and 2B S/Gs using the 2C AFW pump.
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**2-AOP-09.02 AUXILIARY FEEDWATER, Section 4.2, Subsequent Operator Actions**

<b>Performance Step: 7</b> <b>Critical: NO</b>	<p>1. IF all of the following conditions exist:</p> <p><input type="checkbox"/> In MODE 2</p> <p><input type="checkbox"/> All feedwater is lost,</p> <p>THEN <b>PERFORM</b> the following:</p> <p><input type="checkbox"/> <b>TRIP</b> the reactor.</p> <p><input type="checkbox"/> <b>IMPLEMENT</b> 2-EOP-01,</p> <p>Standard Post Trip Actions.</p>
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> from the cue that the Unit is in Mode 3 and proceed to step 2.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical: NO</b>	2. IF all of the following conditions exist: <input type="checkbox"/> In MODE 3 <input type="checkbox"/> SIAS <b>NOT</b> blocked <input type="checkbox"/> All feedwater is lost <input type="checkbox"/> <b>NOT</b> already implementing an optimal recovery procedure. <b>THEN IMPLEMENT 2-EOP-06, Total Loss of Feedwater.</b>
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> from the cue that ALL feedwater is not lost and proceed to step 3
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 9</b> <b>Critical: NO</b>	3. IF all of the following conditions exist: <input type="checkbox"/> In MODE 3 through MODE 6 <input type="checkbox"/> SIAS <b>is</b> blocked <input type="checkbox"/> <b>NOT</b> already implementing an optimal recovery procedure. <b>THEN VERIFY</b> at 15 minute intervals that SFSC criteria are met per Low Mode AOP for the current plant conditions.
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> from the cue that SIAS is NOT blocked and proceed to step 4
<b>Evaluator Cue:</b>	<b>IF ASKED, another operator will address Safety Functions</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**Note**

- Manual initiation of AFAS is allowable under the following circumstances:
- Automatic actuation of the system did **NOT** occur after the appropriate time delay has elapsed.
- When cooling down the RCS using only one Steam Generator, if the operable Steam Generator is affected by the AFAS rupture identification circuit.
- During the loss of off-site power conditions, after AFAS actuation, if one feedwater header pressurizes before the other. This assumes neither feed header is ruptured.
- SIAS signal trips the Main Feedwater Pumps and allows the feedwater headers to depressurize at slightly different rates.
- Automatic actuation of AFAS occurs at 19.5% narrow range steam generator level on 2 out of 4 logic.
- Attachment 8, General Information, provides AFW information.

<b>Performance Step: 10</b> <b>Critical: NO</b>	4. VERIFY AFAS if required
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> from the cue that AFAS is not required and proceed to step 5
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 11</b> <b>Critical: NO</b>	5. VERIFY 2C Auxiliary Feedwater pump is NOT tripped
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> that the 2C AFW Pump is tripped and enter the contingency action
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 12</b> <b>Critical: NO</b>	5.1 IF the 2C Auxiliary Feedwater pump mechanical or electrical overspeed trip has occurred, THEN PERFORM Attachment 1, Resetting 2C AFW Pump Following Overspeed Trip.
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> that the 2C AFW Pump is tripped and perform Attachment 1.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**2-AOP-09.02 AUXILIARY FEEDWATER Attachment 1**

**NOTE**

- An electrical overspeed trip results in closed position indication for MV-08-3, 2C AFW PUMP THROTTLE/TRIP, and alarm reset on G-46.
- A mechanical overspeed trip results in closed position indication for MV-08-3, 2C AFW PUMP THROTTLE/TRIP, and alarm G-46 locked in.
- Attachment 6, Mechanical Overspeed Latching shows correct mechanical overspeed mechanism latching.

<b>Performance Step: 13</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>A. CLOSE</b> MV-08-12, SG 2B STM TO AFW PP 2C. (RTGB-202)
<b>Standard:</b>	Examinee will <b>CLOSE</b> MV-08-12
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 14</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>B. CLOSE</b> MV-08-13, SG 2A STM TO AFW PP 2C. (RTGB-202)
<b>Standard:</b>	Examinee will <b>CLOSE</b> MV-08-13
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 15</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>C. PERFORM</b> the following to reset and OPEN MV-08-3, 2C PUMP: <b>(1) CLOSE</b> MV-08-3, 2C PUMP. (RTGB-202 - Key 78).
<b>Standard:</b>	Examinee will <b>PLACE</b> the control switch for MV-08-3 in the <b>CLOSE</b> position using key 78
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 16</b> <b>Critical :NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>C. PERFORM</b> the following to reset and OPEN MV-08-3, 2C PUMP: <b>(2) IF</b> 2C AFW pump tripped due to mechanical overspeed trip, THEN <b>PERFORM</b> the following: <b>a. RESET</b> the 2C Auxiliary Feedwater Pump mechanical overspeed linkage. <b>b. VERIFY</b> top surface of trip tappet nut is in line with the line marked on the head lever to ensure full engagement.
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> that this step is N/A due to this being an electrical overspeed trip and continue to the next step
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 17</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>C. PERFORM</b> the following to reset and OPEN MV-08-3, 2C PUMP: <b>(3) PLACE</b> MV-08-3, 2C PUMP (2C Auxiliary Feedwater Pump), in OPEN.
<b>Standard:</b>	Examinee will <b>PLACE</b> MV-08-3, 2C PUMP in OPEN
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 18</b> <b>Critical : NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>C. PERFORM</b> the following to reset and OPEN MV-08-3, 2C PUMP: <b>(4) VERIFY</b> MV-08-3, THROTTLE / TRIP VALVE FOR AFW PUMP 2C, is OPEN.
<b>Standard:</b>	Examinee will <b>VERIFY</b> MV-08-3, 2C PUMP is OPEN, RED light ON and GREEN light OFF
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 19</b> <b>Critical :NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>D. IF</b> 2C AFW pump is rotating and is required for immediate operation, THEN <b>PERFORM</b> the following: <b>(1) CLOSE</b> SE-08-2, SOLENOID OPERATED WARM-UP FOR S/G 2A TO AFW PUMP 2C. (Key 301) (TRSL/29/N-T3/W-TA) <b>(2) IF</b> the 2C AFW Pump continues rotating, THEN <b>CLOSE</b> SE-08-1, SOLENOID OPERATED WARM-UP FOR S/G 2B TO AFW PUMP 2C. (Key 301) (TRSL/29/N-T3/W-TA)
<b>Standard:</b>	Examinee will <b>CONTACT</b> the field operator for the status of the 2C AFW pump
<b>Evaluator Cue:</b>	The field operator reports the 2C AFW pump is <b>NOT</b> rotating
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 20</b> <b>Critical :NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>E. IF</b> 2C AFW Pump is rotating and is <b>NOT</b> required for immediate operation, THEN <b>PERFORM</b> Attachment 5, Actions to Stop the 2C AFW PUMP From Rotating
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> the 2C AFW Pump is <b>NOT</b> rotating
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 21</b> <b>Critical :NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>F. PERFORM</b> one of the following to drain oil from the underside of the governor main speed piston: <b>(1) WAIT</b> 3 minutes after pump stops rotating. OR <b>(2) PERFORM</b> the following: <b>a. PLACE</b> manual control knob on the side of the turbine governor in the FULLY COUNTER-CLOCKWISE idle speed position. <b>b. RETURN</b> manual control knob on the turbine governor to FULLY CLOCKWISE maximum speed position.
<b>Standard:</b>	Examinee will wait three minutes <b>OR</b> contact the field operator to <b>PLACE</b> manual control knob on the side of the turbine governor in the FULLY COUNTER-CLOCKWISE idle speed position and then <b>RETURN</b> manual control knob on the turbine governor to FULLY CLOCKWISE maximum speed position
<b>Evaluator Cue:</b>	<b>TIME COMPRESS</b> - The field operator reports the manual control knob of the turbine governor has been turned FULLY COUNTER-CLOCKWISE to the idle speed position and then <b>RETURNED</b> to the FULLY CLOCKWISE maximum speed position
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 22</b> <b>Critical :NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>G. ENSURE</b> MV-09-11, PUMP 2C TO SG 2A is CLOSED. (RTGB-202)
<b>Standard:</b>	Examinee will <b>VERIFY</b> MV-09-11, PUMP 2C TO SG 2A is CLOSED
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE: MAKE SURE MV-09-11 OR MV-09-12 ARE THROTTLED OR CLOSED</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 23</b> <b>Critical :NO</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>H. ENSURE</b> MV-09-12, PUMP 2C TO SG 2B is CLOSED. (RTGB-202)
<b>Standard:</b>	Examinee will <b>VERIFY</b> MV-09-12, PUMP 2C TO SG 2B is CLOSED
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE: MAKE SURE MV-09-11 OR MV-09-12 ARE THROTTLED OR CLOSED</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 24</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: I. IF both Steam Generators are intact AND <b>NOT</b> faulted, THEN <b>OPEN</b> the following valves simultaneously: (1) MV-08-13, SG 2A STM TO AFW PP 2C (2) MV-08-12, SG 2B STM TO AFW PP 2C  <b>ONLY 1 STEAM VALVE OPEN IS CRITICAL</b>
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> both Steam Generators are intact and <b>NOT</b> faulted and THEN <b>OPEN</b> MV-08-13 and MV-08-12 simultaneously
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>S-4; RESTORE AFW FLOW TO THE 2A AND 2B S/Gs USING 2C AFW PUMP</b>	<b>JPM</b> Page 16 of 35
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<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Operation of the 2C AFW Pump should be avoided to minimize direct releases to the environment. If motor driven AFW pumps are NOT available, steam from the least affected S/G should be used.</p>	
<b>Performance Step: 25</b> <b>Critical : NO</b>	<b>1.</b> IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>J.</b> IF either Steam Generator is faulted, THEN <b>OPEN</b> the steam supply valve from the NON-FAULTED S/G: <b>(1)</b> MV-08-13, SG 2A STM TO AFW PP 2C. OR <b>(2)</b> MV-08-12, SG 2B STM TO AFW PP 2C.
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> neither Steam Generator is faulted and continues to next step
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

	<b>S-4; RESTORE AFW FLOW TO THE 2A AND 2B S/Gs USING 2C AFW PUMP</b>	<b>JPM</b> Page 17 of 35
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<b>Performance Step: 26</b> <b>Critical : YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>K. IF</b> flow is to be restored to 2A S/G, THEN <b>ENSURE</b> SE-09-4, 2C PUMP DISCH TO 2A S/G VLV, is OPEN. (Key 85)
<b>Standard:</b>	Examinee will <b>OPEN</b> SE-09-4
<b>Evaluator Cue:</b>	<b>NONE</b> <b>NOTE: Applicant previously opened this valve. If not opened earlier, then critical to ensure flow is achieved.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 27</b> <b>Critical : YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>L. IF</b> flow is to be restored to 2B S/G, THEN <b>ENSURE</b> SE-09-5, 2C PUMP DISCH TO 2B S/G VLV, is OPEN. (Key 86)
<b>Standard:</b>	Examinee will <b>OPEN</b> SE-09-5
<b>Evaluator Cue:</b>	<b>NONE</b> <b>NOTE: Applicant previously opened this valve. If not opened earlier, then critical to ensure flow is achieved.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Initial feedwater flow should be controlled to less than 150 gpm for the first 5 minutes when using Aux Feed for water hammer and thermal shock concerns. Failure to control flow to less than 150 gpm for at least five minutes or until a level rise is observed may require a visual inspection of the feed ring prior to startup. (Section 6.1.3, Management Directive 1)</p>
---



<b>Performance Step: 28</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>M. THROTTLE</b> MV-09-11, PUMP 2C TO S/G 2A, to establish required flowrate to the 2A steam generator.
<b>Standard:</b>	Examinee will <b>THROTTLE</b> MV-09-11, to attain initial flow to the 2A S/G.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 29</b> <b>Critical :YES</b>	1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following: <b>N. THROTTLE</b> MV-09-12, PUMP 2C TO S/G 2B, to establish required flowrate to the 2B steam generator.
<b>Standard:</b>	Examinee will <b>THROTTLE</b> MV-09-12, to attain initial flow to the 2B S/G.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 30</b> <b>Critical :NO</b>	<p>1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN <b>PERFORM</b> the following:  <b>O.</b> IF SE-08-1 or SE-08-2, was CLOSED in Attachment 1, Step 1.D, THEN <b>PERFORM</b> the following:  <b>(1) ENSURE</b> SE-08-1, SOLENOID OPERATED WARM-UP FOR S/G 2B TO AFW PUMP 2C, is OPEN.  <b>(2) ENSURE</b> SE-08-2, SOLENOID OPERATED WARM-UP FOR S/G 2A TO AFW PUMP 2C, is OPEN.</p>
<b>Standard:</b>	Examinee will <b>RECOGNIZE</b> that neither SE-08-1 or SE-08-2, was <b>NOT CLOSED</b> in Attachment 1, Step 1.D and continues to next step
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 31</b> <b>Critical : NO</b>	Examinee will <b>NOTIFY</b> the US that 2C AFW pump is running and supplying feed water to the 2A and 2B S/Gs
<b>Standard:</b>	Examinee will <b>NOTIFIES</b> the US that 2C AFW pump is running and supplying feed water to the 2A and 2B S/Gs
<b>Evaluator Cue:</b>	<b>US Acknowledges</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:** The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**STOP TIME** \_\_\_\_\_



**S-4; RESTORE AFW FLOW TO THE 2A AND 2B S/Gs USING  
2C AFW PUMP**

**JPM**  
Page 20 of 35

**Applicant:** \_\_\_\_\_ **Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO-U ☐ SRO-I

**Date:** \_\_\_\_\_

**PERFORMANCE RESULTS:**                      **SAT:** ☐                      **UNSAT:** ☐

<b>COMMENTS/FEEDBACK:</b> (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE:**    **ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.**

**EVALUATOR’S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee’s record if completed satisfactorily. If  
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

## **TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

### **INITIAL CONDITIONS:**

- Unit 2 is in Mode 3 NOP/NOT preparing for startup
- The 2A and 2B AFW Pumps were/are supplying their respective S/Gs when loss of power to valve SE-09-2 occurred closing the valve
- In addition, the NPO reports a high pitched noise coming from the 2B AFW pump motor, electrical maintenance has requested for the 2B AFW to be secured.
- A NPO is stationed at the 2C AFW pump and reports the pump is ready for a start

### **INITIATING CUES:**

- You are the Board RCO
- The US directs you to Remove from service and then secure the 2B AFW Pump IAW 2-NOP-09.02 Auxiliary Feedwater step 4.3.6.
- Another Operator will secure the 2B AFW Pump after flow has been established with the 2C AFW Pump.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

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**4.3** **2C AFW PUMP to 2A / 2B S/G**

**NOTE**

If the 2C AFW PUMP has tripped, 2-AOP-09.02, Auxiliary Feedwater, provides instructions for restarting.

**CAUTION**

When steam is isolated from the 2C AFW PUMP turbine, water may accumulate in the steam supply lines. Starting the pump with accumulated water could result in an overspeed trip.

~~1.~~ IF this pump start is for post-maintenance testing AND the steam was completely removed from the turbine, THEN **PERFORM** the following steps:

- ~~A.~~ **CLOSE** MV-08-3, 2C PUMP, by placing the key switch on RTGB-202 in the CLOSE position. (KEY 78)
- ~~B.~~ **OPEN** MV-08-12, SG 2B STM TO AFW PP 2C.
- ~~C.~~ **OPEN** MV-08-13, SG 2A STM TO AFW PP 2C.
- ~~D.~~ AFTER 5 minutes, **CLOSE** MV-08-12, SG 2B STM TO AFW PP 2C .
- ~~E.~~ **CLOSE** MV-08-13, SG 2A STM TO AFW PP 2C.
- ~~F.~~ **OPEN** MV-08-3, 2C PUMP, by placing the key switch on RTGB-202 in the OPEN position.

IV

~~2.~~ IF the 2C AFW PUMP turbine is rotating, THEN **PERFORM** the following:

- ~~A.~~ IF the 2C AFW PUMP does **NOT** STOP rotating, THEN **PERFORM** Section 5.4, Establishing And Adjusting 2C Auxiliary Feedwater Pump Warming Steam.

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**4.3 2C AFW PUMP to 2A / 2B S/G (continued)**

**NOTE**

An operator will be required at the 2C AFW PUMP local station to verify speed.

**CAUTION**

The 2C AFW PUMP turbine shall **NOT** be started if turbine bearing or governor oil temperature is less than 40°F.

~~3.~~ IF outside air temperature is less than 70°F, THEN **CHECK** (by pyrometer) turbine bearing and governor oil temperature.

~~A.~~ IF turbine bearing or governor oil temperature is less than 70°F, THEN provisions should be made to warm the oil by external source.

~~B.~~ IF turbine bearing or governor oil temperature is less than 60°F, THEN 2C AFW PUMP shall be declared OOS.

~~4.~~ **ENSURE** the governor oil level is visible between the level mark and top of sightglass.

**CAUTION**

If the oil in the 2C AFW PUMP turbine governor is **NOT** allowed to fully drain back to the reservoir, restarting may cause overspeed. This can be prevented by waiting 3 minutes after the pump stops rotating or taking the manual speed control knob on the side of the governor fully counter-clockwise then returning fully clockwise. (Section 7.1.3, Management Directive 3)

~~5.~~ **ENSURE** the 2C AFW PUMP Turbine is **NOT** rotating.

~~A.~~ **VERIFY** 3 minutes have passed since pump rotation stopped

OR

~~B.~~ **CYCLE** the manual speed control knob on the side of the governor fully counter-clockwise, then fully clockwise.

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**4.3 2C AFW PUMP to 2A / 2B S/G (continued)**

**6. START** 2C AFW PUMP by performing the following:

- **OPEN** MV-08-12, SG 2B STM TO AFW PP 2C.

AND / OR

- **OPEN** MV-08-13, SG 2A STM TO AFW PP 2C.

**7. VERIFY** turbine speed is stable between 3700 and 3800 rpm AND the governor valve is **NOT** hunting / oscillating.

**8. OPEN** the solenoid valve(s) in the header(s) to the S/Gs requiring feed:

- SE-09-4, 2C PUMP DISCH TO 2A S/G VLV (KEY 85)
- SE-09-5, 2C PUMP DISCH TO 2B S/G VLV (KEY 86)

**CAUTION**

To avoid water hammer, when reinitiating flow to a steam generator that has lost all feedwater, the initial flow rate should be limited to less than or equal to 150 gpm for five minutes or until a level rise is observed. Failure to control flow to less than 150 gpm for at least five minutes or until a level rise is observed may require a visual inspection of the feed ring prior to startup. (Section 7.1.3, Management Directive 4)

**9. THROTTLE** MV-09-11, PUMP 2C TO SG 2A, as necessary to establish and maintain desired flow to 2A S/G.

**10. THROTTLE** MV-09-12, PUMP 2C TO SG 2B, as necessary to establish and maintain desired flow to 2B S/G.

**CAUTION**

The maximum temperature of the oil leaving the turbine bearings should be less than 160°F. For temperatures greater than 160°F, Engineering should be consulted for recommendations.

**11. IF** either the governor end or coupling end oil temperature exceeds 180°F, THEN immediately **TRIP** the turbine.



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**4.3 2C AFW PUMP to 2A / 2B S/G (continued)**

**12. WHEN the 2C AFW PUMP is **NO** longer being used for feed and it is desired to secure, THEN **PERFORM** the following:**

**A. ENSURE MV-09-11, PUMP 2C TO SG 2A, is CLOSED.**

**B. ENSURE MV-09-12, PUMP 2C TO SG 2B, is CLOSED.**

**C. PLACE key switch for SE-09-4, 2C PUMP DISCH TO 2A S/G VLV, to AUTO.**

\_\_\_\_\_

**IV**

**D. VERIFY SE-09-4, 2C PUMP DISCH TO 2A S/G VLV, is CLOSED.**

**E. PLACE key switch for SE-09-5, 2C PUMP DISCH TO 2B S/G VLV, to AUTO.**

\_\_\_\_\_

**IV**

**F. VERIFY SE-09-5, 2C PUMP DISCH TO 2B S/G VLV, is CLOSED.**

**G. STOP the 2C AFW PUMP by performing any of the following:**

- CLOSE** MV-08-3, 2C PUMP, with key switch on RTGB-202.
- PRESS** the local TURBINE TRIP pushbutton located on the 2C AFW PUMP TURBINE CONTROL PANEL.
- Locally **STOP** the 2C AFW PUMP by tripping the mechanical overspeed trip lever.

**H. VERIFY 2C AFW PUMP turbine is slowing by observing reduction of speed on 2C AFW PUMP TURBINE CONTROL PANEL.**

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**4.3 2C AFW PUMP to 2A / 2B S/G (continued)**

**12. (continued)**

**NOTE**

- An electrical overspeed trip results in closed indication for MV-08-3, and alarm and reset for annunciator G-46.
- A mechanical overspeed trip results in closed indication for MV-08-3, and locked in alarm for Annunciator G-46.
- Closing MV-08-3 alone will result in closed indication for MV-08-3 with **NO** alarm for Annunciator G-46.

I. IF applicable, THEN **VERIFY** annunciator G-46, 2C AFW PUMP TURBINE FAILURE / TRIP / OVRD / SS ISOL, is in ALARM.

J. **VERIFY** the 2C AFW PUMP is **NOT** rotating.

K. **ENSURE** MV-08-3, 2C PUMP, is reset by placing the key switch on RTGB-202 in the CLOSE position.

**NOTE**

Refer to Attachment 1 for correct mechanical overspeed mechanism latching.

L. IF the 2C AFW PUMP was tripped using the mechanical overspeed trip lever, THEN **PERFORM** the following:

(1) **RESET** the 2C AFW PUMP mechanical overspeed linkage.

(2) **VERIFY** top surface of trip tappet nut is inline with the line marked on the head lever to ensure full engagement.

\_\_\_\_\_  
IV

M. **ENSURE** MV-08-12, SG 2B STM TO AFW PP 2C, is CLOSED.

N. **ENSURE** MV-08-13, SG 2A STM TO AFW PP 2C, is CLOSED.

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**4.3 2C AFW PUMP to 2A / 2B S/G (continued)**

**12. (continued)**

**O. ENSURE** the manual speed control knob on the side of governor is fully CLOCKWISE.

**P. OPEN** MV-08-3, 2C PUMP, by placing the key switch on RTGB-202 in the OPEN position.

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**IV**

**Q. IF** the 2C AFW PUMP is rotating, THEN PERFORM the following:

**(1) IF** the 2C AFW PUMP does **NOT STOP** rotating, THEN **PERFORM** Section 5.4, Establishing And Adjusting 2C Auxiliary Feedwater Pump Warming Steam.

**13. ENSURE** MV-08-12, SG 2B STM TO AFW PP 2C, switch is in AUTO position.

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\_\_\_\_\_

**IV**

**14. ENSURE** MV-08-13, SG 2A STM TO AFW PP 2C, switch is in AUTO position.

\_\_\_\_\_

\_\_\_\_\_

**IV**

Performed By: \_\_\_\_\_

Print/Sign Initials Date

Verified By: \_\_\_\_\_

Print/Sign Initials Date

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**INSTRUCTIONS**

**CONTINGENCY ACTIONS**

**4.0 OPERATOR ACTIONS**

**4.1 Immediate Operator Actions**

None

**4.2 Subsequent Operator Actions**

**NOTE**

Attachment 7, Unit 2 Auxiliary Feedwater System, provides basic lineup information.

☐

**1.** IF all of the following conditions exist:

- In MODE 2
- All feedwater is lost,

THEN **PERFORM** the following:

- TRIP** the reactor.
- IMPLEMENT** 2-EOP-01, Standard Post Trip Actions.

☐

**2.** IF all of the following conditions exist:

- In MODE 3
- SIAS **NOT** blocked
- All feedwater is lost
- NOT** already implementing an optimal recovery procedure.

THEN **IMPLEMENT** 2-EOP-06, Total Loss of Feedwater.

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**INSTRUCTIONS**
**CONTINGENCY ACTIONS**

**4.2 Subsequent Operator Actions (continued)**

☐

**3.** IF all of the following conditions exist:

- In MODE 3 through MODE 6
- SIAS is blocked
- NOT** already implementing an optimal recovery procedure.

THEN **VERIFY** at 15 minute intervals that SFSC criteria are met per Low Mode AOP for the current plant conditions.

**NOTE**

- Manual initiation of AFAS is allowable under the following circumstances:
  - Automatic actuation of the system did **NOT** occur after the appropriate time delay has elapsed.
  - When cooling down the RCS using only one Steam Generator, if the operable Steam Generator is affected by the AFAS rupture identification circuit.
  - During the loss of off-site power conditions, after AFAS actuation, if one feedwater header pressurizes before the other. This assumes neither feed header is ruptured.
  - SIAS signal trips the Main Feedwater Pumps and allows the feedwater headers to depressurize at slightly different rates.
- Automatic actuation of AFAS occurs at 19.5% narrow range steam generator level on 2 out of 4 logic.
- Attachment 8, General Information, provides AFW information.

**3.1 IMPLEMENT** Low Mode AOP for current plant conditions.

☐

**4.** **VERIFY** AFAS, if required.

**4.1** Manually **INITIATE** AFAS using initiation switches on RTGB-202.

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<b>INSTRUCTIONS</b>		<b>CONTINGENCY ACTIONS</b>	
<b>4.2 Subsequent Operator Actions (continued)</b>			
<input type="checkbox"/>	<b>5. VERIFY</b> 2C Auxiliary Feedwater pump is <b>NOT</b> tripped.	<b>5.1</b>	IF the 2C Auxiliary Feedwater pump mechanical or electrical overspeed trip has occurred, THEN <b>PERFORM</b> Attachment 1, Resetting 2C AFW Pump Following Overspeed Trip.
<input type="checkbox"/>	<b>6.</b> IF the 2C AFW pump has been RESET, THEN <b>VERIFY</b> 2C Auxiliary Feedwater pump can be controlled from the Control Room.	<b>6.1</b>	IF 2C Auxiliary Feedwater pump can <b>NOT</b> be controlled from the Control Room, THEN <b>PERFORM</b> local operation per Attachment 3, Local Operation of 2C Auxiliary Feedwater Pump, if required.
<input type="checkbox"/>	<b>7.</b> IF steam binding occurs on one or more Auxiliary Feedwater pumps, THEN:		
	<b>A. STOP</b> the affected pump(s).		
	<b>B. FEED</b> the steam generators with the unaffected Auxiliary Feedwater pump(s).		

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**ATTACHMENT 1**

**Resetting 2C AFW Pump Following Overspeed Trip**

(Page 1 of 4)

**NOTE**

- An electrical overspeed trip results in closed position indication for MV-08-3, 2C AFW PUMP THROTTLE/TRIP, and alarm reset on G-46.
- A mechanical overspeed trip results in closed position indication for MV-08-3, 2C AFW PUMP THROTTLE/TRIP, and alarm G-46 locked in.
- Attachment 6, Mechanical Overspeed Latching shows correct mechanical overspeed mechanism latching.

1. IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN **PERFORM** the following:
  - A. **CLOSE** MV-08-12, SG 2B STM TO AFW PP 2C. (RTGB-202)
  - B. **CLOSE** MV-08-13, SG 2A STM TO AFW PP 2C. (RTGB-202)
  - C. **PERFORM** the following to reset and OPEN MV-08-3, 2C PUMP:
    - (1) **CLOSE** MV-08-3, 2C PUMP. (RTGB-202 - Key 78).
    - (2) IF 2C AFW pump tripped due to mechanical overspeed trip, THEN **PERFORM** the following:
      - a. **RESET** the 2C Auxiliary Feedwater Pump mechanical overspeed linkage.
      - b. **VERIFY** top surface of trip tappet nut is in line with the line marked on the head lever to ensure full engagement.
    - (3) **PLACE** MV-08-3, 2C PUMP (2C Auxiliary Feedwater Pump), in OPEN.
    - (4) **VERIFY** MV-08-3, THROTTLE / TRIP VALVE FOR AFW PUMP 2C, is OPEN.

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**ATTACHMENT 1**

**Resetting 2C AFW Pump Following Overspeed Trip**

(Page 2 of 4)

1. (continued)
  - D. IF 2C AFW pump is rotating and is required for immediate operation, THEN **PERFORM** the following:
    - (1) **CLOSE** SE-08-2, SOLENOID OPERATED WARM-UP FOR S/G 2A TO AFW PUMP 2C. (Key 301) (TRSL/29/N-T3/W-TA)
    - (2) IF the 2C AFW Pump continues rotating, THEN **CLOSE** SE-08-1, SOLENOID OPERATED WARM-UP FOR S/G 2B TO AFW PUMP 2C. (Key 301) (TRSL/29/N-T3/W-TA)
  - E. IF 2C AFW Pump is rotating and is **NOT** required for immediate operation, THEN **PERFORM** Attachment 5, Actions to Stop the 2C AFW PUMP From Rotating
  - F. **PERFORM** one of the following to drain oil from the underside of the governor main speed piston:
    - (1) **WAIT** 3 minutes after pump stops rotating.  
OR
    - (2) **PERFORM** the following:
      - a. **PLACE** manual control knob on the side of the turbine governor in the FULLY COUNTER-CLOCKWISE idle speed position.
      - b. **RETURN** manual control knob on the turbine governor to FULLY CLOCKWISE maximum speed position.
  - G. **ENSURE** MV-09-11, PUMP 2C TO SG 2A is CLOSED. (RTGB-202)
  - H. **ENSURE** MV-09-12, PUMP 2C TO SG 2B is CLOSED. (RTGB-202)
  - I. IF both Steam Generators are intact AND **NOT** faulted, THEN **OPEN** the following valves simultaneously:
    - (1) MV-08-13, SG 2A STM TO AFW PP 2C
    - (2) MV-08-12, SG 2B STM TO AFW PP 2C



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**ATTACHMENT 1**  
**Resetting 2C AFW Pump Following Overspeed Trip**  
 (Page 3 of 4)

**1. (continued)**

**CAUTION**

Operation of the 2C AFW Pump should be avoided to minimize direct releases to the environment. If motor driven AFW pumps are **NOT** available, steam from the least affected S/G should be used.

**J.** IF either Steam Generator is faulted, THEN **OPEN** the steam supply valve from the NON-FAULTED S/G:

**(1)** MV-08-13, SG 2A STM TO AFW PP 2C.

OR

**(2)** MV-08-12, SG 2B STM TO AFW PP 2C.

**K.** IF flow is to be restored to 2A S/G, THEN **ENSURE** SE-09-4, 2C PUMP DISCH TO 2A S/G VLV, is OPEN. (Key 85)

**L.** IF flow is to be restored to 2B S/G, THEN **ENSURE** SE-09-5, 2C PUMP DISCH TO 2B S/G VLV, is OPEN. (Key 86)

**CAUTION**

Initial feedwater flow should be controlled to less than 150 gpm for the first 5 minutes when using Aux Feed for water hammer and thermal shock concerns. Failure to control flow to less than 150 gpm for at least five minutes or until a level rise is observed may require a visual inspection of the feed ring prior to startup. (Section 6.1.3, Management Directive 1)

**M. THROTTLE** MV-09-11, PUMP 2C TO S/G 2A, to establish required flowrate to the 2A steam generator.

**N. THROTTLE** MV-09-12, PUMP 2C TO S/G 2B, to establish required flowrate to the 2B steam generator.

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**ATTACHMENT 1**

**Resetting 2C AFW Pump Following Overspeed Trip**

(Page 4 of 4)

1. (continued)
  - O. IF SE-08-1 or SE-08-2, was CLOSED in Attachment 1, Step 1.D, THEN **PERFORM** the following:
    - (1) **ENSURE** SE-08-1, SOLENOID OPERATED WARM-UP FOR S/G 2B TO AFW PUMP 2C, is OPEN.
    - (2) **ENSURE** SE-08-2, SOLENOID OPERATED WARM-UP FOR S/G 2A TO AFW PUMP 2C, is OPEN.



## JOB PERFORMANCE MEASURE

**JPM**  
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**JPM TITLE:** OPERATE THE HYDROGEN PURGE SYSTEM - UNIT2

**JPM NUMBER:** L-19-1 NRC JPM S-5 **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 07025035/ALIGN HYDROGEN PURGE SYS

**K/A NUMBERS / K/A VALUES: (RO SRO)** 0028 A4.01/ Ability to manually operate and / or monitor in the control room: HRPS controls (4.0/4.0)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☒ Other: ☐  
Lab: ☐

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date



## S-5 OPERATE THE HYDROGEN PURGE SYSTEM – UNIT 2

**JPM**  
Page 2 of 14

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

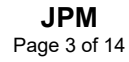
**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

[illegible]

**SIMULATOR SET-UP:**

1. **RESTORE** IC-24 from the JPM Group
2. **UNFREEZE** the Simulator.
3. **PLACE** the Hydrogen Analyzers in service IAW APP. M
4. **FREEZE** the Simulator.
5. **STORE** a Temporary IC set if more than one student will be performing the JPM.
6. No lesson is needed for this JPM.
7. **UNFREEZE** the Simulator when the student is ready. Acknowledge but do not reset non-JPM related alarms to prevent nuisance alarms.

**SIMULATOR MALFUNCTIONS:**

**SIMULATOR OVERRIDES:**

**SIMULATOR REMOTE FUNCTIONS:**

**Required Materials:**      ▪ 2-EOP-99, Appendix N, Hydrogen Purge System Operation

**General References:**    ▪ 2-EOP-99, Appendix N, Hydrogen Purge System Operation

**Task Standards:**            This JPM is complete when the US has been notified that The Hydrogen Purge System has been placed in service with Hydrogen purge flow established using "B" Train components, in accordance with 2-EOP-99, Appendix N

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 has experienced a Loss of Coolant Accident (LOCA)
- 2-EOP-03, LOCA is being implemented.
- Containment hydrogen concentration is approximately 4%
- The Technical Support Center has recommended that the Hydrogen Purge System be placed in operation.

**INITIATING CUES:**

- You are the Desk RCO.
- The US directs you to place the Hydrogen Purge System in operation using **ONLY the 'B' Train** components in accordance with 2-EOP-99, Appendix N.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**S-5 OPERATE THE HYDROGEN PURGE SYSTEM – UNIT 2****JPM**  
Page 6 of 14**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

**2-EOP-99, Appendix N, Hydrogen Purge System Operation****CAUTION**

Close coordination between the Technical Support Center and the Control Room is required to ensure personnel safety with regard to radioactive release rates, exposure and potential for hydrogen burn / explosion.

<b>Performance Step: 1</b> <b>Critical NO</b>	<b>ENSURE</b> FCV-25-35, Continuous Containment Purge Exhaust to Vent Stack is <b>CLOSED</b>
<b>Standard:</b>	Examinee <b>ENSURES</b> FCV-25-35 is <b>CLOSED</b> , Green light <b>ON</b> , Red light <b>OFF</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**NOTE**

If a CIAS is present FCV-25-20 and FCV-25-21 will need to be overridden open.

