



St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

RESTORE AFW FLOW TO THE 2A SG USING 2C AFW PUMP

NRC S-1

Developed/Revised by: Larry Rich 4/01/08
Date

Training Management Approval:  6/4/08
Date

JOB PERFORMANCE MEASURE

Task: Start the 2C AFW pump and feed the 2A SG.

Faulted JPM? No *Listed as A17. PWR*

Facility JPM #: N/A

K/A Rating(s): 008 A2.01 3.3/3.6

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is completed when the 2C AFW pump electrical overspeed trip is reset and the 2C AFW pump is feeding the 2A SG.

Evaluation Location:

Simulator	In Plant	Lab	Other
<u>X</u>			

Performance Level:

Perform	Simulate	Discuss
<u>X</u>		

References:

- 2-ONP-09.02 AUXILIARY FEEDWATER
- 2-NOP-09.02 AUXILIARY FEEDWATER

Validation Time: 20 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-ONP-09.02 AUXILIARY FEEDWATER.
- 2-NOP-09.02 AUXILIARY FEEDWATER

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: Start the 2C AFW Pump and feed the 2A SG.
- 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:

The Unit is in Mode 3 NOP/NOT. The 2A AFW tripped. The 2C AFW pump is ready to be started to feed the 2A SG.

INITIATING CUES:

The US directs you to start the 2C AFW using 2-NOP-09.02 Auxiliary Feedwater step 6.4.5 and feed the 2A SG.

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 3:</u> IMPLEMENT 2-ONP-09.02 and reset the 2C AFW pump electrical overspeed by:</p> <p><u>STANDARD:</u> CLOSE if opened, MV-08-12 SG 2B Stem to AFW Pp 2C.</p> <p style="text-align: center;">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> RESET 2C AFW Pp electrical overspeed</p> <p><u>STANDARD:</u> CLOSE if opened, MV-08-13 SG 2A Stem to AFW Pp 2C.</p> <p style="text-align: center;">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> PERFORM the following to reset and open MV-08-3, 2C Pump on RTGB-202</p> <p><u>STANDARD:</u> PLACE MV-08-3 2C Pump Key 78, key switch to CLOSE.</p> <p style="text-align: center;">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 6: PERFORM the following to reset and open MV-08-3, 2C Pump on RTGB-202</p> <p>STANDARD: RETURN MV-08-3 Brk2C Pump Key 78, key switch to OPEN</p> <p> EXAMINERS CUE:</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7: PERFORM the following to reset and open MV-08-3, 2C Pump on RTGB-202</p> <p>STANDARD: VERIFY MV-08-3 Throttle / Trip Valve for AFW Pump 2C OPEN.</p> <p> EXAMINERS CUE:</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 8: VERIFY the pump has stopped rotating.</p> <p>STANDARD: CONTACT the NOP to determine if pump has stopped rotating.</p> <p> EXAMINERS CUE: Inform the Candidate the Pump has stopped rotating.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 9:</u> PERFORM ONE of the following to drain oil from the underside of the governor main speed piston</p> <p><u>STANDARD:</u> WAIT 3 minutes after the pump stops rotating</p> <p style="text-align: center;">OR</p> <p style="text-align: center;">A. PLACE manual control knob on the side of the turbine governor FULLY COUNTER CLOCKWISE</p> <p style="text-align: center;">B. RETURN manual control knob on turbine governor FULL CLOCKWISE</p> <p style="text-align: center;">EXAMINERS CUE: It has been three minutes since pump has stopped rotating</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">____ SAT</p> <p style="text-align: center;">____ UNSAT</p>
<p><u>STEP 10:</u> ENSURE MV-09-11, Pump 2C to S/G 2A is CLOSED</p> <p><u>STANDARD:</u> VERIFY MV-09-11, Pump 2C to S/G 2A is CLOSED.</p> <p style="text-align: center;">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">____ SAT</p> <p style="text-align: center;">____ UNSAT</p>
<p><u>STEP 11:</u> ENSURE MV-09-12, Pump 2C to S/G 2B is CLOSED</p> <p><u>STANDARD:</u> VERIFY MV-09-12, Pump 2C to S/G 2B is CLOSED</p> <p style="text-align: center;">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p style="text-align: center;">____ SAT</p> <p style="text-align: center;">____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 12:</u> IF BOTH Steam Generators are intact and NOT faulted, <u>THEN</u> OPEN the following SIMULTANEOUSLY</p> <p><u>STANDARD:</u> <u>OPEN</u> MV-08-13, SG 2A Steam to AFW Pp 2C <u>OPEN</u> MV-08-12, SG 2B Steam to AFW Pp 2C</p> <p align="center">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 13:</u> IF flow is to be restored to the 2A S/G <u>THEN</u> ENSURE OPEN SE-09-4 2C Pump Disch to 2A S/G Vlv Key 85</p> <p><u>STANDARD:</u> <u>OPEN</u> SE-09-4 2C Pump Disch to 2A S/G Vlv Key 85</p> <p align="center">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p align="center"><u>CAUTION</u></p> <p>Excessive Feedwater to a Steam Generator following a Total Loss of Feedwater can result in water hammer and thermal shock. Following a Total Loss of Feedwater, initial Feedwater flow should be controlled as follows:</p> <ul style="list-style-type: none"> • If using Auxiliary Feedwater, 150 gpm for 5 minutes OR until SG level has risen • If using Main Feedwater OR Condensate, 'As low as possible' for the first 5 minutes OR until SG level has risen. </div> <p><u>STEP 14:</u> To restore flow to the 2A S/G THROTTLE MV-09-11, Pump 2C to S/G to desired flowrate.</p> <p><u>STANDARD:</u> <u>THROTTLE</u> MV-09-11, Pump 2C to S/G to 150 gpm.</p> <p align="center">EXAMINERS CUE: Terminate JPM when candidate has established flow to the 2A SG from the 2C AFW pump.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

The Unit is in Mode 3 NOP/NOT. The 2A AFW tripped. The 2C AFW pump is ready to be started to feed the 2A SG.

