



L-17-1 NRC EXAM SCENARIO 1 REV. 0

SEG
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SITE: ST. LUCIE

Revision #: 0

LMS ID: N/A

LMS Rev. Date: N/A

SEG TITLE: L-17-1 SCENARIO 1

 SEG TYPE: ☐ Training ☒ Evaluation

 PROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

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	Instructor/Developer	Date

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Appendix D
Scenario Outline
Form ES-D-1

Facility:	St. Lucie	Scenario No.:	1	Op-Test No.:	NRC L-17-1
Examiners:		Operators:	SRO:		
			ATC:		
			BOP:		
Initial Conditions:	100% power, MOC, no scheduled surveillances, 0-AOP-100.14 Response To Severe Weather complete, maintain 100% power				
Turnover:	Inclement weather (severe thunderstorms and tornado watch); 2B HPSI pump inoperable for motor replacement (12 hours into planned 36 hour maintenance window); 2B AFW inoperable 2 hours ago due to broken oil sight glass; LIC-1110X OOS, LIC1110Y Selected; 2B ADV MV-08-18B OOS				
Critical Tasks:	<ol style="list-style-type: none"> RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) and High Pressure (2340 psia) trip set points. RESTORE AC POWER: Close the 2A EDG output breaker 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 SIAS if after 2-EOP-03 entry. 				
Event No.	Malf. No.	Event Type*	CT 3: Event 6 Maintain S/G level to avoid RPS actuation. <div style="display: flex; justify-content: space-between;">EventDescription</div>		
1	1	I/BOP/SRO TS/SRO	Malf: 2B S/G PT-8023C fails low Action: Bypass RPS/AFAS bistables TS 3.3.1, 3.3.2		
2	2	C/ATC/SRO	Malf: HIC-1100 AUTO fails spray valves open Action: Manually Control HIC-1100 TS 3.2.5 CT-1 Failure to control RCS pressure will result in reactor trip.		
3	3	C/ATC/SRO TS/SRO	Malf: V1201, Pressurizer Code Safety, leakage develops (≈14 gpm) Action: Quantify leakage and determine TS limit for RCS identified leak rate is exceeded TS 3.4.6.2		
4		R/ATC N/BOP/SRO	Commence plant shutdown with RCS leakage exceeding TS limit		
5	4	C/ATC/SRO	Malf: Boron load control valve V2525, failed closed Action: Boration via V2512 to the VCT		
6	5	C/BOP/SRO	Malf: 2A MFRV fails to respond to the down power Action: Manually control 2A MFRV		
7	6	M/ALL	Malf: 2A MFRV fails closed Action: Manually trip reactor prior to Auto Trip on low S/G level		
8	7	M/ALL	Malf: On the plant trip V1201 goes full open Action: Diagnose LOCA and enter 2-EOP-03		
9	8	C /BOP/SRO	Malf: 2A S/U Transformer fails to transfer, 2A EDG output breaker does not auto close Action: Manually close 2A EDG output breaker (and after SIAS) CT-2 RESTORE AC POWER to 2A3 electrical bus with the only operable HPSI pump		
* (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 Instrumentation
2. 2-AOP-01.08, RCS Leakage Abnormal Operations
3. 2-AOP-01.10, Pressurizer Pressure and Level
4. 2-AOP-22.01, Rapid Downpower
5. 2-AOP-02.01, Boron Concentration Control Abnormal Ops
6. 2-AOP-09.01, Feedwater Control Sys Abnormal Ops
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.

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 1 OVERVIEW/SEQUENCE OF EVENTS

L-17-1 NRC Scenario 1

The crew assumes the shift at 100% power with no scheduled surveillances. Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14 Response to Severe Weather completed.

- 2A Screen Wash Pump and traveling screens running
- 2B HPSI pump INOP for motor replacement (12 hours into 36 hour maintenance window)
- 2B AFW inoperable 2 hours ago due to broken oil sight glass, on Clearance
- Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected
- 2B ADV MV-08-18B INOP on Clearance

2B S/G PT-8023C will fail low, requiring entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation. The failure will be recognized and reported by the BOP and/or ATC. 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.

HIC-1100 Pressurizer pressure controller will fail in AUTO which will cause the main spray valves to go full open creating a rapid loss of Pressurizer pressure. The ATC will identify the failure and take manual control of HIC-1100 to restore Pressurizer pressure to normal operating valve. The SRO will enter 2-AOP-01.10, Pressurizer Pressure and Level and verify correct actions were taken. TS 3.2.5 for DNB will apply until pressure is restored to greater than 2225 psia.

CT-1 Failure to control RCS pressure will result in reactor trip.

A Pressurizer Code Safety valve, V1201, develops leakage at ≈ 14 gpm. The ATC will recognize and report the condition. The ATC will quantify safety valve leakage report to the SRO. The SRO will direct entry into 2-AOP-01.08, RCS Leakage Abnormal Operation, and 2-AOP-01.10, Pressurizer Pressure and Level. Requires a Tech Spec evaluation and entry into LCO 3.4.6.2. The SRO will determine TS limit for RCS identified leak rate is exceeded.

The SRO will commence plant shutdown with RCS leakage exceeding TS limit. The SRO will direct actions to commence a plant shutdown IAW 2-AOP-22.01, Rapid Downpower. The ATC will commence boration and CEA insertion, as directed. The BOP will commence turbine load reduction, as directed.

During the lineup for boration, Boron Load Control valve, V2525, will be failed closed, requiring boration to the VCT through V2512, Reactor Makeup Water Stop Valve. The ATC will recognize and report this condition, and determine use of V2512 is required.

During the downpower 2A HPFRV fails to respond requiring manual feedwater control. The BOP will recognize and report this condition. The SRO will direct the BOP to take manual control of the 2A HPFRV and implement 2-AOP-09.01, Feedwater Control System Abnormal Operation.

After the BOP has taken manual control, the 2A HPFRV will fail closed (unrecoverable). This will require a manual reactor trip as 2 of 3 2A S/G level channels go < 50% Narrow Range to prevent an automatic trip on low S/G level.

On the plant trip V1201 goes full open The ATC and BOP will perform immediate actions of 2-EOP-01, Standard Post Trip Actions. The SRO will evaluate the post trip response to ensure systems are operating as expected and then begin formal implementation of 2-EOP-01; The SRO will diagnose the event and determine 2-EOP-03, LOCA will be implemented.

On the trip 2A S/U Transformer fails to transfer, 2A EDG starts and 2A EDG breaker fails to close and must be manually closed (and again after SIAS) to power 2A3 bus and the 2A HPSI pump. The BOP will diagnose, report, and make a recommendation to close the 2A EDG breaker. The SRO will concur or give direction to close the 2A EDG breaker.

CT-2 RESTORE AC POWER Failure to energize the bus will result in an unintended transition to the Functional recovery Procedure, due to the inability to provide high pressure safety injection flow.

Procedures Used
Tech Specs Entered

- | | |
|--|---|
| <ul style="list-style-type: none"> • 2-AOP-99.01, Loss of Tech Instrumentation • 2-AOP-01.08, RCS Leakage Abnormal Operations • 2-AOP-01.10, Pressurizer Pressure and Level • 2-AOP-22.01, Rapid Downpower • 2-AOP-02.01, Boron Concentration Control Abnormal Ops • 2-AOP-09.01, Feedwater Control Sys Abnormal Ops • 2-EOP-01, Standard Post Trip Actions • 2-EOP-03, Loss of Coolant Accident • 2-EOP-99, Appendices / Figures / Tables /Data Sheets | <ul style="list-style-type: none"> • 3.3.1 for PT-8023C • 3.3.2 for PT-8023C • 3.4.6.2 for RCS Leak • 3.2.5 for DNB |
|--|---|

Scenario Setup and Booth Operator Instructions:


- **ENSURE** Examination Security has been established.
- **ENSURE** the Simulator is unloaded
- **ENSURE** IC #181 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, CY17C#181.ic and CY17C#181.rlp
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, CY17C#181.ic and CY17C#181.rlp into IC Master
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, xr181.dat
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, xr181.dat into IC Data
- **ENSURE** Lesson for Scenario 1 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO Isn
 - **Copy**, HLC-23 NRC SCENARIO 1.Isn
 - **Open**, Lessons folder on simulator operator station desk top
 - **Paste**, HLC-23 NRC SCENARIO 1.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#181
 - **RUN** the Simulator
 - Place the 2B AFW Pump in STOP and place a clearance tag on the pump control switch, placed a green mylar on annunciator G-29.
 - Place the 2B HPSI Pump in STOP and place a clearance tag on the pump control switch, placed a green mylar on annunciator Q-31.
 - Place GUARDED EQUIPMENT Tags on AFW and HPSI as outlined Guarded Equipment procedure
 - CLOSE MV-08-16 and place a clearance tag on MV-08-16 and MV-08-18B placed a green mylar on annunciator LA-12, LB-6
 - Place Pressurizer Level Controller selector switch to Y Channel position, place caution tag on switch and place an OOS magnet under LIC-1110X
 - 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** HLC-23 NRC SCENARIO 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** IC#181 and HLC-23 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-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-230-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached


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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-17-1	Scenario #	1	Event #	1		
Event Description:		2B S/G PT-8023C fails low						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

T.S. 3.3.1	AS A MINIMUM, THE REACTOR PROTECTIVE INSTRUMENTATION CHANNELS AND BYPASSES OF TABLE 3.3-1 SHALL BE OPERABLE. 6. STEAM GENERATOR PRESSURE – Low– TOTAL CHANNELS 4/SG CHANNELS TO TRIP 2/SG MIN OPERABLE 3/SG ACTION 2 –A. 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.
T.S. 3.3.2	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. ACTION B. WITH AN ESFAS INSTRUMENTATION CHANNEL INOPERABLE, TAKE THE ACTION SHOWN IN TABLE 3.3-3. 4. MSIS B. STEAM GENERATOR PRESSURE – Low– TOTAL CHANNELS 4/SG CHANNELS TO TRIP 2/SG MIN OPERABLE 3/SG 8. AFAS A. SG 2A – SG 2B DIFF PRESS– TOTAL CHANNELS 4/SG CHANNELS TO TRIP 2/SG MIN OPERABLE 3/SG


Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 1: 2B S/G PT-8023C Fails Low 		
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 		
Indications: PI-8023C will indicate low scale on RTGB 203 MC RPS bistables for TM/LP and 2B S/G Low Pressure will be in trip. Annunciators: H-3 TM/LP CHANNEL C SETPOINT HIGH/LOW Q-2 ESFAS ATI Fault P-19 MSIS 2B S/G PRESS LOW CHANNEL TRIP L-19 S/G PRESS LOW CHANNEL TRIP L-27 S/G PRESS LOW CHANNEL PRE TRIP L-36 TM/LP CHANNEL TRIP L-44 TM/LP CHANNEL PRE TRIP SG EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.		
	BOP/ATC	Acknowledges annunciators and Communicates IAW plant policies.

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-17-1		Scenario #	1	Event #	1	
Event Description:		2B S/G PT-8023C fails low						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	BOP/ATC		Diagnoses PT-8023C has failed low; RPS bistables TMLP and Lo SG Press have tripped and Communicates status IAW plant policies.
	BOP		Complies with ARP's and Communicates and/or takes action as directed by ARP.
	SRO		Diagnoses, Interprets , that PT-8023C 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
2-AOP-99.01		The following actions are taken from 2-AOP-99.01, Loss of Tech Spec Instrumentation	
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	1. CONFIRM failed channel by any of the following methods: <ul style="list-style-type: none"> Channel check comparison with redundant channels Annunciators Bistable or status lights Any instrument-related testing or surveillance procedure in progress 	<i>Interprets the indications and determines the failure to be PT-8023C 2B Steam Generator Pressure Transmitter for MC channel</i>

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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:		L-17-1		Scenario #	1	Event #	1
Event Description:		2B S/G PT-8023C fails low					
Time	Position	Procedure Step				Applicant's Actions or Behavior	
		Competency					


NOTE BISTABLE TRIP UNIT is abbreviated as BTU in this AOP												
	SRO	2. IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 6.	N/A									
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: A. LOCATE table row for affected instrument or channel.	Locates correct table row for PT-8023C <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 15%;">S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D</td> <td style="width: 20%;">S/G Press ≤ 626 psia (auct low) TMLO PRES (ASGT >120 psid)</td> <td style="width: 15%;">MSIS < 600 psia</td> <td style="width: 15%;">Input to AFAS</td> <td style="width: 10%;">3.3.1 3.3.2</td> <td style="width: 25%;">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) TMLO PRES (ASGT >120 psid)	MSIS < 600 psia	Input to AFAS	3.3.1 3.3.2	Section 4.2.10
S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D	S/G Press ≤ 626 psia (auct low) TMLO PRES (ASGT >120 psid)	MSIS < 600 psia	Input to AFAS	3.3.1 3.3.2	Section 4.2.10							
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: B. REFER TO applicable Tech Specs.	Refers to applicable Tech Specs 3.3.1 & 3.3.2									
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: C. PERFORM applicable procedure section for affected instrument.	PERFORMs section 4.2.10									
4.2.10 S/G Pressure Channel Failure												
	SRO	1. CIRCLE affected instrument and channel: <ul style="list-style-type: none"> PI-8013 A / B / C / D PI-8023 A / B / C / D 	PERFORMs section 4.2.10 1. CIRCLE affected instrument and channel: <ul style="list-style-type: none"> PI-8013 A / B / C / D PI-8023 A / B / C / D 									

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-17-1	Scenario #	1	Event #	1		
Event Description:		2B S/G PT-8023C fails low						
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)

	SRO	<p>2. PERFORM one of the following for the affected BTUs listed:</p> <ul style="list-style-type: none"> LOW PRES SG (RPS) (Key 105) TM/LO PRESS (RPS) (Key 107) For PI-8013 OR PI-8023 AFAS-1 For PI-8013 OR PI-8023 AFAS-2 For PI-8013 only S/G 2A PRESS (MSIS) (Key 134) For PI-8023 only S/G 2B PRESS (MSIS) (Key 136) <p>A. BYPASS affected BTUs using keyswitches and pushbuttons.</p> <p>OR</p> <p>B. TRIP affected BTUs per Attachment 3, Tripping and Restoring Protection Bistables.</p>	<p>SRO DIRECTS the BOP to BYPASS the affected BTUs using keyswitches and pushbuttons for Channel C as follows;</p> <ul style="list-style-type: none"> LOW PRES SG (RPS) (Key 105) TM/LO PRESS (RPS) (Key 107) For PI-8023 AFAS-1 For PI-8023 AFAS-2 For PI-8023 only S/G 2B PRESS (MSIS) (Key 136)
	BOP	<p>Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.10 S/G Pressure Channel Failure Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitches and pushbuttons</p>	<p>PERFORMs section 4.2.10 as directed by the SRO; Obtains keys, unlocks cabinets and inserts keys: 114&136 for ESFAS, 202&205 for AFAS and keys 105&107 for RPS.</p> <p>BOP relieves the ATC</p>

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.:		L-17-1	Scenario #	1	Event #	1		
Event Description:		2B S/G PT-8023C fails low						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							


	ATC	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.10 S/G Pressure Channel Failure Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitches and pushbuttons	<i>ATC PERFORMs section 4.2.10 as directed by the Unit Supervisor; IVs inserted keys: 136 for ESFAS and rotates key to bypass MC MSIS, 202&205 for MC AFAS Door and bypass compartment and keys 105&107 for MC RPS.</i> <i>ATC Reports to SRO that the affected BTUs have been BYPASSED using keyswitches and pushbuttons</i> <i>ATC relieves the BOP</i>
4.2.1 General Actions:			
	SRO	4. INITIATE work request for affected instrument or channel and NOTIFY I&C or EM as applicable.	<i>PERFORMs section 4.2.1 Step 4 NOTIFIES I&C or EM as applicable and Notifies the SM of the failure and the Tech Spec entry</i>
	SRO	5. DOCUMENT problem as required: <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log 	<i>PERFORMs section 4.2.1 Step 5 and Documents issue as appropriate in:</i> <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log
	SRO	6. WHEN ready to restore affected channel, THEN PERFORM Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> Instrumentation Channels 	<i>IDENTIFIES step as N/A</i>
	SRO	7. VERIFY Exit Conditions are met. 8. EXIT this procedure.	<i>VERIFIES Exit conditions are met by:</i> <ul style="list-style-type: none"> Applicable Tech Spec LCO action requirements have been implemented. Affected channel has been bypassed as required by Tech Specs and exits 2-AOP-99.01
	SRO	Performs Crew Brief	<i>SRO PERFORMs crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM.</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-17-1		Scenario #	1	Event #	2	
Event Description:		HIC-1100 AUTO fails spray valves open						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							


T.S. 3.2.5	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
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CT-1	RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – MAINTAIN RCS PRESSURE WITHIN THE BOUNDS OF THE RPS TM/LP (VARIABLE) TRIP SET POINTS
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Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 2: HIC-1100 AUTO Fails High 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: Both main spray valves open Annunciators: Possible H-9 & H-10			
	ATC		IDENTIFIES Both main spray valves open and RCS pressure lowering rapidly, announces the failure to the SRO and states intended actions of taking HIC-1100 to manual control
	SRO		DIRECTS the ATC the place HIC-1100 to manual control and adjust output to close the spray valves
	BOP		EVALUATES plant for being stable
	BOP		Acknowledge annunciators and communicates status IAW plant policies.
	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	1. IF at Normal Operating Pressure, THEN VERIFY PIC-1100X(Y), PRESSURIZER PRESSURE, stable.	4.1.1 CONTINGENCY ACTIONS SRO VERFIES PORVs are closed

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1	Scenario #	1	Event #	2		
Event Description:		HIC-1100 AUTO fails spray valves open						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							


	ATC	2. VERIFY selected Pressurizer pressure control channel PIC-1100X(Y), PRESSURE, NORMAL.	4.1.2 CONTINGENCY ACTIONS PLACE PRESSURE CONTROL CHANNEL SRO DETERMINES PIC-1100 is operating correctly
	SRO	3. IF 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	4.1.3 CONTINGENCY ACTIONS PLACE PRESSURE CONTROL CHANNEL selector switch to non-affected pressure control channel. The SRO DIRECTS the ATC to take manual control of HIC-1100 and energize PZR heaters as necessary
4.2 Subsequent Operator Actions 4.2.1 General Actions:			
	SRO	1. PERFORM applicable section per Table 1.	SRO EVALUATES the indications determines the failure to be to the Pressure controller HIC-1100 and proceeds to section 4.2.7
4.2.7 Selected Pressurizer Pressure or Level abnormal			
	SRO	1. VERIFY TR-1111/1121, LOOP 2A/2B (T-avg/T-ref), indicates T-avg and T-ref are matched.	SRO EVALUATES failure and determines TR-1111/1121, LOOP 2A/2B (T-avg/T-ref), indicates T-avg and T-ref are matched
	SRO	2. VERIFY Pressurizer level stable OR trending to Pressurizer level setpoint:	SRO EVALUATES failure and determines Pressurizer level is stable and is trending to Pressurizer level setpoint
	SRO	3. VERIFY Pressurizer pressure stable OR trending to Pressurizer pressure setpoint: <input type="checkbox"/> PR-1100, PRESSURE <input type="checkbox"/> PIC-1100X, PRESSURE <input type="checkbox"/> PIC-1100Y, PRESSURE	SRO EVALUATES failure and determines the ATC has CONTROL of Pressurizer pressure at 2250 psia (2225 to 2275 psia) by PLACING HIC-1100, SPRAY, in MANUAL
	SRO	4. IF letdown is in service AND two or more charging pumps are operating, THEN NOTIFY Radiation Protection of the current charging pump alignment.	SRO VERIFIES Charging and Letdown are in service and No actions are required
	SRO	5. GO TO Section 4.2.1, Step 2.	SRO proceeds to appropriate step
4.2.1 General Actions:			

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	1	Event #	2	
Event Description:		HIC-1100 AUTO fails spray valves open						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							
	SRO	4.2.1 General Actions: 2. WHEN plant conditions have stabilized, THEN REVIEW Tech Specs for any required actions.				SRO EVALUATES T.S if less than 2225 psia then enter Action for 3.2.5		
	SRO	4.2.1 General Actions: 3. WHEN Section 3.0, EXIT CONDITIONS, are met, THEN EXIT this procedure.				SRO Exits this procedure		
At the Lead Evaluator's direction, PROCEED to Event 3.								


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	3		
Event Description:		V1201, Pressurizer Code Safety, leakage develops (~14 gpm)					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

<p>T.S. 3.4.6.2</p>	<p>REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE SHALL BE LIMITED TO:</p> <p style="padding-left: 20px;">D. 10 GPM IDENTIFIED LEAKAGE FROM THE REACTOR COOLANT SYSTEM,...</p> <p>ACTION: 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.</p>
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<p>Booth Operator Instructions:</p> <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 3: V1201 PZR Safety leaks <p>Role Play:</p> <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
<p>Indications:</p> <p>TIA-1108 SAFETY VALVE V-1201 DISCHARGE TEMPERATURE will slowly indicate temperature rise on RTGB 203</p> <p>TIA-1116 QUENCH TANK TEMPERATURE will slowly indicate temperature rise on RTGB 203</p> <p>LIA-1116 QUENCH TANK LEVEL will slowly indicate level rise on RTGB 203</p> <p>PIA-1116 QUENCH TANK PRESSURE will slowly indicate pressure rise on RTGB 203</p> <p>Charging and Letdown mismatch</p> <p>RCS Pressure slowly lowering</p> <p>Annunciators:</p> <p>H-19 PRZR SAFETY V-1201 DISCH TEMP HIGH @ 280°F</p> <p>H-16 QUENCH TANK PRESS HIGH 15 psig</p> <p>H-24 QUENCH TANK TEMP HIGH @200°F</p> <p>H-32 QUENCH TANK LEVEL HIGH/LOW @70%</p> <p>EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.</p>			
	ATC		<p>DIAGNOSES Charging and Letdown mismatch, RCS Pressure slowly lowering and TIA-1108 SAFETY VALVE V-1201 DISCHARGE TEMPRATURE slowly rising on RTGB 203 and communicates observations to Unit Supervisor IAW plant policies.</p>
	SRO/ATC		<p>DIAGNOSES, INTERPRETS, CONCURS with the ATC observations and DIRECTS a Leak Rate Calculation to commence.</p> <p>ATC PERFORMS a Leak Rate Calculation</p>


	L-17-1 NRC EXAM SCENARIO 1 REV. 0	SEG Page 17 of 55
Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 3	
Event Description: V1201, Pressurizer Code Safety, leakage develops (≈14 gpm)		
Time	Position Competency	Applicant's Actions or Behavior

	ATC		ATC CALCULATES leak rate as follows: <ul style="list-style-type: none">• Verifies RCS temp stable• Records Pressurizer Level, VCT Level at one minute intervals• Calculates Deltas over time to ascertain the leak rate• Using VCT=33.8gal/% PZR=67.04 gal/% OR• Uses Charging/Letdown Mismatch BOP CALCULATES Confirmatory leak rate
	ATC,BOP		ATC AND BOP COMMUNICATE leak rate of approximately 14 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	STEP 1 ADD RCS makeup per applicable section(s) of Table 1 as directed by US while CONTINUING with this AOP:	SRO DIRECTS start second Charging pump
	SRO	STEP 2 MAINTAIN RCS level stable OR rising	SRO DIRECTS starting additional Charging pumps as needed
	SRO	STEP 3 DETERMINE RCS leak rate by any of the following methods:	SRO DIRECTS Leak rate calculations


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	3		
Event Description:		V1201, Pressurizer Code Safety, leakage develops (≈14 gpm)					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	STEP 4 VERIFY all of the following conditions are met <ul style="list-style-type: none"> UNIDENTIFIED LEAKAGE IDENTIFIED LEAKAGE less than or equal to 10 gpm NO secondary plant radiation alarms or rising trends on any of the following 	<i>DETERMINES that the Leakage from V1201 is IDENTIFIED LEAKAGE and is greater than 10 gpm and refers to tech spec 3.4.6.2. and notifies the SM to implement the E-Plan</i>
	SRO	STEP 5 IF both conditions exist: <input type="checkbox"/> Unit 2 is in MODE 1,2 or 3 <input type="checkbox"/> SIAS not blocked THEN PERFORM Section 4.2.2, Actions for Modes 1 Through 3 With SIAS Available	<i>SRO Performs Section 4.2.2</i>
4.2.2 Actions for Modes 1 Through 3 With SIAS Available			
	SRO	STEP 1 At US discretion, USE Table 2 to prioritize order of performance of applicable leak identification and isolation steps:	<i>SRO EVALUATES table 2 and proceeds to section 4.2.2 step 9</i>
	SRO	STEP 4.2.2.9 VERIFY pressurizer PORV and safety discharge lines are normal: <ul style="list-style-type: none"> PORV discharge line temperature is stable and less than 210°F Safety valve discharge line temperatures are stable and less than 185°F Safety and PORV acoustic monitors show NO flow. (PACB-2) Quench tank pressure, temperature, and level are stable and normal 	<i>SRO DETERMINES that Safety valve discharge line temperatures are not stable and goes to Contingency Actions to monitor quench tank pressure for indications of disc rupture.</i>
	SRO	STEP 12 IF leak location can NOT be identified, THEN PERFORM the following: <ul style="list-style-type: none"> <input type="checkbox"/> MONITOR HUT levels <input type="checkbox"/> MONITOR EDT levels <input type="checkbox"/> REQUEST RP to conduct primary surveys 	<i>SRO DIRECTS HUT levels EDT levels be monitored and REQUEST RP to conduct primary surveys</i>


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	3		
Event Description:		V1201, Pressurizer Code Safety, leakage develops (≈14 gpm)					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
SRO		STEP 13 IF unit in MODE 1 or 2, THEN VERIFY continued operation is permitted by Tech Specs: <input type="checkbox"/> 3.4.6.2, Reactor Coolant System Leakage <input type="checkbox"/> 3.5.1, Safety Injection Tanks			SRO DIRECTS <i>plant shutdown per 2-AOP-22.01, RAPID DOWNPOWER</i>		
Event 4 is driven by entry into 2-AOP-22.01.							

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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #	4		
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


Booth Operator Instructions: <ul style="list-style-type: none"> NONE 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications:			
Annunciators:			
	SRO		ANNOUNCES and enters 2-AOP-22.01, Rapid Downpower as directed
	SRO		DIRECTS 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:			
	SRO		DIRECTS Immediate Operator Actions for 2-AOP-22.01, RAPID DOWNPOWER
	SRO	1. BEGIN boration per operator aid OR Attachment 1, RCS Boration Guidance.	SRO DIRECTS ATC to make boration 15 gallons per minute from a Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance.
ATTACHMENT 1 RCS Boration Guidance NOTE			
<ul style="list-style-type: none"> 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	1. BORATE the RCS by the following: A. START either Boric Acid Pump 2A or 2B.	ATC STARTS Boric Acid Pump ATC VERIFIES Boric Acid Pump STARTS
	ATC	1. BORATE the RCS by the following: B. PLACE FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO.	ATC PLACES FCV-2210Y, BORIC ACID control switch in AUTO
EXAMINER: Event 5 Boron Load Control valve, V2525, fails closed will initiate during the next step			

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	4		
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	ATC	1. BORATE the RCS by the following: C. IF borating to the Charging Pump suction, THEN OPEN V2525, BORON LOAD CONTROL VALVE	ATC PLACES V2525, BORON LOAD control switch in OPEN ATC IDENTIFIES V2525, BORON LOAD control valve does not open ATC REPORTS to the SRO that V2525, BORON LOAD control valve has failed closed and recommends using V2512 REACTOR MAKEUP WATER STOP VLV
	SRO		SRO DIRECTS ATC to BORATE to the VCT using V2512 REACTOR MAKEUP WATER STOP VLV The SRO may alternately elect to direct use of the EB VLV V2514 and cycle the BAM pump as outlined in in 2 AOP-02.01
	ATC	1. BORATE the RCS by the following: D. IF borating to the VCT, THEN OPEN V2512, REACTOR MAKEUP WATER STOP VLV	ATC PLACES V2512, REACTOR MAKEUP WATER STOP VLV control switch in OPEN ATC VERIFIES V2512, REACTOR MAKEUP WATER STOP VLV is OPEN
	ATC	1. BORATE the RCS by the following: E. ADJUST FIC-2210Y, BORIC ACID, to the desired flowrate.	ATC ADJUSTS FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm
	ATC	1. BORATE the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN CLOSE the running BAM pump recirc valve. <ul style="list-style-type: none"> V2650, TANK 2A RECIRC VALVE V2651, TANK 2B RECIRC VALVE 	ATC DETERMINES not required
	ATC	1. BORATE the RCS by the following: G. CYCLE V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	ATC CYCLES V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig
	ATC	1. BORATE the RCS by the following: H. CYCLE V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	ATC CYCLES V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level

		L-17-1 NRC EXAM SCENARIO 1 REV. 0				SEG Page 22 of 55	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #	4		
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	ATC		ATC UPDATES crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER	
	SRO	2. PREPARE turbine for load reduction per operations hard cards.	SRO DIRECTS BOP to set up the turbine for a target of 100 MW and load rate at 10 megawatts per minute per operations hard cards
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 3 TURBINE ADJUSTMENTS TO MAINTAIN POWER 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 placard.			
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER	BOP ENSURES Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER TOUCH MODIFY from RAMP INTERFACE group.	BOP TOUCHES MODIFY from RAMP INTERFACE group
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER ADJUST values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> TARGET SELECT RATE SELECT 	BOP ADJUSTS values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> TARGET SELECT set at 100 MW RATE SELECT set at 10 MW/min
	BOP		BOP NOTIFIES SRO that the Turbine is set up with a Target of 100 MW at a rate of 10 MW/min
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	3. INSERT the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards.	SRO DIRECTS ATC to insert lead group CEAs 6 inches in Manual Sequential
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	

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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #	4		
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

2-NOP-99.07 OPERATIONS HARD CARDS ATTACHMENT 1 CEDMCS OPERATIONS NOTE 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 placecard.			
	ATC	Moving CEAs in group On CEDMCS Control Panel Group Select Switch, SELECT target group.	ATC SELECTS Target Group 5
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	Moving CEAs in group On CEDMCS Control Panel Mode Select Switch, SELECT mode of movement: MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS)	ATC SELECTS MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel
	ATC	Moving CEAs in group IF CEA Motion Inhibit is present, THEN PERFORM the following: PRESS and HOLD CMI BYPASS pushbutton. PRESS and RELEASE BYPASS ENABLE pushbutton.	STEP will be N/A NO CEA Motion Inhibit is present
	ATC	Moving CEAs in group POSITION group as desired using INSERT/WITHDRAW Manual Control lever.	ATC POSITIONS group as directed to 6" inserted from previous position using INSERT/WITHDRAW Manual Control lever
	ATC	Moving CEAs in group IF CMI BYPASS pushbutton is being held, THEN RELEASE CMI BYPASS pushbutton.	STEP will be N/A NO CEA Motion Inhibit is present

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Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-17-1		Scenario # 1		Event # 4			
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	Moving CEAs in group OBSERVE RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment.	ATC OBSERVES RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position
	ATC	Moving CEAs in group On CEDMCS Control Panel, SELECT OFF on Mode Select Switch when the desired height is reached.	ATC SELECTS OFF on Mode Select Switch when the desired height is reached
	ATC	Moving CEAs in group ENSURE RSPT and Pulse Counter indications match.	ATC ENSURES RSPT and Pulse Counter indications match
	ATC		ATC Updates crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
4.2 Subsequent Operator Actions			
	SRO	1. WHEN Tav _g begins to lower and is less than Tref, THEN TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)	DIRECTS ATC to monitor Tav _g and to notify him when it is lowering and less than Tref
	ATC		ATC NOTIFIES the SRO that Tav _g is lowering and less than Tref
	SRO		DIRECTS BOP to TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)
	BOP		BOP to TOUCHES GO on the RAMP INTERFACE group to begin turbine load reduction per operations hard cards as follows: 5. TOUCH GO from RAMP INTERFACE group. (display 5551) 6. MONITOR turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551) BOP Updates crew on load reduction initiation.
	SRO/ATC	SRO directs ATC to MAINTAIN T-avg and T-ref	8. MAINTAIN 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">• Reactivity rate• Turbine load rate

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Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	4			
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit						
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior			

	SRO	2. NOTIFY plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____. "	<i>DIRECTS BOP to NOTIFY</i> plant personnel using Gai-tronics and boost function as follows: <i>"Attention all personnel, Unit 2 has commenced a Rapid Downpower due to excessive RCS leakage."</i>
	BOP		<i>NOTIFIES</i> plant personnel using Gai-tronics and boost function as follows: <i>"Attention all personnel, Unit 2 has commenced a Rapid Downpower due to excessive RCS leakage."</i>
	SRO	3. NOTIFY System of the rapid downpower load reduction.	<i>DIRECTS BOP to NOTIFY</i> System of the rapid downpower
	BOP		<i>NOTIFIES</i> System of the rapid downpower, via dedicated RED phone.
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	4. PERFORM a Crew update to include the following: <ul style="list-style-type: none"> Expected final power level Initial boration rate Initial load rate Expected amount of boric acid addition Expected amount of CEA motion using pre-planned downpower profiles in the Plant Physics Curve Book 	<i>SRO UPDATES</i> crew with the following information: <ul style="list-style-type: none"> <i>Expected final power level Offline</i> <i>Initial boration rate 15 GPM</i> <i>Initial load rate of 10 MW/MIN</i> <i>Expected amount of boric acid addition Per preplanned power guidance</i> <i>Expected amount of CEA motion Per preplanned power guidance</i>
	SRO	5. PLACE Pressurizer on recirculation per operations hard cards.	<i>SRO should recognize</i> heaters are all on to maintain pressure from PZR safety valve leak. Recirculation should not be directed as this will lower pressure
	SRO	6. START additional charging pump as required per operations hard cards.	<i>SRO DIRECTS ATC to START</i> a second charging pump per operations hard cards, if not previously started
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-17-1	Scenario #	1	Event #	4	
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit				
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	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW IF in MODE 1 or 2, THEN PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS to minimize reactivity effects of changing letdown temperature.	BOP PLACES V2520, ION EXCHANGER BYPASS VALVE, in BYPASS
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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	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: START charging pump by placing its control switch in START.	BOP STARTS Second charging pump by placing its control switch in START
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: PLACE CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid.	BOP PLACES CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN 3 minutes has elapsed since pump start, THEN ENSURE associated recirc valve is CLOSED.	BOP ENSURES Second Charging Pp recirc valve is CLOSED

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Appendix D		Operator Action				Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	4		
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN letdown temperature stabilizes, THEN ENSURE V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO.	BOP ENSURES V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO after temp stabilizes
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: NOTIFY RP and SNPO of current charging pump alignment.	BOP NOTIFIES RP and SNPO of starting of the Second charging pump
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
NOTE <ul style="list-style-type: none"> 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. US may direct temporary operation outside of ASI limit. 			
	SRO	7. MAINTAIN Axial Shape Index ± 0.5 of ESI using CEAs.	DIRECTS ATC 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		POSITIONS 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
NOTE 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	8. MAINTAIN Tref and Tavg within 6.6 °F.	DIRECTS ATC to maintain Tave-Tref mismatch within +/- 2 degrees °F
	SRO	9. IF reducing power by more than 20%, THEN NOTIFY SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition.	DIRECTS BOP to dispatch a SNPO to secure Zinc injection
NOTE 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	10. VERIFY Condenser Back Pressure less than 8.859 inHgA.	DIRECTS BOP to report Condenser Backpressure

		L-17-1 NRC EXAM SCENARIO 1 REV. 0				SEG Page 28 of 55	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	4		
Event Description:		Commence plant shutdown with RCS leakage exceeding TS limit					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


NOTE 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	11. VERIFY Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations. OR OVATION display 5605, CONDENSER VACUUM MONITORING.	<i>DIRECTS BOP to monitor Condenser Backpressure</i>
	SRO	12. VERIFY CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)	<i>DIRECTS BOP to monitor Condenser differential pressure</i>
	SRO	13. VERIFY parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits.	<i>DIRECTS BOP to monitor parameters listed on Attachment 3</i>
NOTE Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.			
	SRO	14. MAINTAIN PZR pressure between 2225 and 2275 psia.	<i>DIRECTS ATC to MAINTAIN PZR pressure between 2225 and 2275 psia by controlling HIC-1100</i>
NOTE A large rate of change in Tav _g may cause transient level variance.			
	SRO	15. MAINTAIN PZR level between 27% and 68%.	<i>DIRECTS ATC to MAINTAIN PZR level between 27% and 68%</i>
	SRO	16. WHEN Final power level is achieved, THEN GO TO Section 4.2, Step 35 to STABILIZE the unit.	<i>SRO will continue with procedure to remove the unit offline</i>
Event 5 already has been addressed during rapid down power proceed to Event 6.			

	L-17-1 NRC EXAM SCENARIO 1 REV. 0	SEG Page 29 of 55
Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 5	
Event Description: Boron load control valve V2525, failed closed		
Time	Position	Applicant's Actions or Behavior
	Competency	


Booth Operator Instructions: <ul style="list-style-type: none"> None; Failure is in initial conditions Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
2-AOP-22.01 ATT. 1		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER ATT.1	
	ATC	1. BORATE the RCS by the following: C. IF borating to the Charging Pump suction, THEN OPEN V2525, BORON LOAD CONTROL VALVE	ATC PLACES V2525, BORON LOAD control switch in OPEN ATC IDENTIFIES V2525, BORON LOAD control valve does not open ATC REPORTS to the SRO that V2525, BORON LOAD control valve has failed closed and recommends using V2512 REACTOR MAKEUP WATER STOP VLV
	SRO		SRO DIRECTS ATC to BORATE to the VCT using V2512 REACTOR MAKEUP WATER STOP VLV The SRO may alternately elect to direct use of the EB VLV V2514 and cycle the BAM pump as outlined in in 2 AOP-02.01
	ATC	1. BORATE the RCS by the following: D. IF borating to the VCT, THEN OPEN V2512, REACTOR MAKEUP WATER STOP VLV	ATC PLACES V2512, REACTOR MAKEUP WATER STOP VLV control switch in OPEN ATC VERIFIES V2512, REACTOR MAKEUP WATER STOP VLV is OPEN
	ATC	1. BORATE the RCS by the following: E. ADJUST FIC-2210Y, BORIC ACID, to the desired flowrate.	ATC ADJUSTS FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm
	ATC	1. BORATE the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN CLOSE the running BAM pump recirc valve. <ul style="list-style-type: none"> V2650, TANK 2A RECIRC VALVE V2651, TANK 2B RECIRC VALVE 	ATC DETERMINES not required

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 1		Event # 5			
Event Description:		Boron load control valve V2525, failed closed					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	ATC	1. BORATE the RCS by the following: G. CYCLE V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	ATC CYCLES V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig.
	ATC	1. BORATE the RCS by the following: H. CYCLE V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	ATC CYCLES V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level.
	ATC		ATC UPDATES crew on Reactivity Addition

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Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 6	
Event Description: 2A MFRV fails to respond to the down power		
Time	Position	Applicant's Actions or Behavior
	Competency	

Booth Operator Instructions: <ul style="list-style-type: none"> None; 2A MFRV FVC-911 Fails AS-IS is auto triggered on CEA movement. 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: 2A S/G level control valve FVC-9011 does not move in response to controller output in Auto 2A S/G level goes high			
Annunciators: G-1 2A S/G LEVEL HIGH/LOW			
	BOP		RECOGNIZES 2A S/G level is not trending as expected for the downpower and Evaluates that FVC-9011 controller is not responding to S/G parameter inputs
	BOP/SRO	IF automatic level control is malfunctioning, THEN TAKE manual control of feed flow and STABILIZE S/G levels to 60% to 70% NR.	COMMUNICATES failure to SRO and TAKES manual control of 2A S/G feed flow and STABILIZES S/G level to 60% to 70% NR. SRO Directs placing FVC-9011 controller to manual
	BOP		PULLS ARP's and communicates/takes action as directed
	SRO		ANNOUNCES AND ENTERS 2-AOP-09.01, Feedwater Control System Abnormal Operations
	SRO		DIRECTS actions of 2-AOP-09.01, Feedwater Control System Abnormal Operations
2-AOP-09.01		The following actions are taken from 2-AOP-09.01, Feedwater Control System Abnormal Operations	
NOTE A high power feed regulating valve (HPFRV) and its associated low power feed regulating valve (LPFRV) have flow-compensation logic such that operating one in manual with the other in auto may cause the valve in auto to reposition in an attempt to keep the feed flow rate constant.			
4.1 Immediate Operator Actions:			

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Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 6	
Event Description: 2A MFRV fails to respond to the down power		
Time	Position	Applicant's Actions or Behavior
	Competency	

	BOP/SRO	1. IF automatic level control is malfunctioning, THEN TAKE manual control of feed flow and STABILIZE S/G levels to 60% to 70% NR.	COMMUNICATES failure to SRO and TAKES manual control of 2A S/G feed flow and STABILIZES S/G level to 60% to 70% NR SRO DIRECTS placing FCV-9011 controller to manual
CAUTION CT 3: Event 6 Maintain S/G level to avoid RPS actuation. If a 100% bypass valve is open during a turbine trip or high S/G level event, manual closure will be necessary to prevent S/G overfill.			
	SRO/BOP	2. VERIFY S/G levels are greater than 50% NR.	SRO DIRECTS verifying S/G levels are greater than 50% NR BOP Communicates S/G levels are greater than 50% NR
	SRO/BOP	3. VERIFY S/G levels are less than 75% NR.	SRO DIRECTS verifying S/G levels are less than 75% NR BOP Communicates S/G levels are less than 75% NR
4.2 Subsequent Operator Actions 4.2.1 General Actions: Booth Operator Instructions: <ul style="list-style-type: none"> NONE Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
	SRO	1. PERFORM applicable section or Attachment per Table 1.	SRO EVALUATES failure and determines the need to implement Section 4.2.2
4.2.2 S/G Level, Feed Flow, or Steam Flow Anomalies			
	SRO	1. PERFORM applicable step(s) in any order per Table 2.	SRO EVALUATES failure and determines the need to implement Section 4.2.2 Step 2
NOTE The HPFRV and its associated LPFRV have flow-compensation logic such that operating one in manual with the other in auto may cause the valve in auto to reposition in an attempt to keep the feed flow rate constant.			
NOTE to the evaluator: The crew will be performing a Rapid Downpower the performance of the following steps will not be performed during a plant transient			

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Appendix D			Operator Action				Form ES-D-2			
Op Test No.:		L-17-1		Scenario #	1	Event #	6			
Event Description:		2A MFRV fails to respond to the down power								
Time	Position	Procedure Step				Applicant's Actions or Behavior				
	Competency									
	BOP/SRO	2. VERIFY HPFRV controllers are controlling S/G levels in normal band: <ul style="list-style-type: none"> FIC-9011, S/G 2A FLOW CNTL (HPFRV 2A) FIC-9021, S/G 2B FLOW CNTL (HPFRV 2B) 				SRO DIRECTS the following: 2.1 ENSURE affected LOW PWR M/A STA is in A (auto). 2.2 PLACE affected HIGH PWR M/A STA in M (manual). 2.3 CLOSE affected HPFRV using HIGH PWR M/A STA until LPFRV is 20% to 50% open. 2.4 MAINTAIN S/G level in normal band. 2.5 MAINTAIN LPFRV between 20% to 50% open by adjusting HPFRV as required. BOP Locates and manipulates the above components				
	SRO	7. RETURN TO Section 4.2.1, Step 1.				SRO goes to section 4.2.1 and performs step 1, 2 & 3 and exits 2-AOP-09.01				
	SRO	Performs Crew Brief				SRO PERFORMs crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM				
At the Lead Evaluator's direction, PROCEED to Event 7.										

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	1	Event #	7	
Event Description:		2A MFRV fails closed				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

Booth Operator Instructions:

- **Upon cue from Lead Examiner, trigger Event 7: 2A MFRV FCV-9011 Fails Closed**

Role Play:

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

Indications:


2A HPFRV closed

2A S/G level lowering


Annunciators:

G-1 2A S/G LEVEL HIGH/LOW

	BOP		RECOGNIZES 2A HPFRV closed and 2A S/G level lowering
	BOP		ATTEMPTS to control 2A HPFRV in manual
	BOP		RECOGNIZES 2A HPFRV closed and 2A S/G level continues to lower
	BOP		RECOMMENDS Reactor Trip
	SRO		DIRECTS Reactor trip
	ATC		CONFIRMS reactor power is lowering and startup rate is negative REPORTS "REACTOR TRIPPED" States evaluating CEAs or that all CEAs are inserted
	BOP		VERIFIES all governor and throttle valves closed REPORTS "Turbine Tripped"
	BOP		ANNOUNCE on the Gaitronics: Unit 1 (2) Reactor has tripped NOTIFY the NPO to perform Appendix X, Section 1 of 2-EOP-99 CONTACT 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		REPORTS "All CEAs INSERTED" if not reported previously
	SRO		DIRECTS ATC to start remaining Charging Pumps as necessary

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	7		
Event Description:		2A MFRV fails closed					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	SRO		DIRECTS Implementation Of EOP-01, Standard Post Trip Actions
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
4.1 Immediate Operator Actions: <ul style="list-style-type: none"> • 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:			
	SRO	Step 1 VERIFY reactor trip:	SRO DIRECTS VERIFY 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	Step 2 VERIFY turbine trip:	SRO DIRECTS VERIFY 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
	SRO	Step 3 VERIFY Maintenance of Vital Auxiliaries:	SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies: <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 NOTE: EVENT 9 will present itself in this step 2A EDG output breaker fails to Auto close see details in event 9 below <input type="checkbox"/> VERIFY all Vital and Non Vital DC Buses are ENERGIZED <input type="checkbox"/> VERIFY seal cooling to RCPs:

		L-17-1 NRC EXAM SCENARIO 1 REV. 0					SEG Page 36 of 55	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-17-1			Scenario #	1	Event #	7		
Event Description:			2A MFRV fails closed					
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							


	SRO	Step 4 VERIFY RCS Inventory Control:	SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies: <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35% Pressurizer level will be abnormally high due to the Pressurizer Safety leak. This parameter will drive the crew to enter 2-EOP-03
	SRO	Step 5 VERIFY RCS Pressure Control:	SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies: <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia RCS Pressure will be abnormally low due to the Pressurizer Safety leak. This parameter will drive the crew to enter 2-EOP-03 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
	SRO	Step 6 VERIFY Core Heat Removal:	SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies: <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW <input type="checkbox"/> Loop ΔT 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	Step 7 VERIFY RCS Heat Removal:	SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies: <input type="checkbox"/> VERIFY the following conditions exist on at least one S/G: <ul style="list-style-type: none"> S/G NR level is between 20 and 81% Feedwater is being supplied <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"> Main or Auxiliary Feedwater <input type="checkbox"/> VERIFY RCS TAVG is between 525 and 535°F <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-17-1	Scenario #	1	Event #	7	
Event Description:		2A MFRV fails closed				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


	SRO	<p>Step 8 VERIFY containment conditions:</p>	<p>SRO DIRECTS VERIFY containment conditions, <i>BOP Verifies:</i></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><input type="checkbox"/> <i>Containment radiation level less than alarm values AND stable or lowering:</i></p> <ul style="list-style-type: none"> • CIS Radiation Monitors • Containment Atmospheric Monitors <p>Containment Atmospheric Monitors will be abnormally high due to the Pressurizer Safety leak. This parameter will drive the crew to enter 2-EOP-03</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"> • Condenser Air Ejector Monitor • S/G Blowdown Monitors • Main Steamline Monitors
	SRO	<p>Step 9 DIRECT a field operator to perform the following:</p>	<p>SRO DIRECTS BOP to perform step 9, <i>BOP performs step 9:</i></p> <p><input type="checkbox"/> <i>Directs NPO to perform Section 1 of Appendix X, Secondary Plant Post Trip Actions</i></p> <p><input type="checkbox"/> <i>Directs SNPO to VERIFY SFP inventory and temperature are normal on all available indications</i></p>
	SRO	<p>Step 10 DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.</p>	<p>SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an ESD is in progress</p>
	SRO	<p>Step 11 GO TO the appropriate Emergency Operating Procedure.</p>	<p>SRO Performs a crew brief and transitions to 2-EOP-03</p>

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Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 8	
Event Description: On the plant trip V1201 goes full open		
Time	Position	Applicant's Actions or Behavior
	Competency	
Procedure Step		

Booth Operator Instructions: <ul style="list-style-type: none"> None; V1201 PZR Safety Opens on Trip, is an auto trigger upon Reactor Trip 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: V1201 open, Quench tank parameters Pressure Temperature and Level high, RCS Pressure and Level Lowering Annunciators: Multiple			
2-EOP-03	The following actions are taken from 2-EOP-03, LOSS OF COOLANT ACCIDENT		
NOTE			
<input type="checkbox"/> 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.			
<input type="checkbox"/> Steps designated with an * may be performed non-sequentially or are to be performed continuously.			
CAUTION			
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 less than or equal to 200°F. Figure 1B should be used when indicated containment temperature is greater 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.			
4.0 Operator Actions:			
	SRO	1. MONITOR the SFSCs and VERIFY the SFSC acceptance criteria are MET every 15 minutes.	<i>The SRO DIRECTS the STA to perform SFSCs now and every fifteen minutes</i>
	SRO	2. IMPLEMENT the Emergency Plan.	<i>The SRO DIRECTS the SM to IMPLEMENT the Emergency Plan</i>
	SRO	3. IMPLEMENT placekeeping.	<i>The SRO Pulls the Place Keeper from the back of 2-EOP-03 and begins tracking his progress on the placekeeper</i>
EXAMINER: The implementation of the following step "Sampling Steam Generators" is located in the appendices after Event 9			

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	8		
Event Description:		On the plant trip V1201 goes full open					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	SRO	4. SAMPLE steam generators for activity per Appendix A, Sampling Steam Generators.	<i>The SRO DIRECTS the BOP to PERFORM Appendix A of 2-EOP-99, Sampling Steam Generators</i>
	SRO	5. VERIFY SIAS is ACTUATED.	<i>This is a continuous step and will be performed after SIAS actuation conditions are met</i> <i>SRO VERIFIES</i> SIAS actuated when either of the following conditions are met: <ul style="list-style-type: none"> • <i>Pressurizer pressure is less than 1736 psia</i> • <i>Containment Pressure is greater than 3.5 psig</i>
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	6. OPTIMIZE SI as follows: A. VERIFY SIAS is ACTUATED. B. VERIFY all available SI pumps are RUNNING. C. VERIFY SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure. D. VERIFY all available charging pumps are RUNNING.	<i>SRO VERIFIES:</i> <ul style="list-style-type: none"> • <i>SIAS is ACTUATED.</i> • <i>SI pumps are OPERATING.</i> • <i>SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure.</i> • <i>All available charging pumps are RUNNING.</i> • <i>Charging header is available</i>
	SRO	7. IMPLEMENT RCP trip strategy as follows: A. VERIFY pressurizer pressure is less than 1736 psia. B. ENSURE ONE RCP in each loop is STOPPED. C. VERIFY RCS subcooling is greater than minimum RCS subcooling	<i>SRO IMPLEMENTS</i> RCP Trip Strategy
EXAMINER: The implementation of the following step “Restore CCW to the RCPs” is located in the appendices after Event 9			

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Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 8	
Event Description: On the plant trip V1201 goes full open		
Time	Position	Applicant's Actions or Behavior
	Competency	


	SRO	<p>8. CHECK RCP seal cooling as follows:</p> <p>A. VERIFY CCW to the RCPs.</p> <p>B. IF both of the following conditions exist:</p> <ul style="list-style-type: none"> RCPs have CCW flow CIAS has isolated the normal RCP bleed off flow path to the VCT <p>THEN ESTABLISH the alternate RCP bleedoff flow path to the quench tank by OPENING V2507, RCP Bleed off Relief Stop Vlv.</p>	<p><i>May Have been previously completed</i></p> <p><i>SRO DIRECTS the BOP to Restore CCW to the RCPs per Appendix J of 2-EOP-99:</i></p> <p><i>The BOP restores CCW to the RCPs with Appendix J of 2-EOP-99</i></p>
	SRO	<p>9. CHECK if RCPs are operating within limits:</p> <p>A. VERIFY at least one RCP is OPERATING.</p> <p>B. For all operating RCPs, VERIFY RCP operating limits are MET per Table 13, RCP Operating Limits.</p>	<p><i>SRO DIRECTS ATC to VERIFY operating limits are MET per Table 13, RCP Operating Limits for any running RCPs.</i></p> <p><i>The ATC to VERIFIES operating limits are MET per Table 13, RCP Operating Limits for any running RCPs.</i></p>
	SRO	<p>10. ISOLATE potential LOCA locations as follows:</p> <p>A. VERIFY both PORVs are CLOSED.</p> <p>B. VERIFY Letdown is ISOLATED.</p> <p>C. VERIFY all SIX RCS sample valves are CLOSED.</p> <p>D. VERIFY RCS-to-CCW boundary is INTACT as follows:</p> <ul style="list-style-type: none"> CCW high radiation monitor alarms are CLEAR. (Annunciators PLP-101 and PLP 102) CCW surge tank high level alarm is CLEAR. (Annunciator LB-10) <p>ENSURE sample flow to the CCW radiation monitors.</p> <p>E. VERIFY LOCA is inside Containment by evaluating the following:</p> <ul style="list-style-type: none"> RAB radiation monitor trends and alarms - NORMAL. RAB sump level alarms are CLEAR. (Annunciators LA-2, LA-8, LB-2 and LB-8) 	<p><i>SRO EVALUATES 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-17-1	Scenario #	1	Event #	8	
Event Description:		On the plant trip V1201 goes full open				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					


	SRO	<p>11. ENSURE Containment isolation and Containment cooling as follows:</p> <p>A. VERIFY one of the following conditions is MET:</p> <ul style="list-style-type: none"> Containment pressure is greater than 3.5 psig Containment radiation greater than 10 R/hr SIAS is ACTUATED <p>B. VERIFY CIAS is ACTUATED.</p> <p>C. IF Containment pressure is greater than 3.5 psig, THEN VERIFY MSIS is ACTUATED.</p> <p>D. ENSURE all available Emergency Containment HVAC systems are RUNNING:</p> <ul style="list-style-type: none"> At least ONE train of SBVS At least ONE train of Containment Fan Coolers 	SRO EVALUATES plant conditions and Verifies required ESFAS actuations have occurred
	SRO	<p>12. CHECK if containment spray actuation is required:</p> <p>A. VERIFY Containment pressure is greater than 5.4 psig.</p> <p>B. VERIFY CSAS is ACTUATED.</p> <p>C. VERIFY Containment Spray flow is at least 2700 gpm from each header.</p>	SRO EVALUATES step and Determines it is not required
	SRO	13. VERIFY circulating water flow to the Main Condenser.	SRO VERIFIES circulating water flow to the main condenser
	SRO	14. STABILIZE the secondary plant per Appendix X, Secondary Plant Post Trip Actions, Section 2.	<p>SRO DIRECTS the BOP to Perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits</p> <p>The BOP PERFORMS Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits</p>

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Appendix D		Form ES-D-2
Op Test No.: L-17-1	Scenario # 1 Event # 8	
Event Description: On the plant trip V1201 goes full open		
Time	Position Competency	Procedure Step Applicant's Actions or Behavior

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

		L-17-1 NRC EXAM SCENARIO 1 REV. 0					SEG Page 43 of 55	
Appendix D			Operator Action				Form ES-D-2	
Op Test No.: L-17-1		Scenario #	1	Event #	8			
Event Description:		On the plant trip V1201 goes full open						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							


	SRO/ATC	<p>19. COOLDOWN the RCS (to SDC) as follows:</p> <p>A. COOLDOWN the RCS using SBCS.</p> <p>B. IF RCPs are operating, THEN COOLDOWN at a rate NOT to exceed 100°F in any 1 hour period per 2-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown.</p> <p>C. IF all RCPs are STOPPED, THEN COOLDOWN at a rate NOT to exceed 50°F in any 1 hour period per 2-AOP-01.13, Natural Circulation Cooldown.</p>	<p>SRO DIRECTS the ATC to initiate an RCS cooldown using SBCS</p> <p>The ATC will plot cooldown IAW OPS Policy 539 and place the SBCS permissive switch to manual and begin an RCS cooldown using V8801 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>NOTE</p> <p>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>20. DEPRESSURIZE the RCS to SDC entry conditions as follows:</p> <p>A. OPERATE main or auxiliary pressurizer sprays.</p> <p>B. VERIFY HPSI throttle criteria are MET.</p> <p>C. IF in service, THEN CONTROL letdown.</p> <p>D. THROTTLE SI flow as necessary per Appendix S, Safety Injection Throttling and Restoration.</p>	<p>SRO DIRECTS the ATC to initiate an RCS depressurization using Main or Auxiliary sprays</p> <p>The ATC will initiate an RCS depressurization using Main or Auxiliary sprays while maintaining subcooled margin</p>
<p>The Scenario can be terminated once RCS cooldown and depressurization has commenced</p>			
<p>CAUTION</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>			

		L-17-1 NRC EXAM SCENARIO 1 REV. 0					SEG Page 44 of 55	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-17-1		Scenario #	1	Event #	8			
Event Description:		On the plant trip V1201 goes full open						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

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

Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #	8		
Event Description:		On the plant trip V1201 goes full open					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	24. CHECK LPSI pump stop criteria: A. VERIFY pressurizer pressure is greater than 250 psia AND CONTROLLED. B. STOP the LPSI pumps. C. CLOSE the LPSI injection valves. D. PLACE LPSI pump handswitches in AUTO.	<i>SRO EVALUATES step and Determines takes actions as plant conditions warrant</i>
	SRO	25. CHECK LPSI pump restart criteria: A. VERIFY both LPSI pumps are STOPPED. B. VERIFY RAS is ABSENT. C. VERIFY pressurizer pressure is less than 250 psia. D. START LPSI pumps as necessary. E. OPEN the LPSI injection valves.	<i>SRO EVALUATES step and Determines takes actions as plant conditions warrant</i>
	SRO	26. VERIFY Letdown IN SERVICE.	<i>SRO evaluates step and Determines takes actions as plant conditions warrant</i>

		L-17-1 NRC EXAM SCENARIO 1 REV. 0				SEG Page 46 of 55	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: LI-17-1		Scenario #	1	Event #	9		
Event Description:		2A S/U Transformer fails to transfer, 2A EDG output breaker does not auto close					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

CT-2	RESTORE AC POWER: IF A RUNNING EDG OUTPUT BREAKER DOESN'T AUTO CLOSE, THEN THE CREW CLOSSES THE BREAKER (ASSUMING NO ELECTRICAL FAULT ALARM ON THE BUS) WITHIN 15 MINUTES OF ENTERING 2-EOP-03 TO PREVENT UNNECESSARY ENTRY INTO FUNCTIONAL RECOVERY
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NOTE to EVALUATOR: This step will need to be performed post SIAS also.			
Booth Operator Instructions: <ul style="list-style-type: none"> NONE: No "A" Aux/SU Xformer SWAP 2A EDG Brkr Fail, is an auto trigger upon Reactor Trip Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: 2A EDG Output breaker open and 2A3 4.16KV bus de-energized Annunciators: Multiple			
	BOP/ATC		SRO Recognizes 2A EDG Output breaker open and 2A3 4.16KV bus de-energized verifies no lockouts on Bus or EDG
	SRO		SRO DIRECTS Closing of the 2A EDG output breaker
	BOP		BOP INSERTS the Sych Plug and turns it to the 2A EDG position and closes the output breaker

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #		
Event Description:		APPENDICES				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					


2-EOP-99 APP "A"		The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	2AB Bus energized when 2A EDG output breaker is closed. Determines no additional action required
NOTE			
<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	2. If an INADVERTENT SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following: <input type="checkbox"/> RESTORE flow to the A" CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A HCV-14-9 OR <input type="checkbox"/> RESTORE flow to the B" CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B HCV-14-10	Determines no action required, no inadvertent SIAS
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.			

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #		
Event Description:		APPENDICES				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	


	BOP	<p>3. If a VALID 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: HCV-14-8A, HCV-14-9</p> <p>OR</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 restores "N" header flow
	BOP	<p>4. If the 'N' Header has been restored, Then OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves by performing the following:</p> <p>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-23-7 and FCV-23-9 by PLACING the control switch to CLOSE / OVERRIDE.</p> <p>B. OPEN FCV-23-7 and FCV-23-9, 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

		L-17-1 NRC EXAM SCENARIO 1 REV. 0				SEG Page 49 of 55	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #			
Event Description:		APPENDICES					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


	BOP	6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.	BOP determines step is N/A
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"> Seismic event 'N' Header is found NOT intact The operable Safety Related CCW header becomes inoperable Then ISOLATE the 'N' header.	BOP monitors for these conditions, determines N/A at this time
2-EOP-99 APP "J"		The following actions are for Restoring CCW to the RCPs Using 2-EOP-99, APPENDIX "J".	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH 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. 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

		L-17-1 NRC EXAM SCENARIO 1 REV. 0					SEG Page 50 of 55	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	1	Event #		
Event Description:		APPENDICES						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

NOTE <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		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: HCV-14-8A HCV-14-9 OR HCV-14-8B HCV-14-10	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.			

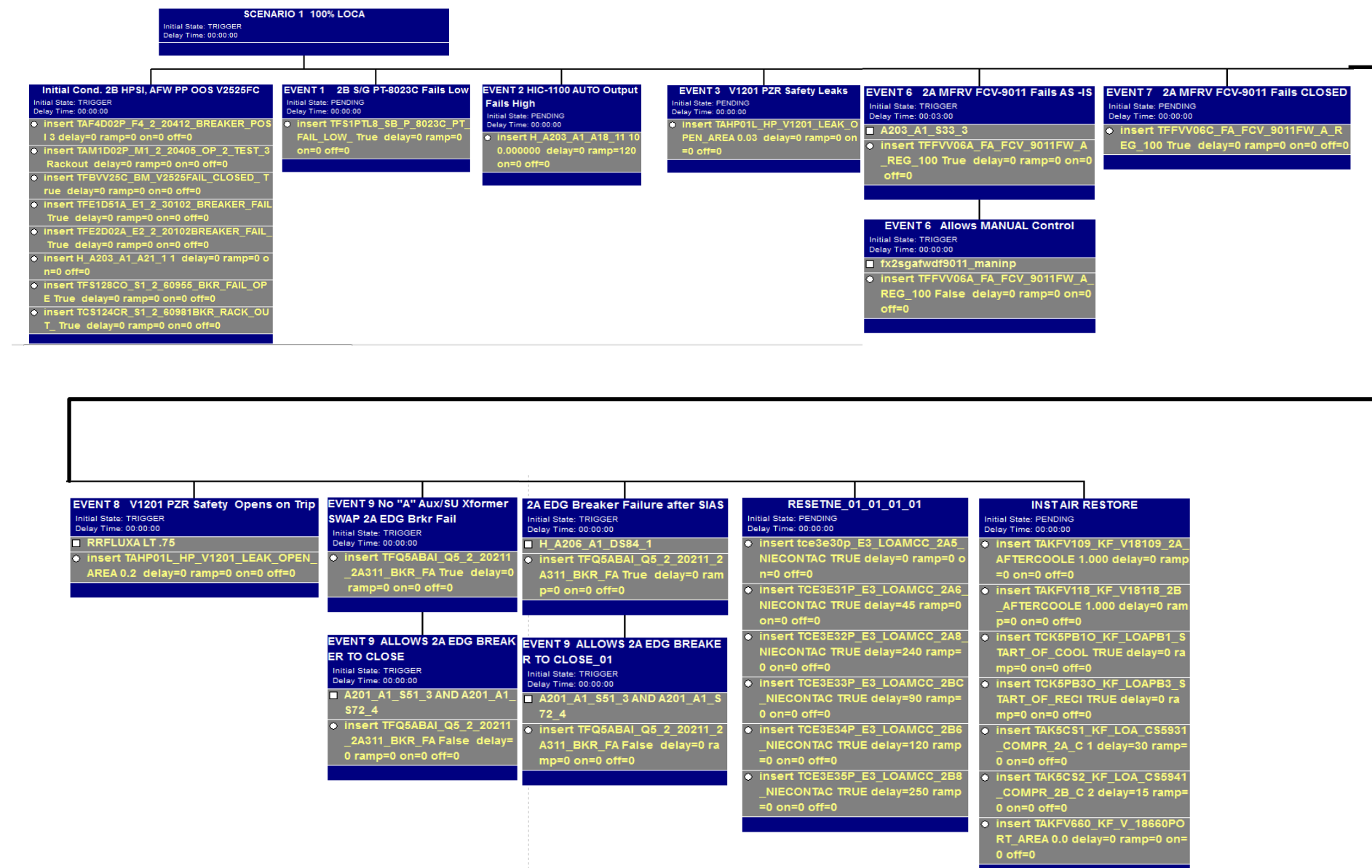
		L-17-1 NRC EXAM SCENARIO 1 REV. 0				SEG Page 51 of 55	
Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	1	Event #			
Event Description:		APPENDICES					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		

	BOP	<p>4. If a VALID 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 style="padding-left: 20px;">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 style="text-align: center;">OR</p> <p style="padding-left: 20px;">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
	BOP	<p>5. OPEN ALL of the following CCW to / from the RCP valves:</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>6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.</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.			

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Appendix D		Form ES-D-2
Op Test No.:	L-17-1	Scenario # 1 Event #
Event Description: APPENDICES		
Time	Position Competency	Procedure Step Applicant's Actions or Behavior

	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	BOP verifies valves are open
NOTE 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.	BOP verifies CCW flow to RCPs
NOTE The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.			
	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 Then 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-8023C fails low
2. HIC-1100 AUTO fails spray valves open
3. V1201, Pressurizer Code Safety, leakage develops
4. Boron load control valve V2525, failed closed
5. 2A MFRV fails to respond to the down power

After EOP Entry:

1. On the plant trip V1201 goes full open
2. 2A S/U Transformer fails to transfer, 2A EDG output breaker does not auto close

Abnormal Events:

1. 2B S/G PT-8023C fails low
2. HIC-1100 AUTO fails spray valves open
3. V1201, Pressurizer Code Safety, leakage develops
4. Boron load control valve V2525, failed closed
5. 2A MFRV fails to respond to the down power

Major Transients:

1. 2A MFRV fails closed
2. V1201 fails open resulting in LOCA

Critical Tasks:

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Maintain RCS pressure within the bounds of the RPS TM/LP (Variable) and High Pressure (2340 psia) trip set points.
2. RESTORE AC POWER: Close the 2A EDG output breaker 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 SIAS 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. 3.7.1.2.a, Restore the required AFW pumps 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.
2. 3.5.2. ACTION a.2 Restore the inoperable subsystem 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.
3. 3.3.3.5.a, Restore 2B ADV MV-08-18B to OPERABLE status within 30 days or be in HOT SHUTDOWN within the next 12 hours.

Operator Work Around:

None

Locked in Annunciators:

1. G-45 2B AFW pp
2. Q-31 2B HPSI pp
3. LA-12, LB-6 ADV MV-08-18B

Current Status:

1. The Unit is at 100% power, Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14, Response To Severe Weather completed.
2. 2A Screen wash Pump and traveling screens running.
3. 2B HPSI pump INOP for motor replacement (12 hours into 36 hour maintenance window) on Clearance.
4. 2B AFW inoperable 2 hours ago due to broken oil sight glass, on Clearance.
5. Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected.
6. 2B ADV MV-08-18B INOP on Clearance.

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.

**L-17-1 NRC EXAM SCENARIO 2 REV. 1****SEG**
Page 1 of 51**SITE:** ST. LUCIE**Revision #:** 1**LMS ID:** N/A**LMS Rev. Date:** N/A**SEG TITLE:** L-17-1 SCENARIO 2**SEG TYPE:** ☐ Training ☒ Evaluation**PROGRAM:** ☐ LOCT ☒ LOIT ☐ Other:**DURATION:** 90 minutes

Developed by: JAMES MANN 10/24/17
Instructor/Developer Date

Reviewed by: J. D. CARPENTER 11/01/17
Instructor (Instructional Review) Date

Validated by: J. D. CARPENTER 11/08/17
SME (Technical Review) Date

Approved by: BRAD HINZE 11/10/17
Training Supervision Date

Approved by: TERRY BENTON 11/08/17
Training Program Owner (Line) Date

Appendix D
Scenario Outline
Form ES-D-1

Facility: <u>St. Lucie</u>	Scenario No.: <u>2</u>	Op-Test No.: <u>L-17-1</u>	
Examiners: _____	Operators: _____	SRO: _____	
_____		ATC: _____	
_____		BOP: _____	
Initial Conditions: 45% power, MOC, no scheduled surveillances, return the unit to 100%.			
Turnover: MFW pump repair returned to service after 5-day repair window; 2B AFW inoperable 2 hours ago due to broken oil sight glass; LIC-1110X OOS, LIC-1110Y Selected; 2B ADV MV-08-18B OOS perform 2-GOP-101 and 201			
Critical Tasks:	<ol style="list-style-type: none"> 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. 'B' train HPSI header valves do not open on SIAS and must be manually opened to meet Figure 2 of 2-EOP-99 and within 15 minutes of entering 2-EOP-04 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 SIAS if after 2-EOP-04 entry ISOLATE THE AFFECTED STEAM GENERATOR - When RCS hot leg temperature is less than 510°F, isolate the 2A S/G per EOP direction. Isolation is IAW 2-EOP-99, Appendix R; this includes closure of MV-08-14 within 15 minutes of Appendix R completion to prevent unnecessary escalation of EAL to SAE (Loss of Second Fission Product Barrier) due to inaction by the operators. 		

Event No.	Malf. No.	Event Type*	Event Description
1		N/ATC/SRO	Raise Power to 100% (Make preparations for up power start 2 nd charging pump and put PZR on recirc) set up for second event
2	1	C/ATC/SRO TS/SRO	Malf: 2B charging pump fails to develop head on start Action: Start alternate charging pump TS 3.1.2.2, 3.1.2.4 and 3.5.2
3	2	C/BOP/SRO TS/SRO	Malf: HVS-4A (running) develops a sheared shaft Action: Secure HVS 4A and start HVS 4B; TS 3.7.8
4	3	C/ATC/SRO	Malf: LIC 2110 L/D flow controller fails to max flow in auto Action: Manually control letdown flow
5	4	C/ATC/SRO TS/SRO	Malf: 2A SGTL (approx. 300 gpd) Action: ATC calculates leak rate; SRO enters SGTL AOP; TS 3.4.6.2 & 3.4.5
6		R/ATC/SRO N/BOP	Commence a rapid downpower, SGTL greater than TS limits
7	5	M/ALL	Malf : A 2A SGTR occurs (approx. 300 gpm) Action: Manually trip the reactor due to not being able to maintain PZR pressure or level; A LOOP occurs 15 minutes post trip
8	6	C/BOP/SRO	Malf : 2A HPSI pump trips on SIAS, "B" train HPSI header valves do not open on SIAS Action: Manually open "B" train HPSI header valves CT-1 INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT
9	7	C/ATC/SRO	Malf: MV-08-18A fails open during RCS cooldown to <510°F T-hot Action: Manually close MV-08-14,
10		BOP/SRO	Isolate the 2A S/G IAW 2-EOP-99 App. R CT-2 ISOLATE THE AFFECTED S/G

* (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-25.02, Ventilation Systems
2. 2-AOP-08.02, Steam Generator Tube Leak
3. 2-NOP-02.02, Charging and Letdown
4. 2-AOP-02.03, Charging And Letdown
5. 2-AOP-22.01, Rapid Downpower
6. 2-EOP-01, Standard Post Trip Actions
7. 2-EOP-04, SGTR
8. 2-EOP-99, Appendices / Figures / Tables /Data Sheets
9. 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 REVIEWER	DATE DATE

SCENARIO 2 OVERVIEW/SEQUENCE OF EVENTS

L-17-1 NRC Scenario 2

The crew assumes the shift at 45% power with no scheduled surveillances. Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14, Response to Severe Weather completed.

- 2A Screen wash Pump and traveling screens running
- 2B AFW inoperable 2 hours ago due to broken oil sight glass, on Clearance
- Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected
- 2B ADV MV-08-18B INOP 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 (per RE guidance), to raise reactor power; The BOP will operate the Turbine Control System, as directed, to raise turbine load.

When Started for the up power 2B charging pump fails to develop head (discharge relief to pump suction fails open); The ATC will recognize and report condition when 2nd charging pump started; The SRO will direct starting the 2C charging pump; The ATC will start the 2C charging pump, as directed. The SRO will evaluate and enter LCO 3.1.2.2, 3.1.2.4, and 3.5.2

2HVS-4A (running) develops a sheared shaft. The BOP will address the annunciator W-16, Secure HVS-4A and start HVS-4B (per ARP guidance). The SRO will implement 2-AOP-25.02 and perform section 4.2.3, evaluate and enter LCO 3.7.8 (ADM-11.16, 4.5.9.7.A.)

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 SGTL (300 gpd) initiates, reading on SJAE will rise to approx. 5.40E-5; The ATC/BOP will recognize and report the conditions, and calculate primary to secondary leak rate; The BOP will monitor RMCS and validate leak rate calculation; The SRO will implement 2-AOP-08.02, Steam Generator Tube Leak, and The SRO will evaluate leakage using the Chemistry report and enter LCO 3.4.6.2 & 3.4.5

Commence a rapid downpower, 2-AOP-22.01, Rapid Downpower, to begin removing the unit from service; The ATC will commence boration and insert CEAs to lower reactor power, as directed; The BOP will operate the TCS to lower turbine load, as directed.

A 2A SGTR (approx. 300 gpm) occurs; The ATC will manually trip the reactor, as directed, due to not being able to maintain Pressurizer pressure or level; The ATC and BOP will perform immediate actions of 2-EOP-01, "Standard Post Trip Actions." The SRO will evaluate the post trip response to ensure systems are operating as expected and then begin formal implementation of 2-EOP-01; A LOOP will occur 15 minutes post trip; The SRO will diagnose the event and determine 2-EOP-04, "SGTR," will be implemented.

On SIAS; 2A HPSI pump starts and trips (seized shaft, unavailable for remainder of the scenario), 'B' train HPSI header valves do not open (actuation module failure) and must be manually opened (SIAS actuation switch does not work). The BOP will recognize and report the condition, recommend manual action, and manually position 'B' train HPSI header valves using their control switches; The SRO will concur with recommendation or provide direction to the BOP, if action is not taken.

