FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

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

NRC S-1

Developed/Revised by: Larry Rich _____
Date

Training Management Approval: _____ _____
Date

JOB PERFORMANCE MEASURE

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

Alternate Path JPM? No

Facility JPM #: 0821158 (Modified for NRC exam)

K/A: A4.07 Ability to manually operate and/or monitor in the control room: ECCS pumps and valves

K/A Rating(s): 4.4 / 4.4

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the US is informed that 2B Hot and Cold leg injection is aligned.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
X				X		

References:

- 2-EOP-99, Appendix O, "Simultaneous Hot and Cold Leg Injection"

Validation Time: 15 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:

- None

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.

- None

Radiological Protection and RWP Requirements:

- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Align the 2B HPSI to Provide Hot and Cold Leg Injection – Unit 2
- The performance level to be used for this JPM is **Perform**
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

A loss of coolant accident has occurred 4.5 hours ago. Shutdown Cooling cannot 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.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

Section 2: Aligning 2B HPSI for Hot Leg Injection:	
STEP 1 (1) OPEN V3551, To Hot Leg 2B Valve. STANDARD: **POSITION** V3551 control switch to **OPEN**. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 2 (2) OPEN V3523, To Hot Leg 2B Valve. STANDARD: **POSITION** V3523 control switch to **OPEN.** **EXAMINERS NOTE: V3523 will not open** **EXAMINER'S NOTE: Candidate should perform alignment on 'A' side. If He/She performs this alignment without cuing or requesting permission, this is considered a 'Faulted Step'. If cuing needed, "faulted Step is N/A.** **EXAMINERS NOTE: Although not procedurally driven, Candidate should go back and close V3551, to Hot Leg 2B Valve** COMMENTS:	**FAULTED STEP** _____ SAT _____ UNSAT
Section 1: Aligning 2A HPSI for Hot Leg Injection	
STEP 3: (1) OPEN V3550, To Hot Leg 2A Valve. STANDARD: **POSITION** V3550 control switch to **OPEN**. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 4: (2) OPEN V3540, To Hot Leg Valve. STANDARD: **POSITION** V3540 control switch to **OPEN** **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 5: (3) CLOSE V3656, Pump 2A Discharge Valve. STANDARD: **POSITION** V3656 control switch to **CLOSE** **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 6: (4) VERIFY flow to the 2A Hot Leg is greater than or equal to 250 gpm on ANY of the following instruments: • FI-3315 HPSI to Hot Leg • FR-3317 HPSI to Hot leg 2A Flow STANDARD: **OBSERVE** FI-3315 or FR-3317 **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

STEP 7: (5) IF **ONE** HPSI Pump is running, THEN ENSURE flow to the Cold Legs is greater than or equal to 250 gpm by the **TOTAL** of all **FOUR** of the following instruments: • FI-3321 HPSI Loop 2A1 Flow • FI-3311 HPSI Loop 2A2 Flow • FI-3331 HPSI Loop 2B1 Flow • FI-3341 HPSI Loop 2B2 Flow STANDARD: **DETERMINE** that two HPSI Pumps are running and this step is N/A **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 8: (6) IF **TWO** HPSI Pump is 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: • FI-3321 HPSI Loop 2A1 Flow • FI-3311 HPSI Loop 2A2 Flow • FI-3331 HPSI Loop 2B1 Flow • FI-3341 HPSI Loop 2B2 Flow **OR** • FR-3313 / 3323 HPSI Loop 2A2 & 2A1 Flow • FR-3333 / 3343 HPSI Loop 2B2 & 2B1 Flow STANDARD: **OBSERVE** Flow instruments listed above EXAMINER'S CUE: COMMENTS:	_____ SAT _____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

STEP Done:	Notify the US that the 2A HPSI train is Aligned for simultaneous Hot and Cold Leg injection.	
STANDARD:	**NOTIFY** the US that simultaneous Hot and Cold Leg injection is **ALIGNED** to the 2A HPSI train.	_____ SAT
EXAMINER'S CUE:	US ACKNOWLEDGES.	_____ UNSAT
COMMENTS:		
	END OF TASK	

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC #80.
2. **UNFREEZE** and **RUN** the simulator for a few minutes.
3. **SELECT AND EXECUTE** S-1
4. **UNFREEZE** the Simulator when the student is ready.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

A loss of coolant accident has occurred 4.5 hours ago. Shutdown Cooling cannot 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.

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

PERFORM CONTROL ROOM ACTIONS FOR CONTROL ROOM INACCESSIBILITY - Unit 2

NRC S-2

Developed/Revised by: _____ _____

Training Management Approval: _____ _____
Signature on file Date

JOB PERFORMANCE MEASURE

Task: RESPOND TO CONTROL ROOM INACCESSIBILITY CONDITION

Faulted JPM? Yes

Facility JPM #: Modified 0821004

K/A: AK3.12 Required sequence of actions for emergency evacuation of control room

K/A Rating(s): 4.1 / 4.5

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when all required operator actions prior to Control Room evacuation have been performed, IAW 2-ONP-100.02.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
X				X		

References:
- 2-ONP-100.02, Control Room Inaccessibility

Validation Time: 6 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
- 2-ONP-100.02, Control Room Inaccessibility

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

  Perform the Operator Actions Prior to Control Room Evacuation – Unit 2

- The performance level to be used for this JPM is Perform
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

A fire broke out in RTGB 203. The US has implemented 2-ONP-100.02, Control Room Inaccessibility

INITIATING CUES:

You are the Board RCO. The US has directed you to perform the operator actions prior to Control Room evacuation IAW 2-ONP-100.02. There is NOT enough time to perform Standard Post-Trip Actions.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

2-ONP-100.02, Control Room Inaccessibility	
STEP 1 (6.1.1): Trip the reactor STANDARD: **DEPRESS** manual Reactor Trip pushbuttons at RTGB 204 or RTGB 201. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 2 (6.1.2.A): OBTAIN the following items: A. Security Grand Master keys (4) (Break glass in Control Room). STANDARD: **OBTAIN** four Security Grand Master keys from glass box in Control Room. **EXAMINER'S CUE:** **EVALUATOR'S NOTE: These keys are not in the Simulator. In the Control Room they are located in a red box next to the entrance door. (Ask the applicant where in the Control Room are these keys located).** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 3 (6.1.2.B): OBTAIN the following items: B. Hot Shutdown Control Panel Room (Key #1 in key locker). STANDARD: **OBTAIN** Key #1 from Control Room key box. **EXAMINER'S CUE:** **EVALUATOR'S NOTE: If in the Simulator, have the student hand the key to the evaluator after retrieving it from the key locker (to prevent it from inadvertently being removed from the Simulator).** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 4 (6.1.2.C): OBTAIN the following items: C. Hot Shutdown Control Panel Room key box (Key #2 in key locker). STANDARD: **OBTAIN** Key #2 from Control Room key box. **EXAMINER'S CUE:** **EVALUATOR'S NOTE: If in the Simulator, have the student hand the key to the evaluator after retrieving it from the key locker (to prevent it from inadvertently being removed from the Simulator).** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 5 (6.1.3): NOTIFY the SM to report to Unit 1 Control Room AND perform the following: **IMPLEMENT** the Emergency Plan IAW EPIP-01, Classification of Emergencies. **CONTACT** Security to have officer meet SNPO at U/2 EDG's with keys to access rooms. STANDARD: **NOTIFIES** SM to perform the above. **EXAMINER'S CUE: SM Acknowledges.** COMMENTS:	_____ SAT _____ UNSAT
STEP 6 (6.1.4): If time permits, Then PERFORM the following: • TRIP the turbine. STANDARD: **DEPRESS** the manual Turbine Trip pushbutton. **EXAMINER'S CUE:** **EXAMINERS NOTE:** Turbine is already tripped COMMENTS:	_____ SAT _____ UNSAT

STEP 7 (6.1.4): If time permits, Then PERFORM the following:
 	
• STOP Main Feedwater Pumps
  • 2A Main Feedwater Pump
  • 2B Main Feedwater Pump
 	
STANDARD: **POSITION** MFW Pump 2A & 2B control switches to **STOP**.
 	
EXAMINER'S CUE:
 	
COMMENTS:
	CRITICAL STEP
	
	_____ SAT
	
	_____ UNSAT

STEP 8 (6.1.4): If time permits, Then PERFORM the following:
 	
• CLOSE Main Feedwater Isolation Valves:
  • HCV-09-1A
  • HCV-09-1B
  • HCV-09-2A
  • HCV-09-2B
 	
STANDARD: **POSITION** HCV-09-1A, HCV-09-1B, HCV-09-2A, and HCV-09-2B to **CLOSE**.
 	
EXAMINER'S CUE:
 	
COMMENTS:
	CRITICAL STEP
	
	_____ SAT
	
	_____ UNSAT

STEP 9 (6.1.4): If time permits, Then PERFORM the following: • TRIP the RCPs. STANDARD: **POSITION** RCP control switches to **STOP**. **EXAMINER'S CUE:** **EVALUATOR'S NOTE: Candidate may choose to start oil lift pumps prior to tripping their respective RCPs.** **2B1 RCP does not trip from the Control Room.** COMMENTS:	**FAULTED STEP** _____ SAT _____ UNSAT

STEP 10 **RECOGNIZES** 2B1 RCP did not trip from the control room STANDARD: **OPENS** 2B1 6.9KV Feeder Breaker 2-30202 to de-energize the 2B1 6.9KV bus. **EXAMINER'S CUE:** **EVALUATOR'S NOTE:** If RO calls RCO 'B' to trip the 2B1 RCP breaker locally, wait one minute and report back 'I took the trip handle to trip and the breaker did not open'. COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 11 (6.1.4): If time permits, Then PERFORM the following:
 	
• CLOSE PORV Block Valves:
  • V1476
  • V1477
 	
STANDARD: **POSITION** the control switches for V1476 and V1477 to **CLOSE**.
 	
EXAMINER'S CUE:
 	
COMMENTS:
	CRITICAL STEP
	
	_____ SAT
	
	_____ UNSAT

STEP 12 (6.1.4): If time permits, Then PERFORM the following:
 	
• CLOSE letdown isolation valves:
  • V2515
  • V2516
  • V2522
 	
STANDARD: **POSITION** V2515, V2516, and V2522 to **CLOSE**.
 	