INITIATING CUES:

The US directs you to start the 2C AFW using 2-NOP-09.02 Auxiliary Feedwater step 6.4.5 and feed the 2A SG.

JOB PERFORMANCE MEASURE
SIMULATOR SETUP SHEET

1. IC #6 File S-5 Afw.Isn Mode 3 NOP/NOT
2. Scenario triggers electrical overspeed of the 2C AFW pump 30 seconds after start
3. Ensure 2C steam admission valves are closed and 2C AFW pump is NOT running
4. Place 2A AFW pump to stop and close associated valves

REVISION NO.: 1A	PROCEDURE TITLE: AUXILIARY FEEDWATER SYSTEM OPERATION ST. LUCIE UNIT 2	PAGE: 13 of 52
PROCEDURE NO.: 2-NOP-09.02		

- 6.4** 2C AFW Pump to 2A / 2B S/G (continued) CHECK
- 5.** START 2C Auxiliary Feedwater Pump by performing the following:
- OPEN MV-08-12, B MS to 2C AFW Pump Isol. _____
- AND / OR**
- OPEN MV-08-13, A MS to 2C AFW Pump Isol. _____
- 6.** ENSURE turbine speed is stable between 3700 and 3800 rpm and the governor valve is not hunting / oscillating. _____
NPO
- 7.** OPEN the solenoid valve in the header to the S/G requiring feed (SE-09-4 for 2A S/G, SE-09-5 for 2B S/G). _____
- 8.** THROTTLE MV-09-11 / MV-09-12 as necessary to establish and maintain desired flow to 2A / 2B S/Gs. _____
- 9.** WHEN the 2C Auxiliary Feedwater Pump is no longer being used for feed and it is desired to secure, PERFORM the following:
- A.** ENSURE closed MV-09-11, Pump 2C to S/G 2A. _____
 - B.** ENSURE closed MV-09-12, Pump 2C to S/G 2B. _____
 - C.** PLACE keyswitch for SE-09-4, 2C Pump Disch to 2A S/G, to AUTO. _____
RCO / IV
 - D.** ENSURE closed SE-09-4, 2C Pump Disch to 2A S/G. _____
 - E.** PLACE keyswitch for SE-09-5, 2C Pump Disch to 2B S/G to AUTO. _____
RCO / IV
 - F.** ENSURE closed SE-09-5, 2C Pump Disch to 2B S/G. _____

REVISION NO.: 1A	PROCEDURE TITLE: AUXILIARY FEEDWATER SYSTEM OPERATION ST. LUCIE UNIT 2	PAGE: 14 of 52
PROCEDURE NO.: 2-NOP-09.02		

6.4 2C AFW Pump to 2A / 2B S/G (continued) CHECK

9. (continued)

NOTE

The 2C Auxiliary Feedwater turbine can be tripped three ways:

- 1) Placing the Key switch for MV-08-3 to CLOSE
- 2) Depressing the trip pushbutton on the Local Control Panel, or
- 3) Locally actuating the mechanical tripping device.

G. STOP the 2C AFW Pump by PERFORMING any of the following:

- CLOSE MV-08-3 with Keyswitch #78 on RTGB - 202. _____

- DEPRESS the Local trip Pushbutton located in the local control panel. _____
NPO

- Locally STOP the 2C Auxiliary Feedwater Pump by tripping the mechanical overspeed trip lever. _____
NPO

H. VERIFY 2C Auxiliary Feedwater Pump turbine is slowing by observing reduction of speed indication on 2C AFW Pump control panel. _____
NPO

NOTE

- An Electrical overspeed trip results in closed indication for MV-08-3, and alarm and reset for Annunciator G-46.
- A Mechanical Overspeed trip results in closed indication for MV-08-3, and locked in alarm for Annunciator G-46.
- CLOSING MV-08-3 alone will result in closed indication for MV-08-3 with NO alarm for Annunciator G-46.

I. If applicable, Then VERIFY annunciator G-46, 2C AFW Pump Turbine failure/trip/OVRLD/SS Isol, Alarms. _____

J. VERIFY the 2C Auxiliary Feedwater Pump is NOT rotating. _____
NPO

REVISION NO.: 1A	PROCEDURE TITLE: AUXILIARY FEEDWATER SYSTEM OPERATION ST. LUCIE UNIT 2	PAGE: 15 of 52
PROCEDURE NO.: 2-NOP-09.02		

6.4 2C AFW Pump to 2A / 2B S/G (continued) CHECK

9. (continued)

K. ENSURE MV-08-3, 2C AFW Pump Throttle/Trip, is reset by placing the key switch on RTGB 202 in the close position. _____

NOTE
REFER to Figure 1 for correct Mechanical Overspeed mechanism latching.