CT-1 INITIATE/ACTUATE/START SAFEGUARDS

Cooldown RCS to <510°F T-hot using the ADVs; The ATC will begin the cooldown, as directed, by fully opening one ADV on each S/G; Once the cooldown has commenced, MV-08-18A fails open, this will not be recognized until 510°F is reached and the ADVs are throttled back to lower the cooldown rate, The ATC will recognize and report the condition, recommend isolating the RTGB ADV, MV-08-18A by closing MV-08-14 and transferring to the HVCB controller for the 2A ADV, MV-08-19A. The SRO will concur or direct the action, if not taken by the ATC.

The BOP will isolate the 2A S/G IAW 2-EOP-99, Appendix R, Section 1, as directed.

CT-2 ISOLATE THE AFFECTED S/G

Procedures Used

- 2-AOP-25.02, Ventilation Systems
- 2-AOP-08.02, Steam Generator Tube Leak
- 2-NOP-02.02, Charging and Letdown
- 2-AOP-02.03, Charging And Letdown
- 2-AOP-22.01, Rapid Downpower
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-04, SGTR
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets

Tech Specs Entered

- 3.1.2.2 Boration Flow Paths
- 3.1.2.4 Charging pp
- 3.5.2 ECCS Subsystems
- 3.7.8 4A RAB Supply fan
- 3.4.6.2c & 3.4.5 SGTL

Scenario Setup and Booth Operator Instructions:

- **Ensure** IC #182 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, CY17C#182.ic and CY17C#182.rlp
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, CY17C#182.ic and CY17C#182.rlp into IC Master
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, xr182.dat
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, xr182.dat into IC Data
- **Ensure** Lesson for Scenario 2 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO Isn
 - **Copy**, HLC-23 NRC SCENARIO 2.Isn
 - **Open**, Lessons folder on simulator operator station desk top
 - **Paste**, HLC-23 NRC SCENARIO 2.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#182
 - **RUN** the Simulator
 - Place the 2B AFW Pump in STOP and place a clearance tag on the pump control switch, placed a green mylar on annunciator G-45.
 - Place GUARDED EQUIPMENT Tags on AFW as outlined in Guarded Equipment procedure.
 - CLOSE MV-08-16 and place a clearance tag on MV-08-16 and MV-08-18B placed a green mylar on annunciator LA-12, LB-6
 - Place Pressurizer Level Controller selector switch to Y Channel, place caution tag on switch and place an OOS magnet under LIC-1110X 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.
 - Place RE guidance letter on US desk.
 - **FREEZE** the simulator
- **OPEN** and **EXECUTE** HLC-23 NRC SCENARIO 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** IC#182 and HLC-23 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-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-230-1007-F11, Surrogate Brief Checklist, if necessary
- Crew Shift Turnover Information: See Attached



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	1		
Event Description:		Raise Power to 100%					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

Booth Operator Instructions: NONE			
Role Play:			
<ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications:			
Annunciators:			
2-GOP-101	The following actions are taken from 2-GOP-101, Reactor Operating Guidelines During Steady State and Scheduled Load Changes		
4.1 Power Level Escalations			
	SRO	PERFORMS A Crew Brief	<i>SRO briefs the crew on the pending up power</i>
	SRO	1. MAINTAIN 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 ATC MAINTAIN T-avg at T-ref during main generator loading using Boron concentration changes per 2-NOP-02.24, Boron Concentration Control.</i>
	SRO	2. IF greater than or equal to 50% power OR 30% power during shape annealing factor test, THEN RAISE power as follows: A. USE boration or dilution per 2-NOP-02.24, Boron Concentration Control for all planned reactivity additions.	<i>SRO EVALUATES step and determines it to be N/A until greater than 50% power</i>
NOTE to EVALUATOR: EVENT 2 will present itself in the next step.			
	SRO	3. IF available, THEN ENSURE two Charging Pumps are operating per 2-NOP-02.02, Charging and Letdown.	<i>SRO DIRECTS the ATC to Start the 2B Charging pump per 2-NOP-02.02, Charging and Letdown</i>
	SRO	4. PLACE the Pressurizer on recirculation per Attachment 1, Pressurizer Recirculation Guidelines.	<i>SRO DIRECTS the ATC to PLACE the Pressurizer on recirculation per Attachment 1, Pressurizer Recirculation Guidelines</i>
	SRO	5. CONTINUE to load Main Generator per 2-GOP-201, Reactor Plant Startup - MODE 2 to MODE 1.	<i>SRO DIRECTS up power per 2-GOP -201, Reactor Plant Startup - MODE 2 to MODE 1</i>



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	1		
Event Description:		Raise Power to 100%					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

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	<i>SRO briefs the crew on the pending up power</i>
	SRO	STEP 4.8.13 PLACE 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	<i>SRO will direct the BOP to the PSS in service</i>
	SRO	SRO refers to the Reactor Engineering power change guidance for the up power	<i>SRO EVALUATES RE guidance and directs reactivity changes as directed in the letter</i>
	SRO	SRO directs the ATC to setup a dilution per RE guidance and IAW 2-NOP-02.24	<i>The ATC begins a dilution IAW 2-NOP-02.24</i>
	SRO	SRO directs BOP to setup the turbine for a up power at a rate as described in the RE guidance letter	<i>The BOP sets the Turbine up for an up power at the directed target and rate using the Hard Card</i>
	SRO	SRO directs ATC to maintain ASI per prescribe guidance	<i>The ATC maintain ASI per prescribe guidance</i>
Event 2 driven by procedure			



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	2	
Event Description:		2B charging pump fails to develop head on start				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

T.S. 3.1.2.2	AT LEAST TWO OF THE FOLLOWING THREE BORON INJECTION FLOW PATHS SHALL BE OPERABLE: ACTION: 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 <input type="checkbox"/> WITHIN THE NEXT 6 HOURS
T.S. 3.1.2.4	AT LEAST TWO CHARGING PUMPS SHALL BE OPERABLE. ACTION: 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 <input type="checkbox"/> WITHIN THE NEXT 6 HOURS
T.S. 3.5.2	TWO INDEPENDENT EMERGENCY CORE COOLING SYSTEM (ECCS) SUBSYSTEMS SHALL BE OPERABLE WITH EACH SUBSYSTEM COMPRISED OF: D. ONE OPERABLE CHARGING PUMP*. ACTION: 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

Booth Operator Instructions:

- None: 2B charging pump fails to develop pressure, is an auto trigger on pump start

Role Play:

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.
- When the SNPO is called to check charging pump ready for start (B or C), report initial watch standing rounds indicated that it is ready to start.
- When the SNPO is dispatched to the 2B Charging pump report back in 10 minutes that the pump recirculation valve is hot to the touch and, if the pump is still running, report there is a lot of noise coming from the valve.

Indications: Lower than expected flow from 2B Charging pump

Annunciators: NONE

	ATC		IDENTIFIES lower than expected flow from the 2B Charging pump and reports the anomaly to the SRO
	SRO		DIRECTS the ATC to dispatch a SNPO to the 2B Charging pump and DIRECTS the Starting of the 2C Charging pump
	BOP		Acknowledges annunciators and communicates status IAW plant policies



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	2		
Event Description:		2B charging pump fails to develop head on start					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	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
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: NONE APPLICABLE			
	SRO	Dispatch SNPO to evaluate the 2B Charging pump	DIRECTS the ATC to dispatch a SNPO to the 2B Charging pump
	SRO	DIRECT the START of the 2C Charging pump	DIRECTS the ATC to Start the 2C Charging pump and place the 2B Charging pump to stop
	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"> 3.1.2.2 Boration Flow Paths 3.1.2.4 Charging pp 3.5.2 ECCS Subsystems
	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 3.			

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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	3	
Event Description:		HVS-4A (running) develops a sheared shaft				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

T.S.
3.7.8

TWO INDEPENDENT ECCS AREA VENTILATION SYSTEMS SHALL BE OPERABLE.
ACTION: WITH ONE ECCS AREA VENTILATION SYSTEM INOPERABLE, RESTORE THE INOPERABLE SYSTEM TO OPERABLE STATUS WITHIN 7 DAYS OR BE IN AT LEAST HOT STANDBY WITHIN THE NEXT 6 HOURS

Booth Operator Instructions:

- After up power has begun or Upon cue from Lead Examiner, trigger Event 3: HVS-4A Shaft Shears

Role Play:

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.
- When the SNPO is called to investigate HVS-4A, if it has not been secured, report that the motor is running but the fan is not.

Indications: HVS-4A indicating lights are on**Annunciators: W-16**

	BOP		Acknowledge annunciators and communicates status IAW plant policies
	ATC		Evaluates plant for being stable
	BOP		Pulls ARPs and communicates/takes action as directed 1. CHECK HVS-4A, RAB Main Supply Fan, Indicating Lights IF HVS-4A, Main Supply Fan, Is ON, THEN PERFORM The Following: A. STOP HVS-4A, Main Supply Fan B. START HVS-4B, RAB Main Supply Fan
	SRO		Announces and enters 2-AOP-25.02, Ventilation Systems
	SRO		Directs actions of 2-AOP-25.02, Ventilation Systems

2-AOP-25.02**The following actions are taken from 2-AOP-25.02, Ventilation Systems****4.1 Immediate Operator Actions: NONE****4.2 Subsequent Operator Actions****4.2.1 General Actions:**



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	3	
Event Description:		HVS-4A (running) develops a sheared shaft				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	Makes Notifications	SRO NOTIFIES the Shift Manager and requests EM&MM support
	SRO	1. GO TO applicable section for affected ventilation system: Section 4.2.3, RAB Ventilation	SRO EVALUATES the indications and proceeds to section 4.2.3 RAB Ventilation
4.2.3 General Actions: RAB Ventilation			
	SRO	1. VERIFY either RAB Main Exhaust Fan running: <input type="checkbox"/> HVE-10A, RAB MAIN EXHAUST FAN <input type="checkbox"/> HVE-10B, RAB MAIN EXHAUST FAN	SRO DIRECTS the BOP to VERIFY a RAB Main Exhaust Fan running
	SRO	2. VERIFY either RAB Main supply Fan running: <input type="checkbox"/> HVE-4A, RAB MAIN SUPPLY FAN <input type="checkbox"/> HVE-4B, RAB MAIN SUPPLY FAN	SRO DIRECTS the BOP to VERIFIES a RAB Main Supply Fan running
	SRO	3. VERIFY either RAB Main supply Fan OPERABLE: <input type="checkbox"/> HVE-4A, RAB MAIN SUPPLY FAN <input type="checkbox"/> HVE-4B, RAB MAIN SUPPLY FAN	SRO REFERS TO Tech Spec 3.7.8, ECCS Area Ventilation System and is declares RAB Main Supply Fan 4A the associated ECCS Train Ventilation INOPERABLE, per ADM-11.16 Transient Procedure Use And Adherence
At the Lead Evaluator's direction, PROCEED to Event 4.			



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	4		
Event Description:		LIC 2110 L/D flow controller fails to max flow in auto					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 4: LIC 2110 Letdown flow control Auto output fails Hi 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: Letdown flow goes high and Pressurizer Level slowly lowers			
Annunciators:			
	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
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, PERFORM the following:	<i>Step is not applicable</i>
	SRO	2. VERIFY 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>

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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	4	
Event Description:		LIC 2110 L/D flow controller fails to max flow in auto				
Time	Position Competency	Procedure Step		Applicant's Actions or Behavior		

	SRO	3 . IF charging and letdown flow has been lost, THEN DETERMINE the cause	<i>Step is not applicable</i>
	SRO	4. IF a charging system leak has occurred, THEN ISOLATE the leak and refer to applicable Technical Specifications for guidance	<i>Step is not applicable</i>
	SRO	5. PERFORM applicable section per Table	SRO EVALUATES 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 PERFORM the following: VERIFY the output of LIC-2110, LETDOWN LEVEL, is responding as expected to current plant conditions	SRO VERIFIES that the ATC has PLACED LIC-2110 in manual and is controlling Pressurizer Level SRO DIRECTS system walk downs observing for leaks or lifting relief valves
	SRO	SRO VERIFIES Normal Charging and Letdown parameters are established with pressurizer level stable	SRO Exits this procedure
	SRO	PERFORMS CREW BRIEF	
At the Lead Evaluator's direction, PROCEED to Event 5.			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	5	
Event Description:		2A SGTL (approx. 300 gpd)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

<p>T.S. 3.4.5</p>	<p>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.</p> <p>ACTION:</p> <p>A. WITH ONE OR MORE SG TUBES SATISFYING THE TUBE REPAIR CRITERIA AND NOT PLUGGED (OR REPAIRED IF ORIGINAL SGs) IN ACCORDANCE WITH THE STEAM GENERATOR PROGRAM;</p> <p>1. WITHIN 7 DAYS VERIFY TUBE INTEGRITY OF THE AFFECTED TUBE(S) IS MAINTAINED UNTIL THE NEXT REFUELING OUTAGE OR SG TUBE INSPECTION, AND</p> <p>2. PLUG OR REPAIR THE AFFECTED TUBE(S) IN ACCORDANCE WITH THE STEAM GENERATOR PROGRAM PRIOR TO ENTERING HOT SHUTDOWN FOLLOWING THE NEXT REFUELING OUTAGE OR SG TUBE INSPECTION. REPAIR APPLIES ONLY TO THE ORIGINAL SGs.</p>
<p>T.S. 3.4.6.2</p>	<p>REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE SHALL BE LIMITED TO:</p> <p>C. 150 GALLONS PER DAY PRIMARY-TO-SECONDARY LEAKAGE THROUGH ANY ONE STEAM GENERATOR (SG),</p> <p>ACTON: 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</p>

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 5: 2A SGTL 300 gpd

Role Play:

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.
- When called for Chemistry samples and Radiation surveys report back in 10 minutes that activity is present on/in the 2A S/G

Indications: Main steam line radiations levels rising and SJAE radiation levels rising

Annunciators: RMCS

	BOP		Acknowledge annunciators and communicates status IAW plant policies.
	BOP		Pulls ARPs and communicates/takes action as directed
	SRO		Directs 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



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	5	
Event Description:		2A SGTL (approx. 300 gpd)				
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. VERIFY pressurizer level stable or rising and pressure normal	SRO DIRECTS ATC to <i>VERIFY</i> pressurizer level stable or rising and pressure normal. Operate heaters as necessary to stabilize pressurizer level and pressure
	SRO	Makes Notifications	SRO NOTIFIES the Shift Manager
	SRO	2. NOTIFY Chemistry of probable S/G tube leakage and to begin sampling for activity	SRO DIRECTS Chemistry to sample S/Gs for activity
	SRO	3. REQUEST Radiation Protection conduct secondary area radiation surveys	SRO DIRECTS Radiation Protection conduct secondary area radiation surveys
	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	SRO DIRECTS BOP to collect reading from the SJAE rad monitor, the SRO evaluates the data to determine the leak rate SRO DETERMINES the leak rate to be greater than >150gpd and evaluates T.S. 3.4.6.2 & 3.4.5
	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	SRO DETERMINES the leak rate to be greater than >150gpd on previous step
	SRO	6. DETERMINE primary to secondary leak rate by one of the following methods: <input type="checkbox"/> Charging / letdown mismatch	SRO DIRECTS ATC to report leak rate calculation results. ATC reports leak rate is minor



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	5	
Event Description:		2A SGTL (approx. 300 gpd)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	<p>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</p>	<p>SRO DIRECTS BOP to begin Logging Air Ejector monitor or Steam Generator Blowdown Radiation Monitor readings every 15 minutes on Attachment 6</p>
	SRO	<p>8. CONFIRM S/G tube leakage using any of the following:</p> <p><input type="checkbox"/> Plant response</p> <p><input type="checkbox"/> Secondary radiation monitors rising</p> <p><input type="checkbox"/> High activity or rising trends on any of the following radiation monitors:</p> <ul style="list-style-type: none"> • S/G liquid sample • Main steam line • S/G blowdown • Chemistry analysis • Rising S/G water level 	<p>SRO EVALUATES data and determines the 2A S/G has the tube leak at a rate of >150 gpd</p>
	SRO	<p>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:</p> <p><input type="checkbox"/> PLACE FCV-23-7, 9, SAMPLE, in CLOSE/OVRD</p> <p><input type="checkbox"/> OPEN FCV-23-7, 9, SAMPLE</p>	<p>SRO DIRECTS step as necessary</p>
	SRO	<p>10. DISPATCH a field operator to the SGBTF to perform the following:</p> <p>A. VERIFY SGBTF Truck Bay door is CLOSED.</p> <p>B. VERIFY the following SGBTF ventilation systems are in operation:</p> <p><input type="checkbox"/> Supply Fans HVS 10A or HVS-10B</p> <p><input type="checkbox"/> Exhaust Fans HVE 41A or HVE-41B</p> <p><input type="checkbox"/> SGBTF Ventilation Process Monitor</p>	<p>SRO DIRECTS BOP to perform this step</p>



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	5	
Event Description:		2A SGTL (approx. 300 gpd)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	11. EVALUATE isolating blowdown and vacuum drag on Unit 1	SRO Contacts Unit-1 and advises
	SRO	12. VERIFY steam generator blowdown aligned to Monitor Storage Tanks	SRO VERIFIES steam generator blowdown aligned to Monitor Storage Tanks
	SRO	13. IF in MODE 1 through 3 and SIAS is NOT blocked, THEN GO TO Section 4.2.2	SRO PROCEEDS to section 4.2.2
4.2.2 Mode 1 through 3 - SIAS Not Blocked			
	SRO	1. VERIFY leak rate is LESS THAN 100 gpd	SRO DETERMINES the leak rate exceeds 100gpd and IMPLEMENTS 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 hourWhile continuing to step 4.2.4.7
	SRO	STEP 4.2.2.7 A. IF plant conditions require, THEN INITIATE the Emergency Plan. B. ENSURE Chemistry is implementing the Contaminated Water Plan per CY-SL-108-0002, High Activity In A Steam Generator. C. IF radiation monitors indicate conditions are changing, THEN EVALUATE stabilizing the plant to facilitate leak rate determination	SRO briefs the crew on the down power and clarifies parameters



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Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-17-1	Scenario #	2	Event #	6				
Event Description:		Commence a rapid downpower							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

Booth Operator Instructions:			
<ul style="list-style-type: none"> NONE 			
Role Play:			
<ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications:			
Annunciators:			
	SRO		ANNOUNCES and enters 2-AOP-22.01, Rapid Downpower as directed
	SRO		DIRECTS 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:			
	SRO		DIRECTS Immediate Operator Actions for 2-AOP-22.01, RAPID DOWNPOWER
	SRO	1. BEGIN boration per operator aid OR Attachment 1, RCS Boration Guidance	SRO DIRECTS ATC to make boration 15 gallons per minute from the 2A Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance
ATTACHMENT 1 RCS Boration Guidance NOTE			
<ul style="list-style-type: none"> 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	1. BORATE the RCS by the following: A. START either Boric Acid Pump 2A or 2B.	ATC STARTS Boric Acid Pump ATC VERIFIES Boric Acid Pump STARTS
	ATC	1. BORATE the RCS by the following: B. PLACE FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO.	ATC PLACES FCV-2210Y, BORIC ACID control switch in AUTO



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Appendix D			Operator Action			Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	ATC	1. BORATE the RCS by the following: C. IF borating to the Charging Pump suction, THEN OPEN V2525, BORON LOAD CONTROL VALVE	ATC PLACES V2525, BORON LOAD control switch in OPEN ATC VERIFIES V2525, BORON LOAD control valve is open
	ATC	1. BORATE the RCS by the following: E. ADJUST FIC-2210Y, BORIC ACID, to the desired flowrate.	ATC ADJUSTS FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm
	ATC	1. BORATE the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN CLOSE the running BAM pump recirc valve. <ul style="list-style-type: none"> V2650, TANK 2A RECIRC VALVE V2651, TANK 2B RECIRC VALVE 	ATC DETERMINES not required
	ATC	1. BORATE the RCS by the following: G. CYCLE V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	ATC CYCLES V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig
	ATC	1. BORATE the RCS by the following: H. CYCLE V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	ATC CYCLES V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level
	ATC		ATC Updates crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	2. PREPARE turbine for load reduction per operations hard cards	SRO DIRECTS BOP to set up the turbine for a target of 100 MW and load rate at 10 megawatts per minute per operations hard cards
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-NOP-99.07 OPERATIONS HARD CARDS

ATTACHMENT 3 TURBINE ADJUSTMENTS TO MAINTAIN POWER 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	TURBINE ADJUSTMENTS TO MAINTAIN POWER	BOP ENSURES Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER TOUCH MODIFY from RAMP INTERFACE group	BOP TOUCHES MODIFY from RAMP INTERFACE group
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER ADJUST values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> TARGET SELECT RATE SELECT 	BOP ADJUSTS values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> TARGET SELECT set at 100MW RATE SELECT set at 10MW/min
	BOP		BOP NOTIFIES SRO that the Turbine is set up with a Target of 100 MW at a rate of 10 MW/min
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	3. INSERT the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards	SRO DIRECTS ATC to insert lead group CEAs 6 inches in Manual Sequential crew only insert CEAs about 3 "
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-NOP-99.07 OPERATIONS HARD CARDS

ATTACHMENT 1 CEDMCS OPERATIONS NOTE

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 placecard.

	ATC	Moving CEAs in group On CEDMCS Control Panel Group Select Switch, SELECT target group	ATC SELECTS Target Group 5
<p style="text-align: center;">CAUTION</p> <p style="text-align: center;">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.</p>			
	ATC	Moving CEAs in group On CEDMCS Control Panel Mode Select Switch, SELECT mode of movement: MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS)	ATC SELECTS MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel
	ATC	Moving CEAs in group IF CEA Motion Inhibit is present, THEN PERFORM the following: PRESS and HOLD CMI BYPASS pushbutton. PRESS and RELEASE BYPASS ENABLE pushbutton	STEP will be N/A NO CEA Motion Inhibit is present
	ATC	Moving CEAs in group POSITION group as desired using INSERT/WITHDRAW Manual Control lever	ATC POSITIONS group as directed to 3" inserted from previous position using INSERT/WITHDRAW Manual Control lever



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	ATC	Moving CEAs in group IF CMI BYPASS pushbutton is being held, THEN RELEASE CMI BYPASS pushbutton	STEP will be N/A NO CEA Motion Inhibit is present
	ATC	Moving CEAs in group OBSERVE RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment	ATC OBSERVES RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position
	ATC	Moving CEAs in group On CEDMCS Control Panel, SELECT OFF on Mode Select Switch when the desired height is reached	ATC SELECTS OFF on Mode Select Switch when the desired height is reached
	ATC	Moving CEAs in group ENSURE RSPT and Pulse Counter indications match	ATC ENSURES RSPT and Pulse Counter indications match
	ATC		ATC Updates crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
4.2 Subsequent Operator Actions			
	SRO	1. WHEN Tav _g begins to lower and is less than T _{ref} , THEN TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)	DIRECTS ATC to monitor Tav _g and to notify him when it is lowering and less than T _{ref}
	ATC		ATC NOTIFIES the SRO that Tav _g is lowering and less than T _{ref}
	SRO		DIRECTS BOP to TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	6		
Event Description:		Commence a rapid downpower					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		

	BOP		<p>BOP to TOUCHES GO on the RAMP INTERFACE group to begin turbine load reduction per operations hard cards as follows:</p> <p>5. TOUCH GO from RAMP INTERFACE group. (display 5551)</p> <p>6. MONITOR turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551)</p> <p>BOP Updates crew on load reduction initiation</p>
	SRO	<p>2. NOTIFY plant personnel using Gai-tronics and boost function as follows:</p> <p>"Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____."</p>	<p>DIRECTS BOP to NOTIFY plant personnel using Gai-tronics and boost function as follows:</p> <p>"Attention all personnel, Unit 2 has commenced a Rapid Downpower due to STEAM GENERATOR TUBE LEAK"</p>
	BOP		<p>NOTIFIES plant personnel using Gai-tronics and boost function as follows:</p> <p>"Attention all personnel, Unit 2 has commenced a Rapid Downpower due to STEAM GENERATOR TUBE LEAK"</p>
	SRO	<p>3. NOTIFY System of the rapid downpower load reduction</p>	<p>DIRECTS BOP to NOTIFY System of the rapid downpower</p>
	BOP		<p>NOTIFIES System of the rapid downpower, via dedicated RED phone</p>
<p>NOTE</p> <p>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.</p>			
	SRO	<p>4. PERFORM a Crew update to include the following:</p> <ul style="list-style-type: none"> Expected final power level Initial boration rate Initial load rate Expected amount of boric acid addition Expected amount of CEA motion using pre-planned downpower profiles in the Plant Physics Curve Book 	<p>SRO UPDATES crew with the following information:</p> <ul style="list-style-type: none"> Expected final power level Offline Initial boration rate 15 GPM Initial load rate of 10 MW/MIN Expected amount of boric acid addition Per preplanned power guidance Expected amount of CEA motion Per preplanned power guidance

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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	5. PLACE Pressurizer on recirculation per operations hard cards	<i>DIRECTS BOP to Place the Pressurizer on Recirculation per operations Hard Card, may have already been performed per 2-GOP-101</i>
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 4 PRESSURIZER HEATER OPERATIONS 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.			
1.1 Placing the Pressurizer on Recirculation			
<div style="border: 1px solid black; padding: 10px;"><p style="text-align: center;"><u>NOTE</u></p><ul style="list-style-type: none">• The purpose of placing the Pressurizer on recirculation is to keep the Pressurizer and RCS boron concentration within 25 ppm when changing RCS boron concentration.• From measured data, the estimated time in minutes to correct a greater than or equal to 25 ppm boron mismatch by operating 6 Backup Bank heaters may be determined as follows: Time (in minutes) to correct mismatch = [(Pzr ppm - RCS ppm) – 25 ppm] x 3• This section is performed on RTGB-203</div>			
	BOP	Placing the Pressurizer on Recirculation PLACE all available Backup Bank heater control switches to ON	<i>BOP PLACES all available Backup Bank heater control switches to ON</i>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	Placing the Pressurizer on Recirculation IF maintaining normal operating pressure is desired, THEN slowly REDUCE the AUTO setpoint on the SELECTED Pressurizer Pressure Control Channel: <ul style="list-style-type: none">o PIC-1100X Pressurizer Pressureo PIC-1100Y Pressurizer Pressure	BOP REDUCES the AUTO setpoint on the SELECTED Pressurizer Pressure Control Channel to attain flow through the pressurizer sprays
	BOP	Placing the Pressurizer on Recirculation VERIFY Main Spray flow by observing the following: OBSERVE the output on HIC-1100, PZR Pressure spray CNTL VLV. OBSERVE the valve position on the following Pressurizer Spray Valves: <input type="checkbox"/> PCV- 1100E, Spray Valve 2B2 <input type="checkbox"/> PCV- 1100F, Spray Valve 2B1	BOP VERIFIES Main Spray flow
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	6. START additional charging pump as required per operations hard cards	SRO RECOGNIZES that all available charging pumps are running
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
<div>NOTE</div> <ul style="list-style-type: none">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 ESIUS may direct temporary operation outside of ASI limit.			
	SRO	7. MAINTAIN Axial Shape Index ±0.5 of ESI using CEAs	DIRECTS ATC 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

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	ATC		POSITIONS 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 align="center">NOTE</p> <p align="center">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	8. MAINTAIN Tref and Tavg within 6.6 °F	DIRECTS ATC to maintain Tave-Tref mismatch within +/- 2 degrees °F
	SRO	9. IF reducing power by more than 20%, THEN NOTIFY SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition	DIRECTS BOP to dispatch a SNPO to secure Zinc injection
<p align="center">NOTE</p> <p align="center">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	10. VERIFY Condenser Back Pressure less than 8.859 inHgA.	DIRECTS BOP to report Condenser Backpressure
<p align="center">NOTE</p> <p align="center">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	11. VERIFY Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations OR OVATION display 5605, CONDENSER VACUUM MONITORING.	DIRECTS BOP to monitor Condenser Backpressure
	SRO	12. VERIFY CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)	DIRECTS BOP to monitor Condenser differential pressure
	SRO	13. VERIFY parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits	DIRECTS BOP to monitor parameters listed on Attachment 3

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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	6	
Event Description:		Commence a rapid downpower				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

NOTE

Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.

SRO

14. MAINTAIN PZR pressure between 2225 and 2275 psia***DIRECTS ATC to MAINTAIN PZR pressure between 2225 and 2275 psia*****NOTE**

A large rate of change in Tavg may cause transient level variance.

SRO

15. MAINTAIN PZR level between 27% and 68%***DIRECTS ATC to MAINTAIN PZR level between 27% and 68%***

SRO

16. WHEN Final power level is achieved, THEN
GO TO Section 4.2, Step 35 to STABILIZE the unit***SRO DETERMINES the unit will be taken offline*****After the appropriate power level change has been observed or at the lead evaluator direction Proceed to Event 7.**



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 7: 2A SGTR ramped to 300 gpm

Role Play:

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

Indications:

Pressurizer pressure and level lowering, Radiation Monitor levels rising

Annunciators:

	ATC		RECOGNIZES Pressurizer pressure and level lowering recommends isolating letdown
	SRO		DIRECTS isolating letdown
	BOP		RECOGNIZES Pressurizer pressure and level still lowering recommends RX trip
	SRO		DIRECTS RX trip
	ATC		CONFIRMS reactor power is lowering and startup rate is negative. REPORTS "REACTOR TRIPPED" States evaluating CEAs or that all CEAs are inserted
	BOP		VERIFIES all governor and throttle valves closed REPORTS "Turbine Tripped"
	BOP		ANNOUNCE on the Gaitronics: Unit 2 Reactor has tripped NOTIFY the NPO to perform Appendix X, Section 1 of EOP-99 CONTACT 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		REPORTS "All CEAs INSERTED" if not reported previously



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	7		
Event Description:		2A SGTR occurs (approx. 300 gpm)					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO		DIRECTS IMPLEMENTATION OF EOP-01 STANDARD POST TRIP ACTIONS
	ATC		RECOGNIZES lowering pressures and recommends unit trip
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
4.1 Immediate Operator Actions: <ul style="list-style-type: none"> 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:			
	SRO	Step 1 VERIFY reactor trip:	SRO DIRECTS VERIFY 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	Step 2 VERIFY turbine trip:	SRO DIRECTS VERIFY 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
	SRO	Step 3 VERIFY Maintenance of Vital Auxiliaries:	SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies: <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:



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	Step 4 VERIFY RCS Inventory Control:	SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies: <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35% Pressurizer level will be abnormally low due to the Steam Generator Tube Rupture. This parameter will drive the crew to enter 2-EOP-04
	SRO	Step 5 VERIFY RCS Pressure Control:	SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies: <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia RCS Pressure will be abnormally low due to the Steam Generator Tube Rupture. This parameter will drive the crew to enter 2-EOP-04
	SRO	Step 6 VERIFY Core Heat Removal:	SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies: <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW. ALL RCPs will be running at this point <input type="checkbox"/> Loop ΔT 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	Step 7 VERIFY RCS Heat Removal:	SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies: <input type="checkbox"/> VERIFY the following conditions exist on at least one S/G: <ul style="list-style-type: none"> S/G NR level is between 20 and 81% Feedwater is being supplied <input type="checkbox"/> IF 2A or 2BAFW 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"> Main or Auxiliary Feedwater <input type="checkbox"/> VERIFY RCS TAVG is between 525 and 535°F. <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-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	Step 8 VERIFY containment conditions:	SRO DIRECTS VERIFY containment conditions, BOP Verifies: <input type="checkbox"/> Containment pressure is less than 2 psig. <input type="checkbox"/> Containment temperature is less than 120°F <input type="checkbox"/> Containment radiation level less than alarm values AND stable or lowering: <ul style="list-style-type: none"> CIS Radiation Monitors Containment Atmospheric Monitors <input type="checkbox"/> Secondary plant radiation levels less than alarm values AND stable or lowering <ul style="list-style-type: none"> Condenser Air Ejector Monitor S/G Blowdown Monitors Main Steamline Monitors 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
	SRO	Step 9 DIRECT a field operator to perform the following:	SRO DIRECTS BOP to perform step 9, BOP performs step 9: <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	Step 10 DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.	SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an SGTR is in progress
	SRO	Step 11 GO TO the appropriate Emergency Operating Procedure.	SRO PERFORMS a crew brief and transitions to 2-EOP-04

NOTE to EVALUATOR: A LOOP will occur 15 minutes post Trip, approximately at this point

Indications: 2A Steam Generator level rising and radiation levels elevated
Annunciators: Multiple



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	ALL	WHEN the LOOP occurs	VERIFY EDGs start and loads sequence on the bus SRO DIRECTS 1 ADV be placed in service AUTO/AUTO set at 900 psig SRO DIRECTS RESTORE S/G levels using AFW feeding 2A S/G with the 2A AFW pump and the 2B S/G with the 2C AFW pump with the steam supply from the 2B S/G only IAW the hard card
	ALL		RECOGNIZE 2A 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">NONE			
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"/> STA or 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
NOTE to EVALUATOR: EVENT 8 will present itself When SIAS is actuated or at the next step, however may not occur until the cooldown is initiated			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	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
	SRO	Step 6 OPTIMIZE SI as follows:	SRO VERIFIES: <input type="checkbox"/> SIAS is ACTUATED <input type="checkbox"/> SI pumps are OPERATING <input type="checkbox"/> SI flow within Figure 2, Safety Injection Flow vs. RCS Pressure <input type="checkbox"/> All available charging pumps are RUNNING <input type="checkbox"/> Charging header is available
	SRO	Step 7 IMPLEMENT RCP Trip Strategy as follows: <ul style="list-style-type: none"> VERIFY pressurizer pressure is less than 1736 psia. VERIFY SIAS is ACTUATED. ENSURE one RCP in each loop is STOPPED. VERIFY RCS subcooling greater than minimum subcooling. 	SRO IMPLEMENTS RCP Trip Strategy IF prior to LOOP trip 2 leave 2 running IF post LOOP then N/A
	SRO	Step 8 VERIFY RCP Seal Cooling as follows: <ul style="list-style-type: none"> VERIFY CCW to the RCPs. 	WHEN SIAS occurs SRO DIRECTS the BOP to Restore CCW to the RCPs per Appendix J of 2-EOP-99: The BOP restores CCW to the RCPs with Appendix J of 2-EOP-99
	SRO	Step 9 CHECK if RCPs are operating within limits: <ul style="list-style-type: none"> VERIFY at least one RCP OPERATING. For all operating RCPs, VERIFY operating limits are MET per Table 13, RCP Operating Limits. 	SRO DIRECTS ATC to VERIFY operating limits are MET per Table 13, RCP Operating Limits for any running RCPs The ATC to VERIFIES 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-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	Step 10 INITIATE lowering RCS Thot to less than 510°F using SBCS.	SRO DIRECTS ATC to INITIATE lowering RCS Thot to less than 510°F using ADVS from both S/Gs (Due to LOOP).
	SRO	Step 11 DEPRESSURIZE the RCS in preparation for isolating the affected S/G: ESTABLISH and MAINTAIN pressurizer pressure to meet all of the following criteria: <input type="checkbox"/> Within limits of Figure 1A, RCS Pressure Temp <input type="checkbox"/> Less than 930 psia <input type="checkbox"/> Greater than minimum RCP NPSH Requirement per Figure 1A, RCS Pressure Temperature <input type="checkbox"/> Within 50 psia of the most affected S/G pressure	SRO DIRECTS ATC to DEPRESSURIZE the RCS using Aux Spray in preparation for isolating the affected S/G and ESTABLISH and MAINTAIN pressurizer pressure to meet all of the following criteria: <ul style="list-style-type: none"> • Within limits of Figure 1A, RCS Pressure Temp • Less than 930 psia • Greater than minimum RCP NPSH Requirement per Figure 1A, RCS Pressure Temperature • Within 50 psia of the most affected S/G pressure
	SRO	Step 12 WHEN permissive conditions are MET during a controlled cooldown, THEN BLOCK automatic MSIS and SIAS actuation signals as follows: A. IF MSIS is ABSENT, THEN BLOCK automatic initiation of MSIS. B. IF SIAS is ABSENT, THEN BLOCK automatic initiation of SIAS.	SRO IMPLEMENTS step as necessary
	SRO	Step 13 VERIFY circulating water flow to the main condenser.	SRO VERIFIES circulating water flow to the main condenser is unavailable due to LOOP
	SRO	Step 14 STABILIZE the Secondary Plant per Appendix X, Secondary Plant Post Trip Actions, Section 2.	SRO DIRECTS the BOP to Perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits The BOP Performs Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	Step 15 IF a LOOP has occurred, THEN PERFORM the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air per Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	<i>SRO DIRECTS the BOP to Perform Appendix H</i>
	SRO	Step 16 DETERMINE the MOST affected S/G by evaluating the following indications: <input type="checkbox"/> S/G radioactivity levels <input type="checkbox"/> Main steam line radiation monitoring trending prior to the trip <input type="checkbox"/> S/G level rise when NOT feeding <input type="checkbox"/> SGBD radioactivity levels <input type="checkbox"/> One S/G level rising faster than the other with approximately equal feeding and steaming rates <input type="checkbox"/> Feed flow mismatch between S/Gs <input type="checkbox"/> Steam flow-feed flow mismatch in either S/G prior to the reactor trip	<i>SRO DETERMINES that the 2A S/G is the most affected</i>
NOTE to EVALUATOR: EVENT 9 MV-08-18A fails open, will present itself When the ATC slows the cooldown after <510°F is reached			
	SRO	Step 17 WHEN RCS That is less than 510°F, THEN ISOLATE the MOST affected S/G per Appendix R, Steam Generator Isolation	<i>SRO DIRECTS the BOP to Perform Appendix R, Steam Generator Isolation for the 2A S/G</i> <i>THE BOP Performs Appendix R, Steam Generator Isolation for the 2A S/G</i> See EVENT 10



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	7	
Event Description:		2A SGTR occurs (approx. 300 gpm)				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	Step 18 MAINTAIN the affected S/G pressure less than 930 psia (915 psig) utilizing one of the following: <ul style="list-style-type: none">• IF condenser vacuum exists, THEN associated MSIV Bypass valve in manual control• Associated ADV in manual control• Associated ADV in local control	SRO DIRECTS the ATC to MAINTAIN the affected S/G pressure less than 930 psia (915 psig)
	SRO	Step 19 VERIFY the most affected S/G is isolated by evaluating the following: <ul style="list-style-type: none"><input type="checkbox"/> S/G radioactivity levels<input type="checkbox"/> Steam plant radiation levels<input type="checkbox"/> SGBD radioactivity levels<input type="checkbox"/> S/G levels	SRO EVALUATES plant parameters and determines that the 2A S/G is the most affected S/G
The Scenario can be terminated once the 2A S/G is isolated by the control room steps or at the lead evaluator's discretion.			

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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	8	
Event Description:		2A HPSI pump trips on SIAS, "B" train HPSI header valves do not open on SIAS				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

CT-1	INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY				
Booth Operator Instructions: <ul style="list-style-type: none">None: "B" HPSI VALVES DO NOT OPEN, is an auto trigger Role Play: <ul style="list-style-type: none">If calls are made for information delivery or support, then verbal repeat back of information is the only required action.					
Indications: Post SIAS 2A HPSI pump Amps will be pegged high for approximately 5 seconds and then the pump will trip. 2B HPSI Header injection valves will all be closed. Annunciators: Multiple					
	ATC/BOP		During SIAS Actuation verification Identifies the failure of the 2A HPSI pump and the failure of the 2B HPSI header valves and takes actions as follows: <ul style="list-style-type: none">If 2A HPSI high Amps were observed, Place the control switch to STOPIf 2A HPSI pump high Amps were not observed, Attempt one start of the 2A HPSI pump and then STOP the pump and place the control switch to stop when high amps are observedVerify the 2B HPSI pump is running and open all four HPSI header valves manually		
	SRO		Concurs with actions taken or DIRECTS the actions if not performed by the ATC		
	ATC/BOP		Updates the crew no the status of SIAS and clarifies the failures		
At the Lead Evaluator's direction, PROCEED to Event 9.					



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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	9		
Event Description:		MV-08-18A fails open during RCS cooldown to <510°F T-hot					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

Booth Operator Instructions:

- **None: MV-08-18A FAILS OPEN, is an auto trigger**


Role Play:

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

Indications: Post RCS Cool down to 510°F Thot for steam generator isolation MV-08-18A will indicate full open and RCS temperature will continue to lower

Annunciators: Multiple

	ATC		While reducing RCS cooldown rate post RCS cooldown to 510°F Thot for steam generator isolation the ATC Identifies MV-08-18A is full open and communicates the anomaly to the SRO
	SRO		DIRECTS the ATC to isolate MV-08-18A and place an alternate ADV in service to provide RCS cooling

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #	10		
Event Description:		Isolate the 2A S/G IAW 2-EOP-99 App. R					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

CT-2	ISOLATE THE AFFECTED STEAM GENERATOR - WHEN RCS HOT LEG TEMPERATURE IS LESS THAN 510°F, ISOLATE THE 2A S/G PER EOP DIRECTION. ISOLATION IS IAW 2-EOP-99 , APPENDIX R,						
Booth Operator Instructions: <ul style="list-style-type: none"> When Directed to perform NPO action for the isolation of the 2A S/G then trigger: NOP ACTIONS FOR Isolate 2A S/G 							
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 							
Indications: When directed to Isolate the 2A S/G Annunciators: NONE							
2-EOP-99 APP "R"		The following actions are for Isolating Steam Generator 2A Using 2-EOP-99, APPENDIX "R" Section 1					
	BOP	1. ENSURE HCV-08-1A, Main Steam Header 'A' Isolation Valve (MSIV), is CLOSED.			BOP ENSURES HCV-08-1A, Main Steam Header 'A' Isolation Valve (MSIV), is CLOSED		
	BOP	3. ENSURE MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED.			BOP ENSURES MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED		
	BOP	4. ENSURE HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED.			BOP ENSURES HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED.		
	BOP	5. ENSURE HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED.			BOP ENSURES ENSURE HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED. 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	7. ENSURE FCV-23-3, 2A SG Blowdown, is CLOSED.			BOP ENSURES FCV-23-3, 2A SG Blowdown, is CLOSED		

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	2	Event #	10	
Event Description:		Isolate the 2A S/G IAW 2-EOP-99 App. R				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	8. ENSURE FCV-23-4, 2A SG Blowdown, is CLOSED.	BOP ENSURES FCV-23-4, 2A SG Blowdown, is CLOSED
	BOP	9. ENSURE MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED.	BOP ENSURES MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED BOP RECOGNIZES MV-08-18A, 2A is failed open and reports the condition to the SRO
	BOP	10. CLOSE MV-08-14, 2A S/G ADV Isol. (Key 79)	BOP ENSURES MV-08-14, 2A S/G ADV Isol. (Key 79) CLOSED IF not closed by ATC the BOP closes MV-08-14
	BOP	11. PLACE the control switch for auxiliary feed, Pump 2A, in STOP.	BOP ENSURES the control switch for auxiliary feed, Pump 2A, is PLACED in STOP
	BOP	12. ENSURE MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED.	BOP ENSURES MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED
	BOP	13. ENSURE MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED.	BOP ENSURES MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED
	BOP	14. PLACE MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.	BOP PLACES MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE. 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	16. ENSURE MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED.	BOP ENSURES MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED
	BOP	17. CLOSE MV-08-15, 2A S/G ADV Isol. (Key 80)	BOP ENSURES MV-08-15, 2A S/G ADV Isol. (Key 80) CLOSED
	BOP	18. If a SGTR is in progress, Then NOTIFY the SM that Control Room steps to isolate the affected S/G are complete for E-Plan purposes.	BOP NOTIFIES the SRO that the control room steps for isolating the 2A S/G are complete
	BOP	19. PERFORM the following LOCAL operations:	BOP DIRECTS the field operator action to isolate the 2A S/G



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-EOP-99 APP "A"		The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	<i>BOP ENSURES that the 2AB 480V Load Center is aligned to an energized bus. BOP DISPATCHES the NPO to restore Instrument Air. REFER TO Appendix H,</i>
NOTE <input type="checkbox"/> HCV14-9 (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	2. If an INADVERTENT SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following: <input type="checkbox"/> RESTORE flow to the A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A HCV-14-9 OR <input type="checkbox"/> RESTORE flow to the B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B HCV-14-10	<i>BOP takes action as described in the Appendices</i>
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.			



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	<p>3. If a VALID 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 style="padding-left: 40px;">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 style="padding-left: 40px;">OR</p> <p style="padding-left: 40px;">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 takes action as described in the Appendices
	BOP	<p>4. If the 'N' Header has been restored, Then OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves by performing the following:</p> <p>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-23-7 and FCV-23-9 by PLACING the control switch to CLOSE / OVERRIDE.</p> <p>B. OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves.</p>	BOP takes action as described in the Appendices
	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 takes action as described in the Appendices



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

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



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
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	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: HCV-14-8A HCV-14-9 OR HCV-14-8B HCV-14-10	BOP takes action as described in the Appendices
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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.

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	<p>4. If a VALID 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 style="padding-left: 40px;">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 style="padding-left: 40px;">OR</p> <p style="padding-left: 40px;">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 takes action as described in the Appendices
	BOP	<p>5. OPEN ALL of the following CCW to / from the RCP valves:</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 takes action as described in the Appendices
	BOP	<p>6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.</p>	BOP takes action as described in the Appendices

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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

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.

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

BOP takes action as described in the Appendices

NOTE

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:
☐ DCS RCP Overview Screen
☐ FIS-14-15A/B/C/D, CCW From RCP Hx Flow
☐ L-6, RCP CCW Flow Low Trip, Annunciator clear.

BOP takes action as described in the Appendices

NOTE

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

BOP

9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.

BOP takes action as described in the Appendices



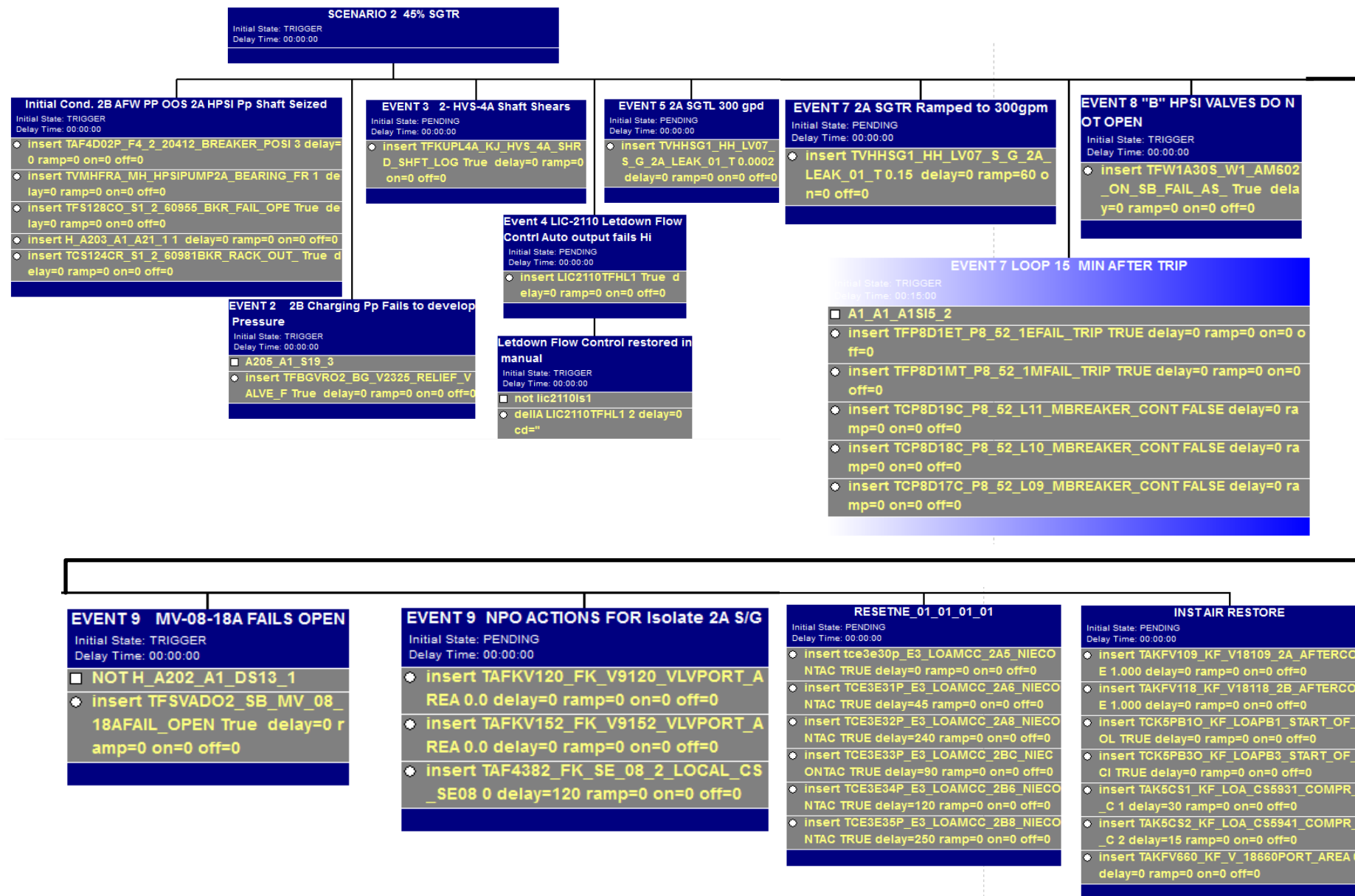
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SEG
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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	2	Event #		
Event Description:		APPENDICIES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	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.	BOP takes action as described in the Appendices
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SIMULATOR LESSON LAYOUT



QUANTITATIVE ATTRIBUTES

Malfunctions:

Before EOP Entry:

1. 2B charging pump fails to develop head on start
2. HVS-4A (running) develops a sheared shaft
3. LIC 2110 L/D flow controller fails to max flow in auto
4. 2A SGTL (approx. 300 gpd)

After EOP Entry:

1. 2A HPSI pump trips on SIAS, "B" train HPSI header valves do not open on SIAS
2. MV-08-18A fails open during RCS cooldown to <510°F T-hot

Abnormal Events:

1. 2B charging pump fails to develop head on start
2. HVS-4A (running) develops a sheared shaft
3. LIC 2110 L/D flow controller fails to max flow in auto
4. 2A SGTL (approx. 300 gpd)

Major Transients:

A 2A SGTR occurs (approx. 300 gpm), A LOOP occurs 15 minutes post trip

Critical Tasks:

1. 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. 'B' train HPSI header valves do not open on SIAS and must be manually opened to meet Figure 2 of 2-EOP-99 and within 15 minutes of entering 2-EOP-04 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 SIAS if after 2-EOP-04 entry
2. ISOLATE THE AFFECTED STEAM GENERATOR - When RCS hot leg temperature is less than 510°F, isolate the 2A S/G per EOP direction. Isolation is IAW 2-EOP-99, Appendix R, this includes closure of MV-08-14 within 15 minutes of Appendix R completion to prevent unnecessary escalation of EAL to SAE (Loss of Second Fission Product Barrier) due to inaction by the operators.

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:

2C Charging pump for preventative maintenance.

Tech Spec Action Statement:

1. 3.7.1.2.a, Restore the required AFW pumps 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.
2. 3.3.3.5.a, Restore 2B ADV MV-08-18B to OPERABLE status within 30 days or be in HOT SHUTDOWN within the next 12 hours.

Operator Work Around:

None

Locked in Annunciators:

1. G-45 2B AFW pp
2. LA-12, LB-6 ADV MV-08-18B

Current Status:

1. The Unit is at 45% power, 2B MFW pump repaired and returned to service after 5-day maintenance window, in 2-GOP-201 Step 4.8.13, up power is on hold for turnover, 2C Charging pump was has been secured in preparation for a clearance. Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14 Response To Severe Weather completed.
2. 2A Screen wash Pump and traveling screens running
3. 2B AFW inoperable 2 hours ago due to broken oil sight glass, on Clearance
4. Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected
5. • 2B ADV MV-08-18B INOP on Clearance

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.

**L-17-1 NRC EXAM SCENARIO 3 REV. 1****SEG**
Page 1 of 62**SITE:** ST. LUCIE**Revision #:** 1**LMS ID:** N/A**LMS Rev. Date:** N/A**SEG TITLE:** L-17-1 SCENARIO 3**SEG TYPE:** ☐ Training ☒ Evaluation**PROGRAM:** ☐ LOCT ☒ LOIT ☐ Other:**DURATION:** 90 minutes

Developed by: JAMES MANN 10/24/17
Instructor/Developer Date

Reviewed by: J. D. CARPENTER 11/01/17
Instructor (Instructional Review) Date

Validated by: J. D. CARPENTER 11/08/17
SME (Technical Review) Date

Approved by: BRAD HINZE 11/10/17
Training Supervision Date

Approved by: TERRY BENTON 11/08/17
Training Program Owner (Line) Date

Appendix D
Scenario Outline
Form ES-D-1

Facility: <u>St. Lucie</u>	Scenario No.: <u>3</u>	Op-Test No.: <u>L-17-1</u>	
Examiners: _____	Operators: _____	SRO: _____	
_____		ATC: _____	
_____		BOP: _____	
Initial Conditions: 100% power, MOC, no scheduled surveillances, maintain 100% power			
Turnover: Inclement weather (severe thunderstorms and tornado watch), 0-AOP-100.14, Response To Severe Weather complete; 2B HPSI pump inoperable for motor replacement (12 hours into planned 36 hour maintenance window); 2B AFW inoperable 2 hours ago due to broken oil sight glass; LIC-1110X OOS, LIC1110Y Selected			
Critical Tasks:	1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Restore CCW to RCPs within 10 minutes of inadvertent closure of CCW supply valve. 2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Manually actuate 2A SIAS within 15 minutes of entry into 2-EOP-15 (Functional Recovery) to prevent unnecessary escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators.		

Event No.	Malf. No.	Event Type *	Event Description
1	1	I/BOP/SRO TS/SRO	Malf: Linear Power Range safety channel NI upper detector fails high Action: Bypass RPS bistables TS 3.3.1,3.2.4
2	2	C/ATC/SRO	Malf: HCV-14-1 inadvertent closure Action: Manually open HCV-14-1 CT-1 Failure to manually open will result in reactor trip T.S. 3.6.3
3	3	C/ATC/SRO	Malf: TIC-2223 Letdown Temperature Controller auto malfunction Action: Manually Control TIC-2223 Letdown Temperature
4	4	C/ATC/SRO TS/SRO	Malf: 2B SGTL (approx.15 gpm) Action: ATC calculates leak rate; SRO Enter SGTL AOP TS 3.4.6.2 & 3.4.5
5		R/ATC N/BOP/SRO	Commence a rapid downpower due to S/G tube leak greater than TS limits
6	5	M/ALL	Malf: SGTR (approx. 200 gpm ramped 30 sec) 2B S/G Action: Manually trip the reactor unable to maintain PZR parameters
7	6	C/BOP/SRO	Malf: Turbine fails to auto trip Action: Manual trip of turbine via RTGB push button
8	7	M/ALL	Malf: 2A Steam Generator MSSV opens on trip and closes at 450 psia Action: ATC stabilizes RCS temp Isolate the 2A S/G due to ESD
9	8	C/BOP/SRO	Malf: A Train of SIAS fails to auto actuate Action: Manually actuate A Train of SIAS to get adequate ECCS flow. CT-2 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-AOP-99.01, Loss of Tech Instrumentation
2. 2-AOP-01.09A 2A1 RCP
3. 2-AOP-02.03, 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, SGTR
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:

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 3 OVERVIEW/SEQUENCE OF EVENTS

L-17-1 NRC Scenario 3

The crew assumes the shift at 100% power with no scheduled surveillances. Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14, Response to Severe Weather completed.

- 2A Screen wash Pump and traveling screens are running.
- 2B HPSI pump INOP for motor replacement (12 hours into 36 hour maintenance window)
- 2B AFW inoperable 2 hours ago due to broken oil sight glass, on Clearance
- Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected

After the assumes the shift Linear Power Range safety channel NI upper detector fails high, requiring entry into 2-AOP-99.01, Loss of Tech Spec Instrumentation. The failure will be recognized and reported by the BOP. The SRO will direct the BOP to bypass the affected RPS/ESFAS bistables. The SRO will evaluate and enter Tech Spec LCO 3.3.1 and 3.2.4.

HCV-14-1 will inadvertently close; the ATC will recognize the failure and relay the status of HCV-14-1 to the SRO. The SRO will direct the ATC to attempt opening of the valve which will be successful. Loss of CCW to the RCPs will start a 10 minute timer for RPS trip of the Reactor.

CT-1 Failure to manual open HCV-14-1 will result in reactor trip. Tech Specs 3.6.3 is applicable while HCV-14-1 is in the OPEN RESET position

TIC-2223 Letdown Temperature Controller fails in auto; the ATC will recognize the failure and relay the status of TIC-2223 to the SRO and take manual control of TIC-2223 and restore L/D temp to pre-event values 2-AOP-02.03

2B SGTL (approx. 10 gpm); The crew will identify the leak using PZR and VCT level changes or Charging/Letdown mismatch the will ATC calculate primary-to-secondary leak rate; SRO will enter 2-AOP-08.02, Steam Generator Tube Leak, and direct actions as appropriate. The SRO will evaluate and enter Tech Spec LCO 3.4.6.2 & 3.4.5

The SRO will direct the RCOs to commence a rapid downpower, IAW 2-AOP-22.01, Rapid Downpower due to S/G tube leak greater than TS limits.

A SGTR (approx. 200 gpm) 2B S/G, ATC Recognizes and evaluates leak rate change, starts all available charging pumps and isolates letdown. When it is determined that the leak rate exceeds the makeup capability recommends manual reactor trip. The SRO directs manual reactor trip, enters 2-EOP-01, Turbine fails to auto trip (TV& GV in same header remain open), on RX trip the BOP will identify and report the failure of 2 Turbine valves to close, then successfully inserts a manual turbine trip via RTGB push button. 2A Steam Generator MSSV opens on trip, the SRO determines that it is a dual event requiring entry into 2-EOP-15.

2A Steam Generator MSSV Closes at 450 psia. The ATC will stabilize RCS temperature using ADVs when the MSSV re-seats.

Upon SIAS the BOP will recognize A Train of SIAS failed to auto actuate and relay the status to the SRO and manually actuate A train SIAS using the pushbutton and the manual actuation switch. CT-2

MANUALLY ACTUATE SAFEGUARDS EQUIPMENT

The Unit Supervisor will direct Isolation of the 2A S/G per 2- EOP-99 Appendix R.

The scenario can be terminated after the most affected S/G (2A) is isolated by the control room actions or at the lead evaluator's discretion.

Procedures Used

- 2-AOP-99.01, Loss of Tech Instrumentation
- 2-AOP-01.09A 2A1 RCP
- 2-AOP-08.02, Steam Generator Tube Leak
- 2-AOP-22.01, Rapid Downpower
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-04, SGTR
- 2-EOP-15, Functional Recovery
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets

Tech Specs Entered

- 3.3.1 Instrumentation
- 3.4.6.2c & 3.4.5 SGTL
- 3.6.3 Cont Isol Vlv

Scenario Setup and Booth Operator Instructions:


- **ENSURE** Examination Security has been established.
- **ENSURE** the Simulator is unloaded
- **ENSURE** IC #183 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, CY17C#183.ic and CY17C#183.rlp
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, CY17C#183.ic and CY17C#183.rlp into IC Master
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, xr183.dat
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, xr183.dat into IC Data
- **ENSURE** Lesson for Scenario 3 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO Isn
 - **Copy**, HLC-23 NRC SCENARIO 3.Isn
 - **Open**, Lessons folder on simulator operator station desk top
 - **Paste**, HLC-23 NRC SCENARIO 3.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#183
 - **RUN** the Simulator
 - Place the 2B AFW Pump in STOP and place a clearance tag on the pump control switch, placed a green mylar on annunciator G-29.
 - Place the 2B HPSI Pump in STOP and place a clearance tag on the pump control switch, placed a green mylar on annunciator Q-31.
 - Place GUARDED EQUIPMENT Tags on AFW and HPSI as outlined in Guarded Equipment procedure.
 - Place Pressurizer Level Controller selector switch to Y Channel position, place caution tag on switch and place an OOS magnet under LIC-1110X
 - **FREEZE** the simulator
- **OPEN** and **EXECUTE** HLC-23 NRC SCENARIO 3.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** IC#183 and HLC-23 NRC SCENARIO 3.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-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-230-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1		Scenario #	3	Event #	1	
Event Description:		Linear Power Range safety channel NI upper detector fails high					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


T.S. 3.3.1	AS A MINIMUM, THE REACTOR PROTECTIVE INSTRUMENTATION CHANNELS AND BYPASSES OF TABLE 3.3-1 SHALL BE OPERABLE. (LINEAR RANGE BTUs) 2. VARIABLE POWER LEVEL — HIGH, 4. THERMAL MARGIN/LOW PRESSURE, 9. LOCAL POWER DENSITY — HIGH ACTION: 2.A. 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		
Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 1: Fails “C” LINEAR CHANNEL NI UPPER DET. HI 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action 			
Indications: Linear Power Range Safety Channel Annunciators: H-3, L-9,17,22,30,34,36,44			
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	ATC		Evaluates plant for being stable
	SRO		Announces and enters 2-AOP-99.01, Loss of Tech Instrumentation
	SRO		Directs actions of 2-AOP-99.01, Loss of Tech Instrumentation
2-AOP-99.01		The following actions are taken from 2-AOP-99.01, Loss of Tech Instrumentation	
4.1 Immediate Operator Actions: NONE APPLICABLE			
4.2 Subsequent Operator Actions			
4.2.1 General Actions:			

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	3	Event #	1	
Event Description:		Linear Power Range safety channel NI upper detector fails high						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	1. CONFIRM failed channel by any of the following methods: <ul style="list-style-type: none"> Channel check comparison with redundant channels Annunciators Bistable or status lights Any instrument-related testing or surveillance procedure in progress 	INTERPRETS the indications and determines the failure to be C Channel Linear Power Range safety channel NI upper detector
	SRO	2. IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 6	N/A
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: A. LOCATE table row for affected instrument or channel	LOCATES correct table row for "MC" Linear Power Range Safety NI
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: B. REFER TO applicable Tech Specs	REFERS TO Tech Specs 3.3.1, and 3.2.4
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: C. PERFORM applicable procedure section for affected instrument	PERFORMs section 4.2.5
4.2.5 Nuclear Instrument Linear Range Safety Channel Failure			
	SRO	1. CIRCLE affected channel: MA MB MC MD	SRO CIRCLES the affected channel: MC

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	1		
Event Description:		Linear Power Range safety channel NI upper detector fails high					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	2. PERFORM <u>one</u> of the following for the affected BTUs listed: <ul style="list-style-type: none"> HI POWER (Key 101) TM/LO PRESS (Key 107) LOC PWR DEN (Key 110) A. BYPASS affected BTUs using keyswitches. B. TRIP affected BTUs per Attachment 3, Tripping and Restoring Protection Bistables.	DIRECTS the BOP to BYPASS the affected BTUs using keyswitches as follows; HI POWER (Key 101) TM/LO PRESS (Key 107) LOC PWR DEN (Key 110)
	SRO	3. IF power level is greater than or equal to 15%, THEN PERFORM <u>one</u> of the following for the affected BTU listed: <ul style="list-style-type: none"> LOSS OF LOAD (Key 108) A. BYPASS affected BTU using keyswitch. B. TRIP affected BTU per Attachment 3, Tripping and Restoring Protection Bistables.	DIRECTS the BOP to BYPASS the affected BTU using keyswitch as follows; LOSS OF LOAD (Key 108)
	BOP	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.5 Nuclear Instrument Linear Range Safety Channel Failure Steps 2. and 3., with direction from the Unit Supervisor, BYPASS affected BTUs using keyswitches and pushbuttons	BOP PERFORMs section 4.2.5 as directed by the Unit Supervisor; Obtains keys, unlocks cabinets as necessary and inserts keys: HI POWER (Key 101) TM/LO PRESS (Key 107) LOC PWR DEN (Key 110) LOSS OF LOAD (Key 108) BOP relieves the ATC

		L-17-1 NRC EXAM SCENARIO 3 REV. 1				SEG Page 10 of 62	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	1		
Event Description:		Linear Power Range safety channel NI upper detector fails high					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	ATC	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.5 Nuclear Instrument Linear Range Safety Channel Failure Steps 2. and 3., with direction from the Unit Supervisor, BYPASS affected BTUs using keyswitches and pushbuttons	ATC PERFORMs section 4.2.5 as directed by the Unit Supervisor; <i>IVs inserted keys and BYPASSES affected BTUs using keyswitches</i> HI POWER (Key 101) TM/LO PRESS (Key 107) LOC PWR DEN (Key 110) LOSS OF LOAD (Key 108) ATC Reports to US has <i>BYPASSED</i> affected BTUs using keyswitches ATC relieves the BOP
4.2.1 General Actions:			
	SRO	4. INITIATE work request for affected instrument or channel and NOTIFY I&C as applicable.	PERFORMs section 4.2.1 Step 4 <i>NOTIFIES</i> I&C or EM as applicable and <i>Notifies the SM of the failure and the Tech Spec entry</i>
	SRO	5. DOCUMENT problem as required: <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log 	<i>PERFORMs</i> section 4.2.1 Step 5 and DOCUMENTs issue as appropriate in: <i>EOOS Log</i> <i>Condition report</i> <i>Ops narrative log</i>
	SRO	6. WHEN ready to restore affected channel, THEN PERFORM Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> Instrumentation Channels 	IDENTIFIES step as N/A
	SRO	7. VERIFY Exit Conditions are met. 8. EXIT this procedure	VERIFIES Exit conditions are met by: <i>Applicable Tech Spec LCO action requirements have been implemented</i> <i>Affected channel has been bypassed or tripped as required by Tech Specs. and exits 2-AOP-99.01</i>
	SRO	Performs Crew Brief	SRO PERFORMs crew brief on status of failed instrument, the Tech Spec entry and <i>Notifies the SM</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-17-1	Scenario #	3	Event #	2	
Event Description:		HCV-14-1 inadvertent closure				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

CT-1	RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – RESTORE CCW TO RCPS WITHIN 10 MINUTES OF INADVERTENT CLOSURE OF CCW SUPPLY VALVE. (THIS WILL AVOID AN AUTOMATIC REACTOR TRIP)				
T.S. 3.6.3	THE CONTAINMENT ISOLATION VALVES SHALL BE OPERABLE. ACTION: WITH ONE OR MORE OF CONTAINMENT ISOLATION VALVE(S) INOPERABLE, MAINTAIN AT LEAST ONE ISOLATION VALVE OPERABLE IN EACH AFFECTED PENETRATION THAT IS OPEN AND EITHER: A. RESTORE THE INOPERABLE VALVE(S) TO OPERABLE STATUS WITHIN 4 HOURS, OR B. ISOLATE EACH AFFECTED PENETRATION WITHIN 4 HOURS BY USE OF AT LEAST ONE DEACTIVATED AUTOMATIC VALVE SECURED IN THE ISOLATION POSITION, OR C. ISOLATE EACH AFFECTED PENETRATION WITHIN 4 HOURS BY USE OF AT LEAST ONE CLOSED MANUAL VALVE OR BLIND FLANGE; OR D. BE IN AT LEAST HOT STANDBY WITHIN THE NEXT 6 HOURS AND IN HOT SHUTDOWN WITHIN THE FOLLOWING 6 HOURS.				
Booth Operator Instructions: <ul style="list-style-type: none">Upon cue from Lead Examiner, trigger Event 2: RCP CCW VALVE HCV-14-1 CLOSES Role Play: <ul style="list-style-type: none">If calls are made for information delivery or support, then verbal repeat back of information is the only required action.					
Indications: DCS loss of flow to the RCPS Annunciators: J-25,28, L-14, S-36, X-2					
	ATC		Identifies HCV-14-1 is closed and recommends entering 2-AOP-01.09A1, 2A1 Reactor Coolant Pump		
	BOP		Acknowledge annunciators and communicates status IAW plant policies		
	ATC		Evaluates plant for being stable		
	BOP		Pulls ARPs and communicates/takes action as directed		
NOTE: Direction for addressing this failure can be found in any of the RCP AOPs, the SRO may enter the CCW AOP which will direct the crew to an RCP AOP. For this event 2-AOP-01.09A1 is used.					
	SRO		Announces and enters ANY RCP 2-AOP-01.09A1, 2A1 Reactor Coolant Pump		
	SRO		Directs actions of ANY RCP 2-AOP-01.09A1, 2A1 Reactor Coolant Pump		
2-AOP-01.09A1		The following actions are taken from 2-AOP-01.09A1, 2A1 REACTOR COOLANT PUMP			



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	3	Event #	2	
Event Description:		HCV-14-1 inadvertent closure				
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:

	SRO	1. At Flat Panel, NAVIGATE to RCP OVERVIEW, and VERIFY multiple RCPs are NOT IN ALARM	SRO EVALUATES Annunciators and determines that there are multiple RCP alarms; IF multiple RCPs indicate CCW alarms, THEN GO TO Section 4.2.10.CCW related alarms
--	-----	---	--

4.2.10 Multiple RCP Low CCW Flow / High Temperature

NOTE

If required to secure all four RCPs post trip with the SBCS in service, then the RCPs should be secured after conducting the full one minute board scan for assessing plant status. In all cases, RCPs shall be secured within any specified time requirements (e.g. within 10 minutes of a loss of CCW)

	SRO	1. VERIFY CCW containment isolation and CCW N Header valves, OPEN: <input type="checkbox"/> CCW N Header isolation valves <input type="checkbox"/> HCV-14-8A, NORMAL HDR. ISOLATION <input type="checkbox"/> HCV-14-8B, NORMAL HDR. ISOLATION <input type="checkbox"/> HCV-14-9, FROM NORMAL HDR ISOLATION <input type="checkbox"/> HCV-14-10, FROM NORMAL HDR ISOLATION <input type="checkbox"/> CCW containment isolation valves <input type="checkbox"/> HCV-14-1, TO RC PUMP <input type="checkbox"/> HCV-14-2, FROM RC PUMP <input type="checkbox"/> HCV-14-6, FROM RC PUMP <input type="checkbox"/> HCV-14-7, TO RC PUMP	The BOP VERIFIES CCW N Header isolation valves and CCW containment isolation valves are open and if not opens them • HCV-14-8A, NORMAL HDR. ISOLATION • HCV-14-8B, NORMAL HDR. ISOLATION • HCV-14-9, FROM NORMAL HDR ISOLATION • HCV-14-10, FROM NORMAL HDR ISOLATION • HCV-14-1, TO RC PUMP • HCV-14-2, FROM RC PUMP • HCV-14-6, FROM RC PUMP • HCV-14-7, TO RC PUMP BOP OPENS HCV-14-1, TO RC PUMP
	SRO	EVALUATES plant status and RECOGNIZES HCV-14-1 closed inadvertently and contacts the SM and MM for support	Recognizes Tech Specs 3.6.3 applicable while HCV-14-1 is in the OPEN RESET position
	SRO	2. GO TO Section 4.2.1, Step 5	SRO PROCEEDS to Section 4.2.1, Step 5



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	3	Event #	2	
Event Description:		HCV-14-1 inadvertent closure				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

4.2.1 General Actions:

	SRO	5. VERIFY Exit Conditions satisfied	SRO VERIFIES exit conditions are met and exits the AOP
At the Lead Evaluator's direction, PROCEED to Event 3.			