<b>Performance Step: 2</b> <b>Critical: YES</b>	<b>OPEN</b> the following valves: <ul style="list-style-type: none"><li>• FCV-25-20, Continuous Cntmt. Purge Isol. Valve</li><li>• FCV-25-21, Continuous Cntmt. Suction</li></ul>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-20 and FCV-25-21 to <b>OPEN</b> , Green lights <b>OFF</b> , Red lights <b>ON</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



<b>Performance Step: 3</b> <b>Critical: YES</b>	<b>OPEN</b> H <sub>2</sub> Purge Discharge to the desired train SBVS: <ul style="list-style-type: none"> <li>FCV-25-34, H2 Purge Discharge to SBVS 'A'</li> <li>FCV-25-29, H2 Purge Discharge to SBVS 'B'</li> </ul>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-29 to <b>OPEN</b> , Green lights <b>OFF</b> , Red lights <b>ON</b>
<b>Evaluator Cue:</b>	<b>A key is required to position FCV-25-29</b>  <b>EVALUATOR'S NOTE: 'B' Train components are to be used per the cue.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 4</b> <b>Critical NO</b>	<b>ENSURE</b> FCV-25-9, Continuous Containment / Hydrogen Purge Control Valve Filter Inlet, is <b>CLOSED</b>
<b>Standard:</b>	Examinee <b>ENSURES</b> FCV-25-9, is <b>CLOSED</b> Green light <b>ON</b> , Red light <b>OFF</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical YES</b>	<b>THROTTLE OPEN</b> FCV-25-28, Continuous Containment / Hydrogen Purge Control Valve Bypass, 10 to 20%.  <b>Critical portion is the valve is throttled open to 5% – 25 % .</b>
<b>Standard:</b>	Examinee <b>THROTTLES</b> FCV-25-28 <b>OPEN</b> until valve <b>INDICATES</b> 5% to 25% <b>OPEN</b> .
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**S-5 OPERATE THE HYDROGEN PURGE SYSTEM – UNIT 2****JPM**  
Page 8 of 14

<b>Performance Step: 6</b>	<b>START</b> the desired train SBVS Fan.
<b>Critical NO</b>	
<b>Standard:</b>	Examinee <b>RECOGNIZES</b> HVE-6B, is running Green light OFF, Red Light ON
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE: 'B' Train components are to be used per the cue.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**NOTE**

FCV-25-26 and FCV-25-36 will not open until a negative differential pressure exists between the Containment and outside air.

<b>Performance Step: 7</b>	<b>OPEN</b> the following valves:
<b>Critical: NO</b>	<ul style="list-style-type: none"><li>• FCV-25-26, Continuous Containment / Hydrogen Purge Makeup</li><li>• FCV-25-36, Continuous Containment / Hydrogen Purge Makeup</li></ul>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-26 and FCV-25-36 control switch to <b>OPEN</b>
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE:</b> Valves will not open at this time due to positive pressure in the containment. Valves will open when negative differential is reached after HVE-7B is started. Examinee should take the control switches for the valves to the open position.
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 8</b>	<b>START ONE</b> Hydrogen Purge Fan.
<b>Critical YES</b>	<ul style="list-style-type: none"><li>• HVE-7A</li><li>• HVE-7B</li></ul>
<b>Standard:</b>	Examinee <b>STARTS</b> HVE-7B, Green light OFF, Red Light ON
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUTOR NOTE: 'B' Train components are to be used per the cue.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**S-5 OPERATE THE HYDROGEN PURGE SYSTEM – UNIT 2****JPM**  
Page 9 of 14

<b>Performance Step: 9</b> <b>Critical YES</b>	<b>ADJUST</b> FCV-25-28, Continuous Containment / Hydrogen Purge Control Valve Bypass, to maintain a flow rate of approximately 100 cfm.
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-28 while <b>MONITORING</b> FI-25-2 and FR-25-2 to <b>OBTAIN FLOW</b> .
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 10</b> <b>Critical NO</b>	<b>MONITOR</b> Plant Stack radiation levels and Containment hydrogen concentration during purge operation.
<b>Standard:</b>	Examinee <b>MONITORS</b> H <sub>2</sub> concentration for <b>LOWERING</b> trend and Plant Vent radiation level for <b>RISING</b> trend.
<b>Evaluator Cue:</b>	<b>H<sub>2</sub> concentration is LOWERING slowly. Plant Vent radiation level is slowly RISING as expected.</b> <b>EVALUATOR'S NOTE:</b> This action takes a considerable amount of time to be observable. Once the student shows the ability to monitor these trends, give the verbal cue above.
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 11</b> <b>Critical NO</b>	Notify the US that the Hydrogen Purge System has been placed in service per Appendix N, 2-EOP-99.
<b>Standard:</b>	<b>NOTIFY</b> the US that the hydrogen Purge System has been PLACED IN SERVICE per Appendix N, 2-EOP-99.
<b>Evaluator Cue:</b>	<b>US ACKNOWLEDGES.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:****The JPM is complete.****NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**Stop Time:** \_\_\_\_\_



OPERATE THE HYDROGEN PURGE SYSTEM – UNIT 2, Rev. 0

**JPM**  
Page 10 of  
14

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If  
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 has experienced a Loss of Coolant Accident (LOCA)
- 2-EOP-03, LOCA is being implemented.
- Containment hydrogen concentration is approximately 4%
- The Technical Support Center has recommended that the Hydrogen Purge System be placed in operation.

**INITIATING CUES:**

- You are the Desk RCO.
- The US directs you to place the Hydrogen Purge System in operation using **ONLY the 'B' Train** components in accordance with 2-EOP-99, Appendix N.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: 60	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 74 of 176
PROCEDURE NO.: 2-EOP-99	ST. LUCIE UNIT 2	

**APPENDIX N**

**HYDROGEN PURGE SYSTEM OPERATION**

(Page 1 of 2)

A Train (√)
B Train (√)

**CAUTION**

Close coordination between the Technical Support Center and the Control Room is required to ensure personnel safety with regard to radioactive release rates, exposure and potential for hydrogen burn / explosion.

☐ 1. ENSURE FCV-25-35, Continuous Containment Purge Exhaust to Vent Stack is CLOSED.

**NOTE**

If a CIAS is present FCV-25-20 and FCV-25-21 will need to be overridden open.

☐ 2. OPEN the following valves:

☐ FCV-25-20, Continuous Contmt. Purge Isol. Valve.

☐ FCV-25-21, Continuous Contmt. Purge Suction.

☐ 3. OPEN H<sub>2</sub> purge discharge to the desired train SBVS.

FCV-25-34, H<sub>2</sub> Purge Discharge to SBVS 'A'. \_\_\_\_\_

FCV-25-29, H<sub>2</sub> Purge Discharge to SBVS 'B'. \_\_\_\_\_

☐ 4. ENSURE FCV-25-9, Continuous Containment / Hydrogen Purge Control Valve Filter Inlet, is CLOSED.

☐ 5. THROTTLE OPEN FCV-25-28, Continuous Containment / Hydrogen Purge Control Valve Bypass, 10 to 20%.

☐ 6. START the desired train SBVS fan.

HVE-6A \_\_\_\_\_

HVE-6B \_\_\_\_\_

REVISION NO.: <div style="border: 1px solid black; padding: 2px; text-align: center;">60</div>	PROCEDURE TITLE: <div style="border: 1px solid black; padding: 5px; text-align: center;">           APPENDICES / FIGURES / TABLES / DATA            SHEETS            ST. LUCIE UNIT 2         </div>	PAGE: <div style="border: 1px solid black; padding: 2px; text-align: center;">75 of 176</div>
PROCEDURE NO.: <div style="border: 1px solid black; padding: 2px;">2-EOP-99</div>		

**APPENDIX N**  
**HYDROGEN PURGE SYSTEM OPERATION**  
 (Page 2 of 2)

A Train (√)      B Train (√)

**NOTE**  
 FCV-25-26 and FCV-25-36 will not open until a negative differential pressure exists between the Containment and outside air.

☐ 7. OPEN the following valves:  

☐ FCV-25-26, Continuous Containment / Hydrogen Purge Makeup  
☐ FCV-25-36, Continuous Containment / Hydrogen Purge Makeup

☐ 8. START ONE Hydrogen Purge Fan.  

HVE-7A \_\_\_\_\_  
 HVE-7B \_\_\_\_\_

☐ 9. ADJUST FCV-25-28, Continuous Containment / Hydrogen Purge Control Valve Bypass, to maintain a flow rate of approximately 100 cfm.

☐ 10. MONITOR Plant Stack radiation levels and Containment hydrogen concentration during purge operation.

**END OF APPENDIX N**





## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 20

**JPM TITLE:** RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2

**JPM NUMBER:** L-19-1 NRC JPM S-6 **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07052015 \ RESTORE A 4160 V BUS NORMAL POWER SUPPLY  
07052140 \ RESPOND TO A LOSS OF OFF-SITE POWER

**K/A NUMBERS / K/A VALUES: (RO SRO)** 062 A4.07/ Ability to manually operate and/or monitor in the control room: Synchronizing and paralleling of different ac supplies (3.1/ 3.1)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐

Simulator: ☒ Other: ☐

Lab: ☐

Time for Completion: 15 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

**Developed by:** JOSH BROWN 2/28/19

Instructor/Developer

Date

**Reviewed by:** SEAN WYLIE 2/28/19

Instructor (Instructional Review)

Date

**Validated by:** SEAN WYLIE 2/28/19

SME (Technical Review)

Date

**Approved by:** TRAVIS OURET 2/28/19

Training Supervision

Date

**Approved by:** TERRY BENTON 2/28/19

Training Program Owner

Date

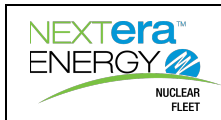
## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE



**S-6, RESTORE POWER TO 2B3 4.16KV BUS  
FROM OFFSITE – UNIT 2**

**JPM**  
Page 3 of 20

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE

**SIMULATOR SET-UP:** *(Only required for simulator JPMs)*

**SIMULATOR SETUP INSTRUCTIONS:**

1. Ensure L-19-1 NRC IC-205 files are transferred to the simulator drive.
2. **RESTORE** IC-205 S-6 NRC SETUP
3. **PLACE** the Simulator in **RUN**.
4. **Ensure** Breakers are OPEN and green flagged per Table 6
5. **Ensure** the Synchroscope Selector Switch is in the normal stored position on the desk(not in the control board)
6. Ensure L-19-1 NRC JPM S-6 IC files are deleted from the simulator drive when the JPM is no longer being administered.

**Required Materials:**

- 2-EOP-99, Appendix D
- 2-EOP-99, Table 6, marked up completed

**General References:**

- 2-EOP-99, APPENDICES / FIGURES / TABLES / DATA SHEETS, Appendix D, Restoration of Offsite Power With Edgs In Operation
- 2-EOP-99, APPENDICES / FIGURES / TABLES / DATA SHEETS, Table 6, Vital Power Breaker Configuration / Loss of Offsite Power

**Task Standards:** This JPM is complete when the 2B3 4.16KV bus is powered from offsite with EDG breaker open, EDG secured with no lockout present.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit-2 has experienced a Loss of Offsite Power (LOOP)
- BOTH EDGs were supplying their respective busses when offsite power was restored
- 2-EOP-99, Table 6, Vital Power Breaker Configuration / Loss Of Offsite Power has been completed

**INITIATING CUES:**

- You are the Desk RCO.
- The US has directed you to restore the 2B3 bus from offsite power IAW 2-EOP-99, Appendix D, and then Stop the 2B EDG.
- Offsite power is available.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

	<b>S-6, RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2</b>	<b>JPM</b> Page 6 of 20
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### JPM PERFORMANCE INFORMATION

**Start Time:** \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>2-EOP-99, APENDIX D, RESTORATION OF OFFSITE POWER WITH EDGs IN OPERATION</b>	
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>Restoration of offsite power should proceed ONE electrical train at a time. The preferred sequence is to restore offsite power to the train currently supplied by a Unit 2 EDG(s), using this appendix, and then to the train supplied by a Unit 1 source (if applicable) using Appendix E, Recovery From Unit to Unit AC Crosstie.</p>	
<b>Performance Step: 1</b> <b>Critical : NO</b>	<b>1. ENSURE</b> Table 6, Vital Power Breaker Configuration (LOOP), has been completed for the electrical train(s) supplied by a Unit 2 EDG(s).
<b>Standard:</b>	Examinee will DETERMINE that Table 6 is complete per the initiating cue
<b>Evaluator Cue:</b>	<b>IF asked, provide completed copy of Table 6.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

	<b>S-6, RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2</b>	<b>JPM</b> Page 7 of 20
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<b>Performance Step: 2</b> <b>Critical: YES</b>	<b>2. INSERT</b> sync plug <u>and</u> <b>PLACE</b> in the desired ST position.  <b>Step is critical, without sync plug, the breaker closure cannot be performed.</b>
<b>Standard:</b>	Examinee will <b>INSERT</b> sync plug and <b>POSITION</b> 2B S/U XFMR to ST-2B2
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical: YES</b>	<b>3. To ENERGIZE</b> the non-vital 4.16 KV bus, <b>CLOSE</b> the associated Startup Transformer breaker.  <b>Step is critical to align off-site power to the 2B3 bus.</b>
<b>Standard:</b>	Examinee will <b>POSITION</b> breaker 20302 to the <b>CLOSED</b> position
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>S-6, RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2</b>	<b>JPM</b> Page 8 of 20
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<b>Performance Step: 4</b> <b>Critical: YES</b>	<b>4. CLOSE</b> breaker 4.16 KV bus tie 2A2 -2A3 (2B2 - 2B3). <b>Step is critical to align off-site power to the 2B3 bus.</b>
<b>Standard:</b>	Examinee will <b>POSITION</b> breaker 20309 to the <b>CLOSED</b> position
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

**NOTE**

The EDG Governor Control amber light must be lit to ensure the EDG governor motor operated potentiometer is set to 60 cycles PRIOR to selecting sync plug to position TIE-2A3 or TIE -2B3.

<b>Performance Step: 5</b> <b>Critical: NO</b>	<b>7. ENSURE</b> that the amber light is lit on the EDG governor control
<b>Standard:</b>	Examinee will <b>OBSERVE</b> the amber light lit on the EDG Governor control
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	



**CAUTION**

After performing the next step, DO NOT change sync switch position **UNTIL AFTER** the EDG output breaker is OPEN..

<b>Performance Step: 6</b> <b>Critical : YES</b>	<b>6. INSERT</b> sync plug <u>and</u> <b>PLACE</b> in the desired TIE position.  <b>Step is critical, without sync plug, the breaker closure cannot be performed.</b>
<b>Standard:</b>	Examinee will <b>INSERT</b> sync plug and <b>POSITION</b> to TIE-2B3
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 7</b> <b>Critical : NO</b>	<b>7. MATCH</b> voltage using the EDG voltage control.
<b>Standard:</b>	Examinee will ADJUST EDG voltage control to MATCH EDG (running) to Grid (incoming) voltage.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

	<b>S-6, RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2</b>	<b>JPM</b> Page 10 of 20
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<b>Performance Step: 8</b> <b>Critical: YES</b>	<b>8.</b> Using EDG governor control, <b>ADJUST</b> synchroscope to <b>SLOW</b> in the COUNTER CLOCKWISE direction.  <b>Step is critical to satisfy the synch protection interlock.</b>
<b>Standard:</b>	Examinee will <b>ADJUST EDG Governor Control resulting in the</b> synchroscope rotating <b>SLOWLY</b> in the COUNTER-CLOCKWISE direction.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**NOTE**

Potential for diesel generator trip exists. If a SIAS signal is NOT present, ANY EDG trip signal that is currently present but bypassed by the bus undervoltage relays will be enabled when the vital to non-vital bus tie breaker is closed.

<b>Performance Step: 9</b> <b>Critical: YES</b>	<b>9.</b> When the synchroscope is in the 12 O'CLOCK position, CLOSE breaker 4.16 KV bus tie 2A3-2A2 (2B3-2B2).  <b>Step is critical to restore the 2A3 bus to offsite power source.</b>
<b>Standard:</b>	Examinee will <b>OBSERVE</b> the synchroscope at the 12 O'CLOCK position, CLOSE breaker 20411, 4.16 KV bus tie (2B3-2B2).
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>S-6, RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2</b>	<b>JPM</b> Page 11 of 20
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<b>Performance Step: 10</b> <b>Critical: YES</b>	<b>10. PLACE</b> EDG governor control to <b>RAISE</b> position UNTIL load is greater than 100 KW (50 amps) to avoid reverse power trip.  <p style="text-align: center;"><b>Step is critical to ENSURE a reverse power trip interlock is not met</b></p>
<b>Standard:</b>	Examinee will ADJUST EDG Governor to prevent a reverse power trip.(Should load to ~100KW)
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 11</b> <b>Critical : YES</b>	<b>11. ENSURE</b> 2A (2B) EDG load is 100 KW (50 amps) and OPEN breaker DG 4.16 KV BREAKER.  <p style="text-align: center;"><b>The Step is critical to open the breaker to remove the EDG from the grid.</b></p>
<b>Standard:</b>	Examinee should UNLOAD EDG to ~100 KW (50 amps), THEN open breaker 20401.
<b>Evaluator Cue:</b>	<b>NOTE: Examinee may report voltage differences to the US.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 12</b> <b>Critical : NO</b>	<b>12. REMOVE</b> the sync plug
<b>Standard:</b>	Examinee will <b>REMOVE</b> the sync plug
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

	<b>S-6, RESTORE POWER TO 2B3 4.16KV BUS FROM OFFSITE – UNIT 2</b>	<b>JPM</b> Page 12 of 20
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<b>Performance Step: 13</b> <b>Critical : NO</b>	<b>13. ENSURE</b> proper restart conditions by amber light indication on BOTH voltage regulator and governor controls.
<b>Standard:</b>	Examinee will OBSERVE amber light indications on BOTH voltage regulator and governor controls.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 14</b> <b>Critical : YES</b>	<b>14.</b> If no ESFAS start signal is present, Then STOP the EDG(s). (The EDG will cooldown at 450 rpm for 10 minutes and then stop)
<b>Standard:</b>	Examinee will <b>DEPRESS</b> the 2B EDG Stop Button
<b>Evaluator Cue:</b>	<b>IF asked the time compression is in effect and the 2B EDG is stopped.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 15</b> <b>Critical : NO</b>	<b>NOTIFY Unit Supervisor that task is complete</b>
<b>Standard:</b>	Examinee will <b>NOTIFY</b> Unit Supervisor that the 2B3 bus is powered from offsite power and the 2B EDG has been secured.
<b>Evaluator Cue:</b>	<b>UNIT SUPERVISOR ACKNOWLEDGES.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	



**S-6, RESTORE POWER TO 2B3 4.16KV BUS  
FROM OFFSITE – UNIT 2**

**JPM**  
Page 13 of 20

**Terminating Cues:**      The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**S-6, RESTORE POWER TO 2B3 4.16KV BUS  
FROM OFFSITE – UNIT 2**

**JPM**  
Page 14 of 20

**Examinee:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

**Date:** \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**REMEDATION REQUIRED:**

**YES:** ☐

**NO:** ☐

**COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).


**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET****INITIAL CONDITIONS:**

- Unit-2 has experienced a Loss of Offsite Power (LOOP)
- BOTH EDGs were supplying their respective busses when offsite power was restored
- 2-EOP-99, Table 6, Vital Power Breaker Configuration / Loss Of Offsite Power has been completed

**INITIATING CUES:**

- You are the Desk RCO.
- The US has directed you to restore the 2B3 bus from offsite power IAW 2-EOP-99, Appendix D, and then Stop the 2B EDG.
- Offsite power is available.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



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PROCEDURE NO.: 2-EOP-99		
<p align="center"><b>TABLE 6</b> <b><u>VITAL POWER BREAKER CONFIGURATION / LOSS OF OFFSITE POWER</u></b> (Page 1 of 1)</p>		
	<u>A Train</u> (✓)	<u>B Train</u> (✓)
<del>1.</del> 1. OPEN and / or GREEN FLAG the Startup Transformer Feeder breakers:		
• S.U. Transformer 2A (2B)	2-30102 ✓	(2-30202) ✓
• S.U. Transformer 2A (2B)	2-20102 ✓	(2-20302) ✓
<del>2.</del> 2. OPEN and / or GREEN FLAG the Auxiliary Transformer Feeder breakers:		
• Aux Transformer 2A (2B)	2-30101 ✓	(2-30201) ✓
• Aux Transformer 2A (2B)	2-20101 ✓	(2-20301) ✓
<del>3.</del> 3. OPEN and / or GREEN FLAG the tie breakers between the vital and non-vital 4.16 KV buses.		
• 4.16 KV Bus Tie 2A2-2A3 (2B2-2B3)	2-20109 ✓	(2-20309) ✓
• 4.16 KV Bus Tie 2A3-2A2 (2B3-2B2)	2-20209 ✓	(2-20411) ✓
<b>END OF TABLE 6</b>		

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PROCEDURE NO.: 2-EOP-99		

**APPENDIX D**

**RESTORATION OF OFFSITE POWER WITH EDGs IN OPERATION**

(Page 1 of 3)

A Train (√)    B Train (√)

**NOTE**

Restoration of offsite power should proceed **ONE** electrical train at a time. The preferred sequence is to restore offsite power to the train currently supplied by a Unit 2 EDG(s), using this appendix, and then to the train supplied by a **Unit 1** source (if applicable) using Appendix E, Recovery From Unit to Unit AC Crosstie.

☐ 1. ENSURE Table 6, Vital Power Breaker Configuration (LOOP), has been completed for the electrical train(s) supplied by a Unit 2 EDG(s). \_\_\_\_\_

☐ 2. INSERT sync plug and PLACE in the desired ST position.                      ST-2A2 \_\_\_\_\_ ST-2B2 \_\_\_\_\_

☐ 3. To ENERGIZE the non-vital 4.16 KV bus, CLOSE the associated Startup Transformer breaker.                      20102 \_\_\_\_\_ 20302 \_\_\_\_\_

☐ 4. CLOSE breaker 4.16 KV bus tie 2A2 -2A3 (2B2 - 2B3).                      20109 \_\_\_\_\_ (20309) \_\_\_\_\_

**NOTE**

The EDG Governor Control amber light must be lit to ensure the EDG governor motor operated potentiometer is set to 60 cycles **PRIOR** to selecting sync plug to position TIE-2A3 or TIE -2B3.

☐ 5. ENSURE that the amber light is lit on the EDG governor control. \_\_\_\_\_

**CAUTION**

After performing the next step, DO NOT change sync switch position **UNTIL AFTER** the EDG output breaker is OPEN.

☐ 6. INSERT sync plug and PLACE in the desired TIE position.                      TIE-2A3 \_\_\_\_\_ TIE-2B3 \_\_\_\_\_

☐ 7. MATCH voltage using the EDG voltage control. \_\_\_\_\_

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PROCEDURE NO.: 2-EOP-99		

**APPENDIX D**

**RESTORATION OF OFFSITE POWER WITH EDGs IN OPERATION**

(Page 2 of 3)

A Train (√)      B Train (√)

☐ 8. Using EDG governor control, ADJUST synchroscope to SLOW in the COUNTER CLOCKWISE direction. \_\_\_\_\_

**CAUTION**

**Potential for diesel generator trip exists.**

If a SIAS signal is NOT present, ANY EDG trip signal that is currently present but bypassed by the bus undervoltage relays will be enabled when the vital to non-vital bus tie breaker is closed.

☐ 9. When the synchroscope is in the 12 O'CLOCK position, CLOSE breaker 4.16 KV bus tie 2A3-2A2 (2B3 -2B2).      20209 \_\_\_\_\_ (20411) \_\_\_\_\_

☐ 10. PLACE EDG governor control to RAISE position UNTIL load is greater than 100 KW (50 amps) to avoid reverse power trip. \_\_\_\_\_

☐ 11. ENSURE 2A (2B) EDG load is 100 KW (50 amps) and OPEN breaker DG 4.16 KV BREAKER.      20211 \_\_\_\_\_ (20401) \_\_\_\_\_

☐ 12. REMOVE the sync plug. \_\_\_\_\_

☐ 13. ENSURE proper restart conditions by amber light indication on **BOTH** voltage regulator and governor controls. \_\_\_\_\_

☐ 14. If NO ESFAS start signal is present, Then STOP the EDG(s). (The EDG will cooldown at 450 rpm for 10 minutes and then stop)      2A EDG \_\_\_\_\_ 2B EDG \_\_\_\_\_

☐ 15. If a Unit 1 4.16 KV bus is being powered from Unit 2 via the SBO crosstie, Then DIRECT Unit 1 to restore offsite power in accordance with 1-EOP-99, Appendix E, Recovery from Unit to Unit AC Crosstie. \_\_\_\_\_

☐ 16. If the diesel has been running for greater than 1 hour, Then DRAIN accumulated water from Diesel Fuel Oil System. **REFER TO 2-NOP-59.02A(B).** \_\_\_\_\_

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**APPENDIX D**  
**RESTORATION OF OFFSITE POWER WITH EDGs IN OPERATION**  
 (Page 3 of 3)

☐ 17. If the other electrical train is powered from a Unit 2 EDG, Then REPEAT Steps 1 through 16.

**CAUTION**  
 If a Unit 1 vital bus is being powered from Unit 2 via the SBO crosstie, Then DO NOT re-energize non-vital loads **UNTIL** Unit 1 is separated from Unit 2. This will prevent overload of the Startup Transformer.

☐ 18. RESTORE remaining electrical buses to their normal supplies and PERFORM the following:

- ☐ A. RESTORE idle Intake Cooling Water Pump(s) **AS NECESSARY**.  
**REFER TO** 2-NOP-21.03A(B)(C)-2A(2B)(2C) Intake Cooling Water System Operation.
- ☐ B. If turbine speed has decreased to less than 600 rpm, Then ENSURE the Bearing Oil Lift Pump has started.
- ☐ C. START the Turbine Lube Oil Reservoir Vapor Extractor and Generator Bearing Oil Vapor Extractor.
- ☐ D. If turbine rotor has stopped, Then ENSURE unit is on turning gear.
- ☐ E. START the Bearing Oil Pump and STOP the Emergency Bearing Oil Pump.
- ☐ F. Locally START the Air Side seal Oil Pump and STOP the Air Side Seal Oil Backup Pump.
- ☐ G. Locally START the Hydrogen Side Seal Oil Pump.
- ☐ H. START ONE TCW Pump. MAINTAIN bearing oil temperature between 110°F and 120°F.  
**REFER TO** 2-NOP-13.03, Turbine Cooling Water System Normal Operation.
- ☐ I. START ONE Condensate Pump.  
**REFER TO** 2-NOP-12.03, Condensate System Operation.
- ☐ J. ENSURE at least one Spent Fuel Pool Cooling Pump is in operation.  
**REFER TO** 2-NOP-04.04, Fuel Pool Cooling and Purification System - Normal Operation.

**END OF APPENDIX D**



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 22

**JPM TITLE:** RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL MONITORS  
- UNIT 2

**JPM NUMBER:** L-19-1 NRC JPM S-7 **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07025090 / Align SFP Ventilation Trains  
07067430 / Respond To Fuel Handling Accident (Dropped/Damaged Fuel)

**K/A NUMBERS / K/A VALUES: (RO SRO)** 072 K1.01/ Knowledge of the physical connections and/or cause-effect relationship between the ARM system and the following system: Plant ventilation systems (3.1/3.5)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☒ Other: ☐  
Lab: ☐

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: YES

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date



**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
MONITORS - UNIT 2, Rev. 0**

**JPM**  
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**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

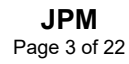
REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

{C001}

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

[illegible]



**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
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**SIMULATOR SET-UP:**

1. Ensure L-19-1 NRC JPM S-4 LSN is transferred to the simulator drive.
2. **RESTORE** IC-1.
3. **UNFREEZE** the Simulator.
4. **SELECT** and **OPEN** file L-19-1 NRC JPM S-7 lsn, **DO NOT EXECUTE** the lesson yet.
5. After examiner turns over to the student and starts the JPM, then **EXECUTE** the lesson for L-19-1 NRC JPM S-7 (Executing the Lesson causes the radiation alarms to come in)
6. When complete with the JPM, **FREEZE** the Simulator and **STOP** the Lesson.
7. For each student go back to step 2.

**Required Materials:**      ▪ 2-AOP-26.02, AREA RADIATION MONITORS, Section 4.2.4, Step 4

**General References:**      ▪ 2-AOP-26.02, AREA RADIATION MONITORS

**Task Standards:**      This JPM is complete when the US has been notified that the critical steps identified for the Fuel Handling Building ventilation line-up have been verified including contingency actions in accordance with 2-AOP-26.02.





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I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 is at 100% power
- Refueling preparations are being made in the Fuel Handling Building with spent fuel movement in progress in the spent fuel pool
- Maintenance is walking down the diesels.
- Scaffolding is being erected in the turbine building for outage preps.

**INITIATING CUES:**

- You are the Desk RCO and you are to respond to conditions

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
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**JPM PERFORMANCE INFORMATION**

**Start Time:** \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>Evaluator Cue:</b>	<b>1) If applicant indicates the need to enter 2-AOP-67.01, Accidents Involving New or Spent Fuel, “the US states another operator will perform 2-AOP-67.01 and directs you to perform 2-AOP-26.02.”</b>  <b>2) If applicant contacts Fuel Handling supervisor for a status, report “We dropped a fuel assembly and we are taking out immediate actions.”</b>
-----------------------	---

2-AOP-26.02, AREA RADIATION MONITORS, Section 4.2.4, Fuel Handling Building Radiation Monitor Alarm Step 1	
<b>Performance Step: 1</b> <b>Critical NO</b>	1. VERIFY only one FHB monitor is alarmed
<b>Standard:</b>	Examinee will observe that more than 1 FHB monitor is in alarm and go to the contingency action which directs the examinee to GO TO Section 4.2.4, Step 4.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
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2-AOP-26.02, AREA RADIATION MONITORS,  
Section 4.2.4, Fuel Handling Building Radiation Monitor Alarm, Step 4.  
IF more than one HIGH Alarm in a train actuated, THEN VERIFY FHB ventilation transfer to SBVS as  
follows:

**NOTE**

Contingency actions are performed at HVAC Panel or locally as conditions allow.

<b>Performance Step: 2</b> <b>Critical NO</b>	A. <b>ENSURE</b> the following fans, <b>STOPPED</b> : <ul style="list-style-type: none"><li>• HVS-6, FUEL POOL SUPPLY FAN.</li><li>• HVS-7, FUEL HANDLING BLDG SUPPLY FAN.</li><li>• HVE-15, FUEL HANDLING BLDG EXHAUST FAN.</li><li>• HVE-16A, FUEL POOL EXHAUST FAN</li><li>• HVE-16B, FUEL POOL EXHAUST FAN</li></ul>
<b>Standard:</b>	Examinee <b>ENSURES</b> each Fan's GREEN light ON and RED light OFF. If fan running, then places control switch in OFF and verifies GREEN light ON and RED light OFF.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL MONITORS - UNIT 2, Rev. 0**

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<b>Performance Step: 3</b> <b>Critical NO</b>	A. <b>ENSURE</b> the following fans, STOPPED: <ul style="list-style-type: none"><li>HVE-17, FUEL BLDG H&amp;V ROOM EXHAUST FAN (FHB/52/FH6/E-RAC)</li></ul>
<b>Standard:</b>	Examinee <b>DIRECTS</b> the SNPO to locally <b>STOP</b> HVE-17, FUEL BLDG H&V ROOM EXHAUST FAN.
<b>Evaluator Cue:</b>	<b>SNPO reports that HVE-17, FUEL BLDG H&amp;V ROOM EXHAUST FAN, is STOPPED.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**NOTE**

Fuses for dampers are behind HVAC Panel.

<b>Performance Step: 4</b> <b>Critical YES</b>	B. <b>VERIFY</b> the following FHB dampers, <b>CLOSED</b> : <ul style="list-style-type: none"><li>D-33, FUEL HDLG BLDG INLET DAMPER (<b>FAILED OPEN</b>)</li><li>D-35, FUEL HDLG BLDG OUTLET DAMPER</li><li>D-29, FUEL POOL INLET DAMPER</li><li>D-31, FUEL POOL OUTLET DAMPER</li><li>D-34, FUEL HDLG BLDG INLET DAMPER</li><li>D-36, FUEL HDLG BLDG OUTLET DAMPER</li><li>D-30, FUEL POOL INLET DAMPER</li><li>D-32, FUEL POOL OUTLET DAMPER</li></ul>
<b>Standard:</b>	Examinee <b>VERIFIES</b> Dampers D-29 through D-36 are <b>CLOSED</b> , Green light ON, Red light OFF with the exception of D-33. Examinee verifies D-33 is <b>OPEN</b> , Red light ON, Green light OFF and reports need to pull fuses for D-33 to the US.
<b>Evaluator Cue:</b>	<b>US acknowledges D-33 is open and states another RO will pull fuses for D-33.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
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<b>Performance Step: 5</b> <b>Critical : NO</b> <b>Faulted Step</b>	<b>C. VERIFY FCV-25-30, FUEL HANDLING EMERG VENT VLV, OPEN.</b>
<b>Standard:</b>	Examinee <b>VERIFIES</b> position of FCV-25-30, Fuel Handling Emerg Vent Vlv by observing Green light ON and Red light OFF.  Examinee <b>DETERMINES</b> FCV-25-30, Fuel Handling Emerg Vent Vlv, <b>CLOSED</b> .
<b>Evaluator Cue:</b>	<b>FCV-25-30 indicates Green light ON, Red Light OFF.</b>  <b>EVALUTOR NOTE: FCV-25-30 failed to auto OPEN.</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical YES</b>	<b>CONTINGENCY ACTION:</b> C.1 <b>OPEN</b> FCV-25-30, FUEL HANDLING EMERG VENT VLV.  <b>Step is critical because without taking contingency action to OPEN FCV-25-30 the task cannot be completed.</b>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-30 control switch to <b>OPEN</b> and <b>VERIFIES</b> Green light OFF, Red light ON. Examinee <b>OBSERVES</b> X-4 Alarms as delta-P lowers.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	



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<b>Performance Step: 7</b> <b>Critical: NO</b> <b>Faulted Step</b>	<b>D. VERIFY FCV-25-32, SBVS ISOLATION VALVE, CLOSED.</b>
<b>Standard:</b>	Examinee <b>VERIFIES</b> position of FCV-25-32, SBVS ISOLATION VALVE by observing Green light OFF and Red light ON.  Examinee <b>DETERMINES</b> FCV-25-32, SBVS ISOLATION VALVE <b>OPEN</b> .
<b>Evaluator Cue:</b>	<b>NONE</b>  <b>EVALUTOR NOTE: FCV-25-32 failed to auto CLOSE.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical YES</b>	<b>CONTINGENCY ACTION:</b> D.1 <b>CLOSE</b> FCV-25-32, SBVS ISOLATION VALVE.  <b>Step is critical because without taking contingency action to CLOSING FCV-25-32 the task cannot be completed.</b>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-32 control switch to <b>CLOSE</b> . Examinee <b>VERIFIES</b> FCV-25-32 indicates Green light ON, Red Light OFF. Examinee <b>OBSERVES</b> V-20 & X4 Alarms.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



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<b>Performance Step: 9</b>	E. <b>VERIFY</b> HVE-6A, SBVS EXHAUST FAN, <b>ON</b> .
<b>Critical NO</b>	
<b>Standard:</b>	Examinee <b>VERIFIES</b> HVE-6A, SBVS EXHAUST FAN, Green light OFF, Red light ON.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 10</b>	F. <b>VERIFY</b> FCV-25-31, FUEL HANDLING EMERG VENT VLV, <b>OPEN</b> .
<b>Critical: NO</b>	
<b>Faulted Step</b>	
<b>Standard:</b>	Examinee <b>VERIFIES</b> position of FCV-25-31, FUEL HANDLING EMERG VENT VLV by observing Green/Red indication lights.  Examinee <b>DETERMINES</b> FCV-25-31, FUEL HANDLING EMERG VENT VLV, <b>CLOSED</b> .
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE: FCV-25-31 failed to auto OPEN.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 11</b>	<b>CONTINGENCY ACTION:</b>
<b>Critical YES</b>	F.1 OPEN FCV-25-31, FUEL HANDLING EMERG VENT VLV.  <b>Step is critical because without taking contingency action to OPENING FCV-25-31 the task cannot be completed.</b>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-31 control switch to OPEN. Examinee <b>VERIFIES</b> FCV-25-31 indicates Green light OFF, Red Light ON.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



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<b>Performance Step: 12</b> <b>Critical: NO</b> <b>Faulted Step</b>	<b>G. VERIFY FCV-25-33, SBVS ISOLATION VALVE, CLOSED.</b>
<b>Standard:</b>	Examinee <b>VERIFIES</b> position of FCV-25-33, SBVS ISOLATION VALVE by observing Green/Red indication lights.  Examinee <b>DETERMINES</b> FCV-25-33, SBVS ISOLATION VALVE, <b>OPEN</b> .
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUTOR NOTE: FCV-25-33 failed to auto CLOSE.</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 13</b> <b>Critical YES</b>	<b>CONTINGENCY ACTION:</b> G.1 CLOSE FCV-25-33, SBVS Isolation Valve.  <b>Step is critical because without taking contingency action to CLOSING FCV-25-33 the task cannot be completed.</b>
<b>Standard:</b>	Examinee <b>POSITIONS</b> FCV-25-33 control switch to CLOSE. Examinee <b>VERIFIES</b> FCV-25-33 indicates Green light ON, Red Light OFF. Examinee <b>OBSERVES</b> V-21 & X4 Reflash Alarms.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	





**S-7 RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
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<b>Performance Step: 14</b> <b>Critical : NO</b> <b>Faulted Step</b>	H. <b>VERIFY</b> HVE-6B, SBVS EXHAUST FAN, is <b>ON</b> .
<b>Standard:</b>	Examinee <b>OBSERVES</b> HVE-6B, SBVS EXHAUST FAN Green light ON and Red light OFF. Examinee <b>DETERMINES</b> HVE-6B, SBVS EXHAUST FAN, FAILED to AUTO START.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE: HVE-6B, SBVS EXHAUST FAN, FAILED to AUTO START.</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	
<b>Performance Step: 15</b> <b>Critical YES</b>	H. <b>CONTINGENCY ACTION:</b> H.1 <b>START</b> HVE-6B, SBVS EXHAUST FAN  <b>Step is critical because without taking contingency action to START HVE-6B, SBVS EXHAUST FAN the task cannot be completed.</b>
<b>Standard:</b>	<ul style="list-style-type: none"> <li>Examinee <b>POSITIONS</b> HVE-6B, SBVS EXHAUST FAN control switch to <b>START</b>.</li> <li>Examinee <b>VERIFIES</b> HVE-6B, SBVS EXHAUST FAN indicates Green light OFF, Red Light ON.</li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY</b>
<b>Comments:</b>	



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<b>Performance Step: 16 Critical N</b>	<b>NOTIFY</b> the US that the Fuel Handling Building ventilation line-up has been verified in accordance with 2-AOP-26.02, section 4.2.4, step 4. FCV-25-30 and FCV-25-31 had to be manually opened, FCV-25-32 and FCV-25-33 had to be manually closed.
<b>Standard:</b>	Examinee <b>NOTIFIES</b> the US that the Fuel Handling Building ventilation line-up has been verified in accordance with 2-AOP-26.02, section 4.2.4, step 4. FCV-25-30 and FCV-25-31 had to be manually opened, FCV-25-32 and FCV-25-33 had to be manually closed.
<b>Evaluator Cue:</b>	<b>US ACKNOWLEDGES:</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:**

The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**RESPOND TO HIGH RADIATION ALARM ON SPENT FUEL  
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Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

PLACEKEEPING COMMENTS:

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If  
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

## TURNOVER SHEET

### **INITIAL CONDITIONS:**

- Unit 2 is at 100% power
- Refueling preparations are being made in the Fuel Handling Building with spent fuel movement in progress in the spent fuel pool
- Maintenance is walking down the diesels.
- Scaffolding is being erected in the turbine building for outage preps.