L. If the 2C Auxiliary Feedwater Pump was tripped using the Mechanical Overspeed trip lever, Then PERFORM the following:

1. RESET the 2C Auxiliary Feedwater Pump mechanical overspeed linkage. _____

2. VERIFY top surface of trip tappet nut is inline with the line marked on the head lever to ensure full engagement. _____

/_____
NPO / IV

M. ENSURE MV-08-12, B MS to 2C AFW Pump Isol CLOSED. _____

N. ENSURE MV-08-13, A MS to 2C AFW Pump Isol CLOSED. _____

O. ENSURE the manual speed control knob on the side of governor is fully CLOCKWISE. _____

NPO

P. OPEN MV-08-3, 2C AFW Pump Throttle / Trip, by placing the key switch on RTGB 202 in the Open position. _____

/_____
RCO / IV

REVISION NO.: 1A	PROCEDURE TITLE: AUXILIARY FEEDWATER SYSTEM OPERATION ST. LUCIE UNIT 2	PAGE: 16 of 52
PROCEDURE NO.: 2-NOP-09.02		

6.4 2C AFW Pump to 2A / 2B S/G (continued) CHECK

9. (continued)

Q. If the 2C Auxiliary Feedwater Pump is rotating, Then PERFORM the following:

1. UNLOCK and CLOSE V08884, SE-08-2 Inlet Isol. _____
NPO

2. When the 2C Aux Feedwater Pump stops rotating, Then slowly reopen V08884, SE-08-2 Inlet Isol. _____
NPO

3. If the 2C Aux Feedwater Pump does NOT stop rotating, Then PERFORM Appendix C, Step 2. _____
NPO

4. LOCK OPEN V08884, SE-08-2 Inlet Isol. _____
NPO / IV

R. ENSURE MV-08-12, SG 2B Stm to AFW PP 2C, switch is in AUTO _____
RCO / IV

S. ENSURE MV-08-13, SG 2A Stm to AFW PP 2C, control switch is in AUTO. _____
RCO / IV

END OF SECTION 6.4

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 8 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX A
RESETTING 2C AFW PUMP FOLLOWING OVERSPEED TRIP

(Page 1 of 6)

INITIAL

NOTE

- An electrical overspeed trip results in closed position indication for MV-08-3 and alarm reset on G-46.
- A mechanical overspeed trip results in closed position indication for MV-08-3 and alarm G-46 locked in.
- Refer to Figure 2 for correct mechanical overspeed mechanism latching.

1. If 2C AFW pump tripped due to mechanical overspeed trip, Then PERFORM the following:
 - A. CLOSE MV-08-12, SG 2B Stm to AFW Pp 2C. _____
 - B. CLOSE MV-08-13, SG, 2A Stm to AFW Pp 2C. _____
 - C. PERFORM the following to reset and OPEN MV-08-3, 2C Pump, on RTGB-202:
 1. PLACE MV-08-3, 2C Pump Key 78, key-switch to CLOSE. _____
 2. RESET the 2C Auxiliary Feedwater Pump mechanical overspeed linkage. _____
 3. VERIFY top surface of trip tappet nut is inline with the line marked on the head lever to ensure full engagement. _____
 4. RETURN MV-08-3, 2C Pump Key 78, key-switch to OPEN. _____
 5. VERIFY MV-08-3, Throttle / Trip Valve for AFW Pump 2C, OPEN. _____
 - D. VERIFY pump has stopped rotating. If pump is rotating, Then PERFORM the following:
 1. CLOSE V08884. _____
 2. When the 2C Aux Feedwater Pump stops rotating, Then slowly REOPEN V08884. _____

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 9 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX A
RESETTING 2C AFW PUMP FOLLOWING OVERSPEED TRIP

(Page 2 of 6)

- | | | |
|----|-------------|----------------|
| 1. | (continued) | <u>INITIAL</u> |
| | D. | |
| | 3. | |
| | 4. | |
| | E. | |
| | 1. | |
| | OR | |
| | 2. | |
| | a. | |
| | b. | |
| | F. | |
| | G. | |
| | H. | |
| | 1. | |
| | 2. | |
| | I. | |
| | 1. | |
| | OR | |
| | 2. | |

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 10 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX A
RESETTING 2C AFW PUMP FOLLOWING OVERSPEED TRIP

(Page 3 of 6)

1. (continued) INITIAL
- J. If flow is to be restored to the 2A S/G, Then ENSURE OPEN SE-09-4, 2C Pump Disch to 2A S/G Vlv Key 85. _____
- K. If flow is to be restored to the 2B S/G, Then ENSURE OPEN SE-09-5 2C Pump Disch to 2B S/G Vlv Key 86. _____

CAUTION

Excessive Feedwater to a Steam Generator following a Total Loss of Feedwater can result in water hammer and thermal shock. Following a Total Loss of Feedwater, initial Feedwater flow should be controlled as follows:

- If using Auxiliary Feedwater, 150 gpm for 5 minutes OR until SG level has risen.
- If using Main Feedwater OR Condensate, "As low as possible" for the first 5 minutes OR until SG level has risen.

- L. To restore flow to the 2A S/G, THROTTLE MV-09-11, Pump 2C to S/G 2A to establish desired flowrate. _____
- M. To restore flow to the 2B S/G, THROTTLE MV-09-12, Pump 2C to S/G 2B to establish desired flowrate. _____
- N. PERFORM Independent Verification of the following:

COMPONENT	POSITION	IV INITIAL
MV-08-12, SG 2B Stm To AFW Pp 2C	OPEN *	
MV-08-13, SG 2A Stm To AFW Pp 2C	OPEN *	
Manual Control Knob on AFW Pp 2C Turbine Governor	FULLY CLOCKWISE	
MV-08-3, 2C Pump Key 78	OPEN	
V08884, Isol. Valve for SE-08-2 Inlet	OPEN	

* If valve is not used, then mark initial block N/A.

2. If 2C AFW pump tripped due to electrical overspeed trip, Then PERFORM the following:
- A. CLOSE MV-08-12, SG 2B Stm To AFW Pp 2C.
- B. CLOSE MV-08-13, SG 2A Stm To AFW Pp 2C.