EXAMINER'S CUE:
 	
COMMENTS:
	CRITICAL STEP
	
	_____ SAT
	
	_____ UNSAT

STEP 13 (6.1.4): If time permits, Then PERFORM the following: • STOP **ALL** charging pumps and PLACE control switches in STOP STANDARD: **POSITION** all Charging Pump control switches to **STOP.** **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 14 (6.1.4): If time permits, Then PERFORM the following:
• CLOSE MSIVs:
  • HCV-08-1A
  • HCV-08-1B
STANDARD: **POSITION** control switches for HCV-08-1A and HCV-08-1B to **CLOSE**.
EXAMINER'S CUE:
COMMENTS:
	CRITICAL STEP
	_____ SAT
	_____ UNSAT

STEP 15 (6.1.4): If time permits, Then PERFORM the following:
• CLOSE S/G Blowdown isolation valves:
  • FCV-23-3
  • FCV-23-4
  • FCV-23-5
  • FCV-23-6
STANDARD: **POSITION** control switches for FCV-23-3, 4, 5, 6 to **CLOSE**.
EXAMINER'S CUE:
COMMENTS:
	CRITICAL STEP
	_____ SAT
	_____ UNSAT

STEP 16 (6.1.4): If time permits, Then PERFORM the following:
• CLOSE CCW to/from RCPs
  • HCV-14-1
  • HCV-14-2
  • HCV-14-6
  • HCV-14-7
STANDARD: **POSITION** control switches for HCV-14-1, 2, 6, 7 to **CLOSE**.
EXAMINER'S CUE:
COMMENTS:
	CRITICAL STEP
	_____ SAT
	_____ UNSAT

STEP 17 (6.1.4): If time permits, Then PERFORM the following: • PERFORM 2-EOP-1, Standard Post Trip Actions. STANDARD: **REMIND** US of intention to **NOT** perform Standard Post Trip Actions. **EXAMINER'S CUE: US Concurs.** COMMENTS:	_____ SAT _____ UNSAT
STEP 18 (6.1.5): ANNOUNCE the evacuation of the Control Room over the Gaitronics System. STANDARD: **ANNOUNCE** the evacuation of the Unit 2 Control Room. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

STEP 19 (6.1.6): OBTAIN portable radios for the following personnel: • RCO A • RCO B • US STANDARD: **OBTAIN** three radios. **EXAMINER'S CUE:** **EXAMINERS NOTE: There are no radios in the Simulator. Ask the applicant where the radios are located in the plant. (Located under the RCO desk in Unit 2)** COMMENTS:	_____ SAT _____ UNSAT
STEP 20 (6.1.7 done): EVACUATE **ALL** personnel from the Control Room. STANDARD: **ENSURE** all personnel are **EVACUATED** from the control room. **EXAMINER'S CUE: Inform the applicant the task is complete.** COMMENTS: **END OF TASK**	_____ SAT _____ UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-1.
2. **UNFREEZE** and **RUN** the simulator for a few minutes.
3. **SELECT AND EXECUTE** S-2
4. **FREEZE** simulator until student is ready.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

A fire broke out in RTGB 203. The US has implemented 2-ONP-100.02, Control Room Inaccessibility

INITIATING CUES:

You are the Board RCO. The US has directed you to perform the operator actions prior to Control Room evacuation IAW 2-ONP-100.02. There is NOT enough time to perform Standard Post-Trip Actions.

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

PERFORM CONTROL ROOM ACTIONS FOR LOSS OF SAFETY RELATED AC BUS - Unit 2

NRC S-3

(RO ONLY)

Developed/Revised by: L. Rich _____

Training Management Approval: Signature on file _____ Date

JOB PERFORMANCE MEASURE

Task: RESPOND TO LOSS OF SAFETY RELATED AC BUS

Faulted JPM? No

Facility JPM #: N/A

K/A: A4.01 Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard)

K/A Rating(s): 3.3 / 3.1

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the 2A5 480V LC has been re-energized.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
X				X		

References:
- 2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A

Validation Time: 15 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
- 2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

PERFORM CONTROL ROOM ACTIONS FOR LOSS OF SAFETY RELATED AC BUS

- The performance level to be used for this JPM is Perform
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 2 is operating at 100% power, steady state conditions when a loss of the 2A5 480V LC occurred.

INITIATING CUES:

You are the Desk RCO. The US has directed you to perform the Actions of 2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A.

START TIME: _____

2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A. General Actions	
CAUTION Various instruments and equipment normally used for assessment of critical safety functions may NOT be OPERABLE. All available indications should be used. STEP 1 (4.2.1.1): IF letdown was in service prior to the loss of power event, THEN **VERIFY** letdown flow. STANDARD: **DETERMINES** Letdown flow has been lost. **EXAMINER'S CUE:** **EXAMINERS NOTE:** Letdown valve V2515 closed on loss of Bus COMMENTS:	_____ SAT _____ UNSAT
STEP 2 (4.2.1.1.1): **SECURE** charging STANDARD: **STOPS** 2A charging pump **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT *Post exam Comment
STEP 3 (4.2.1.1.2): **ENSURE** Train A charging pump control switches are in STOP. STANDARD: **PLACES** 2A AND 2C charging pump control switches to in STOP. **EXAMINER'S CUE:** COMMENTS:	~~**CRITICAL STEP**~~ _____ SAT _____ UNSAT

& Post Exam Comment

STEP 4 (4.2.1.1.3): **ENSURE** the following valves are CLOSED: • V2515, STOP VALVE-IC • V2516, CONTAINMENT ISOL VALVE - IC • V2522, CONTAINMENT ISOL VALVE - OC STANDARD: **PLACES** V2515, V2516 and V2522 to the CLOSED position. **EXAMINER'S CUE:** COMMENTS:	~~CRITICAL~~ f **STEP** _____ SAT _____ UNSAT
STEP 5 (4.2.1.2): IF all of the following conditions exist: • Unit 2 is in MODE 3 through 6 • SIAS blocked THEN **VERIFY** at 15 minute intervals that SFSC criteria are met per Low Mode AOP for current plant conditions. STANDARD: **DETERMINES** step is N/A **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

STEP 6 (4.2.1.3): **VERIFY** Pressurizer level and pressure being maintained. STANDARD: **DETERMINES** Pressurizer pressure is slowly rising. **EXAMINER'S CUE:** **EXAMINERS NOTE:** Due to Pzr. Pressure transmitter failure additional heaters will energize causing pressure to rise. Applicant will need to turn off some heaters to maintain 2250 psia. COMMENTS:	_____ SAT _____ UNSAT
STEP 7 (4.2.1.4): **VERIFY** Tavg signal on DCS (SBCS Input Screen) is good. STANDARD: **MONITORS** DCS to determine IF HOLDING LAST GOOD VALUE RESET REQUIRED. Determines reset required. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 8 (4.2.1.4.1): **IF** HOLDING LAST GOOD VALUE RESET REQUIRED is displayed on screen above Tavg signal THEN **ENSURE** the following: **A.** REACTOR REG SYSTEMS control switch on RTGB-204 is positioned to CONT UNIT 2. **B.** Tave signal on DCS (SBCS) is RESET. STANDARD: **SWAPS** to RRS #2 and resets Tave signal on DCS panel. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 8 (4.2.1.5): **VERIFY** at least one of the following CEDM Cooling Fans operating: • HVE-21A • HVE-21B STANDARD: **DETERMINES** HVE-21B is running. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 9 (4.2.1.6): **VERIFY** at least one of the following Reactor Cavity Cooling Fans operating: • HVS-2A • HVS-2B STANDARD: **DETERMINES** NO Reactor Cavity Cooling fans are running. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 10 (4.2.1.6.1): **IMPLEMENT** applicable sections(s) of 2-AOP-25.01, Loss of RCB Cooling Fans. STANDARD: **IMPLEMENTS** 2-AOP-25.01, Loss of RCB Cooling Fans, section 4.2.3 Loss of Reactor Cavity Cooling Fan. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

2-AOP-25.01, Loss of RCB Cooling Fans.

STEP 11 (4.2.3.1): **START** HVS-2B

STANDARD: **STARTS** HVS-2B

EXAMINER'S CUE:

COMMENTS:

CRITICAL STEP

_____ SAT

_____ UNSAT

2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A.

STEP 12 (4.2.1.7): **VERIFY** at least one of the following Reactor Support Cooling Fans operating:

- HVE-3A
- HVE-3B

STANDARD: **DETERMINES** no Reactor Support Cooling Fans running

EXAMINER'S CUE:

COMMENTS:

_____ SAT

_____ UNSAT

2-AOP-25.01, Loss of RCB Cooling Fans.

STEP 13 (4.2.4.1): **START** standby Reactor Support Cooling Fan

- HVE-3B

STANDARD: **STARTS** HVE-3B

EXAMINER'S CUE:

COMMENTS:

CRITICAL STEP

_____ SAT

_____ UNSAT

2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A. STEP 14 (4.2.1.8): **VERIFY** at least three of the following containment fan coolers are in fast speed operation • HVS-1A • HVS-1B • HVS-1C • HVS-1D STANDARD: **DETERMINES** HVS-1A and HVC-1C are running. HVS-1B has no power. HVS-1D not running but available to start. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
2-AOP-25.01, Loss of RCB Cooling Fans. STEP 14 (4.2.5.1): **START** standby Containment Fan Cooler • HVS-1D STANDARD: **STARTS** HVS-1D in FAST speed. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A.	
STEP 15 (4.2.1.9): **WHEN** plant conditions have stabilized, THEN **REVIEW** Tech Specs for any required actions: STANDARD: **EXAMINER'S CUE:** Unit Supervisor will determine T.S. applicability. COMMENTS:	_____ SAT _____ UNSAT
STEP 16 (4.2.1.10): **GO TO** the applicable Section as listed below for the highest level electrical bus lost: STANDARD: **DETERMINES** Section 4.2.4 480V LC 2A5 **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 17 (4.2.4.1): **INVESTIGATE** cause of the bus deenergization. STANDARD: **CALLS** SNPO to investigate the cause of deenergization. **EXAMINER'S CUE: Respond as SNPO a worker accidently tripped the feeder breaker. As Unit Supervisor, attempt to close the tripped breaker.** COMMENTS:	_____ SAT _____ UNSAT

STEP 18 (4.2.4.2.A): **VERIFY** the following feeder breakers are CLOSED: STATION SERVICE 2A5 XFMR (2-20210) STANDARD: **DETERMINES** STATION SERVICE 2A5 XFMR (2-20210) is OPEN . **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 19 (4.2.4.2.A.1): **CLOSE** STATION SERVICE 2A5 XFMR (2-20210), one attempt only STANDARD: **CLOSES** STATION SERVICE 2A5 XFMR (2-20210). **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 20 (4.2.4.2.B): **VERIFY** the following feeder breakers are CLOSED: 480V BUS 2A5 FEEDER (2-40361) STANDARD: **DETERMINES** 480V BUS 2A5 FEEDER (2-40361) is OPEN . **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

STEP 21 (4.2.4.2.B.1): **CLOSE** 480V BUS 2A5 FEEDER (2-40361), one attempt only. STANDARD: **CLOSES** 480V BUS 2A5 FEEDER 2-40361 **EXAMINER'S CUE**: Another Operator will continue with the procedure. COMMENTS: **END OF TASK**	**CRITICAL STEP** _____ SAT _____ UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-1.
2. **ENSURE** Pressurizer pressure and level channels selected to 'Y'
3. **UNFREEZE** and **RUN** the simulator for a few minutes.
4. **SELECT** and **EXECUTE** S-3
5. **ENSURE** the following RCB fans running:

   HVE-21A

   HVS-2A

   HVE-3A

   HVS-1A, 1B, 1C
6. **FREEZE** simulator until student is ready.
7. **Have complete copy of 2-AOP-47.01A available for the applicant.**

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 2 is operating at 100% power, steady state conditions when a loss of the 2A5 480V LC occurred.

INITIATING CUES:

You are the Desk RCO. The US has directed you to perform the Actions of 2-AOP-47.01A, Loss of A Safety Related AC Bus – Train A.