### **INITIATING CUES:**

- You are the Desk RCO and you are to respond to conditions.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

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PROCEDURE NO.: <b>2-AOP-26.02</b>	<b>ST. LUCIE UNIT 2</b>	

**INSTRUCTIONS**

**CONTINGENCY ACTIONS**

**4.2.4 Fuel Handling Building Radiation Monitor Alarm**

**NOTE**

- The Spent Fuel Pool Radiation Monitor System consists of 6 radiation monitor inputs, divided into 2 groups, SA and SB. Instrumentation is shown in Table 3.
- 2 out of 3 HIGH Alarms on Train A or 2 out of 3 HIGH Alarms on Train B will initiate FHB ventilation transfer to Shield Building Ventilation System (SBVS) on both trains.

Table 3

Channel	Monitor			Recorder
Monitor SA	RC-26-7	RC-26-9	RC-26-11	RR-26-1 (Channels 17,18,19)
RMCS SA	GAG-007	GAG-009	GAG-011	
Monitor SB	RC-26-8	RC-26-10	RC-26-12	RR-26-2 (Channels 17,18,19)
RMCS SB	GAG-008	GAG-010	GAG-012	

☐ **1. VERIFY** only one FHB monitor is alarmed.
 

**1.1 GO TO** Section 4.2.4, Step 4.

**2.** IF greater than one FHB monitor exhibits UNEXPECTED rising radiation levels challenging HIGH ALARM setpoints,  
THEN **PERFORM** the following:
 

**A. SUSPEND** any fuel movement or Independent Spent Fuel Storage Installation (ISFSI) cask loading or unloading operations in progress.

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INSTRUCTIONS

CONTINGENCY ACTIONS

**4.2.4 Fuel Handling Building Radiation Monitor Alarm (continued)**

**2. (continued)**

- B. EVACUATE** the fuel pool area and **INSTRUCT** personnel to remain on the landing outside the Fuel Handling Building door until monitored for contamination.
- C. REQUEST** Security to perform personnel accountability for evacuation.
- D. REQUEST** RP to perform applicable surveys.

☐ **3. VERIFY** FHB monitor alarm, VALID, as follows:

- A. VERIFY** affected channel rising trend on RR-26-1 / RR-26-2 recorders.
- B. MONITOR** other FHB channels for ALERT indication or rising trends on RR-26-1 / RR-26-2 .

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INSTRUCTIONS

CONTINGENCY ACTIONS

**4.2.4 Fuel Handling Building Radiation Monitor Alarm (continued)**

☐ **4.** IF more than one HIGH alarm in a train actuated,  
THEN **ENSURE** FHB ventilation transfer to SBVS as follows:

**NOTE**

Contingency actions are performed at HVAC Panel or locally as conditions allow.

**A. ENSURE** the following fans, STOPPED:

- HVS-6, FUEL POOL SUPPLY FAN
- HVS-7, FUEL HANDLING BLDG SUPPLY FAN
- HVE-15, FUEL HANDLING BLDG EXHAUST FAN
- HVE-16A, FUEL POOL EXHAUST FAN
- HVE-16B, FUEL POOL EXHAUST FAN
- HVE-17, FUEL BLDG H&V ROOM EXHAUST FAN (FHB/52/FH6/E-RAC)

**A.1 STOP** any running fan.

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INSTRUCTIONS	CONTINGENCY ACTIONS		
<b>4.2.4 Fuel Handling Building Radiation Monitor Alarm (continued)</b>  <b>4. (continued)</b>			
<table border="1"> <tr> <th>NOTE</th> </tr> <tr> <td>Fuses for dampers are behind HVAC Panel.</td> </tr> </table>		NOTE	Fuses for dampers are behind HVAC Panel.
NOTE			
Fuses for dampers are behind HVAC Panel.			
<b>B. VERIFY</b> the following FHB dampers, CLOSED: <ul style="list-style-type: none"> <li>D-33, FUEL HDLG BLDG INLET DAMPER</li> <li>D-35, FUEL HDLG BLDG OUTLET DAMPER</li> <li>D-29, FUEL POOL INLET DAMPER</li> <li>D-31, FUEL POOL OUTLET DAMPER</li> <li>D-34, FUEL HDLG BLDG INLET DAMPER</li> <li>D-36, FUEL HDLG BLDG OUTLET DAMPER</li> <li>D-30, FUEL POOL INLET DAMPER</li> <li>D-32, FUEL POOL OUTLET DAMPER</li> </ul>	<b>B.1 FAIL CLOSED</b> any open damper by pulling the associated fuse: <ul style="list-style-type: none"> <li>120V AC SA F- 80</li> <li>120V AC SA F- 80</li> <li>120V AC SA F-21</li> <li>120V AC SA F-21</li> <li>120V AC SB F-80</li> <li>120V AC SB F-80</li> <li>120V AC SB F-21</li> <li>120V AC SB F-21</li> </ul>		



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INSTRUCTIONS	CONTINGENCY ACTIONS
<b>4.2.4 Fuel Handling Building Radiation Monitor Alarm (continued)</b>	
<b>4. (continued)</b>	
<b>C. VERIFY</b> FCV-25-30, FUEL HANDLING EMERG VENT VLV, OPEN.	<b>C.1 OPEN</b> FCV-25-30, FUEL HANDLING EMERG VENT VLV.
<b>D. VERIFY</b> FCV-25-32, SBVS ISOLATION VALVE, CLOSED.	<b>D.1 CLOSE</b> FCV-25-32, SBVS ISOLATION VALVE.
<b>E. VERIFY</b> HVE-6A, SBVS EXHAUST FAN, ON.	<b>E.1 START</b> HVE-6A, SBVS EXHAUST FAN.
<b>F. VERIFY</b> FCV-25-31, FUEL HANDLING EMERG VENT VLV, OPEN.	<b>F.1 OPEN</b> FCV-25-31, FUEL HANDLING EMERG VENT VLV.
<b>G. VERIFY</b> FCV-25-33, SBVS ISOLATION VALVE, CLOSED.	<b>G.1 CLOSE</b> FCV-25-33, SBVS ISOLATION VALVE.
<b>H. VERIFY</b> HVE-6B, SBVS EXHAUST FAN, ON.	<b>H.1 START</b> HVE-6B, SBVS EXHAUST FAN.
<input type="checkbox"/> <b>5. INITIATE</b> action to identify and isolate the source of increased activity.	

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PROCEDURE NO.: 2-AOP-26.02	ST. LUCIE UNIT 2	

INSTRUCTIONS

CONTINGENCY ACTIONS

**4.2.4 Fuel Handling Building Radiation Monitor Alarm (continued)**

- ☐ **6. REFER TO** EPIP-00, Discovery & Identification of an Emergency Condition (Including Chemical, Fire and Natural Emergencies).
- 7. REFER TO** EPIP-07, Conduct Of Evacuations / Assembly.
- ☐ **8.** IF alarm is due to fuel handling accident, THEN **GO TO** 2-AOP-67.01, Accidents Involving New or Spent Fuel.
- ☒ **9.** WHEN FHB conditions permit THEN **PERFORM** Attachment 2, Fuel Pool Ventilation Restoration.
- ☐ **10. GO TO** Section 4.2.1, Step 2.



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 19

**JPM TITLE:** ALIGN 2C CCW PUMP TO SUPPLY THE 'B' CCW HEADER – UNIT 2

**JPM NUMBER:** S-8 **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07014060 / Respond to a Component Cooling Water System malfunction

**K/A NUMBERS / K/A VALUES: (RO SRO)** 008 A2.01 / Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCW pump (3.3/3.6)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐

Simulator: ☒ Other: ☐

Lab: ☐

Time for Completion: 15 Minutes Time Critical: No

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date

**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

<b>REVIEW STATEMENTS</b>	<b>YES</b>	<b>NO</b>	<b>N/A</b>
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE



**S-8; ALIGN 2C CCW PUMP TO SUPPLY THE 'B' CCW  
HEADER – UNIT 2**

**JPM**  
Page 3 of 19

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE

**SIMULATOR SET-UP:** *(Only required for simulator JPMs)*

**SIMULATOR SETUP INSTRUCTIONS:**

1. Ensure L-19-1 NRC JPM S-8 IC 205 files are transferred to the simulator drive. (No lesson plan is required for this setup)
2. RESTORE IC-205
3. PLACE the Simulator in RUN.
4. Ensure L-19-1 NRC JPM S-8 IC 205 files are deleted from the simulator drive when the JPM is no longer being administered.

- Required Materials:**      ▪ 2-AOP-14.01 Component Cooling Water Abnormal Operation, Section 4.2.3
- General References:**    ▪ 2-AOP-14.01 Component Cooling Water Abnormal Operation
- Task Standards:**        The applicant will perform the Operator actions of 2-AOP-14.01 Component Cooling Water Abnormal Operation and align the 2C CCW pump to the “B” header, both electrically and mechanically, with the 2C CCW pump running

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 is at 100% power. The 2B CCW pump has tripped and cannot be started. The 2C CCW pump is available to be aligned and started on the 2B CCW header.

**INITIATING CUES:**

- You are the Board RCO
- The US directs you to align and start the 2C CCW pump on the 2B header in accordance with 2-AOP-14.01 Component Cooling Water Abnormal Operation, Section 4.2.3.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

**2-AOP-14.01 Component Cooling Water Abnormal Operation, Step 4.2.3, Loss of CCW Pump 2B**

<b>Performance Step: 1</b> <b>Critical : NO</b>	1. <b>VERIFY</b> both the following conditions are met: • CCW Pump 2B tripped. • CCW Pump 2C available to supply CCW Header B
<b>Standard:</b>	Examinee will <b>VERIFY</b> 2B CCW pump not running AND 2C CCW pump is available
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	<b>EVALUATOR NOTE:</b> During this scenario, an instructor should play the part of the Desk RCO and keep the annunciators acknowledged to allow the candidate to focus on the task at hand.

<b>Performance Step: 2</b> <b>Critical: NO</b>	2. <b>PLACE</b> the 2B CCW pump in Pull to Lock
<b>Standard:</b>	Examinee will <b>PLACE</b> the 2B CCW pump in Pull to Lock
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**CAUTION**

If CCW is completely lost to a SDC HX, then SDC flow must be promptly isolated to limit flashing and prior to restoring CCW flow to limit thermal stress.



<b>Performance Step: 3</b> <b>Critical : NO</b>	3. <b>VERIFY</b> SDC Loop 2B is NOT in service
<b>Standard:</b>	Examinee will <b>DETERMINE</b> that SDC is not in service, step is N/A
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 4</b> <b>Critical: NO</b>	4 <b>VERIFY</b> the 2C CCW pump is stopped.
<b>Standard:</b>	Examinee will <b>Determine</b> 2C CCW pump is not running
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b><u>NOTE</u></b> Annunciator S-26, 2C CCW PUMP HDR VALVES / AB BUS MISALIGNMENT, is expected while re-aligning CCW Pump 2C to CCW Header B if electrically aligned on Train A.
<b>Performance Step: 5</b> <b>Critical : NO</b>	5. <b>VERIFY</b> the following CLOSED: • MV-14-1 PUMP 2C DISCH TO HEADER A • MV-14-3 HEADER A TO PUMP 2C
<b>Standard:</b>	Examinee will <b>DETERMINE</b> : • MV-14-1 PUMP 2C DISCH TO HEADER A is Open • MV-14-3 HEADER A TO PUMP 2C is Open
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical : YES</b>	5.1. <b>CLOSE</b> the following: • MV-14-1, PUMP 2C DISCH TO HEADER A • MV-14-3, HEADER A TO PUMP 2C
<b>Standard:</b>	Examinee will <b>CLOSE</b> : • MV-14-1, PUMP 2C DISCH TO HEADER A • MV-14-3, HEADER A TO PUMP 2C
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 7</b> <b>Critical : NO</b>	6 <b>VERIFY</b> the following OPEN: <ul style="list-style-type: none"> <li>• MV-14-2, PUMP 2C DISCH TO HEADER B</li> <li>• MV-14-4, HEADER B TO PUMP 2C</li> </ul>
<b>Standard:</b>	Examinee will <b>DETERMINE</b> : <ul style="list-style-type: none"> <li>• MV-14-2, PUMP 2C DISCH TO HEADER A is Closed</li> <li>• MV-14-4, HEADER A TO PUMP 2C is Closed</li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical : YES</b>	6.1. <b>OPEN</b> the following: <ul style="list-style-type: none"> <li>• MV-14-2, PUMP 2C DISCH TO HEADER B</li> <li>• MV-14-4, HEADER B TO PUMP 2C</li> </ul>
<b>Standard:</b>	Examinee will <b>OPEN</b> : <ul style="list-style-type: none"> <li>• MV-14-2, PUMP 2C DISCH TO HEADER B</li> <li>• MV-14-4, HEADER B TO PUMP 2C</li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b><u>NOTE</u></b> If 2AB AC and DC Buses are NOT all powered from the B side, then Tech Specs credit can NOT be taken for CCW Pump 2C until alignment is complete.
<b>Performance Step: 9</b> <b>Critical : NO</b>	7. <b>VERIFY</b> both the following conditions are met: <ul style="list-style-type: none"> <li>• CCW Pump 2C electrically aligned to B Side.</li> <li>• 4160V Bus 2B3 <b>ENERGIZED</b></li> </ul>
<b>Standard:</b>	Examinee will <b>DETERMINE</b> : <ul style="list-style-type: none"> <li>• The 2C CCW pump is <b>NOT</b> electrically aligned to the B side</li> <li>• The 4160V Bus 2B3 is <b>ENERGIZED</b></li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 10</b> <b>Critical : NO</b>	7.1 <b>IF</b> in MODES 1 to 4 AND 4160V Bus 2B3 <b>ENERGIZED</b> , THEN <b>PERFORM</b> Attachment 2, Aligning 4160V Bus 2AB to B Side, prior to starting   CCW Pump 2C on Header B
<b>Standard:</b>	Examinee <b>DETERMINES</b> the 2AB bus requires alignment to the B side and performs Attachment 2, Aligning 4160 V bus 2AB to B Side
<b>Evaluator Cue:</b>	<b>NONE</b>

	<b>S-8; ALIGN 2C CCW PUMP TO SUPPLY THE 'B' CCW HEADER – UNIT 2</b>	<b>JPM</b> Page 9 of 19
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<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Attachment 2 of 2-AOP-14.01</b>	
<p style="text-align: center;"><b>NOTE</b></p> <ul style="list-style-type: none"> <li>• Tech Spec 3.7.3, Component Cooling Water System, applies until 480 VAC and 125 VDC busses are realigned.</li> <li>• While aligning 4160V Bus 2AB to B side, the following annunciators will be received: <ul style="list-style-type: none"> <li>• B-48, 4.16KV SWGR 480V LC/MCC 2AB UV (RTGB-201)</li> <li>• B-60, EMERG 125V DC / 4.16KV / 480V AB BUSES MISALIGNED (RTGB-201)</li> <li>• S-16, EMERG 125VDC/4.16KV/480V AB BUSES MISALIGNED (RTGB-206)</li> </ul> </li> </ul>	
<b>Performance Step: 11</b> <b>Critical : NO</b>	1. <b>VERIFY</b> the following tie breakers are OPEN (RTGB 201): <ul style="list-style-type: none"> <li>• Brk. 1-20501, 1AB 4.16KV Bus SBO X-Tie is OPEN</li> <li>• Brk. 2-20501, 2AB 4.16KV Bus SBO X-Tie is OPEN</li> </ul>
<b>Standard:</b>	Examinee will <b>VERIFY</b> : <ul style="list-style-type: none"> <li>• Brk. 1-20501, 1AB 4.16KV Bus SBO X-Tie is OPEN</li> <li>• Brk. 2-20501, 2AB 4.16KV Bus SBO X-Tie is OPEN</li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 12</b> <b>Critical : NO</b>	2. <b>VERIFY</b> the following pump control switches are in <b>PULL-TO-LOCK</b> : <ul style="list-style-type: none"> <li>• Component Cooling Water Pump 2C (RTGB-206)</li> <li>• Intake Cooling Water Pump 2C (RTGB-202)</li> </ul>
<b>Standard:</b>	Examinee will <b>VERIFY</b> the following pumps are in PULL-TO-LOCK: <ul style="list-style-type: none"> <li>• Component Cooling Water Pump 2C (RTGB-206)</li> <li>• Intake Cooling Water Pump 2C (RTGB-202)</li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 13</b> <b>Critical : YES</b>	3. <b>ENSURE</b> 4160V Bus 2AB aligned to B side as follows: (RTGB-201) <ul style="list-style-type: none"> <li>A. Bkr 2-20505, 4.16KV BUS TIE 2AB/2A3 OPEN</li> <li>B. Bkr 2-20208, 4.16KV BUS TIE 2A3/2AB OPEN</li> <li>C. Bkr 2-20409, 4.16KV BUS TIE 2B3/2AB CLOSED</li> <li>D. Bkr 2-20504, 4.16KV BUS TIE 2AB/2B3 CLOSED</li> </ul>
<b>Standard:</b>	Examinee <b>PLACES</b> control switches for the following: <ul style="list-style-type: none"> <li>A. Bkr 2-20505, 4.16KV BUS TIE 2AB/2A3 OPEN</li> <li>B. Bkr 2-20208, 4.16KV BUS TIE 2A3/2AB OPEN</li> <li>C. Bkr 2-20409, 4.16KV BUS TIE 2B3/2AB CLOSED</li> <li>D. Bkr 2-20504, 4.16KV BUS TIE 2AB/2B3 CLOSED</li> </ul>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Transition back to 2-AOP-14.01 Component Cooling Water Abnormal Operation, Step 4.2.3,  
Loss of CCW Pump 2B**

<b>Performance Step: 14</b> <b>Critical : YES</b>	8. <b>WHEN</b> both the following conditions are met: <ul style="list-style-type: none"> <li>• IF SDC HX 2B was in service, THEN SDC HX 2B flow isolation is complete per Section 4.2.3 Step 3</li> <li>• 4160V electrical alignment of CCW Pump 2C complete</li> </ul> <p align="center"><b>THEN START CCW Pump 2C.</b></p>
<b>Standard:</b>	Examinee <b>RECOGNIZES</b> that SDC HX 2B was not in service and that the 4160V electrical alignment of CCW Pump 2C is complete (IAW Attachment 2) <p align="center"><b>STARTS CCW Pump 2C</b></p>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>S-8; ALIGN 2C CCW PUMP TO SUPPLY THE 'B' CCW HEADER – UNIT 2</b>	<b>JPM</b> Page 11 of 19
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<b>Performance Step: 15</b> <b>Critical : NO</b>	9. <b>VERIFY</b> CCW Header B pressures and flows return to normal: <ul style="list-style-type: none"> <li>• FIS-14-1B, HEADER FLOW</li> <li>• PIS-14-8B, HEADER PRESSURE</li> </ul>
<b>Standard:</b>	Examinee <b>VERIFIES</b> the annunciators associated with CCW flows and pressures are clear and indications return to normal
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:** The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**STOP TIME** \_\_\_\_\_



**S-8; ALIGN 2C CCW PUMP TO SUPPLY THE 'B' CCW  
HEADER – UNIT 2**

**JPM**  
Page 12 of 19

**Applicant:** \_\_\_\_\_ **Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO-U ☐ SRO-I

**Date:** \_\_\_\_\_

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).


**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If  
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

**TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 is at 100% power. The 2B CCW pump has tripped and cannot be started. The 2C CCW pump is available to be aligned and started on the 2B CCW header.

**INITIATING CUES:**

- You are the Board RCO
- The US directs you to align and start the 2C CCW pump on the 2B header in accordance with 2-AOP-14.01 Component Cooling Water Abnormal Operation, Section 4.2.3.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

REVISION NO.: 15	PROCEDURE TITLE: COMPONENT COOLING WATER ABNORMAL OPERATIONS  ST. LUCIE UNIT 2	PAGE: 15 of 118
PROCEDURE NO.: 2-AOP-14.01		

**INSTRUCTIONS**

**CONTINGENCY ACTIONS**

**4.2.3 Loss of CCW Pump 2B**

☐ **1. VERIFY** both the following conditions are met:

- CCW Pump 2B tripped.
- CCW Pump 2C available to supply CCW Header B.

**1.1 PLACE** CCW Pump 2B Control Switch in PULL TO LOCK.

**1.2 GO TO** Section 4.2.5, Loss of Two CCW Pumps.

☐ **2. PLACE** CCW Pump 2B Control Switch in PULL TO LOCK.

**CAUTION**

If CCW is completely lost to a SDC HX, then SDC flow must be promptly isolated to limit flashing and prior to restoring CCW flow to limit thermal stress.

☐ **3. VERIFY** SDC Loop 2B is **NOT** in service.

**3.1 ISOLATE** SDC HX 2B flow as follows:

- A. ENSURE** FCV-3301, BYPASS (SDC Loop 2B2, Key 43), is OPEN or THROTTLED OPEN.
- B. CLOSE** HCV-3512, FLOW (SDC Loop 2B2, Key 51).
- C. CLOSE** HCV-14-3B, SHUTDOWN HX 2B (CCW).



REVISION NO.: 15	PROCEDURE TITLE: COMPONENT COOLING WATER ABNORMAL OPERATIONS  ST. LUCIE UNIT 2	PAGE: 16 of 118
PROCEDURE NO.: 2-AOP-14.01		

INSTRUCTIONS	CONTINGENCY ACTIONS
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**4.2.3 Loss of CCW Pump 2B (continued)**

<input type="checkbox"/> <b>4. VERIFY</b> CCW Pump 2C is stopped.	<b>4.1</b> IF CCW Pump 2A is on standby, THEN <b>PERFORM</b> the following:  <b>A. START</b> CCW Pump 2A.  <b>B. STOP</b> CCW Pump 2C.
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**NOTE**

Annunciator S-26, 2C CCW PUMP HDR VALVES / AB BUS MISALIGNMENT, is expected while re-aligning CCW Pump 2C to CCW Header B if electrically aligned on Train A.

<input type="checkbox"/> <b>5. VERIFY</b> the following CLOSED: <ul style="list-style-type: none"> <li>MV-14-1, PUMP 2C DISCH TO HEADER A</li> <li>MV-14-3, HEADER A TO PUMP 2C</li> </ul>	<b>5.1 CLOSE</b> the following: <ul style="list-style-type: none"> <li>MV-14-1, PUMP 2C DISCH TO HEADER A</li> <li>MV-14-3, HEADER A TO PUMP 2C</li> </ul>
<input type="checkbox"/> <b>6. VERIFY</b> the following OPEN: <ul style="list-style-type: none"> <li>MV-14-2, PUMP 2C DISCH TO HEADER B</li> <li>MV-14-4, HEADER B TO PUMP 2C</li> </ul>	<b>6.1 OPEN</b> the following: <ul style="list-style-type: none"> <li>MV-14-2, PUMP 2C DISCH TO HEADER B</li> <li>MV-14-4, HEADER B TO PUMP 2C</li> </ul>

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**INSTRUCTIONS**
**CONTINGENCY ACTIONS**

**4.2.3 Loss of CCW Pump 2B (continued)**

**NOTE**

If 2AB AC and DC Buses are **NOT** all powered from the B side, then Tech Specs credit can **NOT** be taken for CCW Pump 2C until alignment is complete.

☐ **7. VERIFY** both the following conditions are met:

- CCW Pump 2C electrically aligned to B Side.
- 4160V Bus 2B3 ENERGIZED.

**7.1** IF in MODES 1 to 4 AND 4160V Bus 2B3 ENERGIZED, THEN **PERFORM** Attachment 2, Aligning 4160V Bus 2AB to B Side, prior to starting CCW Pump 2C on Header B.

**NOTE**

Operation of two CCW pumps electrically aligned to the same electrical bus for emergency conditions while in MODES 1 through 4, should be limited to 12 hours. (Section 6.1.3, Management Directive 2)

**7.2** IF 4160V Bus 2B3 is **NOT** ENERGIZED, THEN **PERFORM** the following:

- VERIFY** less than 100 kW of temporary loads are being supplied, or will be upon a turbine trip, from the 2A Start-Up Transformer. (Section 6.1.3, Management Directive 2)
- ENSURE** 4160V Bus 2AB aligned to A Side per Attachment 1, Aligning 4160V Bus 2AB to A Side, prior to starting CCW Pump 2C on CCW Header B.

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2

INSTRUCTIONS	CONTINGENCY ACTIONS
<b>4.2.3 Loss of CCW Pump 2B (continued)</b>	
<b>7. (continued)</b>	
	<ul style="list-style-type: none"> <li><b>REVIEW</b> Tech Specs 3.8.1.1, A.C. Sources.</li> <li><b>REVIEW</b> Tech Spec 3.7.3, CCW System.</li> </ul>
<input type="checkbox"/> <b>8.</b> WHEN <u>both</u> the following conditions are met: <ul style="list-style-type: none"> <li>IF SDC HX 2B was in service, THEN SDC HX 2B flow isolation is complete per Section 4.2.3, Step 3</li> <li>4160V electrical alignment of CCW Pump 2C complete</li> </ul> THEN <b>START</b> CCW Pump 2C.	<b>8.1 GO TO</b> Section 4.2.5, Loss of Two CCW Pumps.
<input type="checkbox"/> <b>9.</b> <b>VERIFY</b> CCW Header B pressures and flows return to normal: <ul style="list-style-type: none"> <li>FIS-14-1B, HEADER FLOW</li> <li>PIS-14-8B, HEADER PRESSURE</li> </ul>	<b>9.1 INVESTIGATE</b> cause.
<input type="checkbox"/> <b>10.</b> <b>VERIFY</b> SDC Loop 2B was <b>NOT</b> in service when CCW pump was lost.	<b>10.1 PERFORM</b> Attachment 3, Restoration of CCW to SDC HX.

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PROCEDURE NO.: 2-AOP-14.01	ST. LUCIE UNIT 2	

**INSTRUCTIONS**

**4.2.3 Loss of CCW Pump 2B (continued)**

☐ **11.** IF 4160V Bus 2AB aligned to 4160V Bus 2B3, THEN **VERIFY** the following aligned to B side:

- 125V DC Bus 2AB
- 480V Load Center 2AB

☐ **12.** **REVIEW** Tech Spec 3.7.3, Component Cooling Water System.

☐ **13.** WHEN Section 3.0, EXIT CONDITIONS are met, THEN **EXIT** this procedure.

**CONTINGENCY ACTIONS**

**11.1 ALIGN** the following to B side per 2-NOP-52.02, Alignment of 2AB Buses and Components:

- 125V DC Bus 2AB
- 480V Load Center 2AB

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**ATTACHMENT 2**  
**Aligning 4160V Bus 2AB to B Side**  
 (Page 1 of 1)

**NOTE**

- Tech Spec 3.7.3, Component Cooling Water System, applies until 480 VAC and 125 VDC busses are realigned.
- While aligning 4160V Bus 2AB to B side, the following annunciators will be received:
  - B-48, 4.16KV SWGR 480V LC/MCC 2AB UV (RTGB-201)
  - B-60, EMERG 125V DC / 4.16KV / 480V AB BUSES MISALIGNED (RTGB-201)
  - S-16, EMERG 125VDC/4.16KV/480V AB BUSES MISALIGNED (RTGB-206)

1. **VERIFY** the following tie breakers are OPEN: (RTGB-201)
  - Bkr 1-20501, 1AB 4.16 KV BUS SBO TIE
  - Bkr 2-20501, 2AB 4.16 KV BUS SBO TIE
2. **VERIFY** the following pump control switches are in PULL-TO-LOCK:
  - Component Cooling Water Pump 2C (RTGB-206)
  - Intake Cooling Water Pump 2C (RTGB-202)
3. **ENSURE** 4160V Bus 2AB aligned to B side as follows: (RTGB-201)
  - A. Bkr 2-20505, 4.16KV BUS TIE 2AB/2A3 OPEN
  - B. Bkr 2-20208, 4.16KV BUS TIE 2A3/2AB OPEN
  - C. Bkr 2-20409, 4.16KV BUS TIE 2B3/2AB CLOSED
  - D. Bkr 2-20504, 4.16KV BUS TIE 2AB/2B3 CLOSED



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 24

**JPM TITLE:** RELEASE 1A WASTE MONITOR TANK

**JPM NUMBER:** P-1

**REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 07006110, Release 1A Waste Monitor Tank Contents

**K/A NUMBERS / K/A VALUES: (RO SRO)** 068-K4.01 / Knowledge of design feature(s) and/or interlock(s) which provide for the following: Safety and environmental precautions for handling hot, acidic, and radioactive liquids (3.4/4.1)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☒ Perform: ☐

**EVALUATION LOCATION:** In-Plant: ☒ Control Room: ☐

Simulator: ☐ Other: ☐

Lab: ☐

Time for Completion: 25 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

<b>UPDATE LOG:</b> Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.					
#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE



- Required Materials:**
- 1-NOP-06.15 OXYGENATED WASTE SYSTEM, Rev 17 page 43 of 139 with step 4.4.1.1 completed.
  - 1-NOP-06.01 CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE, Rev 30, Pages 9 – 12 of 37 with step 4.2.1 completed.
- General References:**
- 1-NOP-06.15 OXYGENATED WASTE SYSTEM
  - 1-NOP-06.01 CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE
- Task Standards:** The applicant will simulate lining up the oxygenated waste system to release the 1A Waste Monitor Tank to the Circulating Water Discharge.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 1 is at 100% power with all systems operable.
- The Unit Supervisor has directed the 1A Waste Monitor Tank (WMT) to be discharged.
- 1A WMT level is 81%.
- Step 4.4.1.1 of 1-NOP-06.15, Oxygen Waste System, ENSURE Attachment 19, WMT Initial Alignment, has been completed.
- Section 4.1 of 1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge, has been completed.
- Channel R-6627, Liquid Waste Monitor is in Service.
- No maintenance is to be performed.
- You have the SNPO keys in your possession.