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 11 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX A
RESETTING 2C AFW PUMP FOLLOWING OVERSPEED TRIP

(Page 4 of 6)

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|-----------|---|----------------|
| 2. | (continued) | <u>INITIAL</u> |
| | <p>C. PERFORM the following to reset and open MV-08-3, 2C Pump, on RTGB-202:</p> <ol style="list-style-type: none"> 1. PLACE MV-08-3, 2C Pump Key 78, key-switch to CLOSE. _____ 2. RETURN MV-08-3, 2C Pump Key 78, key-switch to OPEN. _____ 3. VERIFY MV-08-3, Throttle / Trip Valve for AFW Pump 2C OPEN. _____ <p>D. VERIFY pump has stopped rotating. <u>If</u> pump is rotating, <u>Then</u> PERFORM the following:</p> <ol style="list-style-type: none"> 1. CLOSE V08884. _____ 2. When the 2C Aux Feedwater Pump stops rotating, <u>Then</u> slowly REOPEN V08884. _____ 3. <u>If</u> the 2C Aux Feedwater Pump does NOT stop rotating, <u>Then</u> PERFORM Appendix C, Step 2 of 2-NOP-09.02, Auxiliary Feedwater System Operation. _____ 4. LOCK OPEN V08884. _____ <p>E. PERFORM ONE of the following to drain oil from the underside of the governor main speed piston:</p> <ol style="list-style-type: none"> 1. Wait 3 minutes after pump stops rotating. <p style="text-align: center;">OR</p> <ol style="list-style-type: none"> 2. PERFORM the following: <ol style="list-style-type: none"> a. PLACE manual control knob on the side of the turbine governor FULLY COUNTER-CLOCKWISE (idle speed). b. RETURN manual control knob on turbine governor FULLY CLOCKWISE (normal speed). _____ <p>F. ENSURE MV-09-11, Pump 2C to S/G 2A is CLOSED. _____</p> <p>G. ENSURE MV-09-12, Pump 2C to S/G 2B is CLOSED. _____</p> | |

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 12 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX A
RESETTING 2C AFW PUMP FOLLOWING OVERSPEED TRIP

(Page 5 of 6)

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|----|--|----------------|
| 2. | (continued) | <u>INITIAL</u> |
| | H. <u>If BOTH Steam Generators are intact and NOT faulted, Then OPEN the following valves SIMULTANEOUSLY:</u> | |
| | 1. MV-08-13, SG 2A Stem to AFW Pp 2C | _____ |
| | 2. MV-08-12, SG 2B Stem to AFW Pp 2C | _____ |
| | I. <u>If EITHER Steam Generator is faulted, Then OPEN the steam supply valve from the NON-FAULTED SG (initial valve opened).</u> | |
| | 1. MV-08-13, SG 2A Stem to AFW Pp 2C | _____ |
| | 2. MV-08-12, SG 2B Stem to AFW Pp 2C | _____ |
| | J. <u>If flow is to be restored to the 2A S/G, Then ENSURE OPEN SE-09-4, 2C Pump Disch to 2A S/G Vlv Key 85.</u> | _____ |
| | K. <u>If flow is to be restored to the 2B S/G, Then ENSURE OPEN SE-09-5, 2C Pump Disch to 2B S/G Vlv Key 86.</u> | _____ |

CAUTION

Excessive Feedwater to a Steam Generator following a Total Loss of Feedwater can result in water hammer and thermal shock. Following a Total Loss of Feedwater, initial Feedwater flow should be controlled as follows:

- If using Auxiliary Feedwater, 150 gpm for 5 minutes OR until SG level has risen.
- If using Main Feedwater OR Condensate, "As low as possible" for the first 5 minutes OR until SG level has risen.

- | | | |
|----|--|-------|
| L. | To restore flow to the 2A S/G, THROTTLE MV-09-11, Pump 2C to S/G 2A to establish desired flowrate. | _____ |
| M. | To restore flow to the 2B S/G, THROTTLE MV-09-12, Pump 2C to S/G 2B to establish desired flowrate. | _____ |

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 13 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX A
RESETTING 2C AFW PUMP FOLLOWING OVERSPEED TRIP

(Page 6 of 6)

2. (continued)

INITIAL

N. PERFORM Independent Verification of the following:

COMPONENT	POSITION	IV INITIAL
MV-08-12, SG 2B Stm To AFW Pp 2C	OPEN *	
MV-08-13, SG 2A Stm To AFW Pp 2C	OPEN *	
Manual Control Knob on AFW Pp 2C Turbine Governor	FULLY CLOCKWISE	
MV-08-3, 2C Pump Key 78	OPEN	
V08884, Isol. Valve for SE-08-2 Inlet	OPEN	

* If valve is not used, then mark initial block N/A.

Reviewed by: _____
US

END OF APPENDIX A

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 14 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX B
LOCAL OPERATION OF 2C AFW PUMP

(Page 1 of 4)

NOTE

Communications must be maintained with the Control Room at all times while maintaining steam generator level with this method.

1. If 2C AFW Pump is to be started up locally, Then PERFORM the following:

A. OPEN breaker 2-60320, AFW Pp 2C Stm Vlv MV-08-3 & AFW Pp 2C Turb Ctrl Pnl, on 125V DC Bus 2AB.

B. ENSURE 2C AFW Pump discharge valves are aligned as follows:

COMPONENT	POSITION
MV-09-11, 2C AFW Pump Disch To 2A S/G	CLOSED
MV-09-12, 2C AFW Pump Disch To 2B S/G	CLOSED

C. Locally CLOSE MV-08-3, 2C AFW Pump Throttle / Trip.

D. ENSURE **ONE** of the following valves is OPEN.

1. MV-08-12, 2B SG Stm To 2C AFW Pump.

OR

2. MV-08-13, 2A SG Stm To 2C AFW Pump.

E. ENSURE feedwater solenoid valves to the affected S/G(s) are aligned as follows:

COMPONENT	POSITION
I-SE-09-4, 2C Pump Disch To 2A S/G Vlv Key 85	OPEN
I-SE-09-5, 2C Pump Disch To 2B S/G Vlv Key 86	OPEN

F. ESTABLISH direct communications between the Control Room and AFW Pump local station.

G. Locally THROTTLE MV-08-3, 2C AFW Pump Throttle / Trip, to establish greater than or equal to 100 psi above S/G pressure, as indicated on PI-09-7C, 2C AFW Pump Disch Press.