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

VERIFY CONTAINMENT SPRAY ACTUATION
Unit 2

NRC S-4

Developed/Revised by: L. Rich _____

Training Management Approval: Signature on file _____ Date

JOB PERFORMANCE MEASURE

Task: VERIFY CONTAINMENT SPRAY ACTUATION

Faulted JPM? Yes

Facility JPM #: N/A

K/A: Ability to monitor automatic operation of the CSS, including:
A3.01 Pump starts and correct MOV positioning

K/A Rating(s): 4.3 / 4.5

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when Containment Spray verification is complete

Evaluation Location:				**Performance Level:**		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
X				X		

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

Validation Time: 7 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
- 2-EOP-99, Appendices / Figures / Tables / Data Sheets

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

VERIFY CONTAINMENT SPRAY ACTUATION

- The performance level to be used for this JPM is Perform
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 2 has entered 2-EOP-03, LOCA

INITIATING CUES:

You are the Desk RCO. The US has directed you to verify Containment Spray actuation in accordance with Table 3 of 2-EOP-99.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

2-EOP-99, Appendices / Figures / Tables / Data Sheets	
STEP 1: ENSURE Containment Spray Pumps Running • C.S. Pump 2A • C.S. Pump 2B STANDARD: **RECOGNIZE** C.S. Pump 2B is NOT running **EXAMINER'S CUE:** **EXAMINERS NOTE:** The 2B Hydrazine pump is interlocked to start on Containment Spray pump start, thus the 2B Hydrazine pump will not be running until the 2B C.S. has been started. COMMENTS:	**FAULTED STEP** _____ SAT _____ UNSAT
STEP 2: PLACES control switch for the 2B C.S Pump to START STANDARD: **PLACES** control switch for the 2B C.S Pump to START and verifies AMPS increase and then lower to normal values. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 4: ENSURE Containment Spray Header A/B Valves OPEN • FCV-07-1A • FCV-07-1B STANDARD: **RECOGNIZE** FCV-07-1A is mid position and FCV-07-1B indicates full open. **EXAMINER'S CUE:** COMMENTS:	**FAULTED STEP** _____ SAT _____ UNSAT
STEP 3: POSITIONS FCV-07-1A to **OPEN**. STANDARD: **POSITIONS** FCV-07-1A to OPEN and verifies FCV-07-1A full OPEN **EXAMINER'S CUE:** **EXAMINER'S NOTE:** FCV-07-1A will fully open when the control switch is taken to the open position. COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 4: VERIFY EACH operating Containment Spray Header is delivering greater than of equal to 2700 gpm. STANDARD: **MONITORS** FI-07-1A and FI-07-1B to determine flow **EXAMINER'S CUE:** **EXAMINER'S NOTE:** If applicant did not notice FCV-07-1A was not full open they should recognize less than 2700 gpm flow on the A header and take appropriate action to verify valve lineup. COMMENTS:	_____ SAT _____ UNSAT
STEP 4 : VERIFY Hydrazine Pumps RUNNING: • Hyd. Pump 2A • Hyd. Pump 2B STANDARD: **DETERMINES** 2A and 2B Hydrazine Pumps are operating **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

STEP 5 : VERIFY Hydrazine Pump Discharge Valves OPEN: • 1-SE-07-3A • 1-SE-07-3B STANDARD: **DETERMINES** 1-SE-07-3A and 1-SE-07-3B are OPEN **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 6: VERIFY Hydrazine flow on ANY of the following: FR-07-2-1 (Hydrazine Spray Flow) FR-07-2-2 (Hydrazine Spray Flow) STANDARD: **VERIFIES** adequate Hydrazine flow on FI-07-3A and FI-07-3B. **EXAMINER'S CUE:** COMMENTS: **END OF TASK**	_____ SAT _____ UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-81
2. **UNFREEZE** and **RUN** the simulator for a few minutes.
3. **SELECT** and **EXECUTE** lesson S-4
4. **FREEZE** simulator until student is ready.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 2 has entered 2-EOP-03, LOCA

INITIATING CUES:

You are the Desk RCO. The US has directed you to verify Containment Spray actuation in accordance with Table 3 of 2-EOP-99.

FPL

St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

ESTABLISH ALTERNATE CHARGING FLOWPATH TO RCS THROUGH 'A' HPSI HEADER - UNIT 2

NRC S5

Simulator

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Align Charging flow through 'A' HPSI header.

Faulted JPM? Yes

Facility JPM #: Modified from 0821115

K/A: A4.01 3.5 / 3.2

Ability to manually operate and/or monitor in the control room charging pump and flow controls.

Task Standard:

This JPM is complete when the US is notified that Charging flow has been established through the 'A' HPSI header using the 2C Charging pump IAW 2-EOP-99 Appendix T.

Evaluation Location:

Simulator	In Plant	Lab	Other
X			

Performance Level:

Perform	Simulate	Discuss
X		

References:
2-EOP-99, Appendix T, "Alternate Charging Flow Path to RCS Through 'A' HPSI Header"

Validation Time: 10 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
2-EOP-99, Appendix T, "Alternate Charging Flow Path to RCS Through 'A' HPSI Header"

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

Candidate: _____
Name

Start Time: _____ **Finish Time:** _____

Performance Rating: Sat _____ **Unsat** _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

  Establish Alternate Charging Flow Path through 'A' HPSI Header - Unit 2

- The performance level to be used for this JPM is **Perform**,
- This is not a time critical JPM.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 2 was tripped from 100% power due to a problem with the Feedwater Regulating System. The Crew has implemented 2-EOP-15, "Functional Recovery", due to a dual event. The SNPO reported a pipe break in the charging header between V2429 and V2523. The 2B Charging pump is out of service.

INITIATING CUES:

You are the RCO. The US has directed you to line up Charging flow through the 'A' HPSI header per 2-EOP-99, Appendix T, "Alternate Charging Flow Path to RCS Through 'A' HPSI Header."

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

2-EOP-99, Appendix T, "Alternate Charging Flow Path to RCS Through 'A' HPSI Header."	
STEP 1 (1) ENSURE letdown is ISOLATED. STANDARD: **VERIFY** all letdown Isolation Valves **CLOSED.** ***EXAMINER'S CUE:** **All letdown isolation valves closed, Green light ON, Red light OFF.** COMMENTS:	_____ SAT _____ UNSAT
STEP 2 (2) PLACE ALL Charging Pump in STOP. STANDARD: **VERIFY ALL** Charging Pump control switches to **STOP.** ***EXAMINER'S CUE:** **ALL charging Pumps are in STOP, Green light ON, Red light OFF.** COMMENTS:	_____ SAT _____ UNSAT
STEP 3:(3) PLACE 2A HPSI Pump in STOP. STANDARD: **POSITION** 2A HPSI Pump switch in **STOP.** ***EXAMINER'S CUE:** **2A HPSI pump switch in STOP, Green light ON, Red light OFF. Annunciator R-40 alarms.** **EXAMINER'S NOTE:** **Becomes Critical Step if SIAS occurs.** COMMENTS:	_____ SAT _____ UNSAT
STEP 4: (4) CLOSE V3656, HPSI Pump 2A Discharge Valve. STANDARD: **OBTAIN** key #67, **POSITION** V3656 to **CLOSED.** ***EXAMINER'S CUE:** **V3656 indicates Green light ON, Red light OFF Annunciator Q-33 Alarms.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

STEP 5: (5.A) Locally OPEN V2340, Charging Pump Discharge to 'A' HPSI Header Isolation. (located in 2C Charging Pump Room). STANDARD: **DIRECT** SNPO to **OPEN** V2340. ***EXAMINER'S CUE: The SNPO Reports V2340 is OPEN.** COMMENTS: ***EXAMINER'S CUE: Provide this CUE as US: Use the 2A Charging Pump.**	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 6:(5.B) If desired to use **ANY combination of Charging Pump,** Then locally LOCK CLOSED V2429, Charging Pump Discharge Isolation. STANDARD: **DIRECT** THE SNPO to locally **LOCK CLOSED** V2429. ***EXAMINER'S CUE: The SNPO REPORTS that V2429 is LOCK CLOSED.** **EXAMINER'S NOTE: Break is downstream of V2429 per the cue therefore V2429 is to be closed. Located in pipe penetration room at Penetration Number 27.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 7(5.D) Locally OPEN V3519, Charging Pump to 'A' HPSI Hdr Isol (Located in "A" HPSI pump room). STANDARD: **DIRECT** THE SNPO to locally **OPEN** V3519. ***EXAMINER'S CUE: The SNPO REPORTS that V3519 is OPEN.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 8: (6) ENSURE Charging Pump(s) have a suction flowpath from **ONE** of the following sources: Boric Acid Makeup Tank Refueling Water Tank Volume Control Tank STANDARD: **Verify** Charging Pump Suction Flowpath. ***EXAMINER'S CUE:** **Charging Pump Suction is from the Boric Acid Makeup Tank.** COMMENTS:	_____ SAT _____ UNSAT
STEP 9 (7) ENSURE Charging Pump(s) have a discharge flowpath by OPENING at least **ONE** 'A' HPSI Header Loop Isolation Valve: HCV-3617 2A2 Cold Leg HCV-3627 2A1 Cold Leg HCV-3637 2B1 Cold Leg HCV-3647 2B2 Cold Leg STANDARD: **POSITION** Any **ONE** of the four valves to **OPEN.** ***EXAMINER'S CUE:** **As any one of the four Valves is OPENED, indicate the Green light is OFF, Red light is ON.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 10 (8) START Charging Pump(s) **AS NECESSARY**. STANDARD: **POSITION** the 2A Charging Pump to **START.** ***EXAMINER'S CUE:** **2A Charging Pump indicates Green light OFF and Red light ON. Recirc Valve Indicates BOTH lights ON. 2A Charging pump red and green lights off.** **EXAMINER'S NOTE:** **2A Charging pump trips 5 seconds after start signal. Applicant should refer back to step 5.C for use of the 2C Charging pump.** COMMENTS:	**FAULTED STEP** _____ SAT _____ UNSAT

STEP 11:(5.C) If desired to use **ONLY the 2C Charging pump** Then locally LOCK CLOSED V2338 2C Charging Pump Disc. To Common Disc. Header Isolation. STANDARD: **DIRECT** THE SNPO to locally **LOCK CLOSED** V2338. ***EXAMINER'S CUE:** **SNPO reports V2338 is LOCKED CLOSED.** **EXAMINERS NOTE:** **Closing V2338 is NOT critical due to all Charging Pumps have discharge check valves. V2429 (step 6) should remain closed due to the location of the break. If V2429 is re-opened the 2C Charging pump will pump out the break, not into the RCS.** COMMENTS:	_____ SAT _____ UNSAT
STEP 12:(8) START the 2C Charging pump **AS NECESSARY** STANDARD: **POSITION** the 2C Charging Pump to **START** ***EXAMINER'S CUE:** **2C Charging pump indicates red light ON green light OFF. Recirc, Valve indicates Green light ON red Light OFF.** ***EXAMINER'S CUE:** **As the Recirc valve closes, depending on which SI header Valve is opened, R-46,47, 56 or 57 Alarms and Loop Pressure PIA-3329,3319,3339 or 3349 indicates 1980 psig.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 13 (9) VERIFY flow to the RCS by **ANY** of the following: Pressurizer level rising Indicated flow on applicable HPSI Loop Flow Indicator STANDARD: **OBSERVE** Pressurizer Level and HPSI flow for **PROPER** indication. ***EXAMINER'S CUE:** **Pressurizer Level is slowly RISING and applicable HPSI Loop Flow (FI-3311, 3321, 3331 or 3341) indicates 44 gpm.** COMMENTS:	_____ SAT _____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

STEP (done): NOTIFY the US that charging flow has been established through the 'A' High Pressure Safety Injection Header using the 2C Charging Pump. STANDARD: **NOTIFY** the US that charging flow has been **ESTABLISHED** through the 'A' High Pressure Safety Injection Header using the 2C Charging Pump. **EXAMINER'S CUE: US ACKNOWLEDGES** COMMENTS: **END OF TASK**	

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-88. **UNFREEZE** the Simulator.

2. **SELECT** the Lesson File Folder for JPM.

3. **OPEN** the Lesson File for 0821115 and **EXECUTE** the Lesson.

4. **TRIGGER** Step 1.

5. After Letdown isolates on high temperature, **CLOSE** all three Letdown valves and **PLACE** all Charging pumps in **STOP**.

6. Line up Emergency Boration by performing the following steps:

   - START 2A or 2B BA Pump.
   - CLOSE V2650, Tank 2A Recirc. Valve.
   - CLOSE V2651, Tank 2B Recirc Valve.
   - OPEN V2514, Emergency Borate.

7. The Simulator will automatically FREEZE after 2A Charging Pump recirc valve strokes full open. All SPTAs are performed by the scenario.

8. Ensure 2B Charging pump is in STOP and breaker is racked out.

9. **STORE** a temporary IC set if more than one student is to take the JPM. **Note:** The lesson will have to be stopped and then re-executed each time the temporary IC set is restored.

10. **UNFREEZE** the simulator when the student is ready.