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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	3
Event Description:		TIC-2223 Letdown Temperature Controller auto malfunction			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 4: TIC 2223 Fails Low

Role Play:

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

Indications: CCW to L/D heat exchanger flow lowers, TIC-2223 LED is lit, TIC-2223 output indicates full closed**Annunciators:**

	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

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, PERFORM the following:	<i>Step is not applicable</i>
	SRO	2. VERIFY 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>



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	3
Event Description:		TIC-2223 Letdown Temperature Controller auto malfunction			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	SRO	3. IF charging and letdown flow has been lost, THEN DETERMINE the cause	<i>Step is not applicable</i>
	SRO	4. IF a charging system leak has occurred, THEN ISOLATE the leak and refer to applicable Technical Specifications for guidance	<i>Step is not applicable</i>
	SRO	5. PERFORM applicable section per Table	SRO EVALUATES 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. VERIFY TIC-2223, TEMPERATURE, is responding as expected	SRO DIRECTS the ATC to PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS RESET to bypass letdown ion exchangers SRO DIRECTS the ATC to PLACE TIC-2223, TEMPERATURE, in MANUAL or HARD MANUAL SRO VERIFIES that the ATC has PLACED V2520 in BYPASS and PLACED TIC-2223 in manual and adjust the controller to maintain normal letdown temperature SRO DIRECTS system walk downs observing for leaks or lifting relief valves
	SRO	SRO NOTIFIES the SM and requests I&C support	
	SRO		SRO Exits this procedure
	SRO	SRO PERFORMS CREW BRIEF	

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

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Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-17-1	Scenario #	3	Event #	4	Page	16	of	62
Event Description:		2B SGTL (approx.15 gpm)							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								

T.S. 3.4.5	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. ACTION: A. WITH ONE OR MORE SG TUBES SATISFYING THE TUBE REPAIR CRITERIA AND NOT PLUGGED (OR REPAIRED IF ORIGINAL SGs) IN ACCORDANCE WITH THE STEAM GENERATOR PROGRAM; 1. WITHIN 7 DAYS VERIFY TUBE INTEGRITY OF THE AFFECTED TUBE(S) IS MAINTAINED UNTIL THE NEXT REFUELING OUTAGE OR SG TUBE INSPECTION, AND 2. PLUG OR REPAIR THE AFFECTED TUBE(S) IN ACCORDANCE WITH THE STEAM GENERATOR PROGRAM PRIOR TO ENTERING HOT SHUTDOWN FOLLOWING THE NEXT REFUELING OUTAGE OR SG TUBE INSPECTION. REPAIR APPLIES ONLY TO THE ORIGINAL SGs.
T.S. 3.4.6.2	REACTOR COOLANT SYSTEM OPERATIONAL LEAKAGE SHALL BE LIMITED TO: C. 150 GALLONS PER DAY PRIMARY-TO-SECONDARY LEAKAGE THROUGH ANY ONE STEAM GENERATOR (SG), ACTION: 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

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 4: 2B SGTL Approx 15 gpm

Role Play:

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action.
- When called for Chemistry samples and Radiation surveys report back in 10 minutes that activity is present on/in the 2B S/G

Indications: Main steam line radiations levels rising and SJAE radiations levels rising**Annunciators:****RMCS**

	BOP		Acknowledge annunciators and communicates status IAW plant policies.
	BOP		Pulls ARPs and communicates/takes action as directed
	SRO		Directs 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



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Appendix D		Operator Action				Form ES-D-2			
Op Test No.:	L-17-1	Scenario #	3	Event #	4	Page	17	of	62
Event Description:		2B SGTL (approx.15 gpm)							
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. VERIFY pressurizer level stable or rising and pressure normal	SRO DIRECTS ATC to VERIFY pressurizer level stable or rising and pressure normal. And to start charging pumps and operate heaters as necessary to stabilize pressurizer level and pressure
	SRO	Makes Notifications	SRO NOTIFIES the Shift Manager
	SRO	2. NOTIFY Chemistry of probable S/G tube leakage and to begin sampling for activity	SRO DIRECTS Chemistry to sample S/Gs for activity
	SRO	3. REQUEST Radiation Protection conduct secondary area radiation surveys	SRO DIRECTS Radiation Protection conduct secondary area radiation surveys
	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	SRO DIRECTS BOP to collect reading from the SJAE rad monitor, the SRO evaluates the data to determine the leak rate. The SRO determines the leak rate to be greater than 15 gpm and evaluates T.S. 3.4.6.2 & 3.4.5
	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	SRO DETERMINES the leak rate to be greater than 15 gpm on previous step
	SRO	6. DETERMINE primary to secondary leak rate by one of the following methods: <input type="checkbox"/> Charging / letdown mismatch	SRO DIRECTS ATC to report leak rate calculation results. ATC reports leak rate approximately 15 gpm



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Appendix D			Operator Action				Form ES-D-2			
Op Test No.:	L-17-1	Scenario #	3	Event #	4	Page	18	of	62	
Event Description:		2B SGTL (approx.15 gpm)								
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	SRO DIRECTS BOP to begin Logging Air Ejector monitor or Steam Generator Blowdown Radiation Monitor readings every 15 minutes on Attachment 6
	SRO	8. CONFIRM 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"> S/G liquid sample Main steam line S/G blowdown Chemistry analysis Rising S/G water level 	SRO EVALUATES data and determines the 2B S/G has the tube leak at a rate of 15 gpm
	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	SRO DIRECTS step as necessary
	SRO	10. DISPATCH a field operator to the SGBTF to perform the following: A. VERIFY SGBTF Truck Bay door is CLOSED. B. VERIFY the following SGBTF ventilation systems are in operation: <ul style="list-style-type: none"> <input type="checkbox"/> Supply Fans HVS 10A or HVS-10B <input type="checkbox"/> Exhaust Fans HVE 41A or HVE-41B <input type="checkbox"/> SGBTF Ventilation Process Monitor 	SRO DIRECTS BOP to perform this step

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Appendix D			Operator Action				Form ES-D-2			
Op Test No.:	L-17-1	Scenario #	3	Event #	4	Page	19	of	62	
Event Description:		2B SGTL (approx.15 gpm)								
Time	Position	Procedure Step			Applicant's Actions or Behavior					
	Competency									

	SRO	11. EVALUATE isolating blowdown and vacuum drag on Unit 1	SRO CONTACTS Unit-1 and advises
	SRO	12. VERIFY steam generator blowdown aligned to Monitor Storage Tanks	SRO VERIFIES steam generator blowdown aligned to Monitor Storage Tanks
	SRO	13. IF in MODE 1 through 3 and SIAS is NOT blocked, THEN GO TO Section 4.2.2	SRO PROCEEDS to section 4.2.2
4.2.2 Mode 1 through 3 - SIAS Not Blocked			
	SRO	1. VERIFY leak rate is LESS THAN 100 gpd.	SRO DETERMINES the leak rate exceeds 100gpd and IMPLEMENTS 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	7.A. IF plant conditions require, THEN INITIATE the Emergency Plan B. ENSURE Chemistry is implementing the Contaminated Water Plan per CY-SL-108-0002, High Activity In A Steam Generator C. IF radiation monitors indicate conditions are changing, THEN EVALUATE stabilizing the plant to facilitate leak rate determination	SRO DIRECTS these steps SRO BRIEFS the crew on the down power and clarifies parameters
Event 5 is driven by the down power.			



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	5
Event Description:		Commence a rapid downpower due to S/G tube leak			
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		ANNOUNCES and enters 2-AOP-22.01, Rapid Downpower as directed
	SRO		DIRECTS actions of 2-AOP-22.01, Rapid Downpower

2-AOP-22.01

The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER

4.1 Immediate Operator Actions:

	SRO		DIRECTS Immediate Operator Actions for 2-AOP-22.01, RAPID DOWNPOWER
	SRO	1. BEGIN boration per operator aid OR Attachment 1, RCS Boration Guidance.	SRO DIRECTS ATC to make boration 15 gallons per minute from the 2A Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance.

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	1. BORATE the RCS by the following: A. START either Boric Acid Pump 2A or 2B.	ATC STARTS Boric Acid Pump ATC VERIFIES Boric Acid Pump STARTS
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Appendix D			Operator Action			Form ES-D-2
Op Test No.:	L-17-1	Scenario #	3	Event #	5	
Event Description:		Commence a rapid downpower due to S/G tube leak				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	ATC	1. BORATE the RCS by the following: B. PLACE FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO.	ATC PLACES FCV-2210Y, BORIC ACID control switch in AUTO
	ATC	1. BORATE the RCS by the following: C. IF borating to the Charging Pump suction, THEN OPEN V2525, BORON LOAD CONTROL VALVE	ATC PLACES V2525, BORON LOAD control switch in OPEN ATC VERIFIES V2525, BORON LOAD control valve is open
	ATC	1. BORATE the RCS by the following: E. ADJUST FIC-2210Y, BORIC ACID, to the desired flowrate.	ATC ADJUSTS FIC-2210Y, BORIC ACID, to the desired flowrate of 15gpm
	ATC	1. BORATE the RCS by the following: F. IF desired to maximize the boric acid flow rate, THEN CLOSE the running BAM pump recirc valve. <ul style="list-style-type: none"> V2650, TANK 2A RECIRC VALVE V2651, TANK 2B RECIRC VALVE 	ATC not required
	ATC	1. BORATE the RCS by the following: G. CYCLE V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig.	ATC CYCLES V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig
	ATC	1. BORATE the RCS by the following: H. CYCLE V2500, DIVERT VALVE (RTGB-205) to WMS if necessary to maintain the desired VCT level.	ATC CYCLES V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level
	ATC		ATC Updates crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER	
	SRO	2. PREPARE turbine for load reduction per operations hard cards.	SRO DIRECTS BOP to set up the turbine for a target of 100 MW and load rate at 10 megawatts per minute per operations hard cards



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	5	
Event Description:		Commence a rapid downpower due to S/G tube leak				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	
<p align="center">2-NOP-99.07 OPERATIONS HARD CARDS ATTACHMENT 3 TURBINE ADJUSTMENTS TO MAINTAIN POWER</p> <p align="center">NOTE</p> <p>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.</p>			
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER	BOP ENSURES Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER TOUCH MODIFY from RAMP INTERFACE group	BOP TOUCHES MODIFY from RAMP INTERFACE group
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER ADJUST values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> TARGET SELECT RATE SELECT 	BOP ADJUSTS values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none"> TARGET SELECT set at 100MW RATE SELECT set at 10MW/min
	BOP		BOP NOTIFIES SRO that the Turbine is set up with a Target of 100 MW at a rate of 10 MW/min
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	3. INSERT the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards.	SRO DIRECTS ATC to insert lead group CEAs 6 inches in Manual Sequential.
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS	



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	5
Event Description:		Commence a rapid downpower due to S/G tube leak			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

2-NOP-99.07 OPERATIONS HARD CARDS ATTACHMENT 1 CEDMCS OPERATIONS

NOTE

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 placecard.

	ATC	Moving CEAs in group On CEDMCS Control Panel Group Select Switch, SELECT target group	ATC SELECTS Target Group 5
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	Moving CEAs in group On CEDMCS Control Panel Mode Select Switch, SELECT mode of movement: MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS)	ATC SELECTS MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel
	ATC	Moving CEAs in group IF CEA Motion Inhibit is present, THEN PERFORM the following: PRESS and HOLD CMI BYPASS pushbutton. PRESS and RELEASE BYPASS ENABLE pushbutton	STEP will be N/A NO CEA Motion Inhibit is present
	ATC	Moving CEAs in group POSITION group as desired using INSERT/WITHDRAW Manual Control lever	ATC POSITIONS group as directed to 6" inserted from previous position using INSERT/WITHDRAW Manual Control lever
	ATC	Moving CEAs in group IF CMI BYPASS pushbutton is being held, THEN RELEASE CMI BYPASS pushbutton	STEP will be N/A NO CEA Motion Inhibit is present



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	5
Event Description:		Commence a rapid downpower due to S/G tube leak			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	ATC	Moving CEAs in group OBSERVE RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment	ATC OBSERVES RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position
	ATC	Moving CEAs in group On CEDMCS Control Panel, SELECT OFF on Mode Select Switch when the desired height is reached	ATC SELECTS OFF on Mode Select Switch when the desired height is reached.
	ATC	Moving CEAs in group ENSURE RSPT and Pulse Counter indications match	ATC ENSURES RSPT and Pulse Counter indications match.
	ATC		ATC Updates crew on Reactivity Addition
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
4.2 Subsequent Operator Actions			
	SRO	1. WHEN Tav _g begins to lower and is less than T _{ref} , THEN TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)	DIRECTS ATC to monitor Tav _g and to notify him when it is lowering and less than T _{ref}
	ATC		ATC NOTIFIES the SRO that Tav _g is lowering and less than T _{ref}
	SRO		DIRECTS BOP to TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)
	BOP		BOP to TOUCHES GO on the RAMP INTERFACE group to begin turbine load reduction per operations hard cards as follows: 5. TOUCH GO from RAMP INTERFACE group. (display 5551) 6. MONITOR turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551) BOP Updates crew on load reduction initiation



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	5
Event Description:		Commence a rapid downpower due to S/G tube leak			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	SRO	2. NOTIFY plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____."	DIRECTS BOP to NOTIFY plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to S/G tube leak"
	BOP		NOTIFIES plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to S/G tube leak."
	SRO	3. NOTIFY System of the rapid downpower load reduction	DIRECTS BOP to NOTIFY System of the rapid downpower
	BOP		NOTIFIES System of the rapid downpower, via dedicated RED phone.
<p align="center">NOTE</p> <p>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.</p>			
	SRO	4. PERFORM a Crew update to include the following: <ul style="list-style-type: none"> Expected final power level Initial boration rate Initial load rate Expected amount of boric acid addition Expected amount of CEA motion using pre planned downpower profiles in the Plant Physics Curve Book 	SRO UPDATES crew with the following information: <ul style="list-style-type: none"> Expected final power level Offline Initial boration rate 15 GPM Initial load rate of 10 MW/MIN Expected amount of boric acid addition Per preplanned power guidance Expected amount of CEA motion Per preplanned power guidance
	SRO	5. PLACE Pressurizer on recirculation per operations hard cards	DIRECTS BOP to Place the Pressurizer on Recirculation per operations Hard Card
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	
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Event Description:		Commence a rapid downpower due to S/G tube leak				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-NOP-99.07 OPERATIONS HARD CARDS

ATTACHMENT 4 PRESSURIZER HEATER OPERATIONS 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.

1.1 Placing the Pressurizer on Recirculation

NOTE

- The purpose of placing the Pressurizer on recirculation is to keep the Pressurizer and RCS boron concentration within 25 ppm when changing RCS boron concentration.
- From measured data, the estimated time in minutes to correct a greater than or equal to 25 ppm boron mismatch by operating 6 Backup Bank heaters may be determined as follows:

Time (in minutes) to correct mismatch = [(Pzr ppm - RCS ppm) – 25 ppm] x 3

- This section is performed on RTGB-203

	BOP	Placing the Pressurizer on Recirculation PLACE all available Backup Bank heater control switches to ON	BOP PLACES all available Backup Bank heater control switches to ON
	BOP	Placing the Pressurizer on Recirculation IF maintaining normal operating pressure is desired, THEN slowly REDUCE the AUTO setpoint on the SELECTED Pressurizer Pressure Control Channel: <ul style="list-style-type: none"> ○ PIC-1100X Pressurizer Pressure ○ PIC-1100Y Pressurizer Pressure 	BOP REDUCES the AUTO setpoint on the SELECTED Pressurizer Pressure Control Channel to attain flow through the pressurizer sprays

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Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	BOP	Placing the Pressurizer on Recirculation VERIFY Main Spray flow by observing the following: OBSERVE the output on HIC-1100, PZR Pressure spray CNTL VLV. OBSERVE the valve position on the following Pressurizer Spray Valves: <input type="checkbox"/> PCV- 1100E, Spray Valve 2B2 <input type="checkbox"/> PCV- 1100F, Spray Valve 2B1	BOP VERIFIES Main Spray flow
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	6. START additional charging pump as required per operations hard cards.\	SRO DIRECTS ATC to START a Second charging pump per operations hard cards ATC will need to manually control letdown temperature as letdown flow rises via TIC-2223
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 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 placard.			
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW IF in MODE 1 or 2, THEN PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS to minimize reactivity effects of changing letdown temperature	BOP PLACES V2520, ION EXCHANGER BYPASS VALVE, in BYPASS



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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	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: START charging pump by placing its control switch in START	BOP STARTS 2B charging pump by placing its control switch in START
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: PLACE CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid	BOP PLACES CHRG PUMP SEL RUNNING - B/U PP switch in proper position per operator aid
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN 3 minutes has elapsed since pump start, THEN ENSURE associated recirc valve is CLOSED	BOP ENSURES started Charging Pp recirc valve is CLOSED. ATC will need to manually control letdown temperature as letdown flow rises via TIC-2223
	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: WHEN letdown temperature stabilizes, THEN ENSURE V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO	BOP ENSURES V2520, ION EXCHANGER BYPASS VALVE, control switch is returned to AUTO after temp stabilizes

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Event Description:		Commence a rapid downpower due to S/G tube leak			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	BOP	START ADDITIONAL CHARGING PUMP(S) TO RAISE FLOW: NOTIFY RP and SNPO of current charging pump alignment	BOP NOTIFIES RP and SNPO of starting of the 2B charging.
2-AOP-22.01		The following actions are taken from 2-AOP-22.01 RAPID DOWNPOWER	
NOTE 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. US may direct temporary operation outside of ASI limit.			
	SRO	7. MAINTAIN Axial Shape Index ±0.5 of ESI using CEAs	DIRECTS ATC 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		POSITIONs 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
NOTE 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	8. MAINTAIN Tref and Tavg within 6.6 °F	DIRECTS ATC to maintain Tave-Tref mismatch within +/- 2 degrees °F
	SRO	9. IF reducing power by more than 20%, THEN NOTIFY SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition	DIRECTS BOP to dispatch a SNPO to secure Zinc injection
NOTE 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	10. VERIFY Condenser Back Pressure less than 8.859 inHgA	DIRECTS BOP to report Condenser Backpressure

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Event Description:		Commence a rapid downpower due to S/G tube leak			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

NOTE

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	11. VERIFY Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations OR OVATION display 5605, CONDENSER VACUUM MONITORING	DIRECTS BOP to monitor Condenser Backpressure
	SRO	12. VERIFY CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)	DIRECTS BOP to monitor Condenser differential pressure
	SRO	13. VERIFY parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits	DIRECTS BOP to monitor parameters listed on Attachment 3
NOTE Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.			
	SRO	14. MAINTAIN PZR pressure between 2225 and 2275 psia	DIRECTS ATC to MAINTAIN PZR pressure between 2225 and 2275 psia
NOTE A large rate of change in Tav _g may cause transient level variance.			
	SRO	15. MAINTAIN PZR level between 27% and 68%	DIRECTS ATC to MAINTAIN PZR level between 27% and 68%
	SRO	16. WHEN Final power level is achieved, THEN GO TO Section 4.2, Step 35 to STABILIZE the unit	DETERMINES to be N/A
After the appropriate power level change has been observed or at the lead evaluator direction Proceed to Event 6.			



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Op Test No.:	L-17-1	Scenario #	3	Event #	6
Event Description:		SGTR (approx. 200 gpm ramped 30 sec) 2B S/G			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 7: 2B SGTR ramped to 200 gpm

Role Play:

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

Indications:

Pressurizer pressure and level lowering, Radiation Monitor levels rising

Annunciators:

	ATC		RECOGNIZES Pressurizer pressure and level lowering recommends isolating letdown
	SRO		DIRECTS isolating letdown
	BOP		RECOGNIZES Pressurizer pressure and level still lowering recommends RX trip
	SRO		DIRECTS RX trip
	ATC		CONFIRMS reactor power is lowering and startup rate is negative REPORTS "REACTOR TRIPPED" States evaluating CEAs or that all CEAs are inserted
	BOP		NOTE: Event 7 All Turbine valves not Closed will present itself at this point. VERIFIES all governor and throttle valves closed REPORTS is NOT Turbine Tripped and THEN manually Trips the Turbine with the Turbine Trip Push button
	BOP		ANNOUNCE on the Gaitronics: Unit 2 Reactor has tripped NOTIFY the NPO to perform Appendix X, Section 1 of 2-EOP-99 CONTACT 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		REPORTS "All CEAs INSERTED" if not reported previously
	SRO		DIRECTS IMPLEMENTATION OF 2-EOP-01 STANDARD POST TRIP ACTIONS

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Appendix D		Operator Action				Form ES-D-2
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Event Description:		SGTR (approx. 200 gpm ramped 30 sec) 2B S/G				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	ATC		RECOGNIZES lowering pressures and recommends unit trip
	ALL		RECOGNIZES a Safety is lifted due to the audible cue
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
4.1 Immediate Operator Actions: <ul style="list-style-type: none">• 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. NOTE: Event 7 will present itself at this point.			
4.0 Operator Actions:			
	SRO	Step 1 VERIFY reactor trip:	SRO DIRECTS VERIFY 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	Step 2 VERIFY turbine trip:	SRO DIRECTS VERIFY 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 And REPORTS that a MANUAL TURBINE TRIP was required
	SRO	Step 3 VERIFY Maintenance of Vital Auxiliaries:	SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies: <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 RCsPs:



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	6
Event Description:		SGTR (approx. 200 gpm ramped 30 sec) 2B S/G			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	SRO	Step 4 VERIFY RCS Inventory Control:	SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies: <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35% Pressurizer level will be abnormally low due to the Steam Generator Tube Rupture and 2A MSSV being Open. This parameter will drive the crew to enter 2-EOP-15.
NOTE to EVALUATOR: WHEN SIAS ACTUATES EVENT 9 "A Train of SIAS fails to auto actuate" will present itself			
	SRO	Step 5 VERIFY RCS Pressure Control:	SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies: <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia IF SIAS occurs the SRO DIRECTS manual actuation of "A" train SIAS and the crew will trip 2 RCPs and Leave 2 RCPS running and then PERFROM App. J RCS Pressure will be abnormally low due to the Steam Generator Tube Rupture and 2A MSSV being Open. This parameter will drive the crew to enter 2-EOP-15.
	SRO	Step 6 VERIFY Core Heat Removal:	SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies: <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW <input type="checkbox"/> Loop ΔT 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-17-1	Scenario #	3	Event #	6	
Event Description:		SGTR (approx. 200 gpm ramped 30 sec) 2B S/G				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	Step 7 VERIFY RCS Heat Removal:	SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies: <input type="checkbox"/> <i>VERIFY the following conditions exist on at least one S/G:</i> <ul style="list-style-type: none"> S/G NR level is between 20 and 81% Feedwater is being supplied <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"> Main or Auxiliary Feedwater <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> IF S/G pressures are less than 750 psia the crew will close MSIVs RCS temperature and S/G pressure will be abnormally low due to the MSSV being OPEN. These parameters along with indications of a 2B SGTR will drive the crew to enter 2-EOP-15
	SRO	Step 8 VERIFY Containment Conditions:	SRO DIRECTS VERIFY containment conditions, BOP Verifies: <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"> CIS Radiation Monitors Containment Atmospheric Monitors <input type="checkbox"/> <i>Secondary plant radiation levels less than alarm values AND stable or lowering:</i> <ul style="list-style-type: none"> Condenser Air Ejector Monitor S/G Blowdown Monitors Main Steamline Monitors Secondary Radiation Monitors will be abnormally high due to the Steam Generator Tube Rupture. This parameter along with indications of a ESD will drive the crew to enter 2-EOP-15

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Appendix D		Operator Action				Form ES-D-2
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Event Description:		SGTR (approx. 200 gpm ramped 30 sec) 2B S/G				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	Step 9 DIRECT a field operator to perform the following:	SRO DIRECTS BOP to perform step 9, BOP performs step 9: <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	Step 10 DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.	SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an SGTR is in progress
	SRO	Step 11 GO TO the appropriate Emergency Operating Procedure.	SRO PERFORMS a crew brief and transitions to 2-EOP-15



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	7	
Event Description:		Main Turbine does not fully trip				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

Booth Operator Instructions:

- **NONE: TURBINE FAILS TO AUTO TRIP ALL VALVES** is an auto trigger

Role Play:

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

Indications: Turbine fails to auto trip (TV& GV in same header remain open), on RX trip the BOP will identify and report the failure of 2 Turbine valves to close, then successfully inserts a manual turbine trip via RTGB push button.

Annunciators: Multiple

	ATC		Recognizes 1TV and 1GV did not close on the RX trip and takes contingency action per 2-EOP-01 to insert a Turbine Trip signal from the RTGB
	ATC		Communicates the failure to the SRO and actions taken
	SRO		VERIFIES Turbine Trip and continues with board scans post Trip



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Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	8
Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

Booth Operator Instructions:

- **NONE: 2A S/G MSSV OPENS ON TRIP CLOSSES @ 450 psia, is an auto trigger**

Role Play:

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

2-EOP-15

The following actions are taken from 2-EOP-15 "Functional Recovery"

4.0 Operator Actions:

	SRO	Step 1 Classify Event EVALUATE EPIP Classification criteria for present plant conditions and Emergency Plan Actions REFER TO EPIP-01, Classification of Emergencies.	SRO DIRECTS Sm to <i>EVALUATE EPIP Classification criteria for present plant conditions and Emergency Plan Actions</i>
	SRO	Step 2 Implement Place keeping OPEN the Place keeper and NOTE the time of EOP entry.	SRO IMPLEMENTS the placekeeper

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	8
Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	SRO	<p>Step 3 RCP Trip Strategy</p> <p>A. If ANY of the following conditions exist,</p> <p><input type="checkbox"/> 2A or 2B AFW Pump is the ONLY source of Feedwater</p> <p><input type="checkbox"/> RCS pressure is less than 1736 psia</p> <p><input type="checkbox"/> RCS Temperature is less than 500°F</p> <p>Then STOP ONE RCP in EACH loop</p> <p>B. If ANY of the following conditions exist,</p> <p><input type="checkbox"/> Main or Auxiliary Feedwater flow can NOT be re-established</p> <p><input type="checkbox"/> RCS subcooling is less than minimum subcooling</p> <p><input type="checkbox"/> CCW is LOST to the RCPs for greater than 10 minutes</p> <p>Then STOP ALL RCPs.</p>	<p>SRO IMPLEMENTS RCP Trip Strategy</p> <p>IF SIAS has occurred the crew will trip 2 RCPs and Leave 2 RCPs running and then PERFROM App. J.</p>
	SRO	<p>Step 4 Ensure RCP Seal Cooling</p> <p>A. VERIFY CCW to the RCPs.</p> <p>B. If BOTH of the following conditions exist,</p> <p><input type="checkbox"/> RCPs have CCW flow</p> <p><input type="checkbox"/> CIAS has isolated the normal RCP bleed off flow path to the VCT</p> <p>Then ESTABLISH the alternate RCP bleed off flow path to the Quench Tank by OPENING V2507, RCP Bleed off Relief Stop Vlv.</p>	<p>SRO DIRECTS the BOP to Restore CCW to the RCPs per Appendix J of 2-EOP-99:</p> <p>The BOP restores CCW to the RCPs with Appendix J of 2-EOP-99</p>

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	3	Event #	8	
Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	Step 5 Verify RCP Operating Limits If RCPs are RUNNING, Then VERIFY RCP operating limits are satisfied REFER TO Table 13, RCP Operating Limits	SRO DIRECTS ATC to VERIFY operating limits are MET per Table 13, RCP Operating Limits for any running RCPs The ATC to VERIFIES operating limits are MET per Table 13, RCP Operating Limits for any running RCPs
	SRO	Step 6 Sample S/Gs Sample BOTH S/Gs for activity and boron REFER TO Appendix A, Sampling Steam Generators	The SRO DIRECTS the BOP to PERFORM Appendix A of 2-EOP-99, Sampling Steam Generators
	SRO	Step 7 Protect Main Condenser PERFORM BOTH of the following: A. If Circulating Water flow to the Main Condenser has been lost, Then PERFORM BOTH of the following to protect the Secondary Plant: 1. ENSURE MSIVs are CLOSED. 2. ENSURE SGBD is ISOLATED. B. STABILIZE the Secondary Plant AS NECESSARY. REFER TO Appendix X, Secondary Plant Post Trip Actions, Section 2	SRO VERIFIES circulating water flow to the main condenser SRO DIRECTS the BOP to Perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits The BOP PERFORMS Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits
	SRO	Step 8 Restore Instrument Air If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors	SRO IDENTIFIES step is N/A



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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	Step 9 Perform Safety Function Status Checks PERFORM the Safety Function Status Checks every 15 minutes REFER TO Attachment 1, Safety Function Status Check Sheet	<i>The SRO DIRECTS the STA to perform SFSCs now and every fifteen minutes</i>
	SRO	Step 10 Identify Success Paths IDENTIFY the success paths to be used to satisfy each safety function REFER TO Attachment 3, Functional Recovery Success Paths	<i>SRO UTILIZES to evaluate safety function Status</i>
2-EOP-15 ATT 3		The following actions from 2-EOP-15 ATT 3	
	SRO	Reactivity Control RC-1, CEA Insertion RC-2, Boration via CVCS RC-3, Boration via SIAS	<i>SRO EVALUATES and DETERMINES Reactivity Control is met by RC-1</i>
	SRO	Maint of Vital Aux – DC MVA-DC-1, Batteries/Chargers	<i>SRO EVALUATES and DETERMINES Maint of Vital Aux – DC is met by MVA-DC-1</i>
	SRO	Maint of Vital Aux – AC MVA-AC-1, Startup Transformers MVA-AC-2, EDGs MVA-AC-3, Unit Crosstie	<i>SRO EVALUATES and DETERMINES Maint of Vital Aux – AC is met by MVA-AC-1</i>
	SRO	RCS Inventory Control IC-1, CVCS IC-2, Safety Injection	<i>SRO EVALUATES and DETERMINES RCS Inventory Control is met by IC-2</i>
	SRO	RCS Pressure Control PC-1, Subcooled Control PC-2, PORVs/Pzr Vent PC-3, Saturated Control	<i>SRO EVALUATES and DETERMINES RCS Pressure Control is met by PC-1</i>



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Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	RCS & Core Heat HR-1, S/G Without SIAS HR-2, S/G With SIAS HR-3, Once Through Cooling	SRO EVALUATES and DETERMINES RCS & Core Heat <i>is met by HR-2</i>
	SRO	Containment Isol CI-1, Automatic/Manual Isol	SRO EVALUATES and DETERMINES Containment Isol <i>Is NOT met</i>
	SRO	Cntmt Press & Temp CTPC-1, Normal Cntmt Fans CTPC-2, Cntmt Fan Coolers CTPC-3, Cntmt Spray	SRO EVALUATES and DETERMINES Cntmt Press & Temp <i>Is met by CTPC-1</i>
	SRO	Step 11 Perform Success Path Instructions PERFORM ALL of the following IN THE ORDER LISTED. A. Instructions for a success path MOST LIKELY to be met for safety functions that are NOT met by ANY success path. B. Instructions for success paths for safety functions that are NOT met by Success Path 1. C. Instructions for ALL other success paths for safety functions met by Success Path 1.	SRO DETERMINES CI-1 is the success path to be addressed first and PERFORMS CI-1
2-EOP-15 CI-1		The following actions from 2-EOP-15 CONTAINMENT ISOLATION –CI-1	



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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

SRO	<p>1. Ensure Containment Isolation and Cooling If ANY of the following conditions exist,</p> <p><input type="checkbox"/> Containment pressure greater than 3.5 psig</p> <p><input type="checkbox"/> Containment radiation greater than 10 R/hr</p> <p><input type="checkbox"/> SIAS is ACTUATED</p> <p>Then PERFORM ALL the following:</p> <p>A. VERIFY BOTH the following:</p> <p> 1. VERIFY CIAS has ACTUATED</p> <p> 2. If Containment pressure is greater than 3.5 psig, Then VERIFY MSIS has ACTUATED</p> <p>B. ENSURE ALL available Emergency Containment HVAC systems are RUNNING:</p> <p><input type="checkbox"/> At least ONE train of SBVS</p> <p><input type="checkbox"/> At least ONE train of Containment Fan Coolers</p>	<p>SRO EVALUATES and DETERMINES SIAS is ACTUATED</p>
<p style="text-align: center;">CAUTION</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 ONE S/G must remain available for heat removal.</p>		



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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

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

Appendix D		Operator Action		Form ES-D-2	
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Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

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



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Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

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



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Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

SRO	7. Ensure Two Phase Natural Circulation If NO RCPs are operating, and single phase natural circulation can NOT be maintained, Then ENSURE ALL of the following conditions exist, <ul style="list-style-type: none">• ALL available Charging pumps are RUNNING• SI flow is within the SI flow delivery curve. REFER TO Figure 2. Safety Injection Flow vs. RCS Pressure• At least ONE S/G is available for RCS heat removal with level being restored to or maintained between 60 and 70% NR• Rep CET temperature is less than 22°F superheated	SRO EVALUATES and DETERMINES this step is N/A
CAUTION 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.		
SRO	8. Block MSIS As the RCS cooldown and depressurization proceed, PERFORM the following: A. If MSIS is NOT present, Then BLOCK automatic initiation of MSIS.	SRO EVALUATES and DETERMINES this step is N/A
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.		



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Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

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

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #	8	
Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	BOP	3. ENSURE MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED.	BOP ENSURES MV-08-1A, MSIV Header 'A' Bypass Valve, is CLOSED
	BOP	4. ENSURE HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED.	BOP ENSURES HCV-09-1A, Main Feedwater Header 'A' Isolation Valve, is CLOSED
	BOP	5. ENSURE HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED.	BOP ENSURES ENSURE HCV-09-1B, Main Feedwater Header 'A' Isolation Valve, is CLOSED. 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	7. ENSURE FCV-23-3, 2A SG Blowdown, is CLOSED.	BOP ENSURES FCV-23-3, 2A SG Blowdown, is CLOSED
	BOP	8. ENSURE FCV-23-4, 2A SG Blowdown, is CLOSED.	BOP ENSURES FCV-23-4, 2A SG Blowdown, is CLOSED
	BOP	9. ENSURE MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED.	BOP ENSURES MV-08-18A, 2A S/G Atmos Dump Vlv, is CLOSED
	BOP	10. CLOSE MV-08-14, 2A S/G ADV Isol. (Key 79)	BOP ENSURES MV-08-14, 2A S/G ADV Isol. (Key 79) CLOSED
	BOP	11. PLACE the control switch for auxiliary feed, Pump 2A, in STOP.	BOP ENSURES the control switch for auxiliary feed, Pump 2A, is PLACED in STOP
	BOP	12. ENSURE MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED.	BOP ENSURES MV-09-9, Pump 2A Disch to SG 2A Valve, is CLOSED
	BOP	13. ENSURE MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED.	BOP ENSURES MV-09-11, Pump 2C Disch to SG 2A Valve, is CLOSED

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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	14. PLACE MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE.	BOP PLACES MV-08-13, SG 2A Stm to AFW PP 2C, in CLOSE. 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	16. ENSURE MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED.	BOP ENSURES MV-08-19A, 2A S/G Atmos Dump Vlv, is CLOSED
	BOP	17. CLOSE MV-08-15, 2A S/G ADV Isol. (Key 80)	BOP ENSURES MV-08-15, 2A S/G ADV Isol. (Key 80) CLOSED
	BOP	18. If a SGTR is in progress, Then NOTIFY the SM that Control Room steps to isolate the affected S/G are complete for E-Plan purposes.	BOP NOTIFIES the SRO that the control room steps for isolating the 2A S/G are complete
	BOP	19. PERFORM the following LOCAL operations:	BOP DIRECTS the field operator action to isolate the 2A S/G
The Scenario can be terminated once control room actions for 2A SG have been complete and the crew stabilizes the RCS temperature with the 2B S/G.			
2-EOP-15 HR-2		The following actions from 2-EOP-15 RCS and CORE HEAT REMOVAL –HR-2	
	SRO	12. Verify Correct S/G was Isolated VERIFY the MOST affected S/G is isolated by observing ALL of the following: <ul style="list-style-type: none">• S/G pressures• S/G levels• RCS cold leg temperatures	SRO EVALUATES and DETERMINES the correct 2AS/G has been isolated



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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	<p>13. Stabilize RCS Temperature</p> <p>If there are NO indications of a LOCA or SGTR, Then STABILIZE RCS temperature by performing ALL of the following:</p> <p>A. STEAM the LEAST affected S/G using the ADV.</p> <p>B. CONTROL feedwater to the LEAST affected S/G.</p> <p>C. ENSURE the RCS is within the limits of Figure 1A or 1B, RCS Pressure Temperature.</p> <p>D. If BOTH of the following conditions are met,</p> <ul style="list-style-type: none">• NO RCPs are RUNNING• The limits of Figure 1A or 1B were exceeded <p>Then PERFORM BOTH of the</p> <p>1. RECORD the temperature, pressure and time when control of RCS temperature was regained.</p> <p>2. MAINTAIN RCS Pressure and Temperature stable for a minimum of TWO hours.</p>	<p>SRO DIRECTS 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>
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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

	SRO	<p>14. Cooldown RCS</p> <p>If indication of a LOCA or SGTR exists, Then PERFORM the following:</p> <p>A. COOLDOWN the RCS using SBCS.</p> <p>1. If RCPs are operating, Then COOLDOWN not to exceed 100°F in ANY 1 hour period.</p> <p>2. If RCPs are NOT operating, Then COOLDOWN not to exceed 50°F in ANY 1 hour period.</p> <p>3. If RCPs are NOT operating, and a S/G is ISOLATED for a SGTR event, Then COOLDOWN not to exceed 30°F in ANY 1 hour period..</p> <p>B. BORATE the RCS until Shutdown Margin is greater than the value required by the COLR.</p> <p>REFER TO 2-NOP-02.24, Boron Concentration Control.</p>	<p>SRO EVALUATES and DETERMINES a SGTR is in progress and DIRECTS a cooldown be commenced</p>
<p style="text-align: center;">CAUTION</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 ONE S/G must remain available for heat removal.</p>			



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Event Description:		2A Steam Generator MSSV opens on trip and closes at 450 psia			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

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



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Op Test No.:	L-17-1	Scenario #	3	Event #	9
Event Description:		A Train of SIAS fails to auto actuate			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

CT-2	INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY — MANUALLY ACTUATE 2A SIAS WITHIN 15 MINUTES OF ENTRY INTO 2-EOP-15 (FUNCTIONAL RECOVERY)		
Booth Operator Instructions: <ul style="list-style-type: none">NONE: A SIAS FAILED AS-IS, is an auto trigger			
Role Play: <ul style="list-style-type: none">If calls are made for information delivery or support, then verbal repeat back of information is the only required action.			
Indications: Safety Injection Actuation Alarms and supporting plant parameters			
Annunciators: Multiple			
	BOP		Recognizes plant parameters require SIAS and validates its actuation
	BOP		Identifies that A train SIAS did not actuate and takes action to actuate A train SIAS
	BOP		Pushes the A SIAS push button and turns the A SIAS actuation switch, then verifies the 2A HPSI started
	BOP		Updates the crew on the actuation status of SIAS



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Op Test No.:	L-17-1	Scenario #	3	Event #		
Event Description:		APPENDICES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-EOP-99 APP "A"		The following actions are for Sampling Steam Generators Using 2-EOP-99 APPENDIX "A".	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	BOP ENSURES that the 2AB 480V Load Center is aligned to an energized bus BOP DISPATCHES the NPO to to restore Instrument Air. REFER TO Appendix H
NOTE <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	2. If an INADVERTENT SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following: <input type="checkbox"/> RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A HCV-14-9 OR <input type="checkbox"/> RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B HCV-14-10	BOP takes action as described in the Appendices



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Event Description:		APPENDICES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

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.

	BOP	<p>3. If a VALID 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>OR</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>	<i>BOP takes action as described in the Appendices</i>
	BOP	<p>4. If the 'N' Header has been restored, Then OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves by performing the following:</p> <p>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-23-7 and FCV-23-9 by PLACING the control switch to CLOSE / OVERRIDE.</p> <p>B. OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves.</p>	<i>BOP takes action as described in the Appendices</i>



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Event Description:		APPENDICES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	5. If the 'N' Header is in service, Then DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.	<i>BOP takes action as described in the Appendices</i>
	BOP	6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.	<i>BOP takes action as described in the Appendices</i>
<p align="center">NOTE</p> <p align="center">The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.</p>			
	BOP	7. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	<i>BOP takes action as described in the Appendices</i>
	BOP	8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS, <ul style="list-style-type: none"> Seismic event 'N' Header is found NOT intact The operable Safety Related CCW header becomes inoperable Then ISOLATE the 'N' header.	<i>BOP takes action as described in the Appendices</i>
2-EOP-99 APP "J"		The following actions are for Restoring CCW to the RCPs Using 2-EOP-99 APPENDIX "J"	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: <ul style="list-style-type: none"> <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. 	<i>BOP takes action as described in the Appendices</i>



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Event Description:		APPENDICES			
Time	Position Competency	Procedure Step		Applicant's Actions or Behavior	

	BOP	2. ENSURE Instrument Air to Containment is available by PLACING HCV-18-1 to CLOSE / OVERRIDE and then to OPEN.	<i>BOP takes action as described in the Appendices</i>
<p style="text-align: center;">NOTE</p> <p><input type="checkbox"/> HCV-14-9 (HCV-14-10) will open 5 seconds after HCV-14-8A (HCV-14-8B) starts to open.</p> <p><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.</p>			
	BOP	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: HCV-14-8A HCV-14-9 OR HCV-14-8B HCV-14-10	<i>BOP takes action as described in the Appendices</i>
<p style="text-align: center;">CAUTION</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>			



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #		
Event Description:		APPENDICES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	4. If a VALID SIAS has closed the 'N' Header valves, Then PERFORM the following: A. VERIFY both safety related CCW headers are operational. B. VERIFY 'N'-Header is intact (NO seismic event has occurred). C. ALIGN the 'N' Header to one Safety Related CCW Header by performing either of the following: RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A, HCV-14-9 OR RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B, HCV-14-10	<i>BOP takes action as described in the Appendices</i>
	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	<i>BOP takes action as described in the Appendices</i>
	BOP	6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN .	<i>BOP takes action as described in the Appendices</i>
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.			



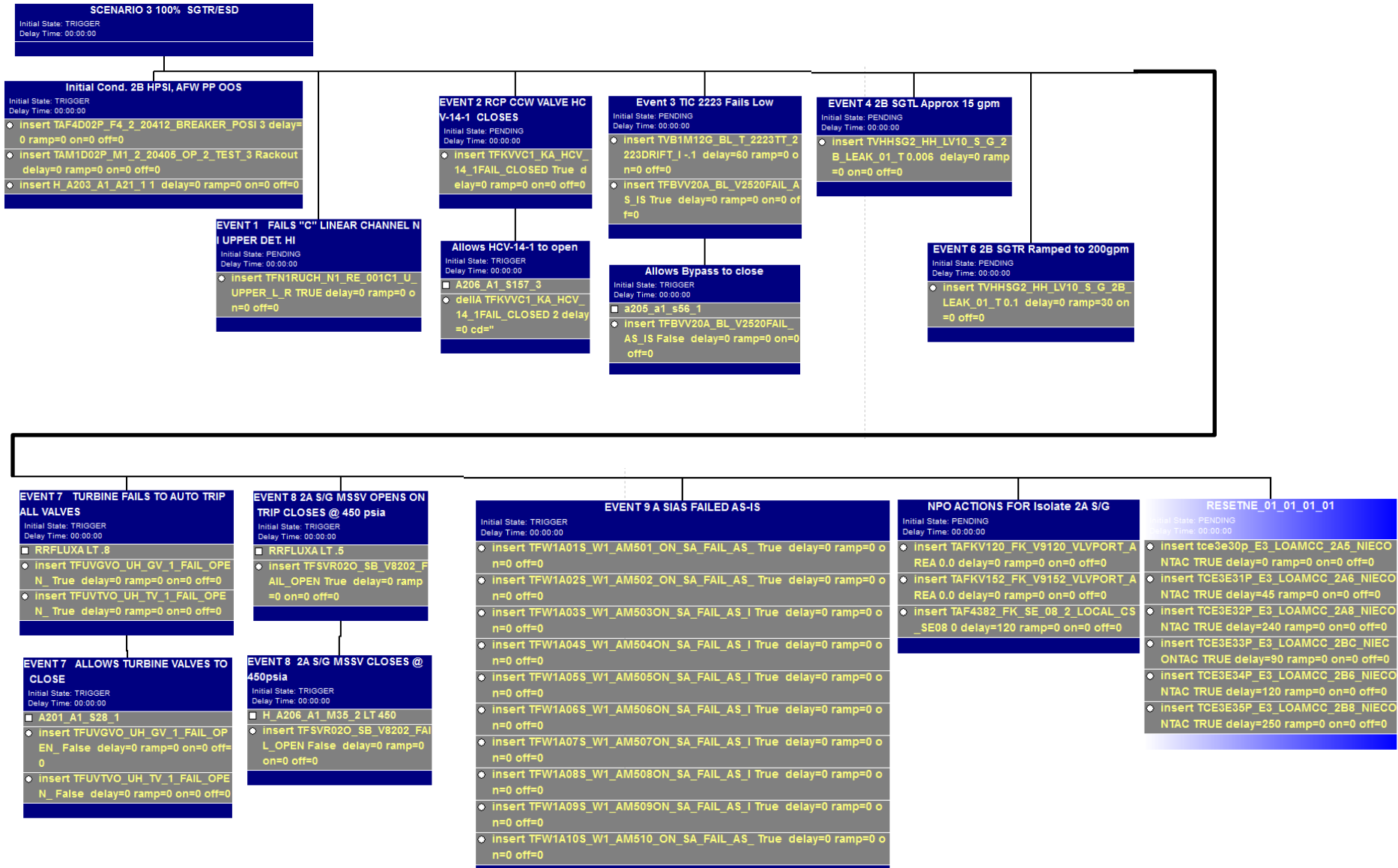
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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	3	Event #		
Event Description:		APPENDICES				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	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	<i>BOP takes action as described in the Appendices</i>
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Reactor Coolant Pumps must be secured if CCW flow is not restored within 10 minutes.</p>			
	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.	<i>BOP takes action as described in the Appendices</i>
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.</p>			
	BOP	9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	<i>BOP takes action as described in the Appendices</i>
	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.	<i>BOP takes action as described in the Appendices</i>

SIMULATOR LESSON LAYOUT



QUANTITATIVE ATTRIBUTES

Malfunctions:

Before EOP Entry:

1. Linear Power Range safety channel NI upper detector fails high
2. HCV-14-1 inadvertent closure
3. TIC-2223 Letdown Temperature Controller auto malfunction
4. 2B SGTL (approx.15 gpm)

After EOP Entry:

1. Turbine fails to auto trip
2. 2A Steam Generator MSSV opens on trip and closes at 450 psia
3. A Train of SIAS fails to auto actuate

Abnormal Events:

1. Linear Power Range safety channel NI upper detector fails high
2. HCV-14-1 inadvertent closure
3. TIC-2223 Letdown Temperature Controller auto malfunction
4. 2B SGTL (approx.15 gpm)

Major Transients:

1. SGTR (approx. 200 gpm ramped 30 sec) 2B S/G
2. 2A Steam Generator MSSV opens on trip and closes at 450 psia

Critical Tasks:

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Restore CCW to RCPs within 10 minutes of inadvertent closure of CCW supply valve.
2. INITIATE/ACTUATE/START SAFEGUARDS EQUIPMENT THAT FAILS TO FUNCTION AUTOMATICALLY – Manually actuate 2A SIAS within 15 minutes of entry into 2-EOP-15 (Functional Recovery) to prevent unnecessary escalation of EAL to SAE (Loss of second Fission Product Barrier) due to inaction by the operators.

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.a, Restore the required AFW pumps 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.
2. 3.5.2. ACTION a.2 Restore the inoperable subsystem 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.

Operator Work Around:

None

Locked in Annunciators:

1. G-45 2B AFW pp
2. Q-31 2B HPSI pp

Current Status:

1. The Unit is at 100% power, Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14 Response To Severe Weather completed.
2. 2A Screen wash Pump and traveling screens running.
3. 2B HPSI pump INOP for motor replacement (12 hours into 36 hour maintenance window) on Clearance
4. 2B AFW inoperable 2 hours ago due to broken oil sight glass, on Clearance
5. Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected

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.

**L-17-1 NRC EXAM SCENARIO 4 REV. 1****SEG**
Page 1 of 62**SITE:** ST. LUCIE**Revision #:** 1**LMS ID:** N/A**LMS Rev. Date:** N/A**SEG TITLE:** L-17-1 SCENARIO 4**SEG TYPE:** ☐ Training ☒ Evaluation**PROGRAM:** ☐ LOCT ☒ LOIT ☐ Other:**DURATION:** 90 minutes

Developed by: JAMES MANN 10/24/17
Instructor/Developer Date

Reviewed by: J. D. CARPENTER 11/01/17
Instructor (Instructional Review) Date

Validated by: J. D. CARPENTER 11/08/17
SME (Technical Review) Date

Approved by: BRAD HINZE 11/10/17
Training Supervision Date

Approved by: TERRY BENTON 11/08/17
Training Program Owner (Line) Date

Appendix D
Scenario Outline
Form ES-D-1

Facility:	<u>St. Lucie</u>	Scenario No.:	<u>4</u>	Op-Test No.:	<u>L-17-1</u>
Examiners:	_____	Operators:	SRO: _____	ATC: _____	
	_____		BOP: _____		
Initial Conditions:	100% power, MOC, no scheduled surveillances, 0-AOP-100.14 Response To Severe Weather complete, maintain 100% power				
Turnover:	Inclement weather (severe thunderstorms and tornado watch); 2B HPSI pump inoperable for motor replacement (12 hours into planned 36 hour maintenance window); LIC-1110X OOS LIC-1110Y Selected, 2B S/G ADV MV-08-18B ADV 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. 2. RESTORE AND CONTROL MAIN/AUXILIARY FEED WATER PRIOR TO REACHING ONCE-THROUGH-COOLING CRITERIA - If no feedwater flow to either S/G, then the crew establishes MFW or AFW flow to at least one S/G and establishes a rising level trend in that S/G prior to reaching Once-Through-Cooling Criteria (15% WR S/G level on both S/Gs).				

Event No.	Malf. No.	Event Type*	Event Description
1	1	C/BOP/SRO	Malf: HVS-2A Rx Cavity Cooling Fan trips Action: Start HVS-2B
2	2	C/BOP/SRO	Malf: Running Charging pump trips Action: Isolate Letdown and Restore charging and letdown T.S. 3.1.2.4 & 3.5.2
3	3	I/BOP/SRO TS/SRO	Malf: CIS RM RIS-26-5-2 (C Channel) fails high Action: Bypass ESFAS bistable TS 3.3.2
4		TS/SRO	NPO calls in discovery of 2B AFW broken oil sight glass on rounds TS 3.7.1.2
5	4	C/ATC/SRO TS/SRO	Malf: PCV-1100F fails open Action: Select PCV-1100E TS 3.2.5 CT-1 Failure to control RCS pressure will result in reactor trip
6	5	R/ATC N/BOP/SRO	Malf: HVS-2B Rx Cavity Cooling Fan trips, Action: Commence plant shutdown with no Cavity Cooling Fans
7	6	M/ALL	MFW pump trip, reactor trip, LOOP (in 1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mechanical OS, EOP-06
8	7	C/ATC/SRO	Malf: 2B ADV PIC-08-1B fails in AUTO, 2B S/G ADV MV-08-18B ADV OOS Action: Manually Control MV-08-19B ADV
9	8	C/BOP/SRO	Malf: 2A EDG fails 2AB 480V LC de-energized Action: Align 2AB 480V LC to 'B' train
10	9	C/BOP/SRO	Action: Restore 2C AFW and feed to at least one S/G IAW 2-AOP-09.02 CT-2 RESTORE FEEDWATER prior to <15% WR both S/Gs

* (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 Instrumentation
2. 2-AOP-25.01, Loss of RCB Cooling Fans
3. 2-AOP-02.03, Charging and Letdown
4. 2-AOP-01.10, Pressurizer Pressure and Level
5. 2-AOP-09.02, AFW
6. 2-AOP-22.01, Rapid Downpower
7. 2-EOP-01, Standard Post Trip Actions
8. 2-EOP-06, TLOF
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:

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-17-1 NRC EXAM SCENARIO 4 REV. 1	SEG Page 4 of 62
Appendix D	Scenario Outline	Form ES-D-2

SCENARIO 4 OVERVIEW/SEQUENCE OF EVENTS

L-17-1 NRC Scenario 4

HVS-2A Rx Cavity Cooling Fan trips. The BOP will address annunciator U-21 and start HVS-2B (per ARP guidance). The SRO will implement 2-AOP-25.01, RCB Ventilation, and perform section 4.2.3.

Running Charging pump trips, the ATC Recognizes and evaluates the failure and communicates to the SRO. The SRO will direct the ATC to isolate Letdown. The SRO will implement 2-AOP-02.03, and Restore Charging and Letdown. T.S. 3.1.2.4 & 3.5.2 applies until the 2A Charging pump control switch is placed in the stop position.

CIS RM RIS-26-5-2 (C Channel) fails high; The BOP will recognize and report the condition; The SRO will implement 2-AOP-99.01, Loss of Tech Spec Instrumentation, and direct the BOP to bypass the affected ESFAS bistable; The SRO will evaluate and enter TS 3.3.2.

NPO calls in discovery of 2B AFW broken oil sight glass on rounds oil completely drained to floor. SRO will evaluate failure and direct the 2B AFW pump control switch to be placed in stop (unavailable for remainder of scenario) and implement TS 3.7.1.2.

PCV-1100F fails open; The ATC will recognize, report the condition, and select PCV-1100E as Immediate Action; The SRO will implement 2-AOP-01.10, Pressurizer Pressure and Level, verify immediate operator actions were performed and implement section 4.2.4 and implement TS 3.2.5.

CT-1 Failure to control RCS pressure will result in an automatic reactor trip.

HVS-2B, Rx Cavity Cooling Fan, trips. HVS-2A, Rx Cavity Cooling Fan, is unavailable. The BOP will address the annunciator U-22. The SRO will re-enter 2-AOP-25.01, RCB Ventilation, and with no Rx Cavity Cooling Fans available, direct actions to commence a plant shutdown IAW 2-AOP-22.01, Rapid Downpower. The ATC will commence boration and CEA insertion, as directed. The BOP will commence turbine load reduction, as directed.

2A MFW pump trips. The crew will identify the need to trip the reactor prior to Auto trip on Low S/G levels. A LOOP will occur 1 minute post trip; the 2A EDG fails to start (unavailable for remainder of scenario). The SRO will implement 2-EOP-01. Upon AFAS actuations, the 2C AFW pump will mechanically Overspeed and trip. The SRO will diagnose a TLOF and transition to 2-EOP-06. The SRO will evaluate LCO 3.7.1.2.

2B ADV PIC-08-1B fails in AUTO, PACB ADV will be OOS from turnover. The ATC will Manually Control ADV PIC-08-1B at RTGB.

The ATC will be directed to restore Instrument Air while in 2-EOP-06. The 2AB 480V LC will be de-energized due to being aligned to the A train. Alignment of the 2AB 480V LC will need to be aligned to B train prior to Instrument Air restoration.

The BOP will evaluate the AFW system, recognize, and report a mechanical overspeed condition. The SRO will direct the BOP to restore AFW IAW 2-AOP-09.02, Auxiliary Feed Water. The BOP will restore the 2C AFW pump and feed at least one S/G to restore level.

CT-2 RESTORE FEEDWATER scenario validation confirms both S/Gs will reach <15% WR approximately 40minutes after event initiation.

Procedures Used
Tech Specs Entered

- 2-AOP-99.01, Loss of Tech Instrumentation
- 2-AOP-25.01, Loss of RCB Cooling Fans
- 2-AOP-02.03, Charging and Letdown
- 2-AOP-01.10, Pressurizer Pressure and Level
- 2-AOP-09.02, AFW
- 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

- 3.3.2 Instrumentation
- 3.7.1.2 AFW
- 3.2.5 DNB
- 3.1.2.4 Charging Pp
- 3.5.2 ECCS Subsystems

Scenario Setup and Booth Operator Instructions:

- **ENSURE** Examination Security has been established.
- **ENSURE** the Simulator is unloaded
- **ENSURE** IC #184 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, CY17C#184.ic and CY17C#184.rlp
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, CY17C#184.ic and CY17C#184.rlp into IC Master
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, xr184.dat
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, xr184.dat into IC Data
- **ENSURE** Lesson for Scenario 4 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO Isn
 - **Copy**, HLC-23 NRC SCENARIO 4.Isn
 - **Open**, Lessons folder on simulator operator station desk top
 - **Paste**, HLC-23 NRC SCENARIO 4.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#184
 - **RUN** the Simulator
 - **Place** the 2B HPSI Pump in STOP and place a clearance tag on the pump control switch, place a green mylar on annunciator Q-31.
 - **Place** GUARDED EQUIPMENT Tags on HPSI as outlined in Guarded Equipment procedure.
 - **Close** MV-08-16 and place a clearance tag on the control switch
 - **Place** a clearance tag on the control switch for MV-08-18B place a green mylar on annunciator LA-12 and LB-6
 - **Place** Pressurizer Level Controller selector switch to Y Channel position, place caution tag on switch and place an OOS magnet under LIC-1110X
 - **ENSURE** the A Train Protected sign and 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** HLC-23 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** IC#184 and HLC-23 NRC SCENARIO 4.Isn are deleted from Simulator in accordance with Attachment 2 of Training Department Policy PSL-TRNG 142



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Appendix D


Scenario Outline

Form ES-D-2

BRIEF / TURNOVER INFORMATION

- Conduct simulator crew pre-scenario brief using TR-AA-230-1007-F06, Simulator Instructor Pre-Exercise Checklist
- Brief the scenario evaluators
- Brief surrogates using TR-AA-230-1007-F11, Surrogate Brief Checklist, if necessary
- Crew Shift Turnover Information: See Attached

		L-17-1 NRC EXAM SCENARIO 4 REV. 1					SEG Page 7 of 62	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	4	Event #	1	
Event Description:		HVS-2A Rx Cavity Cooling Fan trips.						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							
Booth Operator Instructions: <ul style="list-style-type: none"> • Upon cue from Lead Examiner, trigger Event 1: HVS-2A RX CAVITY FAN TRIPS Role Play: <ul style="list-style-type: none"> • If calls are made for information delivery or support, then verbal repeat back of information is the only required action • If called as the SNPO to check breaker 2-41320, then after 5 minutes report the breaker is tripped • If called as EM to check the fuses for HVS-2A, then after 15 minutes report the fuses are good • If called as EM to check breaker 2-41320, after 30 minutes report that the breaker needs to pulled and inspected and request an ECO 								
Indications: Lights for HVS-2A breaker/ fan extinguish Annunciators: U-21								
	BOP/ATC		Acknowledge annunciators and communicate IAW plant policies					
	BOP/ATC		Recognize tripped and communicate status IAW plant policies					
	BOP		Pulls ARP's for U-21 and communicates/takes action as directed					
2-ARP-01-U00		The following actions are taken from 2-AOP-01-U00, Control Room Panel U HVCB Page 24						
	BOP	ALARM CONFIRMATION 1. HVS-2A indicating lights OFF indicates either the breaker is open or the control power fuse is blown	<i>BOP EVALUATES HVS-2A indications and determines the indicating lights to be off</i>					

		L-17-1 NRC EXAM SCENARIO 4 REV. 1					SEG Page 8 of 62	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	4	Event #	1	
Event Description:		HVS-2A Rx Cavity Cooling Fan trips.						
Time	Position	Procedure Step		Applicant's Actions or Behavior				
	Competency							
	BOP	OPERATOR ACTIONS 1. CHECK HVS-2A, REACTOR CAVITY COOLING FAN, indicating lights 2. IF HVS-2A, REACTOR CAVITY COOLING FAN, is RUNNING, THEN PERFORM the following: A. START HVS-2B, REACTOR CAVITY COOLING FAN B. IF NOT required for plant conditions, THEN STOP HVS-2A, REACTOR CAVITY COOLING FAN 3. NOTIFY Maintenance Supervisor			BOP EVALUATES HVS-2A indications and determines the indicating lights to be off, notifies the Maintenance Supervisor and proceeds to step 4			
	BOP/SRO	OPERATOR ACTIONS 4. IF a Reactor Cavity Cooling Fan TRIPPED, THEN PERFORM the following: A. START HVS-2B, REACTOR CAVITY COOLING FAN. B. GO TO 2-AOP-25.01, Loss of RCB Cooling Fans.			BOP EVALUATES HVS-2A indications and determines the fan to be tripped BOP INFORMS the SRO that the ARP directs the starting of HVS-2B and entry into 2-AOP-25.01, Loss of RCB Cooling SRO DIRECTS the BOP to announce and start HVS-2B BOP ANNOUNCES and starts HVS-2B			
	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			
2-AOP-25.01		The following actions are taken from 2-AOP-25.01, Loss of RCB Cooling Fans						
4.1 Immediate Operator Actions: NONE								
4.2 Subsequent Operator Actions								
4.2.1 General Actions:								
	SRO	1. PERFORM applicable section per Table 1			SRO EVALUATES Table 1 and DETERMINES that section 4.2.3 Loss of Reactor Cavity Cooling Fan is applicable			
4.2.3 Loss of Reactor Cavity Cooling Fan:								

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	1	
Event Description:		HVS-2A Rx Cavity Cooling Fan trips.				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

NOTE

Placing Reactor Cavity Cooling Fan control switch to STOP resets the control logic to allow starting following a breaker trip or loss of control power

CAUTION

At least one Reactor Cavity Cooling Fan must be operating to maintain the reactor vessel support structure within its design basis. Operator action is required within 45 minutes from the loss of a Reactor Cavity Cooling Fan to restore a Reactor Cavity Cooling Fan OR initiate reactor trip and cooldown to at least Hot Shutdown. The total time allowed from the loss of Reactor Cavity Cooling Fans to Hot Shutdown is 5 hours. (Section 6.2, Commitment 1, Section 6.2, Commitment 2)

	SRO	1. START standby Reactor Cavity Cooling Fan: • HVS-2A • HVS-2B	SRO VERIFIES The standby Reactor Cavity Cooling fan HVS-2B has been started
	SRO	2. VERIFY Attachment 2, Reactor Cavity Cooling Fan Local Breaker Operations, performed for HVS-2A	SRO VERIFIES The standby Reactor Cavity Cooling fan has been started
ATTACHMENT 2			
	SRO	1. VERIFY electrical alignment of stopped fans as follows: • Bkr 2-41320, 2HVS-2A REACTOR BLDG. CAVITY SUPPLY FAN,CLOSED	SRO DIRECTS the SNPO to inspect the following breaker for status and indication Bkr 2-41320, 2HVS-2A REACTOR BLDG. CAVITY SUPPLY FAN, CLOSED SNPO to check breaker 2-41320, then after 5 minutes report the breaker is tripped
	SRO	2. ENSURE fuses of stopped Reactor Cavity Cooling Fan are checked and • Replaced as necessary	SRO DIRECTS electrical to inspect the fuses for HVS-2A and replace as necessary
	SRO	3. NOTIFY Control Room of breaker status.	SRO DIRECTS the SNPO to Control Room of breaker status
	SRO	4. IF breaker is tripped, THEN IMPLEMENT 0-NOP-99.05, Valve, Breaker, Motor and Instrument Instructions	SRO IMPLEMENTS 0-NOP-99.05, Valve, Breaker, Motor and Instrument Instructions




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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	1	
Event Description:		HVS-2A Rx Cavity Cooling Fan trips.				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

4.2.3 Loss of Reactor Cavity Cooling Fan:			
	SRO	3. VERIFY tripped Reactor Cavity Cooling Fan available	SRO IDENTIFIES HVS-2A is unavailable and Notifies the SM
	SRO	4. WHEN Section 3.0, EXIT CONDITIONS, are met, THEN EXIT this procedure	SRO RECOGNIZES the RCB cooling fans are not restored to normal operation and remains in the AOP
	SRO	Performs Crew Brief	SRO PERFORMs 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.			

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Appendix D		Operator Action	Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4
Event Description:	Running Charging pump trips		
Time	Position	Procedure Step	Applicant's Actions or Behavior
	Competency		
T.S. 3.1.2.4	AT LEAST TWO CHARGING PUMPS SHALL BE OPERABLE. ACTION: 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		
T.S. 3.5.2	TWO INDEPENDENT EMERGENCY CORE COOLING SYSTEM (ECCS) SUBSYSTEMS SHALL BE OPERABLE WITH EACH SUBSYSTEM COMPRISED OF: D. ONE OPERABLE CHARGING PUMP*. ACTION: 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		
Booth Operator Instructions: <ul style="list-style-type: none"> • Upon cue from Lead Examiner, Trigger Event 2: 2A CHARGING Pp TRIPS Role Play: If calls are made for information delivery or support, then verbal repeat back of information is the only required action. If dispatched to the 2A Charging pump or its breaker, report back after 5 minutes that you see no issue with the components If called as EM or MM, report back after 10 minutes as EM that that breaker needs to be taken to the shop for evaluation			
Indications: Charging flow goes to zero Annunciators: M-14,28			
	ATC		Recognizes that all charging flow has been lost and Recognizes the need for immediate operator action to isolate Letdown, announces their intention and takes the required immediate operator action to isolate Letdown
	SRO		Concurs with/ Directs immediate operator action announced by the ATC to isolate Letdown
	BOP		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
2-AOP-02.03		The following actions are taken from 2-AOP-02.03 Charging and Letdown	

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	2	
Event Description:		Running Charging pump trips				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

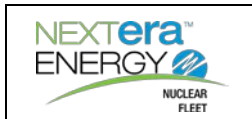
4.1.2 Immediate Operator Actions: IF Charging flow is lost, THEN ISOLATE Letdown by performing the following:

- A. CLOSE V2522, CONTAINMENT ISOL VALVE-OC.
- B. CLOSE V2515, STOP VALVE-IC.
- C. CLOSE V2516, CONTAINMENT ISOL VALVE-IC.

4.2 Subsequent Operator Actions

4.2.1 General Actions:

	SRO	1 IF charging and letdown flow has been lost, THEN, PERFORM the following: <ul style="list-style-type: none"> MAINTAIN reactor power and RCS temperature constant to minimize pressurizer level deviations. IF a charging pump(s) has tripped, THEN PLACE its control switch in STOP. IF charging pumps have been lost, THEN REFER TO the following Technical Specifications: <ul style="list-style-type: none"> 3.1.2.3, Charging Pumps – Shutdown 3.1.2.4, Charging pumps - Operating 3.5.2., Emergency Core Cooling 	SRO DIRECTS the ATC reactor power to be maintained and refers to T.S. and THEN PLACE 2A charging pump control switch in STOP. SRO DETERMINES That T.S. 3.1.2.4 & 3.5.2 applies until the 2A Charging pump control switch is placed in the stop position.
	SRO	Notifies the SM of the loss of the 2A Charging pump	
	SRO	2 VERIFY all applicable automatic actions have occurred. Attachment 1, Charging and Letdown Automatic Responses, contains a listing of expected automatic actions	SRO DIRECTS verification of Att. 1
	SRO	3 IF charging and letdown flow has been lost, THEN DETERMINE the cause	SRO CALLS for assistance to determine the issue with the 2A Charging pump



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	2	
Event Description:		Running Charging pump trips				
Time	Position	Procedure Step			Applicant's Actions or Behavior	
	Competency					

	SRO	4 IF a charging system leak has occurred, THEN ISOLATE the leak and refer to applicable Technical Specifications for guidance.	SRO DETERMINES no leak is present
	SRO	5 PERFORM steps in the following applicable sections per.	SRO DIRECTS Re-establishing Charging and Letdown using either the 2B or 2C charging pump Section 4.2.5
4.2.5 Reestablishing Charging and Letdown			
	SRO	1. IF charging and letdown has been lost and can be restored, THEN REESTABLISH charging and letdown flow per Attachment 5, Reestablishing Charging and Letdown.	SRO DIRECTS the BOP to Re-establish Charging and Letdown using Attachment 5 with either the 2B or 2C charging pump
ATTACHMENT 5 Reestablishing Charging and Letdown			
<p style="text-align: center;">CAUTION</p> <p>Prolonged use of Charging without Letdown could result in the Pressurizer exceeding the Technical Specification limit of 68%. Prolonged use of charging without letdown could result in the Pressurizer going solid. Pressurizer level must be closely monitored.</p>			
	BOP	1. VERIFY the following alarms are CLEAR: <input type="checkbox"/> R-6, SIAS CHANNEL A/B ACTUATION <input type="checkbox"/> P-3, CIS CHANNEL A/B ACTUATION	BOP VERIFIES the following alarms are CLEAR • R-6, SIAS CHANNEL A/B ACTUATION • P-3, CIS CHANNEL A/B ACTUATION
	BOP	2. VERIFY adequate VCT level is indicated.	BOP VERIFIES the VCT has adequate level
	BOP	3. IF inadequate VCT level is indicated, THEN RESTORE the VCT to a normal level per 2-NOP-02.24, Boron Concentration Control.	BOP VERIFIED the VCT has adequate level

Appendix D			Operator Action			Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	2	
Event Description:		Running Charging pump trips				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	<p>4. POSITION the Level Control Valve Selector switch as follows:</p> <p>A. IF both Level Control Valves are desired for use, THEN SELECT BOTH.</p> <p>B. IF LCV-2110P, LEVEL CONTROL VALVE, is desired for use, THEN SELECT LCV 2110P position.</p> <p>C. IF LCV-2110Q, LEVEL CONTROL VALVE, is desired for use, THEN SELECT LCV 2110Q position.</p>	BOP VERIFIES Level Control Valve switch is in the LCV 2110P position.
	BOP	<p>5. POSITION the Pressure Control Valve Selector switch as follows:</p> <p>A. IF both Pressure Control Valves are desired for use, THEN SELECT BOTH.</p> <p>B. IF PCV-2201P, PRESSURE CONTROL VALVE, is desired for use, THEN SELECT PCV 2201P position.</p> <p>C. IF PCV-2201Q, PRESSURE CONTROL VALVE, is desired for use, THEN SELECT PCV 2201Q position.</p>	BOP VERIFIES Pressure Control Valve switch is in the PCV 2201P position
	BOP	6. PLACE LIC-2110, LETDOWN LEVEL, in MANUAL.	BOP PLACES LIC-2110, LETDOWN LEVEL, in MANUAL
	BOP	<p>7. PERFORM the following for PIC-2201, LETDOWN PRESSURE:</p> <p>A. PLACE in AUTO.</p> <p>B. SET to maintain 150 psig.</p>	BOP PLACES PIC-2201, LETDOWN PRESSURE in AUTO and SETS the controller to maintain 150 psig
	BOP	<p>8. PERFORM the following:</p> <p>A. PLACE the POSITION LIMITER BYPASS key switch in the BYPASS position.(Key 97)</p> <p>B. VERIFY annunciator M-45, LETDOWN LCV-2110P/Q LIMITER BYPASSED, alarms.</p>	BOP PLACES the POSITION LIMITER BYPASS key switch in the BYPASS position and VERIFIES annunciator M-45, LETDOWN LCV-2110P/Q LIMITER BYPASSED, alarms



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	2	
Event Description:		Running Charging pump trips				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	9. ENSURE the following letdown level control valves are CLOSED: <input type="checkbox"/> LCV-2110P, LEVEL CONTROL VALVE <input type="checkbox"/> LCV-2110Q, LEVEL CONTROL VALVE	BOP ENSURES letdown level control valves LCV-2110P & LCV-2110Q are CLOSED
	BOP	10. PLACE V2520, ION EXCHANGER BYPASS VALVE, in BYPASS RESET to bypass letdown ion exchangers.	BOP PLACES V2520, ION EXCHANGER BYPASS VALVE, in BYPASS RESET
	BOP	11. START one charging pump.	BOP STARTS either the 2B or 2C AFW Pump as directed by the SRO
	BOP	12. VERIFY charging flow is indicated on FIA-2212, CHARGING TO REGEN HX.	BOP VERIFIES charging flow is indicated on FIA-2212, CHARGING TO REGEN HX
	BOP	13. PERFORM the following to restore Letdown flow: A. OPEN V2516, CONTAINMENT ISOL VALVE-IC B. OPEN V2522, CONTAINMENT ISOL VALVE-OC. C. OPEN V2515, STOP VALVE-IC. (1) IF V2515, STOP VALVE-IC, closed due to M-28, REGENERATIVE HEAT EXCHANGER OUTLET TEMP HIGH, PERFORM the following steps concurrently: a. CYCLE V2515, STOP VALVE-IC. b. Slowly OPEN the level control valve by adjusting LIC-2110, LETDOWN LEVEL, manual output to ESTABLISH approximately 5 gpm letdown flow. c. VERIFY M-28, REGENERATIVE HEAT EXCHANGER OUTLET TEMP HIGH, is clear.	BOP RESTORES Letdown by Opening V2516, V2522 & V2515 and Slowly OPENS the level control valve by adjusting LIC-2110, then VERIFIES M-28, REGENERATIVE HEAT EXCHANGER OUTLET TEMP HIGH, is clear
	BOP	14. Slowly OPEN the level control valve by adjusting LIC-2110, LETDOWN LEVEL, manual output to ESTABLISH approximately 5 gpm letdown flow.	BOP Slowly OPENS the level control valve by adjusting LIC-2110 WHEN letdown temperature stabilizes on TIC-2221, TEMP REGEN HX TUBE OUT to attain 5 gpm letdown flow

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	2	
Event Description:		Running Charging pump trips				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	

	BOP	15. WHEN letdown temperature stabilizes on TIC-2221, TEMP REGEN HX TUBE OUT, THEN RAISE letdown flow at a rate NOT to exceed 5 to 10 gpm over at least a four minute period.	BOP Slowly OPENS the level control valve by adjusting LIC-2110 to RAISE letdown flow at a rate NOT to exceed 5 to 10 gpm over at least a four minute period
	BOP	16. IF letdown cannot be restored, THEN MAINTAIN charging as required for boration AND GO TO Section 4.2.3, Letdown Unavailable.	BOP VERIFIES letdown has been restored
	BOP	17. VERIFY PIC-2201, LETDOWN PRESSURE, is maintaining letdown pressure at 150 psig.	BOP VERIFIES PIC-2201, LETDOWN PRESSURE, is maintaining letdown pressure at 150 psig
	BOP	18. WHEN pressurizer level is at its setpoint, THEN PERFORM the following: A. If Three Element control is desired, Then PERFORM the following on LIC-2110, LETDOWN LEVEL: (1) SELECT the LOOP 1 (PZR LVL DEV) display screen. (2) DEPRESS and HOLD the "A" pushbutton until LIT. B. If Single Element control is desired, Then PERFORM the following on LIC-2110, LETDOWN LEVEL: (1) SELECT the LOOP 1 (PZR LVL DEV) display screen. (2) DEPRESS and HOLD the "PF" pushbutton until LIT. (3) DEPRESS and HOLD the "A" pushbutton until LIT.	BOP VERIFIES Three Element control is in service
	BOP	20. PLACE the POSITION LIMITER BYPASS key switch in NORM and REMOVE key.	BOP PLACES the POSITION LIMITER BYPASS key switch in the NORM position and REMOVES the key
	BOP	21. Slowly RAISE PIC-2201, LETDOWN PRESSURE, setpoint to 430 psig.	BOP Slowly RAISES PIC-2201, LETDOWN PRESSURE, setpoint to 430 psig

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 2			
Event Description:		Running Charging pump trips					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	BOP	22. ENSURE letdown pressure is being maintained between 420 and 440 psig.			BOP ENSURES letdown pressure is being maintained between 420 and 440 psig		
	BOP	23. POSITION CHRG PUMP SEL RUNNING - B/U PP switch per 2-NOP-02.02, Charging and Letdown.			BOP POSITIONS CHRG PUMP SEL RUNNING - B/U PP switch per 2-NOP-02.02, Charging and Letdown		
	BOP	24. ENSURE charging pump control switches are aligned as follows: A. Running pump is in START. B. Remaining OPERABLE pump(s) in AUTO.			BOP ENSURES charging pump control switches are aligned with the running pump in start and the operable pumps are in AUTO		
	BOP	25. NOTIFY Radiation Protection that dose rates near CVCS ion exchangers and piping may change when ion exchanger is placed in service.			BOP NOTIFIES Radiation Protection that dose rates near CVCS ion exchangers and piping may change when ion exchanger is placed in service		
	BOP	26. WHEN letdown temperatures has stabilized on TIC-2223, TEMPERATURE, THEN PLACE V2520, ION EXCHANGER BYPASS VALVE, in AUTO.			BOP PLACES V2520, ION EXCHANGER BYPASS VALVE, in AUTO after letdown temperatures are stable		
	BOP				BOP REPORTS to the SRO that charging and letdown has been restored		
	SRO	EVALUATES the status of charging and letdown and exits the AOP					
	SRO	Perform a crew brief on the Status of the plant and TS					
At the Lead Evaluator's direction, PROCEED to Event 3.							