REVISION NO.: 9	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 15 of 28
PROCEDURE NO.: 2-ONP-09.02	ST. LUCIE UNIT 2	

APPENDIX B
LOCAL OPERATION OF 2C AFW PUMP

(Page 2 of 4)

1. (continued)

H. If S/G levels are to be controlled locally, Then THROTTLE the following valves, as directed by the Control Room:

1. MV-09-11, 2C AFW Pump Disch To 2A S/G.
2. MV-09-12, 2C AFW Pump Disch To 2B S/G.

2. If 2C AFW Pump is already operating but is to be controlled locally, Then PERFORM the following:

A. ESTABLISH direct communications between the Control Room and AFW Pump local station.

B. If MV-08-3, 2C AFW Pump Throttle / Trip, is to be controlled locally, Then PERFORM the following:

1. OPEN breaker 2-60320, AFW Pp 2C Stm Vlv MV-08-3 & AFW Pp 2C Turb Ctrl Pnl, on 125V DC Bus 2AB.
2. Locally THROTTLE MV-08-3, 2C AFW Pump Throttle / Trip, to establish greater than or equal to 100 psi above S/G pressure, as indicated on PI-09-7C, 2C AFW Pump Disch Press.

C. If S/G levels are to be controlled locally, Then THROTTLE the following valves, as directed by the Control Room:

1. MV-09-11, 2C AFW Pump Disch To 2A S/G.
2. MV-09-12, 2C AFW Pump Disch To 2B S/G.

3. When 2C AFW Pump is to be shutdown, Then PERFORM the following:

A. ALIGN the following valves:

COMPONENT	POSITION	INITIAL
MV-09-11, 2C AFW Pump Disch To 2A S/G	CLOSED	
MV-09-12, 2C AFW Pump Disch To 2B S/G	CLOSED	
I-SE-09-4, 2C Pump Disch To 2A S/G Vlv Key 85	CLOSED	
I-SE-09-5, 2C Pump Disch To 2B S/G Vlv Key 86	CLOSED	

DRAFT



St. Lucie Nuclear Plant

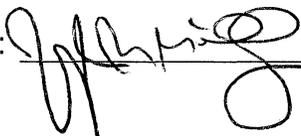
Operations Training

JOB PERFORMANCE MEASURE

**RESPOND TO LOSS OF RCP CONTROLLED
BLEEDOFF AND FAILED RCP SEALS ON THE
2B1 RCP**

NRC S-2

Developed/Revised by: Larry Rich 4/01/08
Date

Training Management Approval:  6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: Respond to loss of RCP controlled bleedoff and failed RCP seals on the 2B1 RCP

Faulted JPM? No

Facility JPM #: N/A

K/A Rating(s): 003 A2.01 3.5/3.9

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when RCP Bleedoff flow has been established to the QT, the Reactor has been tripped and the 2B1 RCP has been stopped.

Evaluation Location:

Simulator In Plant Lab Other

Performance Level:

Perform Simulate Discuss

References:

- 2-0120034 Reactor Coolant Pump

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-0120034 Reactor Coolant Pump

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: Re-establish RCP bleedoff flow.
- 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:

The Unit is at 100%. RCP controlled bleedoff flow has been lost.

INITIATING CUES:

The US directs you to investigate the loss of RCP controlled bleedoff, in accordance with 2-0120034 Reactor Coolant Pump.

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

2-0120034 Reactor Coolant Pump	
<p><u>STEP 1:</u> <u>IF</u> Controlled Bleedoff flow is Lost or Low, <u>Then</u> ENSURE: V2505 RCP Bleedoff Cntmt Isol. Is open.</p> <p><u>STANDARD:</u> <u>OPEN</u> V2505 RCP Bleedoff Cntmt Isol.</p> <p align="center">EXAMINERS NOTE: V2505 will not open</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> <u>IF</u> Controlled Bleedoff flow is Lost or Low, <u>Then</u> ENSURE: V2524 RCP Bleedoff Cntmt Isol. Is open.</p> <p><u>STANDARD:</u> <u>OPEN</u> V2524 RCP Bleedoff Cntmt Isol.</p> <p align="center">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 3:</u> IF normal Controlled Bleedoff can NOT be VERIFIED, <u>Then</u> open V2507 RCP Bleedoff Relief Stop Vlv.</p> <p><u>STANDARD:</u> OPEN V2507 RCP Bleedoff Relief Stop Vlv.</p> <p>EXAMINERS NOTE: Upon opening V2507, three seals fail on 2B1 RCP</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> IF three seals have failed <u>Then</u> TRIP the Reactor</p> <p>TRIP the Reactor</p> <p><u>STANDARD:</u> TRIP the Reactor</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> IF three seals have failed <u>Then:</u> TRIP the Turbine</p> <p><u>STANDARD:</u> TRIP the Turbine</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 6:</u> STOP the affected RCP(s)</p> <p><u>STANDARD:</u> <u>STOP</u> the 2B1 RCP</p> <p style="padding-left: 40px;">EXAMINERS CUE: The JPM is complete when the 2B1 RCP has been stopped.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
---	---

STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

The Unit is at 100%. RCP controlled bleedoff flow has been lost.