11. **TRIGGER** STEP 'Open V2340' when directed to do so by the student.

12. **TRIGGER** STEP 'Close V2429' when directed to do so by the student.

13. **TRIGGER** STEP 'Close V2338' when directed to do so by the student.

14. **TRIGGER** STEP 'Open V3519' when directed to do so by the student.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 2 was tripped from 100% power due to a problem with the Feedwater Regulating System. The Crew has implemented 2-EOP-15, "Functional Recovery", due to a dual event. The SNPO reported a pipe break in the charging header between V2429 and V2523. The 2B Charging pump is out of service

INITIATING CUES:

You are the RCO. The US has directed you to line up Charging flow through the 'A' HPSI header per 2-EOP-99, Appendix T, "Alternate Charging Flow Path to RCS Through 'A' HPSI Header."

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

RESTART RCP's DURING EOP IMPLEMENTATION
Unit 2

NRC S-6

Developed/Revised by: Larry Rich _____

Training Management Approval: Signature on file _____ Date

JOB PERFORMANCE MEASURE

Task: RESTART RCP'S DURING EOP IMPLEMENTATION

Faulted JPM? Yes

Facility JPM #: N/A

K/A: A2.02 Conditions which exist for an abnormal shutdown of an RCP in comparison to a normal shutdown of an RCP

K/A Rating(s): 3.7 / 3.9

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when 2A1 RCP's has been stopped.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
X				X		

References:
2-NOP-01.02, 'Reactor Coolant Pump Operation'
2-EOP-99, Appendices / Figures / Tables / Data Sheets, Table 13, RCP Operating Limits.
2-0120034, Reactor Coolant Pump

Validation Time: 15 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
2-NOP-01.02, 'Reactor Coolant Pump Operation'
2-EOP-99, Appendices / Figures / Tables / Data Sheets, Table 13, RCP Operating Limits.

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

  Restart RCP's during EOP implementation – Unit 2

- The performance level to be used for this JPM is Perform
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 2 is in 2-EOP-09, 'Loss of Offsite Power/Loss of Forced Circulation'. Step 19 for RCP Restart has been met.

INITIATING CUES:

You are the Board RCO. CCW has been restored to the Reactor Coolant Pumps. The US has directed you to start the 2A1 and 2B2 Reactor Coolant Pumps in accordance with 2-NOP-01.02, 'Reactor Coolant Pump Operation' section 5.1, 'RCP Restart During EOP Implementation', starting with step 5.1.5.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

2-NOP-01.02, 'Reactor Coolant Pump Operation'	
STEP 1 (5.1.5): VERIFY RCS pressure and temperature are above the normal seal requirements for RCP operation. IF RCS pressure and temperature are below this limit, THEN initiate a Data Sheet 30, Unscheduled Surveillance Tracking, to track RCP operating time below normal seal requirement, REFER TO Attachment 1, Minimum RCS Pressure for RCP operation, Figure 6A or Figure 6B. STANDARD: **DETERMINES** RCS pressure and temperature are within limits. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 2 (5.1.6): VERIFY CBO flow is within acceptable range for RCP's to be started. REFER TO Attachment 2, RCP Seal Leak-Off Flow Rate vs. RCS Pressure. STANDARD: **DETERMINES** CBO flow is within acceptable range. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 3 (5.1.7): VERIFY proper RCP seal pressure breakdown for RCPs to be started. IF proper seal pressure has NOT occurred, THEN REFER TO ONP 2-0120034, Reactor Coolant Pump. • RCP 2A1 • RCP 2B2 STANDARD: **DETERMINES** seal pressure breakdown is acceptable. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT

STEP 4 (5.1.8): PLACE the control switches for the oil lift pumps for RCP's to started in RUN position. STANDARD: **PLACES** RCP 2A1 and 2B2 RCP oil lift pump to RUN. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 5 (5.1.9): IF the amber permissive light does NOT illuminate in 30 seconds THEN STOP oil lift pumps and investigate. STANDARD: **MONITORS** amber permissive light and determines light is illuminated. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 6 (5.1.10): PERFORM both of the following: A. START one of the selected RCP's AND B. WHEN starting amps return to normal, THEN START the other selected RCP. STANDARD: **STARTS** 2A1 (2B2), when amps return to normal, STARTS 2A1 (2B2) RCP. **EXAMINER'S CUE:** **EXAMINER'S NOTE:** Starting order does not matter COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 7 (5.1.11.): WHEN RCP motor amps return to normal, THEN PERFORM all of the following: A. PLACE oil lift control switches to OFF STANDARD: **PLACES** oil lift control switches for the 2A1 and 2B2 RCP's to OFF. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 8 (5.1.11.): WHEN RCP motor amps return to normal, THEN PERFORM all of the following: B. VERIFY oil lift pumps stop STANDARD: **VERIFIES** oil lift pump STOPS. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 9 (5.1.11): WHEN RCP motor amps return to normal, THEN PERFORM all of the following: C. PLACE oil lift pump control switches to AUTO STANDARD: **PLACES** oil lift control switches for the 2A1 and 2B2 RCP's to AUTO. **EXAMINER'S CUE:** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

STEP 10 (5.1.12): VERIFY RCP operating limits are satisfied. REFER TO 2-EOP-99, Appendices / Figures / Tables / Data Sheets, Table 13, RCP Operating Limits. STANDARD: **REFERS** to Table 13, RCP Operating Limits. **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
2-EOP-99, Appendices / Figures / Tables / Data Sheets, Table 13, RCP Operating Limits.	
STEP 11: DETERMINES RCP range of operation for various parameters on running RCP's STANDARD: **MONITORS** RCP operating limits IAW Table 13. Identifies lower oil reservoir rapidly lowering. **EXAMINER'S CUE:** **EXAMINER'S NOTE:** RCP 2A1 lower oil reservoir level will begin to rapidly lower. Annunciator J-17, 'RCP Oil Trouble' may alarm prior to applicant noticing lowering oil level. Bearing temperatures will slowly rise. Applicant may enter 2-0120034, 'Reactor Coolant Pump' or may elect to trip RCP (STEP 9 of this JPM) COMMENTS:	**FAULTED STEP** _____ SAT _____ UNSAT
2-0120034, Reactor Coolant Pump	
STEP 12 (6.4.5): If oil level decreases rapidly, Then STOP the affected RCP STANDARD: **TRIP** 2A1 RCP. **EXAMINER'S CUE:** **EVALUATOR'S NOTE:** Applicant may elect to start oil lift pumps prior to tripping pump. Starting of oil lift pumps is NOT critical for this step. COMMENTS: **END OF TASK**	**CRITICAL STEP** _____ SAT _____ UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-82
2. **UNFREEZE** and **RUN** the simulator for a few minutes.
3. **SELECT AND EXECUTE** S-6
4. **FREEZE** simulator until student is ready.
5. **Have** RCP Attachment and Figures (6A, 6B) and CBO curve available for applicant.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 2 is in 2-EOP-09, 'Loss of Offsite Power/Loss of Forced Circulation'. Step 19 for RCP Restart has been met.

INITIATING CUES:

You are the Board RCO. CCW has been restored to the Reactor Coolant Pumps. The US has directed you to start the 2A1 and 2B2 Reactor Coolant Pumps in accordance with 2-NOP-01.02, 'Reactor Coolant Pump Operation' section 5.1, 'RCP Restart During EOP Implementation', starting with step 5.1.5.

sec

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

RESPOND TO HIGH CCW SURGE TANK LEVEL DUE TO RADIOACTIVE IN-LEAKAGE - UNIT 2

Unit 2 Simulator

NRC S-7

Developed/Revised by: Larry Rich _____ Date

Line Management Approval: _____ Date

Training Management Approval: Signature on File _____ Date

JOB PERFORMANCE MEASURE

Task: 07014070 Respond to CCW Excessive Activity – Unit 2

Faulted JPM? No

Facility JPM #: 0821030

K/A: A2.02 High/low surge tank level

K/A Rating(s): 3.2 / 3.5

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the US has been informed that the Pressurizer Steam Space Sample Heat Exchanger has been isolated.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
x				x		

References:
- 2-AOP-14.01, "Component Cooling Water Abnormal Operations"
- 2-AOP-14.02, "Component Cooling Water Excessive Activity."
- 2-APP-01-LB-10, "Annunciator Response Procedure"

Validation Time: 15 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
- 2-AOP-14.01, "Component Cooling Water Abnormal Operations"
- 2-AOP-14.02, "Component Cooling Water Excessive Activity."
- 2-APP-01-LB-10, "Annunciator Response Procedure"

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Respond to high CCW Surge Tank Level – Unit 2
- The performance level to be used for this JPM is Simulate
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 2 is operating at 100% power, steady state conditions, MOL. Chemistry is performing RCS samples. Annunciator LB-10 (CCW SURGE TANK LEVEL HIGH/COMPARTMENT B LEVEL LOW) has illuminated. All operator actions of 2-ARP-LB-10 have been carried out. A SNPO was dispatched to locally investigate the CCW Surge Tank. He reports the sight glass is full and LCV-14-1, Demin Water to Surge Tank, is closed with no make-up flow indicated. The SNPO has also verified the sight glass isolation valves are open.

INITIATING CUES:

The US has directed you to perform the actions required by 2-AOP-14.01, "Component Cooling Water Abnormal Operations," section 4.2.12, Abnormal CCW Surge Tank Level, to determine the cause for the high Surge Tank level.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

2-AOP-14.01, "Component Cooling Water Abnormal Operations"	
STEP 1 (4.2.12): Abnormal CCW Surge Tank Level 1. VERIFY the following valves are open • V14480, LG-14-2B Upper On CCW Surge Tank Root • V14481, LG-14-2B Lower On CCW Surge Tank Root • V14482, LG-14-2A Upper On CCW Surge Tank Root • V14483, LG-14-2A Lower On CCW Surge Tank Root STANDARD: **DETERMINES** from the cue the surge tank isolation valves have already been checked open. **EXAMINER'S CUE:** None COMMENTS:	_____ SAT _____ UNSAT
STEP 2 (4.2.12): Abnormal CCW Surge Tank Level 2. MONITOR CCW Surge Tank. STANDARD: **DETERMINES** from cue CCW surge tank sight glass indicates full. **EXAMINER'S CUE:** If asked, inform the applicant as SNPO that both surge tank sight glasses are full. COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

2-AOP-14.01, "Component Cooling Water Abnormal Operations"	
STEP 3 (4.2.12): Abnormal CCW Surge Tank Level 3. VERIFY abnormal rising level in CCW Surge Tank STANDARD: **DETERMINES** from cue CCW surge tank sight glass indicates full. **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
STEP 4(4.2.12): Abnormal CCW Surge Tank Level 4. REQUEST Chemistry sample CCW system to assist in determining source of in-leakage. STANDARD: **CONTACTS** Chemistry to ensure samples are being taken **SIMULATOR OPERATOR: Chemistry notified** COMMENTS:	_____ SAT _____ UNSAT
STEP 5 (4.2.12): Abnormal CCW Surge Tank Level 5 REQUEST System Engineering support to determine cause of CCW Surge Tank high level. STANDARD: **CONTACTS** System Engineering for support **SIMULATOR OPERATOR: System Engineering notified.** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

2-AOP-14.01, "Component Cooling Water Abnormal Operations"	
STEP 6 (4.2.12): Abnormal CCW Surge Tank Level 6. VERIFY CCW Radiation Monitors indicate NO rise in activity: • RC-26-1, CCW • RC-26-2, CCW • RC-26-1, Rad Monitoring Recorder, channel 20 STANDARD: **OBSERVES** RC-26-1, CCW, RC-26-2, CCW, RC-26-1, Rad Monitoring Recorder, all trending up **EXAMINER'S CUE:** COMMENTS:	_____ SAT _____ UNSAT
STEP 7 (4.2.12): Abnormal CCW Surge Tank Level 6.1 IF high activity indicated, THEN IMPLEMENT 2-AOP-14.02, 'Component Cooling Water Excessive Activity'. STANDARD: **REFERS** to 2-AOP-14.02, Component Cooling Water Excessive Activity. **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

2-AOP-14.02, "Component Cooling Water Excessive Activity.	
STEP 8 (4.2.1): General Actions 1. If all of the following conditions exist: • Unit 1 is in Mode 3 thru 6 • SIAS blocked THEN **VERIFY** at 15 minute intervals that SFSC criteria are met per Low Mode ONP for current plant conditions. STANDARD: **DETERMINES** step is N/A. **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
STEP 9 (4.2.1): General Actions 2. Notify Radiation Protection and Chemistry Department of CCW in-leakage and excessive activity. STANDARD: **CONTACT** the Chemistry and RP Technicians and **INFORM** them that there is excessive activity in the CCW system. **SIMULATOR OPERATOR: CHEMISTRY and RP TECHNICIANS NOTIFIED** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 10 (4.2.1): General Actions

3. Determine the RCS leak rate per 2-OSP-01.03, Reactor Coolant System Inventory Balance.

STANDARD: N/A.