**INITIATING CUES:**

- You are the Unit 1 SNPO.
- You have been directed by the Unit 1 Unit Supervisor to place the 1A WMT on recirc in accordance with 1-NOP-06.15, Oxygen Waste System, Oxygenated Waste System Step 4.4.1.2.
- Then release the contents of 1A Waste Monitor Tank using the 1A Waste Monitor Pump, in accordance with section 4.2 of 1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

### JPM PERFORMANCE INFORMATION

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

1-NOP-06.15 OXYGENATED WASTE SYSTEM	
<b>NOTE</b> Component locations are in the WMT area unless otherwise specified.	
<b>Performance Step: 1</b> <b>Critical YES</b>	<b>2. ENSURE</b> HCV-06-6, WASTE MONITOR TANKS INLET, is selected to FILLING TANK B. (RAB/LIQ WST CNTL PN) * Step is only critical if the switch is aligned to the filling tank A position prior to starting the JPM.
<b>Standard:</b>	Examinee will <b>SIMULATE</b> POSITIONING the Control Switch for HCV-06-6 to FILLING TANK B.
<b>Evaluator Cue:</b>	Control Switch is in the <b>FILLING TANK B</b> position.
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical NO</b>	<b>3. RECORD</b> 1A WMT level: _____
<b>Standard:</b>	Examinee will <b>RECORD</b> 81% on the procedure from the cue
<b>Evaluator Cue:</b>	<b>1A WMT Level indicates 81%</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical YES</b>	<b>4. START</b> 1A Waste Monitor Pump using local pushbutton. (Adjacent to pump in B-141C).
<b>Standard:</b>	Examinee will simulate <b>DEPRESSING</b> the local start pushbutton.
<b>Evaluator Cue:</b>	The button has been depressed, and the pump is running.  <b>EVALUATOR NOTE: OPENING BOX IS PERMITTED</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 4</b> <b>Critical NO</b>	<b>5. IF</b> pump fails to start, THEN <b>VERIFY</b> switch position per Section 2.1, Step 1.
<b>Standard:</b>	Examinee will <b>DETERMINE</b> step is N/A.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical YES</b>	<b>6. THROTTLE</b> V06220, 1A WASTE MONITOR PUMP DISCH RECIRC ISOL, to obtain between 20 psig and 25 psig on PI-06-47A, 1A WASTE MONITOR TANK PUMP PRESS.
<b>Standard:</b>	Examinee will Simulate <b>POSITIONING</b> V06220 in the clockwise direction to attain 20 to 25 psig on PI-06-47A.
<b>Evaluator Cue:</b>	<b>Initial pressure is 15 psig and as V06220 is THROTTLED 1A Waste Monitor Pump Pressure rises to 23 psig as indicated on PI-06-47A.</b>  <b>EVALUATOR NOTE: Closing V06220 will raise pressure</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical NO</b>	<b>7. IF</b> unable to obtain between 20 psig and 25 psig on PI-06-47A, 1A WASTE MONITOR TANK PUMP PRESS, THEN STOP 1A Waste Monitor Pump AND RETURN to Section 4.4.1, Step 1 to verify lineup.
<b>Standard:</b>	Examinee will <b>DETERMINE</b> step is N/A.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 7</b> <b>Critical NO</b>	<b>8. ENSURE</b> 1A Waste Monitor Tank level in <b>NOT</b> lowering.
<b>Standard:</b>	Examinee will <b>OBSERVE</b> 1A Waste Monitor Tank level.
<b>Evaluator Cue:</b>	<b>1A Waste monitor Tank Level is 81% and steady.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

	<b>P-1; RELEASE 1A WASTE MONITOR TANK</b>	<b>JPM</b> Page 9 of 24
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<b>Performance Step: 8</b> <b>Critical NO</b>	<b>9. NOTIFY</b> Chemistry and Control Room the 1A WMT is on Recirc with 1A Waste Monitor Pump.
<b>Standard:</b>	Examinee will <b>NOTIFY</b> the Control Room & Chemistry via radio or telephone.
<b>Evaluator Cue:</b>	<b>Chemistry acknowledges the communication.</b> <b>The Control Room acknowledges the communication.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 9</b> <b>Critical NO</b>	<b>10. IF</b> 1A WMT is to be released, <b>THEN GO TO</b> 1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge.
<b>Standard:</b>	Examinee will <b>GO TO 1-NOP-06.01</b>
<b>Evaluator Cue:</b>	<b>TIME COMPRESS --- Chemistry reports sample results on the 1A WMT are acceptable. The US directs the SNPO to release the 1A WMT in accordance with 1-NOP-06.01 section 4.2.3 (per initial cue)</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

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1-NOP-06.01 CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE	
<b>Performance Step: 10</b> <b>Critical NO</b>	<b>3.</b> IF Channel 43 (R-6627), LIQUID RADWASTE DISCHARGE MONITOR, is out of service, THEN <b>ENSURE</b> lineup has been independently verified using 1-NOP-06.15, Oxygenated Waste System.
<b>Standard:</b>	Examinee will <b>DETERMINE</b> step is N/A from the initial conditions.
<b>Evaluator Cue:</b>	<b>(If asked) The Liquid Waste Discharge Monitor is in service.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 11</b> <b>Critical NO</b>	<b>4.</b> IF affected WMT is to be drained for maintenance (pump hand-switch will be placed in CUTOFF), THEN <b>ENSURE</b> lineup has been independently verified using 1-NOP-06.15, Oxygenated Waste System.
<b>Standard:</b>	Examinee will <b>DETERMINE</b> step is N/A from the initial conditions.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

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<b>Performance Step: 12</b> <b>Critical YES</b>	<b>5. UNLOCK and OPEN V21462, WASTE MONITOR PUMPS DISCH TO DISCH CANAL ISOL. (CCW/27/N-954/E-1732)</b>
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V21462, WASTE MONITOR PUMPS DISCH TO DISCH CANAL ISOL by rotating the HW in the counter-clockwise direction.
<b>Evaluator Cue:</b>	<b>V21462 has been rotated in the counter-clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 13</b> <b>Critical NO</b>	<b>6. PERFORM</b> Demin Flush of RE-6627 as follows:  <b>6.A CLOSE V06239, RE-6627 UPSTREAM ROOT. (CCW/26/N-957/E-1731)</b>
<b>Standard:</b>	Examinee will <b>SIMULATE CLOSING</b> V06239 by rotating the HW in the clockwise direction.
<b>Evaluator Cue:</b>	<b>V06239 has been rotated in the clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	



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<b>Performance Step: 14</b> <b>Critical NO</b>	<b>6.B ENSURE</b> V06240, RE-6627 DOWNSTREAM ROOT, is OPEN. (CCW/26/N-957/E-1731)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V06240 by rotating the HW in the counter-clockwise direction.
<b>Evaluator Cue:</b>	<b>V06240 has been rotated in the counter-clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 15</b> <b>Critical NO</b>	<b>6.C</b> Slowly <b>THROTTLE</b> V38175, DMW TO RE-6627 ISOL, OPEN three turns for one minute. (CCW/18/N-951/E-1731)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V38175 by rotating the HW in the counter-clockwise direction to three turns OPEN
<b>Evaluator Cue:</b>	<b>V38175 has been rotated in the counter-clockwise direction is three turns.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 16</b> <b>Critical NO</b>	<b>6.D CLOSE</b> V38175, DMW TO RE-6627 ISOL.
<b>Standard:</b>	Examinee will <b>SIMULATE CLOSING</b> V38175 by rotating the HW in the clockwise direction.
<b>Evaluator Cue:</b>	<b>V38175 has been rotated in the clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

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<b>Performance Step: 17</b> <b>Critical NO</b>	<b>6.E OPEN</b> V06239, RE-6627 UPSTREAM ROOT.
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V06239 by rotating the HW in the counter-clockwise direction.
<b>Evaluator Cue:</b>	<b>V06239 has been rotated in the counter-clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 18</b> <b>Critical NO</b>	<b>6.F CLOSE</b> V06240, RE-6627 DOWNSTREAM ROOT.
<b>Standard:</b>	Examinee will <b>SIMULATE CLOSING</b> V06240 by rotating the HW in the clockwise direction.
<b>Evaluator Cue:</b>	<b>V06240 has been rotated in the clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 19</b> <b>Critical NO</b>	<b>6.G</b> Slowly <b>THROTTLE</b> V38175, DMW TO RE-6627 ISOL, OPEN three turns for one minute. (CCW/18/N-951/E-1731)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V38175 by rotating the HW in the counter-clockwise direction to three turns OPEN
<b>Evaluator Cue:</b>	<b>V38175 has been rotated in the counter-clockwise direction is three turns.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

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<b>Performance Step: 20</b> <b>Critical NO</b>	<b>6.H CLOSE</b> V38175, DMW TO RE-6627 ISOL.
<b>Standard:</b>	Examinee will <b>SIMULATE CLOSING</b> V38175 by rotating the HW in the clockwise direction.
<b>Evaluator Cue:</b>	<b>V38175 has been rotated in the clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 21</b> <b>Critical NO</b>	<b>6.I OPEN</b> V06240, RE-6627 DOWNSTREAM ROOT.
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V06240 by rotating the HW in the counter-clockwise direction.
<b>Evaluator Cue:</b>	<b>V06240 has been rotated in the counter-clockwise direction and has stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 22</b> <b>Critical YES</b>	<b>7. OPEN</b> V06215, 1A WASTE MONITOR PUMP DISCH ISOL. (YD/22/N-1055/E-1719)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V06215 by rotating the HW in the counter-clockwise direction.
<b>Evaluator Cue:</b>	<b>V06215 has been rotated in the counter-clockwise direction and has stopped turning, flow noises are present.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>P-1; RELEASE 1A WASTE MONITOR TANK</b>	<b>JPM</b> Page 15 of 24
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<b>Performance Step: 23</b> <b>Critical NO</b>	<p>8. IF PI-06-47A, WASTE MONITOR PUMP 1A PRESSURE INDICATOR, is NOT between 10 and 25 psig, THEN <b>PERFORM</b> the following: (YD/20/N-1040/E-1715)</p> <p><b>A. CLOSE</b> V06215, 1A WASTE MONITOR PUMP DISCH ISOL.  <b>B. STOP</b> 1A Waste Monitor Pump. (LOCAL PB)  <b>C. RETURN</b> TO Section 4.2, Step 1.</p>
<b>Standard:</b>	Examinee will <b>OBSERVE</b> PI-06-47A, 1A Waste Monitor Pump Press indicates 10 to 25 psig.
<b>Evaluator Cue:</b>	<b>PI-06-47A, 1A Waste Monitor Pump Press indicates 22 psig.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b><u>CAUTION</u></b> Excessive fluctuation of flow observed on FR-6627, LIQUID WASTE FLOW, may be indicative of air trapped in sensing line of FE-6627, LIQUID WASTE DISCH FLOW. (RTGB-105)	
<b>Performance Step: 24</b> <b>Critical NO</b>	<p>9. IF US / SM determines FR-6627, LIQUID WASTE FLOW, is excessively fluctuating prior to OR during release, THEN <b>PERFORM</b> the following:</p> <p><b>A. CLOSE</b> V06215, 1A WASTE MONITOR PUMP DISCH ISOL, to end release.  <b>B. CONTACT</b> I&amp;C to vent sensing lines of FE-6627, LIQUID WASTE DISCH FLOW.  <b>C. WHEN</b> venting of FE-6627 sensing lines are complete, THEN <b>RETURN TO</b> Section 4.2, Step 7.</p>
<b>Standard:</b>	Examinee will <b>DETERMINE</b> step is continuously applicable
<b>Evaluator Cue:</b>	<b>IF Asked the US / SM reports FR-6627, LIQUID WASTE FLOW, is SAT</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

	<b>P-1; RELEASE 1A WASTE MONITOR TANK</b>	<b>JPM</b> Page 16 of 24
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<b>Performance Step: 25</b> <b>Critical NO</b>	<b>10. RECORD</b> the following at start of release: <ul style="list-style-type: none"> <li>Start Date/Time _____</li> <li>Level from LIS-06-47A1, WMST-A LEVEL on LIQUID WASTE CONTROL PANEL _____ (RAB/24/RA3Z/W-RAI)</li> </ul>
<b>Standard:</b>	Examinee will <b>RECORD</b> Release Start Date/Time and WMST-A LEVEL
<b>Evaluator Cue:</b>	Time is <b>NOW</b> and Level is <b>80%</b>  Another Operator will complete the task
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

**Terminating Cues:**      The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**P-1; RELEASE 1A WASTE MONITOR TANK**

**JPM**  
Page 17 of 24

**Examinee:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

**Date:** \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**REMEDATION REQUIRED:**

**YES:** ☐

**NO:** ☐

**COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).


**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

## **TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

### **INITIAL CONDITIONS:**

- Unit 1 is at 100% power with all systems operable.
- The Unit Supervisor has directed the 1A Waste Monitor Tank (WMT) to be discharged.
- 1A WMT level is 81%.
- Step 4.4.1.1 of 1-NOP-06.15, Oxygen Waste System, ENSURE Attachment 19, WMT Initial Alignment, has been completed.
- Section 4.1 of 1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge, has been completed.
- Channel R-6627, Liquid Waste Monitor is in Service.
- No maintenance is to be performed.
- You have the SNPO keys in your possession.

### **INITIATING CUES:**

- You are the Unit 1 SNPO.
- You have been directed by the Unit 1 Unit Supervisor to place the 1A WMT on recirc in accordance with 1-NOP-06.15, Oxygen Waste System, Oxygenated Waste System Step 4.4.1.2.
- Then release the contents of 1A Waste Monitor Tank using the 1A Waste Monitor Pump, in accordance with section 4.2 of 1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



REVISION NO.: 17	PROCEDURE TITLE: OXYGENATED WASTE SYSTEM  ST. LUCIE UNIT 1	PAGE: <div style="font-size: 48pt; opacity: 0.5; text-align: center;">1</div> 43 of 139
PROCEDURE NO.: 1-NOP-06.15		

4.4

**Waste Monitor Tank (WMT) Operations**

4.4.1

**Recirc 1A WMT Via 1A Waste Monitor Pump**

NOTE

Component locations are in the WMT area unless otherwise specified.

- 1

**ENSURE** Attachment 19, WMT Initial Alignment, has been performed.
- 2. ENSURE** HCV-06-6, WASTE MONITOR TANKS INLET, is selected to FILLING TANK B. (RAB/LIQ WST CNTL PN)
- 3. RECORD** 1A WMT level: \_\_\_\_\_
- 4. START** 1A Waste Monitor Pump using local pushbutton. (Adjacent to pump in B-141C)
- 5.** IF pump fails to start, THEN **VERIFY** switch position per Section 2.1, Step 1.
- 6. THROTTLE** V06220, 1A WASTE MONITOR PUMP DISCH RECIRC ISOL, to obtain between 20 psig and 25 psig on PI-06-47A, 1A WASTE MONITOR TANK PUMP PRESS.
- 7.** IF unable to obtain between 20 psig and 25 psig on PI-06-47A, 1A WASTE MONITOR TANK PUMP PRESS, THEN **STOP** 1A Waste Monitor Pump AND **RETURN** to Section 4.4.1, Step 1 to verify lineup.
- 8. ENSURE** 1A Waste Monitor Tank level in **NOT** lowering.
- 9. NOTIFY** Chemistry and Control Room the 1A WMT is on Recirc with 1A Waste Monitor Pump.
- 10.** IF 1A WMT is to be released, THEN **GO TO** 1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge.
- 11.** IF 1A WMT is to be removed from Recirc without being released, THEN **PERFORM** the following:
 

**A. STOP** 1A Waste Monitor Pump using local pushbutton. (Adjacent to pump in B-141C).

**B. OPEN** V06220, 1A WASTE MONITOR PUMP DISCH RECIRC ISOL.

REVISION NO.: 30	PROCEDURE TITLE: CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE	PAGE: 9 of 37
PROCEDURE NO.: 1-NOP-06.01	ST. LUCIE UNIT 1	

**4.2 Discharge 1A WMT Using 1A Waste Monitor Pump**

- ~~1.~~ **ENSURE** Section 4.1, Preparation for a Liquid Release, has been performed.
- 2.** **ENSURE** 1A WMT is recirculating with 1A Waste Monitor Pump per 1-NOP-06.15, Oxygenated Waste System.
- 3.** IF Channel 43 (R-6627), LIQUID RADWASTE DISCHARGE MONITOR, is out of service, THEN **ENSURE** lineup has been independently verified using 1-NOP-06.15, Oxygenated Waste System.
- 4.** IF affected WMT is to be drained for maintenance (pump hand-switch will be placed in CUTOUT), THEN **ENSURE** lineup has been independently verified using 1-NOP-06.15, Oxygenated Waste System.
- 5.** **UNLOCK** and **OPEN** V21462, WASTE MONITOR PUMPS DISCH TO DISCH CANAL ISOL. (CCW/27/N-954/E-1732)
- 6.** **PERFORM** Demin Flush of RE-6627 as follows:
  - A.** **CLOSE** V06239, RE-6627 UPSTREAM ROOT. (CCW/26/N-957/E-1731)
  - B.** **ENSURE** V06240, RE-6627 DOWNSTREAM ROOT, is OPEN. (CCW/26/N-957/E-1731)
  - C.** Slowly **THROTTLE** V38175, DMW TO RE-6627 ISOL, OPEN three turns for one minute. (CCW/18/N-951/E-1731)
  - D.** **CLOSE** V38175, DMW TO RE-6627 ISOL.
  - E.** **OPEN** V06239, RE-6627 UPSTREAM ROOT.
  - F.** **CLOSE** V06240, RE-6627 DOWNSTREAM ROOT.
  - G.** Slowly **THROTTLE** V38175, DMW TO RE-6627 ISOL, OPEN three turns for one minute.
  - H.** **CLOSE** V38175, DMW TO RE-6627 ISOL.
  - I.** **OPEN** V06240, RE-6627 DOWNSTREAM ROOT.
- 7.** **OPEN** V06215, 1A WASTE MONITOR PUMP DISCH ISOL. (YD/22/N-1055/E-1719)

REVISION NO.: 30	PROCEDURE TITLE: CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE	PAGE: 10 of 37
PROCEDURE NO.: 1-NOP-06.01	ST. LUCIE UNIT 1	<b>INITIAL</b>

**4.2 Discharge 1A WMT Using 1A Waste Monitor Pump (continued)**

8. IF PI-06-47A, WASTE MONITOR PUMP 1A PRESSURE INDICATOR, is **NOT** between 10 and 25 psig, THEN **PERFORM** the following: (YD/20/N-1040/E-1715)

- A. **CLOSE** V06215, 1A WASTE MONITOR PUMP DISCH ISOL.
- B. **STOP** 1A Waste Monitor Pump. (LOCAL PB)
- C. **RETURN TO** Section 4.2, Step 1.

**CAUTION**

Excessive fluctuation of flow observed on FR-6627, LIQUID WASTE FLOW, may be indicative of air trapped in sensing line of FE-6627, LIQUID WASTE DISCH FLOW. (RTGB-105)

9. IF US / SM determines FR-6627, LIQUID WASTE FLOW, is excessively fluctuating prior to OR during release, THEN **PERFORM** the following:

- A. **CLOSE** V06215, 1A WASTE MONITOR PUMP DISCH ISOL, to end release.
- B. **CONTACT** I&C to vent sensing lines of FE-6627, LIQUID WASTE DISCH FLOW.
- C. WHEN venting of FE-6627 sensing lines are complete, THEN **RETURN TO** Section 4.2, Step 7.

10. **RECORD** the following at start of release:

- Start Date/Time \_\_\_\_\_
- Level from LIS-06-47A1, WMST-A LEVEL on LIQUID WASTE CONTROL PANEL \_\_\_\_\_ (RAB/24/RA3Z/W-RAI)

REVISION NO.: 30	PROCEDURE TITLE: CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE  ST. LUCIE UNIT 1	PAGE: <div style="font-size: 48pt; text-align: center;">1</div> 11 of 37  <u>INITIAL</u>
PROCEDURE NO.: 1-NOP-06.01		

**4.2 Discharge 1A WMT Using 1A Waste Monitor Pump (continued)**

**11.** IF Channel 43 (R-6627), LIQUID RADWASTE DISCHARGE MONITOR, is out of service, THEN **PERFORM** independent verification for the following valves:

**A. VERIFY** V06215, 1A WASTE MONITOR PUMP DISCH ISOL, is OPEN. (YD/22/N-1055/E-1719) \_\_\_\_\_  
IV

**B. VERIFY** V21462, WASTE MONITOR PUMPS DISCH TO DISCH CANAL ISOL, is OPEN. (CCW/27/N-954/E-1732) \_\_\_\_\_  
IV

**12.** IF Section 4.2, Step 11 was performed, THEN **ENSURE** Section 3.2, Step 4 is complete. \_\_\_\_\_  
US / SM

**13.** IF affected WMT is to be drained for maintenance (pump hand-switch will be placed in CUTOUT), THEN **PERFORM** independent verification for the following valves:

**A. VERIFY** V06215, 1A WASTE MONITOR PUMP DISCH ISOL, is OPEN. (YD/22/N-1055/E-1719) \_\_\_\_\_  
IV

**B. VERIFY** V21462, WASTE MONITOR PUMPS DISCH TO DISCH CANAL ISOL, is OPEN. (CCW/27/N-954/E-1732) \_\_\_\_\_  
IV

**14.** IF Section 4.2, Step 13 was performed, THEN **ENSURE** Section 3.2, Step 5 is complete. \_\_\_\_\_  
US / SM

**15. PLACE** magnetic "LIQUID RELEASE" placard beneath LIS-06-47A1, WMST-A LEVEL, on LIQUID WASTE CONTROL PANEL.

**CAUTION**

When pump hand-switch is in CUTOUT, an Operator should remain on location to stop pump when desired level is reached to prevent pump damage.

**16.** IF 1A WMT is to be drained for maintenance, THEN **ENSURE** 1A WASTE MONITOR PUMP TANK PUMP A PROCESSING switch is in CUTOUT. (LIQUID WASTE CONTROL PANEL)

REVISION NO.: 30	PROCEDURE TITLE: CONTROLLED LIQUID RELEASE TO THE CIRCULATING WATER DISCHARGE	PAGE: 12 of 37
PROCEDURE NO.: 1-NOP-06.01	ST. LUCIE UNIT 1	

**4.2 Discharge 1A WMT Using 1A Waste Monitor Pump (continued)**

**17. PERFORM** the following during liquid release:

- **MONITOR** FR-6627, LIQUID WASTE FLOW, to maintain release flow as follows:
  - **ADJUST** FIC-6627, LIQUID WASTE FLOW, Manual Control Knob, to maintain less than 50 gpm on FR-6627. (RTGB-105)
  - **ENSURE** X-5, LIQUID RADWASTE MONITOR LOW FLOW, is CLEAR. (RADIATION MONITOR PANEL)
- **VERIFY** Channel 43 (R-6627), LIQUID RADWASTE DISCHARGE MONITOR, activity (uCi/ml) level is below Liquid Radwaste Monitor Settings on LRP. (RADIATION MONITOR PANEL)
- **MONITOR** Liquid Waste Control Panel alarms.
- **MONITOR** 1A WMT for lowering level.
- **MONITOR** 1B WMT to ensure level is **NOT** lowering.
- IF an unexplained level change in 1B WMT occurs, THEN **IMPLEMENT** 1-AOP-06.02, Uncontrolled Release of Radioactive Liquids.



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 16

**JPM TITLE:** RESTORE INSTRUMENT AIR USING THE 2A IA COMPRESSOR

**JPM NUMBER:** P-2 **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 03018220, Place Instrument Air Compressor "A" or "B" in service

**K/A NUMBERS / K/A VALUES: (RO SRO)** 078-K4.02 / Knowledge of IAS design feature(s) and/or interlock(s) which provide for the following: Cross-over to other air systems (3.2/3.5)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☒ Perform: ☐

**EVALUATION LOCATION:** In-Plant: ☒ Control Room: ☐

Simulator: ☐ Other: ☐

Lab: ☐

Time for Completion: 10 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE



**P-2; RESTORE INSTRUMENT AIR USING THE 2A IA  
COMPRESSOR**

**JPM**  
Page 3 of 16

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE



**Required Materials:**

- 2-EOP-99 APP. H
- LAMINATED COPY OF IA Compressor screen with appropriate indicaitons

**General References:**

- 2-EOP-99 APP. H

**Task Standards:** The applicant will simulate placing the 2A Instrument Air Compressor in service IAW 2-EOP-99, App H.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 has experienced a LOOP

**INITIATING CUES:**

- You are the Unit 2 NPO.
- You have been directed by the Unit 2 Unit Supervisor to place the 2A Instrument air compressor in service IAW 2-EOP-99 Appendix H, Operation of the 2A and 2B Instrument Air Compressors.
- Step 4 of Section 1 placing Emergency Turbine Cooling Water in service has been completed by an extra NPO.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



**P-2; RESTORE INSTRUMENT AIR USING THE 2A IA  
COMPRESSOR**

**JPM**  
Page 6 of 16

**JPM PERFORMANCE INFORMATION**

**Start Time:** \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

IAW 2-EOP-99 Appendix H Operation of the 2A and 2B Instrument Air Compressors Section 1	
<b>Performance Step: 1</b> <b>Critical NO</b>	1. ENSURE the following breakers are <b>ON</b> . <ul style="list-style-type: none"><li>Bkr 41331(MCC 2A6) Instr Air Compr 2A</li></ul>
<b>Standard:</b>	Examinee will <b>Verify</b> the following breakers <b>ON</b> : <ul style="list-style-type: none"><li>Bkr 41331(MCC 2A6) Instr Air Compr 2A</li></ul>
<b>Evaluator Cue:</b>	<b>Breaker 41331 indicates ON</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical No</b>	1. ENSURE the following breakers are <b>ON</b> . <ul style="list-style-type: none"><li>Bkr 42414(MCC 2AB) Instr Air Compr Cooler Fan</li></ul>
<b>Standard:</b>	Examinee will <b>Verify</b> the following breakers are <b>ON</b> : <ul style="list-style-type: none"><li>Bkr 42414(MCC 2AB) Instr Air Compr Cooler Fan</li></ul>
<b>Evaluator Cue:</b>	<b>Breaker 42414 indicates ON</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical YES</b>	1. ENSURE the following breakers are ON. <ul style="list-style-type: none"> <li>Bkr 42416(MCC 2AB) Cooling System Water Pump</li> </ul>
<b>Standard:</b>	Examinee will <b>Simulate</b> placing the following breakers are <b>ON</b> : <ul style="list-style-type: none"> <li>Bkr 42416(MCC 2AB) Cooling System Water Pump</li> </ul>
<b>Evaluator Cue:</b>	<b>Breaker 42416 indicates ON</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 4</b> <b>Critical YES</b>	2. At breaker 2-41331(MCC-2A6-breaker) INSTR AIR COMPR 2A, <b>PRESS</b> the 2A IAC PWR RST push button.
<b>Standard:</b>	Examinee will Simulate <b>PRESSING</b> the 2A IAC PWR RST push button
<b>Evaluator Cue:</b>	<b>2A IAC PWR RST push button has been depressed</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical NO</b>	3. <b>VERIFY</b> 2A IAC POWER ON light is lit on breaker 2-41331
<b>Standard:</b>	Examinee will <b>VERIFY</b> 2A IAC POWER ON light is lit
<b>Evaluator Cue:</b>	<b>2A IAC POWER ON light is lit</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical NO</b>	<b>4. If TCW is NOT available Then PERFORM the following:</b>
<b>Standard:</b>	<b>The Extra NPO reports that step 4 is complete.</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 7</b> <b>Critical NO</b>	<b>5. If TCW is available Then PERFORM the following:</b>
<b>Standard:</b>	<b>Per the CUE sheet this step is N/A, Examinee will proceed to STEP 6</b>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical YES</b>	<b>6. Locally START 2A Instrument Air Compressor as follows:</b> <b>A. PLACE the 2A IAC selector switch in ON</b>
<b>Standard:</b>	<b>Examinee will Simulate PLACING the 2A IAC selector switch in ON</b>
<b>Evaluator Cue:</b>	<b>2A IAC selector switch is in ON</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 9</b> <b>Critical No</b>	<b>6. Locally START 2A Instrument Air Compressor as follows:</b> <b>B. RESET</b> any warning alarms or trips
<b>Standard:</b>	Examinee will Simulate <b>RESETTING</b> any warning alarms or trips
<b>Evaluator Cue:</b>	<b>No warning lights or alarms are present on the control screen</b>  <b>USE Laminated picture of 2A IAC screen</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 10</b> <b>Critical YES</b>	<b>6. Locally START 2A Instrument Air Compressor as follows:</b> <b>C. PRESS</b> the Regulator Start button at the 2A IAC CNTLR
<b>Standard:</b>	Examinee will Simulate <b>PRESSING</b> the Regulator Start button at the 2A IAC CNTLR
<b>Evaluator Cue:</b>	<b>2A IAC started</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 11</b> <b>Critical NO</b>	<b>6. Locally START 2A Instrument Air Compressor as follows:</b> <b>D. VERIFY</b> 2A IAC starts and loads at 106 psig
<b>Standard:</b>	Examinee will <b>VERIFY</b> the 2A IAC starts and loads at 106 psig
<b>Evaluator Cue:</b>	<b>2A IAC started and is loading rises to 110 psig and reloads at 106 psig</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**P-2; RESTORE INSTRUMENT AIR USING THE 2A IA  
COMPRESSOR**

**JPM**  
Page 10 of 16

<b>Performance Step: 12 Critical NO</b>	<b>NOTIFY</b> the Unit-2 control room that the 2A I/A compressor is running.
<b>Standard:</b>	Examinee will <b>NOTIFIES</b> the Unit-2 control room that the 2A I/A compressor is running
<b>Evaluator Cue:</b>	<b>US acknowledges the communication</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Terminating Cues:</b>	<b>The JPM is complete.</b>
--------------------------	-----------------------------

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**P-2; RESTORE INSTRUMENT AIR USING THE 2A IA  
COMPRESSOR**

**JPM**  
Page 11 of 16

**Examinee:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

**Date:** \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**REMEDiation REQUIRED:**

**YES:** ☐

**NO:** ☐

**COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).


**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*





# Handout Package for Applicant

**TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- Unit 2 has experience a LOOP

**INITIATING CUES:**

- You are the Unit 2 NPO.
- You have been directed by the Unit 2 Unit Supervisor to place the 2A Instrument air compressor in service IAW 2-EOP-99 Appendix H, Operation of the 2A and 2B Instrument Air Compressors.
- Step 4 of Section 1 placing Emergency Turbine Cooling Water in service has been completed by an extra NPO.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: <b>60</b>	PROCEDURE TITLE: <b>APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2</b>	PAGE: <b>61 of 176</b>
PROCEDURE NO.: <b>2-EOP-99</b>		

## APPENDIX H OPERATION OF THE 2A AND 2B INSTRUMENT AIR COMPRESSORS (Page 1 of 4)

### Section 1: Placing 2A Instrument Air Compressor in Service

- ☐ 1. ENSURE the following breakers are aligned as indicated.

Component ID	Component Name	POSITION (√)
Bkr 41331 (MCC 2A6)	Instr Air Compr 2A	ON ____
Bkr 42414 (MCC 2AB)	Instrument Air Compressor Cooler Fan	ON ____
Bkr 42416 (MCC 2AB)	Cooling System Water PP	ON ____

- ☐ 2. At breaker 2-41331 (MCC 2A6), INSTR AIR COMPR 2A, PRESS the 2A IAC PWR RST pushbutton.
- ☐ 3. VERIFY the 2A IAC PWR ON light is lit on breaker 2-41331.
- ☐ 4. If TCW is NOT available,  
Then PERFORM the following:
- ☐ A. ENSURE the Instrument Air Compressor Head Tank level is at least 3/4 full.
- ☐ B. ALIGN 2A Instrument Air Compressor for **emergency** cooling and operation:

Component ID	Component Name	POSITION (√)
V13383	Air Compr Outlet Hdr Isol (TGB/32/N-24/E-B)	CLOSE ____
V13380	Air Compr Inlet Hdr Isol(TGB/31/N-24/W-B)	CLOSE ____
V13417	Air Compr Coolers Inlet Hdr from Recirc Pump Isol (TGB/31/N-24/E-B)	OPEN ____
V13420	Air Compr Coolers to Fan Cooler Isol (TGB/32/N-24/E-B)	OPEN ____
V13424	2A Recirc Pump from / to 2A Expan Tank Isol (TGB/22/N-24/E-B)	OPEN ____
V13419	Air Compr Coolers to Fan Cooler Isol (TGB/25/N-24/E-B)	OPEN ____
V13418	2A Recirc Pump Disch Isol (TGB/22/N-24/E-B)	OPEN ____
V18109	Instr Air Rcvr Inlet from 2A Aftercooler Isol (TGB/29/S-22/W-A)	OPEN ____
V18660	2C / 2D Instr Air Comps Disch Isol (TGB/29/S-22/W-A)	CLOSE ____

REVISION NO.: 60	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 62 of 176
PROCEDURE NO.: 2-EOP-99		

## APPENDIX H OPERATION OF THE 2A AND 2B INSTRUMENT AIR COMPRESSORS (Page 2 of 4)

### Section 1: Placing 2A Instrument Air Compressor in Service (continued)

- ☐ **C.** START the Emergency Cooling System Recirculation Pump. (inside Box B2R68) (TGB/25/24/B)
- ☐ **D.** START the Emergency Cooling System Radiator Fan. (inside Box B2R68) (TGB/25/24/B)
- ☐ **5.** If TCW is available,  
Then ALIGN 2A Instrument Air Compressor for operation:

Component ID	Component Name	POSITION (√)
V18109	Instr Air Rcvr Inlet from 2A Aftercooler Isol (TGB/29/S-22/W-A)	OPEN ____
V18660	2C / 2D Instr Air Comps Disch Isol (TGB/29/S-22/W-A)	CLOSE ____

- ☐ **6.** Locally START the 2A Instrument Air Compressor as follows:
  - ☐ **A.** PLACE 2A IAC selector switch in ON.
  - ☐ **B.** RESET any warning alarms or trips.
  - ☐ **C.** PRESS the Regulator Start button at the 2A IAC CNTLR.
  - ☐ **D.** VERIFY 2A IAC starts and loads at 106 psig.
- ☐ **7.** NOTIFY Unit 2 Control Room that 2A Instrument Air Compressor is running.

**End of Section 1**



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 17

**JPM TITLE:** ALIGN UNIT 2 CST TO SUPPLY 1A AFW PUMP

**JPM NUMBER:** P-3

**REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 03105050 and 07009055, Align AFW System in Response to Component Malfunction/Failure

**K/A NUMBERS / K/A VALUES: (RO SRO)** 061A1.03 Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: Interactions when multi-unit systems are cross tied (3.1/3.6)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☒ Perform: ☐

**EVALUATION LOCATION:** In-Plant: ☒ Control Room: ☐

Simulator: ☐ Other: ☐

Lab: ☐

Time for Completion: 15 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date

**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR #	PREPARER	DATE
				SUPERVISOR	DATE



- Required Materials:**      ▪    1-AOP-09.02 AUXILIARY FEEDWATER, Att 5 sections 2.0 and 3.0
- General References:**    ▪    1-AOP-09.02 AUXILIARY FEEDWATER
- Task Standards:**            The applicant will simulate lining up the Unit-2 CST to supply the 1A AFW pump

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- The Unit 1 CST is unavailable due to being damaged.
- The Unit 2 CST is available.
- The RCO has disabled ALL Auxiliary Feedwater Pumps.