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Appendix D		Operator Action
Op Test No.:	L-17-1	Form ES-D-2
Scenario #	4	Event # 3
Event Description: CIS RM RIS-26-5-2 (C Channel) fails high		
Time	Position Competency	Applicant's Actions or Behavior
<p>T.S. 3.3.2 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>2. CONTAINMENT ISOLATION (CIAS) d. CONTAINMENT RADIATION – HIGH</p> <p>ACTION: 13. 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.</p>		
Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 3: CIS RM RIS-26-5-2 “C” CHANNEL FAILS HIGH Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 		
Indications: CIS RM RIS-26-5-2 “C” Channel Failed High Annunciators: Q-2 ESFAS ATI Fault, P-5, P-15 EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.		
BOP/ATC		Acknowledges annunciators and Communicates IAW plant policies
BOP/ATC		Diagnoses and Communicates status IAW plant policies
BOP		Complies with ARPs for Q-2, P-5, P-15 and Communicates and/or takes action as directed by ARP
SRO		Diagnoses, Interprets , that RIS-26-5-2 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		
4.1 Immediate Operator Actions: NONE		



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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	3	
Event Description:		CIS RM RIS-26-5-2 (C Channel) fails high				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

4.2 Subsequent Operator Actions

4.2.1 General Actions:

NOTE

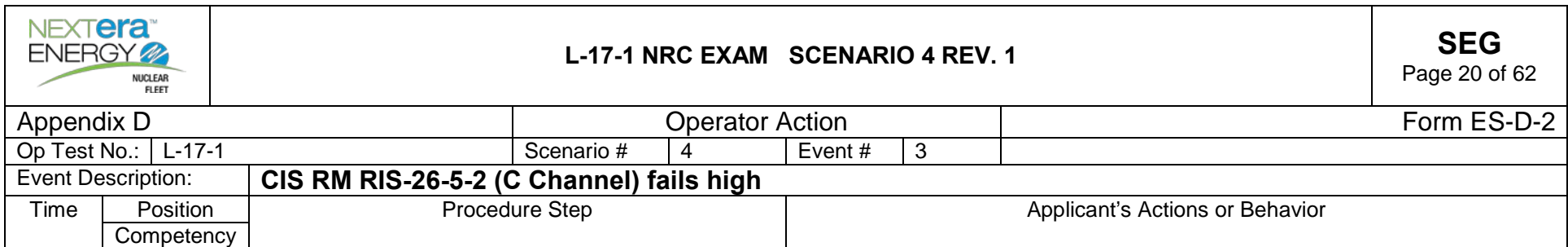
A TRANSMITTER failure can be discriminated from a METER failure by the presence of annunciators and protection and control actuations.

	SRO	1. CONFIRM failed channel by any of the following methods: <ul style="list-style-type: none">Channel check comparison with redundant channelsAnnunciatorsBistable or status lightsAny instrument-related testing or surveillance procedure in progress	<i>Interprets the indications and determines the failure to be RIS-26-5-2 Containment Radiation (MC) channel</i>
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NOTE

BISTABLE TRIP UNIT is abbreviated as BTU in this AOP.

	SRO	2. IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 6.	N/A
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: A. LOCATE table row for affected instrument or channel.	<i>Locates correct table row for RIS-26-5-2</i>
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: B. REFER TO applicable Tech Specs.	<i>Refers to applicable Tech Specs 3.3.2</i>
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: C. PERFORM applicable procedure section for affected instrument.	<i>PERFORMs section 4.2.15 for RIS-26-5-2 failure</i>





SRO	1. CIRCLE affected instrument: <input type="checkbox"/> RIS-26-3-2, CONTAINMENT RADIATION (MA) <input type="checkbox"/> RIS-26-4-2, CONTAINMENT RADIATION (MB) <input type="checkbox"/> RIS-26-5-2, CONTAINMENT RADIATION (MC) <input type="checkbox"/> RIS-26-6-2, CONTAINMENT RADIATION (MD)	PERFORMs section 4.2.15 and CIRCLES affected instrument RIS-26-5-2, Containment Radiation (MC)
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- Bypassing ESFAS BTUs will require Key 114 for ESFAS cabinet door.


	SRO	<p>2. PERFORM one of the following for the affected BTUs listed: CNTMT RAD CIS (Key 130) A. BYPASS affected BTU using keyswitch. B. TRIP affected BTU per Attachment 3, Tripping and Restoring Protection Bistables.</p>	<p>SRO DIRECTS the BOP to BYPASS the affected BTU using keyswitch as follows;</p> <ul style="list-style-type: none"> CNTMT RAD CIS (Key 130)
	BOP	<p>Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.15 Containment Radiation Channel Failure Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitch</p>	<p>PERFORMs section 4.2.15 as directed by the SRO; Obtains keys, unlocks cabinets and inserts keys: 114&130 for ESFAS BOP relieves the ATC</p>
	ATC	<p>Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.15 Containment Radiation Channel Failure Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitch</p>	<p>ATC PERFORMs section 4.2.15 as directed by the Unit Supervisor; IVs inserted key: 130 for ESFAS and rotates key to bypass MC CNTMT RAD CIS ATC Reports to SRO that the affected BTU has been BYPASSED using keyswitch ATC relieves the BOP</p>

4.2.1 General Actions:	
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		L-17-1 NRC EXAM SCENARIO 4 REV. 1				SEG Page 21 of 62	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 3			
Event Description:		CIS RM RIS-26-5-2 (C Channel) fails high					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	SRO	4. INITIATE work request for affected instrument or channel and NOTIFY I&C or EM as applicable.			PERFORMS section 4.2.1 Step 4 <i>NOTIFIES</i> I&C as applicable and <i>Notifies the SM of the failure and the Tech Spec entry</i>		
	SRO	5. DOCUMENT problem as required: <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log 			PERFORMS section 4.2.1 Step 5 and <i>Documents issue as appropriate in:</i> <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log 		
	SRO	6. WHEN ready to restore affected channel, THEN PERFORM Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> Instrumentation Channels. 			IDENTIFIES step as N/A		
	SRO	7. VERIFY Exit Conditions are met. 8. EXIT this procedure.			VERIFIES Exit conditions are met by: <ul style="list-style-type: none"> Applicable Tech Spec LCO action requirements have been implemented. Affected channel has been bypassed or tripped as required by Tech Specs and exits 2-AOP-99.01 		
	SRO	Performs Crew Brief			SRO PERFORMS crew brief on status of failed instrument, the Tech Spec entry and <i>Notifies the SM</i>		
At the Lead Evaluator's direction, PROCEED to Event 4.							

	L-17-1 NRC EXAM SCENARIO 4 REV. 1	SEG Page 22 of 62
Appendix D		Form ES-D-2
Op Test No.:	L-17-1	Scenario # 4 Event # 4
Event Description: NPO calls in discovery of 2B AFW broken oil sight glass on rounds		
Time	Position Competency	Procedure Step Applicant's Actions or Behavior
T.S. 3.7.1.2	AT LEAST THREE INDEPENDENT STEAM GENERATOR AUXILIARY FEEDWATER PUMPS AND ASSOCIATED FLOW PATHS SHALL BE OPERABLE WITH: a. TWO FEEDWATER PUMPS, EACH CAPABLE OF BEING POWERED FROM SEPARATE OPERABLE EMERGENCY BUSES, AND b. ONE FEEDWATER PUMP CAPABLE OF BEING POWERED FROM AN OPERABLE STEAM SUPPLY SYSTEM. ACTION: A. WITH ONE AUXILIARY FEEDWATER PUMP INOPERABLE, RESTORE THE AUXILIARY FEEDWATER PUMP TO OPERABLE STATUS WITHIN 72 HOURS OR BE IN AT LEAST HOT STANDBY WITHIN THE NEXT 6	
Booth Operator Instructions: <ul style="list-style-type: none"> NONE Role Play: <ul style="list-style-type: none"> Call as the NPO and report that the 2B AFW pump oiler has been knocked off the pump and oil has drained out of the pump on to the surrounding area and that appears to be a substantial amount of oil As the NWE confirm the report from the NPO that there is large amount of oil loss from the pump and you will need MM assistance and an ECO generated 		
Indications: NONE Annunciators: NONE		
NOP		Calls the control room with the report of a broken oiler on the 2B AFW pump
SRO		DIRECTS the ATC the place the control switch for the 2b AFW to STOP
SRO		DECLARES the 2B AFW pump Inoperable
SRO		EVALUATES and ENTERS Tech Spec 3.7.1.2 for the loss of the 2B AFW pump
SRO		NOTIFIES the SM of the loss of the 2B AFW pump
At the Lead Evaluator's direction, PROCEED to Event 5.		

		L-17-1 NRC EXAM SCENARIO 4 REV. 1					SEG Page 23 of 62	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-17-1		Scenario #		4	Event #	5		
Event Description:		PCV-1100F fails open						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							
CT-1		RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – MAINTAIN RCS PRESSURE WITHIN THE BOUNDS OF THE RPS TM/LP (VARIABLE) TRIP SET POINTS						
T.S. 3.2.5		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						
Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 5: PCV-1100F FAILS OPEN Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 								
Indications: PCV-1100F indicates full open, pressurizer Pressure lower rapidly Annunciators: EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.								
	ATC		IDENTIFIES main spray valve PCV-1100F is open and RCS pressure lowering rapidly, announces the failure to the SRO and states intended actions of taking Spray valve selector switch to 1100E position					
	SRO		DIRECTS the ATC the place Spray valve selector switch to and verify PCV-1100F closes					
	BOP		EVALUATES plant for being stable					
	BOP		Acknowledge annunciators and communicates status IAW plant policies					
	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	1. IF at Normal Operating Pressure, THEN VERIFY PIC-1100X(Y), PRESSURIZER PRESSURE, stable			1.1 CONTINGENCY ACTIONS N/A			

		L-17-1 NRC EXAM SCENARIO 4 REV. 1				SEG Page 24 of 62	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 5			
Event Description:		PCV-1100F fails open					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	ATC	2. VERIFY selected Pressurizer pressure control channel PIC-1100X(Y), PRESSURE, NORMAL			2.1 CONTINGENCY ACTIONS PLACE N/A		
	SRO	3. IF 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 THEN VERIFY spray valves CLOSED: <input type="checkbox"/> PCV-1100E, SPRAY VALVE 2B2, status lights <input type="checkbox"/> PCV-1100F, SPRAY VALVE 2B1, status lights <input type="checkbox"/> TIA-1103, 2B1 SPRAY LINE (Water Temperature), and TIA-1104, 2B2 SPRAY LINE (Water Temperature), indicate approximately equal temperatures			3.1 CONTINGENCY ACTIONS 3.1 IF both PCV-1100E, SPRAY VALVE 2B2 and PCV-1100F, SPRAY VALVE 2B1, are OPEN, THEN: A. PLACE HIC-1100, PZR PRESSURE SPRAY CNTL VLV, in MANUAL B. OPERATE spray controller HIC-1100, PZR PRESSURE SPRAY CNTL VLV C. OPERATE Pressurizer Heaters as necessary 3.2 IF PCV-1100E, SPRAY VALVE 2B2, is OPEN, THEN PLACE Pressurizer spray valve selector switch in 1100F 3.3 IF PCV-1100F, SPRAY VALVE 2B1, is OPEN, THEN PLACE Pressurizer spray valve selector switch in 1100E The SRO DIRECTS the ATC to PLACE Pressurizer spray valve selector switch in 1100E		
4.2 Subsequent Operator Actions 4.2.1 General Actions:							
	SRO	1. PERFORM applicable section per Table 1.			SRO EVALUATES the indications determines the failure to be PCV-1100F and proceeds to section 4.2.4		
4.2.4 Pressurizer Spray or Auxiliary Spray Valves OPEN or Leaking:							


Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	5	
Event Description:		PCV-1100F fails open				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	1. IF 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 THEN VERIFY spray valves CLOSED: <input type="checkbox"/> PCV-1100E, SPRAY VALVE 2B2, status lights <input type="checkbox"/> PCV-1100F, SPRAY VALVE 2B1, status lights <input type="checkbox"/> TIA-1103, 2B1 SPRAY LINE (Water Temperature), and TIA-1104, 2B2 SPRAY LINE (Water Temperature), indicate approximately equal temperatures	SRO DETERMINES this step was performed in the immediate operator actions
	SRO	2. VERIFY auxiliary spray valves are CLOSED: <input type="checkbox"/> SE-02-3, AUX SPRAY VALVE <input type="checkbox"/> SE-02-4, AUX SPRAY VALVE	SRO VERIFIES auxiliary spray valves are CLOSED
	SRO	3. VERIFY Pressurizer pressure stable OR trending to Pressurizer pressure setpoint: <input type="checkbox"/> PR-1100, PRESSURE <input type="checkbox"/> PIC-1100X, PRESSURE <input type="checkbox"/> PIC-1100Y, PRESSURE	SRO VERIFIES Pressurizer pressure stable OR trending to Pressurizer pressure setpoint
	SRO	4. GO TO Section 4.2.1, Step 2.	SRO GOES TO Section 4.2.1, Step 2.


4.2.1 General Actions:

	SRO	2. WHEN plant conditions have stabilized, THEN REVIEW Tech Specs for any required actions.	SRO REVIEWS Tech Specs for any required actions <i>IF</i> Pressurizer pressure reached ≤ 2225 psia the TS 3.2.5 for DNB will be addressed and the SM notified
	SRO	3. WHEN Section 3.0, EXIT CONDITIONS, are met, THEN EXIT this procedure.	SRO EXITS the AOP
	SRO	Performs Crew Brief	SRO PERFORMS crew brief on status of failed instrument, the Tech Spec entry and Notifies the SM

At the Lead Evaluator's direction, PROCEED to Event 6.

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	6		
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 6: HVS-2B RX CAVITY FAN TRIPS 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action If called as the SNPO to check breaker 2-42015, then after 5 minutes report the breaker is tripped If called as EM to check the fuses for HVS-2B, then after 15 minutes report the fuses are good If called as EM to check breaker 2-42015, after 30 minutes report that the breaker needs to be pulled and inspected and request an ECO 			
Indications: Lights for HVS-2B breaker/ fan extinguish Annunciators: U-22			
	BOP/ATC		Acknowledge annunciators and communicate IAW plant policies
	BOP/ATC		Recognize tripped and communicate status IAW plant policies
	BOP		Pulls ARP's for U-21 and communicates/takes action as directed
2-ARP-01-U00		The following actions are taken from 2-AOP-01-U00, Control Room Panel U HVCB Page 25	
	BOP	ALARM CONFIRMATION 1. HVS-2B indicating lights OFF indicates either the breaker is open or the control power fuse is blown.	BOP EVALUATES HVS-2B indications and determines the indicating lights to be off

		L-17-1 NRC EXAM SCENARIO 4 REV. 1					SEG Page 27 of 62	
Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	4	Event #	6	
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							
	BOP	OPERATOR ACTIONS 1. CHECK HVS-2B, REACTOR CAVITY COOLING FAN, indicating lights. 2. IF HVS-2B, REACTOR CAVITY COOLING FAN, is RUNNING, THEN PERFORM the following: A. START HVS-2A, REACTOR CAVITY COOLING FAN. B. IF NOT required for plant conditions, THEN STOP HVS-2B, REACTOR CAVITY COOLING FAN. 3. NOTIFY Maintenance Supervisor.			<i>BOP EVALUATES HVS-2B indications and determines the indicating lights to be off, notifies the Maintenance Supervisor and proceeds to step 4</i>			
	BOP/SRO	OPERATOR ACTIONS 4. IF a Reactor Cavity Cooling Fan TRIPPED, THEN PERFORM the following: A. START HVS-2A, REACTOR CAVITY COOLING FAN. B. GO TO 2-AOP-25.01, Loss of RCB Cooling Fans.			<i>BOP EVALUATES HVS-2B indications and determines the fan to be tripped. BOP INFORMS the SRO that the ARP directs the starting of HVS-2A and entry into 2-AOP-25.01, Loss of RCB Cooling BOP INFORMS the SRO that HVS-2A is unavailable</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			
2-AOP-25.01		The following actions are taken from 2-AOP-25.01, Loss of RCB Cooling Fans						
4.1 Immediate Operator Actions: NONE								
4.2 Subsequent Operator Actions								
4.2.1 General Actions:								
	SRO	1. PERFORM applicable section per Table 1.			<i>SRO EVALUATES Table 1 and DETERMINES that section 4.2.3 Loss of Reactor Cavity Cooling Fan is applicable</i>			
4.2.3 Loss of Reactor Cavity Cooling Fan:								

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	6
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

NOTE

Placing Reactor Cavity Cooling Fan control switch to STOP resets the control logic to allow starting following a breaker trip or loss of control power.


CAUTION


At least one Reactor Cavity Cooling Fan must be operating to maintain the reactor vessel support structure within its design basis. Operator action is required within 45 minutes from the loss of a Reactor Cavity Cooling Fan to restore a Reactor Cavity Cooling Fan OR initiate reactor trip and cooldown to at least Hot Shutdown. The total time allowed from the loss of Reactor Cavity Cooling Fans to Hot Shutdown is 5 hours. (Section 6.2, Commitment 1, Section 6.2, Commitment 2)


	SRO	1. START standby Reactor Cavity Cooling Fan: <ul style="list-style-type: none"> HVS-2A HVS-2B 	SRO VERIFIES That no Reactor Cavity Cooling fans are running or available and performs the contingency steps
	SRO	1.1 PERFORM Attachment 2, Reactor Cavity Cooling Fan Local Breaker Operations for HVS-2A	SRO PERFORMS Attachment 2, Reactor Cavity Cooling Fan Local Breaker Operations for HVS-2A
	SRO	1.2 PERFORM one start attempt of any available Reactor Cavity Cooling Fan by placing control switch to STOP and to START.	SRO RECOGNIZES HVS-2B is unavailable and proceeds to step 1.3
	SRO	1.3 IF NO Reactor Cavity Cooling Fan is running, THEN PERFORM the following: A. IMPLEMENT 2-AOP-22.01,Rapid Downpower. B. NOTIFY EM.	SRO RECOGNIZES HVS-2B and HVS-2A are unavailable and proceeds to 2-AOP-22.01,Rapid Downpower

ATTACHMENT 2

	SRO	1. VERIFY electrical alignment of stopped fans as follows: <ul style="list-style-type: none"> Bkr 2-42015, 2HVS-2B REACTOR BLDG. CAVITY SUPPLY, CLOSED. 	SRO DIRECTS the SNPO to inspect the following breaker for status and indication Bkr 2-42015, 2HVS-2B REACTOR BLDG. CAVITY SUPPLY
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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 6			
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	SRO	2. ENSURE fuses of stopped Reactor Cavity Cooling Fan are checked and <ul style="list-style-type: none"> Replaced as necessary. 			SRO DIRECTS electrical to inspect the fuses for HVS-2B and replace as necessary		
	SRO	3. NOTIFY Control Room of breaker status.			SRO DIRECTS the SNPO to Control Room of breaker status.		
	SRO	4. IF breaker is tripped, THEN IMPLEMENT 0-NOP-99.05, Valve, Breaker, Motor and Instrument Instructions.			SRO IMPLEMENTS 0-NOP-99.05, Valve, Breaker, Motor and Instrument Instructions		
4.2.3 Loss of Reactor Cavity Cooling Fan:							
	SRO	3. VERIFY tripped Reactor Cavity Cooling Fan available.			SRO IDENTIFIES HVS-2A is unavailable and Notifies the SM		
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER					
4.1 Immediate Operator Actions:							
	SRO				DIRECTS Immediate Operator Actions for 2-AOP-22.01 RAPID DOWNPOWER		
	SRO	1. BEGIN boration per operator aid OR Attachment 1, RCS Boration Guidance			SRO DIRECTS ATC to make boration 15 gallons per minute from the 2A Boric Acid Makeup tank to the charging pump suction. Attachment 1, RCS Boration Guidance		
<p align="center">ATTACHMENT 1 RCS Boration Guidance NOTE</p> <ul style="list-style-type: none"> 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	1. BORATE the RCS by the following: START either Boric Acid Pump 2A or 2B			ATC STARTS Boric Acid Pump ATC VERIFIES Boric Acid Pump STARTS		
	ATC	1. BORATE the RCS by the following: PLACE FCV-2210Y, BORIC ACID (RTGB-205), control switch in AUTO			ATC PLACES FCV-2210Y, BORIC ACID control switch in AUTO		

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 6			
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						
	ATC	1. BORATE the RCS by the following: IF borating to the Charging Pump suction, THEN OPEN V2525, BORON LOAD CONTROL VALVE			ATC PLACES V2525, BORON LOAD control switch in OPEN ATC VERIFIES V2525, BORON LOAD control valve is open		
	ATC	1. BORATE the RCS by the following: ADJUST FIC-2210Y, BORIC ACID, to the desired flowrate			ATC ADJUSTS FIC-2210Y, BORIC ACID, to the desired flowrate of 15 gpm		
	ATC	1. BORATE the RCS by the following: IF desired to maximize the boric acid flow rate, THEN CLOSE the running BAM pump recirc valve. V2650, TANK 2A RECIRC VALVE V2651, TANK 2B RECIRC VALVE			ATC DETERMINES not required		
	ATC	1. BORATE the RCS by the following: CYCLE V2513, VENT VALVE (RTGB-205) to maintain VCT pressure less than or equal to 30 psig			ATC CYCLES V2513, VENT VALVE as necessary to maintain VCT pressure less than or equal to 30 psig		
	ATC	1. BORATE the RCS by the following: CYCLE V2500, DIVERT VALVE (RTGB- 205) to WMS if necessary to maintain the desired VCT level			ATC CYCLES V2500, DIVERT VALVE to WMS if necessary to maintain the desired VCT level		
	ATC				ATC Updates crew on Reactivity Addition		
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWN POWER					
	SRO	2. PREPARE turbine for load reduction per operations hard cards			SRO DIRECTS BOP to set up the turbine for a target of 100 MW and load rate at 10 megawatts per minute per operations hard cards		
2-NOP-99.07		The following actions are taken from 2-NOP-99.07, OPERATIONS HARD CARDS					

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	6		
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

2-NOP-99.07 OPERATIONS HARD CARDS			
ATTACHMENT 3 TURBINE ADJUSTMENTS TO MAINTAIN POWER NOTEA 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 place card.			
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER	OP ENSURES Ovation display 5551, TURBINE CONTROL SYSTEM - OPERATION PANEL, is open
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER TOUCH MODIFY from RAMP INTERFACE group	OP TOUCHES MODIFY from RAMP INTERFACE group
	BOP	TURBINE ADJUSTMENTS TO MAINTAIN POWER ADJUST values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none">TARGET SELECTRATE SELECT	BOP ADJUSTS values, as directed by SM/US, for the following on MODIFY RAMP SETPOINTS: (display 7055) <ul style="list-style-type: none">TARGET SELECT set at 100MWRATE SELECT set at 10MW/min
	BOP		BOP NOTIFIES SRO that the Turbine is set up with a Target of 100 MW at a rate of 10 MW/min
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
	SRO	3. INSERT the Lead CEA Group approximately 6 inches to initially lower RCS temperature per operations hard cards	SRO DIRECTS ATC to insert lead group CEAs 6 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 NOTE			
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 place card.			
	ATC	Moving CEAs in group On CEDMCS Control Panel Group Select Switch, SELECT target group	ATC SELECTS Target Group 5



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Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	6	
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans				
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	Moving CEAs in group On CEDMCS Control Panel Mode Select Switch, SELECT mode of movement: MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS)	ATC SELECTS MANUAL GROUP (MG) OR MANUAL SEQUENTIAL (MS) On CEDMCS Control Panel
	ATC	Moving CEAs in group IF CEA Motion Inhibit is present, THEN PERFORM the following: PRESS and HOLD CMI BYPASS pushbutton. PRESS and RELEASE BYPASS ENABLE pushbutton	STEP will be N/A NO CEA Motion Inhibit is present
	ATC	Moving CEAs in group POSITION group as desired using INSERT/WITHDRAW Manual Control lever	ATC POSITIONS group as directed to 6" inserted from previous position using INSERT/WITHDRAW Manual Control lever
	ATC	Moving CEAs in group IF CMI BYPASS pushbutton is being held, THEN RELEASE CMI BYPASS pushbutton	STEP will be N/A NO CEA Motion Inhibit is present
	ATC	Moving CEAs in group OBSERVE RSPT AND Pulse Counter CEA position indications to verify CEA motion and alignment	ATC OBSERVES RSPT AND Pulse Counter CEA position indications and verifies CEA motion and position
	ATC	Moving CEAs in group On CEDMCS Control Panel, SELECT OFF on Mode Select Switch when the desired height is reached	ATC SELECTS OFF on Mode Select Switch when the desired height is reached

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	4	Event #	6	
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							
	ATC	Moving CEAs in group ENSURE RSPT and Pulse Counter indications match				<i>ATC ENSURES RSPT and Pulse Counter indications match</i>		
	ATC					<i>ATC Updates crew on Reactivity Addition</i>		
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER						
4.2 Subsequent Operator Actions								
	SRO	1. WHEN Tav _g begins to lower and is less than T _{ref} , THEN TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)				<i>DIRECTS ATC to monitor Tav_g and to notify him when it is lowering and less than T_{ref}</i>		
	ATC					<i>ATC NOTIFIES the SRO that Tav_g is lowering and less than T_{ref}</i>		
	SRO					<i>DIRECTS BOP to TOUCH GO from RAMP INTERFACE group. (OVATION display 5551)</i>		
	BOP					<i>BOP to TOUCHES GO on the RAMP INTERFACE group to begin turbine load reduction per operations hard cards as follows: 5. TOUCH GO from RAMP INTERFACE group. (display 5551) 6. MONITOR turbine governor valves response on Ovation main operation window, TURBINE CONTROL SYSTEM – OPERATION PANEL. (display 5551) BOP Updates crew on load reduction initiation</i>		
	SRO	2. NOTIFY plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to _____. "				<i>DIRECTS BOP to NOTIFY plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to Loss of Reactor cavity cooling fans"</i>		
	BOP					<i>NOTIFIES plant personnel using Gai-tronics and boost function as follows: "Attention all personnel, Unit 2 has commenced a Rapid Downpower due to Loss of Reactor cavity cooling fans"</i>		
	SRO	3. NOTIFY System of the rapid downpower load reduction				<i>DIRECTS BOP to NOTIFY System of the rapid downpower</i>		

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1		Scenario #	4	Event #	6	
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						
	BOP	NOTIFIES System of the rapid downpower, via dedicated RED phone					
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	4. PERFORM a Crew update to include the following: <ul style="list-style-type: none"> Expected final power level Initial boration rate Initial load rate Expected amount of boric acid addition Expected amount of CEA motion using pre-planned downpower profiles in the Plant Physics Curve Book 			SRO UPDATES crew with the following information: Expected final power level Offline Initial boration rate 15 GPM Initial load rate of 10 MW/MIN Expected amount of boric acid addition Per preplanned power guidance Expected amount of CEA motion Per preplanned power guidance		
	SRO	5. PLACE Pressurizer on recirculation per operations hard cards			DIRECTS BOP to Place the Pressurizer on Recirculation per operations Hard Card		
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 4 PRESSURIZER HEATER OPERATIONS 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.							

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	6	
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

1.1 Placing the Pressurizer on Recirculation


NOTE

- The purpose of placing the Pressurizer on recirculation is to keep the Pressurizer and RCS boron concentration within 25 ppm when changing RCS boron concentration.
- From measured data, the estimated time in minutes to correct a greater than or equal to 25 ppm boron mismatch by operating 6 Backup Bank heaters may be determined as follows:


Time (in minutes) to correct mismatch = [(Pzr ppm - RCS ppm) – 25 ppm] x 3


- This section is performed on RTGB-203

	BOP	Placing the Pressurizer on Recirculation PLACE all available Backup Bank heater control switches to ON	OP PLACES all available Backup Bank heater control switches to ON
	BOP	Placing the Pressurizer on Recirculation IF maintaining normal operating pressure is desired, THEN slowly REDUCE the AUTO setpoint on the SELECTED Pressurizer Pressure Control Channel: <ul style="list-style-type: none"> PIC-1100X Pressurizer Pressure PIC-1100Y Pressurizer Pressure 	OP REDUCES the AUTO setpoint on the SELECTED Pressurizer Pressure Control Channel to attain flow through the pressurizer sprays
	BOP	Placing the Pressurizer on Recirculation VERIFY Main Spray flow by observing the following: OBSERVE the output on HIC-1100, PZR Pressure spray CNTL VLV. OBSERVE the valve position on the following Pressurizer Spray Valves: <ul style="list-style-type: none"> <input type="checkbox"/> PCV- 1100E, Spray Valve 2B2 <input type="checkbox"/> PCV- 1100F, Spray Valve 2B1 	BOP VERIFIES Main Spray flow on PCV-1100E


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Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-17-1		Scenario # 4		Event # 6				
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans						
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	
	SRO	6. START additional charging pump as required per operations hard cards	<i>SRO DIRECTS starting additional charging pumps using the Hard card</i>
2-AOP-22.01		The following actions are taken from 2-AOP-22.01, RAPID DOWNPOWER	
NOTE <ul style="list-style-type: none"> 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 US may direct temporary operation outside of ASI limit. 			
	SRO	7. MAINTAIN Axial Shape Index ± 0.5 of ESI using CEAs	<i>DIRECTS ATC 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>POSITIONs 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>
NOTE 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	8. MAINTAIN Tref and Tavg within 6.6 °F	<i>DIRECTS ATC to maintain Tave-Tref mismatch within +/- 2 degrees °F</i>
	SRO	9. IF reducing power by more than 20%, THEN NOTIFY SNPO to secure Zinc Injection per 2-NOP-02.26, Zinc Addition	<i>DIRECTS BOP to dispatch a SNPO to secure Zinc injection</i>
NOTE 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	10. VERIFY Condenser Back Pressure less than 8.859 inHgA.	<i>DIRECTS BOP to report Condenser Backpressure</i>


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Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-17-1		Scenario # 4		Event # 6				
Event Description:		HVS-2B Rx Cavity Cooling Fan trips, Commence plant shutdown with no Cavity Cooling Fans						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							
NOTE 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	11. VERIFY Condenser Back Pressure below alarm limits Acceptable Operating Region Attachment 4, Condenser Pressure Limitations OR OVATION display 5605, CONDENSER VACUUM MONITORING.			<i>DIRECTS BOP to monitor Condenser Backpressure</i>			
	SRO	12. VERIFY CONDENSER DIFFERENTIAL pressure less than 2.0 inHgA. (OVATION display 5559 OR 5605)			<i>DIRECTS BOP to monitor Condenser differential pressure</i>			
	SRO	13. VERIFY parameters listed on Attachment 3, Rapid Downpower Parameters, are within limits			<i>DIRECTS BOP to monitor parameters listed on Attachment 3</i>			
NOTE Rapid Downpower may result in Pressurizer Pressure dropping below DNBR Limit.								
	SRO	14. MAINTAIN PZR pressure between 2225 and 2275 psia			<i>DIRECTS ATC to MAINTAIN PZR pressure between 2225 and 2275 psia</i>			
NOTE A large rate of change in Tav _g may cause transient level variance.								
	SRO	15. MAINTAIN PZR level between 27% and 68%			<i>DIRECTS ATC to MAINTAIN PZR level between 27% and 68%.</i>			
	SRO	16. WHEN Final power level is achieved, THEN GO TO Section 4.2, Step 35 to STABILIZE the unit			<i>DETERMINES N/A</i>			
After the appropriate power level change has been observed or at the lead evaluator direction Proceed to Event 7.								


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1		Scenario #	4	Event #	7	
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

Booth Operator Instructions: <ul style="list-style-type: none"> • Upon cue from Lead Examiner, trigger Event 7: 2A MAIN FEEDWATER Pp TRIPS 			
Role Play: <ul style="list-style-type: none"> • If calls are made for information delivery or support, then verbal repeat back of information is the only required action. • When called as NPO & SNPO for 2-EOP-01 actions, then report the actions will be taken • If called to investigate the 2A EDG trip, report back after 5 minutes that the Overspeed Trip and Lockout Relay Failure alarms are in. 			
Indications: 2A feed flow lowers rapidly, 2A Steam Generator level lowers rapidly			
Annunciators: G-1			
	BOP/ATC		Recognizes 2A Main Feedwater Pump Trip and 2A S/G level lowering
	BOP/ATC		Recommends RX trip
	SRO		Directs RX trip
	ATC		Confirms reactor power is lowering and startup rate is negative. Reports "Reactor Tripped" States evaluating CEAs or that all CEAs are inserted
	BOP		Verifies all governor and throttle valves closed. Reports "Turbine Tripped"
	BOP		ANNOUNCE on the Gaitronics: Unit 2 Reactor has tripped NOTIFY the NPO to perform Appendix X, Section 1 of 2-EOP-99 CONTACT 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		Reports "All CEAs INSERTED" if not reported previously
	SRO		Directs ATC to start remaining Charging Pumps as necessary
	SRO		Directs IMPLEMENTATION OF 2-EOP-01, STANDARD POST TRIP ACTIONS
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	


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Op Test No.:	L-17-1		Scenario #	4	Event #	7		
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

4.1 Immediate Operator Actions: <ul style="list-style-type: none"> 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:			
	SRO	Step 1 VERIFY reactor trip:	SRO DIRECTS VERIFY 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	Step 2 VERIFY turbine trip:	SRO DIRECTS VERIFY 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
	SRO	Step 3 VERIFY Maintenance of Vital Auxiliaries:	SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies: <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. NOTE to EVALUATOR: 1 minute post Trip a LOOP will occur, the 2A EDG fails to start and will be unavailable for remainder of scenario <input type="checkbox"/> VERIFY all Vital and Non Vital DC Buses are ENERGIZED. NOTE to EVALUATOR: Event 9 will present itself during this step THE crew will align the 2AB bus to the b train in this step <input type="checkbox"/> VERIFY seal cooling to RCPs:

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 7			
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						
	SRO	Step 4 VERIFY RCS Inventory Control:			SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies: <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35%		
	SRO	Step 5 VERIFY RCS Pressure Control:			SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies: <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia		
	SRO	Step 6 VERIFY Core Heat Removal:			SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies: <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW. BOP identifies on the LOOP No RCPS are running <input type="checkbox"/> Loop ΔT 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		


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	7		
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	SRO	Step 7 VERIFY RCS Heat Removal: SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies: <input type="checkbox"/> <i>VERIFY</i> the following conditions exist on at least one S/G: <ul style="list-style-type: none"> S/G NR level is between 20 and 81% Feedwater is being supplied The ATC will report no Feedwater is being supplied to the S/Gs No power to the 2A AFW pump, 2B AFW pump is INOP due the loss of oil and the 2C AFW pump experiences a mechanical overspeed trip due G-46 being locked in and will require outside assistance to reset. The ATC will update the crew on the status of feedwater. The SRO will direct the BOP to implement 2-AOP-09.02 for AFW. <input type="checkbox"/> <i>IF</i> 2A or 2B AFW Pump is the <i>ONLY</i> source of Feedwater, <i>THEN STOP</i> one RCP in each loop. <input type="checkbox"/> <i>VERIFY</i> at least <i>ONE</i> of the following is supplying feedwater to the S/G(s): <ul style="list-style-type: none"> Main or Auxiliary Feedwater The SRO will direct Feedwater to be restored using AFW <input type="checkbox"/> <i>VERIFY</i> RCS TAVG is between 525 and 535°F. <input type="checkbox"/> <i>VERIFY</i> S/G pressure is between 850 and 930 psia (835 and 915 psig). The SRO will direct 1 ADV be placed in AUTO/AUTO on each S/G, 1 on the RTGB and 1 on the PACB panel EVENT 8 2B ADV PIC-08-1B fails to control S/G pressure in Auto, will present itself during this step, the SRO will direct manual control of the PIC and maintain S/G pressure at 900 psia
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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	4	Event #	7	
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							

	SRO	Step 8 VERIFY containment conditions:	SRO DIRECTS VERIFY containment conditions, ATC Verifies: <input type="checkbox"/> Containment pressure is less than 2psig. <input type="checkbox"/> Containment temperature is less than 120°F. <input type="checkbox"/> Containment radiation level less than alarm values AND stable or lowering: <ul style="list-style-type: none"> • CIS Radiation Monitors • Containment Atmospheric Monitors <input type="checkbox"/> Secondary plant radiation levels less than alarm values AND stable or lowering: <ul style="list-style-type: none"> • Condenser Air Ejector Monitor • S/G Blowdown Monitors • Main Steamline Monitors
	SRO	Step 9 DIRECT a field operator to perform the following:	SRO DIRECTS ATC to perform step 9, BOP performs step 9: <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	Step 10 DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart.	SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an TLOF is in progress
	SRO	Step 11 GO TO the appropriate Emergency Operating Procedure.	SRO PERFORMS a crew brief and transitions to 2-EOP-06

Booth Operator Instructions: <ul style="list-style-type: none"> • NONE 			
Role Play: <ul style="list-style-type: none"> • If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: Both Steam Generator level lowering and no feedwater available Annunciators: Multiple			
	ALL		Recognizes Both Steam Generator level lowering and no feedwater available
	SRO		Enter 2-EOP-06, TLOF


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Op Test No.:	L-17-1	Scenario #	4	Event #	7		
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


2-EOP-06		The following actions are taken from 2-EOP-06, TLOF	
4.2 Immediate Operator Actions: NONE			
4.0 Operator Actions:			
	SRO	Step 1 Confirm Diagnosis VERIFY the SFSC acceptance criteria are MET every 15 minutes.	SRO DIRECTS the STA to MONITOR the SFSCs and VERIFY the SFSC acceptance criteria are MET every 15 minutes. <input type="checkbox"/> STA or Extra RCO performs SFSCs
	SRO	Step 2 Classify Event EVALUATE EPIP Classification criteria for present plant conditions and Emergency Plan Actions. REFER TO EPIP-01, Classification of Emergencies.	SRO NOTIFIES the Shift Manager to IMPLEMENT the Emergency Plan.
	SRO	Step 3 IMPLEMENT place keeping.	SRO IMPLEMENTS the place keeper.
	SRO	Step 4 Perform Secondary Surveys DIRECT HP to perform secondary surveys.	SRO DIRECTS DIRECT HP to perform secondary surveys.
	SRO	Step 5 Stop RCPs and Depressurize A. STOP ALL RCPs. B. COMMENCE RCS depressurization to between 1800 and 1850 psia. C. MAINTAIN Pressurizer level between 10 and 68%.	The SRO DIRECTS the ATC Depressurize the RCS The ATC COMMENCES RCS depressurization to between 1800 and 1850 psia using aux sprays The ATC MAINTAINS Pressurizer level between 10 and 68%
	SRO	Step 6 Restore Instrument Air If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	SRO RECOGNIZES that instrument air is not available and takes no action and DIRECTS APP H be performed

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-17-1		Scenario # 4		Event # 7				
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							
	SRO	Step 7 VERIFY RCP Seal Cooling as follows: <ul style="list-style-type: none"> VERIFY CCW to the RCPs. 			SRO RECOGNIZES that CCW is not available until IA is restored			
	SRO	Step 8 Conserve S/G inventory in BOTH S/Gs by performing ALL of the following: A. CLOSE Blowdown isolation valves. B. CLOSE Blowdown sample valves.			SRO DIRECTS the ATC to Close Blowdown isolation and sample valves the ATC to Closes Blowdown isolation and sample valves			


Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	7	
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	<p>Step 9 Replenish S/G Inventory</p> <p>A. Attempt to RESTORE Auxiliary Feedwater to at least ONE S/G by considering ALL of the following:</p> <ol style="list-style-type: none"> If BOTH of the following conditions exist, <ul style="list-style-type: none"> S/G levels are below 19.5% NR AFAS has stopped timing Then ENSURE AFAS has ACTUATED. If ANY of the following conditions exist, <ul style="list-style-type: none"> Mechanical or electrical overspeed of the 2C AFW Pump has occurred Steam binding of an AFW Pump is suspected Crosstying of Auxiliary Feedwater Discharge Headers is desired Then RESTORE Auxiliary Feedwater components. REFER TO 2-AOP-09.02, Auxiliary Feedwater. <p>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"> ENSURE SIAS and MSIS are RESET. REFER TO Appendix P, Restoration of Components Actuated By ESFAS. ENSURE ONLY ONE Condensate Pump is RUNNING. DEPRESS BOTH pushbuttons to RESET the Low Power Feedwater Valves. ENSURE BOTH Low Power Feedwater Valve Controllers are in MANUAL with MINIMUM output. ENSURE ONLY ONE Main Feedwater Pump is RUNNING, with the control switch in RECIRC. ENSURE the MFIVs in EACH intact feedwater header are OPEN. FEED the S/G by use of ANY of the following flowpaths: <ul style="list-style-type: none"> Low Power Feedwater Valve 100% Bypass Valve Main Feed Regulating and associated Block Valve 	<p>SRO DIRECTS BOP to continue efforts to restore AFW flow to either S/G</p> <p>NOTE: The SRO will DIRECT the BOP to perform 2-AOP-09.02 which is described in Event 10</p>


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Appendix D			Operator Action			Form ES-D-2		
Op Test No.: L-17-1		Scenario # 4		Event # 7				
Event Description:		MFW pump trip, reactor trip, LOOP (1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mech. OS, EOP-06						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							
	SRO	Step 10 Protect Main Condenser <ul style="list-style-type: none"> • If Circulating Water flow to the Main Condenser has been lost, Then ENSURE MSIVs are CLOSED. • STABILIZE the Secondary Plant. REFER TO Appendix X, Secondary Plant Post Trip Actions, Section 2. 			<i>The SRO RECOGNIZES</i> Circulating Water flow is unavailable and DIRECTS the ATC to perform Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits and to close the MSIVS <i>The ATC PERFORMS</i> Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits and closes the MSIVs			
	SRO	Step 11 Verify RCS Heat Removal VERIFY adequate RCS heat removal with at least ONE S/G by observing BOTH of the following: <ul style="list-style-type: none"> • At least ONE S/G has a level of at least 15% WR • RCS TCOLD is stable or lowering 			<i>The SRO RECOGNIZES</i> feedwater has been restored to both S/Gs and VERIFIES S/G levels approach are > 15% WR and recovering <i>The SRO MONITORS</i> both S/G wide range levels			
This Scenario can be terminated once Feedwater has been restored to the S/Gs								


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	8		
Event Description:		2B ADV PIC-08-1B fails in AUTO, PACB ADV will be fail closed					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


Booth Operator Instructions: NONE Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: 2B ADV PIC-08-1B fails to control S/G pressure in Auto Annunciators:			
	ATC		IDENTIFIES 2B ADV PIC-08-1B is not controlling S/G pressure in auto and notifies the SRO they the controller needs to be placed in manual, the other ADV for the 2B S/G is not available from the turnover
	ATC		NOTIFIES the SRO and places 2B ADV PIC-08-1B in manual and makes adjustments to maintain S/G pressure
	SRO		DIRECTS the ATC to place 2B ADV PIC-08-1B in manual

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	9		
Event Description:		2A EDG fails 2AB 480V LC de-energized					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

Booth Operator Instructions: NONE Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: 2AB 480V LC will de-energized due to the loss of the 2A EDG Annunciators: B-48			
2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip actions Step 3	
	BOP		IDENTIFIES the 2AB LC is de-energized during the implementation of 2-EOP-01 Step 3 Maintenance of Vital Auxiliaries
	BOP		NOTIFIES the SRO and performs the contingency actions for step 3 and aligns the 2AB 480V LC as follows: IF either Vital 4.16 KV bus is NOT powered from offsite, THEN ENSURE all of the following: A. The associated EDG is RUNNING B. The associated EDG output breaker is CLOSED C. 2AB 480V Load Center is aligned to an energized bus
	SRO		DIRECTS the BOP to align the 2AB 480V LC to the B train

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1		Scenario #	4	Event #	10	
Event Description:		2C AFW pump Over Speed trip restoration					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						
CT-2 RESTORE AND CONTROL MAIN/AUXILIARY FEED WATER PRIOR TO REACHING ONCE-THROUGH-COOLING CRITERIA - IF NO FEEDWATER FLOW TO EITHER S/G, THEN THE CREW ESTABLISHES MFW OR AFW FLOW TO AT LEAST ONE S/G AND ESTABLISHES A RISING LEVEL TREND IN THAT S/G PRIOR TO REACHING ONCE-THROUGH-COOLING CRITERIA (15% WR S/G LEVEL ON BOTH S/Gs).							
Booth Operator Instructions: <ul style="list-style-type: none"> When requested to reset the 2C AFW pump mechanical overspeed latch, Trigger: NPO Action to Relatch C AFW Pump Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. When called as the NPO to go to the AFW pump area report back in 5 minutes that you are on station and 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. If additional resources are called for support at the AFW station, then implement similar time intervals role playing as different individuals. 							
Indications: 2A&2B Steam Generator levels lowering and failures of AFW System Annunciators: G-46 LOCKED IN							
	SRO		Will direct the BOP to perform 2-AOP-0.02 AUXILIARY FEEDWATER to restore feedwater to either S/G				
	BOP		THE BOP will RECOGNIZE No power to the 2A AFW pump, 2B AFW pump is INOP due the loss of oil and the 2C AFW pump has experienced a mechanical overspeed trip due G-46 being locked in and will require outside assistance to reset				
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					
4.3 Immediate Operator Actions: <ul style="list-style-type: none"> NONE 							
4.0 Operator Actions:							

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event # 10			
Event Description:		2C AFW pump Over Speed trip restoration					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	BOP	Step 1 IF all of the following conditions exist: <input type="checkbox"/> In MODE 2 <input type="checkbox"/> All feedwater is lost,			BOP RECOGNIZES <i>this step does not apply</i>		
	BOP	Step 2 IF 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.			BOP RECOGNIZES <i>that the crew will proceed to 2-EOP-06</i>		
	BOP	Step 3 IF 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.			BOP RECOGNIZES <i>this step does apply</i>		
	BOP	Step 4 VERIFY AFAS, if required.			BOP RECOGNIZES AFAS <i>has actuated</i>		
	SRO	Step 5 VERIFY 2C Auxiliary Feedwater pump is NOT tripped.			BOP RECOGNIZES <i>2C AFW pump has tripped and PERFORMS Attachment 1, Resetting 2C AFW Pump Following Overspeed Trip</i>		
Attachment 1		The following actions are taken from Attachment 1, Resetting 2C AFW Pump Following Overspeed Trip					
STEP 1: IF 2C AFW pump tripped due to mechanical OR electrical overspeed trip, THEN PERFORM the following:							
	BOP	Step A CLOSE MV-08-12, SG 2B STM TO AFW PP 2C.			BOP CLOSES <i>MV-08-12, SG 2B STM TO AFW PP 2C</i>		
	BOP	Step B CLOSE MV-08-13, SG 2A STM TO AFW PP 2C.			BOP CLOSES <i>MV-08-13, SG 2A STM TO AFW PP 2C</i>		

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:	L-17-1		Scenario #	4	Event #	10		
Event Description:		2C AFW pump Over Speed trip restoration						
Time	Position	Procedure Step			Applicant's Actions or Behavior			
	Competency							
	BOP	Step C PERFORM the following to reset and OPEN MV-08-3, 2C PUMP: <ul style="list-style-type: none"> CLOSE MV-08-3, 2C PUMP. (RTGB-202 – Key 78) IF 2C AFW pump tripped due to mechanical overspeed trip, THEN PERFORM the following: <ul style="list-style-type: none"> RESET the 2C Auxiliary Feedwater Pump mechanical overspeed linkage. VERIFY top surface of trip tappet nut is in line with the line marked on the head lever to ensure full PLACE MV-08-3, 2C PUMP (2C Auxiliary Feedwater Pump), in OPEN. VERIFY MV-08-3, THROTTLE / TRIP VALVE FOR AFW PUMP 2C, is OPEN. 			BOP CLOSSES MV-08-3, 2C PUMP. (RTGB-202) BOP OPENS MV-08-3, 2C PUMP. (RTGB-202) NOP RESETS Mechanical Overspeed linkage			
	BOP	Step D IF 2C AFW pump is rotating and is required for immediate operation, THEN PERFORM the following: <ul style="list-style-type: none"> CLOSE SE-08-2, SOLENOID OPERATED WARM-UP FOR S/G 2A TO AFW PUMP 2C 			NPO REPORTS the 2C AFW pump is not rotating			
	BOP	Step 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			BOP RECOGNIZES that this step does not apply			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	10	
Event Description:		2C AFW pump Over Speed trip restoration				
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior	
	BOP	Step F IF PERFORM one of the following to drain oil from the underside of the governor main speed piston: <ul style="list-style-type: none"> WAIT 3 minutes after pump stops rotating. PLACE manual control knob on the side of the turbine governor in the FULLY COUNTER-CLOCKWISE idle speed position and then RETURN manual control knob on the turbine governor to FULLY CLOCKWISE maximum speed position. 			BOP DIRECTS the NPO to PLACE manual control knob on the side of the turbine governor in the FULLY COUNTER-CLOCKWISE idle speed position and then RETURN manual control knob on the turbine governor to FULLY CLOCKWISE maximum speed position NPO PERFORMS the above step and reports back to the control when the step is complete	
	BOP	Step G ENSURE MV-09-11, PUMP 2C TO SG 2A is CLOSED.			BOP CLOSSES MV-09-11, PUMP 2C TO SG 2A	
	BOP	Step H ENSURE MV-09-12, PUMP 2C TO SG 2B is CLOSED.			BOP CLOSSES MV-09-12, PUMP 2C TO SG 2B	
	BOP	Step 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			BOP SIMULTANEOUSLY OPENS: MV-08-13, SG 2A STM TO AFW PP 2C AND MV-08-12, SG 2B STM TO AFW PP 2C	
	BOP	Step J IF either Steam Generator is faulted, THEN OPEN the steam supply valve from the NON-FAULTED S/G:			BOP RECOGNIZES that neither S/G is faulted	
	BOP	Step 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)			BOP OPENS SE-09-4, 2C PUMP DISCH TO 2A S/G	
	BOP	Step 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)			BOP OPENS SE-09-5, 2C PUMP DISCH TO 2B S/G	
	BOP	Step M THROTTLE MV-09-11, PUMP 2C TO S/G 2A, to establish required flowrate to the 2A steam generator.			BOP THROTTLES OPEN MV-09-11, PUMP 2C TO S/G 2A, to establish required flowrate to the 2A steam generator to attain <150 gpm	




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SEG
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Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	4	Event #	10	
Event Description:		2C AFW pump Over Speed trip restoration				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	Step N THROTTLE MV-09-12, PUMP 2C TO S/G 2B, to establish required flowrate to the 2B steam generator.	BOP THROTTLES OPEN MV-09-12, PUMP 2C TO S/G 2B, to establish required flowrate to the 2B steam generator to attain <150 gpm
	BOP		BOP UPDATES the crew that feedwater has been restored to both S/Gs using the 2C AFW pump

This Scenario can be terminated once Feedwater has been restored to the S/Gs

		L-17-1 NRC EXAM SCENARIO 4 REV. 1				SEG Page 54 of 62	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1		Scenario #	4	Event #		
Event Description:		APPENDICES					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						


2-EOP-99 APP "A"		The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A".	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	BOP ENSURES that the 2AB 480V Load Center is aligned to an energized bus. BOP DISPATCHES the NPO to to restore Instrument Air. REFER TO Appendix H
NOTE <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	2. If an INADVERTENT SIAS has closed the 'N' Header valves, Then PERFORM EITHER of the following: <input type="checkbox"/> RESTORE flow to the 'A' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8A HCV-14-9 OR <input type="checkbox"/> RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B HCV-14-10	BOP takes action as described in the Appendices

Appendix D		Operator Action			Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	
Event Description:		APPENDICES			
Time	Position Competency	Procedure Step		Applicant's Actions or Behavior	

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.

	BOP	<p>3. If a VALID 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: HCV-14-8A, HCV-14-9</p> <p>OR</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 takes action as described in the Appendices
	BOP	<p>4. If the 'N' Header has been restored, Then OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves by performing the following:</p> <p>A. If CIAS or high radiation has closed the SGBD Sample Valves, Then OPEN FCV-23-7 and FCV-23-9 by PLACING the control switch to CLOSE / OVERRIDE.</p> <p>B. OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves.</p>	BOP takes action as described in the Appendices

		L-17-1 NRC EXAM SCENARIO 4 REV. 1				SEG Page 56 of 62	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event #			
Event Description:		APPENDICES					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	BOP	5. If the 'N' Header is in service, Then DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.			BOP takes action as described in the Appendices		
	BOP	6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.			BOP takes action as described in the Appendices		
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 takes action as described in the Appendices		
	BOP	8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS , <ul style="list-style-type: none"> • Seismic event • 'N' Header is found NOT intact • The operable Safety Related CCW header becomes inoperable Then ISOLATE the 'N' header.			BOP takes action as described in the Appendices		
2-EOP-99 APP "J"		The following actions are for Restoring CCW to the RCPs Using 2-EOP-99, APPENDIX "J".					
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: <input type="checkbox"/> A. ENSURE2AB 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 takes action as described in the Appendices		

**L-17-1 NRC EXAM SCENARIO 4 REV. 1****SEG**

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Appendix D**Operator Action**

Form ES-D-2

Op Test No.: L-17-1

Scenario #

4

Event #

Event Description:

APPENDICES

Time	Position	Procedure Step	Applicant's Actions or Behavior
	Competency		

BOP

2. ENSURE Instrument Air to Containment is available by PLACING HCV-18-1 to CLOSE / OVERRIDE and then to **OPEN**.

BOP takes action as described in the Appendices**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

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:
HCV-14-8A
HCV-14-9
OR
HCV-14-8B
HCV-14-10

BOP takes action as described in the Appendices**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.

Appendix D		Operator Action			Form ES-D-2
Op Test No.:	L-17-1	Scenario #	4	Event #	
Event Description:		APPENDICES			
Time	Position Competency	Procedure Step		Applicant's Actions or Behavior	

	BOP	<p>4. If a VALID 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 style="padding-left: 40px;">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 style="text-align: center;">OR</p> <p style="padding-left: 40px;">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 takes action as described in the Appendices
	BOP	<p>5. OPEN ALL of the following CCW to / from the RCP valves:</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 takes action as described in the Appendices
	BOP	<p>6. ENSURE V2507, RCP Bleedoff Relief Stop Vlv, is OPEN.</p>	BOP takes action as described in the Appendices

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.

		L-17-1 NRC EXAM SCENARIO 4 REV. 1				SEG Page 59 of 62	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.: L-17-1		Scenario # 4		Event #			
Event Description:		APPENDICES					
Time	Position Competency	Procedure Step			Applicant's Actions or Behavior		
	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			BOP takes action as described in the Appendices		
NOTE 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.			BOP takes action as described in the Appendices		
NOTE The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment							
	BOP	9. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.			BOP takes action as described in the Appendices		
	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.			BOP takes action as described in the Appendices		

SIMULATOR LESSON LAYOUT



QUANTITATIVE ATTRIBUTES

Malfunctions:

Before EOP Entry:

1. HVS-2A Rx Cavity Cooling Fan trips
2. Running Charging pump trips
3. CIS RM RIS-26-5-2 (C Channel) fails high
4. PCV-1100F fails open
5. HVS-2B Rx Cavity Cooling Fan trips,

After EOP Entry:

1. 2C AFW pump Mechanical OS
2. 2B ADV PIC-08-1B fails in AUTO
3. 2A EDG fails 2AB 480V LC de-energized

Abnormal Events:

1. HVS-2A Rx Cavity Cooling Fan trips
2. Running Charging pump trips
3. CIS RM RIS-26-5-2 (C Channel) fails high
4. PCV-1100F fails open
5. HVS-2B Rx Cavity Cooling Fan trips,

Major Transients:

1. MFW pump trip, reactor trip, LOOP (in 1 minute), EOP-01, 2A EDG fails, 2C AFW pump Mechanical OS

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.
2. RESTORE AND CONTROL MAIN/AUXILIARY FEED WATER PRIOR TO REACHING ONCE-THROUGH-COOLING CRITERIA - If no feedwater flow to either S/G, then the crew establishes MFW or AFW flow to at least one S/G and establishes a rising level trend in that S/G prior to reaching Once-Through-Cooling Criteria (15% WR S/G level on both S/Gs).

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. 3.5.2. ACTION a.2. Restore the inoperable subsystem 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.
2. 3.3.3.5.a, Restore 2B ADV MV-08-18B to OPERABLE status within 30 days or be in HOT SHUTDOWN within the next 12 hours.

Operator Work Around:

None

Locked in Annunciators:

1. Q-31 2B HPSI pp
2. LA-12, LB-6 ADV MV-08-18B

Current Status:

1. The Unit is at 100% power, Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14, Response To Severe Weather completed.
2. 2A Screen wash Pump and traveling screens running.
3. 2B HPSI pump INOP for motor replacement (12 hours into 36 hour maintenance window) on Clearance.
4. Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected.
5. 2B ADV MV-08-18B INOP on Clearance.

Longstanding Problems:

None

Reactivity Turnover:

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

SITE: ST. LUCIE

Revision #: 0

LMS ID: N/A

LMS Rev. Date: N/A

SEG TITLE: L-17-1 SCENARIO 5

SEG TYPE: ☐ Training ☒ Evaluation

PROGRAM: ☐ LOCT ☒ LOIT ☐ Other:

DURATION: 90 minutes

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J. D. CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J. D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	Training Program Owner (Line)	Date

Appendix D

Scenario Outline

Form ES-D-1

Facility: <u>St. Lucie</u>	Scenario No.: <u>5</u>	Op-Test No.: <u>L-17-1</u>
Examiners: _____	Operators: _____	SRO: _____
_____	_____	ATC: _____
_____	_____	BOP: _____
Initial Conditions: 30% power, MOC, no scheduled surveillances, 0-AOP-100.14 Response To Severe Weather complete, return the unit to 100%.		
Turnover: Inclement weather (severe thunderstorms and tornado watch); 3 day chemistry hold after reduction in power for condenser tube leak (hi sodium); MSRs have just been placed in service, LIC-1110X OOS, LIC1110Y Selected		
Critical Tasks: RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Manually start the B/U DEH pump to prevent an unnecessary reactor trip. RESTORE AC POWER – Restore power at least one vital AC bus from the opposite Unit via the Station Blackout Crosstie (within 4 hours), with the selected train CCW and ICW pumps placed in pull-to-lock to prevent overloading the opposite unit's single EDG.		

Event No.	Malf. No.	Event Type*	Event Description
1		R/ATC/SRO N/BOP	Raise Power to 100%
2	1	C/ATC/SRO	Malf: Running Primary water pump trips; Unable to dilute Action: Start backup Primary water pump
3	2	I/BOP/SRO TS/SRO	Malf: RCS Loop 2B2 channel "D" T-cold (TE1122CD) fails high Action: Bypass RPS bistables TS 3.3.1
4	3	C/ATC/SRO	Malf: LIC-1110Y oscillations LIC-1110X Inop on Turnover Action: Manually Control LIC-1100Y or LIC-2110
5	4	TS/SRO	Malf: 2A EDG loss of DC Action: Within 1 hour verify A train offsite power available TS 3.8.1.1
6	5	C/BOP/SRO	Malf: Running DEH pump degrades, B/U pump does not auto start Action: Manually start B/U DEH pump CT-1: Restore DEH pressure/Manually start B/U DEH pump
7		M/ALL	Security call - tornado sighted just north of the plant, 3 minutes later switchyard lost resulting in a LOOP and reactor trip; 2B EDG starts and loads
8	6	M/ALL	Malf: 2B EDG breaker trips after 5 minutes resulting in SBO Action: Cross-tie power to Unit 1 CT-2 RESTORE ELECTRICAL POWER (within 4 hours)
9	7	C/ATC/SRO	Malf: Neither ADV on RTGB will operate Action: ADV Control established at the HVCB

(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-15.01, Primary Water System
3. 2-AOP-99.01, Loss of Tech Instrumentation
4. 0-AOP-100.14, Response to Severe Weather
5. 2-AOP-01.10, Pressurizer Pressure and Level
6. 2-EOP-01, Standard Post Trip Actions
7. 2-EOP-10, Station Blackout
8. 2-EOP-99, Appendices / Figures / Tables /Data Sheets
9. 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

	L-17-1 NRC EXAM SCENARIO 5 REV. 0	SEG Page 4 of 39
Appendix D	Scenario Outline	Form ES-D-2

SCENARIO 5: OVERVIEW/SEQUENCE OF EVENTS

L-17-1 NRC Scenario 5

<p>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 TCS, as directed, to raise turbine load.</p>
<p>Running Primary water pump trips resulting in no primary water flow. ATC will recognize no flow to RCS make up system, evaluate the tripped Primary water pump and start the backup Primary water pump.</p>
<p>RCS Loop 2B2 channel "D" T-cold (TE1122CD) fails high causing a channel "D" TM/LP trip, 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 bistables. Requires a Tech Spec evaluation and entry into LCO 3.3.1.</p>
<p>LIC- 1110Y has oscillations in auto LIC-1110X Inop on Turnover The ATC will Manually Control LIC-1100Y or LIC-2110.</p>
<p>2A EDG will lose DC control power. The SRO will declare 2A EDG OOS; evaluate TS 3.8.1.1 and direct verification of A train offsite power available within 1 hour.</p>
<p>Running DEH pump degrades and trips causing annunciator D-36, the backup DEH pump does not auto start; BOP will recognize the B/U pump failed to start and start the B/U DEH pump. With no operator actions Unit trip occurs approximately 6.5 minutes after event initiation. CT-1: Restore DEH pressure/Manually start B/U DEH pump to prevent Unit trip.</p>
<p>Security call - tornado sighted just north of the plant; 3 minutes later the switchyard is lost resulting in a LOOP and reactor trip. The 2B EDG starts and loads.</p>
<p>5 minutes after LOOP, 2B EDG output breaker trips; the BOP will recognize and evaluate the breaker opening, attempt one breaker closure. The SRO will recognize SBO and direct the BOP to perform MVA contingencies to Cross-Tie the units electrically to receive power from Unit 1 via 1/2-20501. CT-2 Restore AC power from the opposite unit (within 4 hours) with the selected train CCW and ICW pumps placed in pull-to-lock to prevent overloading the opposite unit's single EDG.</p>
<p>When direction given to stabilize RCS temperature with ADVs neither RTGB ADV will operate. The ATC will establish control at the HVCB.</p>

	L-17-1 NRC EXAM SCENARIO 5 REV. 0	SEG Page 5 of 39
Appendix D	Scenario Outline	Form ES-D-2

Procedures Used

- 2-GOP-201, Reactor Plant Startup Mode 2 To Mode 1
- 2-AOP-15.01, Primary Water System
- 2-AOP-99.01, Loss of Tech Instrumentation
- 2-AOP-01.10, Pressurizer Pressure and Level
- 2-EOP-01, Standard Post Trip Actions
- 2-EOP-10, Station Blackout
- 2-EOP-99, Appendices / Figures / Tables /Data Sheets

Tech Specs Entered

- 3.3.1 Instrumentation
- 3.8.1.1 EDG

Scenario Setup and Booth Operator Instructions:

- **ENSURE** Examination Security has been established.
- **ENSURE** the Simulator is unloaded
- **ENSURE** IC #185 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, CY17C#185.ic and CY17C#185.rlp
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, CY17C#185.ic and CY17C#185.rlp into IC Master
 - **Open**, folder 23 NRC SCENARIO ICs
 - **Copy**, xr185.dat
 - **Open**, IC folder on simulator operator station desk top
 - **Paste**, xr185.dat into IC Data
- **ENSURE** Lesson for Scenario 3 from Exam Flash drive is loaded as follows:
 - **Open**, folder 23 NRC SCENARIO Isn
 - **Copy**, HLC-23 NRC SCENARIO 5.Isn
 - **Open**, Lessons folder on simulator operator station desk top
 - **Paste**, HLC-23 NRC SCENARIO 5.Isn into the Instructor Lessons folder
- **LOAD** the Simulator
- **RESTORE** IC#184
 - **RUN** the Simulator
 - **Place** Pressurizer Level Controller selector switch to Y Channel position, place caution tag on switch and place an OOS magnet under LIC-1110X
 - **ENSURE** the A Train Protected sign and OLRM sign are placed RTGB-203.
 - **ENSURE** the OLRM sign is placed RTGB-203.
 - **ENSURE** the CHEMISTRY sheet for MOC is placed on the Unit Supervisor Desk.
 - **ENSURE** a copy of 2-GOP-201 Reactor Plant Startup – Mode 2 to Mode 1 is marked up to reflect the progression is to step 4.7.14F and is placed on the Unit Supervisor Desk.
 - **ENSURE** the RE power escalation guidance letter is placed on the Unit Supervisor Desk.
 - **FREEZE** the simulator
- **OPEN** and **EXECUTE** HLC-23 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** IC#185 and HLC-23 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-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.
- Brief the scenario evaluators
- Brief surrogates using TR-AA-230-1007-F11, Surrogate Brief Checklist, if necessary.
- Crew Shift Turnover Information: See Attached

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	1	
Event Description:		Raise Power to 100%				
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:
2-GOP-201

The following actions are taken from 2-GOP-201, Reactor Plant Startup – Mode 2 To Mode 1 AND RE guidance

4.7 Raising Reactor Power from 30%

	SRO	PERFORMS A Crew Brief	<i>SRO briefs the crew on the pending up power</i>
	SRO	STEP 4.7.14. F. CONTINUE power ascension.	
	SRO	SRO refers to the Reactor Engineering power change guidance for the up power.	<i>SRO Evaluates Reactor Engineering power change guidance and determines the Dilution rate and Turbine load increase rate</i>
	SRO	SRO directs the ATC to setup a dilution per RE guidance and IAW 2-NOP-02.24	<i>The ATC begins a dilution IAW 2-NOP-02.24 and updates the crew on the reactivity addition</i>
	SRO	SRO directs BOP to setup the turbine for a up power at a rate as described in the RE guidance letter	<i>The BOP sets the Turbine up for an up power at the directed target and rate using the Hard Card.</i>
	SRO	SRO directs ATC to notify him when Tavg begins to rise	<i>The ATC notifies the SRO when Tavg begins to rise</i>
	SRO	SRO directs BOP to press Go on the Turbine control panel	<i>The BOP presses GO on the Turbine controls and Updates the crew on the up power</i>
	SRO	SRO directs ATC to maintain ASI per prescribe guidance	<i>The ATC maintain ASI per prescribe guidance</i>
	SRO	SRO Notifies the SM of the up power	

When the required power change has been observed, or at the Lead Evaluator's direction, PROCEED to Event 2.

Appendix D		Operator Action		Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	2
Event Description:		Running Primary Water Pump Trips			
Time	Position	Procedure Step		Applicant's Actions or Behavior	
	Competency				

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 2: 2A PRIMARY WATER PUMP TRIPS

Role Play:


- If calls are made for information delivery or support, then verbal repeat back of information is the only required action
- If dispatched to the 2A Primary water pump or its breaker, report back after 10 minutes that you see no issue with the components
- If called as EM or MM, report back after 15 minutes as EM that that breaker needs to be taken to the shop for evaluation

Indications: Lights for 2A Primary water pump extinguish
Annunciators: E-15

	ATC		Recognizes primary water flow has been lost
	BOP/ATC		Acknowledge annunciators and communicate IAW plant policies
2-ARP-01-F00		The following actions are taken from 2-ARP-01-F00 CONTROL ROOM PANEL F RTGB-202 for F-15	
	BOP	1. ENSURE the standby Primary Water Pump is running.	BOP STARTS the 2B Primary water pump if it did not auto start
	BOP	2. DISPATCH an operator to determine the status of Primary Water Pumps and their breakers.	BOP DISPATCHES the SNPO to the 2A Primary water pump and its breaker for evaluation
	BOP	3. IMPLEMENT 2-AOP-15.01, Primary Water System.	BOP NOTIFIES the SRO to enter 2-AOP-15.01
	SRO		Announces and enters 2-AOP-15.01, Primary Water System
	SRO		Directs actions of 2-AOP-15.01, Primary Water System
	SRO	Notifies the SM of the failure	

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	2	
Event Description:		Running Primary Water Pump Trips				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-AOP-15.01		The following actions are taken from 2-AOP-15.01, Primary Water System	
4.1 Immediate Operator Actions: NONE			
4.2. Subsequent Actions:			
	SRO	1. IF annunciator F-15, PRIMARY WATER DISCH HDR PRESS LO-LO, has been received, THEN VERIFY: <ul style="list-style-type: none"> The standby pump has automatically started. F-15, PRIMARY WATER DISCH HDR PRESS LO-LO, has cleared. 	SRO DIRECTS BOP IF the standby pump did NOT start automatically, THEN manually START the pump. SRO RECOGNIZES the 2B Primary Water is running
	SRO	SRO Notifies EM and MM and requests support	
	SRO	Performs Crew Brief	SRO PERFORMs crew brief on status of failed pump and Notifies the SM
At the Lead Evaluator's direction, PROCEED to Event 3.			


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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	3		
Event Description:		RCS Loop 2B2 Channel "D" T-cold (TE1122CD) Fails High					
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 OPERABLE.</p> <p>8. STEAM GENERATOR LEVEL – LOW TOTAL CHANNELS 4/SG CHANNELS TO TRIP 2/SG MIN OPERABLE 3/SG</p> <p>ACTION: 2. A. 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</p>
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Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 3: RCS LOOP 2B2 TCOLD TE1122CD "D" CHANNEL FAILS HIGH 			
Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. 			
Indications: TI-1102D FAILS HIGH "D" RPS TM/LP in TRIP Annunciators: L-34 Nuclear/ΔT Power Channel Deviation L-36 TM/LP Channel Trip L-44 TM/LP Channel PRE Trip SG EXAMINER: The SRO may announce Multiple Alarms to direct the crew to systematically evaluate the plant status.			
	BOP/ATC		Acknowledges annunciators and Communicates IAW plant policies
	BOP/ATC		Diagnoses and Communicates status IAW plant policies
	BOP		Complies with ARPs for L-34, L-36, L-44 and Communicates and/or takes action as directed by ARP
	SRO		Diagnoses, Interprets, that 2B2 TCOLD TE1122CD 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

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	3	
Event Description:		RCS Loop 2B2 Channel "D" T-cold (TE1122CD) Fails High				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-AOP-99.01		The following actions are taken from 2-AOP-99.01, Loss of Tech Spec Instrumentation	
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	1. CONFIRM failed channel by any of the following methods: <ul style="list-style-type: none"> Channel check comparison with redundant channels Annunciators Bistable or status lights Any instrument-related testing or surveillance procedure in progress 	<i>Interprets the indications and determines the failure to be 2B2 TCOLD TE1122CD "D" channel</i>
NOTE			
BISTABLE TRIP UNIT is abbreviated as BTU in this AOP.			
	SRO	2. IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1, Step 6.	N/A
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: A. LOCATE table row for affected instrument or channel.	<i>Locates correct table row for 2B2 TCOLD TE1122CD "D" channel</i>

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Appendix D			Operator Action			Form ES-D-2		
Op Test No.:		L-17-1		Scenario #	5	Event #	3	
Event Description:		RCS Loop 2B2 Channel "D" T-cold (TE1122CD) Fails High						
Time	Position	Procedure Step				Applicant's Actions or Behavior		
	Competency							

	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: B. REFER TO applicable Tech Specs.	<i>Refers to applicable Tech Specs 3.3.1</i>
	SRO	3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following: C. PERFORM applicable procedure section for affected instrument.	<i>PERFORMs section 4.2.7 for 2B2 TCOLD TE1122CD "D" channel</i>

4.2.7 T-cold Channel Failure


NOTE

 Each of the temperature indicators listed has inputs from two narrow range T-cold instruments, which input to RPS. Failure of any input to these narrow range instruments requires taking the actions in Section 4.2.7, T-cold Channel Failure.

	SRO	1. CIRCLE affected instrument: <input type="checkbox"/> TI-1102A <input type="checkbox"/> TI-1102B <input type="checkbox"/> TI-1102C <input type="checkbox"/> TI-1102D	<i>PERFORMs section 4.2.7 and CIRCLES affected instrument TI-1102D for 2B2 TCOLD TE1122CD "D" channel</i>
	SRO	2. PERFORM one of the following for the affected BTUs listed: <input type="checkbox"/> HI POWER (RPS) (Key 101) <input type="checkbox"/> TM/LO PRESS (RPS) (Key 107) <input type="checkbox"/> LOC PWR DEN (RPS) (Key 110) A. BYPASS affected BTUs using keyswitches. B. TRIP affected BTUs per Attachment 3, Tripping and Restoring Protection Bistables.	<i>SRO DIRECTS the BOP to BYPASS the affected BTU using keyswitch as follows;</i> <ul style="list-style-type: none"> • HI POWER (RPS) (Key 101) • TM/LO PRESS (RPS) (Key 107) • LOC PWR DEN (RPS) (Key 110)

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	3	
Event Description:		RCS Loop 2B2 Channel "D" T-cold (TE1122CD) Fails High				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.7 T-cold Channel Failure Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitch	PERFORMS section 4.2.7 as directed by the SRO; Obtains keys and inserts keys: 101,107&110 for RPS BOP relieves the ATC
	ATC	Using 2-AOP-99.01 Loss of Tech Spec Instrumentation section 4.2.7 T-cold Channel Failure Step 2. and direction from the Unit Supervisor BYPASS affected BTUs using keyswitch	ATC PERFORMS section 4.2.7 as directed by the Unit Supervisor; IVs inserted key: 101 for RPS and rotates key to bypass HI POWER IVs inserted key: 107 for RPS and rotates key to bypass TM/LO PRESS IVs inserted key: 110 for RPS and rotates key to bypass LOC PWR DEN ATC Reports to SRO that the affected BTU has been BYPASSED using keyswitch ATC relieves the BOP
4.2.1 General Actions:			
	SRO	4. INITIATE work request for affected instrument or channel and NOTIFY I&C or EM as applicable.	PERFORMS section 4.2.1 Step 4 NOTIFIES I&C as applicable and Notifies the SM of the failure and the Tech Spec entry
	SRO	5. DOCUMENT problem as required: <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log 	PERFORMS section 4.2.1 Step 5 and Documents issue as appropriate in: <ul style="list-style-type: none"> EOOS Log Condition report Ops narrative log
	SRO	6. WHEN ready to restore affected channel, THEN PERFORM Attachment 2, Restoration of Tripped or Bypassed <ul style="list-style-type: none"> Instrumentation Channels. 	IDENTIFIES step as N/A

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:		L-17-1		Scenario #	5	Event #	3
Event Description:		RCS Loop 2B2 Channel "D" T-cold (TE1122CD) Fails High					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						
	SRO	7. VERIFY Exit Conditions are met. 8. EXIT this procedure.			VERIFIES Exit conditions are met by: <ul style="list-style-type: none"> Applicable Tech Spec LCO action requirements have been implemented. Affected channel has been bypassed or tripped as required by Tech Specs. and exits 2-AOP-99.01 		
	SRO	Performs Crew Brief			SRO PERFORMs 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.							