EXAMINER'S CUE: **The extra RCO has performed 1-OSP-01.03, Reactor Coolant System Inventory Balance, and leakrate is 0.2 GPM.**

COMMENTS:

_____ SAT

_____ UNSAT

STEP 11 (4.2.1): General Actions

4. PERFORM applicable section(S) per Table 1

Abnormal Condition	Section
In-Leakage from RCP Seal Coolers	Section 4.2.2
In-Leakage from Letdown Heat Exchanger	Section 4.2.3
In-Leakage from Shutdown Cooling Heat Exchanger	Section 4.2.4
In-Leakage from Sample Heat Exchangers	Section 4.2.5
In-Leakage from HPSI pump seal cooler	Section 4.2.6
In-Leakage from CS pump seal cooler	Section 4.2.7

STANDARD: **PERFORMS** Section 4.2.2

EXAMINER'S CUE: **None**

COMMENTS:

_____ SAT

_____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 12 (4.2.2): In-leakage from RCP Seal Coolers

1. **VERIFY** seal cooler in-leakage:

    - Any RCP Lower Seal Cavity Temperature raised:
        - T1151_A (2A1 RCP)
        - T1161_A (2A2 RCP)
        - T1171_A (2B1 RCP)
        - T1181_A (2B2 RCP)
    - Any RCP seal Cooler CCW outlet temperature raised:
        - T1153_A (2A1 RCP)
        - T1163_A (2A2 RCP)
        - T1173_A (2B1 RCP)
        - T1183_A (2B2 RCP)
    - Any RCP Seal Cooler HX Isolation Valve CLOSED:
        - HCV-14-11A1
        - HCV-14-11A2
        - HCV-14-11B1
        - HCV-14-11B2

_____ SAT

_____ UNSAT

STANDARD: **MONITORS** RCP Lower Seal Cavity temperatures on the DCS. Determines no in-leakage and goes to step 4.2.1 step 4

MONITORS RCP seal cooler outlet temperatures

DETERMINES RCP Seal Coolers HX Isolation Valves are OPEN

DETERMINES NO in-leakage from RCP seals and GOES TO Section 4.2.1 Step 4

EXAMINERS CUE: None

COMMENTS:

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 13 (4.2.1): General Actions

4. PERFORM applicable section(S) per Table 1

Abnormal Condition	Section
In-Leakage from RCP Seal Coolers	Section 4.2.2
In-Leakage from Letdown Heat Exchanger	Section 4.2.3
In-Leakage from Shutdown Cooling Heat Exchanger	Section 4.2.4
In-Leakage from Sample Heat Exchangers	Section 4.2.5
In-Leakage from HPSI pump seal cooler	Section 4.2.6
In-Leakage from CS pump seal cooler	Section 4.2.7

STANDARD: **PERFORMS** Section 4.2.3

EXAMINER'S CUE: None

COMMENTS:

_____ SAT

_____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 14 (4.2.3): In-Leakage from Letdown Heat Exchanger **1. VERIFY** RCS in-leakage from Letdown HX indicated by any of the following: • FIA-2202, LTDN FLOW, lowered considering number of charging pumps operating. • PIC-2201, LTDN PRESSURE, lowered compared to PIC-2201 setpoint. • TR-09-5A, Point 3, TE-14-12 (CCW temperature from Letdown HX) raised STANDARD: **DETERMINE** FIA-2202 letdown flow is normal for one charging pump **DETERMINE** Letdown pressure matches PIC-2201 setpoint **DETERMINE** CCW temperature from Letdown HX is normal **DETERMINE** NO in-leakage from Letdown Heat Exchanger and goes to 4.2.1 step 4 COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 15 (4.2.1): General Actions

4. PERFORM applicable section(S) per Table 1

Abnormal Condition	Section
In-Leakage from RCP Seal Coolers	Section 4.2.2
In-Leakage from Letdown Heat Exchanger	Section 4.2.3
In-Leakage from Shutdown Cooling Heat Exchanger	Section 4.2.4
In-Leakage from Sample Heat Exchangers	Section 4.2.5
In-Leakage from HPSI pump seal cooler	Section 4.2.6
In-Leakage from CS pump seal cooler	Section 4.2.7

STANDARD: **DETERMINES** Section 4.2.4 In-Leakage from Shutdown Cooling Heat Exchanger is N/A due to Mode 1 plant conditions.

EXAMINER'S CUE: None

COMMENTS:

_____ SAT

_____ UNSAT

STEP 16 (4.2.1): General Actions

4. PERFORM applicable section(S) per Table 1

Abnormal Condition	Section
In-Leakage from RCP Seal Coolers	Section 4.2.2
In-Leakage from Letdown Heat Exchanger	Section 4.2.3
In-Leakage from Shutdown Cooling Heat Exchanger	Section 4.2.4
In-Leakage from Sample Heat Exchangers	Section 4.2.5
In-Leakage from HPSI pump seal cooler	Section 4.2.6
In-Leakage from CS pump seal cooler	Section 4.2.7

STANDARD: **PERFORMS** Section 4.2.5 In-Leakage from Sample Heat Exchangers

EXAMINER'S CUE: None

COMMENTS:

_____ SAT

_____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 17 (4.2.5) In-Leakage from Sample heat Exchangers **1. VERIFY** any sample heat exchanger aligned for service: • 2A Sample Heat Exchanger (Hot Leg Loop 2A) • 2B Sample Heat Exchanger (Pressurizer surge line) • 2C Sample Heat Exchanger (Pressurizer steam space) • 2D Sample Heat Exchanger (Shutdown Cooling) STANDARD: **DETERMINES** from below valve positions 2B Sample Heat Exchanger and 2C Sample Heat Exchangers are in service. **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 18: (4.2.5) In-Leakage from Sample heat Exchangers

2. VERIFY any in-service sample heat exchanger outlet temperature raised as indicated by the following
(RAB/20/N-RA3/E-RAH):

- TI-5510, 2A SAMPLE HX OUTLET TEMP
- TI-5520, 2B SAMPLE HX OUTLET TEMP
- TI-5530, 2C SAMPLE HX OUTLET TEMP
- TI-5540, 2D SAMPLE HX OUTLET TEMP

STANDARD: **DETERMINES** TI-5520, 1B SAMPLE HX OUTLET TEMP (Pressurizer Surge Line) and TI-5530, 1C SAMPLE HX OUTLET TEMP (Pressurizer steam space) by calling SNPO to obtain local reading.

SIMULATOR OPERATOR: SNPO reports TI-5520, 2B SAMPLE HX OUTLET TEMP is 95°F and TI-5530 2C SAMPLE HX OUTLET TEMP is 130°F.

DETERMINES 2C SAMPLE HX has a tube leak and goes to Attachment 3, isolation of Sample Heat Exchangers.

COMMENTS:

STEP 19 (4.2.5): In-Leakage from Sample Heat Exchangers (continued)

- GO TO Attachment 3, Isolation of Sample Heat Exchangers,

STANDARD: **REFERS** to Attachment 3 to isolate the 1C Sample heat Exchanger

EXAMINER'S CUE: None

COMMENTS:

_____ SAT

_____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

ATTACHMENT 3 **Isolation of Sample Heat Exchangers**	
STEP 20: 3. If the 2C Sample Heat Exchanger (Pressurizer steam space) is suspected of leaking into CCW, Then **PERFORM** the following: A. **NOTIFY** Chemistry 2C Sample HX is being isolated. STANDARD: **NOTIFIES** Chemistry the 2C Sample HX is to be isolated. **SIMULATOR OPERATOR: Chemistry acknowledges** COMMENTS:	_____ SAT _____ UNSAT
STEP 21: 3. If the 2C Sample Heat Exchanger (Pressurizer steam space) is suspected of leaking into CCW, Then **PERFORM** the following: B. **CLOSE** V5202, PRZR STEAM SPACE SAMPLE. (RTGB 206). STANDARD: **POSITION** V5202 handswitch to **CLOSE** **EXAMINER'S CUE: None** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 22: 3. If the 2C Sample Heat Exchanger (Pressurizer steam space) is suspected of leaking into CCW, Then **PERFORM** the following: C. **CLOSE** V5205, PRZR STEAM SPACE SAMPLE. (RTGB 206). STANDARD: **POSITION** V5205 handswitch to **CLOSE** **EXAMINER'S CUE: None** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 23: 3. If the 2C Sample Heat Exchanger (Pressurizer steam space) is suspected of leaking into CCW, Then **PERFORM** the following: D. **CLOSE** V5157, 2C SAMPLE HX OUTLET ISOL. (RAB/19/S-RA2-E-RAH) STANDARD: **CONTACT** the SNPO to **CLOSE** V5157 **SIMULATOR OPERATOR: SNPO reports V5157 CLOSED.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 24: 3. If the 2C Sample Heat Exchanger (Pressurizer steam space) is suspected of leaking into CCW, Then **PERFORM** the following: E. **CLOSE** V14422, 2C SAMPLE HX INLET ISOL. (RAB/24/N-RA3/E-RAH) STANDARD: **CONTACT** the SNPO to **CLOSE** V14422 **SIMULATOR OPERATOR: SNPO reports V14422 CLOSED** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 25:	3. If the 2C Sample Heat Exchanger (Pressurizer steam space) is suspected of leaking into CCW, Then **PERFORM** the following: F. **CLOSE** V14430, 2C SAMPLE HX OUTLET ISOL. (RAB/24/N-RA3/E-RAH)	**CRITICAL STEP** _____ SAT _____ UNSAT
STANDARD:	**CONTACT** the SNPO to **CLOSE** V14430 **SIMULATOR OPERATOR: SNPO reports V14430 CLOSED**	
COMMENTS:		
STEP 26:	If the 2C Sample Heat Exchanger is suspected of causing the increase in CCW activity, Then isolate the heat exchanger by the following: G. **MONITOR** CCW to verify leak isolated.	 _____ SAT _____ UNSAT
STANDARD:	**Monitor** RC-26-1, CCW RC-26-2, CCW RC-26-1, Rad Monitoring Recorder, channel 20 Determines activity levels are lowering **EXAMINER'S CUE: None**	
COMMENTS:		
STEP (done):	Notify the US that the 2C Sample Heat Exchanger has been isolated.	
STANDARD:	**NOTIFY** the US that the 2C Sample Heat Exchanger has been **ISOLATED** **EXAMINER'S CUE: US AKNOWLEDGES**	_____ SAT
COMMENTS:		_____ UNSAT
	END OF TASK	

STOP TIME: _____

***Cues are to be used only if JPM performance is being simulated in the plant.**

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 2 is operating at 100% power, steady state conditions, MOL. Chemistry is performing RCS samples. Annunciator LB-10 (CCW SURGE TANK LEVEL HIGH/COMPARTMENT B LEVEL LOW) has illuminated. All operator actions of 2-ARP-LB-10 have been carried out. A SNPO was dispatched to locally investigate the CCW Surge Tank. He reports the sight glass is full and LCV-14-1, Demin Water to Surge Tank, is closed with no make-up flow indicated. The SNPO has also verified the sight glass isolation valves are open.