**INITIATING CUES:**

- You are an extra NPO.
- The Unit 1 Unit Supervisor has directed you to perform **ALL** the NPO actions for **BOTH** Unit 1 and Unit 2 to line up the Unit 2 CST to supply the 1A AFW Pump IAW 1-AOP-09.02, Auxiliary Feedwater, Attachment 5, Sections 2.0 and 3.0.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**

**Start Time:** \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>1-AOP-09.02 AUXILIARY FEEDWATER, ATT. 5 UNIT 2 NPO ACTIONS</b>	
<b>NOTE</b> Valve wrenches are located on the north wall by the northeast door.	
<b>Performance Step: 1</b> <b>Critical YES</b>	<b>2.1</b> At the Unit 2 CST, <b>PERFORM</b> the following to establish a flow path from the Unit 2 CST to Unit 1 AFW pumps: <b>A.</b> IF starting 1A AFW Pump OR 1B AFW Pump, THEN <b>OPEN</b> V12802, 2A/2B AFW PUMP SUCT TO / FROM UNIT 1 ISOL. (Southeast side of Tank)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V12802 by rotating HW in the counter-clockwise direction
<b>Evaluator Cue:</b>	<b>V12802 HW has been rotating in the counter-clockwise direction and stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

	<b>P-3; ALIGN UNIT 2 CST TO SUPPLY 1A AFW PUMP</b>	<b>JPM</b> Page 7 of 17
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<b>Performance Step: 2</b> <b>Critical YES</b>	<b>2.1</b> At the Unit 2 CST, <b>PERFORM</b> the following to establish a flow path from the Unit 2 CST to Unit 1 AFW pumps: <b>B. B. IF starting 1C AFW Pump, THEN OPEN V12801, 2C AFW PUMP SUCT TO / FROM UNIT 1 ISOL. (Northeast side of Tank)</b>
<b>Standard:</b>	Examinee will determine this step is N/A
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR NOTE: Opening V12801 will not have any impact on performing the task.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical YES</b>	<b>2.2 OPEN</b> V12805, CST CROSSTIE TO UNIT 1 ISOL. (Near South door by the wall)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V12805 by rotating HW in the counter-clockwise direction
<b>Evaluator Cue:</b>	<b>V12805 HW has been rotating in the counter-clockwise direction and stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

<b>Performance Step: 4</b> <b>Critical NO</b>	<b>2.3 NOTIFY</b> Unit 1 NPO that Unit 2 CST local actions are COMPLETE.
<b>Standard:</b>	Examinee will <b>NOTIFY</b> the Unit 1 NPO that Unit 2 CST local actions are COMPLETE.
<b>Evaluator Cue:</b>	<b>Unit 1 NPO acknowledges</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

	<b>P-3; ALIGN UNIT 2 CST TO SUPPLY 1A AFW PUMP</b>	<b>JPM</b> Page 8 of 17
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<b>Performance Step:5</b> <b>Critical NO</b>	<b>2.4 REPORT</b> to Unit 1 Steam Trestle to assist with valve lineup.
<b>Standard:</b>	Examinee will <b>PROCEED</b> to Unit-1
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>1-AOP-09.02 AUXILIARY FEEDWATER, ATT. 5 UNIT 1 NPO ACTIONS</b>	
<b>Performance Step: 5</b> <b>Critical YES</b>	<b>3.1 PERFORM</b> the following from the Steam Trestle to ISOLATE recirc flow to the Unit 1 CST for the selected AFW pump to feed steam generators: <ul style="list-style-type: none"> <li>1A AFW Pump: <b>CLOSE</b> V09100, 1A AFW PUMP RECIRC ISOL. (TRSL/22/N-T5/W-TA)</li> </ul>
<b>Standard:</b>	Examinee will <b>SIMULATE CLOSING</b> V09100 by rotating HW in the clockwise direction
<b>Evaluator Cue:</b>	<b>V09100 HW has been rotating in the clockwise direction and stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> ____ <b>UNSATISFACTORY</b> ____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical NO</b>	<b>3.1 PERFORM</b> the following from the Steam Trestle to ISOLATE recirc flow to the Unit 1 CST for the selected AFW pump to feed steam generators: <ul style="list-style-type: none"> <li>• 1B AFW Pump: CLOSE V09101, 1B AFW PUMP RECIRC ISOL. (TRSL/22/N-T6/W-TA)</li> <li>• 1C AFW Pump: CLOSE V09399, 1C AFW PUMP RECIRC ISOL. (TRSL/23/N-T3/W-TA)</li> </ul>
Standard:	Examinee will determine these bullets are N/A
Evaluator Cue:	<b>NONE:</b>  <b>EVALUATOR NOTE:</b> Closing V09101 or V09399 will not have any impact on performing the task.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

	<b>P-3; ALIGN UNIT 2 CST TO SUPPLY 1A AFW PUMP</b>	<b>JPM</b> Page 10 of 17
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<b>NOTE</b>	
A valve wrench and pipe wrench are located to the left of the east door inside the CST Building.	
<b>CAUTION</b>	
A catastrophic failure of the Unit 1 CST may cause the CST building to be inaccessible due to high water level, nitrogen concentration in the atmosphere, or loss of security card reader access. Available indications such as low nitrogen pressure or water issuing from the CST building door should be used before entering the building.	
<b>Performance Step: 7 Critical YES</b>	<b>3.2</b> To supply 1A and 1B AFW Pumps, <b>PERFORM</b> the following:  <b>A.</b> WHEN RCO has disabled <u>all</u> Auxiliary Feedwater Pumps per Attachment 5, Section 4.0, Step 1, THEN <b>CLOSE</b> V12497, CST OUTLET TO 1A/1B AFW PUMP SUCT ISOL.
<b>Standard:</b>	Examinee will <b>SIMULATE CLOSING</b> V12497. by rotating HW in the clockwise direction
<b>Evaluator Cue:</b>	<b>V12497 HW has been rotated in the clockwise direction and stopped turning</b> <b>NOTE: Per cue sheet the RCO has disabled all Auxiliary Feedwater Pumps</b> <b>If asked by applicant, no water is issuing from the door.</b> <b>If asked Nitrogen levels are acceptable for entry</b>
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 8</b> <b>Critical YES</b>	<b>3.2</b> To supply 1A and 1B AFW Pumps, <b>PERFORM</b> the following: <b>B.</b> WHEN Unit 2 NPO has completed both Attachment 5, Section 2 actions: <ul style="list-style-type: none"> <li>• V12802, 2A/2B AFW PUMP SUCT TO / FROM UNIT 1 ISOL is OPEN</li> <li>• V12805, CST CROSSTIE TO UNIT 1 ISOL is OPEN</li> </ul> THEN <b>OPEN</b> V12177, TO/FROM UNIT 2 FROM 1A/1B AFW PUMP SUCT ISOL. (Southeast side of Unit 1 CST Building by the wall)
<b>Standard:</b>	Examinee will <b>SIMULATE OPENING</b> V12177 by rotating HW in the counter-clockwise direction
<b>Evaluator Cue:</b>	<b>V12177 HW has been rotated in the counter-clockwise direction and stopped turning.</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	

**Terminating Cues:**      **The JPM is complete.**

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_





**P-3; ALIGN UNIT 2 CST TO SUPPLY 1A AFW PUMP**

**JPM**  
Page 12 of 17

**Examinee:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

**Date:** \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

**PERFORMANCE RESULTS:**

**SAT:** ☐

**UNSAT:** ☐

**REMEDiation REQUIRED:**

**YES:** ☐

**NO:** ☐

**COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).


**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.**

**INITIAL CONDITIONS:**

- The Unit 1 CST is unavailable due to being damaged.
- The Unit 2 CST is available.
- The RCO has disabled ALL Auxiliary Feedwater Pumps.

**INITIATING CUES:**

- You are an extra NPO.
- The Unit 1 Unit Supervisor has directed you to perform **ALL** the NPO actions for **BOTH** Unit 1 and Unit 2 to line up the Unit 2 CST to supply the 1A AFW Pump IAW 1-AOP-09.02, Auxiliary Feedwater, Attachment 5, Sections 2.0 and 3.0.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: 13	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 31 of 43
PROCEDURE NO.: 1-AOP-09.02	ST. LUCIE UNIT 1	

**ATTACHMENT 5**  
**Supplying Unit 1 AFW Pumps From the Unit 2 CST**  
(Page 3 of 12)

## 2.0 UNIT 2 NPO ACTIONS

**NOTE**

Valve wrenches are located on the north wall by the northeast door.

1. At the Unit 2 CST, **PERFORM** the following to establish a flowpath from the Unit 2 CST to Unit 1 AFW pumps:
  - A. IF starting 1A AFW Pump OR 1B AFW Pump, THEN **OPEN** V12802, 2A/2B AFW PUMP SUCT TO / FROM UNIT 1 ISOL. (Southeast side of Tank)
  - B. IF starting 1C AFW Pump, THEN **OPEN** V12801, 2C AFW PUMP SUCT TO / FROM UNIT 1 ISOL. (Northeast side of Tank)
2. **OPEN** V12805, CST CROSSTIE TO UNIT 1 ISOL. (Near South door by the wall)
3. **NOTIFY** Unit 1 NPO that Unit 2 CST local actions are COMPLETE.
4. **REPORT** to Unit 1 Steam Trestle to assist with valve lineup.

REVISION NO.: <b>13</b>	PROCEDURE TITLE: <b>AUXILIARY FEEDWATER</b>	PAGE: <b>32 of 43</b>
PROCEDURE NO.: <b>1-AOP-09.02</b>	<b>ST. LUCIE UNIT 1</b>	

**ATTACHMENT 5**  
**Supplying Unit 1 AFW Pumps From the Unit 2 CST**  
 (Page 4 of 12)

**3.0 UNIT 1 NPO ACTIONS**

1. **PERFORM** the following from the Steam Trestle to ISOLATE recirc flow to the Unit 1 CST for the selected AFW pump to feed steam generators:
  - 1A AFW Pump: **CLOSE** V09100, 1A AFW PUMP RECIRC ISOL. (TRSL/22/N-T5/W-TA)
  - 1B AFW Pump: **CLOSE** V09101, 1B AFW PUMP RECIRC ISOL. (TRSL/22/N-T6/W-TA)
  - 1C AFW Pump: **CLOSE** V09399, 1C AFW PUMP RECIRC ISOL. (TRSL/23/N-T3/W-TA)

**NOTE**

A valve wrench and pipe wrench are located to the left of the east door inside the CST Building.

**CAUTION**

A catastrophic failure of the Unit 1 CST may cause the CST building to be inaccessible due to high water level, nitrogen concentration in the atmosphere, or loss of security card reader access. Available indications such as low nitrogen pressure or water issuing from the CST building door should be used before entering the building.

2. To supply 1A and 1B AFW Pumps, **PERFORM** the following:
  - A. WHEN RCO has disabled all Auxiliary Feedwater Pumps per Attachment 5, Section 4.0, Step 1, THEN **CLOSE** V12497, CST OUTLET TO 1A/1B AFW PUMP SUCT ISOL. (Southeast side of Unit 1 CST)

REVISION NO.: 13	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 33 of 43
PROCEDURE NO.: 1-AOP-09.02	ST. LUCIE UNIT 1	

**ATTACHMENT 5**  
**Supplying Unit 1 AFW Pumps From the Unit 2 CST**  
 (Page 5 of 12)

**3.0 UNIT 1 NPO ACTIONS (continued)**

**2. (continued)**

**B.** WHEN Unit 2 NPO has completed both Attachment 5, Section 2.0 actions:

- V12802, 2A/2B AFW PUMP SUCT TO / FROM UNIT 1 ISOL, is OPEN.

**AND**

- V12805, CST CROSSTIE TO UNIT 1 ISOL, is OPEN.

THEN **OPEN** V12177, TO/FROM UNIT 2 FROM 1A/1B AFW PUMP SUCT ISOL. (Southeast side of Unit 1 CST Building by the wall)

**C. REMOVE** vent cap from V12827, 1A/1B AFW PUMP SUCT FROM CST VENT. (Southeast side of Unit 1 CST between Tank and Wall)

**D. VENT** the AFW suction piping until a steady stream of water issues by opening and closing V12827, 1A/1B AFW PUMP SUCT FROM CST VENT.

**E. INSTALL** vent cap on V12827, 1A/1B AFW PUMP SUCT FROM CST VENT.

**F. NOTIFY** Unit 1 Control Room that 1A and 1B AFW Header is aligned to Unit 2 CST.

	<b>JOB PERFORMANCE MEASURE</b>	<b>JPM</b> Page 1 of 14
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**JPM TITLE:** RO CALC BORON FOR WITHDRAWAL OF DROPPED CEA  
**JPM NUMBER:** L-19-1 NRC JPM A-1R **REV. 0**  
**TASK NUMBER(S) / TASK TITLE(S):** 07002440/ Calculate Boron Concentration Change  
 07066110/ Recover A Misaligned CEA  
**K/A NUMBERS / K/A VALUES: (RO SRO)** Task 2.1.25 RCO (3.9) Ability to interpret reference materials, such as graphs, curves, tables, etc

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO 
 ☐ SRO 
 ☐ STA 
 ☐ Non-Lic 
 ☐ SRO CERT 
 ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
 Simulator: ☐ Other: ☒  
 Lab: ☐

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date

**A-1, RO CALC BORON FOR WITHDRAWAL OF DROPPED CEA****JPM**  
Page 2 of 14**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST****ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..



[illegible]

**Required Materials:**

- Computer with access to procedures
- Unit-1 Daily Chemistry Sheet
- Ops-520 Briefing, Data and Check Sheets, Briefing Sheet 1, Reactivity Management
- Unit 1 Physics Curves for 5000 EFPH

**General References:**

- 1-AOP-66.01 Dropped or Misaligned CEA Abnormal Operations
- Unit-1 Daily Chemistry Sheet
- 1-NOP-02.24 Boron Concentration Control
- Ops-520 Briefing, Data and Check Sheets, Briefing Sheet 1, Reactivity Management
- Unit 1 Physics Curves for 5000 EFPH

**Task Standards:**

This JPM is complete when the applicant has calculated the boric acid injection rate to be 25-26 gpm.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18****INITIAL CONDITIONS:**

- At 0100, Unit1 is at 100% power EFPH is 5000
- CEA #7 in "B" shutdown group dropped, with its associated rod bottom light lit
- ALL remaining "B" shutdown group are at 136"
- 1-AOP-66.01 Dropped or Misaligned CEA Abnormal Operations has been entered
- Attachment 5, CEA Functional Test and Operability Determination has been completed
- CEA #7 is OPERABLE
  
- At 0110, Unit 1 is at 92% power and STABLE
- Step 6.A. of Attachment 1, Dropped CEA Recovery with Reactor Critical, is being implemented for Shutdown Bank "B" CEA #7

**INITIATING CUES:**

- You are the Desk RCO
- The Unit Supervisor directs you to calculate the boric acid rate required to recover the worst case dropped rod over a **10** minute period, using the **1A BAMT**, per Ops-520, Briefing Sheet 1, Reactivity Management

**BORIC ACID RATE REQUIRED:** \_\_\_\_\_.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**A-1, RO CALC BORON FOR WITHDRAWAL OF DROPPED CEA****JPM**  
Page 6 of 14**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Briefing Sheet 1, Reactivity Management	
<b>Performance Step: 1</b> <b>Critical YES</b>	<b>CALCULATE the RCS Boron concentration increase required.</b> Applicant determines Worst Case Dropped Rod Worth (Physics Curve Book B.4)
<b>Standard:</b>	Applicant determines value to be <b>172 pcm</b> from Figure B.4, St. Lucie Unit 1 Cycle 28
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Highest Single Dropped CEA Worth = 172 pcm

<b>Performance Step: 2</b> <b>Critical: YES</b>	<b>CALCULATE the RCS Boron concentration increase required.</b> Applicant determines HFP Boron Worth (Physics Curve Book C.1)
<b>Standard:</b>	Applicant determines value to be <b>8.39 pcm/ppm</b> from Figure C.1, St. Lucie Unit 1 Cycle 28
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Hot Full Power Differential Boron Worth at 5000 EFPH is 8.39 pcm/ppm

<b>Performance Step: 3</b> <b>Critical: YES</b>	<b>CALCULATE the RCS Boron concentration increase required.</b> Applicant calculates the RCS Boron concentration increase required is <b>20.5 ppm</b> . (172pcm/8.39pcm/ppm)
<b>Standard:</b>	Applicant calculates the RCS Boron concentration increase required is 20.5 ppm. Worst Case Dropped Rod Worth divided by HFP Boron Worth.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Applicant calculates the RCS Boron concentration increase required is 20.5 ppm. Worst Case Dropped Rod Worth divided by HFP Boron Worth.

<b>Performance Step: 4</b> <b>Critical YES</b>	<b>CALCULATE the amount of boric acid needed from the selected BAMT:</b> $V_{BAMT} = V_{RCS} * \ln(Cb_{BAMT} - Cb_{RCSI} / Cb_{BAMT} - Cb_{RCSf})$
<b>Standard:</b>	Applicant calculates the required volume of boric acid to be added is $V_{BAMT} = V_{RCS} * \ln(Cb_{BAMT} - Cb_{RCSI} / Cb_{BAMT} - Cb_{RCSf})$ $V_{BAMT} = 62,500 * \ln((5,870 - 843) / (5,870 - 863.5))$ 255.4 gallons of boric acid
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Applicant calculates the required volume of boric acid is 255.4 gallons

<b>Performance Step: 5</b> <b>Critical YES</b>	<b>CALCULATE the initial Boration Rate necessary to recover the dropped rod:</b> Applicant determines the boration rate.
<b>Standard:</b>	Applicant determines that the boration rate is 25.54 gpm ( <b>25-26.2 gpm</b> )
<b>Evaluator Cue:</b>	<b>NOTE</b> <b>The acceptable range takes into consideration the rounding of the calculation results</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	$62500 \times \ln \frac{BAM\ TK - Initial\ RCS\ Boron\ Conc}{BAM\ TK - Final\ RCS\ Boron\ Conc} \rightarrow 62500 \times \ln \frac{5870ppm - 843ppm}{5870ppm - 863.5ppm}$ $62500 \times \ln 1.00409 \rightarrow 62500 \times .004086 \rightarrow 255.39\ gal\ boric\ acid$ $\rightarrow 255.39/10\ min = 25.5\ gpm$

**Terminating Cues:**

This JPM is complete when the applicant has calculated the boric acid injection rate to be 25-26 gpm.

The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_

**A-1, RO CALC BORON FOR WITHDRAWAL OF DROPPED CEA****JPM**  
Page 8 of 14

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT: UNSAT: 

Remediation required:

YES NO **COMMENTS/FEEDBACK:** (Comments shall be made for any steps graded unsatisfactory).**EXAMINER NOTE:** ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.**EVALUATOR'S SIGNATURE:** \_\_\_\_\_*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If  
unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant



## JOB PERFORMANCE MEASURE

**JPM**  
Page 10 of  
14

### TURNOVER SHEET

#### INITIAL CONDITIONS:

- At 0100, Unit 1 is at 100% power EFPH is 5000
- CEA #7 in "B" shutdown group dropped, with its associated rod bottom light lit
- ALL remaining "B" shutdown group are at 136"
- 1-AOP-66.01 Dropped or Misaligned CEA Abnormal Operations has been entered
- Attachment 5, CEA Functional Test and Operability Determination has been completed
- CEA #7 is OPERABLE
  
- At 0110, Unit 1 is at 92% power and STABLE
- Step 6.A. of Attachment 1, Dropped CEA Recovery with Reactor Critical, is being implemented for Shutdown Bank "B" CEA #7

#### INITIATING CUES:

- You are the Desk RCO
- The Unit Supervisor directs you to calculate the boric acid rate required to recover the worst case dropped rod over a **10** minute period, using the **1A BAMT**, per Ops-520, Briefing Sheet 1, Reactivity Management

**BORIC ACID RATE REQUIRED:** \_\_\_\_\_.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



**DAILY CHEMISTRY REPORT**

ST. LUCIE UNIT # 1

**PRIMARY CHEMISTRY**

DATE: 10/1/2018

REACTOR COOLANT SYSTEM									
Parameter	Boron	Lithium	Chloride	Fluoride	Oxygen	Gross Act.	DEQ I-131	DEQ Xe-133	Hydrogen
Units	ppm	ppm	ppb	ppb	ppb	uci/ml	uci/ml	uci/ml	cc/kg
Limits	See COP-05.04 for limits								
Result	843	3.37	3.26	0.82	< 5	1.59E-01	2.09E-04	0.22	44.45
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/26/2018	9/30/2018

RCS Boron Sample Time: 19:40  
Zinc Pump Stroke: 3.00

I-131 = 7.32E-05 I-134 = 1.87E-03 Iodine Sample Date: 9/30/2018  
Iodine Ratio = 1.24E-01 Xe Ratio = 0.70 Chg. Pmp. 1  
\* Xe Ratio >1.0 should be investigated for potential fuel defect

RWST		SFP		BAMT'S		SIT'S			
Parameter	Boron	Silica	Boron	Silica	A Boron	B Boron	1A1	1A2	1B1
Units	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm
Limits	See COP-05.04 for limits								
Result	2177	No Data	2206	No Data	5870	5776	2101	2102	2099
Date	9/24/2018	No Data	9/27/2018	No Data	9/30/2018	9/30/2018	9/7/2018	9/7/2018	9/7/2018
Time	9:00 AM						9:00 AM	9:00 AM	9:00 AM

**SECONDARY CHEMISTRY**

STEAM GENERATORS						
Parameter	Chloride	Fluoride	Sulfate	Cation Conductivity	Sodium	Gross Act.
Units	ppb	ppb	ppb	umhos/cm	ppb	uci/ml
Limits	See COP-05.04 for limits					
1A Result	0.84	0.21	0.90	0.39	0.39	< 9.770E-07
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	10/1/2018
1B Result	0.75	0.28	0.93	0.44	0.44	< 9.77E-07
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	10/1/2018

CONDENSATE			FEED			
Parameter	Cation Conductivity	Diss. O2	pH	Ammonia	Iron	Copper
Units	umhos/cm	ppb		ppm	ppb	ppb
Limits	See COP-05.04 for limits					
Result	0.20	15.00	10.04	17.35	0.50	0.010
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/26/2018	9/26/2018

**Unit 1 Projected Steam Generator Leak Rate Calculations(Info Only)**

Using the Air Ejector Monitor

Leakrate	Projected Reading
5 gpd =	68 cpm
30 gpd =	309 cpm
75 gpd =	742 cpm
100 gpd =	982 cpm
150 gpd =	1484 cpm
1 GPM =	13881 cpm
Current =	<1 gpd

**Air Ejector Set Point Basis:**  
Alert: 2X Average Background  
High: 3X Average Background

Using the Blow Down Monitors

Leakrate	Projected Reading	
	A S/G	B S/G
5 gpd =	205	256 cpm
30 gpd =	428	753 cpm
75 gpd =	831	1647 cpm
100 gpd =	1054	2144 cpm
150 gpd =	1501	3137 cpm
1 GPM =	13034	28767 cpm
Current =	<1	<1 gpd

**Blow Down Set Point Basis:**  
Alert: 2X Average Background

REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS ST. LUCIE UNIT 1	PAGE: 17 of 34
PROCEDURE NO.: 1-AOP-66.01		

**ATTACHMENT 1**  
**Dropped CEA Recovery With Reactor Critical**  
(Page 3 of 4)

**NOTE**

- If it can be done within the allowable time, it is desirable to pace the recovery to take at least 10 minutes.
- If Attachment 1, Step 6 can **NOT** be performed successfully, then Attachment 1, Step 5 shall be performed.

**6. WITHDRAW** dropped CEA as follows:


- A. RECORD and MAINTAIN**  $\Delta T$  power less than or equal to power level recorded in Section 4.2, Step 4 or 70%, whichever limit is in effect, by borating.  
(Section 6.1.3, Management Directive 2)

Power level to maintain: **92** %

**NOTE**

Topics for Dropped CEA Recovery on Briefing Sheet 1, Reactivity Management, of OPS-520, Briefing, Data And Check Sheets, contains the amount and rate of boration while withdrawing the CEA.

- B. COMMENCE** borating per Operator Aid - RCS Boration Guide, posted at RTGB-105.
- C. SELECT** CEAPDS POSITION BACKUP DISPLAY to monitor affected CEA.
- D.** On CEA POSITION DISPLAYS panel, **SELECT** affected group using desired scale (FULL or +/-15 INCHES).
- E.** On MODE SELECTION panel, **SELECT** MANUAL INDIVIDUAL (MI).
- F.** On INDIVIDUAL CEA SELECTION panel, **SELECT** affected CEA.
- G.** On GROUP SELECTION panel, **SELECT** affected group.

	<b>ST. LUCIE PLANT</b>	OPS-520
	<b>OPERATIONS DEPARTMENT POLICY</b>	<b>REVISION</b> 128
	<b>BRIEFING, DATA AND CHECK SHEETS</b>	Page 2 of 34

**Briefing Sheet 1**  
**Reactivity Management**  
(Page 1 of 2)

**Beginning of Shift Reactivity Review** (Control Room Personnel Only - Shiftly)

- ☐ Water / Acid / CEA / Turbine changes during past shift
- ☐ EFPH \_\_\_\_\_ Boron \_\_\_\_\_ ppm Xenon trend \_\_\_\_\_ pcm ASI trend/stability \_\_\_\_\_
- ☐ Water / Acid / CEA / Turbine changes expected this shift
- ☐ Water / Acid to change temperature 0.1°F Water \_\_\_\_\_ gal. Acid \_\_\_\_\_ gal
- ☐ Blend ratio \_\_\_\_\_/1
- ☐ Operations reactivity evolutions planned this shift
- ☐ Maintenance activities potentially challenging reactivity
- ☐ Operator Work Arounds impacting reactivity
- ☐ Reactor Power Band \_\_\_\_\_ RCS Temperature Band \_\_\_\_\_

**Topics Specific to Boron Concentration Control** (Shiftly)

- ☐ Flow Path (VCT or charging pump suction)
- ☐ Amount to be added
- ☐ Volume Control Tank inventory management (as required)
- ☐ Ion Exchanger vs RCS boron concentration differences (delithiations)
- ☐ Expected Annunciators (M-26 for dilutions, N-40 for borations, M-2 for diverting)

**Topics for Dropped CEA Recovery** (Calculation on page 2, 1<sup>st</sup> day of shift rotation)

- ☐ RCS Boron increase required for worst case dropped CEA \_\_\_\_\_ ppm
- ☐ Amount of Boric Acid required \_\_\_\_\_ gal
- ☐ Required Boration Flowrate required for CEA recovery \_\_\_\_\_ gpm
- ☐ Contingencies for dropped/misaligned CEA

**Topics for Power Maneuvers** (Profile for 100-92% at 10 mw shall be reviewed shiftly)

- ☐ Reactor Engineering predictions for borations/dilutions during power maneuver
- ☐ Turbine Ramp Rate
- ☐ ASI change anticipation
- ☐ Expected dilution/boration to support stabilization

**Topics Specific to CEA Control** (required for planned CEA movement)


- ☐ Group height vs reactivity effect
- ☐ CEA positioning vs ASI control/effect

**Topics Specific to Turbine Control** (required for planned maneuvers)

- ☐ Ovation Controls setup (Target, Rate)
- ☐ Tavg / Tref bands

**Brief Closure** (Shiftly)

- ☐ Review Roles and Responsibilities
- ☐ Critical Steps
- ☐ Contingencies
- ☐ Any Questions

	<b>ST. LUCIE PLANT</b>	OPS-520
	<b>OPERATIONS DEPARTMENT POLICY</b>	<b>REVISION</b> 128
	<b>BRIEFING, DATA AND CHECK SHEETS</b>	Page 3 of 34

**Briefing Sheet 1**  
**Reactivity Management**  
(Page 2 of 2)

Determine the initial Boration Rate necessary to recover a dropped rod (taking at least 10 minutes per 1/2-AOP-66.01 as follows:

1. Calculate the RCS Boron concentration increase required (equivalent to the worth of the dropped rod):

Worst Case Dropped Rod Worth (Physics Curve Book B.4) = \_\_\_\_\_ pcm

HFP Boron Worth (Physics Curve Book C.1) \_\_\_\_\_ pcm/ppm

RCS Boron concentration increase required = \_\_\_\_\_ ppm

2. Calculate the amount of boric acid needed from the selected BAMT:

$$\text{Amount of boric acid needed} = V_{\text{BAMT}} = V_{\text{RCS}} \times \ln \left( \frac{C_{\text{BAMT}} - C_{\text{BRCSE}}}{C_{\text{BAMT}} - C_{\text{BRCSE}}} \right)$$

Unit 1  $V_{\text{RCS}}$  = 62,500 gallons @ NOP NOT

Unit 2  $V_{\text{RCS}}$  = 66,891 gallons @ NOP NOT

Amount of boric acid needed = \_\_\_\_\_ gallons

3. Calculate the initial Boration Rate necessary to recover the dropped rod:

Boration Rate =  $\frac{\text{Amount of boric acid needed}}{\text{(at least) 10 minutes}}$  = \_\_\_\_\_ gpm



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 15

**JPM TITLE:** SRO CALC BORON FOR WITHDRAWAL OF DROPPED CEA and T.S.

**JPM NUMBER:** L-19-1 NRC JPM A-1S **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 07002440/ Calculate Boron Concentration Change  
07066120/ Perform a Dropped CEA Recovery

**K/A NUMBERS / K/A VALUES: (RO SRO)** Task 2.1.25 RCO (4.2) Ability to interpret reference materials, such as graphs, curves, tables, etc

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☒  
Lab: ☐

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date

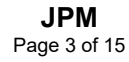
**A-1, SRO CALC BORON FOR WITHDRAWAL OF DROPPED CEA****JPM**  
Page 2 of 15**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST****ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

[illegible]

**Required Materials:**

- Computer with access to procedures
- Unit-1 Daily Chemistry Sheet
- Ops-520 Briefing, Data and Check Sheets, Briefing Sheet 1, Reactivity Management
- Unit 1 Physics Curves for 5000 EFPH

**General References:**

- 1-AOP-66.01 Dropped or Misaligned CEA Abnormal Operations
- Unit-1 Daily Chemistry Sheet
- 1-NOP-02.24 Boron Concentration Control
- Ops-520 Briefing, Data and Check Sheets, Briefing Sheet 1, Reactivity Management
- Unit 1 Physics Curves for 5000 EFPH
- Unit 1 Technical Specifications

**Task Standards:**

This JPM is complete when the applicant has calculated the boric acid injection rate to be 25-26 gpm and determine TS 3.1.3.1 action e and TS 3.1.3.5 are applicable and no others.



I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- At 0100, Unit1 is at 100% power EFPH is 5000
- CEA #7 in "B" shutdown group dropped, with its associated rod bottom light lit
- ALL remaining "B" shutdown group are at 136"
- 1-AOP-66.01 Dropped or Misaligned CEA Abnormal Operations has been entered
- Attachment 5, CEA Functional Test and Operability Determination has been completed
- CEA #7 is OPERABLE
  
- At 0110, Unit 1 is at 92% power and STABLE
- Step 6.A. of Attachment 1, Dropped CEA Recovery with Reactor Critical, is being implemented for Shutdown Bank "B" CEA #7

**INITIATING CUES:**

- You are the Unit Supervisor,
- Calculate the boric acid rate required to recover the worst case dropped rod over a **10** minute period, using the **1A BAMT**, per Ops-520, Briefing Sheet 1, Reactivity Management
- Additionally, identify all required applicable Tech Spec actions statements (IF ANY)

**BORIC ACID RATE REQUIRED:** \_\_\_\_\_.

**TECH SPECS REQUIRED:** \_\_\_\_\_.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**A-1, SRO CALC BORON FOR WITHDRAWAL OF DROPPED CEA****JPM**  
Page 6 of 15**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Briefing Sheet 1, Reactivity Management	
<b>Performance Step: 1</b> <b>Critical YES</b>	<b>CALCULATE the RCS Boron concentration increase required.</b> Applicant determines Worst Case Dropped Rod Worth (Physics Curve Book B.4)
<b>Standard:</b>	Applicant determines value to be <b>172 pcm</b> from Figure B.4, St. Lucie Unit 1 Cycle 28
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Highest Single Dropped CEA Worth = 172 pcm

<b>Performance Step: 2</b> <b>Critical: YES</b>	<b>CALCULATE the RCS Boron concentration increase required.</b> Applicant determines HFP Boron Worth (Physics Curve Book C.1)
<b>Standard:</b>	Applicant determines value to be <b>8.39 pcm/ppm</b> from Figure C.1, St. Lucie Unit 1 Cycle 28
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Hot Full Power Differential Boron Worth at 5000 EFPH is 8.39 pcm/ppm

<b>Performance Step: 3</b> <b>Critical: YES</b>	<b>CALCULATE the RCS Boron concentration increase required.</b> Applicant calculates the RCS Boron centration increase required is <b>20.5 ppm</b> . (172pcm/8.39pcm/ppm)
<b>Standard:</b>	Applicant calculates the RCS Boron centration increase required is 20.5 ppm. Worst Case Dropped Rod Worth divided by HFP Boron Worth.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Applicant calculates the RCS Boron centration increase required is 20.5 ppm. Worst Case Dropped Rod Worth divided by HFP Boron Worth.

<b>Performance Step: 4</b> <b>Critical YES</b>	<b>CALCULATE the amount of boric acid needed from the selected BAMT:</b> $V_{BAMT} = V_{RCS} * \ln(Cb_{BAMT} - Cb_{RCSI} / Cb_{BAMT} - Cb_{RCSf})$
<b>Standard:</b>	Applicant calculates the required volume of boric acid to be added is $V_{BAMT} = V_{RCS} * \ln(Cb_{BAMT} - Cb_{RCSI} / Cb_{BAMT} - Cb_{RCSf})$ $V_{BAMT} = 62,500 * \ln((5,870 - 843) / (5,870 - 863.5))$ <p>255.4 gallons of boric acid</p>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	Applicant calculates the required volume of boric acid is 255.4 gallons

<b>Performance Step: 5</b> <b>Critical YES</b>	<b>CALCULATE the initial Boration Rate necessary to recover the dropped rod:</b> Applicant determines the boration rate.
<b>Standard:</b>	Applicant determines that the boration rate is 25.54 gpm ( <b>25-26.2 gpm</b> )
<b>Evaluator Cue:</b>	<b>NOTE</b> <b>The acceptable range takes into consideration the rounding of the calculation results</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	$62500 \times \ln \frac{BAM\ TK - Initial\ RCS\ Boron\ Conc}{BAM\ TK - Final\ RCS\ Boron\ Conc} \Rightarrow 62500 \times \ln \frac{5870ppm - 843ppm}{5870ppm - 863.5ppm}$ $62500 \times \ln 1.00409 \Rightarrow 62500 \times .004086 \Rightarrow 255.39\ gal\ boric\ acid$ $\Rightarrow 255.39/10\ min = 25.5\ gpm$

<b>Performance Step: 6</b> <b>Critical YES</b>	<b>Determine Tech Spec applicability for the dropped CEA</b> Applicant determines the Tech Spec applicability for Shutdown Bank CEA #7 being out of alignment with the rest of its group.
<b>Standard:</b>	Applicant determines that the following Tech Spec actions apply at 0110:  Tech Spec 3.1.3.1 action (e) Tech Spec 3.1.3.5 no specific action
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY _____</b>
<b>Comments:</b>	<p>MOVABLE CONTROL ASSEMBLIES FULL LENGTH CEA POSITION</p> <p>3.1.3.1 The CEA Block Circuit and all full length (shutdown and regulating) CEAs shall be OPERABLE with each CEA of a given group positioned within 7.5 inches (indicated position) of all other CEAs in its group.</p> <p>APPLICABILITY: MODES 1* and 2*.</p> <p>e. With one full length CEA misaligned from any other CEA in its group by 15 or more inches, operation in MODES 1 and 2 may continue provided that the misaligned CEA is positioned within 7.5 inches of other CEAs in its group in accordance with the time constraints shown in COLR Figure 3.1-1a.</p> <p>SHUTDOWN CEA INSERTION LIMIT</p> <p>3.1.3.5 All shutdown CEAs shall be withdrawn to at least 129.0 inches.</p> <p>APPLICABILITY: MODES 1 and 2*#.</p> <p>With a maximum of one shutdown CEA withdrawn, except for surveillance testing pursuant to Specification 4.1.3.1.2, to less than 129.0 inches, within one hour either:</p> <p>a. Withdraw the CEA to at least 129.0 inches, or</p> <p>b. Declare the CEA inoperable and apply Specification 3.1.3.1.</p>

**Terminating Cues:** This JPM is complete when the applicant has calculated the boric acid injection rate to be 25-26 gpm and determine TS 3.1.3.1 action e and TS 3.1.3.5 are applicable and no others.