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	5	Event #	4	
Event Description:		LT for 1110Y Oscillations				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

Booth Operator Instructions:

- Upon cue from Lead Examiner, trigger Event 4: **OSCILLATING LT 1110Y**

Role Play:


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

Indications: Oscillations on LIC-1110Y, Pressurizer level swings and letdown flow oscillations
Annunciators: H-18, M-5

	ATC		IDENTIFIES Pressurizer level swings, letdown flow oscillations and oscillations on LIC-1110Y, RECOGNIZES LIC-1110X is INOP announces the failure to the SRO and states intended actions of taking manual control of LIC-1110Y
	SRO		DIRECTS the ATC to take manual control of LIC-1110Y or LIC-2110 and stabilizes Pressurizer level and letdown Flow
	BOP		EVALUATES plant for being stable
	BOP		Acknowledge annunciators and communicates status IAW plant policies
	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	1. IF at Normal Operating Pressure, THEN VERIFY PIC-1100X(Y), PRESSURIZER PRESSURE, stable	1.1 CONTINGENCY ACTIONS N/A
	ATC	2. VERIFY selected Pressurizer pressure control channel PIC-1100X(Y), PRESSURE, NORMAL	2.1 CONTINGENCY ACTIONS N/A

		L-17-1 NRC EXAM SCENARIO 5 REV. 0				SEG Page 16 of 39	
Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	4		
Event Description:		LT for 1110Y Oscillations					
Time	Position	Procedure Step		Applicant's Actions or Behavior			
	Competency						
	ATC	3. IF either of the following conditions are met: <ul style="list-style-type: none"> Pressurizer pressure is less than 2275 psia Pressurizer pressure is lowering uncontrollably THEN VERIFY spray valves CLOSED: <ul style="list-style-type: none"> PCV-1100E, SPRAY VALVE 2B2, status lights PCV-1100F, SPRAY VALVE 2B1, status lights TIA-1103, 2B1 SPRAY LINE (Water Temperature), and TIA-1104, 2B2 SPRAY LINE (Water Temperature), indicate approximately equal temperatures 		3.1 CONTINGENCY ACTIONS N/A			
	ATC	4. VERIFY selected RRS channel Pressurizer level setpoint NORMAL as indicated on LR-1110, PRESSURIZER LEVEL.		4.1 CONTINGENCY ACTIONS N/A			
	ATC	5. VERIFY selected Pressurizer level control channel LIC-1110X(Y), LEVEL, NORMAL.		5.1 CONTINGENCY ACTIONS N/A ATC DETERMINES the failure is the Auto control section of LIC-1110Y and with LIC-1110X INOP, Takes manual control of LIC-1110Y or LIC-2110			
4.2 Subsequent Operator Actions 4.2.1 General Actions:							
	SRO	4.2.1 General Actions: 1. PERFORM applicable section per Table 1.		SRO EVALUATES the indications determines the failure to be LIC-1110Y and with LIC-1110X INOP, proceeds to section 4.2.6			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	5	Event #	4	
Event Description:		LT for 1110Y Oscillations				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					


4.2.6 Selected Pressurizer Level Control Channel Failure:

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

4.2.1 General Actions:


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

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

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Appendix D		Operator Action
Op Test No.:	L-17-1	Form ES-D-2
Event Description:	2A EDG loss of DC	
Time	Position	Applicant's Actions or Behavior
	Competency	
T.S. 3.8.1.1	AS A MINIMUM, THE FOLLOWING A.C. ELECTRICAL POWER SOURCES SHALL BE OPERABLE: B. TWO SEPARATE AND INDEPENDENT DIESEL GENERATORS, ACTION: B. WITH ONE DIESEL GENERATOR OF 3.8.1.1.B INOPERABLE, DEMONSTRATE THE OPERABILITY OF THE A.C. SOURCES BY PERFORMING SURVEILLANCE REQUIREMENT 4.8.1.1.1.A WITHIN 1 HOUR AND AT LEAST ONCE PER 8 HOURS THEREAFTER	
Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 5: 2A EDG LOSS OF DC Role Play: <ul style="list-style-type: none"> When called as the SNPO to investigate the 2A EDG report back in 5 minutes that alarms 6-2 and 8-3 are in on the local annunciator panel and indicating lights for the EDG are extinguished, state that you are going to look at the ARP and report back. As the SNPO report back that annunciator Start DC Failure CS Isolated and Lockout Relay Failure provide information that there is a DC control power failure, if the control room directs checking breaker 2-60122 the report back in 10 minutes that it is tripped, LOOK AT ARP section below for further communication guidance. When called as EM to assist with the EDG, reports back in 15 minutes that it appears there is a DC control power issue and that you are going to need an ECO to trouble shoot further. 		
Indications: Start controls, Governor controls and Voltage controls for the 2A EDG are extinguished Annunciators: B-36		
	BOP/ATC	Acknowledges annunciators and Communicates IAW plant policies
	BOP/ATC	Diagnoses and Communicates status IAW plant policies
	BOP	Complies with ARPs for B-36 and Communicates and/or takes action as directed by ARP
	BOP	Complies with ARPs for B-36 and DISPATCHES a SNPO to the 2A EDG
	SRO	Diagnoses, Interprets, that 2A EDG has had a Loss of DC control power
	SRO	DECLARES the 2A EDG Inoperable
	SRO	EVALUATES and ENTERS Tech Specs for the loss of the 2A EDG
	SRO	NOTIFIES the SM of the loss of the 2A EDG
2-ARP-06-A00	The following actions are taken from 2-ARP-06-A00, 2A EDG PANEL for 8-3	
ALARM CONFIRMATION		

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	5	
Event Description:		2A EDG loss of DC				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	DIRECTS SNPO to report the status of the Lockout Relay blue light on 2A EDG Control Panel, is OFF	SNPO REPORTS the Lockout Relay blue light on 2A EDG Control Panel, is OFF
	SRO	DIRECTS SNPO to report the status of Local Annunciator 6-2, START DC FAILURE/ SS ISOL, in ALARM	SNPO REPORTS the Local Annunciator 6-2, START DC FAILURE/ SS ISOL, is in ALARM
	SRO	DIRECTS SNPO to report the status of the Master Control indicating light on the 2A EDG Control Panel	SNPO REPORTS the Master Control indicating light is OFF on the 2A EDG Control Panel
	SRO	DIRECTS SNPO to report the status of the green POWER ON light on 2A EDG Control Panel	SNPO REPORTS the green POWER ON light on 2A EDG Control Panel is OFF
	SRO	DETERMINES the 2A EDG has lost DC control Power	
	SRO	DIRECTS SNPO to report the status of 125 VDC Bus 2A Power Panel, Bkr 2-60122, DG 2A Control Panel	SNPO REPORTS Bkr 2-60122, DG 2A Control Panel is tripped
	SRO	DIRECTS EM to investigate the tripping of Bkr 2-60122, DG 2A Control Panel	EM REPORTS DC control power issue and that you are going to need an ECO to trouble shoot further
	SRO	EVALUATES and ENTERS Tech Specs for the loss of the 2A EDG	SRO NOTIFIES the SM of the loss of the 2A EDG and TS 3.8.1.1 entry
	SRO	Performs Crew Brief	SRO PERFORMS crew brief on status of failed instrument, the Tech Spec entry
	SRO	DIRECTS BOP to PERFORM the OFFSITE power check using the HARDCARD to comply with TS 4.8.1.1.1a	BOP PERFORMS Offsite power check IAW HARDCARD
At the Lead Evaluator's direction, PROCEED to Event 6.			

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	6		
Event Description:		Running DEH pump degrades					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

CT-1	RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – MANUALLY START THE B/U DEH PUMP TO PREVENT AN UNNECESSARY REACTOR TRIP.		
Booth Operator Instructions: <ul style="list-style-type: none"> Upon cue from Lead Examiner, trigger Event 6: 2A EH PUMP TRIPS 2B EH FAILS TO AUTO START Role Play: <ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action If dispatched to the 2A EH pump or its breaker, report back after 10 minutes that you see no issue with the components If called as EM or MM, report back after 15 minutes as EM that that breaker needs to be taken to the shop for evaluation 			
Indications: Lights for 2A EH pump lights extinguish Annunciators: D-36, D-37			
	ATC		Recognizes 2A EH pump has been lost
	BOP/ATC		Acknowledge annunciators and communicate IAW plant policies
2-ARP-01-D00		The following actions are taken from 2-ARP-01-D00 CONTROL ROOM PANEL D RTGB-201 for D-36	
	BOP	1. VERIFY the standby DEH Pump RUNNING	BOP IDENTIFIES the 2B DEH pump did not start relays to pump status to the SRO
	BOP	2. IF standby pump did NOT start, THEN PLACE control switch to START .	SRO DIRECTS the BOP to START the 2B DEH pump BOP STARTS the 2B DEH pump
	BOP	VERIFIES PI-22-26, EMERGENCY OIL TRIP PRESS is > 1000 psig	BOP NOTIFIES the SRO that EH header pressure is recovering and that EMERGENCY OIL TRIP PRESS is > 1000 psig
	SRO	Notifies the SM of the failure	SRO NOTIFIES the SM of the loss of the 2A EH Pump and asks for MM assistance
	SRO	Performs Crew Brief	SRO PERFORMS crew brief on status of failed pump
At the Lead Evaluator's direction, PROCEED to Event 7.			

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	7	
Event Description:		Security Call - Tornado Sighted Just North of the Plant Then LOOP				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

Booth Operator Instructions:

- Upon cue from Lead Examiner, Call the Unit-2 Control Room as Security and report that a Tornado has been sighted just north of the Plant
- Approximately 3 minutes after the call or upon cue from Lead Examiner, trigger Event 7: LOOP

Role Play:

- If calls are made for information delivery or support, then verbal repeat back of information is the only required action
- When called as NPO & SNPO for 2-EOP-01 actions, then report the actions will be taken
- If dispatched to the 2B EDG report back in 15 minutes that there is an overspeed trip and the overspeed trip linkage is broken
- If call made to Unit-1 to determine status, report Loss of Off-site Power with one (1) EDG loaded on the bus

Indications: Offsite power indicates 0 volts, multiple alarms, 2B EDG start and breaker closes

Annunciators: Multiple

	BOP/ATC		Recognizes LOOP
	BOP/ATC		Recommends RX trip
	SRO		Directs RX trip
	ATC		Confirms reactor power is lowering and startup rate is negative. Reports "Reactor Tripped" States evaluating CEAs or that all CEAs are inserted
	BOP		Verifies all governor and throttle valves closed Reports "Turbine Tripped"
	BOP		ANNOUNCE on the Gai-tronics: Unit 2 Reactor has tripped NOTIFY the NPO to perform Appendix X, Section 1 of 2-EOP-99 CONTACT 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		Reports "All CEAs INSERTED" if not reported previously
	SRO		Directs ATC to start remaining Charging Pumps as necessary
	SRO		Directs IMPLEMENTATION OF EOP-01, STANDARD POST TRIP ACTIONS

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	7	
Event Description:		Security Call - Tornado Sighted Just North of the Plant Then LOOP				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

2-EOP-01		The following actions are taken from 2-EOP-01, Standard Post Trip Actions	
Immediate Operator Actions: <ul style="list-style-type: none"> ATC: Verifies Reactor power lowering, Negative Startup rate, all CEAs inserted, verifies no dilution is in progress, 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:			
	SRO	1. VERIFY reactor trip:	SRO DIRECTS VERIFY 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	2. VERIFY turbine trip:	SRO DIRECTS VERIFY 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
	SRO	3. VERIFY Maintenance of Vital Auxiliaries:	SRO DIRECTS VERIFY Maintenance of Vital Auxiliaries, BOP Verifies: <input type="checkbox"/> VERIFY station loads transferred to offsite electrical power BOP will Update the crew on the LOOP <input type="checkbox"/> VERIFY all Vital and Non-Vital AC buses transfer from Auxiliary to Start-up Transformers AND are ENERGIZED NOTE to EVALUATOR: 5 minutes post Trip the 2B EDG fails and will be unavailable for remainder of scenario, the SRO will DIRECT the BOP to PERFORM the Contingency actions and restore power using APP V which is described in EVENT 8 <input type="checkbox"/> VERIFY all Vital and Non Vital DC Buses are ENERGIZED <input type="checkbox"/> VERIFY seal cooling to RCPs:

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	7	
Event Description:		Security Call - Tornado Sighted Just North of the Plant Then LOOP				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	4. VERIFY RCS Inventory Control:	SRO DIRECTS VERIFY RCS Inventory Control, ATC Verifies: <input type="checkbox"/> Pressurizer level is between 10 and 68% <input type="checkbox"/> Pressurizer level is trending to between 30 and 35%
	SRO	5. VERIFY RCS Pressure Control:	SRO DIRECTS VERIFY RCS Pressure Control, ATC Verifies: <input type="checkbox"/> Pressurizer pressure is between 1800 and 2300 psia <input type="checkbox"/> Pressurizer pressure is trending to between 2225 and 2275 psia
	SRO	6. VERIFY Core Heat Removal:	SRO DIRECTS VERIFY Core Heat Removal, ATC Verifies: <input type="checkbox"/> At least one RCP is RUNNING and all RUNNING RCPs are supplied with CCW <input type="checkbox"/> Loop ΔT 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	7. VERIFY RCS Heat Removal:	SRO DIRECTS VERIFY RCS Heat Removal, ATC Verifies: <input type="checkbox"/> VERIFY the following conditions exist on at least one S/G: <ul style="list-style-type: none"> S/G NR level is between 20 and 81% Feedwater is being supplied <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"> Main or Auxiliary Feedwater The SRO will direct Feedwater to be restored using 2C AFW <input type="checkbox"/> VERIFY RCS TAVG is between 525 and 535°F <input type="checkbox"/> VERIFY S/G pressure is between 850 and 930 psia (835 and 915 psig) The SRO will direct 1 ADV be placed in MANUAL/MANUAL on each S/G EVENT:9 Will present itself on this step

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	7	
Event Description:		Security Call - Tornado Sighted Just North of the Plant Then LOOP				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	8. VERIFY containment conditions:	SRO DIRECTS VERIFY containment conditions, ATC Verifies: <input type="checkbox"/> Containment pressure is less than 2 psig <input type="checkbox"/> Containment temperature is less than 120°F <input type="checkbox"/> Containment radiation level less than alarm values AND stable or lowering: <ul style="list-style-type: none"> CIS Radiation Monitors Containment Atmospheric Monitors <input type="checkbox"/> Secondary plant radiation levels less than alarm values AND stable or lowering: <ul style="list-style-type: none"> Condenser Air Ejector Monitor S/G Blowdown Monitors Main Steamline Monitors
	SRO	9. DIRECT a field operator to perform the following:	SRO DIRECTS ATC to perform step 9, BOP performs step 9: <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	10. DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart	SRO DIAGNOSE the event using Attachment 1, Diagnostic Flow Chart and determines an SBO is in progress
	SRO	11. GO TO the appropriate Emergency Operating Procedure	SRO PERFORMS a crew brief and transitions to 2-EOP-10

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	8	
Event Description:		2B EDG breaker trips after 5 minutes				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

CT-2 RESTORE AC POWER – RESTORE POWER TO AT LEAST ONE VITAL AC BUS FROM THE OPPOSITE UNIT VIA THE STATION BLACKOUT CROSS-TIE (**WITHIN 4 HOURS**), WITH THE SELECTED TRAIN CCW AND ICW PUMPS PLACED IN PULL-TO-LOCK TO PREVENT OVERLOADING THE OPPOSITE UNIT'S SINGLE EDG

Booth Operator Instructions:			
<ul style="list-style-type: none"> NONE 			
Role Play:			
<ul style="list-style-type: none"> If calls are made for information delivery or support, then verbal repeat back of information is the only required action. If call made to Unit-1 to determine status, report Loss of Off-site Power with one (1) EDG loaded on the bus 			
Indications: No AC electric power from A Unit-2 source			
Annunciators: Multiple			
	ALL		Recognizes No Offsite power or EDGs supplying power
	SRO		Enter 2-EOP-10
2-EOP-10		The following actions are taken from 2-EOP-10, Station Blackout	
4.1 Immediate Operator Actions: NONE			
4.0 Operator Actions:			
	SRO	1. MONITOR the SFSCs and VERIFY the SFSC acceptance criteria are MET every 15 minutes	SRO DIRECTS the STA to MONITOR the SFSCs and VERIFY the SFSC acceptance criteria are MET every 15 minutes <input type="checkbox"/> STA or Extra RCO performs SFSCs
	SRO	2. IMPLEMENT the Emergency Plan	SRO NOTIFIES the Shift Manager to IMPLEMENT the Emergency Plan
	SRO	3. IMPLEMENT placekeeping.	SRO IMPLEMENTS the place keeper
	SRO	4. DIRECT Health Physics to conduct secondary plant area radiation surveys	SRO DIRECTS DIRECT HP to perform secondary surveys

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	8	
Event Description:		2B EDG breaker trips after 5 minutes				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	5. PROTECT the main condenser: A. ENSURE MSIVs are CLOSED A.1 IF MSIVs do NOT close, THEN PERFORM the following as necessary: 1. Manually INITIATE MSIS 2. Locally CLOSE MSIVs per Appendix I, MSIV Local Closure B. ENSURE SGBD is ISOLATED C. ENSURE S/G Sampling is ISOLATED D. STABILIZE the secondary plant per Appendix X, Secondary Plant Post Trip Actions, Section 2	<i>The SRO DIRECTS the ATC to PERFORM the following</i> The ATC CLOSSES MSIVs The ATC ENSURES SGBD is ISOLATED The ATC ENSURES S/G Sampling is ISOLATED The ATC PERFORMS Appendix X, Secondary Plant Post Trip Actions, Section 2 as time permits
	SRO	6. MINIMIZE RCS leakage: A. ENSURE letdown is ISOLATED. B. ENSURE RCP controlled bleedoff is ISOLATED. C. ENSURE all six RCS sample valves are CLOSED	<i>The SRO DIRECTS the ATC to PERFORM the following</i> The ATC ENSURES letdown is ISOLATED The ATC ENSURES RCP controlled bleedoff is ISOLATED The ATC ENSURES all six RCS sample valves are CLOSED
	SRO	7. ENSURE RCS Tcold is being controlled less than 535°F by operation of ADVs	<i>The SRO DIRECTS the ATC to ENSURE RCS Tcold is being controlled less than 535°F by operation of ADVs</i> NOTE to EVALUATOR: EVENT 9 will present itself at this step
	SRO	8. ENSURE at least one S/G has level being restored to or maintained between 60 and 70% NR with main or auxiliary feedwater	The SRO DIRECTS the ATC to ENSURE at least one S/G has level being restored to or maintained between 60 and 70% NR with main or auxiliary feedwater

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	5	Event #	8	
Event Description:		2B EDG breaker trips after 5 minutes				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	SRO	<p>9. PERFORM all of the following to configure the plant for restoration of AC power:</p> <p>A. NOTIFY Unit 1 to perform Appendix W, Supplying Unit 2 With AC Power Using SBO Crosstie; Section 1</p> <p>B. PERFORM Table 7, Vital Power Breaker Configuration / Station Blackout</p> <p>C. PERFORM Appendix V, Receiving AC Power From Unit 1 Using SBO Crosstie; Section 1</p> <p>D. CONTACT Division Load Dispatcher to restore power to the switchyard</p>	<p>The SRO DIRECTS the BOP to PERFORM all of the following to configure the plant for restoration of AC power</p> <p>A. NOTIFY Unit 1 to perform Appendix W, Supplying Unit 2 With AC Power Using SBO Crosstie; Section 1</p> <p>B. PERFORM Table 7, Vital Power Breaker Configuration / Station Blackout.</p> <p>C. PERFORM Appendix V, Receiving AC Power From Unit 1 Using SBO Crosstie; Section 1</p> <p>D. CONTACT Division Load Dispatcher to restore power to the switchyard</p>
	BOP	<p>NOTIFIES Unit 1 to perform Appendix W, Supplying Unit 2 With AC Power Using SBO Crosstie; Section 1</p>	<p>Unit 1 NOTIFIES the BOP that Appendix W, Supplying Unit 2 With AC Power Using SBO Crosstie; Section 1 is complete and informs the BOP that they have ONLY 1 EDG AVAILABLE</p>


2-EOP-99 Table 7

The following actions are from 2-AOP-99 Table 7


TABLE 7 VITAL POWER BREAKER CONFIGURATION / STATION BLACKOUT

NOTE

This Table identifies ALL AC breakers located on the apron section of RTGB-201. If NO vital 4.16 KV bus is energized, timely completion of this table is needed for restoration of safety functions. The breakers are listed in a top to bottom / left to right format.

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Appendix D			Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	8		
Event Description:		2B EDG breaker trips after 5 minutes					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

	BOP	1. OPEN and / or GREEN FLAG the following <input type="checkbox"/> Auxiliary Transformer 2A (6.9 KV) 2-30101 <input type="checkbox"/> S.U. Transformer 2A (6.9 KV) 2-30102 <input type="checkbox"/> Auxiliary Transformer 2A (4.16 KV) 2-20101 <input type="checkbox"/> S.U. Transformer 2A (4.16 KV) 2-20102 <input type="checkbox"/> 4.16 KV Bus Tie 2A2-2A3 2-20109 <input type="checkbox"/> Station Service Transformer 2A1 2-20110 <input type="checkbox"/> 480V Bus 2A1 Feeder 2-40103 <input type="checkbox"/> 4.16 KV Bus Tie 2A3-2A2 2-20209 <input type="checkbox"/> 480V Bus 2A5 Feeder 2-40361 <input type="checkbox"/> PRZR Heater Transformer 2A3 2-20204 <input type="checkbox"/> DG 2A 4.16KV Breaker 2-20211 <input type="checkbox"/> 4.16 KV Bus Tie 2A3-2AB 2-20208 <input type="checkbox"/> Station Service Transformer 2A5 2-20210 <input type="checkbox"/> 480V 2A2 Feeder 2-40219 <input type="checkbox"/> 480V Bus Tie 2A2-2AB 2-40220 <input type="checkbox"/> 4.16 KV Bus Tie 2AB-2A3 2-20505 <input type="checkbox"/> Station Service Transformer 2A2 2-20213 <input type="checkbox"/> 480V Bus Tie 2AB-2A2 2-40702 <input type="checkbox"/> 4.16 KV Bus Tie 2AB-2B3 2-20504 <input type="checkbox"/> 480V Bus Tie 2AB-2B2 2-40706 <input type="checkbox"/> Auxiliary Transformer 2B (6.9 KV) 2-30201 <input type="checkbox"/> S.U. Transformer 2B (6.9 KV) 2-30202 <input type="checkbox"/> Auxiliary Transformer 2B (4.16 KV) 2-20301 <input type="checkbox"/> S.U. Transformer 2B (4.16 KV) 2-20302 <input type="checkbox"/> 4.16 KV Bus Tie 2B2-2B3 2-20309 <input type="checkbox"/> Station Service Transformer 2B1 2-20310 <input type="checkbox"/> 480V Bus 2B1 Feeder 2-40419 <input type="checkbox"/> 480V Bus Tie 2B1-2A1 2-40420 <input type="checkbox"/> 4.16 KV Bus Tie 2B3-2B2 2-20411 <input type="checkbox"/> 480V Bus Feeder 2B5 2-40653 <input type="checkbox"/> PRZR Heater Transformer 2B3 2-20403 <input type="checkbox"/> DG 2B 4.16 KV Breaker 2-20401 <input type="checkbox"/> 4.16 KV Bus Tie 2B3-2AB 2-20409 <input type="checkbox"/> Station Service Transformer 2B2/2B5 2-20402 <input type="checkbox"/> 480V 2B2 Feeder 2-40503 <input type="checkbox"/> 480V Bus Tie 2B2-2AB 2-40504	<i>BOP LOCATES and OPENS/ GREEN FLAGS all listed breakers</i>
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		L-17-1 NRC EXAM SCENARIO 5 REV. 0				SEG	
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Appendix D		Operator Action				Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	8		
Event Description:		2B EDG breaker trips after 5 minutes					
Time	Position	Procedure Step			Applicant's Actions or Behavior		
	Competency						

2-EOP-99 APP "V"		The following actions are for Receiving AC Power From Unit 1 Using SBO Crosstie 2-EOP-99 APPENDIX "V".					
Section 1: Preparations for Crosstie							
<p>NOTE</p> <p>All of the following factors should be considered:</p> <p> <input type="checkbox"/> The potential for recovering a Unit 2 AC power source <input type="checkbox"/> Equipment availability <input type="checkbox"/> 10 CFR 50 Appendix R considerations (A" train is preferred on Unit 2) </p>							
	BOP	1. SELECT the train that will be used to receive AC power from Unit 1 A Train ____ B Train ____	<i>BOP CONFERS with the SRO to determine the AC train to restore power to from Unit-1</i> <i>The SRO DETERMINES which train is appropriate and DIRECTS the BOP</i> <i>NOTE to EVALUATOR: The preferred train on Unit-2 is the "A" train; however the SRO may select the "B" train after evaluating the available plant equipment</i>				
	BOP	2. ENSURE Table 7, Vital Power Breaker Configuration / Station Blackout, has been completed	<i>BOP PREFORMED table 7</i>				
<p>NOTE</p> <p>Placing the following NORMAL / ISOLATE switches in ISOLATE is not required to be performed if the EDG is unable to provide power to the bus or plant conditions prevent access to the switches.</p>							
	BOP	3. DISPATCH an operator to locally PLACE the selected train EDG Output Breaker NORMAL / ISOLATE switch in ISOLATE	<i>BOP DISPATCHES an operator to locally PLACE the selected train EDG Output Breaker NORMAL / ISOLATE switch in ISOLATE</i>				
	BOP	4. PLACE the following CCW Pumps in PULL TO LOCK: <input type="checkbox"/> 2C CCW Pump <input type="checkbox"/> Selected train CCW Pump	<i>BOP PLACES the following CCW Pumps in PULL TO LOCK</i> <input type="checkbox"/> 2C CCW Pump <input type="checkbox"/> Selected train CCW Pump				
	BOP	5. PLACE the selected train Containment Spray Pump in STOP	<i>BOP PLACES the selected train Containment Spray Pump in STOP</i>				

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	8	
Event Description:		2B EDG breaker trips after 5 minutes				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	6. PLACE the following Safety Injection Pumps in STOP: <input type="checkbox"/> Selected train HPSI Pump <input type="checkbox"/> Selected train LPSI Pump	BOP PLACES the following CCW Pumps in STOP • Selected train HPSI Pump • Selected train LPSI Pump
	BOP	7. PLACE the following Charging Pumps in STOP: <input type="checkbox"/> 2C Charging Pump <input type="checkbox"/> Selected train Charging Pump	BOP PLACES the following CCW Pumps in STOP • 2C Charging Pump • Selected train Charging Pump
	BOP	8. PLACE ALL RCP Oil lift Pumps in OFF	BOP PLACES ALL RCP Oil lift Pumps in OFF
	BOP	9. PLACE the selected train motor driven AFW Pump in STOP	BOP PLACES the selected train motor driven AFW Pump in STOP
	BOP	10. PLACE the following ICW Pumps in PULL TO LOCK: <input type="checkbox"/> 2C ICW Pump <input type="checkbox"/> Selected train ICW Pump	BOP PLACES the following CCW Pumps in PULL TO LOCK • 2C ICW Pump • Selected train ICW Pump
	BOP	11. PLACE ALL Containment Fan Coolers in STOP	BOP PLACES ALL Containment Fan Coolers in STOP
	BOP	12. ENSURE further attempts to restore power to the selected train from a Unit 2 source are suspended while Unit to Unit crosstie efforts are in progress	BOP ENSURES further attempts to restore power to the selected train from a Unit 2 source are suspended while Unit to Unit crosstie efforts are in progress
HOLDPOINT Do not proceed to Section 2 until ALL steps of Section 1 have been completed.			

Appendix D		Operator Action				Form ES-D-2
Op Test No.:	L-17-1	Scenario #	5	Event #	8	
Event Description:		2B EDG breaker trips after 5 minutes				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

Section 2: Receiving Power from Unit 1

	BOP	1. When Unit 1 is ready to supply power to Unit 2, Then PERFORM ALL of the following: A. CLOSE the Unit 2 SBO crosstie breaker, 2AB 4.16 KV BUS SBO TIE (20501) B. REQUEST Unit 1 close their SBO crosstie breaker, 4160V SWGR 1AB UNIT X-TIE BKR (1-20501) C. VERIFY the 2AB 4.16 KV bus has power restored	BOP CONTACTS Unit-1 and CONFIRMS they are ready to supply AC power to Unit-2 BOP CLOSSES 2-205012AB 4.16 KV BUS SBO TIE BOP REQUEST UNIT-1 CLOSE 1-20501 BOP VERIFIES the 2AB 4.16 KV bus has power restored BOP UPDATES the crew that Unit-2 AC power has been restored to the AB 4.16KV bus
	BOP	2. ALIGN the selected train Vital 4.16 KV bus to the 2AB 4.16 KV bus by CLOSING the TWO crosstie breakers: A Train: 2AB-2A3 (20505) and 2A3-2AB (20208) B Train: 2AB-2B3 (20504) and 2B3-2AB (20409)	BOP CLOSSES the appropriate breakers for the selected train
	BOP	3. VERIFY the selected train Vital 4.16 KV bus has power restored	BOP VERIFIES the selected 4.16 KV bus has power restored
The Scenario can be terminated after AC power is restored to Unit-2 from Unit-1 and a Charging pump is started			
	BOP	4. If TWO Unit 1 EDGs are RUNNING, Then GO TO Section 3 , Restoring Loads With TWO Unit 1 EDGs Running	BOP CONTACTS Unit-1 and CONFIRMS they have 1 EDG running
	BOP	5. If only ONE Unit 1 EDG is RUNNING, Then GO TO Section 4 , Restoring Loads With ONE Unit 1 EDG Running.	BOP CONTACTS Unit-1 and CONFIRMS they have 1 EDG running and proceeds to SECTION 4


Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	8	
Event Description:		2B EDG breaker trips after 5 minutes				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

SECTION 4: Restoring Loads With ONE Unit 1 EDG Running

	BOP	1. REQUEST Unit 1 to VERIFY that the crosstied EDG is carrying less than or equal to 2500 KW (350 amps)	BOP CONTACTS Unit-1 and CONFIRMS the crosstied EDG is carrying less than or equal to 2500 KW
<p style="text-align: center;">CAUTION</p> <p>Restoring power to the vital 480V Load Centers will cause load sequence to occur within 35 seconds. Unit 1 will need to closely monitor EDG KW and 1AB 4.16 KV bus amps to ensure an overload condition will not occur.</p>			
	BOP	2. RESTORE power to the selected train vital 480V Load Centers by CLOSING the associated supply breakers: * 2B2 and 2B5 Load Centers share a common 4.16KV supply breaker	BOP CLOSSES the appropriate breakers for the selected train to energize the 480V Load Centers
	BOP	3. VERIFY with Unit 1 that the crosstied EDG is operating satisfactorily.	BOP CONTACTS Unit-1 and CONFIRMS the crosstied EDG is operating satisfactorily
<p style="text-align: center;">NOTE</p> <p>The crosstied EDG KW and AB 4.16KV amps should be checked frequently as equipment is restored. Potential loads should be balanced against available capacity to ensure an overload condition will NOT occur. REFER TO Table 11, Emergency Diesel Generator Loading (SBO).</p>			
	SRO	4. START Charging Pumps AS NECESSARY to maintain Inventory Control safety function	The SRO DIRECTS the ATC to START Charging Pumps AS NECESSARY to maintain Inventory Control safety function
	SRO	5. RESTORE power to the 2AB 480V Load Center by CLOSING the TWO crosstie breakers:	BOP CLOSSES the appropriate breakers to RESTORE power to the 2AB 480V Load Center
	SRO	6. START additional equipment as EDG load capacity permits. Do NOT exceed 3730 KW (530 amps) on the Unit 1 EDG	The SRO DIRECTS the BOP to START additional equipment as EDG load capacity permits
<p style="color: red;">The Scenario can be terminated after AC power is restored to Unit-2 from Unit-1 and a Charging pump is started</p>			

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	9	
Event Description:		Neither ADV on RTGB will operate				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

Indications: ADVS on the RTGB do not operate			
Annunciators: NONE			
	ATC		RECOGNIZES the ADVS on the RTGB are not functioning and recommends the operation of ADVs on the PACB panel
	SRO		SRO DIRECTS the ATC to maintain S/G pressure at 900 psia using the ADVs on the PACB panel
	ATC		ATC OPERATES on the ADVs on the PACB panel to maintain S/G pressure at 900 psia
2-EOP-99 APP "A"		The following actions are for Sampling Steam Generators Using 2-EOP-99, APPENDIX "A"	
	BOP	1. If a LOOP has occurred, Then PERFORM BOTH of the following: A. ENSURE 2AB 480V Load Center is aligned to an energized bus. B. DISPATCH an operator to restore Instrument Air. REFER TO Appendix H, Operation of the 2A and 2B Instrument Air Compressors.	ATC RECOGNIZES no AC power and directs secondary surveys
NOTE			
<ul style="list-style-type: none"> 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 			

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Appendix D			Operator Action			Form ES-D-2			
Op Test No.:		L-17-1		Scenario #		5		Event #	9
Event Description:		Neither ADV on RTGB will operate							
Time	Position	Procedure Step			Applicant's Actions or Behavior				
	Competency								
	BOP	2. If an <u>INADVERTENT</u> SIAS has closed the 'N' Header valves, <u>Then</u> PERFORM EITHER of the following: <ul style="list-style-type: none"> 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 style="text-align: center;">OR</p> <ul style="list-style-type: none"> RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B HCV-14-10 			ATC RECOGNIZES no AC power and directs secondary surveys				
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.									

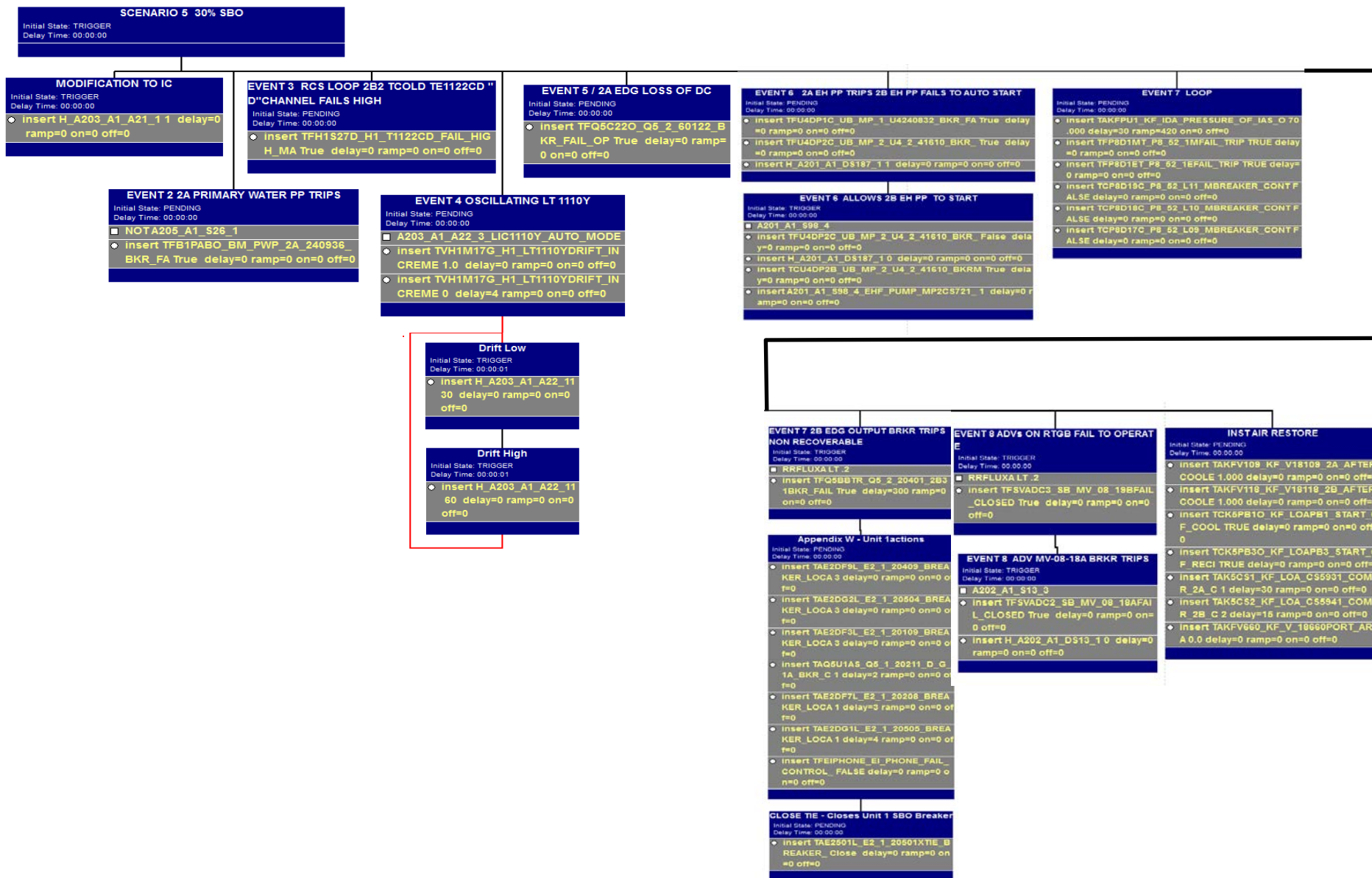
Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	9	
Event Description:		Neither ADV on RTGB will operate				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	<p>3. If a VALID SIAS has closed the 'N' Header valves, <u>Then</u> 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> <ul style="list-style-type: none"> 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>OR</p> <ul style="list-style-type: none"> RESTORE flow to the 'B' CCW Header by placing the control switches to CLOSE and then to OVERRIDE: HCV-14-8B HCV-14-10 	ATC RECOGNIZES no AC power and directs secondary surveys
	BOP	<p>4. If the 'N' Header has been restored, <u>Then</u> OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves by performing the following:</p> <p>A. If CIAS or high radiation has closed the SGBD Sample Valves, <u>Then</u> OPEN FCV-23-7 and FCV-23-9 by PLACING the control switch to CLOSE / OVERRIDE.</p> <p>B. OPEN FCV-23-7 and FCV-23-9, SGBD Sample Valves.</p>	ATC RECOGNIZES no AC power and directs secondary surveys

Appendix D		Operator Action			Form ES-D-2	
Op Test No.:	L-17-1	Scenario #	5	Event #	9	
Event Description:		Neither ADV on RTGB will operate				
Time	Position	Procedure Step		Applicant's Actions or Behavior		
	Competency					

	BOP	5. If the 'N' Header is in service, Then DIRECT Chemistry to perform S/G samples for isotopic activity and Tritium.	ATC RECOGNIZES no AC power and directs secondary surveys
	BOP	6. If S/Gs cannot be sampled, Then DIRECT Health Physics to conduct secondary plant local area radiation surveys.	ATC RECOGNIZES no AC power and directs secondary surveys
<p style="text-align: center;">NOTE</p> <p style="text-align: center;">The Safety Related CCW header NOT aligned to the 'N' Header will be operable to supply essential equipment.</p>			
	BOP	7. DECLARE the Safety Related CCW header aligned to the 'N' Header, inoperable but available.	ATC RECOGNIZES no AC power and directs secondary surveys
	BOP	8. If any of the following conditions occur prior to reaching cold shutdown or resetting SIAS, <ul style="list-style-type: none"> Seismic event 'N' Header is found NOT intact The operable Safety Related CCW header becomes inoperable Then ISOLATE the 'N' header.	ATC RECOGNIZES no AC power and directs secondary surveys

SIMULATOR LESSON LAYOUT



QUANTITATIVE ATTRIBUTES

Malfunctions:

Before EOP Entry:

1. Running Primary water pump trips
2. RCS Loop 2B2 channel "D" T-cold (TE1122CD) fails high
3. LIC-1110Y oscillations
4. 2A EDG loss of DC
5. Running DEH pump degrades

After EOP Entry:

1. Neither ADV on RTGB will operate

Abnormal Events:

1. Running Primary water pump trips
2. RCS Loop 2B2 channel "D" T-cold (TE1122CD) fails high
3. LIC-1110Y oscillations
4. 2A EDG loss of DC
5. Running DEH pump degrades

Major Transients:

1. Tornado sighted just north of the plant, 3 minutes later switchyard lost resulting in a LOOP and reactor trip; 2B EDG starts and loads
2. 2B EDG breaker trips after 5 minutes resulting in SBO

Critical Tasks:

1. RESTORE PARAMETER/COMPONENT PRIOR TO RPS ACTUATION – Manually start the B/U DEH pump to prevent an unnecessary reactor trip.
2. RESTORE AC POWER - Power to at least one vital AC bus can be established from the opposite Unit via the Station Blackout Cross-tie selected train CCW and ICW pumps placed in pull-to-lock to prevent overloading the opposite units single EDG.

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:

None

Operator Work Around:

None

Locked in Annunciators:

NONE

Current Status:

1. The Unit is at 30% steady state power MOC, Xenon at equilibrium, 3 day chemistry hold after reduction in power for condenser tube leak (hi sodium) is complete. Inclement weather (severe thunderstorms and tornado watch) is in effect; 0-AOP-100.14, Response To Severe Weather completed.
2. 2A Screen wash Pump and traveling screens running.
3. Pressurizer Level Control Channel X INOP LIC-1110X OOS, LIC1110Y Selected.
4. Chemistry has cleared the unit for power escalation to 100% power
5. Return the unit to 100% using RE guidance for power escalation and IAW 2-GOP-201 and 2-GOP-101
6. 2-GOP-201 Reactor Plant Startup Mode 2 to Mode 1 is being implemented at step 4.7.14F.
7. The SNPO has checked the 2B Charging pump and it is ready for a start

Longstanding Problems:

None

Reactivity Turnover:

Per RE guidance letter



JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: Recover Dropped CEA

JPM NUMBER: S-1

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07066120 / Perform a dropped CEA recovery

K/A NUMBERS / K/A VALUES: (RO SRO) 003 AK3.04 / Knowledge of the reasons for the following responses as they apply to the Dropped Control Rod: Actions contained in EOP for dropped control rod (3.8/4.1)

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]: N/A

Developed by:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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

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. RESTORE IC-187, CEA.56 Dropped in Core
2. PLACE the Simulator in RUN.
3. PRIOR to each student performing the JPM, place the Group Select switch to Group 5 and the Individual Select switch to CEA #00
4. SELECT the 23 NRC JPM Lsn and OPEN File HLC-23 NRC SIM-1
5. EXECUTE Lesson HLC-23 NRC SIM-1.
6. SELECT RRS-2 to have Tavg/Tref matched.
7. STORE a temporary IC set if this JPM is to be used by multiple students.

SIMULATOR MALFUNCTIONS:

SIMULATOR OVERRIDES:

SIMULATOR REMOTE FUNCTIONS:

Required Materials:	2-AOP-66.01, DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS 2-AOP-66.01, Attachment 1 Marked Up for Pre Brief 2-AOP-66.01, Attachment 5
General References:	2-AOP-66.01, DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS, Attachment 5
Task Standards:	The applicant will take steps to withdraw a dropped CEA, followed by responding to a second dropped CEA by performing immediate operator actions for greater than two CEAs dropped into the core “Trip the Reactor”.

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 96.5% power, MOL.
- CEA 56 dropped to the bottom while being moved for ASI control 30 minutes ago.
- The Immediate Operator Actions of 2-AOP-66.01, Dropped or Misaligned CEA Abnormal Operations, have been performed.
- Turbine load has been reduced to match Tavg and Tref.
- The cause of the dropped CEA has been corrected, I&C replaced ACTM card.
- Attachment 1, Dropped CEA Recovery with Reactor Critical, has been completed up to step 4, PERFORM Attachment 5, CEA Functional Test and Operability Determination.

INITIATING CUES:

- You are the Board RCO
- The US has directed you to PERFORM Attachment 5, CEA Functional Test and Operability Determination, of 2-AOP-66.01, Dropped or Misaligned CEA Abnormal Operations, for CEA #56.

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

ATTACHMENT 5, CEA Functional Test and Operability Determination	
<p><u>STEP 1:</u> MAINTAIN ΔT power less than or equal to power level recorded in Section 4.2 Step 4 or 70%, whichever limit is in effect.</p> <p><u>STANDARD:</u> MAINTAINS ΔT power within limits.</p> <p>EXAMINER’S CUE: PER CUE Sheet the plant is operating at 96.5% power</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> IF cause of abnormal condition is known, THEN VERIFY problem has been corrected.</p> <p><u>STANDARD:</u> VERIFIES problem has been corrected.</p> <p>EXAMINER’S CUE: PER CUE Sheet the cause has been corrected.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

Attachment 5, Step 3: DETERMINE if the affected CEA can be moved as follows:

<p><u>STEP A:</u> NAVIGATE to the affected CEA on the ADS FLAT PANEL DISPLAY for CEA position indication during CEA recovery.</p> <p><u>STANDARD:</u> SELECTS CEA # 56 on the ADS FLAT PANEL DISPLAY.</p> <p>EXAMINER'S CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP B:</u> On MODE SELECT switch, SELECT MI (manual individual).</p> <p><u>STANDARD:</u> SELECTS MI (manual individual) on MODE SELECT switch.</p> <p>EXAMINER'S CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP C:</u> On INDIVIDUAL CEA SELECTION panel, SELECT affected CEA.</p> <p><u>STANDARD:</u> SELECTS CEA # 56 on INDIVIDUAL CEA SELECTION panel.</p> <p>EXAMINER'S CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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<p><u>STEP D:</u> On GROUP SELECT switch, SELECT affected group.</p> <p><u>STANDARD:</u> SELECTS Group 5 on GROUP SELECT switch.</p> <p>EXAMINER'S CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP E:</u> IF CEA motion inhibit is present, THEN PERFORM the following as necessary:</p> <p>(1) PRESS and HOLD CMI BYPASS pushbutton.</p> <p>(2) PRESS and RELEASE BYPASS ENABLE pushbutton.</p> <p><u>STANDARD:</u> Determine that CEA motion inhibit is present. DEPRESS and HOLD the CEA motion inhibit bypass pushbutton</p> <p style="text-align: center;">AND</p> <p>DEPRESS then RELEASE the Bypass Enable pushbutton.</p> <p>EXAMINER'S CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP F:</u> IF affected CEA was dropped, THEN EXERCISE CEA as follows:</p> <p>(1) DO NOT EXCEED 10 inches withdrawn without US permission.</p> <p>(2) WITHDRAW affected CEA until positive indication of movement is verified by observing CEA on ADS FLAT PANEL DISPLAY.</p> <p><u>STANDARD:</u> WITHDRAW CEA 56 one or more steps while observing CEA on ADS FLAT PANEL DISPLAY.</p> <p>EVALUATOR'S NOTE: CEA 4 Drops to the bottom of the core upon motion of CEA 56. Operator determines that Immediate Operator Actions need to be taken.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

SECTION 4.1 Immediate Operator Actions	
<p>STEP 3: VERIFY NO dropped CEAs:</p> <ul style="list-style-type: none"> • Rod bottom lights • ADS FLAT PANEL DISPLAY • Pulse Count Displays <p>STEP 3 CONTINGENCY: IF <u>both</u> of the following conditions are met:</p> <ul style="list-style-type: none"> • Unit is in MODE 1 or 2. • TWO or more CEAs are dropped. <p>THEN PERFORM the following:</p> <p>A. TRIP reactor.</p> <p>B. GO TO 2-EOP-01, Standard Post Trip Actions.</p> <p>STANDARD: Applicant TRIPS the reactor.</p> <p>EVALUATOR’S NOTE: Inform student that this JPM is complete.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME _____



S-1; RECOVER DROPPED CEA

JPM
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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.

Handout Package for Applicant

TURNOVER SHEET

INITIAL CONDITIONS:

- Unit 2 is at 96.5% power, MOL.
- CEA 56 dropped to the bottom while being moved for ASI control 30 minutes ago.
- The Immediate Operator Actions of 2-AOP-66.01, Dropped or Misaligned CEA Abnormal Operations, have been performed.
- Turbine load has been reduced to match Tavg and Tref.
- The cause of the dropped CEA has been corrected, I&C replaced ACTM card.
- Attachment 1, Dropped CEA Recovery with Reactor Critical, has been completed up to step 4, PERFORM Attachment 5, CEA Functional Test and Operability Determination.

INITIATING CUES:

- You are the Board RCO
- The US has directed you to PERFORM Attachment 5, CEA Functional Test and Operability Determination, of 2-AOP-66.01, Dropped or Misaligned CEA Abnormal Operations, for CEA #56.

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

REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS ST. LUCIE UNIT 2	PAGE: 14 of 33
PROCEDURE NO.: 2-AOP-66.01		

ATTACHMENT 1
Dropped CEA Recovery With Reactor Critical
 (Page 1 of 4)

NOTE

- ☒ TS 3.1.3.1, Full Length CEA Position, Actions d and e are applicable.
- ☒ If CEA remains inserted for an extended period of time, the following may apply additional power limitations:
 - ☒ TS 3.2.4, Azimuthal Power Tilt - T_q
 - ☒ TS 3.2.5, DNB Parameters

1. VERIFY the following:

- ☐ CEDMCS MODE SELECT switch is in OFF.
- ☐ T-avg – T-ref deviation is stable AND less than or equal to $\pm 2^\circ\text{F}$.
- ☐ CEA motion inhibit exists.

2. RECORD and **MAINTAIN** ΔT power less than or equal to power level recorded in Section 4.2, Step 4.

Power level to maintain: 96.5 %

NOTE

Tech Specs Bases allow a maximum of 1 hour to realign CEAs. The COLR times are variable based on F_r^T . The use of the most conservative value should be used in determining the allowed time.

3. DETERMINE allowable amount of time to restore CEA to within 7.0 inches of all other CEAs in its group, as follows:

A. RECORD most recent F_r^T value from Plant Physics Curve Book Figure C.3.

F_r^T 1.584

B. Using most recent F_r^T value and COLR Figure 3.1-1a or 1 hour, **DETERMINE** allowable time to align CEA to its group.

Allowable time: 60 minutes

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ATTACHMENT 1
Dropped CEA Recovery With Reactor Critical
 (Page 2 of 4)

4. PERFORM Attachment 5, CEA Functional Test and Operability Determination.

NOTE

Tech Spec Bases 3/4.1.3 require a downpower if the allowed time is exceeded. Once started, this downpower shall continue at the maximum rate permitted by plant conditions, **NOT** to exceed 5 hours.

5. IF ΔT power is greater than 70%, THEN **PERFORM** the following:

A. IF at any time either of the following conditions is met:

- It is expected that CEA can **NOT** be aligned to within 7.0 inches of all other CEAs in its group within allowable time.
- Allowable time elapses before dropped CEA can be aligned with its group.

THEN **PERFORM** the following:

- (1) **SUSPEND** dropped CEA recovery actions.
- (2) **PLACE** CEDMCS MODE SELECT switch in OFF.
- (3) **REDUCE** ΔT power to less than or equal to 70% rated thermal power per 2-AOP-22.01, Rapid Downpower.
- (4) WHEN ΔT power is stable AND less than or equal to 70% rated thermal power THEN **RESUME** recovery actions by continuing to Attachment 1, Step 6.

REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS ST. LUCIE UNIT 2	PAGE: 16 of 33
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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 7 must be performed.

6. WITHDRAW dropped CEA as follows:

- A. RECORD** and **MAINTAIN** ΔT power less than or equal to power level recorded in Section 4.2, Step 4 or 70%, whichever limit is in effect, by borating.

Power level to maintain: _____ %
- B. NAVIGATE** to the affected CEA on the ADS FLAT PANEL DISPLAY for CEA position indication during CEA recovery.
- C.** On MODE SELECT switch, **SELECT** MI (manual individual).
- D.** On INDIVIDUAL CEA SELECTION panel, **SELECT** affected CEA.
- E.** On GROUP SELECT switch, **SELECT** affected group.
- F.** IF CEA motion inhibit is present, THEN **PERFORM** the following as necessary:
 - (1) **PRESS** and **HOLD** CMI BYPASS pushbutton.
 - (2) **PRESS** and **RELEASE** BYPASS ENABLE pushbutton.
- G. WITHDRAW** affected CEA in small increments of 2.25 inches or less until CEA is aligned within 7.0 inches of all other CEAs in its group.
- H.** IF held pressed, THEN **RELEASE** CMI BYPASS pushbutton.
- I. PLACE** MODE SELECT switch in OFF.

7. IF Attachment 1, Step 6 could **NOT** be performed successfully, THEN **PERFORM** the applicable actions of Tech Spec 3.1.3.1 Action f.

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ATTACHMENT 1
Dropped CEA Recovery With Reactor Critical
 (Page 4 of 4)

NOTE

It may be necessary to operate at this reduced power for as long as 24 to 36 hours to reduce the azimuthal oscillation and the resulting values of F_r^T , T_q and ASI resulting from a dropped CEA.

8. **ASSESS** core conditions as follows:
 - A. **MAINTAIN** ΔT power at current power level until released by Reactor Engineering.
 - B. **REQUEST** Reactor Engineering supervisor to assess power distributions and azimuthal tilts following dropped CEA recovery and alignment.
 - C. IF at BOC conditions AND dropped CEA was at core periphery, THEN **REQUEST** Reactor Engineering to monitor azimuthal (cross-core) power shifting to verify normal power distribution following return to required operating power level.
9. **RETURN TO** Section 4.2, Step 6.

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ATTACHMENT 5
CEA Functional Test and Operability Determination
(Page 1 of 5)

1.0 FUNCTIONAL TEST

NOTE

Per ADM-11.16, Transient Procedure Use and Adherence, between required surveillance requirement performances, if a CEA is immovable but trippable, then the CEA is considered to be OPERABLE.

1. **MAINTAIN** ΔT power less than or equal to power level recorded in Section 4.2, Step 4 or 70%, whichever limit is in effect.
2. IF cause of abnormal condition is known, THEN **VERIFY** problem has been corrected.
3. **DETERMINE** if affected CEA can be moved as follows:
 - A. **NAVIGATE** to the affected CEA on the ADS FLAT PANEL DISPLAY for CEA position indication during CEA recovery.
 - B. On MODE SELECT switch, **SELECT** MI (manual individual).
 - C. On INDIVIDUAL CEA SELECTION panel, **SELECT** affected CEA.
 - D. On GROUP SELECT switch, **SELECT** affected group.
 - E. IF CEA motion inhibit is present, THEN **PERFORM** the following as necessary:
 - (1) **PRESS** and **HOLD** CMI BYPASS pushbutton.
 - (2) **PRESS** and **RELEASE** BYPASS ENABLE pushbutton.
 - F. IF affected CEA was dropped, THEN **EXERCISE** CEA as follows:
 - (1) **DO NOT EXCEED** 10 inches withdrawn without US permission.
 - (2) **WITHDRAW** affected CEA until positive indication of movement is verified by observing CEA on ADS FLAT PANEL DISPLAY.
 - (3) IF CEA will **NOT** move, THEN **PERFORM** the following:
 - a. IF held pressed, THEN **RELEASE** CMI BYPASS pushbutton.
 - b. **PLACE** MODE SELECT switch in OFF.

REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS ST. LUCIE UNIT 2	PAGE: 28 of 33
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ATTACHMENT 5
CEA Functional Test and Operability Determination
 (Page 2 of 5)

1.0 FUNCTIONAL TEST (continued)

3. F. (3) (continued)

c. GO TO Attachment 5, Section 2.0, Step 1.

(4) VERIFY rod bottom and LEL lights are OFF.

(5) INSERT affected CEA to LEL or rod bottom light, whichever occurs first, while checking for normal operation and indications.

(6) VERIFY rod bottom or LEL light is ON, as applicable.

(7) IF held pressed, **THEN RELEASE** CMI BYPASS pushbutton.

(8) IF CEA moved freely in both directions, **THEN CONSIDER** CEA functional and OPERABLE and **RETURN TO** section or attachment and step in effect.

G. IF affected CEA was misaligned AND **NOT** dropped, **THEN EXERCISE** CEA as follows:

(1) DO NOT EXCEED ±10 inches CEA movement from original misaligned position without US permission.

(2) NOTE CEA initial position and **INSERT** affected CEA until positive indication of movement is verified by observing the CEA on ADS FLAT PANEL DISPLAY.

(3) IF CEA will **NOT** move, **THEN PERFORM** the following:

a. IF held pressed, **THEN RELEASE** CMI BYPASS pushbutton.

b. PLACE MODE SELECT switch in OFF.

c. GO TO Attachment 5, Section 2.0, Step 1.

(4) WITHDRAW affected CEA to its position just prior to insertion.

(5) IF held pressed, **THEN RELEASE** CMI BYPASS pushbutton.

(6) IF CEA moved freely in both directions, **THEN CONSIDER** affected CEA functional and OPERABLE and **RETURN TO** section or attachment and step in effect.

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ATTACHMENT 5
CEA Functional Test and Operability Determination
 (Page 3 of 5)

2.0 OPERABILITY DETERMINATION

1. DETERMINE OPERABILITY for immovable CEA as follows:

- A.** IF CEA is dropped, THEN **CONSIDER** CEA trippable and OPERABLE.
- B.** IF CEA is misaligned, THEN **PERFORM** the following:
 - (1) REQUEST** I&C and Engineering to determine if CEA is trippable.
 - (2)** IF I&C requests additional troubleshooting of inoperable CEA, THEN concurrently **PERFORM** Attachment 5, Section 3.0 while continuing with next step.
 - (3)** IF CEA is determined to be trippable, THEN **CONSIDER** CEA to be OPERABLE.
 - (4)** IF CEA is determined to be **NOT** trippable, THEN **PERFORM** the following:
 - a. DECLARE** CEA to be inoperable.
 - b. PERFORM** Attachment 7, Untrippable CEA Actions.
- C. PERFORM** applicable actions per Attachment 6, Technical Specifications Related to CEA Abnormal Operations.
- D. RETURN TO** section or attachment and step in effect.

REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS	PAGE: 30 of 33
PROCEDURE NO.: 2-AOP-66.01	ST. LUCIE UNIT 2	

ATTACHMENT 5
CEA Functional Test and Operability Determination
 (Page 4 of 5)

3.0 TROUBLESHOOTING ACTIONS FOR INOPERABLE CEA(S)

1. **OBTAIN** CEDM ROOM Key 224 from keylocker.
2. **ENSURE** affected CEA DISCONNECT breaker is in ON position. (CEDMCS Room)
3. **INSPECT** affected ACTM as follows: (inside CEDMCS cabinet)
 - A. **NOTE** any LEDs that are ON.
 - B. **RESET** affected ACTM card using RESET toggle switch.
 - C. **VERIFY** UG ENGD light is ON.
 - D. IF any abnormal LEDs are still ON, THEN **NOTIFY** I&C.
4. **ENSURE** CEDMCS air conditioning system is RUNNING and exhausting cool air into the room.
5. **ENSURE** CEDMCS cabinet cooling fans are RUNNING.
6. **EXAMINE** ADS and CEDMCS cabinets for abnormal indications.
7. IF two or more CEAs simultaneously transfer to lower gripper, as indicated by their ACTM LG ENGD LEDs ON, THEN **PERFORM** the following:
 - **NOTIFY** I&C of possible system grounds.
 - **MINIMIZE** CEA movement.
8. **NOTIFY** I&C of any problems found.

REVISION NO.: 8	PROCEDURE TITLE: DROPPED OR MISALIGNED CEA ABNORMAL OPERATIONS ST. LUCIE UNIT 2	PAGE: 31 of 33
PROCEDURE NO.: 2-AOP-66.01		

ATTACHMENT 5
CEA Functional Test and Operability Determination
 (Page 5 of 5)

3.0 TROUBLESHOOTING ACTIONS FOR INOPERABLE CEA(S) (continued)

9. IF directed by US, THEN **CONTINUE** troubleshooting efforts as follows:

A. **CONDUCT** pre-troubleshooting briefing to include the following:

- Potential for control rod drop
- Review of the testing procedure
- Review of expected alarms and indications
- Installation and removal of the Gripper Engagement Module (GEM)

B. **DO NOT MOVE** affected CEA more than ± 10 inches from original post-event position without US permission.

C. **OPERATE** CEAs in MI (manual individual) or MG (manual group) mode as requested by I&C to support troubleshooting.

D. **REQUEST** I&C perform the following:

- **INSPECT** associated power supplies and fuses. (CEDMCS cabinets)
- **OBTAIN** coil current traces and voltage readings to localize trouble.

10. WHEN affected CEA is ready for functional test and OPERABILITY determination, THEN **RETURN TO** Attachment 5, Section 1.0, Step 1.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 15

JPM TITLE: ALIGN THE ECCS FOR SIMULTANEOUS HOT AND COLD LEG INJECTION - UNIT 2

JPM NUMBER: S-2 REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07003110 / Align Safety Injection for Hot and Cold Leg Injection

K/A NUMBERS / K/A VALUES: (RO SRO) 006 A4.07 / Ability to manually operate and/or monitor in the control room: ECCS pumps and valves (4.4 /4.4)

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

Developed by:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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-2; ALIGN THE ECCS FOR SIMULTANEOUS
HOT AND COLD LEG INJECTION - UNIT 2**

JPM
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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. RESTORE IC-188.
2. No Lesson required.
3. 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 O, Simultaneous Hot and Cold Leg Injection

General References: 2-EOP-99, Appendix O, Simultaneous Hot and Cold Leg Injection

Task Standards: The applicant will align the ECCS system for Simultaneous Hot and Cold leg injection in accordance with 2-EOP-99, Appendix O

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 LOCA.
- 4.5 hours have elapsed since the trip.
- Shutdown Cooling can NOT be established.
- 2A and 2B HPSI pumps are running.

INITIATING CUES:

- You are the RCO.
- The US has directed you to complete Section 2, Simultaneous Hot and Cold Leg Injection IAW 2-EOP-99, Appendix O, for B side ONLY.

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

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

**2-EOP-99, APPENDIX O, SIMULTANEOUS HOT AND COLD LEG INJECTION,
Section 2: Aligning 2B HPSI for Hot Leg Injection**

<p><u>STEP 1:</u> OPEN V3551, To Hot Leg 2B Valve</p> <p><u>STANDARD:</u> Applicant will position V3551 control switch to OPEN and observe RED Light ON, Green Light OFF.</p> <p><u>COMMENTS:</u> (KEY 58)</p>	<p align="center">CRITICAL STEP</p> <p align="center">_____ SAT</p> <p align="center">_____ UNSAT</p>
<p><u>STEP 2:</u> OPEN V3523, To Hot Leg 2B Valve</p> <p><u>STANDARD:</u> Applicant will position V3523 control switch to OPEN and observe RED Light ON, Green Light OFF.</p> <p><u>COMMENTS:</u> (KEY 53)</p>	<p align="center">CRITICAL STEP</p> <p align="center">_____ SAT</p> <p align="center">_____ UNSAT</p>
<p><u>STEP 3:</u> CLOSE V3654, Pump 2B Discharge Valve</p> <p><u>STANDARD:</u> Applicant will position V3654 control switch to CLOSE and observe RED Light OFF, Green Light ON.</p> <p><u>COMMENTS:</u> (KEY 65)</p>	<p align="center">CRITICAL STEP</p> <p align="center">_____ SAT</p> <p align="center">_____ UNSAT</p>

S-2; ALIGN THE ECCS FOR SIMULTANEOUS HOT AND COLD LEG INJECTION - UNIT 2

<u>STEP 4:</u>	VERIFY flow to the 2B Hot Leg is greater than or equal to 250 gpm on ANY of the following instruments: <ul style="list-style-type: none"> ▪ FI-3325, HPSI to Hot Leg 2B Flow ▪ FR-3327, HPSI to Hot Leg 2B Flow 	_____ SAT
<u>STANDARD:</u>	Applicant will OBSERVE flow on FI-3325 or FR-3327	_____ UNSAT
<u>COMMENTS:</u>		

<u>STEP 5:</u>	If ONE HPSI Pump is RUNNING, <u>Then</u> ENSURE flow to the Cold Legs is greater than or equal to 250 gpm by the TOTAL of all FOUR of the following instruments: <ul style="list-style-type: none"> ▪ FI-3321, HPSI Loop 2A1 Flow ▪ FI-3311, HPSI Loop 2A2 Flow ▪ FI-3331, HPSI Loop 2B1 Flow ▪ FI-3341, HPSI Loop 2B2 Flow <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> ▪ FR-3313/3323, HPSI Loop 2A2 & 2A1 Flow ▪ FR-3333/3343, HPSI Loop 2B2 & 2B1 Flow 	_____ SAT
<u>STANDARD:</u>	Applicant will DETERMINE that TWO HPSI pumps are running and this step is N/A	_____ UNSAT
<u>COMMENTS:</u>		

S-2; ALIGN THE ECCS FOR SIMULTANEOUS HOT AND COLD LEG INJECTION - UNIT 2

<u>STEP 6:</u>	<p>If TWO HPSI Pumps are RUNNING, <u>Then</u> ENSURE flow to the Cold Legs is greater than or equal to 440 gpm by the TOTAL of all FOUR of the following instruments:</p> <ul style="list-style-type: none"> ▪ FI-3321, HPSI Loop 2A1 Flow ▪ FI-3311, HPSI Loop 2A2 Flow ▪ FI-3331, HPSI Loop 2B1 Flow ▪ FI-3341, HPSI Loop 2B2 Flow <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> ▪ FR-3313/3323, HPSI Loop 2A2 & 2A1 Flow ▪ FR-3333/3343, HPSI Loop 2B2 & 2B1 Flow 	<p style="text-align: center;">_____ SAT</p> <p style="text-align: center;">_____ UNSAT</p>
<u>STANDARD:</u>	Applicant will OBSERVE flow instruments listed above	
<u>COMMENTS:</u>		
<u>STEP (done):</u>	Notify the US that the 2B HPSI train is aligned for simultaneous Hot and Cold Leg injection.	
<u>STANDARD:</u>	<u>NOTIFY</u> the US that simultaneous Hot and Cold Leg injection is <u>ALIGNED</u> to the 2B HPSI train.	
<u>EVALUATOR'S CUE:</u>	US acknowledges	
<u>COMMENTS:</u>		
END OF TASK		

STOP TIME _____



**S-2; ALIGN THE ECCS FOR SIMULTANEOUS
HOT AND COLD LEG INJECTION - UNIT 2**

JPM
Page 9 of 15

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.

Handout Package for Applicant

TURNOVER SHEET

INITIAL CONDITIONS:

- Unit 2 has experienced a LOCA.
- 4.5 hours have elapsed since the trip.
- Shutdown Cooling can **NOT** be established.
- 2A and 2B HPSI pumps are running.

INITIATING CUES:

- You are the RCO.
- The US has directed you to complete Section 2, Simultaneous Hot and Cold Leg Injection IAW 2-EOP-99, Appendix O, for B side ONLY.

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

REVISION NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">57</div>	PROCEDURE TITLE: <div style="text-align: center; border: 1px solid black; padding: 2px;">APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2</div>	PAGE: <div style="text-align: center; border: 1px solid black; padding: 2px;">76 of 175</div>
PROCEDURE NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">2-EOP-99</div>	<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>APPENDIX O <u>SIMULTANEOUS HOT AND COLD LEG INJECTION</u> (Page 1 of 4)</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;">NOTE</p> <p>If a HPSI Pump has been throttled post-RAS due to excessive flow, the HPSI pump that is NOT throttled should be used for simultaneous hot and cold leg injection.</p> </div> </div> <p>Section 1: Aligning 2A HPSI for Hot Leg Injection</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1. OPEN V3550, To Hot Leg 2A Valve. <input type="checkbox"/> 2. OPEN V3540, To Hot Leg 2A Valve. <input type="checkbox"/> 3. CLOSE V3656, Pump 2A Discharge Valve. <input type="checkbox"/> 4. VERIFY flow to the 2A Hot Leg is greater than or equal to 250 gpm on ANY of the following instruments: <ul style="list-style-type: none"> <input type="checkbox"/> FI-3315, HPSI To Hot Leg <input type="checkbox"/> FY-3317-1, HPSI To Hot Leg 2A Flow <input type="checkbox"/> 5. If ONE HPSI Pump is RUNNING, <u>Then</u> ENSURE flow to the Cold Legs is greater than or equal to 275 gpm by the TOTAL of all FOUR of the following instruments: <ul style="list-style-type: none"> <input type="checkbox"/> FI-3321, HPSI Loop 2A1 Flow <input type="checkbox"/> FI-3311, HPSI Loop 2A2 Flow <input type="checkbox"/> FI-3331, HPSI Loop 2B1 Flow <input type="checkbox"/> FI-3341, HPSI Loop 2B2 Flow <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> FY-3313-1 / 3323-1, HPSI HDR 2A2 & 2A1 Flow <input type="checkbox"/> FY-3333-1 / 3343-1, HPSI HDR 2B1 & 2B2 Flow 	

REVISION NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">57</div>	PROCEDURE TITLE: <div style="text-align: center; border: 1px solid black; padding: 2px;">APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2</div>	PAGE: <div style="text-align: center; border: 1px solid black; padding: 2px;">77 of 175</div>
PROCEDURE NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">2-EOP-99</div>	<div style="text-align: center;"> APPENDIX O <u>SIMULTANEOUS HOT AND COLD LEG INJECTION</u> (Page 2 of 4) </div> <p>Section 1: Aligning 2A HPSI for Hot Leg Injection (continued)</p> <p><input type="checkbox"/> 6. <u>If</u> TWO HPSI Pumps are RUNNING, <u>Then</u> ENSURE flow to the Cold Legs is greater than or equal to 440 gpm by the TOTAL of all FOUR of the following instruments:</p> <ul style="list-style-type: none"> <input type="checkbox"/> FI-3321, HPSI Loop 2A1 Flow <input type="checkbox"/> FI-3311, HPSI Loop 2A2 Flow <input type="checkbox"/> FI-3331, HPSI Loop 2B1 Flow <input type="checkbox"/> FI-3341, HPSI Loop 2B2 Flow <p align="center">OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> FY-3313-1 / 3323-1, HPSI HDR 2A2 & 2A1 Flow <input type="checkbox"/> FY-3333-1 / 3343-1, HPSI HDR 2B1 & 2B2 Flow <p align="center" style="margin-top: 100px;">End of Section 1</p>	

REVISION NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">57</div>	PROCEDURE TITLE: <div style="text-align: center; border: 1px solid black; padding: 2px;">APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2</div>	PAGE: <div style="text-align: center; border: 1px solid black; padding: 2px;">78 of 175</div>
PROCEDURE NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">2-EOP-99</div>	<div style="text-align: center;"> APPENDIX O <u>SIMULTANEOUS HOT AND COLD LEG INJECTION</u> (Page 3 of 4) </div> Section 2: Aligning 2B HPSI for Hot Leg Injection <div style="list-style-type: none; padding-left: 0;"> <div><input type="checkbox"/> 1. OPEN V3551, To Hot Leg 2B Valve.</div> <div><input type="checkbox"/> 2. OPEN V3523, To Hot Leg 2B Valve.</div> <div><input type="checkbox"/> 3. CLOSE V3654, Pump 2B Discharge Valve.</div> <div><input type="checkbox"/> 4. VERIFY flow to the 2B Hot Leg is greater than or equal to 250 gpm on ANY of the following instruments: <div style="margin-left: 20px;"> <input type="checkbox"/> FI-3325, HPSI To Hot Leg 2B Flow <input type="checkbox"/> FY-3327-1, HPSI To Hot Leg 2B Flow </div> </div> <div><input type="checkbox"/> 5. <u>If</u> ONE HPSI Pump is RUNNING, <u>Then</u> ENSURE flow to the Cold Legs is greater than or equal to 275 gpm by the TOTAL of all FOUR of the following instruments: <div style="margin-left: 20px;"> <input type="checkbox"/> FI-3321, HPSI Loop 2A1 Flow <input type="checkbox"/> FI-3311, HPSI Loop 2A2 Flow <input type="checkbox"/> FI-3331, HPSI Loop 2B1 Flow <input type="checkbox"/> FI-3341, HPSI Loop 2B2 Flow OR <input type="checkbox"/> FY-3313-1 / 3323-1, HPSI HDR 2A2 & 2A1 Flow <input type="checkbox"/> FY-3333-1 / 3343-1, HPSI HDR 2B1 & 2B2 Flow </div> </div> </div>	

REVISION NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">57</div>	PROCEDURE TITLE: <div style="text-align: center; border: 1px solid black; padding: 2px;">APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2</div>	PAGE: <div style="text-align: center; border: 1px solid black; padding: 2px;">79 of 175</div>
PROCEDURE NO.: <div style="text-align: center; border: 1px solid black; padding: 2px;">2-EOP-99</div>	<div style="text-align: center;"> APPENDIX O <u>SIMULTANEOUS HOT AND COLD LEG INJECTION</u> (Page 4 of 4) </div> <p>Section 2: Aligning 2B HPSI for Hot Leg Injection (continued)</p> <p><input type="checkbox"/> 6. <u>If TWO</u> HPSI Pumps are RUNNING, Then ENSURE flow to the Cold Legs is greater than or equal to 440 gpm by the TOTAL of all FOUR of the following instruments:</p> <ul style="list-style-type: none"> <input type="checkbox"/> FI-3321, HPSI Loop 2A1 Flow <input type="checkbox"/> FI-3311, HPSI Loop 2A2 Flow <input type="checkbox"/> FI-3331, HPSI Loop 2B1 Flow <input type="checkbox"/> FI-3341, HPSI Loop 2B2 Flow <p align="center">OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> FY-3313-1 / 3323-1, HPSI HDR 2A2 & 2A1 Flow <input type="checkbox"/> FY-3333-1 / 3343-1, HPSI HDR 2B1 & 2B2 Flow <p align="center" style="margin-top: 20px;">End of Section 2</p> <p align="center" style="margin-top: 20px;">END OF APPENDIX O</p>	



JOB PERFORMANCE MEASURE

JPM
Page 1 of 21

JPM TITLE: Establish Once Through Cooling

JPM NUMBER: S-3

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07200220 / Establish Once Through Cooling

K/A NUMBERS / K/A VALUES: (RO SRO) 002 A2.04 / Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of heat sinks (4.3/4.6)

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]: YES

Alternate Path [INPO]: N/A

Developed by:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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-3; ESTABLISH ONCE THROUGH COOLING

JPM
Page 3 of 21

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. **RESTORE** IC-189 from the JPM IC Set Group.
2. **DO NOT UNFREEZE** the Simulator.
3. **SELECT** JPM Lesson File Folder.
4. **SELECT** NRC23 SIM JPM-3 and **EXECUTE** the Lesson.
5. **Hang a clearance tag on the 2A HPSI pump switch in STOP** and place a green mylar on annunciator R-40.
6. **UNFREEZE** the Simulator to verify the 2A HPSI pump failure inserted (in the IC). Ensure the lights are out on the 2A HPSI pump switch and annunciator R-40 is in. The simulator will **AUTO FREEZE** after 10 seconds.
7. Make a Temporary **STOREPOINT** if more than one student will perform the JPM.
8. The lesson does **NOT** need to be stopped and re-executed for subsequent students.
9. **UNFREEZE** the Simulator when the student is ready.