INITIATING CUES:

The US has directed you to perform the actions required by 2-AOP-14.01, "Component Cooling Water Abnormal Operations," section 4.2.12, Abnormal CCW Surge Tank Level, to determine the cause for the high Surge Tank level.

JOB PERFORMANCE MEASURE
SIMULATOR SETUP

- Initiate IC-78
- Open and Execute NRC S-7

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

RESPOND TO FAILURE OF WIDE RANGE NUCLEAR INSTRUMENT, UNIT 1

UNIT 1 CONTROL ROOM

NRC C-1

Developed/Revised by: Larry Rich _____ Date

Line Management Approval: _____ Date

Training Management Approval: _____ Date

JOB PERFORMANCE MEASURE

Task: 07064255 - Respond to wide range NI Channel Malfunction Unit 1

Faulted JPM? No

Facility JPM #: 0821036

K/A: Ability to monitor automatic operation of the NIS, including:
A3.03 Verification of proper functioning/operability

K/A Rating(s): 3.9 / 3.9

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when it is verified that the Technical Specification action items are met.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
	X				X	

References:
- 1-ARP-01-L30 NI Channel Inoperative
- 1-AOP-99.01, "Loss of Tech Spec Instrumentation"
- T.S. 3.3.1.1 and 3.9.2

Validation Time: 10 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
- 1-ARP-01-L30 NI Channel Inoperative
- 1-AOP-99.01, "Loss of Tech Spec Instrumentation"

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- None

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Respond to failure of Wide Range NI Channel Malfunction Unit 1
- The performance level to be used for this JPM is Simulate
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 1 reactor startup is in progress at approximately 10^{-3}% power. After recording critical data and commencing CEA withdrawal toward the point of adding heat, Annunciator L-30 (NI CHANNEL INOPERATIVE) alarmed. The Board RCO reports that the wide range NI recorder indication has gone off scale low and that he has stopped CEA withdrawal and stabilized reactor power level below the point of adding heat.

INITIATING CUES:

You are the Desk RCO. The US has directed you to assist the Board RCO in responding to the alarm, diagnosing the problem, and taking appropriate action.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

1-ARP-01-L30 : NI CHANNEL INOPERATIVE	
STEP 1: Reference alarm response procedure for Annunciator L-30. STANDARD: **IMPLEMENT** alarm response procedure 1-ARP-01-L30 **EXAMINER'S CUE: IF ASKED, WIDE RANGE NI RECORDER IS SELECTED TO CHANNEL D** COMMENTS:	_____ SAT _____ UNSAT
STEP 2: 1. VERIFY all Wide Range Nuclear Instruments show NO disagreement with the other channels. STANDARD: **COMPARE** RPS and/or RTGB-104 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 (AND RTGB) INDICATE AS FOLLOWS:** **A $\approx 10^{-3}$% POWER** **B $\approx 10^{-3}$% POWER** **C $\approx 10^{-3}$% POWER** **D $\approx 10^{-11}$% POWER** COMMENTS:	_____ SAT _____ UNSAT
STEP 3: 2. If there is a significant disagreement between the Wide Range Instruments, Then implement 1-AOP-99.01, Loss of Tech Spec Instrumentation. STANDARD: **ENTER** 1-AOP-99.01 **EXAMINER'S CUE: NONE** **EXAMINER'S NOTE:** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

1-AOP-99.01, Section 4.2.2
4.2.1 General Actions - Using Attachment 5, Channel Failure Impact Table, PERFORM the following:
Locate table row for affected instrument or channel – Wide Range NI MD

STEP 4 (4.1): Immediate Operator Actions

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

_____ SAT

_____ UNSAT

STANDARD: Determines channel D caused Annunciator L-30

EXAMINER'S CUE:
- Channel check comparison with redundant channels
  A $\approx 10^{-3}$% POWER
  B $\approx 10^{-3}$% POWER
  C $\approx 10^{-3}$% POWER
  D $\approx 10^{-11}$% POWER
- Anunciators
  L-30 NI Channel Inoperative
- Bistable or status lights
  None
- Any instrument related testing or surveillance procedure in progress
  None

EVALUATOR'S NOTE: May refer to step 2 and determine channel D is defective.

COMMENTS:

STEP 5 (4.2.1): General Actions

1. IF entering this procedure to restore an affected channel, THEN GO TO Section 4.2.1 Step 5

_____ SAT

STANDARD: Determines step is N/A (not restoring an affected channel)

_____ UNSAT

EXAMINER'S CUE: None

COMMENTS:

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 6 (4.2.1): General Actions 2. Using Attachment 5, Channel Failure Impact Table, PERFORM the following • LOCATE table row for affected instrument or channel • REFER TO applicable Tech Specs • PERFORM applicable procedure section for affected instrument STANDARD: Refers to Attachment 5 **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
Attachment 5	
STEP 7 LOCATE table row for affected instrument or channel STANDARD: Locates CHANNEL INDICATOR Wide Range NI Channel D **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
STEP 8: REFER to applicable Tech Specs STANDARD: Refers to Tech Specs 3.3.1.1 (bypass or trip within one hour) and 3.9.2 (N/A not in Mode 6) **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 9 PERFORM applicable procedure section for affected instrument STANDARD: Performs Section 4.2.2 **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
STEP 10 (4.2.2): **1. CIRCLE** affected Channel: MD MB MC MD STANDARD: Circles Channel D **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
STEP 11 (4.2.2): **2. PERFORM** one of the following for the affected BTU listed: • HI RATE (Key 82) **A. BYPASS** affected BTU using keyswitch. OR **B. TRIP** affected BTU per Attachment 3, Tripping and Restoring Protection Bistables. STANDARD: **OBTAIN** key and **ROTATE** Channel D high rate trip unit bistable keyswitch clockwise to 3 o'clock position **EXAMINER'S CUE: THE US DIRECTS BYPASSING THE CHANNEL.** **KEY ROTATED TO 3 O'CLOCK POSITION AND YELLOW LIGHT LIT.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 12 (4.2.2): **3. VERIFY** CPS/% POWER WIDE RANGE LOG recorder is selected to an operable channel. STANDARD: **PRESS** WIDE RANGE pushbutton to select an operable channel. (any channel other than 'D' **EXAMINER'S CUE: INPUTS SELECTED PER STUDENT CHOICES; WIDE RANGE RECORDER SHOWS ≈10^{-3}% POWER AFTER SELECTION OF A DIFFERENT CHANNEL.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 13 (4.2.2): **4. SELECT** Audio Count Rate to an operable channel. STANDARD: **SELECT** audio count rate channel input to **ANY CHANNEL OTHER THAN CHANNEL D** **EXAMINER'S CUE: INPUTS SELECTED PER STUDENT CHOICES; AUDIO COUNT RATE CAN BE HEARD.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 14 (4.2.1): **3. INITIATE** work request for affected instrument or channel and **NOTIFY** I&C or EM as applicable. STANDARD: **NOTIFY** I&C Department that wide range nuclear instrument Channel D has failed. **EXAMINER'S CUE: I&C. ACKNOWLEDGES.** COMMENTS:	_____ SAT _____ UNSAT

***Cues are to be used only if JPM performance is being simulated in the plant.**

STEP 15 (4.2.1): **4. DOCUMENT** problem as required: • EOOS Log • Condition report • Ops narrative log STANDARD: Perform or notify appropriate personnel to perform the documentation. **EXAMINER'S CUE: US IS HAVING A SPARE RO DOCUMENT THE PROBLEM.** COMMENTS:	_____ SAT _____ UNSAT
STEP (done): Notify US that task is complete. STANDARD: **NOTIFY** US that high rate trip unit bistable on Channel D has been bypassed IAW SECTION 4.2.2 **EXAMINER'S CUE: US ACKNOWLEDGES** COMMENTS: **END OF TASK**	_____ SAT _____ UNSAT

STOP TIME: _____

***Cues are to be used only if JPM performance is being simulated in the plant.**

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 1 reactor startup is in progress at approximately 10^{-3}% power. After recording critical data and commencing CEA withdrawal toward the point of adding heat, Annunciator L-30 (NI CHANNEL INOPERATIVE) alarmed. The Board RCO reports that the wide range NI recorder indication has gone off scale low and that he has stopped CEA withdrawal and stabilized reactor power level below the point of adding heat.

INITIATING CUES:

You are the Desk RCO. The US has directed you to assist the Board RCO in responding to the alarm, diagnosing the problem, and taking appropriate action.

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

RESTORE AUXILIARY FEEDWATER FLOW FOLLOWING STEAM BINDING - UNIT 1

1A AFW PUMP ROOM / STEAM TRESTLE

NRC P-1

Developed/Revised by: Larry Rich _____
Date

Training Management Approval: _____
Date

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

Task: RESTORE AUXILIARY FEEDWATER FLOW FOLLOWING STEAM BINDING - UNIT 1

Faulted JPM? No

Facility JPM #: N/A

K/A: Ability to (a) predict the impacts of the following malfunctions or operations on the AFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations:

A2.06 Back leakage of MFW

K/A Rating(s): 2.7 / 3.0

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the 1A AFW pump has been restored to operable condition following steam binding.

Evaluation Location:

Simulator	In Plant	Lab	Other
	X		

Performance Level:

Perform	Simulate	Discuss
	X	

References:
- 1-AOP-09.02, 'Auxiliary Feedwater'

Time Critical: No

Validation Time: 20 minutes

Tools/Equipment/Procedures Needed:
- 1-AOP-09.02, 'Auxiliary Feedwater' Attachment 2
-

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- Standard in plant PPE plus PPE for venting hot water and steam.

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Restore Auxiliary Feedwater Flow Following Steam Binding for 1A AFW
- The performance level to be used for this JPM is Simulate
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 1 is in Mode 3 following a Unit trip. The RCO stopped the 1A AFW pump due to erratic discharge pressure and amps.

INITIATING CUES:

You are the NPO. The US has directed you to perform actions or 1-AOP-09.02, 'Auxiliary Feedwater' Attachment 2, 'Restore Auxiliary Feedwater Flow Following Steam Binding'

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

1-AOP-09.02, 'Auxiliary Feedwater'
Attachment 2, 'Restore Auxiliary Feedwater Flow Following Steam Binding'

NOTE

- CST static head pressure is the driving force for initial venting the pumps. Vent time will be dependent upon CST level.
- A pipe wrench of sufficient size will be needed to remove 1" pipe caps during this evolution.

WARNING

The following instructions involve the venting of hot water and steam. Appropriate PPE should be donned.

CRITICAL STEP

_____ SAT

_____ UNSAT

STEP 1: 1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following:

A. CLOSE V09120, 1A AFW PUMP TO 1A S/G FW ISOL. (TRSL/43/S-T1/W-TA)

STANDARD: **CLOSES** V09120 by rotating the handwheel clockwise until stopped.

EXAMINER'S CUE: V09120 has been rotated fully clockwise.

EXAMINERS NOTE: Valve is located on Steam Trestle. Remainder of steps are performed in the 1B AFW pump area.