INITIATING CUES:

The US directs you to investigate the loss of RCP controlled bleedoff, in accordance with 2-0120034 Reactor Coolant Pump.

**JOB PERFORMANCE MEASURE
SIMULATOR SETUP SHEET**

1. Trigger S-3 RCP.Isn

REVISION NO.: 32B	PROCEDURE TITLE: REACTOR COOLANT PUMP	PAGE: 18 of 33
PROCEDURE NO.: 2-0120034	ST. LUCIE UNIT 2	

6.3 RCP Seal Problems/Anomalies (continued)

INSTRUCTIONS

CONTINGENCY ACTIONS

5. If Controlled Bleedoff flow is Lost or Low, Then ENSURE the following:
- A. V2505, RCP Bleedoff Cntmt Isol, is OPEN.
 - B. V2524, RCP Bleedoff Cntmt Isol, is OPEN.
 - C. Normal Bleedoff Flow for affected RCP(s) has been established.
6. * If CBO flow can NOT be reestablished within 30 minutes, Then PERFORM the following:
- A. TRIP the Reactor.
 - B. TRIP the Turbine.
 - C. STOP all RCPs.
 - D. **IMPLEMENT 2-EOP- 01, Standard Post Trip Actions.**
7. If any seal has failed, as indicated by a loss of differential pressure across the seal, Then TAKE 30 minute readings on controlled bleedoff flow and cavity pressures, using Data Sheet 1, until it is determined that additional seal degradation is NOT occurring.
8. **If two seals have failed, Then:**
- A. **NOTIFY** the system dispatcher.
 - B. **BEGIN** a unit shutdown.
 - C. **When** CEA TCBs are open, **Then** STOP the affected RCP.

- 5.1 If normal Controlled Bleedoff can NOT be VERIFIED, Then OPEN V2507, RCP Bleedoff Relief Stop Vlv.

REVISION NO.: 32B	PROCEDURE TITLE: REACTOR COOLANT PUMP	PAGE: 19 of 33
PROCEDURE NO.: 2-0120034	ST. LUCIE UNIT 2	

6.3 RCP Seal Problems/Anomalies (continued)

INSTRUCTIONS

CONTINGENCY ACTIONS

9. If three seals have failed,
Then:
- A. TRIP the reactor.
 - B. TRIP the turbine.
 - C. STOP the affected RCP(s).
 - D. **IMPLEMENT 2-EOP- 01,
Standard Post Trip Actions.**

NOTE

Annunciator R-8, SIAS Channel A/B Actuation Block Permissive, alarms at a setpoint of 1836 psia.

10. * If a RCP has been Stopped while in Hot Standby or Mode 1 conditions and a reactor plant cooldown is not to be performed, Then DEPRESSURIZE the RCS to between **1800 psia to 1850 psia** to maintain RCP lower seal cavity temperature less than 300°F.

END OF SECTION 6.3

JOB PERFORMANCE MEASURE



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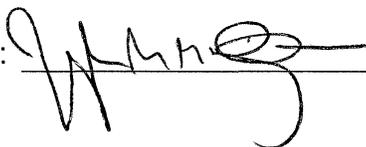
Operations Training

JOB PERFORMANCE MEASURE

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

NRC S-3

Developed/Revised by: Larry Rich 4/01/08
Date

Training Management Approval:  6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: 07003110, ALIGN SAFETY INJECTION FOR HOT AND COLD LEG INJECTION

Faulted JPM? No

Facility JPM #: 0821158 (Modified for NRC exam)

K/A Rating(s): 006 A4.02 4.0 / 3.8

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:

Simulator X In Plant _____ Lab _____ Other _____

Performance Level:

Perform X Simulate _____ Discuss _____

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 and has been diagnosed in Unit 2. It is four and a half (4.5) hours post-trip, and Shutdown Cooling can **NOT** be established. 2A and 2B HPSI pumps are running.

INITIATING CUES:

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

Section 2: Aligning 2B HPSI for Hot Leg Injection:		
<p><u>STEP 1:</u> OPEN V3551, To Hot Leg 2B Valve.</p> <p><u>STANDARD:</u> POSITION V3551 control switch to OPEN.</p> <p style="text-align: center;">EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>		<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> OPEN V3523, To Hot Leg 2B Valve.</p> <p><u>STANDARD:</u> POSITION V3523 control switch to OPEN.</p> <p style="text-align: center;">EXAMINERS NOTE: V3523 will not open EXAMINER'S CUE: When Candidate recognizes V3523 will not open, inform him as US to align the A side for Hot and Cold Leg Injection EXAMINERS NOTE: Although not procedurally driven, Candidate should go back and close V3551, to Hot Leg 2B Valve</p> <p><u>COMMENTS:</u></p>	FAULTED STEP	<p>_____ SAT</p> <p>_____ UNSAT</p>
Section 1: Aligning 2A HPSI for Hot Leg Injection		
<p><u>STEP 3:</u> OPEN V3550, To Hot Leg 2A Valve.</p> <p><u>STANDARD:</u> POSITION V3550 control switch to OPEN.</p> <p style="text-align: center;">EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>	CRITICAL STEP	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 4:</u> OPEN V3540, To Hot Leg Valve.</p> <p><u>STANDARD:</u> <u>POSITION</u> V3540 control switch to <u>OPEN</u></p> <p style="padding-left: 40px;">EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> CLOSE V3656, Pump 2A Discharge Valve.</p> <p><u>STANDARD:</u> <u>POSITION</u> V3656 control switch to <u>CLOSE</u></p> <p style="padding-left: 40px;">EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> VERIFY flow to the 2A Hot Leg is greater than or equal to 250 gpm on ANY of the following instruments:</p> <ul style="list-style-type: none"> • FI-3315 HPSI to Hot Leg • FR-3317 HPSI to Hot leg 2A Flow <p><u>STANDARD:</u> <u>OBSERVE</u> FI-3315 or FR-3317</p> <p style="padding-left: 40px;">EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

REVISION NO.: 35	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 70 of 156
PROCEDURE NO.: 2-EOP-99		

APPENDIX O
SIMULTANEOUS HOT AND COLD LEG INJECTION
(Page 1 of 4)

NOTE

If a HPSI Pump has been throttled post-RAS due to excessive flow, the HPSI pump that is NOT throttled should be used for simultaneous hot and cold leg injection.