SIMULATOR MALFUNCTIONS:

SIMULATOR OVERRIDES:

SIMULATOR REMOTE FUNCTIONS:

Required Materials: 2-EOP-15, Functional Recovery, RCS and Core Heat Removal, Success Path 3

2-EOP-99, Figure 2

General References: 2-EOP-15, Functional Recovery

2-EOP-99, Appendices / Figures / Tables / Data Sheets

Task Standards: The applicant will complete this JPM when once-through cooling has been established and safety injection flow to the RCS has been verified, including contingency actions.

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.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 2 is experiencing a total loss of feedwater event.
- All attempts to restore main and auxiliary feedwater have been unsuccessful.
- Both steam generator levels indicate less than 15% wide range.
- The US has determined that once-through cooling will be established.
- The 2A HPSI Pump is OOS for breaker work.

INITIATING CUES:

- You are the Desk RCO.
- The US has directed you to establish once-through-cooling per 2-EOP-15, Section 4.6.1, RCS and Core Heat Removal - HR-3, Success Path 3 – Step 1, Establish Once-Through-Cooling.
- An Extra Operator is available to acknowledge alarms.

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

2-EOP-15, Functional Recovery, RCS & Core Heat Removal HR-3, Success Path 3, Once-Through-Cooling, 4.6.1 Establish Once Through Cooling, Step 1. 1. If S/G level in BOTH S/Gs is less than 15% WR, or TCOLD rises uncontrolled by more than 5°F, Then establish heat removal via once-through-cooling:

<p>STEP 1: A. DE-ENERGIZE ALL Pressurizer Heaters.</p> <p>STANDARD: POSITION all Pressurizer Heaters control switches to OFF.</p> <p>EVALUATOR NOTE: The heaters will be off. If the heaters are off with the heater transformer breakers open (no lights on the heaters), and the student leaves the heater switches as-is, this step is not unsat. It is more desirable for the student to place the individual heater switches in OFF.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: B. If Main Condenser is available, Then PERFORM BOTH the following:</p> <ol style="list-style-type: none"> 1. BLOCK MSIS 2. ENSURE ALL Steam Bypass Valves are OPEN. <p>STANDARD: DETERMINE that Main Condenser is not AVAILABLE and step is N/A.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<u>STEP 3:</u>	C. ENSURE ALL available Atmospheric Dump Valves are OPEN	CRITICAL STEP
	Step is critical because without ALL available Atmospheric Dump Valves open the task cannot be completed.	_____ SAT
<u>STANDARD:</u>	POSITION all four ADVs to OPEN	
<u>COMMENTS:</u>		_____ UNSAT
<u>STEP 4:</u>	D. ENSURE ALL RCPs are STOPPED.	
<u>STANDARD:</u>	DETERMINE that all RCPs are STOPPED	_____ SAT
<u>COMMENTS:</u>		
		_____ UNSAT
<u>STEP 5:</u>	E. ENSURE SIAS <u>and</u> CIAS are ACTUATED.	
	Step is critical because without ENSURING SIAS and CIAS ACTUATED the task cannot be completed.	CRITICAL STEP
<u>STANDARD:</u>	DEPRESS the pushbutton above each switch and POSITION SIAS Train A and Train B actuation switches to SIAS ON.	_____ SAT
	VERIFY SIAS and CIAS Trains A and B have ACTUATED.	
		_____ UNSAT
	EVALUATORS NOTE: SIAS and CIAS may AUTO Actuate prior to MANUAL Actuation. If AUTO actuation has occurred, this is not a CRITICAL STEP.	
<u>COMMENTS:</u>		

<u>STEP 6:</u>	<p>F. ENSURE BOTH of the following:</p> <ol style="list-style-type: none"> 1. BOTH HPSI pumps are RUNNING <p>Step is critical because without ENSURING HPSI Pump 2B running the task cannot be completed.</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<u>STANDARD:</u>	<p>OBSERVE that HPSI Pump 2A is OOS and HPSI Pump 2B failed to START.</p> <p>POSITION HPSI Pump 2B control switch to START</p>	
<u>COMMENTS:</u>		
<u>STEP 7</u>	<p>F. ENSURE BOTH of the following:</p> <ol style="list-style-type: none"> 2. ALL cold leg injection valves are OPEN 	<p>_____ SAT</p> <p>_____ UNSAT</p>
<u>STANDARD:</u>	<p>OBSERVE that ALL cold leg injection valves are OPEN</p>	
<u>COMMENTS:</u>		
<u>STEP 8</u>	<p>G. ENSURE ALL available charging pumps are RUNNING.</p> <p>Step is critical because without STARTING the 2C Charging Pump the task cannot be completed.</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<u>STANDARD:</u>	<p>POSITION the 2B and 2C Charging Pumps to START.</p>	
<p>EVALUATORS NOTE: 2B Charging Pump will be running, the examinee may place the switch in START to ensure it remains running. Only the starting the 2C pump is critical.</p>		
<u>COMMENTS:</u>		

<p><u>STEP 9</u> H. ENSURE BOTH PORV block valves are OPEN.</p> <p>Step is critical because without OPENING BOTH PORV block valves the task cannot be completed.</p> <p><u>STANDARD:</u> POSITION V1477 PORV block valve control switch to OPEN</p> <p>EVALUATORS NOTE: V1476 IS ALREADY OPEN</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10</u> I. When at least ONE HPSI pump is RUNNING with a cold leg flowpath, and BOTH PORV block valves are open, Then OPEN BOTH PORVs.</p> <p>1. ENSURE PORV control switches are in OFF.</p> <p><u>STANDARD:</u> VERIFY V1474 and V1475 control switches are in OFF.</p> <p>EVALUATORS NOTE: Both PORV switches are already in OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11</u> I. When at least ONE HPSI pump is RUNNING with a cold leg flowpath, and BOTH PORV block valves are open, Then OPEN BOTH PORVs.</p> <p>2. PULL at least TWO RPS Hi Pzr Press bistables</p> <p>Step is critical because without at least TWO RPS Hi Press bistables removed the task cannot be completed.</p> <p><u>STANDARD:</u> UNFASTEN and PULL any two HI PZR PRESS trip unit bistables on RPS Cabinets.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 12</u></p> <p>I. When at least ONE HPSI pump is RUNNING with a cold leg flowpath, and BOTH PORV block valves are open, Then OPEN BOTH PORVs.</p> <p>3. VERIFY BOTH PORVs OPEN</p> <p><u>STANDARD:</u> VERIFY BOTH PORVS OPEN</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 13</u></p> <p>J. When once through cooling has been established, Then:</p> <p>1. Close Atmospheric Dump Valves.</p> <p><u>STANDARD:</u> CLOSE all four ADVs by placing the ADV control switches in MANUAL and CLOSED. ADV controller in "M" mode with manual output at 0%.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 14</u></p> <p>J. When once through cooling has been established, Then:</p> <p>2. Close Main Steam Isolation.</p> <p>3. Close Main Steam Isolation Bypass Valves.</p> <p>4. Close Steam Generator Blowdown Isolation Valves.</p> <p>5. Verify Steam Generator Safety Valves are CLOSED.</p> <p><u>STANDARD:</u> Applicant will observe all listed valves are CLOSED.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 15</u></p> <p>K. If Steam Generator pressure approaches 985 psig (1000 psia) Then OPERATE ADVs as necessary to maintain S/G pressure between 835 and 915 psig (850 and 930 psia).</p> <p><u>STANDARD:</u> Applicant will acknowledge the step.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STEP 16	2. Maximize SI Flow Perform all of the following: A. Ensure all available SI Pumps are running. B. Verify adequate SI flow. Refer to Figure 2, Safety Injection Flow vs. RCS Pressure C. Ensure all available charging pumps are running.	_____ SAT _____ UNSAT
STANDARD:	Applicant will observe all available SI pumps running and verify adequate per Figure 2. Then observe all available charging pumps are running.	
COMMENTS:		
STEP (done):	Notify US that task is complete.	
STANDARD:	NOTIFY the US that once-through-cooling has been ESTABLISHED per 2-EOP-15, RCS and Core Heat Removal – HR-3, Success Path 3. The 2B HPSI Pump had to be manually started. Figure 2 is being met	
EVALUATOR CUE:	US ACKNOWLEDGES	
COMMENTS:	<div style="text-align: center;"> END OF TASK </div>	

STOP TIME _____



S-3; ESTABLISH ONCE THROUGH COOLING

JPM
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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.

Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- Unit 2 is experiencing a total loss of feedwater event.
- All attempts to restore main and auxiliary feedwater have been unsuccessful.
- Both steam generator levels indicate less than 15% wide range.
- The US has determined that once-through cooling will be established.
- The 2A HPSI Pump is OOS for breaker work.

INITIATING CUES:

- You are the Desk RCO.
- The US has directed you to establish once-through-cooling per 2-EOP-15, Section 4.6.1, RCS and Core Heat Removal - HR-3, Success Path 3 – Step 1, Establish Once-Through-Cooling.
- An Extra Operator is available to acknowledge alarms.

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

REVISION NO.: 47	PROCEDURE TITLE: FUNCTIONAL RECOVERY	PAGE: 134 of 215
PROCEDURE NO.: 2-EOP-15	ST. LUCIE UNIT 2	

4.6 RCS and CORE HEAT REMOVAL – HR-3

Success Path 3 – Once-Through-Cooling

INSTRUCTIONS

☐ **1. Establish Once-Through Cooling**

If S/G level in **BOTH** S/Gs is less than 15% WR,
or T_{COLD} rises uncontrolled by more than 5°F,
Then establish heat removal via once-through-cooling:

A. DE-ENERGIZE **ALL** Pressurizer heaters.

B. If Main Condenser is available, Then PERFORM **BOTH** the following:

- 1.** BLOCK MSIS.
- 2.** ENSURE **ALL** available Steam Bypass Valves are OPEN.

C. ENSURE **ALL** available Atmospheric Dump Valves are OPEN.

D. ENSURE **ALL** RCPs are STOPPED.

E. ENSURE SIAS and CIAS are ACTUATED.

(continued on next page)

CONTINGENCY ACTIONS

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PROCEDURE NO.: 2-EOP-15	ST. LUCIE UNIT 2	

4.6 RCS and CORE HEAT REMOVAL – HR-3 (continued)	Success Path 3 – Once-Through-Cooling (continued)
<p align="center">INSTRUCTIONS</p> <p>1. (continued)</p> <p>F. ENSURE BOTH of the following:</p> <p>1. BOTH HPSI pumps are RUNNING.</p> <p>2. ALL cold leg injection valves are OPEN.</p> <p>G. ENSURE ALL available charging pumps are RUNNING.</p>	<p>CONTINGENCY ACTIONS</p> <p>F.1 <u>If ONE</u> HPSI pump is operating <u>with</u> a cold leg injection flowpath, <u>Then</u> continue steps to initiate Once Through Cooling.</p> <p>F.2 <u>If NO</u> HPSI pumps are operating, OR the RCS has repressurized above HPSI shutoff head, rendering SI flow inadequate, OR SI flow per Figure 2, Safety Injection Flow vs. RCS Pressure, is inadequate for any reason, <u>Then</u>:</p> <p>A. Place the control switch for V1474, in OVERRIDE.</p> <p>B. Place the control switch for V1475, in OVERRIDE.</p> <p>C. Close PORV Block Valve V1476.</p> <p>D. Close PORV Block Valve V1477.</p> <p>E. GO TO Step 18.3 Contingency Actions for success path HR-3.</p>

REVISION NO.: 47	PROCEDURE TITLE: FUNCTIONAL RECOVERY	PAGE: 136 of 215
PROCEDURE NO.: 2-EOP-15	ST. LUCIE UNIT 2	

4.6 RCS and CORE HEAT REMOVAL – HR-3 (continued)	Success Path 3 – Once-Through-Cooling (continued)
INSTRUCTIONS	CONTINGENCY ACTIONS
1. (continued) H. ENSURE BOTH PORV block valves are OPEN.	H.1 If ONE PORV Block Valve is OPEN, <u>Then</u> continue steps to initiate Once Through Cooling. H.2 If NO PORV Block Valves are OPEN, <u>Then:</u> A. Continue efforts to ENSURE ONE PORV Block Valve is OPEN. B. Take actions to establish a source of feedwater to one S/G.
(continued on next page)	

REVISION NO.: 47	PROCEDURE TITLE: FUNCTIONAL RECOVERY	PAGE: 137 of 215
PROCEDURE NO.: 2-EOP-15	ST. LUCIE UNIT 2	

4.6 RCS and CORE HEAT REMOVAL – HR-3 (continued)	Success Path 3 – Once-Through-Cooling (continued)
<p align="center">INSTRUCTIONS</p> <p>1. (continued)</p> <p>I. <u>When</u> at least ONE HPSI pump is RUNNING <u>with</u> a cold leg flowpath and BOTH PORV Block Valves are OPEN, <u>Then</u> OPEN BOTH PORVs.</p> <p>1. ENSURE PORV control switches are in OFF.</p> <p>2. PULL at least TWO RPS Hi Pzr Press bistables.</p> <p>3. VERIFY BOTH PORVS OPEN.</p> <p align="center">(continued on next page)</p>	<p align="center">CONTINGENCY ACTIONS</p> <p>I.1 <u>When</u> at least ONE HPSI pump is RUNNING <u>with</u> a cold leg flowpath, <u>and</u> at least ONE PORV Block Valve is OPEN, <u>Then</u> PERFORM the following:</p> <p>A. ENSURE the associated PORV control switch is OFF.</p> <p>B. PULL at least TWO RPS Hi Pzr Press bistables.</p> <p>C. VERIFY the PORV with an OPEN PORV Block Valve is OPEN.</p> <p>D. CONTINUE efforts to OPEN the second PORV and PORV Block Valve.</p> <p>I.2 <u>If</u> at least ONE PORV is NOT OPEN, <u>Then</u>:</p> <p>A. Continue efforts to ENSURE at least ONE PORV <u>and</u> its associated Block Valve are OPEN.</p> <p>B. Take actions to establish a source of feedwater to one S/G.</p>

REVISION NO.: 47	PROCEDURE TITLE: FUNCTIONAL RECOVERY	PAGE: 138 of 215
PROCEDURE NO.: 2-EOP-15	ST. LUCIE UNIT 2	

<p>4.6 RCS and CORE HEAT REMOVAL – HR-3 (continued)</p> <p style="text-align: center;">INSTRUCTIONS</p> <p>1. (continued)</p> <p>J. <u>When</u> once through cooling has been established, <u>Then</u>:</p> <ol style="list-style-type: none"> 1. Close Atmospheric Dump Valves. 2. Close Main Steam Isolation Valves. 3. Close Main Steam Isolation Bypass Valves. 4. Close Steam Generator Blowdown Isolation Valves. 5. Verify Steam Generator Safety Valves are CLOSED. <p>K. <u>If</u> Steam Generator pressure approaches 985 psig (1000 psia), <u>Then</u> OPERATE ADVs as necessary to maintain S/G pressure between 835 and 915 psig (850 and 930 psia).</p>	<p>Success Path 3 – Once-Through-Cooling (continued)</p> <p style="text-align: center;">CONTINGENCY ACTIONS</p> <p>K.1 <u>If</u> main condenser is available,</p> <ol style="list-style-type: none"> A. Key enable respective S/G Main Steam Isolation Bypass Valve. <ul style="list-style-type: none"> • SG 2A, Key enable MV-08-1A on Bkr 41202 (MCC2A5) • SG 2B, Key enable MV-08-1B on Bkr 42004 (MCC2B5) B. OPEN respective Main Steam Isolation Bypass Valve. C. OPERATE Steam Bypass as necessary to maintain S/G pressure between 835 and 915 psig (850 and 930 psia). <p style="text-align: right;">(continued on next page)</p>
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REVISION NO.: 47	PROCEDURE TITLE: FUNCTIONAL RECOVERY	PAGE: 139 of 215
PROCEDURE NO.: 2-EOP-15	ST. LUCIE UNIT 2	

4.6 RCS and CORE HEAT REMOVAL – HR-3 (continued)

INSTRUCTIONS

1. (continued)

☐ **2. Maximize SI Flow**

PERFORM ALL of the following:

A. ENSURE ALL available SI Pumps are RUNNING.

B. VERIFY adequate SI flow.
REFER TO Figure 2, Safety Injection Flow vs. RCS Pressure.

C. ENSURE ALL available Charging Pumps are RUNNING.

☐ **3. Close ADVs & SBCS Valves**

When feedwater is to be restored to the S/Gs,
Then CLOSE ALL ADVs and SBCS valves.

Success Path 3 – Once-Through-Cooling (continued)

CONTINGENCY ACTIONS

K.2 If main condenser is NOT available, Then MAINTAIN S/G pressure using alternate steaming paths. REFER TO Table 12, Alternate S/G Heat Removal Flowpaths.

B.1 TAKE actions to restore SI flow:

A. ENSURE electrical power to SI pumps and valves.

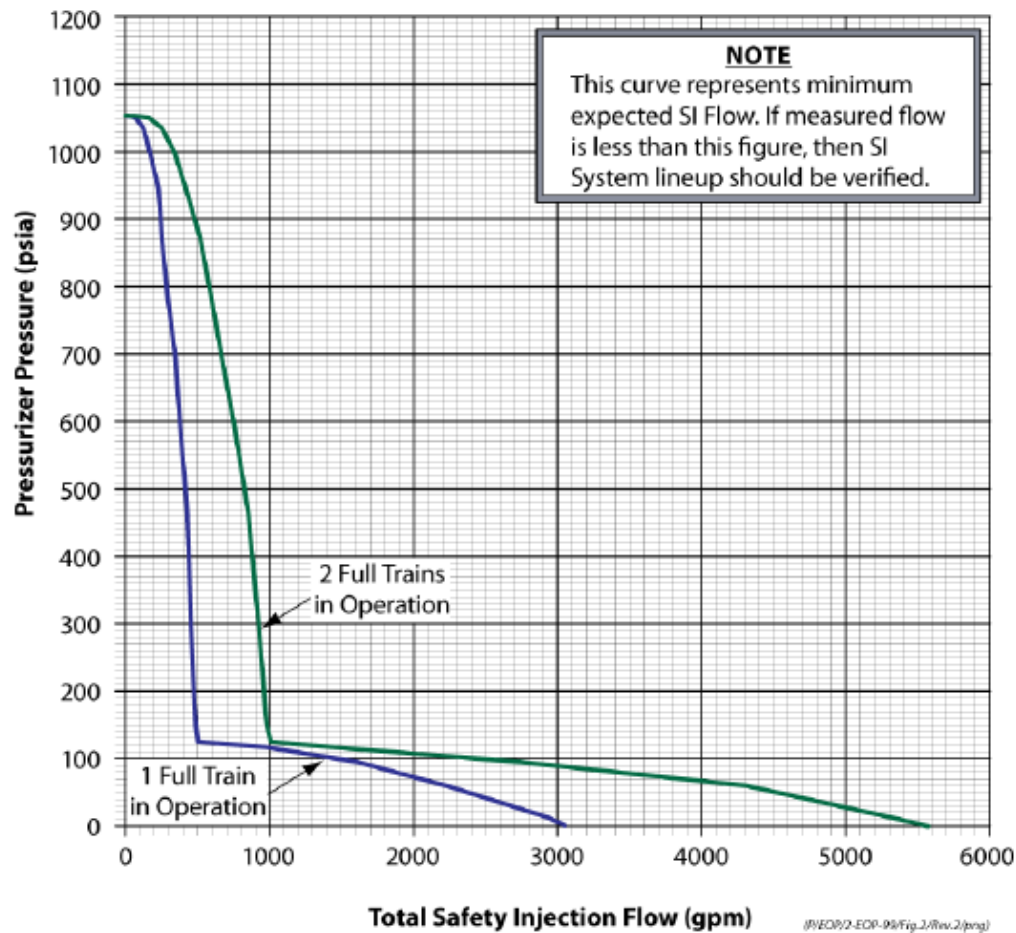
B. ENSURE correct SI valve alignment.

C. ENSURE operation of necessary auxiliary systems.

C.1 If the Charging Header is NOT available, Then CONSIDER charging to the HPSI Header.
REFER TO Appendix T, Alternate Charging Flow Path to RCS Through 'A' HPSI Header.

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PROCEDURE NO.: 2-EOP-99		

FIGURE 2
SAFETY INJECTION FLOW VS. RCS PRESSURE
(Page 1 of 1)





JOB PERFORMANCE MEASURE

JPM
Page 1 of 14

JPM TITLE: Place LTOP in Service

JPM NUMBER: S-4

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 0701545 / Place LTOP in service

K/A NUMBERS / K/A VALUES: (RO SRO) 005 K4.01/ Knowledge of RHRS design feature(s) and/or interlock(s) which provide or the following: Overpressure mitigation system (3.0/3.2)

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

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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; PLACE LTOP IN SERVICE

JPM
Page 3 of 14

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. RESTORE IC-190 from the Flash Drive.
2. OPEN and EXECUTE lesson HLC-23 NRC SIM JPM-4
3. RUN simulator until student is ready.
4. STORE a temporary IC set if this setting is to be used by multiple students.

SIMULATOR MALFUNCTIONS:

SIMULATOR OVERRIDES:

SIMULATOR REMOTE FUNCTIONS:

Required Materials:	2-GOP-305, REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN – Step 4.8
General References:	2-GOP-305, REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN
Task Standards:	The applicant will place LTOP in service and perform immediate operator actions per 2-AOP-01.01 in response to V1475 failing open

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:

- A Unit Shutdown is in progress on Unit 2
- RCS temperature is below 238°F
- Annunciators LIT:
 - H-34, PORV V1474 LTOP Range Condition Select LTOP
 - H-38, PORV V1475 LTOP Range Condition Select LTOP

INITIATING CUES:

- You are the Board RCO
- The Unit Supervisor has directed you to place LTOP in service IAW 2-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown, Beginning with Section 4.8, Placing Low Temperature Over Pressure (LTOP) in Service, Step 3
- The channel functional test will NOT be performed

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

2-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown, Section 4.8, Placing Low Temperature Over Pressure (LTOP) in Service, Step 3		
<u>STEP 1:</u>	Verify Annunciator H-34, PORV V1474 LTOP Range Condition Select LTOP, is in ALARM.	_____ SAT _____ UNSAT
<u>STANDARD:</u>	<u>OBSERVE</u> Annunciator H-34, PORV V1474 LTOP Range Condition Select LTOP, is in <u>ALARM</u> .	
<u>COMMENTS:</u>		
<u>STEP 2:</u>	Verify Annunciator H-43, LTOP Channel A Transient, is NOT in ALARM.	_____ SAT _____ UNSAT
<u>STANDARD:</u>	<u>OBSERVE</u> Annunciator H-43, LTOP Channel A Transient, is <u>NOT</u> in <u>ALARM</u> .	
<u>COMMENTS:</u>		
<u>STEP 3:</u>	CLOSE V1476, PORV Block Valve.	_____ SAT _____ UNSAT
<u>STANDARD:</u>	<u>POSITION</u> V1476, PORV Block Valve to <u>CLOSE</u> .	
<u>COMMENTS:</u>		

S-4; PLACE LTOP IN SERVICE

<u>STEP 4:</u>	PLACE the PORV Mode Select switch for PORV V1474 in the LTOP Position.	CRITICAL STEP
<u>STANDARD:</u>	<u>POSITION</u> Mode Select switch for PORV V1474 in <u>LTOP</u> .	_____ SAT
<u>COMMENTS:</u>		_____ UNSAT
<u>STEP 5:</u>	Verify V1474, PORV, did NOT OPEN.	
<u>STANDARD:</u>	<u>OBSERVE</u> V1474 PORV to be <u>CLOSED</u> .	_____ SAT
<u>COMMENTS:</u>		_____ UNSAT
<u>STEP 6:</u>	OPEN V1476, PORV Block Valve.	CRITICAL STEP
<u>STANDARD:</u>	<u>POSITION</u> V1476, PORV Block Valve, to <u>OPEN</u> .	_____ SAT
<u>COMMENTS:</u>		_____ UNSAT
<u>STEP 7:</u>	Verify Annunciator H-38, PORV V1475 LTOP Range Condition Select LTOP, is in ALARM.	
<u>STANDARD:</u>	<u>OBSERVE</u> Annunciator H-38, PORV V1475 LTOP Range Condition Select LTOP is in <u>ALARM</u> .	_____ SAT
<u>COMMENTS:</u>		_____ UNSAT
<u>STEP 8:</u>	Verify Annunciator H-47, LTOP Channel B Transient, is NOT in ALARM.	
<u>STANDARD:</u>	<u>OBSERVE</u> Annunciator H-47, LTOP Channel B Transient, is <u>NOT</u> in <u>ALARM</u> .	_____ SAT
<u>COMMENTS:</u>		_____ UNSAT

	S-4; PLACE LTOP IN SERVICE	JPM Page 8 of 14
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<p><u>STEP 9:</u> CLOSE V1477, PORV Block Valve.</p> <p><u>STANDARD:</u> VERIFY V1477, PORV Block Valve is <u>CLOSED</u>.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10:</u> PLACE the PORV Mode Select switch for PORV V1475 in the LTOP Position.</p> <p><u>STANDARD:</u> <u>POSITION</u> Mode Select switch for PORV V1475 in <u>LTOP</u>.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11:</u> Verify V1475, PORV, did NOT OPEN.</p> <p><u>STANDARD:</u> <u>OBSERVE</u> V1475 PORV to be <u>CLOSED</u>.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12:</u> OPEN V1477, PORV Block Valve.</p> <p><u>STANDARD:</u> <u>POSITION</u> V1477, PORV Block Valve, to <u>OPEN</u>.</p> <p><u>COMMENTS:</u> When V1477 PORV Block Valve reaches the full open position V1475 PORV will fail OPEN.</p>	<p>FAULTED STEP /CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

	S-4; PLACE LTOP IN SERVICE	JPM Page 9 of 14
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2-AOP-01.10, PRESSURIZER PRESSURE AND LEVEL, STEP 1. IF at Normal Operating Pressure, THEN VERIFY PIC-1100X(Y), PRESSURIZER PRESSURE, stable.	
<div>STEP 13: CONTINGENCY ACTIONS: IF Pressurizer pressure less than 2300 psia AND PORV leakage is indicated or PORV has failed OPEN, THEN PLACE affected PORV in OVERRIDE and CLOSE associated block valve:<ul style="list-style-type: none">V1474, PORV, and V1476, PORV BLOCK VALVEV1475, PORV, and V1477, PORV BLOCK VALVE</div> <div>STANDARD: Applicant will identify that Pressurizer Pressure is not stable and <u>POSITION</u> V1477, PORV Block Valve, to <u>CLOSE</u>.</div> <div>COMMENTS:</div>	<div>CRITICAL STEP</div> <div>____ SAT</div> <div>____ UNSAT</div>
<div>STEP (done): NOTIFY the Unit Supervisor that the task is COMPLETE.</div> <div>STANDARD: NOTIFY Unit Supervisor that LTOP has been PLACED in SERVICE, V1475, PORV failed OPEN and V1477, PORV Block Valve has been CLOSED.</div> <div>EXAMINER'S CUE: Unit Supervisor ACKNOWLEDGES.</div> <div>COMMENTS:</div> <div>END OF TASK</div>	<div>____ SAT</div> <div>____ UNSAT</div>

STOP TIME _____



S-4; PLACE LTOP IN SERVICE

JPM
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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.

Handout Package for Applicant

TURNOVER SHEET

INITIAL CONDITIONS:

- A Unit Shutdown is in progress on Unit 2
- RCS temperature is below 238°F
- Annunciators LIT:
 - H-34, PORV V1474 LTOP Range Condition Select LTOP
 - H-38, PORV V1475 LTOP Range Condition Select LTOP

INITIATING CUES:

- You are the Board RCO
- The Unit Supervisor has directed you to place LTOP in service IAW 2-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown, Beginning with Section 4.8, Placing Low Temperature Over Pressure (LTOP) in Service, Step 3
- The channel functional test will NOT be performed

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

REVISION NO.: 69	PROCEDURE TITLE: REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN	PAGE: 33 of 98
PROCEDURE NO.: 2-GOP-305	ST. LUCIE UNIT 2	INITIAL

4.8

Placing Low Temperature Over Pressure (LTOP) in Service

CAUTION

Do **NOT** reduce RCS temperature below 240°F until one of the following conditions exist:

- ☒ Both LTOP channels have been demonstrated to be OPERABLE
- ☒ Both SDC train relief valves are aligned and in service.
(Section 7.1.3, Management Directive 2)

1. Prior to decreasing RCS temperature below 240°F, **ENSURE** channel functional test has been performed on PORV actuation channels per I&C Procedure 2-SMI-01.45, Low Temperature Overpressure Protection Setpoint Verification. (**NOT** required if performed within the previous 31 days.)

N/A
US

CAUTION

Do **NOT** reduce RCS temperature below 230°F until one of the following conditions exists:

- ☒ Both PORVs have been placed in LTOP
- ☒ Both SDC train relief valves are aligned and in service.
(Section 7.1.3, Management Directive 2)

2. WHEN RCS temperature is less than 240°F, THEN **VERIFY** the following Annunciators are IN ALARM:

☒ H-34, PORV V1474 LTOP RANGE CONDITION SELECT LTOP

☒ H-38, PORV V1475 LTOP RANGE CONDITION SELECT LTOP

3. As each annunciator alarms, **PLACE** each PORV in LTOP mode as follows:

A. PERFORM the following for V-1474, PORV:

- (1) **VERIFY** Annunciator H-34, PORV V1474 LTOP RANGE CONDITION SELECT LTOP, is IN ALARM.
- (2) **VERIFY** Annunciator H-43, LTOP CHANNEL A TRANSIENT, is **NOT** IN ALARM.

REVISION NO.: 69	PROCEDURE TITLE: REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN ST. LUCIE UNIT 2	PAGE: 34 of 98
PROCEDURE NO.: 2-GOP-305		

4.8 Placing Low Temperature Over Pressure (LTOP) in Service (continued)

3. A. (continued)

- (3) **CLOSE** V1476, PORV BLOCK VALVE.
- (4) **PLACE** PORV MODE SELECT switch for PORV V-1474 in LTOP position.
- (5) **VERIFY** V1474, PORV, did **NOT** open.
- (6) **OPEN** V1476, PORV BLOCK VALVE.

B. PERFORM the following for V1475, PORV:

- (1) **VERIFY** Annunciator H-38, PORV V1475 LTOP RANGE CONDITION SELECT LTOP, is **IN ALARM**.
- (2) **VERIFY** Annunciator H-47, LTOP CHANNEL B TRANSIENT, is **NOT IN ALARM**.
- (3) **CLOSE** V1477, PORV BLOCK VALVE.
- (4) **PLACE** PORV MODE SELECT switch for PORV V1475 in LTOP position.
- (5) **VERIFY** V1475, PORV, did **NOT** open.
- (6) **OPEN** V1477, PORV BLOCK VALVE.

C. IF this is a cooldown for refueling, **THEN PERFORM** testing of PORVs V1474 and V1475 per OP-2-0010125A, Surveillance Data Sheets, Valve Testing Procedures.

CAUTION

Motor Stator Temperatures of operating RCPs should be closely monitored as RCS temperature lowers. Stator temperature shall be maintained below 311°F.

4. CONTINUE to operate RCPs in conjunction with SDC to cool down Steam Generators.



JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: Synchronize Emergency Diesel Generator

JPM NUMBER: S-5

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07059010 / Start and/or Synchronize the EDG from the CR

K/A NUMBERS / K/A VALUES: (RO SRO) 064 A2.03 / Ability to (a) predict the impacts of the following malfunctions or operations on the ED/G system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Parallel operation of ED/Gs (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: 10 Minutes Time Critical: No

Alternate Path [NRC]: NO

Alternate Path [INPO]: N/A

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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-5; Synchronize Emergency Diesel Generator

JPM
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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. RESTORE IC-191 from the Flash Drive
2. 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:	Marked up copy of 2-OSP-59.01A, 2A Emergency Diesel Generator Monthly Surveillance, signed off up to and including step 4.37
General References:	2-OSP-59.01A, 2A Emergency Diesel Generator Monthly Surveillance,
Task Standards:	The applicant will complete this JPM when the 2A Diesel Generator has been paralleled to the grid and load picked up to prevent a reverse power condition iaw 2-OSP-59.01A

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 is at 100% power
- The 2A EDG is running unloaded in accordance with 2-OSP-59.01A, 2A Emergency Diesel Generator Monthly Surveillance
- 2-OSP-59.01A has been completed up to and including Section 4.0, Step 37

INITIATING CUES:

- You are the Extra RCO
- The US directs you to parallel the 2A EDG to the grid beginning with 2-OSP-59.01A, Section 4.0, step 38

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

2-OSP-59.01A 2A Emergency Diesel Generator Monthly Surveillance, Section 4.0 Instructions, Step 38. VERIFY voltage control as follows (RTGB-201):	
<p><u>STEP 1:</u> A. RAISE 2A EDG output voltage to approximately 4300V</p> <p><u>STANDARD:</u> Raise voltage to approximately 4300V</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 2:</u> B. LOWER 2A EDG output voltage to approximately 4000V</p> <p><u>STANDARD:</u> Lower voltage to approximately 4000V.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 3:</u> C. RAISE 2A EDG output voltage to approximately 4160V</p> <p><u>STANDARD:</u> Raise voltage to approximately 4160V.</p> <p>Step is critical to allowing the EDG to be synced.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

2-OSP-59.01A 2A Emergency Diesel Generator Monthly Surveillance, Section 4.0 Instructions, Step 39. VERIFY governor control as follows (RTGB-201):

<p><u>STEP 4:</u> A. RAISE 2A EDG frequency to approximately 60.5 Hz</p> <p><u>STANDARD:</u> Raise frequency to approximately 60.5 Hz</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 5:</u> B. LOWER 2A EDG frequency to approximately 59.5 Hz</p> <p><u>STANDARD:</u> Lower frequency to approximately 59.5 Hz</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 6:</u> C. RAISE 2A EDG frequency to approximately 60 Hz</p> <p><u>STANDARD:</u> Raise frequency to approximately 60 Hz.</p> <p>Step is critical to allowing the EDG to be synced.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

2-OSP-59.01A 2A Emergency Diesel Generator Monthly Surveillance, Section 4.0 Instructions, Step 40. SYNCHRONIZE 2A EDG as follows:

<p><u>STEP 7:</u> A. INSERT sync plug and PLACE in DG-2A position (RTGB-201)</p> <p><u>STANDARD:</u> INSERT sync plug and PLACE in DG-2A position.</p> <p>Step is critical to allowing the EDG to be synced.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 8:</u> B. ENSURE VM-888I, INCOMING VOLT, meter indicates slightly higher voltage than VM-888R, RUNNING VOLT, meter indicated voltage. (RTGB-201)</p> <p><u>STANDARD:</u> ENSURE incoming voltage is slightly higher than running voltage and that the Sync Scope is moving slowly in the fast direction. Makes adjustments as necessary to ensure the above.</p> <p>Step is critical to allowing the EDG to be synced.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

	S-5; Synchronize Emergency Diesel Generator	JPM Page 9 of 17
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<p><u>STEP 9:</u> C. ENSURE SYN-888, SYNCHROSCOPE, is moving slowly in the FAST direction at less than one revolution per 60 seconds. (RTGB-201)</p> <p><u>STANDARD:</u> ADJUST the governor as needed to ensure no more than one (1) revolution per 60 seconds and closes 2A Diesel Output breaker just before it reaches the 12 o'clock position.</p> <p>Step is critical to allow the EDG output breaker to close.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p style="text-align: center;"><u>CAUTION</u></p> <ul style="list-style-type: none"> • Synchroscope must be rotating in the FAST direction when closing the EDG breaker. If the EDG frequency is even slightly slower than the bus when the breaker is CLOSED, the sudden acceleration and gear ratio for the turbocharger may shear the turbocharger shaft. • Failure to ensure the EDG promptly assumes an initial load of at least 100 KW may result in a reverse power trip. 	
<p><u>STEP 10:</u> D. WHEN SYN-888, SYNCHROSCOPE, indicates just before 12 o'clock position, THEN PLACE 2-20211, DG 4.16 KV BREAKER, control switch in CLOSE. (RTGB-201)</p> <p><u>STANDARD:</u> POSITION 2-20211 to CLOSE.</p> <p>Step is critical to sync the EDG to the grid.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

S-5; Synchronize Emergency Diesel Generator

<p><u>STEP 11:</u> E. IF 2-2011, DG 4.16 KV BREAKER, control switch red light is ON, THEN LOAD 2A EDG to at least 100 KW (100 to 300 KW).. (RTGB-201)</p> <p><u>STANDARD:</u> ADJUST the governor as necessary to ensure at least 100KW EDG load.</p> <p>Step is critical to prevent a reverse power trip of the EDG.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
---	---

STOP TIME _____



Date: _____

SAT: ☐ **UNSAT:** ☐

[illegible]

EVALUATOR'S SIGNATURE: _____

TR-AA-230-1007-F15, Revision 0

Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- The Unit is at 100% power
- The 2A EDG is running unloaded in accordance with 2-OSP-59.01A, 2A Emergency Diesel Generator Monthly Surveillance
- 2-OSP-59.01A has been completed up to and including Section 4.0, Step 37

INITIATING CUES:

- You are the Extra RCO
- The US directs you to parallel the 2A EDG to the grid beginning with 2-OSP-59.01A, Section 4.0, step 38

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

REVISION NO.: 41	PROCEDURE TITLE: 2A EMERGENCY DIESEL GENERATOR MONTHLY SURVEILLANCE ST. LUCIE UNIT 2	PAGE: 34 of 100 INITIAL
PROCEDURE NO.: 2-OSP-59.01A		

4.0 INSTRUCTIONS (continued)

CAUTION

If the diesel fuel oil duplex filter being switched in is **NOT** full, the EDG may be starved of fuel and stall. When the filter lever is in mid-position, both filters receive fuel oil. This position is used to fill the filter being switched in and supply fuel to the EDG simultaneously prior to swapping to new fuel filter.

N/A

↓

~~37~~ **MONITOR** diesel fuel oil duplex filter:

~~A~~ IF PI-59-004A, DIESEL ENGINE 2A1 FUEL PRESS, indicates less than 13 psig, THEN **PERFORM** the following:

- ~~(1)~~ **PLACE** SF-59-2A1, DIESEL ENGINE 2A1 DUPLEX, filter lever at mid-position for at least 10 seconds.
- ~~(2)~~ **ROTATE** SF-59-2A1, DIESEL ENGINE 2A1 DUPLEX, filter lever to place standby filter in service.
- ~~(3)~~ **REQUEST** Mechanical Maintenance replace clogged fuel oil filter.

~~B~~ IF PI-59-008A, DIESEL ENGINE 2A2 FUEL PRESS, indicates less than 13 psig, THEN **PERFORM** the following:

- ~~(1)~~ **PLACE** SF-59-2A2, DIESEL ENGINE 2A2 DUPLEX, filter lever at mid-position for at least 10 seconds.
- ~~(2)~~ **ROTATE** SF-59-2A2, DIESEL ENGINE 2A2 DUPLEX, filter lever to place standby filter in service.
- ~~(3)~~ **REQUEST** Mechanical Maintenance replace clogged fuel oil filter.

N/A

↓

38. VERIFY voltage control as follows (RTGB-201):

- A. RAISE** 2A EDG output voltage to approximately 4300 V.
- B. LOWER** 2A EDG output voltage to approximately 4000 V.
- C. RAISE** 2A EDG output voltage to approximately 4160 V.

REVISION NO.: <div style="text-align: center;">43</div>	PROCEDURE TITLE: <div style="text-align: center;">2A EMERGENCY DIESEL GENERATOR MONTHLY SURVEILLANCE</div>	PAGE: <div style="text-align: center;">35 of 100</div>
PROCEDURE NO.: <div style="text-align: center;">2-OSP-59.01A</div>	<div style="text-align: center;">ST. LUCIE UNIT 2</div>	<div style="text-align: center;">INITIAL</div>

4.0 INSTRUCTIONS (continued)

39. VERIFY governor control as follows (RTGB-201):

- A. RAISE** 2A EDG frequency to approximately 60.5 Hz. _____
- B. LOWER** 2A EDG frequency to approximately 59.5 Hz. _____
- C. RAISE** 2A EDG frequency to approximately 60 Hz. _____

NOTE

EDG is inoperable while paralleled with offsite power via the 4.16 KV bus. When the EDG breaker is CLOSED, the loss of voltage and degraded voltage relay protection is blocked and **NOT** available to protect the EDG from an overload condition due to a grid or system disturbance.

40. SYNCHRONIZE 2A EDG as follows:

- A. INSERT** sync plug and **PLACE** in DG-2A position. (RTGB-201) _____
- B. ENSURE** VM-888I, INCOMING VOLT, meter indicates slightly higher voltage than VM-888R, RUNNING VOLT, meter indicated voltage. (RTGB-201) _____
- C. ENSURE** SYN-888, SYNCHROSCOPE, is moving slowly in the FAST direction at less than one revolution per 60 seconds. (RTGB-201) _____

CAUTION

- Synchroscope must be rotating in the FAST direction when closing the EDG breaker. If the EDG frequency is even slightly slower than the bus when the breaker is CLOSED, the sudden acceleration and gear ratio for the turbocharger may shear the turbocharger shaft.
- Failure to ensure the EDG promptly assumes an initial load of at least 100 KW may result in a reverse power trip.

- D. WHEN** SYN-888, SYNCHROSCOPE, indicates just before 12 o'clock position, **THEN PLACE** 2-20211, DG 4.16 KV BREAKER, control switch in CLOSE. (RTGB-201) _____
- E. IF** 2-20211, DG 4.16 KV BREAKER, control switch red light is ON, **THEN LOAD** 2A EDG to at least 100 KW (100 to 300 KW). _____

REVISION NO.: 43	PROCEDURE TITLE: 2A EMERGENCY DIESEL GENERATOR MONTHLY SURVEILLANCE ST. LUCIE UNIT 2	PAGE: 36 of 100 INITIAL
PROCEDURE NO.: 2-OSP-59.01A		

4.0 INSTRUCTIONS (continued)

40. (continued)

NOTE

Test functional criteria allow three attempts to synchronize the EDG to the bus.

F. IF 2A EDG Output Breaker fails to close, THEN **PERFORM the following:**

- (1) **ENSURE** 2-20211, DG 4.16 KV BREAKER, control switch is GREEN-FLAGGED. _____
- (2) **SLOW** SYN-888, SYNCHROSCOPE, further while still rotating in FAST direction. _____
- (3) WHEN SYN-888, SYNCHROSCOPE, indicates just before 12 o'clock position, THEN **PLACE** 2-20211, DG 4.16 KV BREAKER, control switch in CLOSE. _____
- (4) IF 2-20211, DG 4.16 KV BREAKER, control switch red light is ON, THEN **LOAD** 2A EDG to at least 100 KW (100 to 300 KW). _____
- (5) IF 2A EDG Output breaker fails to close after third attempt, THEN **NOTIFY** US, Electrical Maintenance and System Engineer. _____

G. VERIFY 2A EDG synchronizing functional criteria are met: _____

Parameter	Functional Criteria	Results (✓)
2A EDG synchronizing	Voltage and frequency manual control verified, and Breaker closure in three or less attempts.	SAT <input type="checkbox"/> UNSAT <input type="checkbox"/>

H. RECORD below and in Narrative Log time of breaker closure and 2A EDG inoperable.
Time: _____

I. NOTIFY the System Load Dispatcher that the 2A EDG surveillance has commenced and to limit switching on the system in the vicinity of the site during the duration of the testing. _____

REVISION NO.: 43	PROCEDURE TITLE: 2A EMERGENCY DIESEL GENERATOR MONTHLY SURVEILLANCE ST. LUCIE UNIT 2	PAGE: 37 of 100 INITIAL
PROCEDURE NO.: 2-OSP-59.01A		

4.0 INSTRUCTIONS (continued)

NOTE

EDG local and Control Room KW indications should agree within 110 KW. This ensures the 3685 KW surveillance requirement can be satisfied without exceeding the 3800 KW administrative limit.

41. MONITOR load indications as follows:

- A. **VERIFY** that REC/1606 has no rogue or insecure connections (ie. Undocumented Wires/Cables, Vendor Connections, Modems, or Thumb Drives). _____
- B. **VERIFY** periodically that REC/1606, 2A D/G WATT/FREQ, Channel 1, 2A D/G WATTS, recorder on RTGB-201 and WATTMETER on 2A D/G Control Panel, indications remain within 110 KW of each other. _____
- C. IF anomalies occur during loading evolutions, THEN **REFER TO** Attachment 6, EDG KW to Amps Comparison Chart, to determine if there is a gross failure of Control Room or local KW indications. _____
- D. IF REC/1606, 2A D/G WATT/FREQ, Channel 1, 2A D/G WATTS, recorder indication is **NOT** available, THEN **DIRECT** local operator to monitor WATTMETER on 2A D/G Control Panel. _____
- E. **RECORD** (✓) which EDG load indication will be used:

REC/1606, 2A D/G WATT/FREQ, Channel 1, 2A D/G WATTS Recorder (Control Room)	
WATTMETER (2A D/G Control Panel)	
- F. WHEN changing EDG load, THEN **VERIFY** periodically that selected load indication and AM-955D, DG AMPERES, meter on RTGB-201, track together. _____



JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: Start Containment Purge

JPM NUMBER: S-6

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07025080 / Initiate Containment Purge

K/A NUMBERS / K/A VALUES: (RO SRO) 029 A1.02 / Ability to predict and/or monitor changes in parameters to prevent exceeding design limits associated with operating the Containment purge system controls including: Radiation levels (3.4/3.4)

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

Developed by:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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; START CONTAINMENT PURGE

JPM
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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. **RESTORE** IC-192.
2. **OPEN and EXECUTE** lesson HLC-23 NRC SIM JPM-6
3. **RUN** simulator until student is ready.
4. **STORE** a temporary IC set if this setting is to be used by multiple students.

SIMULATOR MALFUNCTIONS:

SIMULATOR OVERRIDES:

SIMULATOR REMOTE FUNCTIONS:

Required Materials: **2-NOP-06.20, Controlled Gaseous Batch Release to Atmosphere, Step 4.2.1.**

General References: **2-NOP-06.20, Controlled Gaseous Batch Release to Atmosphere**

Task Standards: **The applicant will align and initiate a Containment Purge, and then secure the running Containment Purge Exhaust Fan when a valid Plant Vent alarm go into high alarm on RMCS.**

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 6 preparing for Refueling, Radiation Protection has requested a Containment Purge be initiated.
- A Gaseous Release Permit # G-17-500-B has been issued and approved by the Unit Supervisor.

INITIATING CUES :

- The Unit Supervisor directs you to perform a Containment Purge IAW 2-NOP-06.20, The following Steps have been completed by an extra RCO;
- Step 4.2.1
 1. REVIEW Section 2.0, PRECAUTIONS AND LIMITATIONS.
 2. REVIEW Section 3.1.2, Containment Purge Prerequisites.
 3. REVIEW Section 3.2.2, Containment Purge Initial Conditions
 4. PREPARE Main Purge System for operation as follows

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

<p>STEP 1: 4.2.1 Performing a Containment Purge</p> <p>5. VERIFY the following valves are CLOSED(HVCB)</p> <ul style="list-style-type: none"> • FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL • FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL • FCV-25-5, CNTMT PURGE SUPPLY IN ANNULUS TO HVE-8A/8B ISOL • FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL • FCV-25-4, CNTMT PURGE SUPPLY IN CNTMT TO HVE-8A/8B ISOL • FCV-25-6, CNTMT PURGE SUPPLY TO HVE-8A/8B IN H&V FAN ROOM ISOL • FCV-25-7, CNTMT VAC RELIEF • FCV-25-8, CNTMT VAC RELIEF <p>STANDARD: VERIFY the valves listed above are CLOSED (HVCB)</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 2: 4.2.1 Performing a Containment Purge</p> <p>6. VERIFY PURGE MODE SELECTOR switch is in PURGE. (HVCB)</p> <p>STANDARD: VERIFY PURGE MODE SELECTOR switch is in PURGE. (HVCB)</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>

<p>STEP 3: 4.2.1 Performing a Containment Purge</p> <p>7. IF purge is for refueling operation, THEN ENSURE PURGE MODE SELECTOR is in REFUEL position prior to fuel movement.(Section 7.1.3, Management Directive 1)</p> <p>STANDARD: Places PURGE MODE SELECTOR SWITCH in the REFUEL POSITION</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 4: 4.2.1 Performing a Containment Purge</p> <p>8. ENTER Gaseous Release Permit Number:</p> <p>STANDARD: ENTER Gaseous Release Permit Number Given in INITIAL CONDITIONS.</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 5: 4.2.1 Performing a Containment Purge</p> <p>9. IF at any time during release any of the following conditions are met:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Alert condition with an unexplained AND increasing count rate on any activity channel. <input type="checkbox"/> High Alarm condition is received on active Plant Vent Channel. <input type="checkbox"/> Directed by US/SM. <p>THEN STOP the running HVE-8A/B, CNTMT PURGE EXHAUST FAN, to terminate release. (HVCB)</p> <p>STANDARD: ACKNOWLEDGE step.</p> <p>COMMENTS:</p>	<p>___ SAT</p> <p>___ UNSAT</p>

	S-6; START CONTAINMENT PURGE	JPM Page 8 of 21
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<p>STEP 6: 4.2.1 Performing a Containment Purge</p> <p>10. COMMENCE Containment Purge as follows:</p> <p style="padding-left: 40px;">A. START one of the following: (HVCB)</p> <ul style="list-style-type: none"> ▪ HVE-8A, CNTMT PURGE EXHAUST FAN ▪ HVE-8B, CNTMT PURGE EXHAUST FAN <p>Step is critical to start the fan to compete the purge.</p> <p><u>STANDARD:</u> Place start switch to START either HVE-8A or HVE-8B CNTMT PURGE EXHAUST FAN.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 7: 4.2.1 Performing a Containment Purge</p> <p>10. COMMENCE Containment Purge as follows:</p> <p style="padding-left: 40px;">B. VERIFY the following valves OPEN prior to fan start:</p> <ul style="list-style-type: none"> • FCV-25-4, CNTMT PURGE SUPPLY IN CNTMT TO HVE-8A/8B ISOL • FCV-25-5, CNTMT PURGE SUPPLY IN ANNULUS TO HVE-8A/8B ISOL • FCV-25-6, CNTMT PURGE SUPPLY TO HVE-8A/8B IN H&V FAN ROOM ISOL <p><u>STANDARD:</u> VERIFY the valves listed above are OPEN</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 8: 4.2.1 Performing a Containment Purge</p> <p>10. COMMENCE Containment Purge as follows:</p> <p style="padding-left: 40px;">C. VERIFY selected containment purge fan starts.</p> <p><u>STANDARD:</u> VERIFY selected containment purge fan starts</p> <p><u>COMMENTS:</u></p>	<p>___ SAT</p> <p>___ UNSAT</p>

STEP 9: 4.2.1 Performing a Containment Purge

11. RECORD release Start Date/Time:

STANDARD: **RECORD** release Start Date/Time

COMMENTS:

___ SAT

___ UNSAT

STEP 10: 4.2.1 Performing a Containment Purge

12. & 13 OBSERVE containment differential pressure indicators, PDIS-25-1A and PDIS-25-1B. (HVCB)

WHEN the following indicators reach -0.5 inches H₂O:

THEN **VERIFY** the following valves **OPEN**:

- FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL
- FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL
- FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL

STANDARD: **OBSERVE** containment differential pressure WHEN indicators , PDIS-25-1A and PDIS-25-1B reach -0.5 inches H₂O:

THEN **VERIFY** the following valves OPEN:

- FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL
- FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL
- FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL

COMMENTS:

___ SAT

___ UNSAT

STEP 11: 4.2.1 Performing a Containment Purge

14. IF the following indicators reach -1.0 inches H₂O:

- PDIS-25-1A, CONTAINMENT DP
- PDIS-25-1B, CONTAINMENT DP

AND the following valves are **CLOSED**:

- FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL
- FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL
- FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL

THEN PERFORM the following:

STOP the running containment purge fan.

- HVE-8A, CNTMT PURGE EXHAUST FAN
- HVE-8B, CNTMT PURGE EXHAUST FAN

NOTIFY I & C Department.

NOTIFY Chemistry that containment purge has been stopped.

NOTIFY Radiation Protection that containment purge has been stopped.

___ SAT

___ UNSAT

STANDARD: **COMPLY** with above Step

COMMENTS:

STEP 12: 4.2.1 Performing a Containment Purge

15. IF a refueling outage is in progress, **THEN RECORD** open position indication verification results for FCV-25-1, FCV-25-2, FCV-25-3, FCV-25-4, FCV-25-5, and FCV-25-6 in OP-2-0010125A, Surveillance Data Sheets, Data Sheet 33.

___ SAT

___ UNSAT

STANDARD: **RECORD** if needed

COMMENTS:

<p>STEP 12: 4.2.1 Performing a Containment Purge</p> <p>16. PERFORM the following during containment purge:</p> <ul style="list-style-type: none"> OBSERVE plant vent and containment radiation monitors during purge to ensure readings as expected. IF an Alert alarm is received, THEN INVESTIGATE AND MONITOR alarming channel. PERFORM CHANNEL CHECK on the following: <ul style="list-style-type: none"> Plant Vent PIG A (423) Plant Vent PIG B (433) WRGM (621) <p>Step is critical to secure the purge on the High Radiation condition.</p> <p><u>STANDARD:</u> SECURE the running Containment Purge fan.</p> <p><u>COMMENTS:</u> Both Plant Vent alarms go into high alarm on RMCS (and at RM-23), candidate recognizes valid alarms and secures HVE-8A or HVE-8B per step 4.2.1.9</p>	<p style="text-align: center;">CRITICAL STEP</p> <p style="text-align: center;">___ SAT</p> <p style="text-align: center;">___ UNSAT</p>
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NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____



S-6; START CONTAINMENT PURGE

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).

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 is in Mode 6 preparing for Refueling, Radiation Protection has requested a Containment Purge be initiated.
- A Gaseous Release Permit # G-17-500-B has been issued and approved by the Unit Supervisor.

INITIATING CUES :

- The Unit Supervisor directs you to perform a Containment Purge IAW 2-NOP-06.20, The following Steps have been completed by an extra RCO;
- Step 4.2.1
 1. REVIEW Section 2.0, PRECAUTIONS AND LIMITATIONS.
 2. REVIEW Section 3.1.2, Containment Purge Prerequisites.
 3. REVIEW Section 3.2.2, Containment Purge Initial Conditions
 4. PREPARE Main Purge System for operation as follows

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

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	

ATTACHMENT 5
Gaseous Release Permit - Unit 2
(Page 1 of 1)

I. GASEOUS PERMIT NUMBER	SAMPLE DATE AND TIME	GDT NAME OR PURGE
G-17-500-B	12/5/17 2300	UNIT-2 MAIN PURGE
II. LIMITS	ACTUAL CONCENTRATION	
GDT = 20 µCi/cc	N/A	µCi/cc
Containment Purge = 4.76E-03 µCi/cc	1.595E-06	µCi/cc
Containment Mini-Purge = 0.01 µCi/cc	NA	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: _____		
III. REVIEW - APPROVAL (PRIOR TO RELEASE)		
Main Purge or Mini-Purge ≥ 5.00E-03 µCi/cc	N/A	Signature
Radiochemist / Chemistry Supervisor		
Mini-Purge < 5.00E-03 µCi/cc and meets the requirements of STS 3.6.1.7.b	Permit Preparer	<i>Fred Fanks</i> Signature
GDT ≥ 25% of Section II.	Radiochemist / Chemistry Supervisor	N/A Signature
GDT < 25% of Section II.	Permit Preparer	N/A Signature
	Unit Supervisor	<i>Frank Fredricks</i> Signature
IV. Start Date _____ Start Time _____ Stop Date _____ Stop Time _____		
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
V. REVIEW - APPROVAL (POST RELEASE)		
Unit Supervisor _____		Signature
Radiochemist / Chemistry Supervisor _____		Signature

REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 26 of 41
PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2	<u>INITIAL</u>

4.2 Containment Purge

4.2.1 Performing a Containment Purge

~~1~~ **REVIEW** Section 2.0, PRECAUTIONS AND LIMITATIONS.

~~2~~ **REVIEW** Section 3.1.2, Containment Purge Prerequisites.

~~3~~ **REVIEW** Section 3.2.2, Containment Purge Initial Conditions.

~~4~~ **PREPARE** Main Purge System for operation as follows:

~~A~~ **ENSURE** the following Containment Purge Valve fuses are INSERTED:

~~1~~ HVCB SA 125V DC Fuses 25/26,
FCV-25-1/3/5 CNTMT PURGE VALVES

BRT

NB
IV

~~2~~ HVCB SB 125V DC Fuses 25/26,
FCV-25-2/4/6 CNTMT PURGE VALVES

BRT

NB
IV

~~B~~ **ENSURE** the following breakers for HVE-8A/B, CNTMT
PURGE EXHAUST FAN, are ON:

~~1~~ 2-41272, HVE-8A CNTMT PURGE EXHAUST FAN
BKR (MCC-2A5)

~~2~~ 2-42073, HVE-8B CNTMT PURGE EXHAUST FAN
BKR (MCC-2B5)

REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 27 of 41
PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2	

4.2.1 Performing a Containment Purge (continued)

5. **VERIFY** the following valves are CLOSED: (HVCB)

- FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL
- FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL
- FCV-25-5, CNTMT PURGE SUPPLY IN ANNULUS TO HVE-8A/8B ISOL
- FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL
- FCV-25-4, CNTMT PURGE SUPPLY IN CNTMT TO HVE-8A/8B ISOL
- FCV-25-6, CNTMT PURGE SUPPLY TO HVE-8A/8B IN H&V FAN ROOM ISOL
- FCV-25-7, CNTMT VAC RELIEF
- FCV-25-8, CNTMT VAC RELIEF

6. **VERIFY** PURGE MODE SELECTOR switch is in PURGE. (HVCB)

7. IF purge is for refueling operation, THEN **ENSURE** PURGE MODE SELECTOR is in REFUEL position prior to fuel movement. (Section 7.1.3, Management Directive 1)

8. **ENTER** Gaseous Release Permit Number: _____

9. IF at anytime during release any of the following conditions are met:

- Alert condition with an unexplained AND increasing count rate on any activity channel.
- High Alarm condition is received on active Plant Vent Channel.
- Directed by US/SM.

THEN **STOP** the running HVE-8A/B, CNTMT PURGE EXHAUST FAN, to terminate release. (HVCB)

REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 28 of 41
PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2	

4.2.1 Performing a Containment Purge (continued)

NOTE

- FCV-25-1 and FCV-25-3 are controlled from PDIS-25-2A, CNTMT PURGE ISOL VLVS FCV-25-1 & FCV-25-3 D/P.
- FCV-25-3 is controlled from PDIS-25-2B, CNTMT PURGE ISOL VLV FCV-25-2 D/P.
- There is **NO** Containment to Outside D/P indication in the control room.
- PDIS-25-1A and PDIS-25-1B are Containment to Annulus D/P indication.
- With the equipment hatch and personnel airlock closed, FCV-25-7 and FCV-25-8 open if containment pressure reaches -2.25 inches H₂O.
- Normally Outside and Annulus are at equilibrium.

10. **COMMENCE** Containment Purge as follows:

A. **START** one of the following: (HVCB)

- HVE-8A, CNTMT PURGE EXHAUST FAN
- HVE-8B, CNTMT PURGE EXHAUST FAN

B. **VERIFY** the following valves OPEN prior to fan start:

- FCV-25-4, CNTMT PURGE SUPPLY IN CNTMT TO HVE-8A/8B ISOL
- FCV-25-5, CNTMT PURGE SUPPLY IN ANNULUS TO HVE-8A/8B ISOL
- FCV-25-6, CNTMT PURGE SUPPLY TO HVE-8A/8B IN H&V FAN ROOM ISOL

C. **VERIFY** selected containment purge fan starts.

11. **RECORD** release Start Date/Time: _____

REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 29 of 41
PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2	

4.2.1 Performing a Containment Purge (continued)

NOTE

HVE-8A/B, CNTMT PURGE EXHAUST FAN, will trip when containment differential pressure reaches -4.0 inches H₂O.

12. **OBSERVE** containment differential pressure indicators, PDIS-25-1A and PDIS-25-1B. (HVCB)

13. WHEN the following indicators reach -0.5 inches H₂O:

- PDIS-25-1A, CONTAINMENT DP
- PDIS-25-1B, CONTAINMENT DP

THEN **VERIFY** the following valves OPEN:

- FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL
- FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL
- FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL

REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 30 of 41
PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2	

4.2.1 Performing a Containment Purge (continued)

14. IF the following indicators reach -1.0 inches H₂O:

- PDIS-25-1A, CONTAINMENT DP
- PDIS-25-1B, CONTAINMENT DP

AND the following valves are CLOSED:

- FCV-25-1, CNTMT PURGE MAKEUP IN H&V INTAKE ROOM ISOL
- FCV-25-2, CNTMT PURGE MAKEUP IN ANNULUS ISOL
- FCV-25-3, CNTMT PURGE MAKEUP IN CNTMT ISOL

THEN **PERFORM** the following:

- **STOP** the running containment purge fan.
 - HVE-8A, CNTMT PURGE EXHAUST FAN
 - HVE-8B, CNTMT PURGE EXHAUST FAN
- **NOTIFY** I & C Department.
- **NOTIFY** Chemistry that containment purge has been stopped.
- **NOTIFY** Radiation Protection that containment purge has been stopped.

15. IF a refueling outage is in progress, THEN **RECORD** open position indication verification results for FCV-25-1, FCV-25-2, FCV-25-3, FCV-25-4, FCV-25-5, and FCV-25-6 in OP-2-0010125A, Surveillance Data Sheets, Data Sheet 33.

REVISION NO.: 5	PROCEDURE TITLE: CONTROLLED GASEOUS BATCH RELEASE TO ATMOSPHERE	PAGE: 31 of 41
PROCEDURE NO.: 2-NOP-06.20	ST. LUCIE UNIT 2	

4.2.1 Performing a Containment Purge (continued)

NOTE

During Containment Purge, radiation monitor readings will initially rise, due to starting containment purge fan, AND then lower.

16. **PERFORM** the following during containment purge:

- **OBSERVE** plant vent and containment radiation monitors during purge to ensure readings as expected.
- IF an Alert alarm is received, THEN **INVESTIGATE AND MONITOR** alarming channel.
- **PERFORM** CHANNEL CHECK on the following:
 - Plant Vent PIG A (423)
 - Plant Vent PIG B (433)
 - WRGM (621)

17. IF purge is going to run continuously, THEN **PERFORM** the following:

- A. **ENSURE** gaseous release permit is administratively terminated after 10 hours.
- B. **ENSURE** the following are completed on Gaseous Release Permit:
 - Channel Check of Plant Vent PIG A (423)
 - Channel Check of Plant Vent PIG B (433)
 - Channel Check of WRGM (621)
 - Start Date/Time
 - Stop Date/Time as 10 hours from start of purge
 - US Signature



JOB PERFORMANCE MEASURE

JPM
Page 1 of 18

JPM TITLE: Unit-1 CSAS Evaluation/Verification

JPM NUMBER: C-1

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07200440/Perform Action Associated with CSAS (Verify CSAS on Unit 1)

K/A NUMBERS / K/A VALUES: (RO SRO) 026 A2.04/ 3.9/4.2 Ability to (a) predict the impacts of the following malfunctions or operations on the CSS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of spray pump

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: 5 Minutes Time Critical: No

Alternate Path [NRC]: YES

Alternate Path [INPO]: N/A

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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-EOP-03, Loss of Coolant Accident
 - 1-EOP-99, Table 3, Containment Spray Actuation Signal

- General References:**
- 1-EOP-03, Loss of Coolant Accident
 - 1-EOP-99, Table 3, Containment Spray Actuation Signal

Task Standard: The applicant will complete 1-EOP-99, Table 3, and notify US, including contingencies taken.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is experiencing a Loss of Coolant Accident.
- 1-EOP-03, Loss of Coolant Accident is in progress.

INITIATING CUES:

- The US directs you to perform 1-EOP-03, Loss of Coolant Accident, beginning at Step 12

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

1-EOP-03, LOCA, Step 12, CHECK if containment spray actuation is required.	
<p><u>STEP 1:</u> A. VERIFY Containment pressure is greater than 10 psig.</p> <p><u>STANDARD:</u> VERIFY Containment Pressure is greater than 10 psig.</p> <p>EXAMINER’S CUE: Containment Pressure is 15 psig on PIS-07-2A-2D on RTGB-106</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> B. VERIFY CSAS is ACTUATED</p> <p><u>STANDARD:</u> Observe that Annunciator R-1 is NOT LIT and enter the contingency step.</p> <p>EXAMINER’S CUE:</p> <p>R-1, CSAS CHANNEL A/B ACTUATION is NOT LIT R-11, CNTMT PRESS HIGH CSAS CHANNEL TRIP IS LIT</p> <p>IF Asked: R-31, CNTMT SPRAY FCV-07-1A FAIL TO OPEN is NOT LIT R-32, CNTMT SPRAY FCV-07-1B FAIL TO OPEN is NOT LIT</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 3:</u> CONTINGENCY ACTION</p> <p>B.1 MANUALLY ACTUATE CSAS</p> <p>Step is critical because without manually actuating CSAS the task cannot be completed.</p> <p><u>STANDARD:</u></p> <p>Manually ACTUATES CSAS by: DEPRESS and HOLD the CSAS Channel 'A' pushbutton and POSITION the Channel 'A' CSAS control switch to CSAS ON. DEPRESS and HOLD the CSAS Channel 'B' pushbutton and POSITION the Channel 'B' CSAS control switch to CSAS ON.</p> <p>EXAMINER'S CUE:</p> <p>R-1, CSAS CHANNEL A/B ACTUATION is LIT R-11, CNTMT PRESS HIGH CSAS CHANNEL TRIP IS LIT</p> <p>IF Asked: R-31, CNTMT SPRAY FCV-07-1A FAIL TO OPEN is NOT LIT R-32, CNTMT SPRAY FCV-07-1B FAIL TO OPEN is NOT LIT</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> C. VERIFY Containment Spray flow is at least 2550 gpm from each header.</p> <p><u>STANDARD:</u> DETERMINE that both Containment Spray Header flows (A and B) are zero and enter the contingency step.</p> <p>EXAMINER'S CUE:</p> <p>FI-07-1A "A" CS HEADER FLOW IS 0 gpm FI-07-1B "B" CS HEADER FLOW IS 0 gpm</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 5: CONTINGENCY ACTION C.1 START / ALIGN CSAS components per Table 3, Containment Spray Actuation Signal</p> <p>STANDARD: Begin EVALUATING CSAS components per Table 3 of 1-EOP-99.</p> <p>EXAMINER'S CUE:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>1-EOP-99, Table 3, Containment Spray Actuation Signal</p>	
<p><u>STEP 6:</u> ENSURE Containment Spray Pumps RUNNING.</p> <ul style="list-style-type: none"> ▪ Cntmt Spray Pump 1A ▪ Cntmt Spray Pump 1B <p><u>STANDARD:</u> VERIFY Containment Spray Pumps 1A and 1B are RUNNING.</p> <p>EXAMINER'S CUE: Containment Spray Pump 1A indicates Green light OFF, Red light ON Containment Spray Pump 1B indicates Green light ON, Red light OFF</p> <p>EXAMINER'S NOTE: Faulted Step – Containment Spray Pump 1B failed to start.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 7:</u> ENSURE Containment Spray Pumps RUNNING.</p> <ul style="list-style-type: none"> ▪ Cntmt Spray Pump 1A ▪ Cntmt Spray Pump 1B <p>Step is critical to start the CS pumps</p> <p><u>STANDARD:</u> <u>POSITION</u> the 1B Containment Spray Pump hand switch to START.</p> <p>EXAMINER'S CUE: After positioning the switch to START: Containment Spray Pump 1A indicates Green light OFF, Red light ON Containment Spray Pump 1B indicates Green light OFF, Red light ON</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> ENSURE Containment Spray Header Valves OPEN.</p> <ul style="list-style-type: none"> ▪ FCV-07-1A ▪ FCV-07-1B <p><u>STANDARD:</u> Applicant will observe that FCV-07-1A FAILED to OPEN and FCV-07-1B is <u>OPEN</u>.</p> <p>EXAMINER'S CUE: FCV-07-1A indicates Green lights ON, Red lights OFF FCV-07-1B indicate Green lights OFF, Red lights ON</p> <p><u>COMMENTS:</u></p> <p>Faulted Step FCV-07-1A Failed to open</p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 9:</u> ENSURE Containment Spray Header Valves OPEN.</p> <ul style="list-style-type: none"> ▪ FCV-07-1A ▪ FCV-07-1B <p>Step is critical to open CS Header Valve</p> <p><u>STANDARD:</u> Position FCV-07-1A control switch to OPEN.</p> <p>EXAMINER'S CUE:</p> <p>After Positioning FCV-07-1A to OPEN it will indicate Green light OFF, Red light ON</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10:</u> ENSURE EACH operating Containment Spray Header is delivering greater than or equal to 2550 gpm.</p> <ul style="list-style-type: none"> ▪ FI-07-1A ▪ FI-07-1B <p><u>STANDARD:</u> <u>VERIFY</u> FI-07-1A and FI-07-1B <u>EACH</u> indicate <u>AT LEAST 2550 gpm FLOW.</u></p> <p>EXAMINER'S CUE: FI-07-1A indicates 3000 gpm, FI-07-1B indicates 3000 gpm</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 11: ENSURE NaOH (Caustic) Injection Valves OPEN.</p> <ul style="list-style-type: none"> SE-07-1A SE-07-2A SE-07-1B SE-07-2B <p>STANDARD: <u>VERIFY</u> SE-07-1A, 2A, 1B and 2B are <u>OPEN</u>.</p> <p>EXAMINER'S CUE: SE-07-1A indicates Green light OFF, Red light ON SE-07-2A indicates Green light ON, Red light OFF SE-07-1B indicates Green light ON, Red light OFF SE-07-2B indicates Green light OFF, Red light ON</p> <p>EXAMINER'S NOTE: FAULTED STEP – SE-07-2A AND SE-07-1B FAILED TO AUTO OPEN</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 12: ENSURE NaOH (Caustic) Injection Valves OPEN.</p> <p>Step is critical to OPEN the NaOH Injection Valves</p> <p>STANDARD: <u>POSITION</u> SE-07-2A AND SE-07-1B control switches to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: SE-07-2A shows Green light OFF, Red light ON SE-07-1B shows Green light OFF, Red light ON</p> <p><u>COMMENTS:</u></p> <p>Opening one of the two valves will satisfy the critical step due to flow being initiated with one flow path.</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 13:</u> On PAP 'A' Panel, VERIFY NaOH flow on:</p> <ul style="list-style-type: none"> FR- 07-4 (Ctmt Spray/NaOH Flow) <p><u>STANDARD:</u> VERIFY FR-07-4 INDICATES FLOW.</p> <p>EXAMINER'S CUE: FR-07-4 indicates 36 gpm.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP (done):</u> NOTIFY the US that CSAS has been verified IAW 1-EOP-99, Table 3 and that the 1B Containment Spray Pump did not start and was started manually and SE-07-2A, SE-07-1B and FCV-07-1A did not auto open and had to be opened manually.</p> <p><u>STANDARD:</u> NOTIFY US that CSAS has been VERIFIED IAW 1-EOP-99, Table 3, and that the 1B Containment Spray Pump did not start and had to be STARTED manually, and that SE-07-2ASE-07-1B and FCV-07-1A did not auto open and had to be opened manually.</p> <p>EXAMINER'S CUE: US ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

END OF TASK

STOP TIME _____



C-1; UNIT 1 CSAS EVALUATION / VERIFICATION

JPM
Page 13 of 18

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.

Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- Unit 1 is experiencing a Loss of Coolant Accident.
- 1-EOP-03, Loss of Coolant Accident is in progress.