**The JPM is complete.**

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**A-1, SRO CALC BORON FOR WITHDRAWAL OF DROPPED CEA**

**JPM**  
Page 9 of 15

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET****INITIAL CONDITIONS:**

- At 0100, Unit1 is at 100% power EFPH is 5000
- CEA #7 in "B" shutdown group dropped, with its associated rod bottom light lit
- ALL remaining "B" shutdown group are at 136"
- 1-AOP-66.01 Dropped or Misaligned CEA Abnormal Operations has been entered
- Attachment 5, CEA Functional Test and Operability Determination has been completed
- CEA #7 is OPERABLE
  
- At 0110, Unit 1 is at 92% power and STABLE
- Step 6.A. of Attachment 1, Dropped CEA Recovery with Reactor Critical, is being implemented for Shutdown Bank "B" CEA #7

**INITIATING CUES:**

- You are the Unit Supervisor,
- Calculate the boric acid rate required to recover the worst case dropped rod over a **10** minute period, using the **1A BAMT**, per Ops-520, Briefing Sheet 1, Reactivity Management
- Additionally, identify all required applicable Tech Spec actions statements (IF ANY)

**BORIC ACID RATE REQUIRED:** \_\_\_\_\_.**TECH SPECS REQUIRED:** \_\_\_\_\_.**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**DAILY CHEMISTRY REPORT**

**ST. LUCIE UNIT # 1**

**PRIMARY CHEMISTRY**

DATE: 10/1/2018

REACTOR COOLANT SYSTEM										
Parameter	Boron	Lithium	Chloride	Fluoride	Oxygen	Gross Act.	DEQ I-131	DEQ Xe-133	Hydrogen	Surge Boron
Units	ppm	ppm	ppb	ppb	ppb	uci/ml	uci/ml	uci/ml	cc/kg	ppm
Limits	See COP-05.04 for limits									
Result	843	3.37	3.26	0.82	< 5	1.59E-01	2.09E-04	0.22	44.45	848
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/26/2018	9/30/2018	9/26/2018

RCS Boron Sample Time: 19:40  
Zinc Pump Stroke: 3.00

I-131 = 7.32E-05 I-134 = 1.87E-03 Iodine Sample Date: 9/30/2018  
Iodine Ratio = 1.24E-01 Xe Ratio = 0.70 Chg. Pmp. 1  
\* Xe Ratio >1.0 should be investigated for potential fuel defect

RWST		SFP		BAMT'S		SIT'S			
Parameter	Boron	Silica	Boron	Silica	A Boron	B Boron	1A1	1A2	1B1
Units	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm
Limits	See COP-05.04 for limits								
Result	2177	No Data	2206	No Data	5870	5776	2101	2102	2099
Date	9/24/2018	No Data	9/27/2018	No Data	9/30/2018	9/30/2018	9/7/2018	9/7/2018	9/7/2018
Time	9:00 AM						9:00 AM	9:00 AM	9:00 AM

**SECONDARY CHEMISTRY**

STEAM GENERATORS							
Parameter	Chloride	Fluoride	Sulfate	Cation Conductivity	Sodium	Gross Act.	B/D Rate
Units	ppb	ppb	ppb	umhos/cm	ppb	uci/ml	GPM
Limits	See COP-05.04 for limits						
1A Result	0.84	0.21	0.90	0.39	0.39	< 9.77E-07	40
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	10/1/2018	10/1/2018
1B Result	0.75	0.28	0.99	0.44	0.44	< 9.77E-07	40
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/30/2018	10/1/2018	10/1/2018

CONDENSATE			FEED			
Parameter	Cation Conductivity	Diss. O2	pH	Ammonia	Iron	Copper
Units	umhos/cm	ppb		ppm	ppb	ppb
Limits	See COP-05.04 for limits					
Result	0.20	15.00	10.04	17.35	0.50	0.010
Date	9/30/2018	9/30/2018	9/30/2018	9/30/2018	9/26/2018	9/26/2018

**Unit 1 Projected Steam Generator Leak Rate Calculations(Info Only)**

Using the Air Ejector Monitor

Leakrate	Projected Reading
5 gpd =	68 cpm
30 gpd =	309 cpm
75 gpd =	742 cpm
100 gpd =	982 cpm
150 gpd =	1484 cpm
1 GPM =	13881 cpm
Current =	<1 gpd

**Air Ejector Set Point Basis:**  
Alert: 2X Average Background  
High: 3X Average Background

Using the Blow Down Monitors

Leakrate	Projected Reading	
	A S/G	B S/G
5 gpd =	205	256 cpm
30 gpd =	428	753 cpm
75 gpd =	831	1647 cpm
100 gpd =	1054	2144 cpm
150 gpd =	1501	3137 cpm
1 GPM =	13034	28767 cpm
Current =	<1	<1 gpd

**Blow Down Set Point Basis:**  
Alert: 2X Average Background



REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS ST. LUCIE UNIT 1	PAGE: 17 of 34
PROCEDURE NO.: 1-AOP-66.01		

**ATTACHMENT 1**  
**Dropped CEA Recovery With Reactor Critical**  
(Page 3 of 4)

**NOTE**

- If it can be done within the allowable time, it is desirable to pace the recovery to take at least 10 minutes.
- If Attachment 1, Step 6 can **NOT** be performed successfully, then Attachment 1, Step 5 shall be performed.

**6. WITHDRAW** dropped CEA as follows:


- A. RECORD** and **MAINTAIN**  $\Delta T$  power less than or equal to power level recorded in Section 4.2, Step 4 or 70%, whichever limit is in effect, by borating.  
(Section 6.1.3, Management Directive 2)

Power level to maintain: **92** %

**NOTE**

Topics for Dropped CEA Recovery on Briefing Sheet 1, Reactivity Management, of OPS-520, Briefing, Data And Check Sheets, contains the amount and rate of boration while withdrawing the CEA.

- B. COMMENCE** borating per Operator Aid - RCS Boration Guide, posted at RTGB-105.
- C. SELECT** CEAPDS POSITION BACKUP DISPLAY to monitor affected CEA.
- D.** On CEA POSITION DISPLAYS panel, **SELECT** affected group using desired scale (FULL or +/-15 INCHES).
- E.** On MODE SELECTION panel, **SELECT** MANUAL INDIVIDUAL (MI).
- F.** On INDIVIDUAL CEA SELECTION panel, **SELECT** affected CEA.
- G.** On GROUP SELECTION panel, **SELECT** affected group.

	<b>ST. LUCIE PLANT</b>	OPS-520
	<b>OPERATIONS DEPARTMENT POLICY</b>	<b>REVISION 128</b>
	<b>BRIEFING, DATA AND CHECK SHEETS</b>	Page 2 of 34

**Briefing Sheet 1**  
**Reactivity Management**  
(Page 1 of 2)

Beginning of Shift Reactivity Review (Control Room Personnel Only - Shiftly)

- ☐ Water / Acid / CEA / Turbine changes during past shift
- ☐ EFPH \_\_\_\_\_ Boron \_\_\_\_\_ ppm Xenon trend \_\_\_\_\_ pcm ASI trend/stability \_\_\_\_\_
- ☐ Water / Acid / CEA / Turbine changes expected this shift
- ☐ Water / Acid to change temperature 0.1°F Water \_\_\_\_\_ gal. Acid \_\_\_\_\_ gal
- ☐ Blend ratio \_\_\_\_\_/1
- ☐ Operations reactivity evolutions planned this shift
- ☐ Maintenance activities potentially challenging reactivity
- ☐ Operator Work Arounds impacting reactivity
- ☐ Reactor Power Band \_\_\_\_\_ RCS Temperature Band \_\_\_\_\_

Topics Specific to Boron Concentration Control (Shiftly)

- ☐ Flow Path (VCT or charging pump suction)
- ☐ Amount to be added
- ☐ Volume Control Tank inventory management (as required)
- ☐ Ion Exchanger vs RCS boron concentration differences (delithiations)
- ☐ Expected Annunciators (M-26 for dilutions, N-40 for borations, M-2 for diverting)

Topics for Dropped CEA Recovery (Calculation on page 2, 1<sup>st</sup> day of shift rotation)

- ☐ RCS Boron increase required for worst case dropped CEA \_\_\_\_\_ ppm
- ☐ Amount of Boric Acid required \_\_\_\_\_ gal
- ☐ Required Boration Flowrate required for CEA recovery \_\_\_\_\_ gpm
- ☐ Contingencies for dropped/misaligned CEA

Topics for Power Maneuvers (Profile for 100-92% at 10 mw shall be reviewed shiftly)

- ☐ Reactor Engineering predictions for borations/dilutions during power maneuver
- ☐ Turbine Ramp Rate
- ☐ ASI change anticipation
- ☐ Expected dilution/boration to support stabilization

Topics Specific to CEA Control (required for planned CEA movement)


- ☐ Group height vs reactivity effect
- ☐ CEA positioning vs ASI control/effect

Topics Specific to Turbine Control (required for planned maneuvers)

- ☐ Ovation Controls setup (Target, Rate)
- ☐ Tav<sub>g</sub> / Tref bands

Brief Closure (Shiftly)

- ☐ Review Roles and Responsibilities
- ☐ Critical Steps
- ☐ Contingencies
- ☐ Any Questions

	<b>ST. LUCIE PLANT</b>	OPS-520
	<b>OPERATIONS DEPARTMENT POLICY</b>	<b>REVISION</b> <b>128</b>
	<b>BRIEFING, DATA AND CHECK SHEETS</b>	Page 3 of 34

**Briefing Sheet 1**  
**Reactivity Management**  
(Page 2 of 2)

Determine the initial Boration Rate necessary to recover a dropped rod (taking at least 10 minutes per 1/2-AOP-66.01 as follows:

1. Calculate the RCS Boron concentration increase required (equivalent to the worth of the dropped rod):

Worst Case Dropped Rod Worth (Physics Curve Book B.4) = \_\_\_\_\_ pcm  
HFP Boron Worth (Physics Curve Book C.1) \_\_\_\_\_ pcm/ppm  
RCS Boron concentration increase required = \_\_\_\_\_ ppm

2. Calculate the amount of boric acid needed from the selected BAMT:

$$\text{Amount of boric acid needed} = V_{\text{BAMT}} = V_{\text{RCS}} \times \ln \left( \frac{C_{\text{BAMT}} - C_{\text{BRCSi}}}{C_{\text{BAMT}} - C_{\text{BRCsf}}} \right)$$

Unit 1  $V_{\text{RCS}}$  = 62,500 gallons @ NOP NOT

Unit 2  $V_{\text{RCS}}$  = 66,891 gallons @ NOP NOT

Amount of boric acid needed = \_\_\_\_\_ gallons

3. Calculate the initial Boration Rate necessary to recover the dropped rod:

Boration Rate =  $\frac{\text{Amount of boric acid needed}}{\text{(at least) 10 minutes}}$  = \_\_\_\_\_ gpm



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 13

**JPM TITLE:** RO TIME TO BOIL CALCULATION

**JPM NUMBER:** L-19-1 NRC JPM A-2 RO **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 07003470 / Respond to a Loss of the SDC system

**K/A NUMBERS / K/A VALUES: (RO SRO)** 2.1.37 RCO (4.3) Knowledge of procedures, guidelines, or limitations associated with reactivity management.

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☒  
Lab: ☐

Time for Completion: 20 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date



## A-2, RO TIME TO BOIL CALCULATION

**JPM**  
Page 2 of 13

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

[illegible]

**Required Materials:**

- Computer with access to procedures
- Hard Copy of 1-AOP-03.02 Shutdown Cooling Abnormal Operations Attachment 1, pages 1 and 2 to provide if asked

**General References:**

- 1-AOP-03.02 Shutdown Cooling Abnormal Operations
- 1-ONP-01.04, Plant Condition 4, Shutdown Cooling in Operation- Reduced Inventory Operations.

**Task Standards:**

This JPM is complete when the applicant determines boiling will occur at 0728-0729

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18****INITIAL CONDITIONS:**

- Unit 1 was tripped March 20 at 0615 for a Refueling outage
- Core OFFLOAD has NOT commenced.
- A loss of shutdown cooling has just occurred
- RCS temperature is 114°F, Mode 6
- RCS level is 31 feet
- 1A Shutdown Cooling Train in Operation

Subsequently:

- On March 24, 0715, the 1A LPSI pump tripped, and the 1B LPSI failed to start

**INITIATING CUES:**

- You are the BRCO determine the time boiling will occur

**Time Boiling Will Occur:** \_\_\_\_\_

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.





## A-2, RO TIME TO BOIL CALCULATION

**JPM**  
Page 6 of 13

### JPM PERFORMANCE INFORMATION

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

#### ATTACHMENT 1

<b>Performance Step: 1</b> <b>Critical NO</b>	<b>Record the following information</b> <ul style="list-style-type: none"><li>• Time SDC was lost</li></ul>
<b>Standard:</b>	Examinee Records 0715
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical: NO</b>	<b>Record</b> the following information <ul style="list-style-type: none"><li>• RCS Temperature</li><li>• </li></ul>
<b>Standard:</b>	Records 114°F
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical: NO</b>	ATTACHMENT 1 step 1A Record the following information Vessel / Cavity Level
<b>Standard:</b>	Records 31 ft.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



## A-2, RO TIME TO BOIL CALCULATION

**JPM**  
Page 7 of 13

<b>Performance Step: 4</b> <b>Critical NO</b>	Record the following information Time since shutdown (hours)
<b>Standard:</b>	Examinee Records 96 hours
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical YES</b>	Record time to boil at mid-loop per Table 1
<b>Standard:</b>	Examinee 12.3 minutes
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	<ul style="list-style-type: none"><li>• Temperature between columns, select higher temperature</li><li>• Time since shutdown between rows, select the lesser time</li></ul>

<b>Performance Step: 6</b> <b>Critical YES</b>	Record additional time to boil for a 100ft <sup>3</sup> volume per Table 2
<b>Standard:</b>	0.857 (minutes / 100ft <sup>3</sup> )
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	<ul style="list-style-type: none"><li>• Temperature between columns, select higher temperature</li><li>• Time since shutdown between rows, select the lesser time</li></ul>

<b>Performance Step: 7</b> <b>Critical: YES</b>	Record additional 100ft <sup>3</sup> volumes above mid-loop per Table 3
<b>Standard:</b>	1.21 (100 ft <sup>3</sup> )
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



## A-2, RO TIME TO BOIL CALCULATION

**JPM**  
Page 8 of 13

<b>Performance Step: 8</b> <b>Critical YES</b>	Calculate Time to Boil as Follows:
<b>Standard:</b>	Calculate Time to Boil as Follows:  $\begin{array}{ccccccc} (\underline{\quad 12.3 \quad}) & + & [(\underline{\quad 0.857 \quad}) & \times & (\underline{\quad 1.21 \quad})] & = & 13.34 \text{ min} \\ \text{Time to boil} & & \text{Additional} & & \text{Additional} & & \text{Time to Boil} \\ & & \text{Time to boil} & & 100 \text{ ft}^3 \text{ volumes} & & \\ \text{Step 1.B} & & \text{Step 1.C} & & \text{Step 1.D} & & \end{array}$  Time to Boil 13.34 minutes (13–13.34 minutes is acceptable)
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 9</b> <b>Critical YES</b>	IF core shuffle or reload has NOT been completed, THEN CALCULATE time boiling will occur as follows: $\begin{array}{ccccc} (\underline{\quad 0715 \quad}) & + & (\underline{\quad 13.34 \quad}) & = & (0728.34) \\ \text{Time SDC lost} & & \text{Time to boil} & & \text{Time boiling will occur} \\ \text{Step 1.A} & & \text{Step 1.E} & & \end{array}$
<b>Standard:</b>	Time 0728:00 to 0729:00 is acceptable
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:**                      This JPM is complete when the applicant determines boiling will occur at 0728 - 0729

The JPM is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



## A-2, RO TIME TO BOIL CALCULATION

**JPM**  
Page 9 of 13

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 1 was tripped March 20 at 0615 for a Refueling outage
- Core OFFLOAD has NOT commenced.
- A loss of shutdown cooling has just occurred
- RCS temperature is 114°F, Mode 6
- RCS level is 31 feet
- 1A Shutdown Cooling Train in Operation

Subsequently:

- On March 24, 0715, the 1A LPSI pump tripped, and the 1B LPSI failed to start

**INITIATING CUES:**

- You are the BRCO determine the time boiling will occur

**Time Boiling Will Occur:** \_\_\_\_\_

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: 14	PROCEDURE TITLE: SHUTDOWN COOLING ABNORMAL OPERATIONS	PAGE: 19 of 39
PROCEDURE NO.: 1-AOP-03.02	ST. LUCIE UNIT 1	

**ATTACHMENT 1**  
**Estimated Time to Core Boiling**  
(Page 1 of 9)

**NOTE**

During Core Offload / Reload conditions, Time to Boil is only required to be calculated once per shift unless otherwise directed by the Shift Manager.

1. **DETERMINE** estimated time to core boiling as follows (Section 6.2, Commitment 2):
  - A. **RECORD** the following information at the time SDC was lost:
 

Time Shutdown Cooling Lost from Section 4.2, Step 2 \_\_\_\_\_

RCS Temperature from Section 4.2, Step 2 \_\_\_\_\_ °F

Vessel / Cavity Level \_\_\_\_\_ ft

Time since shutdown (hours) \_\_\_\_\_
  - B. **RECORD** time to boil at mid-loop per Table 1:  
\_\_\_\_\_ (minutes)
  - C. **RECORD** additional time to boil for a 100 ft<sup>3</sup> volume per Table 2:  
\_\_\_\_\_ (minutes / 100 ft<sup>3</sup>).
  - D. **RECORD** additional 100 ft<sup>3</sup> volumes above mid-loop per Table 3:  
\_\_\_\_\_ (100 ft<sup>3</sup>)
  - E. **CALCULATE** Time to Boil as follows:
 
$$\left( \frac{\text{Time to boil}}{\text{Step 1.B}} \right) + \left[ \left( \frac{\text{Additional time to boil}}{\text{Step 1.C}} \right) \times \left( \frac{\text{Additional 100 ft}^3 \text{ volumes}}{\text{Step 1.D}} \right) \right] = \frac{\text{Time to Boil}}{\text{min}}$$

REVISION NO.: 14	PROCEDURE TITLE: SHUTDOWN COOLING ABNORMAL OPERATIONS	PAGE: 20 of 39
PROCEDURE NO.: 1-AOP-03.02	ST. LUCIE UNIT 1	

**ATTACHMENT 1**  
**Estimated Time to Core Boiling**  
(Page 2 of 9)

- F.** IF Full Core Offload is in progress, THEN **CALCULATE** Time to Boil as follows:  
(Section 6.1.3, Management Directive 1)

$$\left[ \left( \frac{\text{Time to Boil}}{\text{Step 1.E}} \right) \times \left( \frac{\text{Time to Boil Multiplier}}{\text{Table 4}} \right) \right] = \frac{\text{Time to Boil}}{\text{Time to Boil}} \text{ min}$$

- G.** If Reload is in progress OR complete, THEN **CALCULATE** Time to Boil as follows: (Section 6.1.3, Management Directive 1)

$$\left[ \left( \frac{\text{Time to Boil}}{\text{Step 1.E}} \right) \times (1.35) \times \left( \frac{\text{Time to Boil Multiplier}}{\text{Table 5}} \right) \right] = \frac{\text{Time to Boil}}{\text{Time to Boil}} \text{ min}$$





## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 14

**JPM TITLE:** SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S. APPLICABILITY

**JPM NUMBER:** L-19-1 NRC JPM A-2 SRO **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 09003005 / Action due to SDC system out of spec/service conditions  
07003470 / Respond to a Loss of the SDC system

**K/A NUMBERS / K/A VALUES: (RO SRO)** 2.1.37 SRO (4.6) Knowledge of procedures, guidelines, or limitations associated with reactivity management.

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☒  
Lab: ☐

Time for Completion: 20 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date



**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S.  
APPLICABILITY**

**JPM**  
Page 2 of 14

**JOB PERFORMANCE MEASURE VALIDATION CHECKLIST**

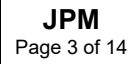
**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

[illegible]



**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S.  
APPLICABILITY**

**JPM**  
Page 4 of 14

**Required Materials:**

- Computer with access to procedures
- Hard Copy of 1-AOP-03.02 Shutdown Cooling Abnormal Operations Attachment 1, pages 1 and 2 to provide if asked

**General References:**

- 1-AOP-03.02 Shutdown Cooling Abnormal Operations
- 1-ONP-01.04, Plant Condition 4, Shutdown Cooling in Operation- Reduced Inventory Operations.
- Unit 1 Technical Specifications

**Task Standards:**

This JPM is complete when the applicant determines boiling will occur at 0728-0729 and TS 3.9.8.2 actions a and b are applicable and NO others.



**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S.  
APPLICABILITY**

**JPM**  
Page 5 of 14

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 1 was tripped March 20 at 0615 for a Refueling outage
- Core OFFLOAD has NOT commenced.
- A loss of shutdown cooling has just occurred
- RCS temperature is 114°F, Mode 6
- RCS level is 31 feet
- 1A Shutdown Cooling Train in Operation

Subsequently:

- On March 24, 0715, the 1A LPSI pump tripped, and the 1B LPSI failed to start

**INITIATING CUES:**

- You are the Unit Supervisor, determine the nd time boiling will occur using 1-AOP-03.02, Shutdown Cooling Abnormal Operations, and determine the required Tech Spec action(s) (if any)

**Time Boiling Will Occur:** \_\_\_\_\_

**Required Tech Spec Actions:** \_\_\_\_\_

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S.  
APPLICABILITY**

**JPM**  
Page 6 of 14

**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

**ATTACHMENT 1**

<b>Performance Step: 1</b> <b>Critical NO</b>	<b>Record</b> the following information • Time SDC was lost
<b>Standard:</b>	Examinee Records 0715
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 2</b> <b>Critical: NO</b>	<b>Record</b> the following information • RCS Temperature
<b>Standard:</b>	Examinee Records 114°F
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b> <b>Critical: NO</b>	ATTACHMENT 1 step 1A Record the following information Vessel / Cavity Level
<b>Standard:</b>	Examinee Records 31 ft.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S.  
APPLICABILITY**

**JPM**  
Page 7 of 14

<b>Performance Step: 4</b>	Record the following information Time since shutdown (hours)
<b>Critical NO</b>	
<b>Standard:</b>	Examinee Records 96 hours
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b>	Record time to boil at mid-loop per Table 1
<b>Critical YES</b>	
<b>Standard:</b>	Examinee Records 12.3 minutes
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE:</b> Temperature between columns, select higher temperature Time since shutdown between rows, select the lesser time
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 6</b>	Record additional time to boil for a 100ft <sup>3</sup> volume per Table 2
<b>Critical YES</b>	
<b>Standard:</b>	0.857 (minutes / 100ft <sup>3</sup> )
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE:</b> Temperature between columns, select higher temperature Time since shutdown between rows, select the lesser time
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S. APPLICABILITY**

**JPM**  
Page 8 of 14

<b>Performance Step: 7</b>	Record additional 100ft <sup>3</sup> volumes above mid-loop per Table 3
<b>Critical: NO</b>	
<b>Standard:</b>	1.21 (100 ft <sup>3</sup> )
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE:</b> Temperature between columns, select higher temperature Time since shutdown between rows, select the lesser time
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 8</b>	Calculate Time to Boil as Follows:
<b>Critical YES</b>	
<b>Standard:</b>	Calculate Time to Boil as Follows:  $\begin{array}{ccccccc} (\underline{\hspace{1cm}}12.3\underline{\hspace{1cm}}) & + & [(\underline{\hspace{1cm}}0.857\underline{\hspace{1cm}}) & \times & (\underline{\hspace{1cm}}1.21\underline{\hspace{1cm}})] & = & 13.34 \text{ min} \\ \text{Time to boil} & & \text{Additional} & & \text{Additional} & & \text{Time to Boil} \\ & & \text{Time to boil} & & 100 \text{ ft}^3 \text{ volumes} & & \\ \text{Step 1.B} & & \text{Step 1.C} & & \text{Step 1.D} & & \end{array}$ Time to Boil 13.34 minutes (13 –13.34 minutes is acceptable)
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 9</b>	IF core shuffle or reload has NOT been completed, THEN CALCULATE time boiling will occur as follows:
<b>Critical YES</b>	$\begin{array}{ccccc} (\underline{\hspace{1cm}}0715\underline{\hspace{1cm}}) & + & (\underline{\hspace{1cm}}13.34\underline{\hspace{1cm}}) & = & (0728.34) \\ \text{Time SDC lost} & & \text{Time to boil} & & \text{Time boiling will occur} \\ \text{Step 1.A} & & \text{Step 1.E} & & \end{array}$
<b>Standard:</b>	Time 0728 to 0729 is acceptable
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	





**A-2, SRO TIME TO BOIL CALCULATION WITH LOSS OF SDC T.S.  
APPLICABILITY**

**JPM**  
Page 9 of 14

<b>Performance Step: 10</b>	Determine the required Tech Spec actions
<b>Critical YES</b>	
<b>Standard:</b>	<p>Applicant will determine T.S. 3.9.8.2 Actions a and b are applicable.  <b>3.9.8.2</b> Two independent shutdown cooling loops shall be OPERABLE and at least one shutdown cooling loop shall be in operation.*  <b>APPLICABILITY:</b> MODE 6 when the water level above the top of irradiated fuel assemblies seated within the reactor pressure vessel is less than 23 feet.  <b>ACTION:</b>  a. With less than the required shutdown cooling loops OPERABLE, within one (1) hour 1) initiate corrective action to return the required loops to OPERABLE status, or 2) establish greater than or equal to 23 feet of water above irradiated fuel assemblies seated within the reactor pressure vessel.  b. With no shutdown cooling loop in operation, suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of Technical Specification 3.9.1. and within one (1) hour initiate corrective action to return the required shutdown cooling loop to operation. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.  c. The provisions of Specification 3.0.3 are not applicable.</p> <p>* One required shutdown cooling loop may be inoperable for up to 2 hours for surveillance testing, provided that the other shutdown cooling loop is OPERABLE and in operation.</p>
<b>Evaluator Cue:</b>	<b>NONE</b> <b>Action C is acceptable if added but not required therefore not critical</b>
<b>Performance:</b>	<b>SATISFACTORY    UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:** This JPM is complete when the applicant determines the time to core boiling and time boiling will occur, and determines the required Tech Spec actions

**The JPM is complete.**

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**A-2, SRO TIME TO BOIL WITH MAKE UP CALCULATION**

**JPM**  
Page 10 of  
14

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant



## JOB PERFORMANCE MEASURE

**JPM**  
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14

### TURNOVER SHEET

PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18

#### INITIAL CONDITIONS:

- Unit 1 was tripped March 20 at 0615 for a Refueling outage
- Core OFFLOAD has NOT commenced.
- A loss of shutdown cooling has just occurred
- RCS temperature is 114°F, Mode 6
- RCS level is 31 feet
- 1A Shutdown Cooling Train in Operation

Subsequently:

- On March 24, 0715, the 1A LPSI pump tripped, and the 1B LPSI failed to start

#### INITIATING CUES:

- You are the Unit Supervisor, determine the nd time boiling will occur using 1-AOP-03.02, Shutdown Cooling Abnormal Operations, and determine the required Tech Spec action(s) (IF ANY)

Time Boiling Will Occur: \_\_\_\_\_

Required Tech Spec Actions: \_\_\_\_\_

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

REVISION NO.: 14	PROCEDURE TITLE: SHUTDOWN COOLING ABNORMAL OPERATIONS	PAGE: 19 of 39
PROCEDURE NO.: 1-AOP-03.02	ST. LUCIE UNIT 1	

**ATTACHMENT 1**  
**Estimated Time to Core Boiling**  
(Page 1 of 9)

**NOTE**

During Core Offload / Reload conditions, Time to Boil is only required to be calculated once per shift unless otherwise directed by the Shift Manager.

1. **DETERMINE** estimated time to core boiling as follows (Section 6.2, Commitment 2):
  - A. **RECORD** the following information at the time SDC was lost:
 

Time Shutdown Cooling Lost from Section 4.2, Step 2 \_\_\_\_\_

RCS Temperature from Section 4.2, Step 2 \_\_\_\_\_ °F

Vessel / Cavity Level \_\_\_\_\_ ft

Time since shutdown (hours) \_\_\_\_\_
  - B. **RECORD** time to boil at mid-loop per Table 1:  
\_\_\_\_\_ (minutes)
  - C. **RECORD** additional time to boil for a 100 ft<sup>3</sup> volume per Table 2:  
\_\_\_\_\_ (minutes / 100 ft<sup>3</sup>).
  - D. **RECORD** additional 100 ft<sup>3</sup> volumes above mid-loop per Table 3:  
\_\_\_\_\_ (100 ft<sup>3</sup>)
  - E. **CALCULATE** Time to Boil as follows:
 
$$\left( \frac{\text{Time to boil}}{\text{Step 1.B}} \right) + \left[ \left( \frac{\text{Additional time to boil}}{\text{Step 1.C}} \right) \times \left( \frac{\text{Additional 100 ft}^3 \text{ volumes}}{\text{Step 1.D}} \right) \right] = \frac{\text{Time to Boil}}{\text{min}}$$

REVISION NO.: 14	PROCEDURE TITLE: SHUTDOWN COOLING ABNORMAL OPERATIONS	PAGE: 20 of 39
PROCEDURE NO.: 1-AOP-03.02	ST. LUCIE UNIT 1	

**ATTACHMENT 1**  
**Estimated Time to Core Boiling**  
(Page 2 of 9)

- F.** IF Full Core Offload is in progress, THEN **CALCULATE** Time to Boil as follows:  
(Section 6.1.3, Management Directive 1)

$$\left[ \left( \frac{\text{Time to Boil}}{\text{Step 1.E}} \right) \times \left( \frac{\text{Time to Boil Multiplier}}{\text{Table 4}} \right) \right] = \frac{\text{Time to Boil}}{\text{Time to Boil}} \text{ min}$$

- G.** If Reload is in progress OR complete, THEN **CALCULATE** Time to Boil as follows: (Section 6.1.3, Management Directive 1)

$$\left[ \left( \frac{\text{Time to Boil}}{\text{Step 1.E}} \right) \times (1.35) \times \left( \frac{\text{Time to Boil Multiplier}}{\text{Table 5}} \right) \right] = \frac{\text{Time to Boil}}{\text{Time to Boil}} \text{ min}$$



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 16

**JPM TITLE:** RO Perform 2C Intake Cooling Water Pump Code Run Unit 2

**JPM NUMBER:** L-19-1 NRC JPM A-3 RO **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 07203250 / Implement Surveillance procedures

**K/A NUMBERS / K/A VALUES: (RO SRO)** 2.2.12 Knowledge of surveillance procedures  
RO (3.7)

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☒  
Lab: ☐

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b>	2/28/19
	Instructor/Developer	Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b>	2/28/19
	Instructor (Instructional Review)	Date
<b>Validated by:</b>	<b>SEAN WYLIE</b>	2/28/19
	SME (Technical Review)	Date
<b>Approved by:</b>	<b>TRAVIS OURET</b>	2/28/19
	Training Supervision	Date
<b>Approved by:</b>	<b>TERRY BENTON</b>	2/28/19
	Training Program Owner	Date



A-3R; Perform 2C Intake Cooling Water Pump Code Run - Unit 2

**JPM**  
Page 2 of 16

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

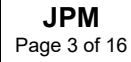
REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..



[illegible]



## A-3R; Perform 2C Intake Cooling Water Pump Code Run - Unit 2

**JPM**

Page 4 of 16

### Required Materials:

- Computer with access to procedures
- 2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN, Steps 4.2.19, 4.2.20 and Attachment 2.
- Calculator

### General References:

- 2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN, Steps 4.2.19, 4.2.20 and Attachment 2.

### Task Standards:

The applicant will:

- Enter pump data into the surveillance procedure steps.
- Evaluate the results to determine pump status.

This JPM is complete when the applicant determines that electrical power is required to be aligned to the B side to perform the code run and determines that the 2C ICW pump is in the required action range.



I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 2 is at 100% power
- 2A and 2B Intake Cooling Water (ICW) Pumps are running
- The Crew is scheduled to perform 2-OSP-21.01C, 2C Intake Cooling Water Pump Code Run aligned to the 'B' ICW Header

**INITIATING CUES:**

- You are the Reactor Operator
- Is the 2C ICW Pump electrical power required to be aligned to the 'B' side to perform the 2C ICW pump code run?