Section 1: Aligning 2A HPSI for Hot Leg Injection

- 1. OPEN V3550, To Hot Leg 2A Valve.
- 2. OPEN V3540, To Hot Leg 2A Valve.
- 3. CLOSE V3656, Pump 2A Discharge Valve.
- 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
- 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

OR

 - FR-3313 / 3323, HPSI Loop 2A2 & 2A1 Flow
 - FR-3333 / 3343, HPSI Loop 2B2 & 2B1 Flow

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p>STEP 7: 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:</p> <ul style="list-style-type: none"> • FI-3321 HPSI Loop 2A1 Flow • FI-3311 HPSI Loop 2A2 Flow • FI-3331 HPSI Loop 2B1 Flow • FI-3341 HPSI Loop 2B2 Flow <p>STANDARD: DETERMINE that two HPSI Pumps are running and this step is N/A</p> <p style="text-align: center;">EXAMINER'S CUE:</p> <p>COMMENTS:</p>	<p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>
<p>STEP 8: 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:</p> <ul style="list-style-type: none"> • FI-3321 HPSI Loop 2A1 Flow • FI-3311 HPSI Loop 2A2 Flow • FI-3331 HPSI Loop 2B1 Flow • FI-3341 HPSI Loop 2B2 Flow <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • FR-3313 / 3323 HPSI Loop 2A2 & 2A1 Flow • FR-3333 / 3343 HPSI Loop 2B2 & 2B1 Flow <p>STANDARD: OBSERVE Flow instruments listed above</p> <p>EXAMINER'S CUE:</p> <p>COMMENTS:</p>	<p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p>STEP 9: Notify the US that the 2A HPSI train is Aligned for simultaneous Hot and Cold Leg injection.</p> <p>STANDARD: <u>NOTIFY</u> the US that simultaneous Hot and Cold Leg injection is <u>ALIGNED</u> to the 2A HPSI train.</p> <p>EXAMINER'S CUE: US ACKNOWLEDGES.</p> <p>COMMENTS:</p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
--	-------------------------------------

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** File XR021.Dat.
2. **V3523** is failed closed in IC set.
3. **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 and has been diagnosed in Unit 2. It is four and a half (4.5) hours post-trip, and Shutdown Cooling can NOT be established. 2A and 2B HPSI pumps are running.

INITIATING CUES:

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

REVISION NO.: 35	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 71 of 156
PROCEDURE NO.: 2-EOP-99		

APPENDIX O
SIMULTANEOUS HOT AND COLD LEG INJECTION
(Page 2 of 4)

Section 1: Aligning 2A HPSI for Hot Leg Injection (continued)

6. If **TWO** HPSI Pumps are RUNNING,
Then ENSURE flow to the Cold Legs is greater than or equal to 440 gpm by the
TOTAL of all **FOUR** of the following instruments:
- 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

End of Section 1

REVISION NO.: 35	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 72 of 156
PROCEDURE NO.: 2-EOP-99		

APPENDIX O
SIMULTANEOUS HOT AND COLD LEG INJECTION
(Page 3 of 4)

Section 2: Aligning 2B HPSI for Hot Leg Injection

- 1. OPEN V3551, To Hot Leg 2B Valve.
- 2. OPEN V3523, To Hot Leg 2B Valve.
- 3. CLOSE V3654, Pump 2B Discharge Valve.
- 4. VERIFY flow to the 2B Hot Leg is greater than or equal to 250 gpm on **ANY** of the following instruments:
 - FI-3325, HPSI To Hot Leg 2B Flow
 - FR-3327, HPSI To Hot Leg 2B Flow
- 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

OR

 - FR-3313 / 3323, HPSI Loop 2A2 & 2A1 Flow
 - FR-3333 / 3343, HPSI Loop 2B2 & 2B1 Flow

REVISION NO.: 35	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 73 of 156
PROCEDURE NO.: 2-EOP-99		

APPENDIX O
SIMULTANEOUS HOT AND COLD LEG INJECTION
(Page 4 of 4)

Section 2: Aligning 2B HPSI for Hot Leg Injection (continued)

6. If **TWO** HPSI Pumps are RUNNING,
Then ENSURE flow to the Cold Legs is greater than or equal to 440 gpm by the
TOTAL of all **FOUR** of the following instruments:
- 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

End of Section 2

END OF APPENDIX O

DRAFT



Reminder to the TPE Evaluator
Refer to the OJT/TPE Procedure and
follow the instructions.

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

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

**Bank JPM 0821115/R11
Simulator
NRC S-4**

Developed/Revised by: J.W. Weeks 4/25/07
Date

Training Management Approval: Signature on file 6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: 05002180, Respond to a Loss of Charging
07002130, ALIGN ALTERNATE CHARGING FLOW PATH
07002610, VERIFY BORATION FLOW PATH
07002650, EMERGENCY BORATE THE RCS

Faulted JPM? No

Facility JPM #: 0821115

K/A Rating(s): A.15.03 A.15.14 (3.6)

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the US is notified that emergency boration has been established through the 'A' High Pressure Safety Injection Header.