INITIATING CUES:

- The US directs you to perform 1-EOP-03, Loss of Coolant Accident, beginning at Step 12

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

REVISION NO.: 41	PROCEDURE TITLE: LOSS OF COOLANT ACCIDENT (LOCA)	PAGE: 16 of 110
PROCEDURE NO.: 1-EOP-03	ST. LUCIE UNIT 1	

1

INSTRUCTIONS	CONTINGENCY ACTIONS
4.0 OPERATOR ACTIONS (continued)	
11. (continued)	
<p>C. ENSURE <u>all</u> available Emergency Containment HVAC systems are RUNNING:</p> <ul style="list-style-type: none"> • At least ONE train of SBVS • At least ONE train of Containment Fan Coolers 	
<p><input type="checkbox"/> 12. CHECK if containment spray actuation is required:</p>	
<p>A. VERIFY Containment pressure is greater than 10 psig.</p>	<p>A.1 GO TO Section 4.0, Step 13.</p>
<p>B. VERIFY CSAS is ACTUATED.</p>	<p>B.1 Manually ACTUATE CSAS.</p>
<p>C. VERIFY Containment Spray flow is at least 2550 gpm from <u>each</u> header.</p>	<p>C.1 START/ALIGN CSAS components per Table 3, Containment Spray Actuation Signal.</p>

REVISION NO.: 41	PROCEDURE TITLE: LOSS OF COOLANT ACCIDENT (LOCA)	PAGE: 17 of 110
PROCEDURE NO.: 1-EOP-03	ST. LUCIE UNIT 1	

INSTRUCTIONS		CONTINGENCY ACTIONS	
4.0 OPERATOR ACTIONS (continued)			
<input type="checkbox"/> *	13. VERIFY circulating water flow to the Main Condenser.	13.1 PROTECT Main Condenser as follows:	
		A. ENSURE MSIVs are CLOSED.	
		B. ENSURE SGBD is ISOLATED.	
<input type="checkbox"/> *	14. STABILIZE the secondary plant per Appendix X, Secondary Plant Post Trip Actions, Section 2.		
<input type="checkbox"/>	15. IF a LOOP has occurred, THEN PERFORM <u>both</u> of the following to restore Instrument Air:		
	A. ENSURE 1AB 480V Load Center is aligned to an energized bus.		
	B. DISPATCH an operator to restore Instrument Air per Appendix H, Operation of the 1A and 1B Instrument Air Compressors.		
<input type="checkbox"/>	16. VERIFY LOCA is still in PROGRESS.	16.1 IF the LOCA is ISOLATED, THEN GO TO Section 4.0, Step 54.	

REVISION NO.: 62	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 167 of 185
PROCEDURE NO.: 1-EOP-99	ST. LUCIE UNIT 1	

TABLE 3
CONTAINMENT SPRAY ACTUATION SIGNAL
 (Page 1 of 1)

	<u>A Train (√)</u>	<u>B Train (√)</u>
<input type="checkbox"/> 1. ENSURE Containment Spray Pumps RUNNING. <ul style="list-style-type: none"> Cntmt Spray Pump 1A _____ Cntmt Spray Pump 1B _____ 		
<input type="checkbox"/> 2. ENSURE Containment Spray Header Valves OPEN. <ul style="list-style-type: none"> FCV-07-1A _____ FCV-07-1B _____ 		
<input type="checkbox"/> 3. VERIFY EACH operating Containment Spray Header is delivering greater than or equal to 2550 gpm. <div style="display: flex; justify-content: space-between; width: 80%; margin-left: 40px;"> FI-07-1A _____ FI-07-1B _____ </div>		
<input type="checkbox"/> 4. ENSURE NaOH (Caustic) Injection Valves OPEN. <ul style="list-style-type: none"> SE-07-1A _____ SE-07-2A _____ SE-07-1B _____ SE-07-2B _____ 		
<input type="checkbox"/> 5. On PAP 'A' Panel, VERIFY NaOH flow on the following: <ul style="list-style-type: none"> FR-07-4 (CNTMT Spray/ NaOH Flow) 		

END OF TABLE 3



JOB PERFORMANCE MEASURE

JPM
Page 1 of 21

JPM TITLE: Wide Range NI Failure

JPM NUMBER: C-2

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07064255/ Respond to a Wide Range NI Sys Malfunction

K/A NUMBERS / K/A VALUES: (RO SRO) 033 AK3.02/ 3.6/3.9 Knowledge of the reasons for the following responses as they apply to the Loss of Intermediate Range Nuclear Instrumentation: Guidance contained in EOP for loss of intermediate range instrumentation

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:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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-99.01, Loss of Tech Spec Instrumentation – Sections 4.1, 4.2, 4.2.2, Attachment 5 and Attachment 3
 - 1-ARP-01-L30, Annunciator Response Procedure – Panel L (Only need sheet L-30)

- General References:**
- 1-AOP-99.01, Loss of Tech Spec Instrumentation
 - 1-ARP-01-L40, Annunciator Response Procedure – Panel L

Task Standard: The applicant will bypass the affected RPS high rate trip bistable and notify the US.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 reactor startup is in progress at approximately 10⁻⁷% power
- Group 1 CEAs are at the Upper Electrical Limit
- While Reactor Engineering is performing the 1/M Plot, Annunciator L-30 (NI CHANNEL INOPERATIVE) alarmed
- The Board RCO reports that the wide range NI recorder indication has gone off scale low
- NI Testing is NOT in progress
- I&C has been directed to troubleshoot and repair

INITIATING CUES:

- The US has directed you to respond to the alarm, diagnose the problem and take appropriate action per 1-ARP-01-L00, NI CHANNEL INOPERATIVE, Window L-30 Operator Actions, starting at Step 2

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

1-ARP-01-L30 : NI CHANNEL INOPERATIVE

STEP 1: 2. COMPARE readings on all Wide Range Nuclear Instruments

STANDARD: Applicant will COMPARE RPS wide range nuclear instrument channel indications and DETERMINE that wide range NI Channel D has failed low

EXAMINER’S CUE:

WIDE RANGE NI CHANNELS ON RPS INDICATE AS FOLLOWS:

- A $\approx 10^{-7}\%$ POWER**
- B $\approx 10^{-7}\%$ POWER**
- C $\approx 10^{-7}\%$ POWER**
- D $\approx 10^{-8}\%$ POWER**

EVALUATOR NOTE: D CHANNEL IS FAILED

COMMENTS:

_____ SAT

_____ UNSAT

<p><u>STEP 2:</u> 3. COMPARE readings on all Linear Range Nuclear Instruments</p> <p><u>STANDARD:</u> Applicant will COMPARE RPS linear range nuclear instrument channel indications and DETERMINE that linear range NI Channels are similar</p> <p>EVALUATOR CUE:</p> <p>LINEAR RANGE NI CHANNELS ON RPS INDICATE AS FOLLOWS:</p> <p style="margin-left: 40px;"> A ≈ 0% POWER B ≈ 0% POWER C ≈ 0% POWER D ≈ 0% POWER </p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> 4. IF either of the following exists:</p> <ul style="list-style-type: none"> A significant disagreement between the Wide Range Nuclear Instruments A significant disagreement between the Linear Range Nuclear Instruments <p>Then implement 1-AOP-99.01, Loss of Tech Spec Instrumentation</p> <p><u>STANDARD:</u> Applicant will determine that WR NI Channel D is failed and enter 1-AOP-99.01, Loss of Tech Spec Instrumentation</p> <p>EVALUATOR CUE: NONE</p> <p>EVALUATOR NOTE: If asked the US has entered 1-AOP-99.01 and directs you to perform 1-AOP-99.01, Section 4.2.2</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

1-AOP-99.01, Loss of Tech Spec Instrumentation, Section 4.2 Subsequent Operator Actions

NOTE

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

STEP 4:

1. CONFIRM failed channel by any of the following methods:

- Channel check comparison with redundant channels
- Annunciators
- Bistable or status lights

Any instrument-related testing or surveillance procedure in progress

STANDARD: Applicant will have determined the failed channel in the ARP

EVALUATOR CUE: NONE

COMMENTS:

_____ SAT

_____ UNSAT

NOTE

BISTABLE TRIP UNIT is abbreviated as BTU in this AOP.

STEP 5:

2. IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1 Step 5.

STANDARD: Applicant will N/A this step

EVALUATOR CUE: NONE

COMMENTS:

_____ SAT

_____ UNSAT

<p><u>STEP 6:</u> 3. Using Attachment 5, Channel Failure Impact Table, PERFORM the following:</p> <ul style="list-style-type: none"> A. LOCATE table row for the affected instrument or channel B. REFER TO applicable Tech Specs C. PERFORM applicable procedure section for affected instrument <p><u>STANDARD:</u> Applicant will use Attachment 5 and determine that Section 4.2.2 is the appropriate section.</p> <p>EVALUATOR CUE: If asked, another individual will address Tech Specs</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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1-AOP-99.01, Loss of Tech Spec Instrumentation, Section 4.2.2 Nuclear Instrument Wide Range Safety Channel Failure

NOTE

Attachment 1, Generation Information, contains a discussion of the effects of nuclear instrumentation channel failures.

<p><u>STEP 7:</u> 1. CIRCLE the affected channel:</p> <p style="text-align: center;">MA MB MC MD</p> <p><u>STANDARD:</u> Applicant will circle MD.</p> <p>EVALUATOR CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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<p>STEP 8: 2. PERFORM one of the following for the affected BTU:</p> <ul style="list-style-type: none"> • HI RATE (Key 82). A. BYPASS affected BTU using keyswitch. B. TRIP affected BTU per Attachment 3, Tripping and Restoring Protection Bistables. <p>Step is critical to bypassing the affected channel</p> <p>STANDARD: Applicant will OBTAIN key and ROTATE Channel D high rate trip unit bistable key switch clockwise to 3 o'clock position and observes yellow light above the key switch is ON</p> <p>EVALUATOR CUE: When asked the US directs bypassing the channel</p> <p>Key rotated to 3 o'clock position and yellow light is lit</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9: 3. VERIFY CPS/% POWER WIDE RANGE LOG recorder is selected to an operable channel.</p> <p>3.1 CONTINGENCY ACTION PRESS WIDE RANGE pushbutton to select an operable channel</p> <p>STANDARD: Applicant will select wide range recorder channel input to any channel other than channel D</p> <p>EVALUATOR CUE: When asked the CPS/% POWER WIDE RANGE LOG recorder is selected to Channel D.</p> <p>When a channel is selected inform applicant that Channel A, B or C is selected and indicates $\approx 10^{-7}\%$ POWER</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

	C-2; WIDE RANGE NI FAILURE	JPM Page 11 of 21
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<p><u>STEP 10:</u> 4. SELECT Audio Count Rate to an operable channel.</p> <p>Step is critical to restoring audio count rate to the control room</p> <p><u>STANDARD:</u> Applicant will select audio count rate to any channel other than channel D</p> <p>EVALUATOR CUE: When asked the audio count rate is selected to Channel D.</p> <p>When a channel is selected inform examinee that Channel A, B or C is selected and audio count rate is audible.</p> <p><u>COMMENTS:</u></p>	CRITICAL STEP ____ SAT ____ UNSAT
--	--

<p><u>STEP (done):</u> Notify US that task is complete.</p> <p><u>STANDARD:</u> NOTIFY US that high rate trip unit bistable on Channel D has been bypassed IAW SECTION 4.2.2</p> <p>EVALUATOR CUE: US ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	____ SAT ____ UNSAT
--	----------------------------

STOP TIME _____

Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- Unit 1 reactor startup is in progress at approximately 10⁻⁷% power
- Group 1 CEAs are at the Upper Electrical Limit
- While Reactor Engineering is performing the 1/M Plot, Annunciator L-30 (NI CHANNEL INOPERATIVE) alarmed
- The Board RCO reports that the wide range NI recorder indication has gone off scale low
- NI Testing is NOT in progress
- I&C has been directed to troubleshoot and repair

INITIATING CUES:

- The US has directed you to respond to the alarm, diagnose the problem and take appropriate action per 1-ARP-01-L00, NI CHANNEL INOPERATIVE, Window L-30 Operator Actions, starting at Step 2

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

REVISION NO.: 30	PROCEDURE TITLE: CONTROL ROOM PANEL L RTGB 104	PAGE: 33
PROCEDURE NO.: 1-ARP-01-L00	ST. LUCIE UNIT 1	WINDOW: L-30 (Page 1 of 1)

CAUSES: Any of the following:

- A loss of power to the drawer or the detector
- A pulled circuit card
- Test enable switch not in normal combined with another switch out of its normal position

Due to:

- I&C or OPS testing
- A failed instrument

The following are the normal switch and light indications:

- LOG CAL in OPR
- RATE TEST in OPR
- OUTPUT TEST SELECT in OFF
- METER SELECT in CAL AVE
- PR TEST in OPR
- ZPMB LED **NOT** ON
- LOG LED is ON
- LOG TROUBLE LED **NOT** ON
- TEST ENABLE in NORMAL (Key 117)
- POWER ON is ON
- AVERAGE CONTROL in (UOL)/2
- LIN 1 LED is ON
- LIN 2 LED **NOT** ON
- LIN TROUBLE LED **NOT** ON

**NI CHANNEL
INOPERATIVE**

L-30

DEVICE:
Module W2J2 K3 and K8 relays

SETPOINT:
Test Enable switch **NOT** in NORMAL combined with another switch out of its normal position.

LOCATION:
RPS Cabinets

ALARM CONFIRMATION

- Test Enable switch **NOT** in NORMAL and I&C testing in progress.
- Test Enable switch **NOT** in NORMAL and OPS testing in progress.
- Power On light is OFF.
- LOG Trouble LED is ON.
- LIN Trouble LED is ON.

OPERATOR ACTIONS

- IF testing is **NOT** in progress, THEN **DIRECT** I&C to troubleshoot and repair.
- COMPARE** readings on all Wide Range Nuclear Instruments.
- COMPARE** readings on all Linear Range Nuclear Instruments.
- IF either of the following exists:
 - A significant disagreement between the Wide Range Nuclear Instruments
 - A significant disagreement between the Linear Range Nuclear Instruments
THEN **IMPLEMENT** 1-AOP-99.01, Loss of Tech Spec Instrumentation.

REFERENCES:

- CWD 8770-B-327 SH 60, 61, 62, 63, 406
- VTM 8770-13729

REVISION NO.: 10	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION	PAGE: 9 of 84
PROCEDURE NO.: 1-AOP-99.01	ST. LUCIE UNIT 1	

INSTRUCTIONS

CONTINGENCY ACTIONS

4.0 OPERATOR ACTIONS

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.

☐

1. CONFIRM failed channel by any of the following methods:

- Channel check comparison with redundant channels
- Annunciators
- Bistable or status lights
- Any instrument-related testing or surveillance procedure in progress

REVISION NO.: 10	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION	PAGE: 10 of 84
PROCEDURE NO.: 1-AOP-99.01	ST. LUCIE UNIT 1	

INSTRUCTIONS
CONTINGENCY ACTIONS

4.2.1 General Actions (continued)

NOTE

BISTABLE TRIP UNIT is abbreviated as BTU in this AOP.

☐

2. IF entering this procedure to restore an affected channel, **THEN GO TO** Section 4.2.1, Step 6.

☐

3. Using Attachment 5, Channel Failure Impact Table, **PERFORM** the following:

A. LOCATE table row for affected instrument or channel.

B. REFER TO applicable Tech Specs.

C. PERFORM applicable procedure section for affected instrument.

☐

4. INITIATE work request for affected instrument or channel and **NOTIFY** I&C or EM as applicable.

REVISION NO.: 10	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION	PAGE: 11 of 84
PROCEDURE NO.: 1-AOP-99.01	ST. LUCIE UNIT 1	

INSTRUCTIONS

CONTINGENCY ACTIONS

4.2.1 General Actions (continued)

☐

5. DOCUMENT problem as required:

- EOOS Log
- Condition report
- Ops narrative log

☐

6. WHEN ready to restore affected channel,
THEN PERFORM
Attachment 2, Restoration of
Tripped or Bypassed
Instrumentation Channels.

☐

7. VERIFY Exit Conditions are met.

7.1 IF additional instruments or channels are affected,
THEN RETURN TO
Section 4.2.1, Step 3.

☐

8. EXIT this procedure.

REVISION NO.: 10 PROCEDURE NO.: 1-AOP-99.01	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION ST. LUCIE UNIT 1	PAGE: 82 of 84																		
ATTACHMENT 5 Channel Failure Impact Table (Page 1 of 3)																				
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p style="text-align: center;"><u>NOTE</u></p> <ul style="list-style-type: none"> HI RATE trip (2/4 trips) and HI RATE CWP (2/4 pretrips) protection is active only between 10⁻⁴% and 15% power. LIN 1 bistable used for LOSS LOAD and HI RATE trip bypass functions. LOG and LIN 1 bistable status lights are ON when above their setpoints. If power is less than reset setpoint, then reset pushbutton should be pushed to turn off the light. ZPMB and CPS bistable status lights are OFF when below their setpoints. </div>																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Channel Indicator (source device)</th> <th style="width: 25%;">RPS Trip</th> <th style="width: 25%;">ESFAS Trip</th> <th style="width: 25%;">Other Functions</th> <th style="width: 10%;">Tech Specs</th> <th style="width: 10%;">AOP Section</th> </tr> </thead> <tbody> <tr> <td>Wide Range NI MA/MB/MC/MD</td> <td>HI RATE ≥ 2.49 dpm</td> <td>N/A</td> <td> Audio count rate CPS 1x10³ cps LOG 10⁻⁴% ZPMB 1.0% HI RATE CWP > 1.3 dpm Input to HI RATE trip block Input to CEAPDS PDIL </td> <td> 3.3.1.1 3.9.2 </td> <td>Section 4.2.2</td> </tr> <tr> <td>Linear Power Range Control NI (RRS 9 and 10)</td> <td>N/A</td> <td>N/A</td> <td> Input to RRS Input to Pwr Ratio Calculator </td> <td>N/A</td> <td>Section 4.2.3</td> </tr> </tbody> </table>			Channel Indicator (source device)	RPS Trip	ESFAS Trip	Other Functions	Tech Specs	AOP Section	Wide Range NI MA/MB/MC/MD	HI RATE ≥ 2.49 dpm	N/A	Audio count rate CPS 1x10 ³ cps LOG 10 ⁻⁴ % ZPMB 1.0% HI RATE CWP > 1.3 dpm Input to HI RATE trip block Input to CEAPDS PDIL	3.3.1.1 3.9.2	Section 4.2.2	Linear Power Range Control NI (RRS 9 and 10)	N/A	N/A	Input to RRS Input to Pwr Ratio Calculator	N/A	Section 4.2.3
Channel Indicator (source device)	RPS Trip	ESFAS Trip	Other Functions	Tech Specs	AOP Section															
Wide Range NI MA/MB/MC/MD	HI RATE ≥ 2.49 dpm	N/A	Audio count rate CPS 1x10 ³ cps LOG 10 ⁻⁴ % ZPMB 1.0% HI RATE CWP > 1.3 dpm Input to HI RATE trip block Input to CEAPDS PDIL	3.3.1.1 3.9.2	Section 4.2.2															
Linear Power Range Control NI (RRS 9 and 10)	N/A	N/A	Input to RRS Input to Pwr Ratio Calculator	N/A	Section 4.2.3															

REVISION NO.: 10		PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION		PAGE: 83 of 84	
PROCEDURE NO.: 1-AOP-99.01		ST. LUCIE UNIT 1			
ATTACHMENT 5 Channel Failure Impact Table (Page 2 of 3)					
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 PRES	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 4.2.4
Pressurizer Pressure PI-1102A/B/C/D	Pzr Press > 2400 psia TM/LO PRES (TM/LP)	SIAS < 1600 psia	DSS > 2450 psia (ATWS)	3.3.1 3.3.2	Section 4.2.5
T-cold TI-1102A/B/C/D (TT-1112CA/CB/CC/CD TT-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 4.2.6
T-hot TI-1102A/B/C/D (TT-1112HA/HB/HC/HD TT-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 4.2.7
TM/LP Setpoint Generator PR-1102A/B/C/D	N/A	N/A	Variable 1887 to 2350 psia. Set to 2500 psia for ASGT	3.3.1	Section 4.2.8
S/G Pressure PI-8013A/B/C/D PI-8023A/B/C/D	S/G Press ≤ 600 psia (aud low) TM/LO PRES (ASGT>135 psid)	MSIS < 600 psia	Input to AFAS	3.3.1 3.3.2	Section 4.2.9
S/G Level LIC-9013A/B/C/D LIC-9023A/B/C/D	S/G Level < 35.0% (admin limit < 50%)	Level < 19% NR	Hi Level Override >82% NR	3.3.1 3.3.2	Section 4.2.10

REVISION NO.: 10	PROCEDURE TITLE: LOSS OF TECH SPEC INSTRUMENTATION ST. LUCIE UNIT 1	PAGE: 12 of 84
PROCEDURE NO.: 1-AOP-99.01		

INSTRUCTIONS
CONTINGENCY ACTIONS

4.2.2 Nuclear Instrument Wide Range Safety Channel Failure

NOTE

Attachment 1, Generation Information, contains a discussion of the effects of nuclear instrumentation channel failures.

- ☐
1. CIRCLE affected channel:

MA MB MC MD
- ☐
2. PERFORM one of the following for the affected BTU listed:
 - HI RATE (Key 82)
 - A. BYPASS** affected BTU using keyswitch.
 - B. TRIP** affected BTU per Attachment 3, Tripping and Restoring Protection Bistables.
- ☐
3. VERIFY CPS/% POWER WIDE RANGE LOG recorder is selected to an operable channel.

3.1 PRESS WIDE RANGE pushbutton to select an operable channel.
- ☐
4. SELECT Audio Count Rate to an operable channel.



JOB PERFORMANCE MEASURE

JPM
Page 1 of 14

JPM TITLE: Realign charging pump suction to the RWT during a Fire

JPM NUMBER: P-1 **REV.** 0

TASK NUMBER(S) / TASK TITLE(S): 07002120/ Align charging pump suction to the RWT

K/A NUMBERS / K/A VALUES: (RO SRO) 004 K1.23/ 3.4/3.7 Knowledge of the physical connections and/or cause-effect relationships between the CVCS and the following systems: RWST

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:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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

Required Materials: 1-AOP-100.12, RESPONSE TO FIRE - FIRE AREAS, Pages 31-32 ONLY with steps 1.4.9 A&B completed

General References: 1-AOP-100.12, RESPONSE TO FIRE - FIRE AREAS

Task Standard: The applicant will manually align charging suction to the refueling water tank.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- A Fire occurred on Unit 1 in Fire Area “C”
- The fire has been extinguished and all smoke has been evacuated from the area
- The 1A Charging pump was secured due to cavitation

INITIATING CUES:

- You are the SNPO
- The Unit Supervisor has directed you to align charging pump suction to the RWT per 1-AOP-100.12 step 1.4.9, steps 1.4.9 A&B have been completed
- The “B” Train switchgear is de-energized

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

<p><u>STEP 1:</u> 1-AOP-100.12, Att. 1, Step 9.C; CONTACT Control Room and VERIFY all charging pumps are in STOP.</p> <p><u>STANDARD:</u> Applicant contacts Control Room and verifies all charging pumps are stopped.</p> <p>EXAMINER’S CUE: Control Room reports all Charging pumps are stopped.</p> <p><u>COMMENTS:</u></p>	<p>___ SAT ___ UNSAT</p>
<p><u>STEP 2:</u> 1-AOP-100.12, Att. 1, Step 9.D; ENSURE the following valves are CLOSED:</p> <p><input type="checkbox"/> V2508, 1B BAMT OUTLET TO EMERG BORATION FEED. (RAB/3/S-RA4/E-RAE)</p> <p>Step is critical to align the suction path</p> <p><u>STANDARD:</u> Applicant CLOSES V2508 1B BAMT OUTLET TO EMERG BORATION FEED.</p> <p>EXAMINER’S CUE: V2508, 1B BAMT OUTLET TO EMERG BORATION FEED is rotated fully clockwise.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT ___ UNSAT</p>

<p>STEP 3: 1-AOP-100.12, Att. 1, Step 9.D; ENSURE the following valves are CLOSED:</p> <p><input type="checkbox"/> V2509, 1A BAMT OUTLET TO EMERG BORATION FEED. (RAB/3/S-RA4/E-RAE)</p> <p>Step is critical to align the suction path</p> <p>STANDARD: Applicant CLOSES V2509 1A BAMT OUTLET TO EMERG BORATION FEED.</p> <p>EXAMINER'S CUE: V2509, 1A BAMT OUTLET TO EMERG BORATION FEED is rotated fully clockwise.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 4: 1-AOP-100.12, Att. 1, Step 9.E; OPEN V2504, RWT TO CHARGING PUMP SUCT MOV. (RAB/1/N-RA3/E-RAE)</p> <p>Step is critical to align the suction path</p> <p>STANDARD: Applicant OPENS V2504 1B BAMT OUTLET TO EMERG BORATION FEED.</p> <p>EXAMINER'S CUE: EXAMINER'S CUE: V2504, RWT TO CHARGING PUMP SUCT MOV is rotated fully counter-clockwise.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>



**P1; REALIGN CHARGING PUMP SUCTION TO THE RWT
DURING A FIRE**

JPM
Page 7 of 14

STEP 5: 1-AOP-100.12, Att. 1, Step 9.F; **NOTIFY** Control Room 1A
Charging Pump suction is aligned to RWT.

STANDARD: Applicant **NOTIFIES** Control Room 1A Charging Pump
suction is aligned to RWT.

EXAMINER'S CUE: Communication received.

COMMENTS:

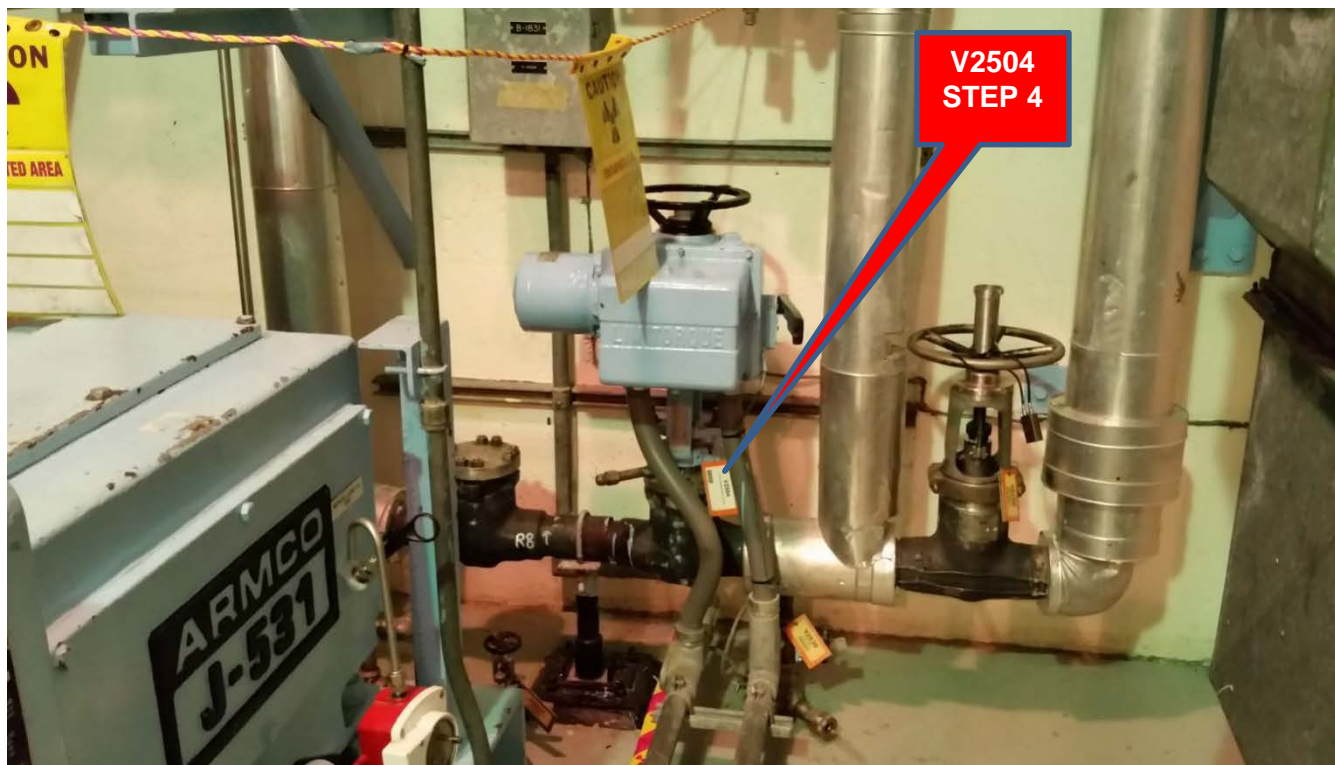
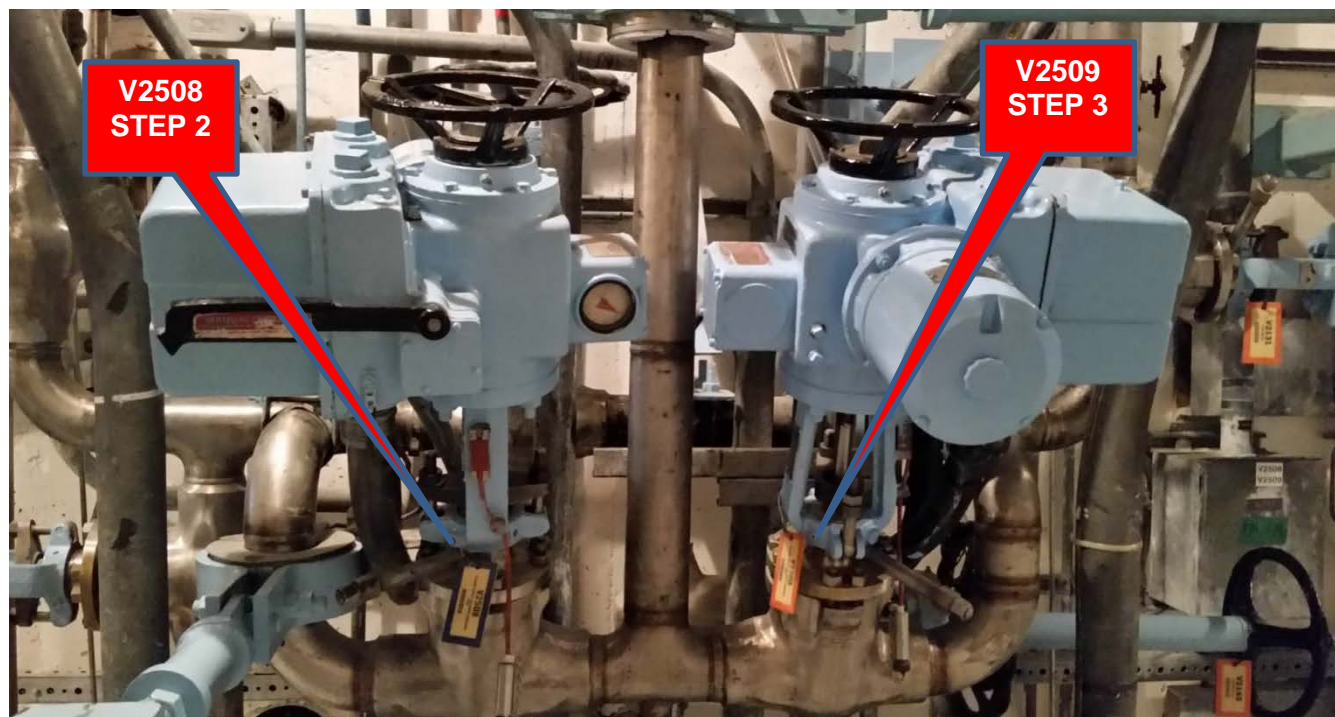
___ SAT
___ UNSAT

STOP TIME _____

PLT P-1

Key

**DO NOT HAND TO
APPLICANT**



Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- A Fire occurred on Unit 1 in Fire Area “C”
- The fire has been extinguished and all smoke has been evacuated from the area
- The 1A Charging pump was secured due to cavitation

INITIATING CUES:

- You are the SNPO
- The Unit Supervisor has directed you to align charging pump suction to the RWT per 1-AOP-100.12 step 1.4.9, steps 1.4.9 A&B have been completed
- The “B” Train switchgear is de-energized

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

REVISION NO.: 5	PROCEDURE TITLE: RESPONSE TO FIRE - FIRE AREAS	PAGE: 31 of 120
PROCEDURE NO.: 1-AOP-100.12	ST. LUCIE UNIT 1	

ATTACHMENT 1
Fire Area C: Integrated Response to Fire
(Page 21 of 44)

1.4 CRI SNPO Instructions: Fire Area C (continued)

7. WHEN directed by Control Room to align charging pump discharge to A HPSI Header, THEN **PERFORM** the following: (60 min)

- A.** **OPEN** V2340, CHARGING PUMP DISCH HDR TO AUX HPSI HDR ISOL. (RAB/8/N-RA2/E-RAE)
- B.** **CLOSE** V2429, CHARGING PUMP DISCH AT PENETR # 27 ISOL. (RAB/34/N-RA1/W-RAE)

NOTE

The following lists completed CRI SNPO 60 minute actions and is provided should clarification be required. This list need **NOT** be communicated:

- Charging pump discharge is aligned to A HPSI Header

8. **NOTIFY** Control Room all CRI SNPO 60 minute actions are COMPLETE and charging pump discharge is aligned to A HPSI Header.

NOTE

BAMT usage should be closely monitored to remain greater than 20% to prevent gas binding of the charging pumps.

CAUTION

When taking suction from BAMTs, charging pumps should be monitored for cavitation as BAMT level indication is **NOT** reliable.

9. **MONITOR** charging pumps for cavitation as follows:

- A.** WHEN BAMT is nearing empty as determined by CR, THEN **MONITOR** running charging pumps for cavitation.
- B.** IF charging pump cavitation occurs, THEN **NOTIFY** Control Room to stop running charging pump.

REVISION NO.: 5	PROCEDURE TITLE: RESPONSE TO FIRE - FIRE AREAS	PAGE: 32 of 120
PROCEDURE NO.: 1-AOP-100.12	ST. LUCIE UNIT 1	

ATTACHMENT 1
Fire Area C: Integrated Response to Fire
(Page 22 of 44)

1.4 CRI SNPO Instructions: Fire Area C (continued)

9. (continued)

CAUTION

Isolating 1A Charging Pump suction with the pump running may damage the only protected charging pump.

C. CONTACT Control Room and **VERIFY** all charging pumps are in STOP.

D. ENSURE the following valves are CLOSED:

- V2508, 1B BAMT OUTLET TO EMERG BORATION FEED.
(RAB/3/S-RA4/E-RAE)
- V2509, 1A BAMT OUTLET TO EMERG BORATION FEED.
(RAB/3/S-RA4/E-RAE)


E. OPEN V2504, RWT TO CHARGING PUMP SUCT MOV.
(RAB/1/N-RA3/E-RAE)

F. NOTIFY Control Room 1A Charging Pump suction is aligned to RWT.

CAUTION

A diesel engine should **NOT** be run unloaded (less than 700 KW) for more than 4 hours consecutively. Unburned fuel may accumulate in the exhaust system and lead to a fire. The EDG may be tripped after post fire conditions are stable and offsite power is assured.

- 10. IF** at any time directed by Control Room to trip 1A EDG, THEN **PRESS** either 1A EDG engine mounted control panel emergency stop pushbutton (1 per engine) and **ENSURE** both overspeed trip levers are TRIPPED. (4 hrs)

	JOB PERFORMANCE MEASURE	JPM Page 1 of 13
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JPM TITLE: Locally Close Unit-1 MSIV

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

TASK NUMBER(S) / TASK TITLE(S): 07008045/ Locally Close MSIV

K/A NUMBERS / K/A VALUES: (RO SRO) 038 EA2.01/ 4.1/4.7 Ability to determine or interpret the following as they apply to a SGTR: When to isolate one or more S/Gs

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:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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-EOP-99, APPENDIX 1, MSIV LOCAL CLOSURE

General References: ▪ 1-EOP-99

Task Standard: The applicant will locally close the 1A MSIV, HCV-08-1A

Tools/Equipment/Procedures Needed:

1-EOP-99 APPENDIX I, MSIV LOCAL CLOSURE

Task Standard: 1A MSIV, HCV-08-1A is locally closed

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 has been tripped following a Steam Generator Tube Rupture.
- 1-EOP-04, Steam Generator Tube Rupture SGTR is in progress.
- HCV-08-1A, S/G 1A MSIV has not closed.

INITIATING CUES:

- You are NPO
- The Unit Supervisor directs you to locally close HCV-08-1A, S/G 1A MSIV, in accordance with 1-EOP-99, APPENDICES / FIGURES / TABLES / DATA SHEETS, Appendix I, MSIV LOCAL CLOSURE.

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

1-EOP-99, APPENDICES / FIGURES / TABLES / DATA SHEETS, Appendix I, MSIV LOCAL CLOSURE. Step 1. To locally CLOSE HCV-08-1A, 1A S/G MSIV, PERFORM the following:	
<p><u>STEP 1A:</u> CLOSE SH08918, Inst Air Header Isol To 1A MSIV Actuator.</p> <p>Step is critical for the actuator to be operated manually</p> <p><u>STANDARD:</u> Applicant CLOSES SH08918 Inst Air Header Isol To 1A MSIV Actuator.</p> <p>EXAMINER’S CUE: SH08918, Instrument Air Header Isolation To 1A MSIV Actuator is rotated fully clockwise.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p><u>STEP 1B.a:</u> PERFORM the following to OPEN V08919, Needle Valve 2 For HCV-08-1A Actuator:</p> <ul style="list-style-type: none"> • LOOSEN the locking ring for V08919, Needle Valve 2 For HCV-08-1A Actuator. <p>Step is critical for the actuator to be operated manually</p> <p><u>STANDARD:</u> Operator LOOSENS the locking ring for V08919, Needle Valve 2 For HCV-08-1A Actuator.</p> <p>EXAMINER’S CUE: The locking ring for V08919, Needle Valve 2 For HCV-08-1A Actuator has been loosened.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

<p>STEP 1B.b: PERFORM the following to OPEN V08919, Needle Valve 2 For HCV-08-1A Actuator:</p> <ul style="list-style-type: none"> • OPEN V08919, Needle Valve 2 For HCV-08-1A Actuator. <p>Step is critical for the actuator to be operated manually</p> <p>STANDARD: Operator OPENS V08919, Needle Valve 2 For HCV-08-1A Actuator.</p> <p>EXAMINER'S CUE: V08919, Needle Valve 2 For HCV-08-1A Actuator is rotated fully counter-clockwise.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 1C.a: PERFORM the following to OPEN V08593, Needle Valve 3 For HCV-08-1A Actuator:</p> <ul style="list-style-type: none"> • LOOSEN the locking ring for V08593, Needle Valve 3 For HCV-08-1A Actuator. <p>Step is critical for the actuator to be operated manually</p> <p>STANDARD: Operator LOOSENS the locking ring for V08593, Needle Valve 3 For HCV-08-1A Actuator.</p> <p>EXAMINER'S CUE: The locking ring for V08593, Needle Valve 3 For HCV-08-1A Actuator has been loosened.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>STEP 1C.b: PERFORM the following to OPEN V08593, Needle Valve 3 For HCV-08-1A Actuator:</p> <ul style="list-style-type: none"> • OPEN V08593, Needle Valve 3 For HCV-08-1A Actuator. <p>Step is critical for the actuator to be operated manually</p> <p>STANDARD: Operator OPENS V08593, Needle Valve 3 For HCV-08-1A Actuator.</p> <p>EXAMINER'S CUE: V08593, Needle Valve 3 For HCV-08-1A Actuator is rotated fully counter-clockwise.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>



P-2; LOCALLY CLOSE UNIT-1 MSIV

JPM
Page 8 of 13

STEP 2: NOTIFY US that HCV-08-1A has been CLOSED.

___ SAT

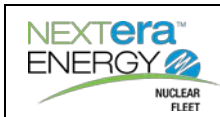
___ UNSAT

STANDARD: Applicant **NOTIFIES** US that MSIV 1A, HCV-08-1A, has been manually CLOSED.

EXAMINER'S CUE: US ACKNOWLEDGES communication.

COMMENTS:

STOP TIME _____



P-2; LOCALLY CLOSE UNIT-1 MSIV

JPM
Page 9 of 13

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

Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- Unit 1 has been tripped following a Steam Generator Tube Rupture.
- 1-EOP-04, Steam Generator Tube Rupture SGTR is in progress.
- HCV-08-1A, S/G 1A MSIV has not closed.

INITIATING CUES:

- You are NPO
- The Unit Supervisor directs you to locally close HCV-08-1A, S/G 1A MSIV, in accordance with 1-EOP-99, APPENDICES / FIGURES / TABLES / DATA SHEETS, Appendix I, MSIV LOCAL CLOSURE.

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

REVISION NO.: 62	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 65 of 185
PROCEDURE NO.: 1-EOP-99	ST. LUCIE UNIT 1	

APPENDIX I
MSIV LOCAL CLOSURE
(Page 1 of 2)

- ☐ 1. To locally CLOSE HCV-08-1A, 1A S/G MSIV, PERFORM the following:
- ☐ A. CLOSE SH08918, Inst Air Header Isol To 1A MSIV Actuator.

NOTE

MSIV needle valves contain two rings. The locking ring is the one on the backside as shown in Figure 1. This applies to V08919 and V08593.

Figure 1



- ☐ B. PERFORM the following to OPEN V08919, Needle Valve 2 For HCV-08-1A Actuator:
- ☐ LOOSEN the locking ring for V08919, Needle Valve 2 For HCV-08-1A Actuator.
 - ☐ OPEN V08919, Needle Valve 2 For HCV-08-1A Actuator.
- ☐ C. PERFORM the following to OPEN V08593, Needle Valve 3 For HCV-08-1A Actuator:
- ☐ LOOSEN the locking ring for V08593, Needle Valve 3 For HCV-08-1A Actuator.
 - ☐ OPEN V08593, Needle Valve 3 For HCV-08-1A Actuator.

REVISION NO.: 62	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 66 of 185
PROCEDURE NO.: 1-EOP-99	ST. LUCIE UNIT 1	

APPENDIX I
MSIV LOCAL CLOSURE
 (Page 2 of 2)

☐ **2.** To locally CLOSE HCV-08-1B, 1B S/G MSIV, PERFORM the following:

☐ **A.** CLOSE SH08931, Inst Air Header Isol To 1B MSIV Actuator.

NOTE

MSIV needle valves contain two rings. The locking ring is the one on the backside as shown in Figure 1 of Appendix I. This applies to V08932 and V08597.

☐ **B.** PERFORM the following to OPEN V08932, Needle Valve 2 For HCV-08-1B Actuator:

☐ LOOSEN the locking ring for V08932, Needle Valve 2 For HCV-08-1B Actuator.

☐ OPEN V08932, Needle Valve 2 For HCV-08-1B Actuator.

☐ **C.** PERFORM the following to OPEN V08597, Needle Valve 3 For HCV-08-1B Actuator:

☐ LOOSEN the locking ring for V08597, Needle Valve 3 For HCV-08-1B Actuator.

☐ OPEN V08597, Needle Valve 3 For HCV-08-1B Actuator.

END OF APPENDIX I



JOB PERFORMANCE MEASURE

JPM
Page 1 of 18

JPM TITLE: Unit-1 Local Start of EDG Alternate Path

JPM NUMBER: P-3

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 05059095/ Start EDG Locally

K/A NUMBERS / K/A VALUES: (RO SRO) 064 A3.03/ 3.4/ 3.3 Ability to monitor automatic operation of the EDG system, including: Indicating lights, meters, and recorders

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

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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-EOP-99, Appendix C, DIESEL GENERATOR LOCAL START
- General References:** ▪ 1-EOP-99, Appendices/Figures /Tables/Data Sheets
- Task Standard:** The applicant will locally start the 1B Emergency Diesel Generator

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 1 is in a Station Blackout event.
- The plant is stable in a hot standby condition.
- 1-EOP-10, Station Blackout is being implemented.
- 1B EDG did not automatically start and can NOT be manually started from the Control Room.

INITIATING CUES:

- You are the Unit 1 SNPO.
- The US has directed you to start the 1B EDG locally in accordance with 1-EOP-99, Appendices/Figures/Tables/Data Sheets, Appendix C, Diesel Generator Local Start.

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 annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

<p><u>STEP 1:</u> PLACE the EDG Output Breaker, NORMAL/ISOLATE switch in ISOLATE.</p> <p>Step is critical to locally start the EDG.</p> <p><u>STANDARD:</u> <u>POSITION</u> Breaker 1-20401 Normal/Isolate switch (SS/963) to <u>ISOLATE</u>.</p> <p>EXAMINER’S CUE: Normal/Isolate Switch is in ISOLATE</p> <p>EVALUATOR NOTE: This breaker is in RAB+43’ Switchgear Room B</p> <p><u>COMMENTS:</u> SS/963 IS THE CRITICAL SWITCH IF THE APPLICANT TAKES SS/964 AS WELL THAT IS ACCEPTABLE.</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> INVESTIGATE status of local alarm panel. <u>If</u> there are NO alarms present, <u>Then</u> ENSURE BOTH overspeed trip levers are in the LATCHED position.</p> <p><u>STANDARD:</u> <u>INVESTIGATE</u> local alarm panel status. <u>VERIFY</u> that engine overspeed trip latches on the 12- and 16-cylinder diesel engines are <u>RESET</u> (each latch is horizontal and each limit switch is set).</p> <p>EXAMINER’S CUE: There are NO local alarms. Both overspeed trip latches are HORIZONTAL and their respective limit switches are SET.</p> <p><u>COMMENTS:</u> This can be seen from one side of the EDG but concern should be taken to minimize the applicant asking to climb on the EDG for a better view.</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

	<p align="center">P-3; Unit-1 Local Start of EDG</p>	<p align="center">JPM Page 7 of 18</p>
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<p><u>STEP 3:</u> ENSURE the lockout relay is RESET.</p> <p><u>STANDARD:</u> <u>VERIFY</u> lockout relay is <u>RESET</u> with blue light <u>LIT</u>.</p> <p>EXAMINER'S CUE: Lockout relay flag is "RED", Switch is pointing to left, Blue light is OUT</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> ENSURE the lockout relay is RESET.</p> <p>Step is critical to reset the lockout relay.</p> <p><u>STANDARD:</u> <u>ROTATES</u> the lockout relay clockwise to <u>RESET</u>.</p> <p>EXAMINER'S CUE: LOCKOUT RELAY is RESET, Blue Light is LIT, Diesel does NOT start</p> <p>EVALUATOR NOTE: Faulted step – EDG does NOT start</p> <p><u>COMMENTS:</u></p>	<p>FAULTED / CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> If the EDG does NOT start, <u>Then</u> PLACE the engine start switch to START.</p> <p>Step is critical to locally start the EDG.</p> <p><u>STANDARD:</u> <u>POSITION</u> the engine start switch to <u>START</u></p> <p>EXAMINER'S CUE: Engine start switch is in START. Diesel does NOT start</p> <p>EVALUATOR NOTE: Faulted step – EDG does NOT start</p> <p><u>COMMENTS:</u></p>	<p>FAULTED / CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

	<p align="center">P-3; Unit-1 Local Start of EDG</p>	<p align="center">JPM Page 8 of 18</p>
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<p><u>STEP 6:</u> If the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p>A. PLACE NORMAL/ISOLATE switches in ISOLATE.</p> <ul style="list-style-type: none"> • Voltage Control <p>Step is critical to control voltage of the EDG.</p> <p><u>STANDARD:</u> <u>POSITION</u> Voltage Control switch to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7:</u> If the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p>A. PLACE NORMAL/ISOLATE switches in ISOLATE.</p> <ul style="list-style-type: none"> • Frequency Control <p>Step is critical to control frequency of the EDG.</p> <p><u>STANDARD:</u> <u>POSITION</u> Frequency Control switch to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> If the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p>A. PLACE NORMAL/ISOLATE switches in ISOLATE.</p> <ul style="list-style-type: none"> • Start Circuit <p>Step is critical to allow local start of the EDG.</p> <p><u>STANDARD:</u> <u>POSITION</u> Start Circuit switch to ISOLATE</p> <p>EXAMINER'S CUE: Switch is in ISOLATE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 9: <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p style="padding-left: 40px;">B. PLACE engine control to START.</p> <p>Step is critical to locally start of the EDG.</p> <p>STANDARD: <u>POSITION</u> the engine start switch to START.</p> <p>EXAMINER'S CUE: Diesel STARTS and accelerates to 900 rpm</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10: <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p style="padding-left: 40px;">C. <u>When</u> the EDG reaches 900 rpm, <u>Then</u> PERFORM BOTH of the following:</p> <p style="padding-left: 80px;">1. ADJUST Voltage Control Switch to obtain 4160 volts (3950-4370 Volts).</p> <p>STANDARD: <u>OBSERVE</u> "A.C. Voltmeter Gen." voltage</p> <p>EXAMINER'S CUE: Diesel output is between 4100 and 4200 (4160) volts</p> <p>COMMENTS:</p> <p>The voltage meter reads in 100 volt increments</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 11: <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p style="padding-left: 40px;">C. <u>When</u> the EDG reaches 900 rpm, <u>Then</u> PERFORM BOTH of the following:</p> <p style="padding-left: 80px;">2. ADJUST Electric Governor Control Switch to obtain 60 hertz (60.0-60.3 Hz).</p> <p>STANDARD: <u>OBSERVE</u> "Frequency meter"</p> <p>EXAMINER'S CUE: Diesel output is 60 hertz</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

	<p align="center">P-3; Unit-1 Local Start of EDG</p>	<p align="center">JPM Page 10 of 18</p>
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<p>STEP 12: <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p> D. PLACE NORMAL/ISOLATE switches in NORMAL.</p> <p> • Voltage Control</p> <p>Step is critical to allow operation from the control room.</p> <p>STANDARD: <u>POSITION</u> Voltage Control switch to NORMAL</p> <p>EXAMINER'S CUE: Switch is in NORMAL</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 13: <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p> D. PLACE NORMAL/ISOLATE switches in NORMAL.</p> <p> • Frequency Control</p> <p>Step is critical to allow operation from the control room.</p> <p>STANDARD: <u>POSITION</u> Frequency Control switch to NORMAL</p> <p>EXAMINER'S CUE: Switch is in NORMAL</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 14: <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:</p> <p> D. PLACE NORMAL/ISOLATE switches in NORMAL.</p> <p> • Start Circuit</p> <p>Step is critical to allow operation from the control room.</p> <p>STANDARD: <u>POSITION</u> Start Circuit switch to NORMAL</p> <p>EXAMINER'S CUE: Switch is in NORMAL</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

<p><u>STEP 15:</u> VERIFY the EDG is operating normally.</p> <p><u>STANDARD:</u> <u>VERIFY</u> normal operating CONDITIONS.</p> <p>EXAMINER'S CUE: If asked, frequency is 60 Hz and output voltage is 4160 volts. No alarms are present.</p> <p><u>COMMENTS:</u></p>	_____ SAT _____ UNSAT
<p><u>STEP (done):</u> NOTIFY the Control Room that the 1B Diesel Generator has been RESTORED in accordance with Appendix C.</p> <p><u>STANDARD:</u> NOTIFY Control Room that 1B EDG has been STARTED IAW 1-EOP-99, Appendix C.</p> <p>EXAMINER'S CUE: US acknowledges and tells the Unit 1 SNPO the Normal/Isolate switch for 1B EDG output breaker will be operated by a Control Room Operator.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	_____ SAT _____ UNSAT

STOP TIME _____



P-3; Unit-1 Local Start of EDG

JPM
Page 12 of 18

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: _____

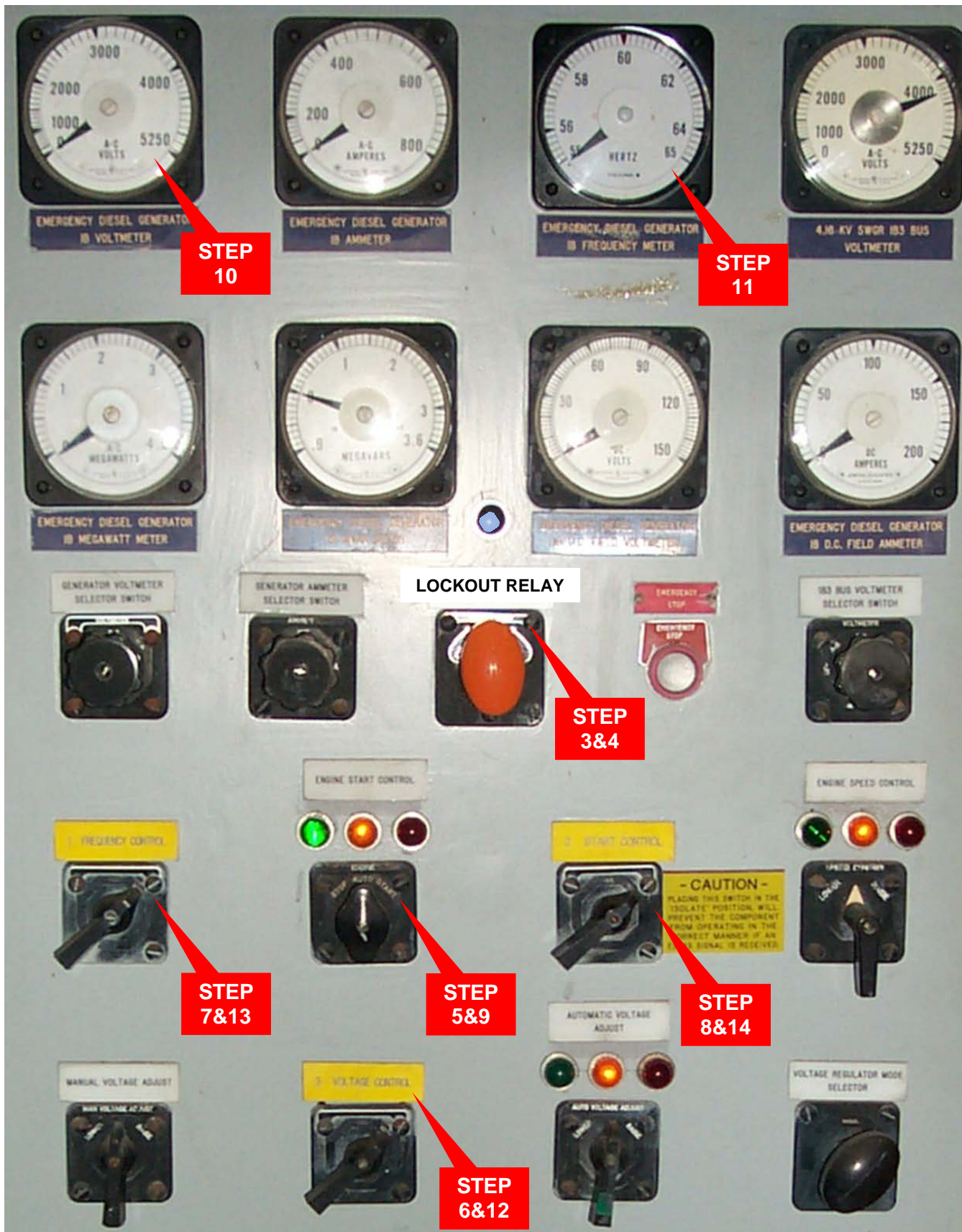
NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

PLT P-3

KEY

DO NOT

HAND TO APPLICANT



Handout Package for Applicant

TURNOVER SHEET**INITIAL CONDITIONS:**

- Unit 1 is in a Station Blackout event.
- The plant is stable in a hot standby condition.
- 1-EOP-10, Station Blackout is being implemented.
- 1B EDG did not automatically start and can NOT be manually started from the Control Room.

INITIATING CUES:

- You are the Unit 1 SNPO.
- The US has directed you to start the 1B EDG locally in accordance with 1-EOP-99, Appendices/Figures/Tables/Data Sheets, Appendix C, Diesel Generator Local Start.

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

REVISION NO.: 62	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 18 of 185
PROCEDURE NO.: 1-EOP-99	ST. LUCIE UNIT 1	

APPENDIX C
DIESEL GENERATOR LOCAL START
(Page 1 of 2)

	<u>A Train (√)</u>	<u>B Train (√)</u>
1. PLACE the EDG Output Breaker NORMAL / ISOLATE switch in ISOLATE.	20211 ____	20401 ____
<input type="checkbox"/> 2. INVESTIGATE status of local diesel alarm panel.		
<input type="checkbox"/> 3. <u>If</u> there are NO alarms present, <u>Then</u> ENSURE BOTH overspeed trip levers are in the LATCHED position.		
<p style="text-align: center;">CAUTION</p> <p>If an auto start signal is present the EDG will automatically start when the lockout relay is reset.</p>		
<input type="checkbox"/> 4. ENSURE the lockout relay is RESET.		
<input type="checkbox"/> 5. <u>If</u> the EDG does NOT start, <u>Then</u> PLACE the engine start switch to START.		
<input type="checkbox"/> 6. <u>If</u> the EDG still does NOT start, <u>Then</u> PERFORM ALL of the following:		
<input type="checkbox"/> A. PLACE NORMAL / ISOLATE switches in ISOLATE. <ul style="list-style-type: none"> <input type="checkbox"/> Voltage Control <input type="checkbox"/> Frequency Control <input type="checkbox"/> Start Circuit 		
<input type="checkbox"/> B. PLACE engine control to START.		
<input type="checkbox"/> C. <u>When</u> the EDG reaches 900 rpm, <u>Then</u> PERFORM BOTH of the following on the DG Local Control Panel: <ul style="list-style-type: none"> <input type="checkbox"/> 1. ADJUST Voltage using the Manual Voltage Adjust Switch to obtain 4160 volts (3950-4370 Volts). <input type="checkbox"/> 2. ADJUST the speed using the Engine Speed Control Switch to obtain 60 hertz (60.0-60.3 Hz). 		

REVISION NO.: 62	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 19 of 185
PROCEDURE NO.: 1-EOP-99	ST. LUCIE UNIT 1	

APPENDIX C

DIESEL GENERATOR LOCAL START

(Page 2 of 2)

6. (continued)

☐ D. PLACE NORMAL / ISOLATE switches in NORMAL.

- ☐ Voltage Control
- ☐ Frequency Control
- ☐ Start Circuit

☐ 7. VERIFY the EDG is operating normally.

☐ 8. NOTIFY Control Room the EDG is available to restore the bus.

9. When notified of all actions required to restore power to a de-energized bus are complete by the Control Room

Then PLACE the EDG Output Breaker
NORMAL / ISOLATE switch in NORMAL.

A Train (✓)

20211 ____

B Train (✓)

20401 ____

END OF APPENDIX C

JPM TITLE: Determine License Status

JPM NUMBER: A-1R

REV. 0

TASK NUMBER(S) / TASK TITLE(S): Determine License Status; Active or Inactive

K/A NUMBERS / K/A VALUES: (RO SRO) 2.1.4; Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, no-solo operation, maintenance of active license status, 10CFR55, etc.
RO 3.5

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

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:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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-1R; Determine License Status

JPM
Page 3 of 14

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

A-1R; Determine License Status

- Required Materials:**
- OP-AA-100-1001 LICENSE MAINTENANCE AND ACTIVATION
 - Calculator

- General References:**
- None

Task Standards: The applicant will determine the correct active/inactive status of the operators with appropriate justifications.

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:

Three (3) Reactor Control Operators (RCOs) have the following history:

- All perform off-shift assignments at the plant.
- All are current in License Operator Continuing Training.
- LMS demonstrates associated medical requirements have been met for each operator.

The ACTIVE/INACTIVE status and time on shift since January 1, 2017 is as follows for each of the RCOs:

RCO – A License was ACTIVE on January 1, 2017			
Shift Date	Position	Assumed Date/Time	Relieved Date/Time
01/02/17	B RCO U1	01/02/17 06:00:00	01/02/17 15:30:00
01/03/17	B RCO U1	01/03/17 06:00:00	01/03/17 17:00:00
01/04/17	B RCO U1	01/04/17 06:00:00	01/04/17 18:00:00
01/05/17	B RCO U1	01/05/17 06:00:00	01/05/17 18:00:00
02/26/17	B RCO U1	02/26/17 06:00:00	02/26/17 18:00:00

RCO – B License was ACTIVE on January 1, 2017			
Shift Date	Position	Assumed Date/Time	Relieved Date/Time
02/01/17	D RCO U1	02/01/17 06:00:00	02/01/17 18:00:00
02/02/17	B RCO U1	02/02/17 06:00:00	02/02/17 18:00:00
02/03/17	D RCO U1	02/03/17 06:00:00	02/03/17 18:00:00
02/14/17	B RCO U1	02/14/17 06:00:00	02/14/17 18:00:00
03/02/17	Extra RCO U1	03/02/17 06:00:00	03/02/17 18:00:00

RCO – C License was ACTIVE on January 1, 2017			
Shift Date	Position	Assumed Date/Time	Relieved Date/Time
01/01/17	D RCO U1	01/02/17 06:00:00	01/02/17 18:00:00
01/02/17	B RCO U1	01/03/17 06:00:00	01/03/17 18:00:00
01/03/17	B RCO U1	01/04/17 06:00:00	01/04/17 18:00:00
02/05/17	D RCO U2	02/05/17 06:00:00	02/05/17 18:00:00
02/12/17	D RCO U1	02/12/17 06:00:00	02/12/17 18:00:00

Circle your answer and provide justification below:

RCO A's License is **ACTIVE / INACTIVE**.

Justification; _____

RCO B's License is **ACTIVE / INACTIVE**.

Justification; _____

RCO C's License is **ACTIVE / INACTIVE**.

Justification; _____

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



A-1R; Determine License Status

JPM
Page 7 of 14

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: 1 Critical Step	Step 1. Determine the ACTIVE / INACTIVE status of RCO A's license. Step is critical to ensure an RO with an inactive license does not perform license duties
Standard:	<p>The Applicant determines the license is <u>INACTIVE</u> due to the following reasons: Per OP-AA-100-1001, LICENSE MAINTENANCE AND ACTIVATION</p> <p>4.1 Maintenance of Active License Status</p> <ol style="list-style-type: none"> 1. The licensee shall: <ol style="list-style-type: none"> A. Actively perform the functions of an operator or senior operator, as appropriate, in a shift crew position required by Technical Specifications (TS) or shift crew position in excess of those required by Technical Specifications. (i.e., Reactor Operator, Unit Supervisor, or Shift Manager). B. Complete a minimum of 56 hours per calendar quarter in the position described in Section 4.1, Step 1.A above. <ol style="list-style-type: none"> (1) To complete the 56-hour minimum requirement, a combination of complete 8 and 12 hour shifts (in a position required by the plant's technical specifications) is acceptable. The completed 8 or 12 hour shifts must be as part of the standard schedule (not overtime that extends a shift or a truncated shift). (2) The complete 8-hour or 12-hour shifts shall include participation in <u>shift turnovers</u>. (3) Watches shall not be truncated when the operator satisfies the minimum quarterly requirement (56 hours). (4) Hours shall be in the same / current calendar quarter. (5) Overtime for coverage of a complete shift may be counted. <p>Justification;</p> <ul style="list-style-type: none"> • The operator DID NOT work the required qualified 56 hour shifts in a license position during the previous quarter. • On 1/02/17, the RO was not present on shift from shift turnover to shift turnover. • On 1/03/17, the RO was not present on shift from shift turnover to shift turnover.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 2 Critical Step	Step 2. Determine the ACTIVE / INACTIVE status of RCO B's license Step is critical to ensure an RO with an inactive license does not perform license duties
Standard:	<p>The Applicant determines the license is <u>INACTIVE</u> due to the following reasons: Per OP-AA-100-1001, LICENSE MAINTENANCE AND ACTIVATION</p> <p>4.1 Maintenance of Active License Status</p> <ol style="list-style-type: none"> 1. The licensee shall: <ol style="list-style-type: none"> A. Actively perform the functions of an operator or senior operator, as appropriate, in a shift crew position required by Technical Specifications (TS) or shift crew position in excess of those required by Technical Specifications. (i.e., Reactor Operator, Unit Supervisor, or Shift Manager). B. Complete a minimum of 56 hours per calendar quarter in the position described in Section 4.1, Step 1.A above. <ol style="list-style-type: none"> (1) To complete the 56-hour minimum requirement, a combination of complete 8 and 12 hour shifts (in a position required by the plant's technical specifications) is acceptable. The completed 8 or 12 hour shifts must be as part of the standard schedule (not overtime that extends a shift or a truncated shift). (2) The complete 8-hour or 12-hour shifts shall include participation in <u>shift turnovers</u>. (3) Watches shall not be truncated when the operator satisfies the minimum quarterly requirement (56 hours). (4) Hours shall be in the same / current calendar quarter. (5) Overtime for coverage of a complete shift may be counted. <p>Justification;</p> <ul style="list-style-type: none"> • The operator DID NOT work the required qualified 56 hour shifts in a license position during the previous quarter. • On 3/02/17, the RO was not in a position described in Section 4.1, Step 1.A.
Performance:	SATISFACTORY ____ UNSATISFACTORY ____
Comments:	

Performance Step: 3 Critical Step	Step 3. Determine the ACTIVE / INACTIVE status of RCO C's license Step is critical to ensure an RO with an inactive license does not perform license duties
Standard:	<p>The Applicant determines the license is <u>ACTIVE</u> due to the following reasons: <i>The operator worked a total of 5 12.25 hour shifts which includes a standard crew turnover meeting and a 15 turnover of job position.</i> Per OP-AA-100-1001, LICENSE MAINTENANCE AND ACTIVATION 4.1 Maintenance of Active License Status 1. The licensee shall: A. Actively perform the functions of an operator or senior operator, as appropriate, in a shift crew position required by Technical Specifications (TS) or shift crew position in excess of those required by Technical Specifications. (i.e., Reactor Operator, Unit Supervisor, or Shift Manager). B. Complete a minimum of 56 hours per calendar quarter in the position described in Section 4.1, Step 1.A above. (1) To complete the 56-hour minimum requirement, a combination of complete 8 and 12 hour shifts (in a position required by the plant's technical specifications) is acceptable. The completed 8 or 12 hour shifts must be as part of the standard schedule (not overtime that extends a shift or a truncated shift). (2) The complete 8-hour or 12-hour shifts shall include participation in <u>shift turnovers</u>. (3) Watches shall not be truncated when the operator satisfies the minimum quarterly requirement (56 hours). (4) Hours shall be in the same / current calendar quarter. (5) Overtime for coverage of a complete shift may be counted. Justification; • <i>The operator DID work the required qualified 56 hour shifts in a license position during the previous quarter.</i></p>
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

END OF TASK

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

Stop Time: _____



A-1R; Determine License Status

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).

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:

Three (3) Reactor Control Operators (RCOs) have the following history:

- All perform off-shift assignments at the plant.
- All are current in License Operator Continuing Training.
- LMS demonstrates associated medical requirements have been met for each operator.

The ACTIVE/INACTIVE status and time on shift since January 1, 2017 is as follows for each of the RCOs:

RCO – A License was ACTIVE on January 1, 2017			
Shift Date	Position	Assumed Date/Time	Relieved Date/Time
01/02/17	B RCO U1	01/02/17 06:00:00	01/02/17 15:30:00
01/03/17	B RCO U1	01/03/17 06:00:00	01/03/17 17:00:00
01/04/17	B RCO U1	01/04/17 06:00:00	01/04/17 18:00:00
01/05/17	B RCO U1	01/05/17 06:00:00	01/05/17 18:00:00
02/26/17	B RCO U1	02/26/17 06:00:00	02/26/17 18:00:00

RCO – B License was ACTIVE on January 1, 2017			
Shift Date	Position	Assumed Date/Time	Relieved Date/Time
02/01/17	D RCO U1	02/01/17 06:00:00	02/01/17 18:00:00
02/02/17	B RCO U1	02/02/17 06:00:00	02/02/17 18:00:00
02/03/17	D RCO U1	02/03/17 06:00:00	02/03/17 18:00:00
02/14/17	B RCO U1	02/14/17 06:00:00	02/14/17 18:00:00
03/02/17	Extra RCO U1	03/02/17 06:00:00	03/02/17 18:00:00

RCO – C License was ACTIVE on January 1, 2017			
Shift Date	Position	Assumed Date/Time	Relieved Date/Time
01/01/17	D RCO U1	01/02/17 06:00:00	01/02/17 18:00:00
01/02/17	B RCO U1	01/03/17 06:00:00	01/03/17 18:00:00
01/03/17	B RCO U1	01/04/17 06:00:00	01/04/17 18:00:00
02/05/17	D RCO U2	02/05/17 06:00:00	02/05/17 18:00:00
02/12/17	D RCO U1	02/12/17 06:00:00	02/12/17 18:00:00

Circle your answer and provide justification below:

RCO A's License is **ACTIVE / INACTIVE**.

Justification; _____

RCO B's License is **ACTIVE / INACTIVE**.

Justification; _____

RCO C's License is **ACTIVE / INACTIVE**.

Justification; _____

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

JPM TITLE: Determine License Status

JPM NUMBER: A-1S

REV. 0

TASK NUMBER(S) / TASK TITLE(S): Determine License Status; Active or Inactive

K/A NUMBERS / K/A VALUES: (RO SRO) 2.1.4; Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, no-solo operation, maintenance of active license status, 10CFR55, etc.
SRO 3.8

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

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:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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-1S; Determine License Status

JPM
Page 3 of 18

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:**
- OP-AA-100-1001 LICENSE MAINTENANCE AND ACTIVATION
 - Calculator

- General References:**
- None

Task Standards: The applicant will determine the correct active/inactive status of the operators with appropriate justifications.

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:

One (1) Reactor Control Operators (RCO) and two (2) Senior Reactor Operators (SROs) have submitted the License Watch Standing Records provided below:

- All licenses were ACTIVE on January 1, 2017
- All perform off-shift assignments at the plant.
- All are current in License Operator Continuing Training.
- LMS demonstrates associated medical requirements have been met for each operator.

The ACTIVE/INACTIVE status and time on shift since January 1, 2017 is as follows for each of the Operators:

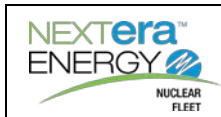
LICENSE WATCH-STANDING RECORD (Page 5 of 18)

DOCUMENTATION OF ON-SHIFT HOURS FOR ACTIVE LICENSE MAINTENANCE/REACTIVATION OF A LICENSE

NAME OF LICENSEE **SRO A**

CALENDAR QUARTER: (Circle one) 1st 2nd 3rd 4th

Shift	Date	Position	Hours		
1	01/02/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
2	01/03/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
3	01/04/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
4	01/05/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
5	02/26/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				

**A-1S; Determine License Status****JPM**
Page 6 of 18**LICENSE WATCH-STANDING RECORD**
(Page 6 of 18)**DOCUMENTATION OF ON-SHIFT HOURS FOR**
ACTIVE LICENSE MAINTENANCE/REACTIVATION OF A LICENSENAME OF LICENSEE **RCO A**

CALENDAR QUARTER: (Circle one)

1st2nd3rd4th

Shift	Date	Position	Hours		
1	02/01/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
2	02/02/17	B RCO	9		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input type="checkbox"/> Completed off-going shift turnover				
3	02/03/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
4	02/14/17	B RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
5	03/02/17	Extra RCO	12		
	Comments: ** Conducted Diesel Generator surveillance as an extra member of the shift. <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				

**A-1S; Determine License Status****JPM**
Page 7 of 18**LICENSE WATCH-STANDING RECORD**
(Page 7 of 18)**DOCUMENTATION OF ON-SHIFT HOURS FOR**
ACTIVE LICENSE MAINTENANCE/REACTIVATION OF A LICENSENAME OF LICENSEE **SRO B**

CALENDAR QUARTER: (Circle one)

1st2nd3rd4th

Shift	Date	Position	Hours		
1	01/01/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
2	01/02/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
3	01/03/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
4	01/05/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
5	01/14/17	STA	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				



A-1S; Determine License Status

JPM
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INITIATING CUES:

You are to review the provided License Watch Standing Records and determine if each of the RCO/SRO Licenses are **ACTIVE** or **INACTIVE** as of 0700 on April 1, 2017.

Circle your answer and provide justification below:

SRO A's License is **ACTIVE / INACTIVE**.

Justification; _____

RCO A's License is **ACTIVE / INACTIVE**.

Justification; _____

SRO B's License is **ACTIVE / INACTIVE**.

Justification; _____

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



A-1S; Determine License Status

JPM
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JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: 1 Critical Step	Step 1. Determine the ACTIVE / INACTIVE status of SRO A's license. Step is critical to ensure an SRO with an inactive license does not perform license duties
Standard:	<p>The Applicant determines the license is <u>ACTIVE</u> due to the following reasons: Per OP-AA-100-1001, LICENSE MAINTENANCE AND ACTIVATION</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><u>NOTE</u></p> <ul style="list-style-type: none"> In order to maintain the supervisory portion of an SRO license active, a SRO must stand at least one complete watch (8-or12-hour shift) per calendar quarter in an SRO only supervisory position. The remainder of complete watches required in a calendar quarter may be performed in either a credited SRO or RO position. </div> <p>4.1 <u>Maintenance of Active License Status</u></p> <p>1. The licensee shall:</p> <ul style="list-style-type: none"> A. Actively perform the functions of an operator or senior operator, as appropriate, in a shift crew position required by Technical Specifications (TS) or shift crew position in excess of those required by Technical Specifications. (i.e., Reactor Operator, Unit Supervisor, or Shift Manager). B. Complete a minimum of 56 hours per calendar quarter in the position described in Section 4.1, Step 1.A above. <ul style="list-style-type: none"> (1) To complete the 56-hour minimum requirement, a combination of complete 8 and 12 hour shifts (in a position required by the plant's technical specifications) is acceptable. The completed 8 or 12 hour shifts must be as part of the standard schedule (not overtime that extends a shift or a truncated shift). (2) The complete 8-hour or 12-hour shifts shall include participation in <u>shift turnovers</u>. (3) Watches shall not be truncated when the operator satisfies the minimum quarterly requirement (56 hours). (4) Hours shall be in the same / current calendar quarter. (5) Overtime for coverage of a complete shift may be counted. <p><i>Justification;</i></p> <ul style="list-style-type: none"> <i>The operator DID work the required qualified 56 hour shifts in a license position during the previous quarter.</i>
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 2 Critical Step	Step 2. Determine the ACTIVE / INACTIVE status of RCO A's license Step is critical to ensure an RCO with an inactive license does not perform license duties
Standard:	<p>The Applicant determines the license is <u>INACTIVE</u> due to the following reasons: Per OP-AA-100-1001, LICENSE MAINTENANCE AND ACTIVATION</p> <p>4.1 Maintenance of Active License Status</p> <ol style="list-style-type: none"> 1. The licensee shall: <ol style="list-style-type: none"> A. Actively perform the functions of an operator or senior operator, as appropriate, in a shift crew position required by Technical Specifications (TS) or shift crew position in excess of those required by Technical Specifications. (i.e., Reactor Operator, Unit Supervisor, or Shift Manager). B. Complete a minimum of 56 hours per calendar quarter in the position described in Section 4.1, Step 1.A above. <ol style="list-style-type: none"> (1) To complete the 56-hour minimum requirement, a combination of complete 8 and 12 hour shifts (in a position required by the plant's technical specifications) is acceptable. The completed 8 or 12 hour shifts must be as part of the standard schedule (not overtime that extends a shift or a truncated shift). (2) The complete 8-hour or 12-hour shifts shall include participation in <u>shift turnovers</u>. (3) Watches shall not be truncated when the operator satisfies the minimum quarterly requirement (56 hours). (4) Hours shall be in the same / current calendar quarter. (5) Overtime for coverage of a complete shift may be counted. <p>Justification;</p> <ul style="list-style-type: none"> • The operator DID NOT work the required qualified 56 hour shifts in a license position during the previous quarter. • On 3/02/17, the RO was not in a position described in Section 4.1, Step 1.A.
Performance:	SATISFACTORY ____ UNSATISFACTORY ____
Comments:	

Performance Step: 3
Critical Step

Step 3. Determine the ACTIVE / INACTIVE status of SRO A's license
Step is critical to ensure an SRO with an inactive license does not perform license duties

Standard:

The Applicant determines the license is INACTIVE due to the following reasons:

The operator worked a total of 5 12.25 hour shifts which includes a standard crew turnover meeting and a 15 minute turnover of job position.