Power is required to be aligned to the 'B' side **YES / NO** (circle one ONLY)

- After the 2C ICW pump has been started and ran, you are directed to record and evaluate the test data with respect to acceptance criteria and determine the status of the 2C ICW Pump in accordance with Steps 4.2.19, 4.2.20 and Attachment 2.
- **INDICATE** status: 2C ICW pump.
- The ANPO has Transmitted the pump data from Attachment 2 as follows:
  - **Intake Level**
    - -3.44 ft.
  - **Pump Disc Press. (PI-21-5C)**
    - 43 psig
  - **Vibration (Peak Velocity)**
    - UMN .06208 in/sec
    - UME .05777 in/sec
    - UMA .43290 in/sec
  - **Vibration Instr. No.**
    - PSL-2592

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

**2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN**

**Performance Step: 1**  
**Critical YES**

**Record and evaluate the test data**

**Standard:**

REVISION NO: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 22 of 53
PROCEDURE NO: 2-OSP-21.01C	ST. LUCIE UNIT 2	INITIAL

**4.2 2C ICW Pump Code Run on B Header (continued)**

19. Perform the following:

A. **CALCULATE** pump head. \_\_\_\_\_

Actual pump head =  $41 + (a \times 2.307) - (b + 18)$

where: a = PL-21-5C, 2C ICW Pump Disch Press  
b = Intake level

Actual pump head =  $41 + (43 \text{ psig} \times 2.307) - (-3.44 \text{ ft} + 18)$

Actual pump head = 125.6 ft CRITICAL STEP

B. **RECORD** calculated pump head in Table 1 of Attachment 2, 2C ICW Quarterly Pump Code Run. \_\_\_\_\_

C. **VERIFY** calculated pump head Acceptance Criteria. \_\_\_\_\_

Acceptance Criteria	Results (✓)
Calculated pump head is 126.3 to 140.8 ft.	<input type="checkbox"/> SAT <input checked="" type="checkbox"/> UNSAT

CRITICAL STEP

20. **PERFORM** the following:

A. **VERIFY** vibration Acceptance Criteria. \_\_\_\_\_

Location	Acceptance Criteria	Results (✓)
UMN	Vibration is < 0.195 in/sec	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UME	Vibration is < 0.119 in/sec	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UMA	Vibration is < 0.167 in/sec	<input type="checkbox"/> SAT <input checked="" type="checkbox"/> UNSAT

**Evaluator Cue:**

**NONE**

**Performance:**

**SATISFACTORY** , **UNSATISFACTORY** \_\_\_\_\_

**Comments:**

<b>Performance Step: 2</b> <b>Critical: YES</b> <b>Standard:</b>	<p align="center"><b>Determine the status of the 2C ICW Pump</b></p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; border-bottom: 1px solid black;">REVISION NO. 26</td> <td style="width: 50%; border-bottom: 1px solid black;">PROCEDURE TITLE 2C INTAKE COOLING WATER PUMP CODE RUN ST. LUCIE UNIT 2</td> <td style="width: 25%; border-bottom: 1px solid black;">PAGE 53 of 53</td> </tr> <tr> <td style="border-bottom: 1px solid black;">PROCEDURE NO. 2-OSP-21.01C</td> <td colspan="2"></td> </tr> </table> <p align="center"><b>ATTACHMENT 2</b>  <b>2C ICW Quarterly Pump Code Run</b>          (Page 1 of 1)</p> <p>Date: ____/____/____      Vibration Instr. No. _____</p> <p align="center">Table 1 2C ICW Pump Flow and Vibration Data</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Parameter</th> <th rowspan="2">Reading</th> <th colspan="3">Acceptance Criteria</th> </tr> <tr> <th>Allowable Range</th> <th>Alert Range</th> <th>Required Action</th> </tr> </thead> <tbody> <tr> <td>Intake Level</td> <td>-3.44 ft.</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Pump Disch. Press. (P1-21-5C)</td> <td>43 psig</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>Calculated Pump Head *</td> <td>125.6 ft.</td> <td>126.3 to 140.8</td> <td>123.6 to &lt; 126.3</td> <td>&lt; 123.6 or &gt; 140.8</td> </tr> <tr> <td rowspan="3">Peak Velocity</td> <td>UMN .06208 in./sec.</td> <td>&lt; 0.195</td> <td>0.195 to 0.468</td> <td>&gt; 0.468</td> </tr> <tr> <td>UME .05777 in./sec.</td> <td>&lt; 0.119</td> <td>0.119 to 0.286</td> <td>&gt; 0.286</td> </tr> <tr> <td>UMA .43290 in./sec.</td> <td>&lt; 0.167</td> <td>0.167 to 0.401</td> <td>&gt; 0.401</td> </tr> </tbody> </table> <p>* Calculated Pump Head = 41 ft. + (Disch. Press. x 2.307) - (Intake Level + 18 ft.).          ** See Attachment 1, 2C ICW Pump Vibration Reading Locations, for measurement points.</p> <p>1. <b>INDICATE</b> purpose of test:</p> <p><input checked="" type="checkbox"/> Code Run</p> <p><input type="checkbox"/> Post Maintenance (explain) _____</p> <p><input type="checkbox"/> Other (explain) _____</p> <p>2. <b>EVALUATE</b> the test data with respect to acceptance criteria and <b>INDICATE</b> status:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">CRITICAL STEP</div> <p><input type="checkbox"/> ACCEPTABLE</p> <p><input type="checkbox"/> ALERT RANGE</p> <p><input checked="" type="checkbox"/> REQUIRED ACTION RANGE</p> </div>	REVISION NO. 26	PROCEDURE TITLE 2C INTAKE COOLING WATER PUMP CODE RUN ST. LUCIE UNIT 2	PAGE 53 of 53	PROCEDURE NO. 2-OSP-21.01C			Parameter	Reading	Acceptance Criteria			Allowable Range	Alert Range	Required Action	Intake Level	-3.44 ft.	N/A	N/A	N/A	Pump Disch. Press. (P1-21-5C)	43 psig	N/A	N/A	N/A	Calculated Pump Head *	125.6 ft.	126.3 to 140.8	123.6 to < 126.3	< 123.6 or > 140.8	Peak Velocity	UMN .06208 in./sec.	< 0.195	0.195 to 0.468	> 0.468	UME .05777 in./sec.	< 0.119	0.119 to 0.286	> 0.286	UMA .43290 in./sec.	< 0.167	0.167 to 0.401	> 0.401
REVISION NO. 26	PROCEDURE TITLE 2C INTAKE COOLING WATER PUMP CODE RUN ST. LUCIE UNIT 2	PAGE 53 of 53																																									
PROCEDURE NO. 2-OSP-21.01C																																											
Parameter	Reading	Acceptance Criteria																																									
		Allowable Range	Alert Range	Required Action																																							
Intake Level	-3.44 ft.	N/A	N/A	N/A																																							
Pump Disch. Press. (P1-21-5C)	43 psig	N/A	N/A	N/A																																							
Calculated Pump Head *	125.6 ft.	126.3 to 140.8	123.6 to < 126.3	< 123.6 or > 140.8																																							
Peak Velocity	UMN .06208 in./sec.	< 0.195	0.195 to 0.468	> 0.468																																							
	UME .05777 in./sec.	< 0.119	0.119 to 0.286	> 0.286																																							
	UMA .43290 in./sec.	< 0.167	0.167 to 0.401	> 0.401																																							
<b>Evaluator Cue:</b>	<b>NONE</b>																																										
<b>Performance:</b>	<b>SATISFACTORY      UNSATISFACTORY</b>																																										
<b>Comments:</b>																																											

**Terminating Cues:**      **The applicant will:**

- Enter pump data into the surveillance procedure steps.
- Evaluate the results to determine pump status.

**The JPM is complete.**      **This JPM is complete when the applicant returns the cue sheet, filled out surveillance procedure, and calculation to the examiner.**

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**A-3R; Perform 2C Intake Cooling Water Pump Code Run - Unit 2**

**JPM**  
Page 8 of 16

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant



## JOB PERFORMANCE MEASURE

**JPM**  
Page 10 of  
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### TURNOVER SHEET

PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18

#### INITIAL CONDITIONS:

- Unit 2 is at 100% power
- 2A and 2B Intake Cooling Water (ICW) Pumps are running
- The Crew is scheduled to perform 2-OSP-21.01C, 2C Intake Cooling Water Pump Code Run aligned to the 'B' ICW Header

#### INITIATING CUES:

- You are the Reactor Operator
- Is the 2C ICW Pump electrical power required to be aligned to the 'B' side to perform the 2C ICW pump code run?

Power is required to be aligned to the 'B' side **YES / NO** (circle one ONLY)

- After the 2C ICW pump has been started and ran, you are directed to record and evaluate the test data with respect to acceptance criteria and determine the status of the 2C ICW Pump in accordance with Steps 4.2.19, 4.2.20 and Attachment 2.
- **INDICATE** status: 2C ICW pump.
- The ANPO has Transmitted the pump data from Attachment 2 as follows:
  - **Intake Level**
    - -3.44 ft.
  - **Pump Disc Press. (PI-21-5C)**
    - 43 psig
  - **Vibration (Peak Velocity)**
    - UMN .06208 in/sec
    - UME .05777 in/sec
    - UMA .43290 in/sec
  - **Vibration Instr. No.**
    - PSL-2592

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.



**JOB PERFORMANCE MEASURE**

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 22 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	<b>INITIAL</b>

**4.2 2C ICW Pump Code Run on B Header (continued)**

19. Perform the following:

**A. CALCULATE** pump head. \_\_\_\_\_

Actual pump head =  $41 + (\text{a} \times 2.307) - (\text{b} + 18)$

where: a = PI-21-5C, 2C ICW Pump Disch Press  
b = Intake level

Actual pump head =  $41 + (\text{ } \times 2.307) - (\text{ } + 18)$

Actual pump head = \_\_\_\_\_

**B. RECORD** calculated pump head in Table 1 of Attachment 2, 2C ICW Quarterly Pump Code Run. \_\_\_\_\_

**C. VERIFY** calculated pump head Acceptance Criteria. \_\_\_\_\_

Acceptance Criteria	Results (✓)
Calculated pump head is 126.3 to 140.8 ft.	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

20. **PERFORM** the following:

**A. VERIFY** vibration Acceptance Criteria. \_\_\_\_\_

Location	Acceptance Criteria	Results (✓)
UMN	Vibration is < 0.195 in/sec	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UME	Vibration is < 0.119 in/sec	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UMA	Vibration is < 0.167 in/sec	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

**JOB PERFORMANCE MEASURE**

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 53 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	

**ATTACHMENT 2**  
**2C ICW Quarterly Pump Code Run**  
(Page 1 of 1)

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Vibration Instr. No. \_\_\_\_\_

Table 1  
2C ICW Pump Flow and Vibration Data

2015W Pump Flow and Vibration Data					
Parameter		Reading	Acceptance Criteria		
			Allowable Range	Alert Range	Required Action
Intake Level		ft.	N/A	N/A	N/A
Pump Disch. Press. (PI-21-5C)		psig	N/A	N/A	N/A
Calculated Pump Head *		ft.	126.3 to 140.8	123.6 to < 126.3	< 123.6 or > 140.8
Peak Velocity **	UMN	in./sec.	< 0.195	0.195 to 0.468	> 0.468
	UME	in./sec.	<0.119	0.119 to 0.286	> 0.286
	UMA	in./sec.	< 0.167	0.167 to 0.401	> 0.401

\* Calculated Pump Head = 41 ft. + (Disch. Press. x 2.307) - (Intake Level + 18 ft.).

\*\* See Attachment 1, 2C ICW Pump Vibration Reading Locations, for measurement points.

- INDICATE** purpose of test:  
☐ Code Run  
☐ Post Maintenance (explain) \_\_\_\_\_  
☐ Other (explain) \_\_\_\_\_
- EVALUATE** the test data with respect to acceptance criteria and **INDICATE** status:  
☐ ACCEPTABLE  
☐ ALERT RANGE  
☐ REQUIRED ACTION RANGE

**JOB PERFORMANCE MEASURE**

**JPM**  
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16

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 17 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	<b>INITIAL</b>

**NOTE**

Either Section 4.1 or Section 4.2 may be performed to complete the 2C ICW Code Run testing.

**4.2 2C ICW Pump Code Run on B Header**

1. IF ICW inlet temperature is greater than 88°F, THEN **PERFORM** one of the following: (Section 8.1.3, Management Directive 1)
  - **OBTAIN** an evaluation to demonstrate operability prior to performing this procedure. N/A <88 °F
  - **DECLARE** ICW train B inoperable when strainer upstream isolation valve SB21232, SS-21-1B UPSTRM ISOL, is unlocked and throttled. N/A <88 °F
2. **CIRCLE** type of test performance. LFG
  - Code Run
  - Post Maintenance
  - Other: ( )
3. **RECORD** vibration instrument number in Section 5.2, Step 1 AND on Attachment 2, 2C ICW Quarterly Pump Code Run. LFG
4. **ENSURE** SB21165, 2C ICW PUMP X-TIE DISCH TO "A" TRAIN ISOL, is LOCKED CLOSED. (INTK/9/N-4/W-C) BFG  
ANPO
5. IF SB21165, 2C ICW PUMP X-TIE DISCH TO "A" TRAIN ISOL, is LOCKED CLOSED AND the "V" notch on indicator plate and valve indicator arrow are **NOT** aligned, THEN **NOTIFY** Site Programs Engineering. (INTK/9/N-4/W-C) LFG
6. **ENSURE** the 2C ICW Pump is operating on the 2B Header per 2-NOP-21.03C, 2C Intake Cooling Water System Operation. LFG

**JOB PERFORMANCE MEASURE**

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 18 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	<b>INITIAL</b>

**4.2 2C ICW Pump Code Run on B Header (continued)**

**NOTE**

Section 4.2, Step 7 and Section 4.2, Step 8 may be performed concurrently.

**7. PERFORM** the following:

**A. CHECK** ICW Pump 2C and associated valves and piping for the following:

BFG  
ANPO

☒ Leakage  
☒ Abnormal Conditions

**B. IF** any leakage or abnormal conditions are identified, THEN **DOCUMENT** in Section 5.2, Documentation.

BFG  
ANPO

**NOTE**

The Auto/Manual status of TCVs in the turbine building should be evaluated for the impact of changing ICW flow prior to cross-tying heat exchangers (TCW, Blowdown, Seal Oil, H2, Exciter, Lube Oil, and EH).

**8. ENSURE** the following valves OPEN:

☒ SB212001, ICW CROSS-TIE TO 2A/2B OBHX ISOL (TGB/32/N-21/E-G)

GF  
NPO

☒ SB21215, 2A/2B TCW HX ICW INLET CROSS-TIE BYPASS (TGB/27/S-20/E-G)

GF  
NPO

**JOB PERFORMANCE MEASURE**

**JPM**  
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16

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 20 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	<b>INITIAL</b>

**4.2 2C ICW Pump Code Run on B Header (continued)**

~~11.~~ B. (2) (continued)

d. **VERIFY** TCV-14-4B, 2B CCW HX OUTLET, is OPEN.

BUG  
SNPO

**NOTE**

ICW flow has a significant effect on calculated pump head during the ICW pump surveillance. Accurately establishing 14,000 gpm flow is essential for determining pump operability. Fluctuations in flow on FIS-21-9B, 2B CCW HX ICW OUTLET FLOW, should NOT exceed +/-200 gpm.

~~12.~~ **THROTTLE** SB21232, SS-21-1B UPSTRM ISOL, to obtain ICW flow of 14,000 gpm as indicated on FIS-21-9B, 2B CCW HX ICW OUTLET FLOW. (CCW/26/N-3/E-3)

BUG  
SNPO

~~13.~~ IF ICW inlet temperature is greater than 88°F AND an evaluation is **NOT** obtained to demonstrate operability, THEN **DECLARE** ICW train B inoperable. (Section 8.1.3, Management Directive 1)

N/A <88 °F

~~14.~~ **RECORD** ICW flow as indicated on FIS-21-9B, 2B CCW HX ICW FLOW.

BUG  
SNPO

FIS-21-9B 14,000 gpm Time NOW

~~15.~~ IF any of the following conditions exist on FIS-21-9B, 2B CCW HX OUTLET ICW FLOW:

- Fluctuations in flow exceed +/- 200 gpm from 14,000 gpm
- Gauge accuracy is suspect

THEN **REQUEST** I&C perform the following:

- **VENT** FIS-21-9B, 2B CCW HX ICW OUTLET FLOW, and its associated lines.

LSG  
I&C

- IF I&C determines calibration is necessary, THEN **CALIBRATE** transmitter FIS-21-9B, 2B CCW HX ICW OUTLET FLOW.

LSG  
I&C

**JOB PERFORMANCE MEASURE**

**JPM**  
Page 16 of  
16

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 21 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	<b>INITIAL</b>

**4.2 2C ICW Pump Code Run on B Header (continued)**

**NOTE**

When the ICW pump temporary gauge isolation valve is opened, the affected pump and header the pump is aligned to shall be declared inoperable but available.

Field operator shall remain locally and in radio communication with the Control Room while temporary gauge is in service to restore valve closure in case of an emergency header demand.

~~16~~ WHEN two minutes has elapsed, THEN **PERFORM** the following:

~~A.~~ **OPEN** SH21204, ROOT VALVE FOR PI-21-5C.  
(INTK/23/N-3/W-C) BFG  
ANPO

~~B.~~ **RECORD** the following in Table 1 of Attachment 2, 2C ICW Quarterly Pump Code Run

- Pressure from temporary gauge located at PI-21-5C, 2C ICW PUMP DISCH PRESS
- Intake level from LT-21-9A or LT-21-9B on PDR-21-1 (RTGB 202) or Intake Level Gauge at Unit 1 intake.

~~C.~~ **CLOSE** SH21204, ROOT VALVE FOR PI-21-5C.  
(INTK/23/N-3/W-C) BFG  
ANPO

~~17.~~ Referring to Attachment 1, 2C ICW Pump Vibration Reading Locations, **TAKE** vibration readings AND **RECORD** in Table 1 of Attachment 2, 2C ICW Quarterly Pump Code Run. BFG  
ANPO

~~18.~~ **TRANSMIT** recorded data from Attachment 2, Table 1 to Control Room. BFG  
ANPO

# ADMINISTRATIVE JOB PERFORMANCE MEASURE

**JPM TITLE:** Perform 2C Intake Cooling Water Pump Code Run and Evaluate Pump Operability - Unit 2

**JPM NUMBER:** L-19-1 NRC JPM A-3 SRO **REV.** 0

**TASK NUMBER(S) / TASK TITLE(S):** 09201030 / Perform Immediate Operability Determination  
07203250 / Implement Surveillance procedures

**K/A NUMBERS / K/A VALUES: (RO SRO)** 2.2.37 SRO (4.6) Ability to determine operability and/or availability of safety related equipment.

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐

Simulator: ☐ Other: ☒

Lab: ☐

Time for Completion: 15 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

**Developed by:** JOSH BROWN 2/28/19  
Instructor/Developer Date

**Reviewed by:** SEAN WYLIE 2/28/19  
Instructor (Instructional Review) Date

**Validated by:** SEAN WYLIE 2/28/19  
SME (Technical Review) Date

**Approved by:** TRAVIS OURET 2/28/19  
Training Supervision Date

**Approved by:** TERRY BENTON 2/28/19  
Training Program Owner Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE





**A-3S; Perform 2C Intake Cooling Water Pump Code Run  
and Evaluate Pump Operability - Unit 2**

**JPM**  
Page 3 of 16

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1000) made to the material after initial approval.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER	DATE
				SUPERVISOR	DATE

**Required Materials:**

- Computer with access to procedures
- 2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN, Steps 4.2.19, 4.2.20 and Attachment 2.
- ADM-29.02, ASME CODE TESTING OF PUMPS AND VALVES
- Calculator

**General References:**

- Computer with access to procedures
- 2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN, Steps 4.2.19, 4.2.20 and Attachment 2.
- ADM-29.02, ASME CODE TESTING OF PUMPS AND VALVES
  - Unit 2 Technical Specifications

**Task Standards:**

The applicant will:

- Enter pump data into the surveillance procedure steps.
- Evaluate the results to determine pump status.
- Evaluate and determine pump operability.
- Evaluate and determine T.S. Applicability

This JPM is complete when the applicant determines that the 2C ICW pump is in the required action range, 2C ICW pump is INOPERABLE and that TS 3.7.4 is applicable and no others.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 2 is at 100% power.
- The 2A ICW pump is operating on the “A” header.
- The 2C ICW pump is operating on the “B” header.
- 2B ICW Pump is in Pull to Lock (PTL).
- 2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN is in progress.

**INITIATING CUES:**

- You are an extra SRO performing a code run on the 2C ICW pump; you are to record and evaluate the test data per attachment 2, and complete 2-OSP-21.01C steps 4.2.19 and 4.2.20.
- Additionally, as the SRO, determine operability of the 2C ICW pump per ADM-29.02, ASME Code Testing of Pumps and Valves and Tech Spec applicability (IF ANY).
- **INDICATE** status: 2C ICW pump.
- The ANPO has Transmitted the pump data from Attachment 2 as follows:
  - **Intake Level**
    - -3.44 ft.
  - **Pump Disc Press. (PI-21-5C)**
    - 43 psig
  - **Vibration (Peak Velocity)**
    - UMN .06208 in/sec
    - UME .05777 in/sec
    - UMA .43290 in/sec
  - **Vibration Instr. No.**
    - PSL-2592

The 2C ICW is:	<u><b>OPERABLE / INOPERABLE</b></u>
T.S. LCO	_____

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**JPM PERFORMANCE INFORMATION**

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

**Start Time:**

**2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN**

**Performance Step: 1**  
**Critical YES**

**Record and evaluate the test data**

**Standard:**

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN	PAGE: 22 of 53
PROCEDURE NO.: 2-OSP-21.01C	ST. LUCIE UNIT 2	INITIAL

**4.2 2C ICW Pump Code Run on B Header (continued)**

**19. Perform the following:**

**A. CALCULATE** pump head. \_\_\_\_\_

Actual pump head =  $41 + (\_a\_ \times 2.307) - (\_b\_ + 18)$

where: a = PI-21-5C, 2C ICW Pump Disch Press  
b = Intake level

Actual pump head =  $41 + (.43 \text{ psig} \times 2.307) - (-3.44 \text{ ft} + 18)$

Actual pump head = 125.6 ft CRITICAL STEP

**B. RECORD** calculated pump head in Table 1 of Attachment 2, 2C ICW Quarterly Pump Code Run. \_\_\_\_\_

**C. VERIFY** calculated pump head Acceptance Criteria. \_\_\_\_\_

Acceptance Criteria	Results (✓)
Calculated pump head is 126.3 to 140.8 ft.	<input type="checkbox"/> SAT <input checked="" type="checkbox"/> UNSAT

**20. PERFORM** the following:

**A. VERIFY** vibration Acceptance Criteria. \_\_\_\_\_

Location	Acceptance Criteria	Results (✓)
UMN	Vibration is < 0.195 in/sec	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UME	Vibration is < 0.119 in/sec	<input checked="" type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UMA	Vibration is < 0.167 in/sec	<input type="checkbox"/> SAT <input checked="" type="checkbox"/> UNSAT

**Evaluator Cue:**

**NONE**

**Performance:**

**SATISFACTORY \_\_\_\_ UNSATISFACTORY \_\_\_\_**

<b>Comments:</b>																																					
<b>Performance Step: 2</b>	<b>Determine the status of the 2C ICW Pump</b>																																				
<b>Critical: YES</b>																																					
<b>Standard:</b>	<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div> REVISION NO.: 26 PROCEDURE NO.: 2-OSP-21.01C </div> <div> PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN ST. LUCIE UNIT 2 </div> <div> PAGE: 53 of 53 </div> </div> <div style="text-align: center; margin-top: 10px;"> <b>ATTACHMENT 2</b>  <b>2C ICW Quarterly Pump Code Run</b>          (Page 1 of 1) </div> <p>Date: ____ / ____ / ____      Vibration Instr. No. _____</p> <p style="text-align: center;">Table 1 2C ICW Pump Flow and Vibration Data</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Parameter</th><th rowspan="2">Reading</th><th colspan="3">Acceptance Criteria</th></tr> <tr> <th>Allowable Range</th><th>Alert Range</th><th>Required Action</th></tr> </thead> <tbody> <tr> <td>Intake Level</td><td style="color: red;">-3.44 ft.</td><td>N/A</td><td>N/A</td><td>N/A</td></tr> <tr> <td>Pump Disch. Press. (PI-21-5C)</td><td style="color: red;">43 psig</td><td>N/A</td><td>N/A</td><td>N/A</td></tr> <tr> <td>Calculated Pump Head *</td><td style="color: red;">125.6 ft.</td><td>126.3 to 140.8</td><td>123.6 to &lt; 126.3</td><td>&lt; 123.6 or &gt; 140.8</td></tr> <tr> <td rowspan="3" style="writing-mode: vertical-rl; transform: rotate(180deg);">Peak Velocity</td><td>UMN</td><td style="color: red;">.06208 in./sec.</td><td>&lt; 0.195</td><td>0.195 to 0.468</td></tr> <tr> <td>UME</td><td style="color: red;">.05777 in./sec.</td><td>&lt; 0.119</td><td>0.119 to 0.286</td></tr> <tr> <td>UMA</td><td style="color: red;">.43290 in./sec.</td><td>&lt; 0.167</td><td>0.167 to 0.401</td></tr> </tbody> </table> <p><small>* Calculated Pump Head = 41 ft. + (Disch. Press. x 2.307) - (Intake Level + 18 ft.).</small></p> <p><small>** See Attachment 1, 2C ICW Pump Vibration Reading Locations, for measurement points.</small></p> <div style="margin-top: 10px;"> <p>1. <b>INDICATE</b> purpose of test:</p> <p><input checked="" type="checkbox"/> Code Run</p> <p><input type="checkbox"/> Post Maintenance (explain) _____</p> <p><input type="checkbox"/> Other (explain) _____</p> <p>2. <b>EVALUATE</b> the test data with respect to acceptance criteria and <b>INDICATE</b> status:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin-bottom: 5px;">CRITICAL STEP</div> <p><input type="checkbox"/> ACCEPTABLE</p> <p><input type="checkbox"/> ALERT RANGE</p> <p><input checked="" type="checkbox"/> REQUIRED ACTION RANGE</p> </div> </div>	Parameter	Reading	Acceptance Criteria			Allowable Range	Alert Range	Required Action	Intake Level	-3.44 ft.	N/A	N/A	N/A	Pump Disch. Press. (PI-21-5C)	43 psig	N/A	N/A	N/A	Calculated Pump Head *	125.6 ft.	126.3 to 140.8	123.6 to < 126.3	< 123.6 or > 140.8	Peak Velocity	UMN	.06208 in./sec.	< 0.195	0.195 to 0.468	UME	.05777 in./sec.	< 0.119	0.119 to 0.286	UMA	.43290 in./sec.	< 0.167	0.167 to 0.401
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<b>Evaluator Cue:</b>	<b>NONE</b>																																				
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____																																				
<b>Comments:</b>																																					

<b>Performance Step: 3</b> <b>Critical: YES</b>	<b>Determine the Operability of the 2C ICW Pump</b>						
<b>Standard:</b>	<p>Applicant determines 2C ICW Pump is INOPERABLE</p> <div> <table border="1"> <tr> <td>REVISION NO.: 17</td> <td>PROCEDURE TITLE: ASME CODE TESTING OF PUMPS AND VALVES</td> <td>PAGE: 17 of 70</td> </tr> <tr> <td>PROCEDURE NO.: ADM-29.02</td> <td colspan="2">ST. LUCIE PLANT</td> </tr> </table> <p><b>6.6 Pump Corrective Action</b></p> <ol style="list-style-type: none"> <li>When any pump test parameter falls outside the Allowable Ranges a Condition Report shall be initiated.</li> <li>If any of the pump test parameters exceeds a Required Action level, the pump shall be declared out of service (OOS) and not returned to service until the cause of the deviation is determined and the condition corrected.</li> <li>If any of the pump test parameters exceeds an Alert level, the frequency of pump testing shall be doubled and a Data Sheet 30, Unscheduled Surveillance Tracking, of OP-1/2-0010125A shall be initiated.</li> <li>For a pump in Alert during Group A or Group B testing, the test frequency shall be 46 days. For a pump in Alert during Comprehensive pump testing, the test frequency shall be 1 year. If a pump is in Alert for only one type of test, the frequency of testing for another type of test is not required to be increased.</li> <li>Further corrective action may include:             <ol style="list-style-type: none"> <li>Recalibration of the appropriate instruments followed by retest of the pump. If the subsequent test is satisfactory the pump may be declared operable, and the Alert range or normal test frequency may be resumed as appropriate.</li> <li>Repair or replacement of the defective component(s) followed by retest of the pump. If the Post Maintenance test is satisfactory, the pump may be declared operable, and the Alert range or normal test frequency may be resumed as appropriate.</li> <li>If it is suspected that an Alert range measurement may have been anomalous in that the Alert range measurement cannot be readily duplicated, and no other symptoms indicating the pump is not performing acceptably are evident, then the pump may be removed from Alert range test frequency following three (3) successive tests in which allowable range measurements were obtained.</li> </ol> </li> <li>Alert or Required Action pump tests shall be documented on their normal test form (data sheet or procedure).</li> <li>Pump operability based upon analysis shall be documented under a Condition Report evaluation.</li> <li>Justification for continued operation may be considered in cases where Code compliance cannot be achieved due to a degraded or nonconforming condition in accordance with EN-AA-203-1001.</li> </ol> <p style="text-align: center;"><b>END OF SECTION 6.6</b></p> </div>	REVISION NO.: 17	PROCEDURE TITLE: ASME CODE TESTING OF PUMPS AND VALVES	PAGE: 17 of 70	PROCEDURE NO.: ADM-29.02	ST. LUCIE PLANT	
REVISION NO.: 17	PROCEDURE TITLE: ASME CODE TESTING OF PUMPS AND VALVES	PAGE: 17 of 70					
PROCEDURE NO.: ADM-29.02	ST. LUCIE PLANT						
<b>Evaluator Cue:</b>	<b>NONE</b>						
<b>Performance:</b>	<b>SATISFACTORY</b> _____ <b>UNSATISFACTORY</b> _____						
<b>Comments:</b>							

<b>Performance Step: 4</b> <b>Critical: YES</b>	<b>Determine the T.S Applicability of the 2C ICW Pump</b>
<b>Standard:</b>	<p>Applicant determines T.S. LCO 3.7.4, is applicable</p> <div style="border: 1px solid red; border-radius: 50%; padding: 10px; margin: 10px auto; width: 80%;"> <p><u>PLANT SYSTEMS</u></p> <p><u>3/4.7.4 INTAKE COOLING WATER SYSTEM</u></p> <p><u>LIMITING CONDITION FOR OPERATION</u></p> <p>3.7.4 At least two independent intake cooling water loops shall be OPERABLE.*</p> <p><u>APPLICABILITY: MODES 1, 2, 3, and 4.</u></p> <p><u>ACTION:</u></p> <p>With only one intake cooling water loop OPERABLE, restore at least two loops to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.</p> <p><u>SURVEILLANCE REQUIREMENTS</u></p> <p>4.7.4 At least two intake cooling water loops shall be demonstrated OPERABLE:</p> <ul style="list-style-type: none"> <li>a. In accordance with the Surveillance Frequency Control Program by verifying that each valve (manual, power-operated, or automatic) servicing safety-related equipment that is not locked, sealed or otherwise secured in position, is in its correct position.</li> <li>b. In accordance with the Surveillance Frequency Control Program during shutdown, by verifying that each automatic valve servicing safety-related equipment actuates to its correct position on a SIAS test signal.</li> </ul> </div> <p>* When ICW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves must be verified to be consistent with the appropriate power supply at least once per 24 hours.</p> <p style="text-align: center; font-size: small;">ST. LUCIE - UNIT 2                      3/4 7-14                      Amendment No. 473, 184</p>
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY _____ UNSATISFACTORY _____</b>
<b>Comments:</b>	



**A-3S; Perform 2C Intake Cooling Water Pump Code Run  
and Evaluate Pump Operability - Unit 2**

**JPM**  
Page 10 of 16

**Terminating Cues:** This JPM is complete when the applicant determines that the 2C ICW pump is in the required action range, 2C ICW pump is INOPERABLE  
**The JPM is complete.** and that TS 3.7.4 is applicable and no others.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_





**A-3S; Perform 2C Intake Cooling Water Pump Code Run  
and Evaluate Pump Operability - Unit 2**

**JPM**  
Page 11 of 16

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO \_\_\_\_\_

PERFORMANCE RESULTS: SAT: ☐ UNSAT: ☐

Remediation required: YES ☐ NO ☐

<b>COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).</b>

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE: \_\_\_\_\_**

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 2 is at 100% power.
- The 2A ICW pump is operating on the “A” header.
- The 2C ICW pump is operating on the “B” header.
- 2B ICW Pump is in Pull to Lock (PTL).
- 2-OSP-21.01C, 2C INTAKE COOLING WATER PUMP CODE RUN is in progress.

**INITIATING CUES:**

- You are an extra SRO performing a code run on the 2C ICW pump; you are to record and evaluate the test data per attachment 2, and complete 2-OSP-21.01C steps 4.2.19 and 4.2.20.
- Additionally, as the SRO, determine operability of the 2C ICW pump per ADM-29.02, ASME Code Testing of Pumps and Valves and Tech Spec applicability (IF ANY).

- **INDICATE** status: 2C ICW pump.
- The ANPO has Transmitted the pump data from Attachment 2 as follows:

- **Intake Level**

- -3.44 ft.

- **Pump Disc Press. (PI-21-5C)**

- 43 psig

- **Vibration (Peak Velocity)**

- UMN .06208 in/sec
- UME .05777 in/sec
- UMA .43290 in/sec

- **Vibration Instr. No.**

- PSL-2592

The 2C ICW is:	<u><b>OPERABLE / INOPERABLE</b></u>
T.S. LCO	_____

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN  ST. LUCIE UNIT 2	PAGE: 22 of 53  <b>INITIAL</b>
PROCEDURE NO.: 2-OSP-21.01C		

**4.2 2C ICW Pump Code Run on B Header (continued)**

**19. Perform the following:**

**A. CALCULATE** pump head. \_\_\_\_\_

Actual pump head =  $41 + (\text{a} \times 2.307) - (\text{b} + 18)$

where: a = PI-21-5C, 2C ICW Pump Disch Press  
b = Intake level

Actual pump head =  $41 + (\text{ } \times 2.307) - (\text{ } + 18)$

Actual pump head = \_\_\_\_\_

**B. RECORD** calculated pump head in Table 1 of Attachment 2, 2C ICW Quarterly Pump Code Run. \_\_\_\_\_

**C. VERIFY** calculated pump head Acceptance Criteria. \_\_\_\_\_

Acceptance Criteria	Results (✓)
Calculated pump head is 126.3 to 140.8 ft.	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

**20. PERFORM** the following:

**A. VERIFY** vibration Acceptance Criteria. \_\_\_\_\_

Location	Acceptance Criteria	Results (✓)
UMN	Vibration is < 0.195 in/sec	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UME	Vibration is < 0.119 in/sec	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT
UMA	Vibration is < 0.167 in/sec	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

REVISION NO.: 26	PROCEDURE TITLE: 2C INTAKE COOLING WATER PUMP CODE RUN  ST. LUCIE UNIT 2	PAGE: 53 of 53
PROCEDURE NO.: 2-OSP-21.01C		

**ATTACHMENT 2**  
**2C ICW Quarterly Pump Code Run**  
 (Page 1 of 1)

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_      Vibration Instr. No. \_\_\_\_\_

Table 1  
2C ICW Pump Flow and Vibration Data

Parameter		Reading	Acceptance Criteria		
			Allowable Range	Alert Range	Required Action
Intake Level		ft.	N/A	N/A	N/A
Pump Disch. Press. (PI-21-5C)		psig	N/A	N/A	N/A
Calculated Pump Head *		ft.	126.3 to 140.8	123.6 to < 126.3	< 123.6 or > 140.8
Peak Velocity **	UMN	in./sec.	< 0.195	0.195 to 0.468	> 0.468
	UME	in./sec.	< 0.119	0.119 to 0.286	> 0.286
	UMA	in./sec.	< 0.167	0.167 to 0.401	> 0.401

\* Calculated Pump Head = 41 ft. + (Disch. Press. x 2.307) - (Intake Level + 18 ft.).

\*\* See Attachment 1, 2C ICW Pump Vibration Reading Locations, for measurement points.

**1. INDICATE** purpose of test:

☐ Code Run

☐ Post Maintenance (explain) \_\_\_\_\_

☐ Other (explain) \_\_\_\_\_

**2. EVALUATE** the test data with respect to acceptance criteria and **INDICATE** status:

☐ ACCEPTABLE

☐ ALERT RANGE

☐ REQUIRED ACTION RANGE

REVISION NO.: 17	PROCEDURE TITLE: ASME CODE TESTING OF PUMPS AND VALVES	PAGE: 17 of 70
PROCEDURE NO.: ADM-29.02	ST. LUCIE PLANT	

**6.6 Pump Corrective Action**

1. When any pump test parameter falls outside the Allowable Ranges a Condition Report shall be initiated.
2. If any of the pump test parameters exceeds a Required Action level, the pump shall be declared out of service (OOS) and not returned to service until the cause of the deviation is determined and the condition corrected.
3. If any of the pump test parameters exceeds an Alert level, the frequency of pump testing shall be doubled and a Data Sheet 30, Unscheduled Surveillance Tracking, of OP-1/2-0010125A shall be initiated.
4. For a pump in Alert during Group A or Group B testing, the test frequency shall be 46 days. For a pump in Alert during Comprehensive pump testing, the test frequency shall be 1 year. If a pump is in Alert for only one type of test, the frequency of testing for another type of test is not required to be increased.
5. Further corrective action may include:
  - A. Recalibration of the appropriate instruments followed by retest of the pump. If the subsequent test is satisfactory the pump may be declared operable, and the Alert range or normal test frequency may be resumed as appropriate.
  - B. Repair or replacement of the defective component(s) followed by retest of the pump. If the Post Maintenance test is satisfactory, the pump may be declared operable, and the Alert range or normal test frequency may be resumed as appropriate.
  - C. If it is suspected that an Alert range measurement may have been anomalous in that the Alert range measurement cannot be readily duplicated, and no other symptoms indicating the pump is not performing acceptably are evident, then the pump may be removed from Alert range test frequency following three (3) successive tests in which allowable range measurements were obtained.
6. Alert or Required Action pump tests shall be documented on their normal test form (data sheet or procedure).
7. Pump operability based upon analysis shall be documented under a Condition Report evaluation.
8. Justification for continued operation may be considered in cases where Code compliance cannot be achieved due to a degraded or nonconforming condition in accordance with EN-AA-203-1001.