COMMENTS:

STEP 2:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **B. ENSURE** the following valves are LOCKED OPEN: **(1)** V12498, 1A AFW PUMP SUCT ISOL. (TRSL/22/N-T5/W-TA) **(2)** V09100, 1A AFW PUMP RECIRC ISOL. (TRSL/22/N-T5/W-TA)	_____ SAT _____ UNSAT
STANDARD:	**VERIFIES** V12498 is fully counter clockwise and a locking device is attached. **VERIFIES** V09100 is fully counter clockwise and a locking device is attached. **EXAMINER'S CUE: V12498 is fully counter clockwise and a locking device is attached.** **EXAMINER'S CUE: V09100 is fully counter clockwise and a locking device is attached.**	
COMMENTS:		
STEP 3:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **C. OPEN** the following valves: **(1)** V09306, 1A TO 1B AFW PUMP DISCH CROSSTIE DRAIN. (TRSL/20/S-T5/W-TA) **(2)** V09307, 1A TO 1B AFW PUMP DISCH CROSSTIE DRAIN. (TRSL/20/S-T5/W-TA)	**CRITICAL STEP** _____ SAT _____ UNSAT
STANDARD:	**OPENS** V09306 by rotating the handwheel counter clockwise until stopped. **OPENS** V09307 by rotating the handwheel counter clockwise until stopped. **EXAMINER'S CUE: V09306 is fully counter clockwise.** **EXAMINER'S CUE: V09307 is fully counter clockwise.**	
COMMENTS:		

STEP 4:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **D. OPEN** MV-09-13, 1A AFW PUMP DISCH TO 1B S/G. (RTGB-102)	**CRITICAL STEP** _____ SAT
STANDARD:	**CALLS** the Unit 1 Control Room and request MV-09-13 to be opened.	
	EXAMINER'S CUE: Acknowledge as Unit 1, and 30 seconds later inform the Operator MV-09-13 is open.	_____ UNSAT
COMMENTS:		
STEP 5:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **E.** WHEN a steady stream of water flows out of the drain valve, THEN **CLOSE** MV-09-13, 1A AFW PUMP DISCH TO 1B S/G.	**CRITICAL STEP** _____ SAT
STANDARD:	**CALLS** the Unit 1 Control Room and inform them a a steady stream of water is flowing out the drain. Request MV-09-13 to be closed.	_____ UNSAT
	EXAMINER'S CUE: Acknowledge as Unit 1, and 30 seconds later inform the Operator MV-09-13 is closed.	
COMMENTS:		

STEP 6:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **F. CLOSE** the following valves: **(1)** V09306, 1A TO 1B AFW PUMP DISCH CROSSTIE DRAIN. **(2)** V09307, 1A TO 1B AFW PUMP DISCH CROSSTIE DRAIN. STANDARD: **CLOSES** V09306 by rotating the handwheel clockwise until stopped. **CLOSES** V09307 by rotating the handwheel clockwise until stopped. **EXAMINER'S CUE: V09306 is fully clockwise.** **EXAMINER'S CUE: V09307 is fully clockwise.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 7:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **G. OPEN** the following valves: **(1)** V09313, PX-09-4A1 ISOL. (TRSL/43/S-T1/E-TB) **(2)** V09314, PX-09-4A1 ISOL. (TRSL/44/S-T1/E-TB) STANDARD: **OPENS** V09313, PX-09-4A1 ISOL. by rotating the handwheel counter clockwise until stopped. **OPENS** V09314, PX-09-4A1 ISOL.. by rotating the handwheel counter clockwise until stopped **EXAMINER'S CUE: V09313 is fully counter clockwise.** **EXAMINER'S CUE: V09314 is fully counter clockwise.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 8:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **H. OPEN** MV-09-9, 1A AFW PUMP DISCH TO 1A S/G. (RTGB-102)	**CRITICAL STEP** _____ SAT
STANDARD:	**CALLS** the Unit 1 Control Room to open MV-09-9, 1A AFW PUMP DISCH TO 1A S/G.	_____ UNSAT
	EXAMINER'S CUE: Acknowledge as Unit 1, and 30 seconds later inform the Operator MV-09-9 is open.	
COMMENTS:		
STEP 9:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **I. CLOSE** V09108, 1A AFW PUMP DISCH ISOL. (TRSL/24/N-T5/W-TA)	**CRITICAL STEP** _____ SAT _____ UNSAT
STANDARD:	**CLOSES** V09108 by rotating the handwheel clockwise until stopped	
	EXAMINER'S CUE: V09108 handwheel has been rotated fully clockwise.	
COMMENTS:		

STEP 10:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **J. PERFORM** the following: **(1) OPEN** V09886, 1A AFW PUMP CASING VENT. (TRSL/20/N-T5/W-TA) **(2)** WHEN a steady stream of water issues from the vent, THEN **CLOSE** V09886, 1A AFW PUMP CASING VENT.	**CRITICAL STEP** _____ SAT _____ UNSAT
STANDARD:	**OPEN** V09886 1A AFW PUMP CASING VENT by rotating handwheel counter clockwise until stopped. **IDENTIFIES** a steady stream of water from the vent **THEN** CLOSES V09886 by rotating the handwheel clockwise until stopped. **EXAMINER'S CUE: V09886 has been rotated fully counter clockwise.** **EXAMINER'S CUE: A steady stream of water is issuing from V09886.** **EXAMINER'S CUE: V09886 handwheel has been rotated fully clockwise.**	
COMMENTS:		

STEP 11:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **K. START** 1A AUXILIARY FEEDWATER PUMP. (RTGB-102)	**CRITICAL STEP** _____ SAT
STANDARD:	**CALLS** the Unit 1 Control Room and inform them the 1A Auxiliary Feedwater pump is ready to be started. **EXAMINER'S CUE: Acknowledge as Unit 1 Control that that the 1A Auxiliary Feedwater pump is ready to be started. Wait 30 seconds and inform the Operator the 1A AFW pump is running.** **EXAMINERS NOTE: The Operator should stand away from the Pump during starting as the Control Room will make that announcement.**	_____ UNSAT
COMMENTS:		

STEP 12:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **L.** Slowly **OPEN** V09108, 1A AFW PUMP DISCH ISOL. STANDARD: **OPENS** V09108 SLOWLY by rotating the handwheel counter clockwise until stopped. **EXAMINER'S CUE: V09108 has been rotated fully counter clockwise** **EXAMINERS NOTE: The applicant may elect to partially open V09108 until water issues from vent which is next step. V09108 will be LOCKED OPEN in step 16.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 13:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **M.** WHEN a steady stream of water flows out of the vent, THEN: **(1) CLOSE** V09313, PX-09-4A1 ISOL. **(2) CLOSE** V09314, PX-09-4A1 ISOL. STANDARD: **CLOSE** V09313 by rotating handwheel clockwise until stopped. **CLOSE** V09314 by rotating handwheel clockwise until stopped. **EXAMINER'S CUE: V09313 has been rotated fully clockwise** **EXAMNIERS CUE: V09314 has been rotated fully clockwise** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 14:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **N. CLOSE** MV-09-9, 1A AFW PUMP DISCH TO 1A S/G. STANDARD: **CALLS** Unit 1 Control Room and requests MV-09-9 be closed. **EXAMINER'S CUE: Acknowledge as Unit 1 Control Room and 30 seconds later inform the Operator MV-09-9 is closed.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 15:	1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **O. LOCK OPEN** V09120, 1A AFW PUMP DISCH TO 1A S/G FW ISOL. STANDARD: **OPENS AND LOCKS** V09120 by rotating handwheel counter clockwise until stopped. Installs lock on handwheel is a way to prevent rotating the handwheel. **EXAMINER'S CUE: V09120 has been rotated counter clockwise until stopped. Lock has been installed on handwheel.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 16: 1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **P. LOCK OPEN** V09108, 1A AFW PUMP DISCH ISOL. STANDARD: **OPENS** or verifies open (from step 12) by rotating handwheel counter clockwise until stopped. Installs lock on handwheel is a way to prevent rotating the handwheel. **EXAMINER'S CUE: V09108 handwheel has been rotated counter clockwise until stopped. Lock has been installed on handweel.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 17 (done): 1. IF steam binding occurs on the 1A Auxiliary Feedwater pump, THEN **PERFORM** the following: **Q. VERIFY** discharge pressure greater than 1300 psig as indicated on PI-09-7A, 1A AFW PUMP DISCH PRESS. (TRSL/27/N-T5/W-TA) STANDARD: **OBSERVES** PI-09-7A to determine discharge pressure **EXAMINER'S CUE: PI-09-7A indicated 1350 psig.** COMMENTS: **END OF TASK**	_____ SAT _____ UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 1 is in Mode 3 following a Unit trip. The RCO stopped the 1A AFW pump due to erratic discharge pressure and amps.

INITIATING CUES:

You are the NPO. The US has directed you to perform actions or 1-AOP-09.02, 'Auxiliary Feedwater' Attachment 2, 'Restore Auxiliary Feedwater Flow Following Steam Binding'

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

LOCAL OPERATION OF BORON CONCENTRATION CONTROL – UNIT 2

NRC P-2

Developed/Revised by: Larry Rich _____
Date

Training Management Approval: _____
Date

JOB PERFORMANCE MEASURE

Task: Perform local blend to the VCT in accordance with 2-AOP-02.01 Boron Concentration System Abnormal Operations

Alternate Path JPM? No

Facility JPM #: 0821212

K/A: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the CVCS controls including: A1.06 VCT level

K/A Rating(s): 3.0 / 3.2

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the VCT is blended to the normal band.

Evaluation Location:

Simulator	In Plant	Lab	Other
	X		

Performance Level:

Perform	Simulate	Discuss
	X	

References:

- 2-AOP-02.01 Boron Concentration Control System Abnormal Operations

Validation Time: 15 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:

- 2-AOP-02.01 Boron Concentration Control System Abnormal Operations

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.

- Standard in plant PPE

Radiological Protection and RWP Requirements:

- General entry RWP requirements

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Locally operate the Boron Concentration Control system to blend to the VCT in accordance with Attachment 3 of 2-AOP-02.01 Boron Concentration Control System Abnormal Operations
- The performance level to be used for this JPM is **SIMULATE**.
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

- All simulator JPM steps, including communications, shall be performed for this JPM.
- You are to operate any plant equipment that is necessary for the completion of this JPM.
- The simulator will provide the cues as you perform this JPM.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 2 Control Room is not able to verify proper flow rates to blend to the VCT.

INITIATING CUES:

The US directs you to locally blend to the VCT using Attachment 3 from 2-AOP-02.01 Boron Concentration Control System Abnormal Operations. The blend ratio is 10:1.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

Attachment 3 from 2-AOP-02.01 Boron Concentration Control System Abnormal Operations.	
STEP 1 (1) Station operator at boric acid station and Establish communication between operator and the Control Room. STANDARD: **ESTABLISH** Communications with Unit 2 Control Room using Radio at the Boric Acid station. **EXAMINERS CUE: Unit 2 Control Room acknowledges communications** COMMENTS:	_____ **SAT** _____ **UNSAT**
STEP 2: (2) PLACE the Makeup Mode Selector switch in MANUAL: STANDARD: **VERIFY** Control Room has placed the Mode Selector switch in MANUAL **EXAMINERS CUE: Control Room has placed the Mode Selector switch in MANUAL** COMMENTS:	_____ **SAT** _____ **UNSAT**
STEP 3: (3) Start 2A or 2B Boric Acid Pump: STANDARD: **VERIFY** Control Room has started 2A or 2B Boric Acid Pump **EXAMINERS CUE: Control Room has started 2A Boric Acid Pump** COMMENTS:	_____ **SAT** _____ **UNSAT**

STEP 4: (4) ENSURE V2514 is CLOSED: STANDARD: **ENSURE** Control Room has verified V2514 Emergency Borate is CLOSED. **EXAMINERS CUE: Control Room has ensured V2514 is closed.** COMMENTS:	_____ **SAT** _____ **UNSAT**
STEP 5: (5) ENSURE FCV-2210X Reactor Makeup is CLOSED STANDARD: **ENSURE** Control Room FCV-2210X is CLOSED **EXAMINERS CUE: Control Room has ensured FCV-2210X is closed.** COMMENTS:	_____ **SAT** _____ **UNSAT**
STEP 6: (6) ENSURE FCV-2210Y Boric Acid Valve is CLOSED STANDARD: **ENSURE** Control Room FCV-2210Y is CLOSED **EXAMINERS CUE: Control Room has ensured FCV-2210Y is closed.** COMMENTS:	_____ **SAT** _____ **UNSAT**

CAUTION

- V2647 provides a direct Boric Acid flow path to the Charging pump suction at 20 gpm . With this valve open, boric acid flwo rate can NOT be monitored.
- V2180 provides a direct Primary Water flow path to the Charging pump suction

CRITICAL STEP

_____ **SAT**

_____ **UNSAT**

EXAMINERS CUE: Control Room calls to OPEN V2647 EMERG Boration from BAM Pumps Dish Isol ¼ turn OPEN.