Per OP-AA-100-1001,LICENSE MAINTENANCE AND ACTIVATION

NOTE

- In order to maintain the supervisory portion of an SRO license active, a SRO must stand at least one complete watch (8-or12-hour shift) per calendar quarter in an SRO only supervisory position. The remainder of complete watches required in a calendar quarter may be performed in either a credited SRO or RO position.
- If a licensed SRO stands all of his or her required proficiency watches in a SRO-only supervisory position, the RO portion of the license is still considered active. SRO A stood one 12-hour shift in the credited Unit Supervisor position, thus maintaining the supervisory portion of the license.

4.1.1.B.

(1) To complete the 56-hour minimum requirement, a combination of complete 8 and 12 hour shifts (in a position required by the plant's technical specifications) is acceptable. The completed 8 or 12 hour shifts must be as part of the standard schedule (not overtime that extends a shift or a truncated shift).

(2) The complete 8-hour or 12-hour shifts shall include participation in shift turnovers.

Justification;

- *The operator DID NOT work the required qualified 56 hour shifts in a license position during the previous quarter.*
- *On 3/02/17, the SRO was not in a position described in Section 4.1, Step 1.A.*
- *The SRO stood one 12-hour shift in the STA position, for which credit is not given.*

Performance:

SATISFACTORY _____ UNSATISFACTORY _____

Comments:

Stop Time: _____

END OF TASK



A-1S; Determine License Status

JPM
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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:

One (1) Reactor Control Operators (RCO) and two (2) Senior Reactor Operators (SROs) have submitted the License Watch Standing Records provided below:

- All licenses were ACTIVE on January 1, 2017
- All perform off-shift assignments at the plant.
- All are current in License Operator Continuing Training.
- LMS demonstrates associated medical requirements have been met for each operator.

The ACTIVE/INACTIVE status and time on shift since January 1, 2017 is as follows for each of the Operators:

LICENSE WATCH-STANDING RECORD
(Page 15 of 18)

DOCUMENTATION OF ON-SHIFT HOURS FOR
ACTIVE LICENSE MAINTENANCE/REACTIVATION OF A LICENSE

NAME OF LICENSEE **SRO A**

CALENDAR QUARTER: (Circle one)

1st

2nd

3rd

4th

Shift	Date	Position	Hours		
1	01/02/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
2	01/03/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
3	01/04/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
4	01/05/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
5	02/26/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				



JOB PERFORMANCE MEASURE

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LICENSE WATCH-STANDING RECORD (Page 16 of 18)

DOCUMENTATION OF ON-SHIFT HOURS FOR ACTIVE LICENSE MAINTENANCE/REACTIVATION OF A LICENSE

NAME OF LICENSEE RCO A

CALENDAR QUARTER: (Circle one)

1st

2nd

3rd

4th

Shift	Date	Position	Hours		
1	02/01/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
2	02/02/17	B RCO	9		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input type="checkbox"/> Completed off-going shift turnover				
3	02/03/17	D RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
4	02/14/17	B RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
5	03/02/17	Extra RCO	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				



JOB PERFORMANCE MEASURE

JPM
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LICENSE WATCH-STANDING RECORD (Page 17 of 18)

DOCUMENTATION OF ON-SHIFT HOURS FOR ACTIVE LICENSE MAINTENANCE/REACTIVATION OF A LICENSE

NAME OF LICENSEE **SRO B**

CALENDAR QUARTER: (Circle one)

1st

2nd

3rd

4th

Shift	Date	Position	Hours		
1	01/01/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
2	01/02/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
3	01/03/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
4	01/05/17	US	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				
5	01/14/17	STA	12		
	Comments: ** <input checked="" type="checkbox"/> Completed on-coming shift turnover <input checked="" type="checkbox"/> Completed off-going shift turnover				



JOB PERFORMANCE MEASURE

JPM
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INITIATING CUES:

You are to review the provided License Watch Standing Records and determine if each of the RCO/SRO Licenses are **ACTIVE** or **INACTIVE** as of 0700 on April 1, 2017.

Circle your answer and provide justification below:

SRO A's License is **ACTIVE / INACTIVE**.

Justification; _____

RCO A's License is **ACTIVE / INACTIVE**.

Justification; _____

SRO B's License is **ACTIVE / INACTIVE**.

Justification; _____

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



ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM
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JPM TITLE: Develop an Equipment Clearance Order for the 1B Containment Spray Pump Cooler

JPM NUMBER: A-2R **REV.** 0

TASK NUMBER(S) / TASK TITLE(S): Develop an Equipment Clearance Order for the 1B Containment Spray Pump Cooler

K/A NUMBERS / K/A VALUES: (RO SRO) 2.2.41 Ability to obtain and interpret station electrical and mechanical drawings. RO 3.5

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

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

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

Simulator: ☐ Other: ☒

Lab: ☐

Time for Completion: 30 Minutes Time Critical: No

Alternate Path [NRC]: N/A

Alternate Path [INPO]: N/A

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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-2R; Develop an Equipment Clearance Order for the 1B
Containment Spray Pump Cooler**

JPM
Page 3 of 13

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:

- P&ID 8770-G-088 SH 1
- P&ID 8770-G-083 SH 2
- CWD 8770-B-326 SH 290
- OP-AA-101-1000, Clearance and Tagging
- 1-ADM-03.01A Unit 1 Power Distribution Breaker List
- Operations Policy OPS-406 Clearance Database Conventions

General References:

- None

Task Standards:

The applicant will determine the correct critical components to electrically de-energize, mechanically isolate and drain the 1B Containment Spray Pump and Cooler.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

Initial Conditions

- Unit 1 is at 100% power.
- The 1B Containment Spray Pump has developed a pump cooler leak.
- The pump cooler is to be removed from service to repair the leak.
- No other equipment is out of service. ESOMS is unavailable.

Initiating Cue

- The Clearance requests that the 1B Containment Spray Pump and Cooler be electrically and mechanically isolated with BOTH the Pump and the Cooler drained.
- On the attached matrix, develop an Equipment Clearance Order IAW OP-AA-101-1000, Clearance and Tagging, and OPS-406, Clearance Database Conventions, for the 1B Containment Spray Pump and Cooler that would facilitate repairing the cooler leak.
- Ensure tagged components are placed in the proper sequence.

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



**A-2R; Develop an Equipment Clearance Order for the 1B
Containment Spray Pump Cooler**

JPM
Page 6 of 13

JPM PERFORMANCE INFORMATION

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome. The following two pages document the expected outcome of the applicant's filled out matrix indicating the required ECO boundaries.

NOTE: Critical steps are annotated at each boundary on the matrix with an *. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

Component	Name	Position (Note 1)	Tag (type)
Control Room Control Switch for 1B Containment Spray Pump	1-CS-290	In Place	Info Tag
* @Breaker 1-20407	1B Containment Spray Pump	Racked Out Plus	Danger
* @V07130	1B Containment Spray Pump Discharge Valve	Locked Closed Plus	Danger
* V07135	Equalizer Valve for V07130	Closed Plus	Danger
* @V07124	1B Containment Spray Pump Suction Valve	Locked Closed Plus	Danger
* V07118	Equalizer Valve for V07124	Closed Plus	Danger
* V07262	Isolation Valve for Sodium Hydroxide Feed to Containment Spray Pump 1B Suction	Locked Closed Plus	Danger
* V07226 (Note 2)	Primary Isolation Valve for Containment Spray Pump 1B Recic.	Locked Closed Plus	Danger
* V07132 (Note 2)	Containment Spray Pump 1B Recic.	Locked Closed Plus	Danger
* V14292	Isolation for Containment Spray Pump 1B CCW inlet	Locked Closed Plus	Danger
* V14295	Isolation for Containment Spray Pump 1B CCW outlet	Locked Closed Plus	Danger
<p>@ only these steps must be listed in sequence given with breaker listed first.</p> <p>Note 1: Locked and the Plus device is NOT required or critical for position to meet Critical Steps</p> <p>Note 2: Either V07226 or V07132 may be used to meet the boundary.</p> <p>* Critical Step</p>			

	A-2R; Develop an Equipment Clearance Order for the 1B Containment Spray Pump Cooler	JPM Page 8 of 13
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Component	Name	Position	Tag (type)
Note 3: The following drains and vents may be opened and tagged ONLY after their associated system is isolated. ONLY ONE VENT and ONE DRAIN are needed to be opened to meet the critical step. As per Ops Policy 406, 'Vents and Drains do not require a danger tag. It is preferred, but not required'.			
V07123	Drain Valve on Containment Spray Pump 1B Suction	Open	Danger
V07128	Drain Valve on Containment Spray Pump 1B Discharge	Open	Danger
V07125	Root Valve for PX-07-2B Upstream of SS-07-1B	Open	Danger
V07126	PX-07-1B Dwnstrm Of SS-07-1B Root	Open	Danger
V14294	Root Valve for PX-14-19B CSP 1B CCW Outlet	Open	Danger
V14293	Root Valve for PX-14-19B CSP 1B CCW Inlet	Open	Danger

TASK IS COMPLETE

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

Stop Time: _____



**A-2R; Develop an Equipment Clearance Order for the 1B
Containment Spray Pump Cooler**

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

**APPLICANT CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

Initial Conditions

- Unit 1 is at 100% power.
- The 1B Containment Spray Pump has developed a pump cooler leak.
- The pump cooler is to be removed from service to repair the leak.
- No other equipment is out of service. ESOMS is unavailable.

Initiating Cue

- The Clearance requests that the 1B Containment Spray Pump and Cooler be electrically and mechanically isolated with BOTH the Pump and the Cooler drained.
- On the attached matrix, develop an Equipment Clearance Order IAW OP-AA-101-1000, Clearance and Tagging, and OPS-406, Clearance Database Conventions, for the 1B Containment Spray Pump and Cooler that would facilitate repairing the cooler leak.
- Ensure tagged components are placed in the proper sequence.

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

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Component	Name	Position	Tag (type)

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM TITLE: Develop an Equipment Clearance Order for the 1B Containment Spray Pump Cooler and Evaluate Technical Specifications

JPM NUMBER: A-2S **REV.** 0

TASK NUMBER(S) / TASK TITLE(S): Develop Equipment Clearance Orders
Evaluate Technical Specification Applicability

K/A NUMBERS / K/A VALUES: (RO SRO) 2.2.41 Ability to obtain and interpret station electrical and mechanical drawings. SRO 3.9

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

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

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

Simulator: ☐ Other: ☒

Lab: ☐

Time for Completion: 35 Minutes Time Critical: No

Alternate Path [NRC]: N/A

Alternate Path [INPO]: N/A

Developed by:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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 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



**A-2S; Develop an Equipment Clearance Order for the 1B
Containment Spray Pump Cooler and Evaluate Tech Specs**

JPM
Page 3 of 15

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:

- P&ID 8770-G-088 SH 1
- P&ID 8770-G-083 SH 2
- CWD 8770-B-326 SH 290
- OP-AA-101-1000, Clearance and Tagging
- 1-ADM-03.01A Unit 1 Power Distribution Breaker List
- Operations Policy OPS-406 Clearance Database Conventions
- Unit 1 Technical Specifications

General References:

- None

Task Standards:

The applicant will determine the correct critical components to electrically de-energize, mechanically isolate, and drain to remove the 1B Containment Spray Pump and Cooler from service. Additionally, the candidate will determine Technical Specification applicability.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

Initial Conditions

- Unit 1 is at 100% power.
- The 1B Containment Spray Pump has developed a pump cooler leak.
- The pump cooler is to be removed from service to repair the leak.
- No other equipment is out of service. ESOMS is unavailable.

Initiating Cue

- The Clearance requests that the 1B Containment Spray Pump and Cooler be electrically and mechanically isolated with BOTH the Pump and the Cooler drained.
- On the attached matrix, develop an Equipment Clearance Order IAW OP-AA-101-1000, Clearance and Tagging, and OPS-406, Clearance Database Conventions, for the 1B Containment Spray Pump and Cooler that would facilitate repairing the cooler leak.
- Ensure tagged components are placed in the proper sequence.

AND

- Determine all of the Technical Specification Required Actions for this Equipment Clearance Order.

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



A-2S; Develop an Equipment Clearance Order for the 1B Containment Spray Pump Cooler and Evaluate Tech Specs

JPM
Page 6 of 15

JPM PERFORMANCE INFORMATION

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome. The following two pages document the expected outcome of the applicant's filled out matrix indicating the required ECO boundaries and Tech Spec evaluation

NOTE: Critical steps are annotated at each ECO boundary and Tech Spec determination on the matrices with an *. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

Component	Name	Position (Note 1)	Tag (type)
Control Room Control Switch for 1B Containment Spray Pump	1-CS-290	In Place	Info Tag
* @Breaker 1-20407	1B Containment Spray Pump	Racked Out Plus	Danger
* @V07130	1B Containment Spray Pump Discharge Valve	Locked Closed Plus	Danger
* V07135	Equalizer Valve for V07130	Closed Plus	Danger
* @V07124	1B Containment Spray Pump Suction Valve	Locked Closed Plus	Danger
* V07118	Equalizer Valve for V07124	Closed Plus	Danger
* V07262	Isolation Valve for Sodium Hydroxide Feed to Containment Spray Pump 1B Suction	Locked Closed Plus	Danger
* V07226 (Note 2)	Primary Isolation Valve for Containment Spray Pump 1B Recic.	Locked Closed Plus	Danger
* V07132 (Note 2)	Containment Spray Pump 1B Recic.	Locked Closed Plus	Danger
* V14292	Isolation for Containment Spray Pump 1B CCW inlet	Locked Closed Plus	Danger
* V14295	Isolation for Containment Spray Pump 1B CCW outlet	Locked Closed Plus	Danger
<p>@ only these steps must be listed in sequence given with breaker listed first.</p> <p>Note 1: Locked and the Plus device is NOT required or critical for position to meet Critical Steps</p> <p>Note 2: Either V07226 or V07132 may be used to meet the boundary.</p> <p>* Critical Step</p>			

Component	Name	Position	Tag (type)
Note 3: The following drains and vents may be opened and tagged ONLY after their associated system is isolated. ONLY ONE VENT and ONE DRAIN are needed to be opened to meet the critical step. As per Ops Policy 406, 'Vents and Drains do not require a danger tag. It is preferred, but not required'.			
V07123	Drain Valve on Containment Spray Pump 1B Suction	Open	Danger
V07128	Drain Valve on Containment Spray Pump 1B Discharge	Open	Danger
V07125	Root Valve for PX-07-2B Upstream of SS-07-1B	Open	Danger
V07126	PX-07-1B Dwnstrm Of SS-07-1B Root	Open	Danger
V14294	Root Valve for PX-14-19B CSP 1B CCW Outlet	Open	Danger
V14293	Root Valve for PX-14-19B CSP 1B CCW Inlet	Open	Danger

Technical Specification Applicability

Limiting Condition for Operation(s)	Action Item(s) and Statement(s)
CRITICAL STEP 3.6.2.1	CRITICAL STEP <u>ACTION:</u> 1. a. With one containment spray train inoperable, restore the inoperable spray train to OPERABLE status within 72 hours; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 54 hours.
CRITICAL STEP 3.6.2.2 b.	CRITICAL STEP <u>ACTION:</u> With the spray additive system inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the spray additive system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY AND COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two containment spray trains and two containment cooling trains shall be OPERABLE.

APPLICABILITY: Containment Spray System: MODES 1, 2, and MODE 3 with Pressurizer Pressure > 1750 psia.

Containment Cooling System: MODES 1, 2, and 3.

ACTION:

1. Modes 1, 2, and 3 with Pressurizer Pressure ☐ 1750 psia:
 - a. **With one containment spray train inoperable, restore the inoperable spray train to OPERABLE status within 72 hours; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 54 hours.**
 - b. 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.
 - c. With one containment spray train and one containment cooling train inoperable, concurrently implement ACTIONS a. and b. The completion intervals for ACTION a. and ACTION b. shall be tracked separately for each train starting from the time each train was discovered inoperable.

NOTE

Action not applicable when second containment spray train intentionally made inoperable.

- d. With two containment spray trains inoperable, within 1 hour verify TS 3.7.7, "Control Room Emergency Ventilation System," is met, and restore at least one containment spray train to OPERABLE status within 24 hours; otherwise, be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.
- e. With two containment cooling trains inoperable, restore one cooling train to OPERABLE status within 72 hours; otherwise be in MODE 3 within the next 6 hours and in MODE 4 within the following 6 hours.
- f. With any combination of three or more trains inoperable, enter LCO 3.0.3 immediately.

CONTAINMENT SYSTEMS

SPRAY ADDITIVE SYSTEM

LIMITING CONDITION FOR OPERATION

- 3.6.2.2 The spray additive system shall be OPERABLE with:
- A spray additive tank containing a volume of between 4010 and 5000 gallons of between 28.5 and 30.5% by weight NaOH solution, and
 - Two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a containment spray system pump flow.

APPLICABILITY: MODES 1, 2 and 3.*

ACTION:

With the spray additive system inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the spray additive system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

TASK IS COMPLETE

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

Stop Time: _____



A-2S; Develop an Equipment Clearance Order for the 1B Containment Spray Pump Cooler and Evaluate Tech Specs

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

**APPLICANT CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

Initial Conditions

- Unit 1 is at 100% power.
- The 1B Containment Spray Pump has developed a pump cooler leak.
- The pump cooler is to be removed from service to repair the leak.
- No other equipment is out of service. ESOMS is unavailable.

Initiating Cue

- The Clearance requests that the 1B Containment Spray Pump and Cooler be electrically and mechanically isolated with BOTH the Pump and the Cooler drained.
- On the attached matrix, develop an Equipment Clearance Order IAW OP-AA-101-1000, Clearance and Tagging, and OPS-406, Clearance Database Conventions, for the 1B Containment Spray Pump and Cooler that would facilitate repairing the cooler leak.
- Ensure tagged components are placed in the proper sequence.

AND

- Determine all of the Technical Specification Required Actions for this Equipment Clearance Order.

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

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

Component	Name	Position	Tag (type)

Technical Specification Applicability

Limiting Condition for Operation(s)	Action Item(s) and Statement(s)



ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM
Page 1 of 14

JPM TITLE: CALCULATE FUEL POOL BORON CONCENTRATION UNIT 2

JPM NUMBER: A-3R **REV.** 0

TASK NUMBER(S) / 0700240
TASK TITLE(S): Calculate Boron Concentration Change

K/A NUMBERS / K/A 2.1.20 Ability to interpret and execute procedure steps.
VALUES: (RO SRO) RO 4.6

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

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]: N/A

Alternate Path [INPO]: N/A

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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"/>
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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-3R; Calculate Fuel Pool Boron Concentration Unit 2

JPM
Page 3 of 14

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-NOP-04.04, Fuel Pool Cooling And Purification System – Normal Operation, attachment 12
- Calculator

General References:

- None

Task Standards:

The applicant will:

- Enter provided data in the applicable procedure steps.
- Calculate data as directed in the procedure.
- Determine the final Fuel Pool Boron concentration
- Determine if Technical Specification acceptance criteria is met

This JPM is complete when the applicant returns the cue sheet, filled out surveillance procedure with calculations to the examiner.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 2 is at 100% power
- Annunciators LA-14 and LB-14 are “Locked-in”
- The SNPO reports the Spent Fuel Pool level is 59’4” and no leaks identified
- Fuel Pool Cb 1952 ppm
- Refueling Water Tank Cb 2050 ppm

INITIATING CUES:

- The Unit Supervisor has directed the Fuel Pool level be raised to 60’5” using Primary Water.
- You are directed to calculate expected final Fuel Pool Boron concentration by performing steps 1&2 of attachment 12 of 2-NOP-04.04, Fuel Pool Cooling and Purification System – Normal Operation and provided references;

AND

- Determine the maintenance of Technical Specification acceptance criteria for this evolution.

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

JPM PERFORMANCE INFORMATION

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the procedure, calculate all of the data and provide the completed outcome. The following seven pages indicate how the applicant's procedure should look when completed.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

<p>STEP 1: Attachment 12 step1.A</p> <p>STANDARD: Uses provided information from Cue Sheet</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: Attachment 12 step1.B</p> <p>STANDARD: Records SFP boron concentration of 1952 PPM</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3: Attachment 12 step1.C</p> <p>STANDARD: Records RWT boron concentration of 2050 PPM</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4: Attachment 12 step1.D</p> <p>STANDARD: Records C1 Current SFP boron concentration of 1952 PPM</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 5: Attachment 12 step1.E</p> <p>STANDARD: Records V1 Current SFP volume of 345417 gallons</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS: 351,505 gallons at 60 ft 0 inches. (Add 761 gallons per inch if greater than 60 ft 0 inches. Subtract 761 gallons per inch if less than 60 ft 0 inches.)</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 6: Attachment 12 step1.F</p> <p>STANDARD: Records C2 Makeup source boron concentration: 0 PPM</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS: Directions on Cue Sheet were to use Primary water.</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 7: Attachment 12 step1.F</p> <p>STANDARD: Performs calculation to determine volume of water to be added as follows. V2 - Volume of water to be added: 9893 gallons (13 inches of water to be added X 761 gallons per inch = 9893 gallons)</p> <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 8: Attachment 12 step 2</p> <p>STANDARD: Performs calculation to determine SFP final boron concentration as follows. CF= 1897.8 ppm (1896 – 1898 acceptable)</p> $1897 = \frac{\left(\frac{1952}{345417} \times 345417 \right) + \left(\frac{0}{9893} \times 9893 \right)}{\left(\frac{345417}{345417} + \frac{9893}{9893} \right)}$ <p>EXAMINER'S CUE: NONE.</p> <p>COMMENTS: Formula for calculation:</p> $CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

STEP 9.	Determine maintenance of Technical Specification acceptance criteria.	CRITICAL STEP
STANDARD:	Determine Spent Fuel Storage Pool, 3.9.11 b. "The fuel storage pool boron concentration greater than or equal to 1900 ppm," will not be maintained under the calculated conditions	_____ SAT
EXAMINER'S CUE:	NONE.	_____ UNSAT
COMMENTS:		

REFUELING OPERATIONS

3/4.9.11 SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

- 3.9.11 The Spent Fuel Pool shall be maintained with:
- The fuel storage pool water level greater than or equal to 23 ft over the top of irradiated fuel assemblies seated in the storage racks, and
 - The fuel storage pool boron concentration greater than or equal to 1900 ppm.**

STOP TIME: _____



A-3R; Calculate Fuel Pool Boron Concentration Unit 2

JPM
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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

**APPLICANT CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

- Unit 2 is at 100% power
- Annunciators LA-14 and LB-14 are “Locked-in”
- The SNPO reports the Spent Fuel Pool level is 59’4” and no leaks identified
- Fuel Pool Cb 1952 ppm
- Refueling Water Tank Cb 2050 ppm

INITIATING CUES:

- The Unit Supervisor has directed the Fuel Pool level be raised to 60’5” using Primary Water.
- You are directed to calculate expected final Fuel Pool Boron concentration by performing steps 1&2 of attachment 12 of 2-NOP-04.04, Fuel Pool Cooling and Purification System – Normal Operation and provided references;

AND

- Determine the maintenance of Technical Specification acceptance criteria for this evolution.

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

REVISION NO.:
25
PROCEDURE NO.:
2-NOP-04.04

PROCEDURE TITLE:
FUEL POOL COOLING AND PURIFICATION SYSTEM - NORMAL
OPERATION
ST. LUCIE UNIT 2

PAGE:
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ATTACHMENT 12 Calculating Spent Fuel Pool Boron Concentration (Page 1 of 3)

NOTES

- Adding water to the SFP is considered a reactivity manipulation and requires an independent calculation of the final boron concentration.
- This attachment should be used for normal makeup activities for SFP level greater than 59 ft 3 inches.
- Calculations may be performed by a shift qualified chemistry technician and a licensed operator OR by two licensed operators.
- SFP volume is 351,505 gallons at 60 feet 0 inch level.
- Spent Fuel Pool level is 761 gallons per inch.
- Calculate volume values to the nearest inch and boron values to the nearest PPM.

CAUTION

Filling the Spent Fuel Pool with either Primary Water or RWT when refueling is in progress, requires that the Spent Fuel Pool is maintained greater than minimum refueling boron concentration to ensure boron reactivity worth.

1. **RECORD** the following data:
 - A. **CONTACT** Chemistry or use the Unit 2 Daily Chemistry Report for SFP and RWT boron concentration values.

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PROCEDURE NO.: 2-NOP-04.04	ST. LUCIE UNIT 2	

ATTACHMENT 12
Calculating Spent Fuel Pool Boron Concentration
(Page 2 of 3)

- B. RECORD** SFP boron concentration: _____ PPM
- C. RECORD** RWT boron concentration: _____ PPM
- D. C1** - Current SFP boron concentration: _____ PPM
- E. V1** - Current SFP volume: _____ gallons
351,505 gallons at 60 ft 0 inches. (Add 761 gallons per inch if greater than 60 ft 0 inches. Subtract 761 gallons per inch if less than 60 ft 0 inches.)
- F. C2** - Makeup source boron concentration:
- IF using RWT: _____ PPM
 - IF using Primary Water: 0 PPM
- G. V2** - Volume of water to be added: _____ gallons
(_____ inches of water to be added X 761 gallons per inch = _____ gallons)

2. CALCULATE SFP final boron concentration using Equation 1:

Equation 1
SFP Final Boron Concentration

$$CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$$

$$CF = \frac{(\text{_____} \times \text{_____}) + (\text{_____} \times \text{_____})}{(\text{_____} + \text{_____})}$$

$$CF = \text{_____ PPM}$$

Performed By _____
Print/Sign _____ Date _____

REVISION NO.: 25	PROCEDURE TITLE: FUEL POOL COOLING AND PURIFICATION SYSTEM - NORMAL OPERATION	PAGE: 96 of 97
PROCEDURE NO.: 2-NOP-04.04	ST. LUCIE UNIT 2	

ATTACHMENT 12 Calculating Spent Fuel Pool Boron Concentration (Page 3 of 3)

3. **PERFORM** an independent calculation of SFP final boron concentration using Equation 2:

Equation 2
SFP Final Boron Concentration

$$CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$$

$$CF = \frac{(\underline{\hspace{1cm}} \times \underline{\hspace{1cm}}) + (\underline{\hspace{1cm}} \times \underline{\hspace{1cm}})}{(\underline{\hspace{1cm}} + \underline{\hspace{1cm}})}$$

$$CF = \underline{\hspace{1cm}} \text{ PPM}$$

Performed By _____
Print/Sign _____ Date _____

4. **VERIFY** the calculated SFP final boron concentration values in Attachment 12, Step 2 and Attachment 12, Step 3 are within 5 PPM.

Verified By _____
US Print/Sign _____ Date _____

5. **VERIFY** the calculated final boron concentration is within the administrative limits for the Unit 2 SFP per 0-COP-05.04, Chemistry Department Surveillances and Parameters OR Attachment 13, U2 SFP Boron Parameters including ISFSI Operations.

Verified By _____
US Print/Sign _____ Date _____



ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM
Page 1 of 29

JPM TITLE: CALCULATE FUEL POOL BORON CONCENTRATION UNIT 2

JPM NUMBER: A-3S **REV.** 0

TASK NUMBER(S) / 0700240
TASK TITLE(S): Calculate Boron Concentration Change

K/A NUMBERS / K/A 2.1.20 Ability to interpret and execute procedure steps.
VALUES: (RO SRO) SRO 4.6

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

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]: N/A

Alternate Path [INPO]: N/A

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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; Calculate Fuel Pool Boron Concentration Unit 2

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-NOP-04.04, Fuel Pool Cooling And Purification System – Normal Operation
- Calculator

General References:

- None

Task Standards:

The applicant will:

- Enter provided data in the applicable procedure steps.
- Calculate data as directed in the procedure.
- Determine the final Fuel Pool Boron concentration
- Determine all required actions

This JPM is complete when the applicant returns the cue sheet, filled out surveillance procedure with calculations to the examiner.

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

- Unit 2 is at 100% power
- The SNPO reports the Spent Fuel Pool level is 59'6"
- There are NO identified leaks
- Fuel Pool Cb 1990 ppm
- Refueling Water Tank Cb 2050 ppm

INITIATING CUES:

- You are the Unit Supervisor, using 2-NOP-04.04, Fuel Pool Cooling and Purification System – Normal Operation step 4.3 Filling the Spent Fuel Pool and provided references; determine if the SFP level can be raised to 60'5" using Primary Water
- State the reasoning for your conclusion and any additional actions (if required) for this condition

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

JPM PERFORMANCE INFORMATION

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the procedure, calculate all of the data and provide the completed outcome. The following seven pages indicate how the applicant's procedure should look when completed.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Start Time: _____

<p>STEP 1: Attachment 12 step1.A</p> <p>STANDARD: Uses provided information from Cue Sheet</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 2: Attachment 12 step1.B</p> <p>STANDARD: Records SFP boron concentration of 1990 PPM</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 3: Attachment 12 step1.C</p> <p>STANDARD: Records RWT boron concentration of 2050 PPM</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4: Attachment 12 step1.D</p> <p>STANDARD: Records C1 Current SFP boron concentration of 1990 PPM</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

<p>STEP 5: Attachment 12 step1.E</p> <p>STANDARD: Records V1 Current SFP volume of 346939 gallons</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS: 351,505 gallons at 60 ft 0 inches. (Add 761 gallons per inch if greater than 60 ft 0 inches. Subtract 761 gallons per inch if less than 60 ft 0 inches.)</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 6: Attachment 12 step1.F</p> <p>STANDARD: Records C2 Makeup source boron concentration: 0 PPM</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS: Directions on Cue Sheet were to use Primary water.</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 7: Attachment 12 step1.F</p> <p>STANDARD: Performs calculation to determine volume of water to be added as follows. V2 - Volume of water to be added: 8371 gallons (11 inches of water to be added X 761 gallons per inch = 8371 gallons)</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 8: Attachment 12 step 2</p> <p>STANDARD: Performs calculation to determine SFP final boron concentration as follows. CF= 1943 PPM (1942 – 1944 acceptable)</p> $1943 = \frac{\left(\underline{1990} \times \underline{346939} \right) + \left(\underline{0} \times \underline{8371} \right)}{\left(\underline{346939} + \underline{8371} \right)}$ <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS: Formula for calculation: $CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

<p>STEP 9: SRO evaluates boron concentration from Att. 12 and determines required actions</p> <p>STANDARD: States reasoning for your conclusion on cue sheet; Recognizes the SFP administrative boron concentration would be out of specification if this water addition were to be done.</p> <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10: SRO evaluates boron concentration from Att. 12 and determines required actions</p> <p>STANDARD: States additional actions required for this condition on cue sheet; Refers to 2-NOP-04.04 for alternate filling methods:</p> <ul style="list-style-type: none"> • Section 4.3 for filling the SFP via the RWT OR • Fills to a lower level using primary water <p>EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: _____

REVISION NO.: 25	PROCEDURE TITLE: FUEL POOL COOLING AND PURIFICATION SYSTEM - NORMAL OPERATION	PAGE: 95 of 97
PROCEDURE NO.: 2-NOP-04.04	ST. LUCIE UNIT 2	

ATTACHMENT 12
Calculating Spent Fuel Pool Boron Concentration
(Page 2 of 3)

B. RECORD SFP boron concentration: 1990 PPM

C. RECORD RWT boron concentration: 2050 PPM

D. C1 - Current SFP boron concentration: 1990 PPM

E. V1 - Current SFP volume: 346939 gallons

351,505 gallons at 60 ft 0 inches. (Add 761 gallons per inch if greater than 60 ft 0 inches. Subtract 761 gallons per inch if less than 60 ft 0 inches.)

F. C2 - Makeup source boron concentration:

- IF using RWT: PPM
- IF using Primary Water: 0 PPM

G. V2 - Volume of water to be added: 8371 gallons
(11 inches of water to be added X 761 gallons per inch
= 8371 gallons)

2. CALCULATE SFP final boron concentration using Equation 1:

Equation 1
SFP Final Boron Concentration

$$CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$$

$$CF = \frac{(1990 \times 346939) + (0 \times 8371)}{(346939 + 8371)}$$

$$CF = 1943 \text{ PPM}$$

Performed By _____

Print/Sign _____

Date _____



A-3S; Calculate Fuel Pool Boron Concentration Unit 2

JPM
Page 10 of 29

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

**APPLICANT CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)**

INITIAL CONDITIONS:

- Unit 2 is at 100% power
- The SNPO reports the Spent Fuel Pool level is 59'6"
- There are NO identified leaks
- Fuel Pool Cb 1990 ppm
- Refueling Water Tank Cb 2050 ppm

INITIATING CUES:

- You are the Unit Supervisor, using 2-NOP-04.04, Fuel Pool Cooling and Purification System – Normal Operation step 4.3 Filling the Spent Fuel Pool and provided references; determine if the SFP level can be raised to 60'5" using Primary Water
- State the reasoning for your conclusion and any additional actions (if required) for this condition

Reasoning for your conclusion: _____

Additional actions for this condition (if required): _____

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



ST. LUCIE UNIT 2
NORMAL OPERATING PROCEDURE
QUALITY RELATED
CONTINUOUS USE

Procedure No.

2-NOP-04.04

Revision No.

25

Title:

**FUEL POOL COOLING AND PURIFICATION SYSTEM - NORMAL
OPERATION**

Responsible Department: OPERATIONS

Special Considerations:

FOR INFORMATION ONLY

Before use, verify revision and change documentation
(if applicable) with a controlled index or document.

DATE VERIFIED _____ INITIAL _____

Revision

Approved By

Approval Date

0

M. Bladek

08/30/11

25

T. Spillman

08/24/17

UNIT #

UNIT 2

DATE

DOCT

DOCN

SYS

STATUS

REV

OF PGS

PROCEDURE

2-NOP-04.04

COMPLETED

25

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REVISION SUMMARY

Rev. No.	Description
25	Incorporated PCR 2207061 to provide clarification for SFP boron concentration above administrative limits. (Author: J. R. Guist)
24	Incorporated PCR 2176654. Added new Sections 4.7, 4.8, 4.9, and 4.10 for placing 2A and 2B Fuel Pool Heat Exchangers in service. (Author: J. Fiori)
23	Incorporated PCR 2161177. Created new Infrequent Operation Section 5.5, for adding boric acid directly to the Spent Fuel Pool. (Author: J. R. Guist)
22	Incorporated PCR 2117001 to add a precaution and note to appropriate sections of procedure concerning alignment of Fuel Pool Purification system to RWT during Mode 1 4. (Author: N. Davidson)
21	Incorporated PCR 2102394 to provide more specific guidance from Chemistry prior to placing the SFP IX in service if it is bypassed. (Author: J. R. Guist)
20	Incorporated PCR 2106300 to install a permanent placard on the Spent Fuel Handling Machine console instead of a caution tag to alert RE and RP supervisor to evaluate the potential for shine/streaming when moving irradiated fuel assemblies near the Bulkhead Gate when the Transfer Canal is empty. (Author: J. R. Guist)
19	Incorporated PCR 2110589 to update procedure number reference. (Author: N. Davidson)
18	Incorporated PCR 2069268 to change normal level control band to between 59.8 feet to 60.5 feet to avoid high and low level alarms. Incorporated PCR 2083119 to change Section 4.6 Steps 1 and 2 from pushbutton to handswitch. Incorporated PCR 2079990 to change Section 4.4 Step 6 from OPEN to Unlock and OPEN since V07189 is a locked valve. (Author: J. R. Guist)
17	Incorporated PCR 1863114 for AR 1846300. In Section 4.3 added new Step 3 to ensure Chemistry performs an independent verification of calculations when requesting a change in boron concentration and added new Step 8 to notify Chemistry to sample Spent Fuel Pool Boron concentration. (Author: J. R. Guist)
16	Incorporated PCR 1970084 per EC 279191. Added FLEX connection valve V04007 to Attachment 1. (Author: Eugene Cone)

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1.0 PURPOSE

This procedure provides the initial valve lineup and instructions for normal operation of the Fuel Pool Cooling and Purification System whenever spent fuel assemblies are being stored in the Spent Fuel Pool. This procedure also provides instructions for draining the Spent Fuel Transfer Canal.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Precautions

1. The Fuel Pool Purification system is non-safety related and non-seismically qualified. Therefore, whenever the Fuel Pool Purification system is aligned to the RWT in MODES 1-4, a dedicated operator shall be stationed at V07104, RWT TO FUEL POOL M/U, FILL & PURIF ISOL, and in constant communication with the control room.
2. The Purification Filter and the Ion Exchanger (IX) may be bypassed simultaneously with the permission of the SM / US.
3. Normally only one fuel pool heat exchanger will be in service. Both heat exchangers may be used if necessary to maintain fuel pool temperature.
4. Historically, the 2A Fuel Pool Heat Exchanger has been maintained in service and the 2B Fuel Pool Heat Exchanger has been isolated on the tube side and shell side.
 - A. If a fuel pool heat exchanger has been isolated for an extended period of time, the following should be done:
 - (1) Engineering should evaluate fuel pool heat exchanger tube integrity prior to placing in service.
 - (2) Chemistry should evaluate water quality prior to placing in service.
5. Fuel Pool Purification shall **NOT** be aligned to more than one source of water at the same time.
6. The purification filter should be in service whenever the Ion Exchanger (IX) is in service unless Chemistry and Radiation Protection give permission to place the IX in service without the filter.

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2.1 Precautions (continued)

7. A dedicated fuel pool level watch shall be maintained during level changes if the fuel pool level annunciation in the control room is out of service.
8. When the Fuel Pool Purification Pump is aligned to the RWT and RWT level is less than or equal to 20 feet, the Fuel Pool Purification Pump should be monitored for cavitation.
9. When refueling, fuel pool boron concentration shall be maintained greater than the required refueling boron concentration.
10. During Refueling operations, Spent Fuel Pool temperature limits and Fuel Pool Cooling Pump operation are controlled per 2-GOP-365, Refueling Sequencing Guidelines.
11. 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.
12. This procedure contains steps that could adversely affect local radiation levels when draining evolutions are performed. Radiation Protection shall be notified to provide coverage prior to draining evolutions and so that radiological consideration is given and appropriate briefings occur.
13. Any water from the RWT or Fuel Pool Cooling System that contacts the ground shall be evaluated for reportability based on tritium contamination guidelines. Refer to procedure LI-AA-102-1001, Regulatory Reporting.
14. Industry OE has shown a significant potential for overexposure due to radiation shine or streaming through the Bulkhead Gate when the Transfer Canal is empty and irradiated fuel is moved near the Bulkhead Gate. To minimize this potential, the Transfer Canal should be maintained full during normal Plant Operations. (Section 7.1.3, Management Directive 1)
15. All vent and drain rigs shall be installed and removed per ADM-09.09, Administrative Control of Drain and Vent Hoses.

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2.2 Limitations

1. Ion exchanger ΔP should **NOT** be allowed to exceed 15 psid.
2. Purification filter ΔP should **NOT** be allowed to exceed 30 psid.
3. Inlet temperature to the IX shall **NOT** exceed 130°F (operating) or 140°F (transient).
4. Fuel Pool temperature shall **NOT** be allowed to exceed 123°F. (Fuel Pool temperature alarm is 119°F).
(Section 7.1.3, Management Directive 3).

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~~3.0~~ **PREREQUISITES AND INITIAL CONDITIONS**

~~3.1~~ **Prerequisites**

- ~~1~~ **ENSURE** Component Cooling Water has been aligned to supply cooling water to the Fuel Pool Heat Exchanger per 2-NOP -14.01, Component Cooling Water System Initial Alignment. BFG
- ~~2~~ **ENSURE** the Refueling Water Tank (RWT) is available to supply makeup water at refueling boron concentration. BFG

NOTE

Bkr 2-42321, Fuel Pool Purification Pump, has an isolation device associated with the MCC breaker.

- ~~3~~ **ENSURE** the following breakers are CLOSED:
 - ~~•~~ Bkr 2-41501, Fuel Pool Pump 2A (MCC 2A8) BFG
 - ~~•~~ Bkr 2-42322, Fuel Pool Pump 2B (MCC 2B8) BFG
 - ~~•~~ Bkr 2-42321, Fuel Pool Purification Pump (MCC 2B8) BFG

~~3.2~~ **Initial Conditions**

None

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4.3 Filling the Spent Fuel Pool

NOTE

- Adding water to the SFP is considered a reactivity manipulation and requires an independent calculation of the SFP final boron concentration.
- A dedicated Fuel Pool Level watch shall be maintained during level changes if the Spent Fuel Pool level annunciation in the Control Room is out of service.
- To maintain the narrow Spent Fuel Pool boron concentration limits, this section provides the required control for using RWT or Primary Water as the makeup source. Deviation requires Chemistry management permission.
- If SFP boron concentration is greater than 2015 ppm, with Chemistry permission, the fuel pool should be filled using primary water
- The Unit 2 Daily Chemistry Report may be used for SFP and RWT boron concentration values unless more recent sample results are available.

CAUTION

When filling the Spent Fuel Pool with either Primary Water or RWT during refueling operations, the SFP boron concentration shall be maintained greater than the refueling boron concentration to ensure boron reactivity worth.

1. **PERFORM** calculation and independent verification of SFP boron concentration using Attachment 12, Calculating Spent Fuel Pool Boron Concentration
2. IF the calculated SFP final boron concentration from Attachment 12, Step 5, will place the SFP boron concentration outside administrative limits, THEN **STOP** until a calculation is within acceptable administrative limits, or ensure actions are in place to return SFP boron concentration to within limits.
3. If Chemistry requests a change in SFP boron concentration, THEN **ENSURE** the calculations have been independently verified.
4. IF using primary water as the makeup source through V15538, PMW TO HS 15 55 DRAIN, is desired, THEN **FILL** the Spent Fuel Pool with primary water as follows:

Chem

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4.3 Filling the Spent Fuel Pool (continued)

4. (continued)

- A. ENSURE** hose is connected to V15538, PMW TO HS-15-55 DRAIN, and positioned to fill the Spent Fuel Pool. (FHB/66/S-FH2/E-RAC, Spent Fuel Pool North Wall)
- B. ENSURE** hose is **NOT** in contact with the Spent Fuel Pool water.
- C. OPEN** V15538, PMW TO HS-15-55 DRAIN.
- D. RAISE** Spent Fuel Pool level to between 59 feet 8 inches and 60 feet 5 inches.
- E.** WHEN fill is complete, THEN **LOCK CLOSED** V15538, PMW TO HS-15-55 DRAIN.
- F. VERIFY** the following Control Room annunciators, are CLEAR:
 - LA-14, FUEL POOL TEMP HIGH / LEVEL HIGH/LOW
 - LB-14, FUEL POOL TEMP HIGH / LEVEL HIGH/LOW
- G. REMOVE** the hose from the pool, and **STORE** in its appropriate location.

5. IF using primary water as the makeup source through V15322, PMW HOSE CONN TO CASK STOR AREA ISOL, is desired, THEN **FILL** the Spent Fuel Pool with primary water as follows:

- A. ENSURE** hose is connected to V15322, PMW HOSE CONN TO CASK STOR AREA ISOL, and positioned to fill the Spent Fuel Pool. (FHB/66/S-FH2/E-RAC, Spent Fuel Pool North Wall)
- B. ENSURE** hose is **NOT** in contact with the Spent Fuel Pool water.
- C. OPEN** V15322, PMW HOSE CONN TO CASK STOR AREA ISOL.
- D. RAISE** Spent Fuel Pool level to between 59 feet 8 inches and 60 feet 5 inches.

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4.3 Filling the Spent Fuel Pool (continued)

5. (continued)

- E. WHEN fill is complete, THEN **CLOSE** V15322, PMW HOSE CONN TO CASK STOR AREA ISOL.
- F. **VERIFY** the following Control Room annunciators, are CLEAR:
 - LA-14, FUEL POOL TEMP HIGH / LEVEL HIGH/LOW
 - LB-14, FUEL POOL TEMP HIGH / LEVEL HIGH/LOW
- G. **REMOVE** the hose from the pool, and **STORE** in its appropriate location.

NOTE

The Fuel Pool Purification system is non-safety related and non-seismically qualified. Therefore, whenever the Fuel Pool Purification system is aligned to the RWT in MODES 1-4, a dedicated operator shall be stationed at V07104, RWT TO FUEL POOL M/U, FILL & PURIF ISOL, and in constant communication with the control room.

- 6. IF using the RWT as the makeup source, THEN **FILL** the Spent Fuel Pool from the RWT as follows:
 - A. IF in MODE 1-4, THEN **ENSURE** RWT level is greater than 33.1 feet. (Section 7.1.3, Management Directive 2)
 - B. **STOP** the Fuel Pool Purification Pump using the local handswitch. (FHB/24/N-FH7/E-RAC)
 - C. **CLOSE** V4220, FUEL POOL OUTLET TO PURIF PUMP ISOL. (Fuel Pool Purification Pump Room, FHB/18/S-FHS/E-RAC)
 - D. **CLOSE** V4201, FUEL POOL PURIF LOOP SKIMMER SUCT STOP. (FHB/18/S-FH6/E-RAC, Fuel Pool Purification Pump Room)
 - E. **OPEN** V07104, RWT TO FUEL POOL M/U, FILL & PURIF ISOL. (YD/20/N-603/E-1690, Northwest Side of RWT)

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4.3 Filling the Spent Fuel Pool (continued)

6. (continued)

- F. **ENSURE** V07101, FUEL POOL IX OUTLET TO RWT ISOL is LOCK CLOSED. (YD/23/N-604/E-1687, Northwest Side of RWT)
- G. **OPEN** V4252, FUEL POOL INLET FROM FUEL POOL PURIF IX ISOL. (Fuel Pool Purification Pump Room, FHB/18/S-FH6/E-RAC)
- H. **VERIFY** RWT level is greater than 20 feet on LIT-07-2A, RWT HIGH/LOW LEVEL. (RWT/21/N-16/W-27)
 - (1) IF RWT level is less than or equal to 20 feet or will lower to less than 20 feet, THEN **MONITOR** the Fuel Pool Purification Pump for cavitation.
- I. **START** the Fuel Pool Purification Pump.
- J. **RAISE** fuel pool level to normal level between 59 feet 8 inches to 60 feet 5 inches.
- K. WHEN normal level has been established THEN **PERFORM** the following:
 - (1) **STOP** the Fuel Pool Purification Pump.
 - (2) **LOCK CLOSED** V07104, RWT TO FUEL POOL M/U, FILL & PURIF ISOL. (Northwest Side of RWT)
- L. **VERIFY** the following Control Room annunciators, are CLEAR:
 - LA-14, FUEL POOL TEMP HIGH / LEVEL HIGH/LOW
 - LB-14, FUEL POOL TEMP HIGH / LEVEL HIGH/LOW
- M. **PERFORM** an independent verification for the following valves:
 - **VERIFY** V07104, RWT TO FUEL POOL M/U, FILL & PURIF ISOL is LOCKED CLOSED.

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4.3 Filling the Spent Fuel Pool (continued)

6. M. (continued)

- VERIFY** V07101, FUEL POOL IX OUTLET TO RWT ISOL is LOCKED CLOSED.

IV

7. PERFORM one of the following as directed by the US:

- ALIGN** the Fuel Pool Purification System to the Spent Fuel Pool per Section 4.14, Placing Fuel Pool Purification in Service to the Spent Fuel Pool.
- ALIGN** the Fuel Pool Purification System to the RWT per Section 4.13, Placing Fuel Pool Purification in Service to the RWT.

8. NOTIFY Chemistry to sample Spent Fuel Pool for boron concentration.

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ATTACHMENT 12

Calculating Spent Fuel Pool Boron Concentration

(Page 1 of 3)

NOTES

- Adding water to the SFP is considered a reactivity manipulation and requires an independent calculation of the final boron concentration.
- This attachment should be used for normal makeup activities for SFP level greater than 59 ft 3 inches.
- Calculations may be performed by a shift qualified chemistry technician and a licensed operator OR by two licensed operators.
- SFP volume is 351,505 gallons at 60 feet 0 inch level.
- Spent Fuel Pool level is 761 gallons per inch.
- Calculate volume values to the nearest inch and boron values to the nearest PPM.

CAUTION

Filling the Spent Fuel Pool with either Primary Water or RWT when refueling is in progress, requires that the Spent Fuel Pool is maintained greater than minimum refueling boron concentration to ensure boron reactivity worth.

1. **RECORD** the following data:
 - A. **CONTACT** Chemistry or use the Unit 2 Daily Chemistry Report for SFP and RWT boron concentration values.

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ATTACHMENT 12
Calculating Spent Fuel Pool Boron Concentration
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B. RECORD SFP boron concentration: _____ PPM

C. RECORD RWT boron concentration: _____ PPM

D. C1 - Current SFP boron concentration: _____ PPM

E. V1 - Current SFP volume: _____ gallons

351,505 gallons at 60 ft 0 inches. (Add 761 gallons per inch if greater than 60 ft 0 inches. Subtract 761 gallons per inch if less than 60 ft 0 inches.)

F. C2 - Makeup source boron concentration:

- IF using RWT: _____ PPM
- IF using Primary Water: 0 PPM

G. V2 - Volume of water to be added: _____ gallons
(_____ inches of water to be added X 761 gallons per inch
= _____ gallons)

2. CALCULATE SFP final boron concentration using Equation 1:

Equation 1
SFP Final Boron Concentration

$$CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$$

$$CF = \frac{(\text{_____} \times \text{_____}) + (\text{_____} \times \text{_____})}{(\text{_____} + \text{_____})}$$

CF = _____ PPM

Performed By _____
Print/Sign _____ Date _____

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ATTACHMENT 12
Calculating Spent Fuel Pool Boron Concentration
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3. **PERFORM** an independent calculation of SFP final boron concentration using Equation 2:

Equation 2
SFP Final Boron Concentration

$$CF = \frac{(C1 \times V1) + (C2 \times V2)}{(V1 + V2)}$$

$$CF = \frac{(\text{ } \times \text{ }) + (\text{ } \times \text{ })}{(\text{ } + \text{ })}$$

CF = _____ PPM

Performed By _____
Print/Sign _____ Date _____

4. **VERIFY** the calculated SFP final boron concentration values in Attachment 12, Step 2 and Attachment 12, Step 3 are within 5 PPM.

Verified By _____
US Print/Sign _____ Date _____

5. **VERIFY** the calculated final boron concentration is within the administrative limits for the Unit 2 SFP per 0-COP-05.04, Chemistry Department Surveillances and Parameters OR Attachment 13, U2 SFP Boron Parameters including ISFSI Operations.

Verified By _____
US Print/Sign _____ Date _____

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ATTACHMENT 13 U2 SFP Boron Parameters including ISFSI Operations (Page 1 of 1)

NOTE

The following Chemistry parameters are taken from 0-COP-05.04, Chemistry Department Surveillances and Parameters.

SPENT FUEL POOL

(MODES 1, 2, 3, 4, 5, 6)

(ISFSI Loading and Unloading Operations)

Chemistry Parameters

Control Parameter	Tech ¹ Spec	Limit	Admin Limit	Maximum Value
Boron, ppm	Unit 2 (3.9.11)	≥ 1900	1950-2050	2150 ²
SFP Boron	NUHOMS 3.2	>2000 ³	2050-2150	2150

1. Refer to the Technical Specifications for Applicability, Action(s) and Surveillance requirements.
2. UFSAR Table 9.1-4, Design Limit.
3. Applicable to Dry Shielded Canisters (DSC) with Type C Basket, loading with an initial fuel enrichment less than 4.5 weight percent U-235

Justification for Boron Values

Boron - This parameter is based on maintaining the fuel pool boron concentration in a range consistent with the assumptions of the Spent Fuel Pool Criticality Analysis and the Fuel Pool Boron Dilution Analysis. With respect to SFP boron concentration for DSC loading / unloading operations, the minimum SFP boron concentration is established because the SFP is the reservoir for DSC water and makeup. The minimum administrative limit is established 50 ppm above the minimum NUHOMS 3.2 TS limit; providing reasonable margin for analysis sensitivity and the low potential for SFP dilution during cask loading and unloading operations.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM TITLE: Evaluate Radiation Survey Map

JPM NUMBER: A-4R

REV. 0

TASK NUMBER(S) / TASK TITLE(S): 07203410 / Monitor personnel radiation exposure

K/A NUMBERS / K/A VALUES: (RO SRO) 2.3.7; Ability to comply with radiation work permit requirements during normal and abnormal conditions.
RO 3.5

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

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:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	Training Program Owner	Date

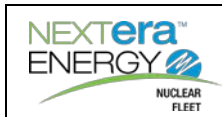
JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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-4R; Evaluate Radiation Survey Map

JPM
Page 3 of 13

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:

- HPP-30, Personnel Monitoring
- RP-AA-101, Personnel Monitoring Program
- RP-AA-100-1002, Radiation Worker Instruction and Responsibilities
- Survey Map
- Calculator

General References:

- None

Task Standards:

The applicant will calculate the stay time for the area of the work, indicate the path of travel that would result in the lowest dose, and indicate the area that would be utilized if the worker needed to wait that would result in the lowest dose.

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:

- A worker has a RWP Dose Limit of 5 mRem and will be at Location A to repair a valve.

INITIATING CUES:

Using the provided survey map you are to:

1. Determine the maximum stay time for the worker at location A _____. (Not including transit time)
2. Draw (on the survey map) the appropriate route the worker will take to gain access to the valve.
3. Circle the appropriate area the worker would use if minor delays are encountered during the performance of the work.

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

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: 1 Critical Y	1. Determine the Stay Time for location A. Step is critical to determine stay time for pre-job brief
Standard:	The applicant determines the Stay Time for location A is 2 hours using the provided survey map showing general area is 2.5 mRem
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

2. Draw (on the survey map) the appropriate route the worker will take to gain access to the valve.

Step is critical to determine the route to the work location that will result in the least amount of dose to the worker.

[illegible]

SATISFACTORY _____ **UNSATISFACTORY** _____



A-4R; Evaluate Radiation Survey Map

JPM
Page 9 of 13

Examinee: _____

Evaluator: _____

☐ RO

Date: _____

☐ LOIT RO

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:**

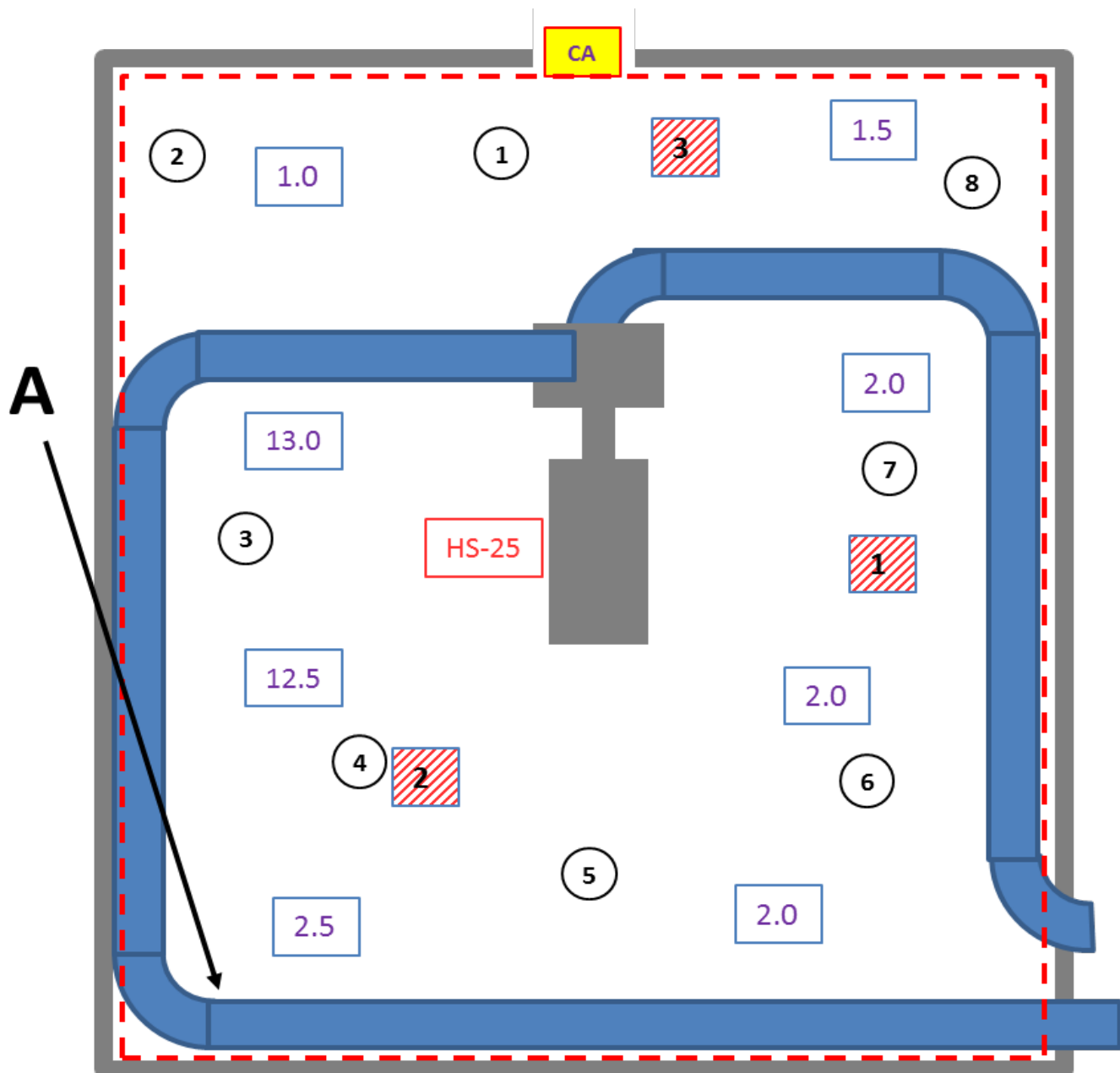
- A worker has a RWP Dose Limit of 5 mRem and will be at Location A to repair a valve.

INITIATING CUES:

Using the provided survey map you are to:

1. Determine the maximum stay time for the worker at location A _____. (Not including transit time)
2. Draw (on the survey map) the appropriate route the worker will take to gain access to the valve.
3. Circle the appropriate area the worker would use if minor delays are encountered during the performance of the work.

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



Comments: Surveyor Dose = 0.3 mRem (All 3 Pumps) Frisker BKG = ~60 cpm Tennelec Alpha MDA = 12.59 dpm Tennelec Beta MDA = 25.32 dpm No Discrete/Hot Particles were detected Survey PSL-M-20170611-4 used as Template		Summary of Highest Readings (All available values may not be listed)	
		Smears 10) <1000 DPM/100 cm ² β/γ 7) <MDA DPM/100 cm ² α	Air Samples & Wipes Wipe 1) <10,000 DPM SAM Wipe 1) <1000 DPM / Probe β/γ
Type: ROUTINE Symbol Legend (for example only) Dose Rate *150 ← Contact Reading +75 ← 30 cm Reading 20 ← General Area 15 Smear 15 Air Sample 15 RM 15 Wipe HS-50 Hot Spot PCA Posting Drip Bag		RWP #: 17-0002 Reactor Power = 100%	
Unless otherwise noted, dose rates in mrem/hr.			
Lead Surveyor: Green, Tammy Location Code: U2 RAB		Status: Approved by: Bldg/Area Name: -0.5'	

Image File: HPS-207B

Data Point Details						
Survey #: PSL-M-20170625-4						
Map: 1 - HPS-207A						
#	Type	Inst.	Value	Units	Position	Notes
DR	Y	N/A	1.0	mrem/hr		
DR	Y	N/A	1.5	mrem/hr		
DR	Y	N/A	13.0	mrem/hr		
DR	Y	N/A	12.5	mrem/hr		
DR	Y	N/A	2.5	mrem/hr		
DR	Y	N/A	2.0	mrem/hr		
DR	Y	N/A	2.0	mrem/hr		
DR	Y	N/A	2.0	mrem/hr		
1	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
2	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
3	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
4	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
5	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
6	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
7	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
8	Smear	3	β/γ <MDA	DPM/100 cm ²		
		3	α <MDA	DPM/100 cm ²		
1	Wipe		β/γ <1000	DPM/Probe		
			Sam Passed	DPM		
2	Wipe		β/γ <1000	DPM/Probe		
			Sam Passed	DPM		
3	Wipe		β/γ <1000	DPM/Probe		
			Sam Passed	DPM		
	Posting		CA			
	Posting		HS-25	mrem/hr		
	Posting					
	Posting					

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM TITLE: Calculate the Maximum Permissible Stay Time within Emergency Dose Limits

JPM NUMBER: A-4S **REV. 0**

TASK NUMBER(S) / TASK TITLE(S): 07203410 / Monitor personnel radiation exposure

K/A NUMBERS / K/A VALUES: (RO SRO) 2.3.4; Knowledge of radiation exposure limits under normal and emergency conditions.
SRO 3.7

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

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

Developed by:	<u>JAMES MANN</u>	<u>10/24/17</u>
	Instructor/Developer	Date
Reviewed by:	<u>J.D.CARPENTER</u>	<u>11/01/17</u>
	Instructor (Instructional Review)	Date
Validated by:	<u>J.D. CARPENTER</u>	<u>11/08/17</u>
	SME (Technical Review)	Date
Approved by:	<u>BRAD HINZE</u>	<u>11/10/17</u>
	Training Supervision	Date
Approved by:	<u>TERRY BENTON</u>	<u>11/08/17</u>
	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-4S; Calculate the Maximum Permissible Stay Time within
Emergency Dose Limits**

JPM
Page 3 of 10

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:

- EPIP-06, Activation And Operation Of The Emergency Operations Facility St. Lucie Plant
- HPP-30, Personnel Monitoring
- RP-AA-101, Personnel Monitoring Program

General References:

- None

Task Standards:

This applicant will correctly calculate a workers dose for multiple tasks required during an emergency and determine if they can be performed without exceeding the dose limits.

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:

- A SITE AREA EMERGENCY has been declared on Unit 1.
- 1A LPSI pump was secured due to cavitation and must be vented and started to prevent escalation of the event.
- The TSC has also requested that the 1B LPSI pump be vented at the casing vent after restoring 1A LPSI pump, suggests using the same Repair Team. (The 1B LPSI pump amps are oscillating periodically, indicating possible air intrusion.)
- The tasks are listed in the table below, and estimated times (dose received in transit is negligible) and dose rates have been provided.
- Each Task must be performed in the order listed.
- You have been selected to perform the task.

INITIATING CUES:

The Emergency Coordinator (EC) directs you to perform the following with the information provided:

1. Calculate the expected dose for tasks 1 through 3 and document the results in the TABLE.

Task #	Location/Task Description	Time allowed / req'd (minutes)	Dose Rate (R/hr)	Expected Dose
1	Close V3204 1A LPSI PUMP RECIRC TO RWT	10	6	
2	Locally verify 1A LPSI Pump Suction Isolation valve V3444 is CLOSED.	5	18	
3	(RAB/-6/N-RA2/W-RAH) / VENT LPSI Pump 1A through V3670, 1A LPSI PUMP CASING VENT.	36	10	
4	(RAB/-6/N-RA2/W-RAH) / VENT LPSI Pump 1B through V3674, 1B LPSI PUMP CASING VENT.		5	

2. Answer the following:

- Can you perform Tasks #1 through #3 without exceeding the emergency dose limit?
(Circle one)
YES / NO
- IF YES, then enter the permitted stay time for the team to perform Task #4. _____
- IF NO, then state the highest sequential task # that can be performed, if any. _____

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

JPM PERFORMANCE INFORMATION


Start Time: _____

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: 1 Critical step	1. Applicant calculates the EXPECTED DOSE for Tasks #1 through #3. Step is critical to determine total expected dose
Standard:	Applicant determines the following: EXPECTED DOSE for TASK # 1 (10 minutes/60 minutes/hour) x 6 R/hr = 1.0 R EXPECTED DOSE for TASK #2 (5 minutes/60 minutes/hr) x 18 R/hr = 1.5 R EXPECTED DOSE for TASK #3 (36 minutes/60 minutes/hr) x 10 R/hr = 6 R TOTAL EXPECTED DOSE for TASKS #1, #2 and #3 is 8.5 R
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 2 Critical Step	2. Applicant answers the question "Can you perform Tasks #1 through #3 without exceeding the equipment protection emergency dose limit?" Step is critical in determining emergency dose limit not exceeded
Standard:	Applicant circles YES on the APPLICANT CUE SHEET.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

	A-4S; Calculate the Maximum Permissible Stay Time within Emergency Dose Limits	JPM Page 7 of 10
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Performance Step: 3 Critical Step	3. Applicant determines stay time limit for Task #4 must be less than or equal to 18 minutes. Step is critical to ensure emergency dose limit not exceeded
Standard:	Applicant subtracts 8.5 R from the limit of 10 R and determines the remaining dose to be 1.5 R. Applicant divides 1.5 R by 5 R/hr (the expected dose for Task #4) and determines the stay time to be 0.3 hrs. Applicant multiplies 0.3 hr x 60 minutes/hr and determines a maximum stay time of 18 minutes for Task #4. Applicant enters 18 minutes for permitted stay time for Task #4 .
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

END OF TASK

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

Stop Time: _____



**A-4S; Calculate the Maximum Permissible Stay Time within
Emergency Dose Limits**

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

INITIAL CONDITIONS:

- A SITE AREA EMERGENCY has been declared on Unit 1.
- 1A LPSI pump was secured due to cavitation and must be vented and started to prevent escalation of the event.
- The TSC has also requested that the 1B LPSI pump be vented at the casing vent after restoring 1A LPSI pump, suggests using the same Repair Team. (The 1B LPSI pump amps are oscillating periodically, indicating possible air intrusion.)
- The tasks are listed in the table below, and estimated times (dose received in transit is negligible) and dose rates have been provided.
- Each Task must be performed in the order listed.
- You have been selected to perform the task.

INITIATING CUES:

The Emergency Coordinator (EC) directs you to perform the following with the information provided:

1. Calculate the expected dose for tasks 1 through 3 and document the results in the TABLE.

Task #	Location/Task Description	Time allowed / req'd (minutes)	Dose Rate (R/hr)	Expected Dose
1	Close V3204 1A LPSI PUMP RECIRC TO RWT	10	6	
2	Locally verify 1A LPSI Pump Suction Isolation valve V3444 is CLOSED.	5	18	
3	(RAB/-6/N-RA2/W-RAH) / VENT LPSI Pump 1A through V3670, 1A LPSI PUMP CASING VENT.	36	10	
4	(RAB/-6/N-RA2/W-RAH) / VENT LPSI Pump 1B through V3674, 1B LPSI PUMP CASING VENT.		5	

2. Answer the following:

- Can you perform Tasks #1 through #3 without exceeding the emergency dose limit?
(Circle one)
YES / NO
- IF YES, then enter the permitted stay time for the team to perform Task #4. _____
- IF NO, then state the highest sequential task # that can be performed, if any. _____

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

JPM TITLE: Make Emergency Classification, Complete the Notification Form, and Determine Protective Action Recommendations

JPM NUMBER: A-5S **REV. 0**

TASK NUMBER(S) / TASK TITLE(S): Implement Protective Action Recommendations

K/A NUMBERS / K/A VALUES: (RO SRO) 2.2.44; Knowledge of emergency plan protective action recommendations.
SRO 4.4

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

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

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

Simulator: ☐ Other: ☒

Lab: ☐

Time for Completion: 30 Minutes Time Critical: YES

Alternate Path [NRC]: N/A

Alternate Path [INPO]: N/A

Developed by:	JAMES MANN	10/24/17
	Instructor/Developer	Date
Reviewed by:	J.D.CARPENTER	11/01/17
	Instructor (Instructional Review)	Date
Validated by:	J.D. CARPENTER	11/08/17
	SME (Technical Review)	Date
Approved by:	BRAD HINZE	11/10/17
	Training Supervision	Date
Approved by:	TERRY BENTON	11/08/17
	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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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:

- EPIP-01, "Classification of Emergencies"
- HOT and COLD EMERGENCY ACTION LEVEL CLASSIFICATION TABLES
- EPIP-08, "Off-Site Notifications and Protective Action Recommendations"

General References:

None

Task Standards:

Using EPIP-01, "Classification of Emergencies," EPIP-08, "Off-Site Notifications and Protective Action Recommendations," and the plant parameters given, the applicant will:

- Correctly determine the Emergency Action Level within 15 minutes.
- The applicant will also complete and approve the Florida Nuclear Plant Emergency Notification Form, including Protective Action Recommendations within the next 15 minutes.



A-5S; Make Emergency Classification, Complete the Notification Form, and Determine Protective Action Recommendations

JPM
Page 5 of 10

DIRECTION TO APPLICANT:

I will explain the initial conditions and state the task to be performed. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the cue sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 is experiencing a Large Break LOCA.
2. Protestors are demonstrating at the site boundary.
3. Plant conditions are as follows:
 - a. Rep CET temperature is 1560°F
 - b. RCS pressure is 250 psia
 - c. Containment Pressure reached 45 psig before rapidly lowering
 - d. Wind direction is from 15°
4. No Dose calculations have been performed.


INITIATING CUES:

You are the Emergency Coordinator (EC), complete the following:

- Determine the Emergency Action Level.
- Complete the Florida Nuclear Plant Emergency Notification Form.

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

****This JPM is TIME CRITICAL****

	A-5S; Make Emergency Classification, Complete the Notification Form, and Determine Protective Action Recommendations	JPM Page 6 of 10
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JPM PERFORMANCE INFORMATION

NOTE: Evaluator Cues are not provided to the applicant during the performance of this Administrative JPM. All information is provided to implement the task and provide the completed outcome.

NOTE: Critical steps are annotated. Failure to meet the standard for any critical step shall result in failure of this JPM.

<p>START TIME: _____</p> <p>STEP 1: Applicant evaluates the given conditions and determines the event classification within 15 minutes.</p> <p>STANDARD: Applicant determines the following: Conditions indicate a <u>General Emergency, FG1 under the Fission Product Barrier Table</u>.</p> <p>STOP TIME: _____</p> <p>Classification determined within 15 minutes of Step 1 start time</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>
<p>START TIME: _____</p> <p>STEP 2: Applicant implements EPIP-08 to complete the Florida Nuclear Plant Emergency Notification Form. Complete the Protective Action Recommendations section and sign the approval block.</p> <p>STANDARD: Applicant uses Attachment 1 and 1A of EPIP-08 to complete the Notification Form. Applicant uses Attachment 2 of EPIP-08 to determine that <u>P-3 PAR will be issued Based on Plant Conditions</u>.</p> <p>NOTE: The cue states that “No Dose calculations have been performed” therefore the applicant must use PARs based on Plant Conditions.</p> <p>STOP TIME: _____</p> <p>Form is complete, including approval signature, within 15 minutes of Step 2 start time.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>___ SAT</p> <p>___ UNSAT</p>

A-5S KEY

REVISION NO.: <div style="text-align: center; font-weight: bold; font-size: 1.2em;">41</div>	PROCEDURE TITLE: <div style="font-weight: bold; font-size: 1.2em;">OFF-SITE NOTIFICATIONS AND PROTECTIVE ACTION RECOMMENDATIONS</div> <div style="font-weight: bold; font-size: 1.2em;">ST. LUCIE PLANT</div>	PAGE: <div style="font-size: 1.5em; font-weight: bold;">40 of 62</div>
PROCEDURE NO.: <div style="font-weight: bold; font-size: 1.2em;">EPIP-08</div>		

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: TODAY B.* Contact Time: Time of Contact with SWO C. Reported by: (Name) Applicant's Name

 D. Message Number: 1 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: Time of Declaration

6.* Reason for Emergency Declaration: A. ☒ EAL Number: F / G / 1 OR B. ☐ Description:

Alpha / Alpha / Numeric

7. Additional Information or Update: A. ☐ None OR B. ☐ Description:

8.* Weather Data: A. Wind direction from 15 degrees B. Downwind Sectors Affected: JKL

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:

	OR	<u>Evacuate Sectors</u>	<u>Shelter Sectors</u>	<u>Monitor & Prepare Sectors</u>
Evacuate Zones: <u>N/A</u>		<u>0 - 2</u> <u>ALL</u>	<u>NONE</u>	<u>NONE</u>
Shelter Zones: <u>N/A</u>		<u>2 - 5</u> <u>JKL</u>	<u>NONE</u>	<u>ALL REMAINING</u>
		<u>5 - 10</u> <u>NONE</u>	<u>JKL</u>	<u>ALL REMAINING</u>

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 _____

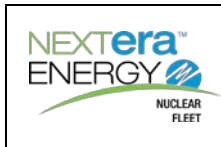
14. Additional Release Information: A. ☐ Not Applicable (Go to Item 15)

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: Applicant's Signature Date: TODAY Time: Time Completed

 Message Received By: Name: _____ Date: / / Time: _____

* Items are evaluated for NRC Performance Indicators (PI's)



A-5S; Make Emergency Classification, Complete the Notification Form, and Determine Protective Action Recommendations

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

INITIAL CONDITIONS:

1. Unit 1 is experiencing a Large Break LOCA.
2. Protestors are demonstrating at the site boundary.
3. Plant conditions are as follows:
 - a. Rep CET temperature is 1560°F
 - b. RCS pressure is 250 psia
 - c. Containment Pressure reached 45 psig before rapidly lowering
 - d. Wind direction is from 15°
4. No Dose calculations have been performed.

INITIATING CUES:

You are the Emergency Coordinator (EC), complete the following:

- Determine the Emergency Action Level.
- Complete the Florida Nuclear Plant Emergency Notification Form.

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

****This JPM is TIME CRITICAL****