**END OF SECTION 6.6**



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 10

**JPM TITLE:** RO EXPOSURE LIMITS NORMAL OPS

**JPM NUMBER:** L-19-1 NRC JPM A-4 RO **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 07203410 / Monitor Personal Radiation Exposure

**K/A NUMBERS / K/A VALUES: (RO SRO)** 2.3.7 RCO (3.5) Ability to comply with radiation work permit requirements during normal or abnormal conditions.

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☒ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☐  
Lab: ☒

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date



## A-4, RO EXPOSURE LIMITS NORMAL OPS

**JPM**  
Page 2 of 10

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..



[illegible]



#### A-4, RO EXPOSURE LIMITS NORMAL OPS

**JPM**

Page 4 of 10

**Required Materials:**

- Computer with access to procedures
- HPP-30, Personnel Monitoring

**General References:**

- HPP-30, Personnel Monitoring

**Task Standards:**

This JPM is complete when the applicant determines what dose would be received for each person and all employee(s) not allowed to rebuild the Hoist Box without a dose extension.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 2 is in a refueling outage and refueling equipment preparations are under way.
- The Refueling Machine Hoist Box will need to be rebuilt.
- The Hoist Box rebuild will take 45 minutes in a 1000 mR/hr field.

Below are the employee's dose records:

Employee	Age	Lifetime Dose (TEDE)	Current Year DLR (Dosimetry of Legal Record) total (TEDE)	TOTAL EXPECTED DOSE AFTER JOB COMPLETION	Employee CAN / CANNOT Rebuild the Hoist Box without dose extension
1	40	27 R	2050 mR		
2	38	33 R	1970 mR		
3	35	30 R	2000 mR		
4	27	19 R	1450 mR		

**INITIATING CUES:**

- You are the Desk RCO, what would be the TOTAL DOSE for the year for each person and which employee(s) (IF ANY) are allowed to rebuild the Hoist Box **without** a dose extension?

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



#### A-4, RO EXPOSURE LIMITS NORMAL OPS

**JPM**  
Page 6 of 10

#### JPM PERFORMANCE INFORMATION

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>Performance Step: 1</b>	<b>Calculates the dose the employee will receive performing the rebuild.</b>
<b>Critical: NO</b>	
<b>Standard:</b>	<b>CALCULATES</b> 1000 mR/hr x 45 min x 1 hr/60 min = 750 mR.
<b>Evaluator Cue:</b>	<b>NONE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>HPP-30, Personnel Monitoring</b>	
<b>Performance Step: 2</b>	<b>Determines employee #1’s Total dose.</b>
<b>Critical: YES</b>	
<b>Standard:</b>	<b>DETERMINES</b> that employee #1 total dose will be 2800 mr and will exceed 2000 mR/year and will need a dose extension.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EXAMINERS NOTE:</b> Per HPP-30 Appendix 6, Step 7.4.2, An individual with a complete Form 4 for the current year may have their site annual dose limit extended to greater than 2000 mrem by the Radiation Protection Manager, and the Site Director. Employee #1 would receive 2800 mR
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 3</b>	<b>Determines employee #2’s Total dose.</b>
<b>Critical: YES</b>	
<b>Standard:</b>	<b>DETERMINES</b> that employee #2 total dose will be 2720 mr and will exceed 2000 mR/year and will need a dose extension.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR’S NOTE,</b> employee #2 would receive 2720 mR
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**A-4, RO EXPOSURE LIMITS NORMAL OPS****JPM**  
Page 7 of 10

<b>Performance Step: 4</b> <b>Critical YES</b>	<b>Determines employee #3's Total dose.</b>
<b>Standard:</b>	<b>DETERMINES</b> that employee #3 total dose will be 2750 mr and will exceed 2000 mR/year and will need a dose extension.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EVALUATOR'S NOTE</b> , employee #3 would receive 2750 mR
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 5</b> <b>Critical YES</b>	<b>Determines employee #4's Total dose.</b>
<b>Standard:</b>	<b>DETERMINES</b> that employee #4 total dose will be 2200 mr and will exceed 2000 mR/year and will need a dose extension.
<b>Evaluator Cue:</b>	<b>NONE</b> <b>EXAMINERS NOTE</b> : employee #4 would receive 2200 mR
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

<b>Performance Step: 6</b> <b>Critical NO</b>	<b>Candidate informs the Examiner that the task is complete.</b>
<b>Standard:</b>	<b>INFORMS</b> the Examiner that the task is complete.
<b>Evaluator Cue:</b>	<b>TASK IS COMPLETE</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:**            This JPM is complete when the applicant determines what dose would be received for each person and all employee(s) are allowed to rebuild the Hoist Box without a dose extension

**The JPM is complete.**

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_



**A-4, RO EXPOSURE LIMITS NORMAL OPS**

**JPM**  
Page 8 of 10

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Unit 2 is in a refueling outage and refueling equipment preparations are under way.
- The Refueling Machine Hoist Box will need to be rebuilt.
- The Hoist Box rebuild will take 45 minutes in a 1000 mR/hr field.

Below are the employee's dose records:

Employee	Age	Lifetime Dose (TEDE)	Current Year DLR (Dosimetry of Legal Record) total (TEDE)	TOTAL EXPECTED DOSE AFTER JOB COMPLETION	Employee CAN / CANNOT Rebuild the Hoist Box without dose extension
1	40	27 R	2050 mR		
2	38	33 R	1970 mR		
3	35	30 R	2000 mR		
4	27	19 R	1450 mR		

**INITIATING CUES:**

- You are the Desk RCO, what would be the TOTAL DOSE for the year for each person and which employee(s) are allowed to rebuild the Hoist Box **without** a dose extension?





## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 13

**JPM TITLE:** SRO GAS RELEASE PERMIT REVIEW

**JPM NUMBER:** L-19-1 NRC JPM A-4 SRO **REV. 0**

**TASK NUMBER(S) /  
TASK TITLE(S):**

**K/A NUMBERS / K/A  
VALUES: (RO SRO)** Task 2.3.4 SRO (3.7) Knowledge of radiation exposure limits under  
normal or emergency conditions.

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☐ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☒  
Lab: ☐

Time for Completion: 15 Minutes Time Critical: No

Alternate Path [NRC]: No

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date



## A-4, SRO GAS RELEASE PERMIT REVIEW

**JPM**  
Page 2 of 13

### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

[illegible]

**Required Materials:**

- Computer with access to procedures
- 2-NOP-06.20 Controlled Batch Gaseous Release to Atmosphere Att. 5 Gaseous Release Permit Unit-2

**General References:**

- 2-NOP-06.20 Controlled Batch Gaseous Release to Atmosphere

**Task Standards:**

This JPM is complete when The applicant has reviewed the radioactive Gas release permit and determines the permit is unacceptable to perform the release due to the 2 errors:

- 1) Containment Mini Purge has the data filed filled in vice the Containment Purge data field as required
- 2) The Radiochemist signature is required and the permit preparer block is signed instead.



#### A-4, SRO GAS RELEASE PERMIT REVIEW

**JPM**  
Page 5 of 13

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

#### **PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

##### **INITIAL CONDITIONS:**

- Unit-2 is in Mode 6, Radiation Protection has requested a Main Containment Purge be initiated in accordance with 2-NOP-06.20, Controlled Batch Gaseous Release to Atmosphere
- A Gaseous Release Permit # G-18-500-B has been issued and requires approval by the Unit Supervisor.

##### **INITIATING CUES :**

- You are the Unit Supervisor, you are to review Gaseous Release Permit # G-18-500-B and determine if the Main Containment Purge can be performed.
- Explain ALL REASON(S) for APPROVAL/DISAPPROVAL for this release below:

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



## A-4, SRO GAS RELEASE PERMIT REVIEW

**JPM**  
Page 6 of 13

### JPM PERFORMANCE INFORMATION

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

2-NOP-06.20 Controlled Batch Gaseous Release to Atmosphere	
Performance Step: 1 Critical No	REVIEW ATTACHMENT 5 GASEOUS RELEASE PERMIT UNIT-2
Standard:	REVIEWS ATTACHMENT 5 GASEOUS RELEASE PERMIT UNIT-2 for errors
Evaluator Cue:	NONE
Performance:	SATISFACTORY , UNSATISFACTORY _____
Comments:	

<b>Performance Step: 2</b> <b>Critical: YES</b>	<b>Identifies Error: Section II Actual Concentration is listed in the Mini Purge line the release is for a Main Purge</b>																																																																																									
<b>Standard:</b>	<table border="1"> <tr> <td> REVISION NO.: 5 </td> <td> PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE </td> <td> PAGE: 41 of 41 </td> </tr> <tr> <td> PROCEDURE NO.: 2-NOP-06.20 </td> <td colspan="2"> ST. LUCIE UNIT 2 </td> </tr> </table> <p align="center"><b>ATTACHMENT 5</b>  <b>Gaseous Release Permit - Unit 2</b>  (Page 1 of 1)</p> <table border="1"> <tr> <td><b>I. GASEOUS PERMIT NUMBER</b></td> <td><b>SAMPLE DATE AND TIME</b></td> <td><b>GDT NAME OR PURGE</b></td> </tr> <tr> <td>G-18-500-B</td> <td>12/5/18 2300</td> <td>UNIT-2 MAIN PURGE</td> </tr> <tr> <td><b>II. LIMITS</b></td> <td colspan="2"><b>ACTUAL CONCENTRATION</b></td> </tr> <tr> <td>GDT = 20 µCi/cc</td> <td colspan="2">N/A µCi/cc</td> </tr> <tr> <td>Containment Purge = 4.76E-03 µCi/cc</td> <td colspan="2">N/A µCi/cc</td> </tr> <tr> <td>Containment Mini-Purge = 0.01 µCi/cc</td> <td colspan="2">5.90E-03 µCi/cc</td> </tr> <tr> <td colspan="3">Maximum Discharge Flow Rate</td> </tr> <tr> <td>GDT #/hr</td> <td colspan="2">GDT Decreases or 1.000E+01 C.F.M. Flow Setting</td> </tr> <tr> <td colspan="3">Waste Gas Monitor Setpoints: Alert N/A µCi/cc High: N/A µCi/cc</td> </tr> <tr> <td colspan="3">Waste Gas Monitor Source Check Performed By: N/A Signature</td> </tr> <tr> <td colspan="3">GRP LIMS # MONITOR SOURCE CHECK LIMS #</td> </tr> <tr> <td colspan="3">PRE-RELEASE REMARKS:</td> </tr> <tr> <td colspan="3"><b>III. REVIEW - APPROVAL (PRIOR TO RELEASE)</b></td> </tr> <tr> <td colspan="3">Main Purge or Mini-Purge ≥ 5.00E-03 µCi/cc</td> </tr> <tr> <td colspan="2">Radiochemist / Chemistry Supervisor</td> <td>N/A Signature</td> </tr> <tr> <td colspan="3">Mini-Purge &lt; 5.00E-03 µCi/cc and meets the requirements of STS 3.6.1.7.b</td> </tr> <tr> <td colspan="2">Permit Preparer</td> <td>Paul Pardo Signature</td> </tr> <tr> <td colspan="2">GDT ≥ 25% of Section II. Radiochemist / Chemistry Supervisor</td> <td>N/A Signature</td> </tr> <tr> <td colspan="2">GDT &lt; 25% of Section II. Permit Preparer</td> <td>N/A Signature</td> </tr> <tr> <td colspan="2">Unit Supervisor</td> <td>Signature</td> </tr> <tr> <td colspan="3"><b>IV. Start Date</b> _____ <b>Start Time</b> _____ <b>Stop Date</b> _____ <b>Stop Time</b> _____</td> </tr> <tr> <td colspan="2">Start GDT Pressure</td> <td>Stop GDT Pressure</td> </tr> <tr> <td colspan="3">Channel Check of Plant Vent Monitor during release.</td> </tr> <tr> <td>PIG A (423)</td> <td>Initial</td> <td>PIG B (433) Initial WRGM (621) Initial</td> </tr> <tr> <td colspan="3"><b>V. REVIEW - APPROVAL (POST RELEASE)</b></td> </tr> <tr> <td colspan="2">Unit Supervisor</td> <td>Signature</td> </tr> <tr> <td colspan="2">Radiochemist / Chemistry Supervisor</td> <td>Signature</td> </tr> </table>			REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 41 of 41	PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2		<b>I. GASEOUS PERMIT NUMBER</b>	<b>SAMPLE DATE AND TIME</b>	<b>GDT NAME OR PURGE</b>	G-18-500-B	12/5/18 2300	UNIT-2 MAIN PURGE	<b>II. LIMITS</b>	<b>ACTUAL CONCENTRATION</b>		GDT = 20 µCi/cc	N/A µCi/cc		Containment Purge = 4.76E-03 µCi/cc	N/A µCi/cc		Containment Mini-Purge = 0.01 µCi/cc	5.90E-03 µCi/cc		Maximum Discharge Flow Rate			GDT #/hr	GDT Decreases or 1.000E+01 C.F.M. Flow Setting		Waste Gas Monitor Setpoints: Alert N/A µCi/cc High: N/A µCi/cc			Waste Gas Monitor Source Check Performed By: N/A Signature			GRP LIMS # MONITOR SOURCE CHECK LIMS #			PRE-RELEASE REMARKS:			<b>III. REVIEW - APPROVAL (PRIOR TO RELEASE)</b>			Main Purge or Mini-Purge ≥ 5.00E-03 µCi/cc			Radiochemist / Chemistry Supervisor		N/A Signature	Mini-Purge < 5.00E-03 µCi/cc and meets the requirements of STS 3.6.1.7.b			Permit Preparer		Paul Pardo Signature	GDT ≥ 25% of Section II. Radiochemist / Chemistry Supervisor		N/A Signature	GDT < 25% of Section II. Permit Preparer		N/A Signature	Unit Supervisor		Signature	<b>IV. Start Date</b> _____ <b>Start Time</b> _____ <b>Stop Date</b> _____ <b>Stop Time</b> _____			Start GDT Pressure		Stop GDT Pressure	Channel Check of Plant Vent Monitor during release.			PIG A (423)	Initial	PIG B (433) Initial WRGM (621) Initial	<b>V. REVIEW - APPROVAL (POST RELEASE)</b>			Unit Supervisor		Signature	Radiochemist / Chemistry Supervisor		Signature
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<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____																																																																					
<b>Comments:</b>																																																																						





**A-4, SRO GAS RELEASE PERMIT REVIEW**

**JPM**

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**Terminating Cues:**  
**The JPM is complete.**

**This JPM is complete when The applicant has reviewed the radioactive Gas release permit and determines the permit is unacceptable to perform the release due to the 2 errors:**

- 1) Containment Mini Purge has the data filed filled in vice the Containment Purge data field as required**
- 2) The Radiochemist signature is required and the permit preparer block is signed instead.**

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**Stop Time:** \_\_\_\_\_



**A-4, SRO GAS RELEASE PERMIT REVIEW**

**JPM**  
Page 10 of  
13

Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant



## JOB PERFORMANCE MEASURE

**JPM**  
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13

### TURNOVER SHEET

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

#### **INITIAL CONDITIONS:**

- Unit-2 is in Mode 6, Radiation Protection has requested a Main Containment Purge be initiated in accordance with 2-NOP-06.20, Controlled Batch Gaseous Release to Atmosphere
- A Gaseous Release Permit # G-18-500-B has been issued and requires approval by the Unit Supervisor.

#### **INITIATING CUES :**

- You are the Unit Supervisor, you are to review Gaseous Release Permit # G-18-500-B and determine if the Main Containment Purge can be performed.
- Explain ALL REASON(S) for APPROVAL/DISAPPROVAL for this release below:

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

REVISION NO.: <b>5</b>	PROCEDURE TITLE: <b>CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE</b>	PAGE: <b>41 of 41</b>
PROCEDURE NO.: <b>2-NOP-06.20</b>	<b>ST. LUCIE UNIT 2</b>	

**ATTACHMENT 5**  
**Gaseous Release Permit - Unit 2**  
 (Page 1 of 1)

<b>I. GASEOUS PERMIT NUMBER</b>	<b>SAMPLE DATE AND TIME</b>	<b>GDT NAME OR PURGE</b>
G-18-500-B	12/5/18 2300	UNIT-2 MAIN PURGE
<b>II. LIMITS</b>	<b>ACTUAL CONCENTRATION</b>	
GDT = 20 µCi/cc	N/A µCi/cc	
Containment Purge = 4.76E-03 µCi/cc	N/A µCi/cc	
Containment Mini-Purge = 0.01 µCi/cc	5.90E-03 µCi/cc	
Maximum Discharge Flow Rate		
GDT _____ #/hr	GDT Decreases or <u>1.000E+01</u> C.F.M. Flow Setting	
Waste Gas Monitor Setpoints: Alert <u>N/A</u> µCi/cc High: <u>N/A</u> µCi/cc		
Waste Gas Monitor Source Check Performed By: <u>N/A</u> Signature		
GRP LIMS #	MONITOR SOURCE CHECK LIMS #	
<b>PRE-RELEASE REMARKS:</b> _____		
<b>III. REVIEW - APPROVAL (PRIOR TO RELEASE)</b>		
Main Purge or Mini-Purge ≥ 5.00E-03 µCi/cc		
Radiochemist / Chemistry Supervisor		<u>N/A</u> Signature
Mini-Purge < 5.00E-03 µCi/cc and meets the requirements of STS 3.6.1.7.b		
Permit Preparer		<u>Paul Jankis</u> Signature
GDT ≥ 25% of Section II.	Radiochemist / Chemistry Supervisor	<u>N/A</u> Signature
GDT < 25% of Section II.	Permit Preparer	<u>N/A</u> Signature
Unit Supervisor		Signature
<b>IV. Start Date</b> _____ <b>Start Time</b> _____ <b>Stop Date</b> _____ <b>Stop Time</b> _____		
Start GDT Pressure _____		Stop GDT Pressure _____
Channel Check of Plant Vent Monitor during release.		
PIG A (423) _____ Initial	PIG B (433) _____ Initial	WRGM (621) _____ Initial
<b>V. REVIEW - APPROVAL (POST RELEASE)</b>		
Unit Supervisor		Signature
Radiochemist / Chemistry Supervisor		Signature



## JOB PERFORMANCE MEASURE

**JPM**  
Page 1 of 14

**JPM TITLE:** SRO EALS & Notification for a security event

**JPM NUMBER:** L-19-1 NRC JPM A-5 SRO **REV. 0**

**TASK NUMBER(S) / TASK TITLE(S):** 09200180 / Classify Plant Events (EPIP)

**K/A NUMBERS / K/A VALUES: (RO SRO)** 2.4.44 SRO (4.4) Knowledge of emergency plan protective action recommendations.

**Justification (FOR K/A VALUES <3.0):** N/A

**TASK APPLICABILITY:**

☐ RO ☒ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT ☐ OTHER: \_\_\_\_\_

**APPLICABLE METHOD OF TESTING:** Simulate/Walkthrough: ☐ Perform: ☒

**EVALUATION LOCATION:** In-Plant: ☐ Control Room: ☐  
Simulator: ☐ Other: ☒  
Lab: ☐

Time for Completion: 15/15 Minutes Time Critical: YES

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

<b>Developed by:</b>	<b>JOSH BROWN</b> Instructor/Developer	2/28/19 Date
<b>Reviewed by:</b>	<b>SEAN WYLIE</b> Instructor (Instructional Review)	2/28/19 Date
<b>Validated by:</b>	<b>SEAN WYLIE</b> SME (Technical Review)	2/28/19 Date
<b>Approved by:</b>	<b>TRAVIS OURET</b> Training Supervision	2/28/19 Date
<b>Approved by:</b>	<b>TERRY BENTON</b> Training Program Owner	2/28/19 Date



## A-5, SRO EALS & Notification for a security event

**JPM**  
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### JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.**

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Has the JPM been reviewed and validated by SMEs?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the completion time been established based on validation data or incumbent experience?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is the job level appropriate for the task being evaluated if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Is the K/A appropriate to the task and to the licensee level if required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Is justification provided for tasks with K/A values less than 3.0?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Are all references identified, current, accurate, and available to the trainee?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

**Protected Content:** NONE

**Commented [JPM1]:** Protected Content: List items such as CAPRs, corrective actions, licensing commitments, results of investigations, and the AR number for reference. Assign each committed item an identification number inside braces in this format: {C001}, {C002}, etc. Flag the associated content/instructions in the training material using the identification number in order to protect the content from being removed from material..

**UPDATE LOG:** Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

[illegible]



**Required Materials:**

- Computer with access to procedures
- EPIP-01, "Classification of Emergencies"
- EPIP-02, "Duties and Responsibilities of the Emergency Coordinator"
- EPIP-08, "Off-Site Notifications and Protective Action Recommendations"

**General References:**

- EPIP-01, "Classification of Emergencies"
- EPIP-02, "Duties and Responsibilities of the Emergency Coordinator"
- EPIP-08, "Off-Site Notifications and Protective Action Recommendations"

**Task Standards:**

This JPM is complete when the event has been classified, the notification form is completed, and the State Watch Office is notified.

**IMPLEMENTATION INSTRUCTIONS:**

1. **ENSURE** all Applicants have a copy of the following:
  - a. A current revision of the EPIP-01 Classification Tables.
  - b. A current copy of EPIP-08.
  - c. The Applicant handout package from this JPM face down on the desk.
2. Read only the initiating Cues to the applicants.
3. Direct the applicants to turn over the Applicant handout package and read the Initial Conditions.
4. Record the start the time for the JPM after the initial conditions have been read and inform the applicants that they may begin the JPM.
5. Retrieve the CLASSIFICATION ANSWER SHEET as the Applicants complete it not to exceed the + 15 minute mark.
6. Retrieve the COMPLETED FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM as the Applicants complete it not to exceed the + 15 minute mark from the time recorded on the applicants classification answer sheet.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18****INITIAL CONDITIONS:**

- Security called the Shift Manager and reported that multiple intruders have parachuted onto the roof of the South Service Building.
- Small arms fire has been exchanged and the intruders have been neutralized, security has incurred casualties.
- Unit 1 and Unit 2 have been manually tripped. 1/2-EOP-01, Standard Post Trip Actions have been completed and the crew is transitioning to 1/2-EOP-02 Reactor Trip Recovery.
- Met Tower Data is attached.

**INITIATING CUES:**

- You are the Shift Manager in the **Unit 2** control room.
- These actions are **TIME CRITICAL**.
  - Record Classification information on the Classification Sheet and return to proctor immediately after completion.
  - Fill out the Florida Nuclear Plant Emergency Notification form through step 15 and return to the proctor.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**



## A-5, SRO EALS & Notification for a security event

**JPM**  
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### JPM PERFORMANCE INFORMATION

Start Time: \_\_\_\_\_

**NOTE:** When providing “Evaluator Cues” to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee’s actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

**NOTE:** Critical steps are marked with a “Y” below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

<b>Performance Step: 1</b> <b>Critical YES</b>	The SM shall classify the abnormal condition in accordance with EPIP-01 “Classification of Emergencies”.  <b>Step is critical and must be ≤15 minutes of the START TIME</b>
<b>Standard:</b>	<b>CLASSIFY</b> the event as “ <b>SITE AREA EMERGENCY</b> ” under <b>HS4</b> , <u>Hostile Action Within the Protected Area</u>
<b>Evaluator Cue:</b>	<b>ACKNOWLEDGE EVENT CLASSIFICATION</b>  <b>NOTE:</b> Record the time initial event classification is made for determining the time critical notification of agencies:  <b>Classification Time:</b> _____ (≤15 minutes of the START TIME)
<b>Performance:</b>	<b>SATISFACTORY</b> , <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	



# A-5, SRO EALS & Notification for a security event

**JPM**  
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<b>Performance Step: 2</b> <b>Critical: YES</b>	Complete required notifications in accordance with Appendix A, EPIP-08, Off-site Notifications and PAR's.  <b>Step is critical to ensure the correct information is transmitted to the State Agencies.</b>
<b>Standard:</b>	<b>COMPLETE</b> 'Florida Nuclear Plant Emergency Notification Form' (form similar to Attachment 1) using instructions in Attachments 1A or 1B per EPIP-08 Step 2.A.2. <b>Completion Time:</b> _____ (≤15 minutes of the <b>CLASSIFICATION TIME</b> )
<b>Evaluator Cue:</b>	<b>Note: Only the asterisked steps of the Florida Nuclear Plant Emergency Notification Form are considered critical for completion of this step.</b>
<b>Performance:</b>	<b>SATISFACTORY</b> <b>UNSATISFACTORY</b> _____
<b>Comments:</b>	

**Terminating Cues:**            This JPM is complete when the event has been classified and the notification form is complete.

**NOTE:** Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

**Stop Time:** \_\_\_\_\_

**KEY**

## CLASSIFICATION SHEET

**CLASSIFY** the event as an **SITE AREA EMERGENCY** under **H / S / 4**.

**CLASSIFICATION COMPLETION TIME** **<15 MIN**.

**RECOMMENDED PARs** **NONE**.

REVISION NO.: <b>45</b>	PROCEDURE TITLE: <b>OFF-SITE NOTIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS ST. LUCIE PLANT</b>	PAGE: <b>40 of 62</b>
PROCEDURE NO.: <b>EPIP-08</b>		

**ATTACHMENT 1  
FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM  
(Page 1 of 1)**

On-line Verification: ☐ SWPIDEM ☐ DOH/BRC ☐ St. Lucie County/Ft. Pierce ☐ Martin County

1.\* **A. ☒ THIS IS NOT CRITICAL** **B. ☐ THIS IS AN EMERGENCY**

2. A. Date: Today B. \* Contact Time: \_\_\_\_\_ C. Reported by: (Name) \_\_\_\_\_  
D. Message Number: \_\_\_\_\_ E. Reported from: ☒ Control Room ☐ TSC ☐ EOF  
F. ☒ Initial / New Classification OR ☐ Update Notification

3.\* Site: A. ☐ Crystal River Unit 3 B. ☐ St. Lucie Unit 1 C. ☒ St. Lucie Unit 2  
D. ☐ Turkey Point Unit 3 E. ☐ Turkey Point Unit 4

4.\* Emergency Classification: A. ☐ Notification of Unusual Event B. ☐ Alert  
C. ☒ Site Area Emergency D. ☐ General Emergency

5.\* A. ☒ Emergency Declaration B. ☐ Emergency Termination Date: Today Time: Now

6.\* Reason for Emergency Declaration: A. ☒ EAL Number H / S / 4 OR B. ☐ Description: \_\_\_\_\_  
Alpha / Alpha / Numeric

7. Additional Information or Update: A. ☐ None OR B. ☒ Description: \_\_\_\_\_

**U1 IS TRIPPED CONDITIONS NORMAL ( THIS IS NOT CRITICAL )**

8.\* Weather Data: A. Wind direction from 92 degrees B. Downwind Sectors Affected: MNP

9.\* Release Status: A. ☒ None (Go to Item 11) B. ☐ In progress C. ☐ Has occurred, but stopped (Go to Item 11)

10. Release Significance Category at the Site Boundary:  
A. ☐ Under evaluation B. ☐ Release within normal operating limits  
C. ☐ Non-Significant (fraction of protective action guide range) D. ☐ Protective action guide range  
E. ☐ Liquid release (no actions required)

<b>11.* UTILITY PROTECTIVE ACTION RECOMMENDATIONS FOR THE PUBLIC:</b>			
A. <input checked="" type="checkbox"/> No utility recommended actions at this time.			
B. <input type="checkbox"/> The utility recommends the following protective actions:			
	Evacuate Sectors	Shelter Sectors	Monitor & Prepare Sectors
Evacuate Zones: _____	OR 0 - 2 _____	_____	_____
Shelter Zones: _____	2 - 5 _____	_____	_____
	5 - 10 _____	_____	_____
AND consider issuance of potassium iodide (KI)*			

*If form is completed in the Control Room, go to Item 15. If completed in the TSC or EOF, continue with item 12.*

12. Plant Conditions: A. Reactor Shutdown? ☐ Yes ☐ No B. Core Adequately Cooled? ☐ Yes ☐ No  
C. Containment Intact? ☐ Yes ☐ No D. Core Condition: ☐ Stable ☐ Degrading

13. Weather Data: A. \* Wind Speed \_\_\_\_\_ mph B. Stability Class \_\_\_\_\_

14. Additional Release Information: A. ☐ Not Applicable (Go to Item 15)

Distance	Projected Thyroid Dose (GDE) for _____ hour(s)	Projected Total Dose (TEDE) for _____ hour(s)
1 Mile (Site Boundary)	B. _____ mrem	C. _____ mrem
2 Miles	D. _____ mrem	E. _____ mrem
5 Miles	F. _____ mrem	G. _____ mrem
10 Miles	H. _____ mrem	I. _____ mrem

15. (Do Not Read) EC or RM Approval Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_\_

Message Received By: Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_\_

\* Items are evaluated for NRC Performance Indicators (PI's)

EPIP-08-F01

Form Revision: 4

**END OF ATTACHMENT 1**



**A-5, SRO EALS WITH S/G RUPTURE & COMPLETE  
NOTIFICATION FORM W/PARS**

**JPM**  
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Examinee: \_\_\_\_\_ Evaluator: \_\_\_\_\_

☐ RO ☐ SRO ☐ STA ☐ Non-Lic ☐ SRO CERT

Date: \_\_\_\_\_

☐ LOIT RO ☐ LOIT SRO

PERFORMANCE RESULTS:

SAT:

UNSAT:

Remediation required:

YES

NO

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

PLACEKEEPING COMMENTS:

**EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES  
CLEANED, AS APPROPRIATE.**

**EVALUATOR'S SIGNATURE:** \_\_\_\_\_

*NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.*

# Handout Package for Applicant

**TURNOVER SHEET**

**PSL PROCEDURES FOR THE NRC L-19-1 EXAM WERE FROZEN ON 12/6/18**

**INITIAL CONDITIONS:**

- Security called the Shift Manager and reported that multiple intruders have parachuted onto the roof of the South Service Building.
- Small arms fire has been exchanged and the intruders have been neutralized, security has incurred casualties.
- Unit 1 and Unit 2 have been manually tripped. 1/2-EOP-01, Standard Post Trip Actions have been completed and the crew is transitioning to 1/2-EOP-02 Reactor Trip Recovery.
- Met Tower Data is attached.

**INITIATING CUES:**

- You are the Shift Manager in the **Unit 2** control room.
- These actions are **TIME CRITICAL**.
  - Record Classification information on the Classification Sheet and return to proctor immediately after completion.
  - Fill out the Florida Nuclear Plant Emergency Notification form through step 15 and return to the proctor.

**NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.**

**MET Tower Data**





## JOB PERFORMANCE MEASURE

**JPM**  
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	<u>10 METER</u>	<u>60 METER</u>
15-MINUTE AVERAGE WIND SPEED	43 MPH	53 MPH
15-MINUTE AVERAGE WIND DIRECTION	92 DEG	111 DEG
15-MINUTE AVERAGE TEMPERATURE	76°F	79°F
15-MINUTE AVERAGE $\Delta T$	3°F	



## JOB PERFORMANCE MEASURE

**JPM**  
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### CLASSIFICATION ANSWER SHEET

NAME \_\_\_\_\_

CLASSIFY the event as \_\_\_\_\_ under \_\_\_\_/\_\_\_\_/\_\_\_\_.

CLASSIFICATION COMPLETION TIME \_\_\_\_\_.

RECOMENDED PARs \_\_\_\_\_.

REVISION NO.: <b>45</b>	PROCEDURE TITLE: <b>OFF-SITE NOTIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS ST. LUCIE PLANT</b>	PAGE: <b>40 of 62</b>
PROCEDURE NO.: <b>EPIP-08</b>		

**ATTACHMENT 1  
FLORIDA NUCLEAR PLANT EMERGENCY NOTIFICATION FORM  
(Page 1 of 1)**

On-line Verification: ☐ SWP/DEM ☐ DOH/BRC ☐ St. Lucie County/Ft. Pierce ☐ Martin County

1.\* A. ☐ THIS IS A DRILL B. ☐ THIS IS AN EMERGENCY

2. A. Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ B.\* Contact Time: \_\_\_\_ C. Reported by: (Name) \_\_\_\_\_  
D. Message Number: \_\_\_\_\_ E. Reported from: ☐ Control Room ☐ TSC ☐ EOF  
F. ☐ Initial / New Classification OR ☐ Update Notification

3.\* Site: A. ☐ Crystal River Unit 3 B. ☐ St. Lucie Unit 1 C. ☐ St. Lucie Unit 2  
D. ☐ Turkey Point Unit 3 E. ☐ Turkey Point Unit 4

4.\* Emergency Classification: A. ☐ Notification of Unusual Event B. ☐ Alert  
C. ☐ Site Area Emergency D. ☐ General Emergency

5.\* A. ☐ Emergency Declaration: B. ☐ Emergency Termination: Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_

6.\* Reason for Emergency Declaration: A. ☐ EAL Number \_\_\_\_/\_\_\_\_/\_\_\_\_ OR B. ☐ Description: \_\_\_\_\_  
Alpha / Alpha / Numeric

7. Additional Information or Update: A. ☐ None OR B. ☐ Description: \_\_\_\_\_

8.\* Weather Data: A. Wind direction from \_\_\_\_ degrees B. Downwind Sectors Affected: \_\_\_\_\_

9.\* Release Status: A. ☐ None (Go to Item 11) B. ☐ In progress C. ☐ Has occurred, but stopped (Go to Item 11)

10. Release Significance Category at the Site Boundary:  
A. ☐ Under evaluation B. ☐ Release within normal operating limits  
C. ☐ Non-Significant (fraction of protective action guide range) D. ☐ Protective action guide range  
E. ☐ Liquid release (no actions required)

11.\* UTILITY PROTECTIVE ACTION RECOMMENDATIONS FOR THE PUBLIC:

A. ☐ No utility recommended actions at this time.

B. ☐ The utility recommends the following protective actions:

	Evacuate Sectors	Shelter Sectors	Monitor & Prepare Sectors
Evacuate Zones: ____ OR 0 - 2	____	____	____
Shelter Zones: ____ 2 - 5	____	____	____
____ 5 - 10	____	____	____

AND consider issuance of potassium iodide (KI)\*

*If form is completed in the Control Room, go to item 15. If completed in the TSC or EOF, continue with item 12.*

12. Plant Conditions: A. Reactor Shutdown? ☐ Yes ☐ No B. Core Adequately Cooled? ☐ Yes ☐ No  
C. Containment Intact? ☐ Yes ☐ No D. Core Condition: ☐ Stable ☐ Degrading

13. Weather Data: A. \* Wind Speed \_\_\_\_ mph B. Stability Class \_\_\_\_

14. Additional Release Information: A. ☐ Not Applicable (Go to Item 15)

Distance	Projected Thyroid Dose (CDE) for ____ hour(s)	Projected Total Dose (TEDE) for ____ hour(s)
1 Mile (Site Boundary)	B. _____ mrem	C. _____ mrem
2 Miles	D. _____ mrem	E. _____ mrem
5 Miles	F. _____ mrem	G. _____ mrem
10 Miles	H. _____ mrem	I. _____ mrem

15. (Do Not Read) EC or RM Approval Signature: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_  
Message Received By: Name: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_ Time: \_\_\_\_

EPIP-08-F01

Form Revision: 4

**END OF ATTACHMENT 1**