STEP 7: (7) DIRECT the Operator at the Boric Acid station to throttle V2647, EMERG) Boration From BAM Pumps Disch Isol, OPEN ¼ turn. (RAB/3/S-RA4/E-RAE)

STANDARD: **OPENS** V2647 ¼ turn and communicates to Control Room valve is ¼ turn open.

EXAMINERS CUE: V2647 is turned Counter Clockwise ¼ turn
EXAMINERS CUE: Acknowledges as Control Room V2647 is ¼ turn open.

COMMENTS:

EXAMINERS CUE: Control Room calls to OPEN V2180 PMW to Charging Pumps Suct Manual Isol 1 (one) turn open.

CRITICAL STEP

_____ **SAT**

_____ **UNSAT**

STEP 8: (8) DIRECT the Operator at the Boric Acid station to throttle V2180, PMW to Charging Pumps Suct Manual Isol, per blend ration. (RAB/4/N-RA3/E-RAE)

STANDARD: **OPENS** V2180, PMW to Charging Pumps Suct Manual Isol, 1 (one) turn open and communicates to Control Room valve is 1 (one) turn open.

EXAMINERS CUE: V2180 is turned Counter Clockwise 1 (one) turn open.
EXAMINERS CUE: Acknowledges as Control Room V2180 is 1 (one) turn open.

COMMENTS:

STEP 9 (9) MONITOR FR-2210 for Reactor Makeup Water flow rate and ADJUST V2180 PMW To Charging Pumps Suct Manual Isol, as required. STANDARD: **COMMUNICATE** to the Control Room to determine if any adjustments to V2180 need to be made. **EXAMINERS CUE: No adjustments need to be made at this time.** COMMENTS:	_____ **SAT** _____ **UNSAT**
EXAMINERS CUE: About 30 seconds later, report: Reactor Makeup water flow indication FRC-2210X has malfunctioned. You are to CLOSE V2180 and REOPEN V2180 ¼ turn. STEP 10 (10) IF the Reactor Makeup water flow indication malfunctions, Then DIRECT the operator to OPEN V2180 ¼ turn open. STANDARD: **CLOSES** V2180 and **REOPENS** V2180 to ¼ turn open and communicates to control room V2180 is ¼ turn open. **EXAMINERS CUE: V2180 is fully clockwise** **EXAMINERS CUE: V2180 is counter-clockwise ¼ turn** **EXAMINERS CUE: Acknowledges as control room V2180 is ¼ turn open** COMMENTS:	**CRITICAL STEP** _____ **SAT** _____ **UNSAT**

STEP 11: (11) MONITOR Tave and RCS boron concentration for abnormal changes.

STANDARD: **COMMUNICATES** with control room to ensure Tave is not changing.

EXAMINERS CUE: Control room states Tave is constant. JPM is complete

COMMENTS:

STEP 12: (12) DIRECT operator to adjust V2180 and V2647 as necessary to maintain VCT level 45% to 65% and plant conditions stable.

STANDARD: None

EXAMINERS CUE: Control room states VCT level is 52%. End of JPM

COMMENTS:

END OF TASK

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR SETUP SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 2 Control Room is not able to verify proper flow rates to blend to the VCT.

INITIATING CUES:

The US directs you to locally blend to the VCT using Attachment 3 from 2-AOP-02.01 Boron Concentration Control System Abnormal Operations. The blend ratio is 10:1.

FPL

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

DISCONNECT 1B INSTRUMENT INVERTER FROM SERVICE FOR PREVENTIVE MAINTENANCE - UNIT 1

1B Battery Charger Room

NRC P-3

Developed/Revised by: Larry Rich _____
Date

Technical Review: _____
Date

Training Management Approval: _____
Date

JOB PERFORMANCE MEASURE

Task: Disconnect the 1B 120V Instrument Inverter from service on Unit 1.

Faulted JPM? No

Facility JPM #: 0821067

K/A: Knowledge of the physical connections and/or cause effect relationships between the ac distribution system and the following systems: K1.03 DC distribution

K/A Rating(s): 3.5 / 4.0

Duty Area(s): NA

Task Information: NA

Task Standard:

This JPM is complete when the Control Room has been notified that the 1B Instrument Inverter has been transferred to the Maintenance Bypass Bus and the 1B Instrument Inverter is out of service.

Evaluation Location:				Performance Level:		
Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
	X				X	

References:
1-NOP-49.05B, "120 VAC Instrument Bus 1MB (Class 1E) Normal Operations"

Validation Time: 10 minutes **Time Critical:** No

Tools/Equipment/Procedures Needed:
- 1-NOP-49.05B, "120 VAC Instrument Bus 1MB (Class 1E) Normal Operations"

Specific Safety Rules, Personal Protective Equipment and Hazards associated with the task.
- Normal PPE for in-plant

Radiological Protection and RWP Requirements:
- None

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Disconnect the 1B 120V Instrument Inverter from service.
- The performance level to be used for this JPM is Simulate
- This is not a time critical JPM.
- During the performance of the task, I will tell you which steps to simulate or discuss.
- I will provide you with the appropriate cues for steps that are simulated or discussed.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

INITIAL CONDITIONS:

Unit 1 is at 100% power and stable with each instrument bus aligned to receive power from its respective inverter. The 1B Instrument Inverter is to be removed from service for preventive maintenance.

INITIATING CUES:

You are the SNPO. The US has directed you to remove 1B 120V Instrument Inverter from service by placing it on the Maintenance Bypass Bus in accordance with 1-NOP-49.05B, "120 VAC Instrument Bus 1MB (Class 1E) Normal Operations". Consider all Concurrent Verifications complete. Step 1, Initiating an Equipment Out Of Service Log entry has been completed.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

1-NOP-49.05B, "120 VAC Instrument Bus 1MB (Class 1E) Normal Operations" Step 4.1 Remove Instrument Inverter from Service (Shifting Loads to Maintenance Bypass Bus)	
STEP 1 (4.1.2): At Instrument Bus Transfer Panel 1B, **VERIFY** switch 1010-2, TRANSFER SWITCH 1MD, is positioned to INVERTER 1D. STANDARD: **VERIFY** switch 1010-2 is positioned to INVERTER 1D. **EXAMINER'S CUE: Switch 1010-2 is positioned to Inverter 1D.** COMMENTS:	_____ SAT _____ UNSAT
STEP 2 (4.1.3): At 1B Maint Bypass Bus, **PLACE** breaker CKT 13 (Feed to Instrument Bus 1MB) in ON. STANDARD: **POSITION** 1B Maint Bypass Bus CKT 13 Breaker to **ON.** **EXAMINER'S CUE: CKT 13 Breaker is ON** **EXAMINER'S NOTE: If CKT 13 breaker is already ON, then the standard for this step is VERIFY, and it no longer a critical step.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

STEP 3 (4.1.4): At Instrument Bus Transfer Panel 1B, **VERIFY** 1010-2, MAINT BYPASS BUS 1B FEED, power available light is ON. STANDARD: **VERIFY** light 1010-2 is **ON** at Bus Transfer Panel 1B. **EXAMINER'S CUE: Light 1010-2 is ON** COMMENTS:	_____ SAT _____ UNSAT
STEP 4 (4.1.5): At 1B Maint Bypass Bus, **VERIFY** breaker CKT 3 (Sync Signal to Inverter 1B) in ON. STANDARD: **VERIFY** Inverter 1B Maint Bypass Bus 1B CKT 3 Breaker is **ON.** **EXAMINER'S CUE: CKT 3 Breaker is ON.** COMMENTS:	_____ SAT _____ UNSAT
STEP 5 (4.1.6): At 1MB Instrument Inverter, **VERIFY** IN SYNC light is ON. STANDARD: **VERIFY** IN at 1MB Instrument Inverter that the IN SYNC light is ON. **EXAMINER'S CUE: IN SYNC light on Inverter 1MB is ON** COMMENTS:	_____ SAT _____ UNSAT

STEP 6 (4.1.7): IF the IN SYNC light is OFF, THEN **STOP** procedure and **NOTIFY** Electrical Maintenance. STANDARD: **DETERMINE** step is N/A **EXAMINER'S CUE: None** COMMENTS:	_____ SAT _____ UNSAT
STEP 7 (4.1.8): At Instrument Bus Transfer Panel 1B, **PLACE** 1010-1, TRANSFER SWITCH 1MB, in MAINT BYPASS BUS 1B. STANDARD: **POSITION** 1010-1 in MAINT BYPASS BUS 1B. **EXAMINER'S CUE: 1010-1 is in MAINT BYPASS BUS 1B.** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 8 (4.1.9): **NOTIFY** the Control Room That Instrument Bus 1MB is being powered from Maintenance Bypass Bus 1B STANDARD: **NOTIFY** Control Room that 1MB Instrument Bus is now being powered from the Maintenance Bypass Bus. **EXAMINER'S CUE: CONTROL ROOM ACKNOWLEDGES** COMMENTS:	_____ SAT _____ UNSAT

STEP 9 (4.1.10): At 1MB Instrument Inverter, **PLACE** the following breakers in OFF: A. 1MB-B4, BYPASS SOURCE A.C. INPUT B. 1MB-B2, INVERTER OUTPUT C. 1MB-B1, DC INPUT STANDARD: **POSITION** Breakers, 1MB-B4, 1MB-B2, and 1MB-B1 on Inverter 1MB to **OFF** in that order **EXAMINER'S CUE: As Student positions these Breakers, cue that the respective breaker is OFF** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 10 (4.1.11): At 125V DC Bus 1B, PLACE Bkr 1-60224, INVERTER 1B in OFF. STANDARD: **POSITION** DC Bus 1B Breaker 1-60224 to **OFF** **EXAMINER'S CUE: Breaker 1-60224 is OFF** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT
STEP 11 (4.1.12): At 1B Maint Bypass Bus, PLACE breaker CKT 3 (Sync Signal to Inverter 1B) in OFF. STANDARD: **POSITION** Maintenance Bypass Bus 1B CKT 3 Breaker to **OFF** **EXAMINER'S CUE: CKT 3 breaker is OFF** COMMENTS:	**CRITICAL STEP** _____ SAT _____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

STEP (4.1.13 done): Notify the Control Room the 1B inverter is removed from service. STANDARD: **NOTIFY** the Control Room that 1MB Instrument Inverter is removed from service **EXAMINER'S CUE: CONTROL ROOM ACKNOWLEDGES** COMMENTS: **END OF TASK**	_____ SAT _____ UNSAT

STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

(TO BE RETURNED TO THE EXAMINER UPON COMPLETION OF THE TASK)

INITIAL CONDITIONS:

Unit 1 is at 100% power and stable with each instrument bus aligned to receive power from its respective inverter. The 1B Instrument Inverter is to be removed from service for preventive maintenance.

INITIATING CUES:

You are the SNPO. The US has directed you to remove 1B 120V Instrument Inverter from service by placing it on the Maintenance Bypass Bus in accordance with 1-NOP-49.05B, "120 VAC Instrument Bus 1MB (Class 1E) Normal Operations". Consider all Concurrent Verifications complete. Step 1, initiating an Equipment Out Of Service Log entry has been completed.