Evaluation Location:

Simulator	In Plant	Lab	Other
X	X		

Performance Level:

Perform	Simulate	Discuss
X	X	

References:

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

Validation Time: 5 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

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**, or **Simulate**.
(Circle the performance level being used for this implementation of the JPM)
- 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 was tripped from 100% power due to a problem with the Feedwater Regulating System. Subsequent to the trip it was discovered that two CEAs had stuck out and emergency boration was begun. The SNPO reported a pipe break in the charging header between V2429 and V2523, and the emergency boration line-up was secured. With the loss of the Reactivity Control safety function, it was decided to enter 2-EOP-15.

INITIATING CUES:

You are the Desk RCO. The US has directed you to emergency borate using 'A' HPSI header and the 2A Charging Pump 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."	
<p><u>STEP 1:</u> ENSURE letdown is ISOLATED.</p> <p><u>STANDARD:</u> Verify all letdown Isolation Valves CLOSED.</p> <p>*EXAMINER'S CUE: All letdown isolation valves closed, Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> PLACE ALL Charging Pump in STOP.</p> <p><u>STANDARD:</u> VERIFY ALL Charging Pump control switches to STOP.</p> <p>*EXAMINER'S CUE: ALL charging Pumps are in STOP, Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> PLACE 2A HPSI Pump in STOP.</p> <p><u>STANDARD:</u> POSITION 2A HPSI Pump switch in STOP.</p> <p>*EXAMINER'S CUE: 2A HPSI pump switch in STOP, Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> CLOSE V3656, HPSI Pump 2A Discharge Valve.</p> <p><u>STANDARD:</u> OBTAIN key #67, POSITION V3656 to CLOSED.</p> <p>*EXAMINER'S CUE: V3656 indicates Green light ON, Red light OFF Q-33 Alarms.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 5: Locally OPEN V2340, Charging Pump Discharge to 'A' HPSI Header Isolation. (located in 2C Charging Pump Room).</p> <p>STANDARD: <u>DIRECT</u> SNPO to OPEN V2340.</p> <p>*EXAMINER'S CUE: The SNPO Reports V2340 is OPEN.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6: If desired to use ANY combination of Charging Pump, <u>Then</u> locally LOCK CLOSED V2429, Charging Pump Discharge Isolation.</p> <p>STANDARD: <u>DIRECT</u> THE SNPO to locally LOCK CLOSED V2429.</p> <p>*EXAMINER'S CUE: The SNPO REPORTS that V2429 is LOCK CLOSED.</p> <p>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.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7: Locally OPEN V3519, Charging Pump to 'A' HPSI Hdr Isol (Located in "A" HPSI pump room).</p> <p>STANDARD: <u>DIRECT</u> THE SNPO to locally OPEN V3519.</p> <p>*EXAMINER'S CUE: The SNPO REPORTS that V3519 is OPEN.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 8: ENSURE Charging Pump(s) have a suction flowpath from ONE of the following sources:</p> <p align="center">Boric Acid Makeup Tank Refueling Water Tank Volume Control Tank</p> <p>STANDARD: Verify Charging Pump Suction Flowpath.</p> <p>*EXAMINER'S CUE: Charging Pump Suction is from the Boric Acid Makeup Tank.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9: ENSURE Charging Pump(s) have a discharge flowpath by OPENING at least ONE 'A' HPSI Header Loop Isolation Valve:</p> <p align="center">HCV-3617 2A2 Cold Leg HCV-3627 2A1 Cold Leg HCV-3637 2B1 Cold Leg HCV-3647 2B2 Cold Leg</p> <p>STANDARD: POSITION Any one of the four valves to OPEN.</p> <p>*EXAMINER'S CUE: As any one of the four Valves is OPENED, indicate the Green light is OFF, Red light is ON.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10: START Charging Pump(s) AS NECESSARY.</p> <p>STANDARD: POSITION the 2A Charging Pump to START.</p> <p>*EXAMINER'S CUE: 2A Charging Pump indicates Green light OFF and Red light ON. Recirc Valve Indicates BOTH lights ON. After 3 minutes Recirc Indicates Green light ON and Red light OFF.</p> <p>EXAMINER'S CUE: As 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.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 11:</u> VERIFY flow to the RCS by ANY of the following:</p> <p align="center">Pressurizer level rising</p> <p align="center">Indicated flow on applicable HPSI Loop Flow Indicator</p> <p><u>STANDARD:</u> OBSERVE Pressurizer Level and HPSI flow for PROPER indication.</p> <p align="center">*EXAMINER'S CUE: Pressurizer Level is slowly RISING and applicable HPSI Loop Flow Indicates 44 gpm.</p> <p><u>COMMENTS:</u></p>	<p align="center">_____ SAT</p> <p align="center">_____ UNSAT</p>
<p><u>STEP 12:</u> VERIFY emergency boration suction flowpath to charging pump(s).</p> <p><u>STANDARD:</u> OBSERVE charging pump suction from Boric Acid Makeup Tank.</p> <p align="center">*EXAMINER'S CUE: BAM Tank supplying Charging Pump suction.</p> <p align="center">EXAMINER'S NOTE: Per Initial Conditions, emergency boration flow path pre-existed the loss of charging header.</p> <p><u>COMMENTS:</u></p>	<p align="center">_____ SAT</p> <p align="center">_____ UNSAT</p>
<p><u>STEP (done):</u> NOTIFY the US that emergency boration and charging flow has been established through the 'A' High Pressure Safety Injection Header using the 2A Charging Pump.</p> <p><u>STANDARD:</u> NOTIFY the US that emergency boration and charging flow has been ESTABLISHED through the 'A' High Pressure Safety Injection Header using the 2A Charging Pump.</p> <p align="center">EXAMINER'S CUE: US ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p align="center">END OF TASK</p>	

STOP TIME: _____

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

JOB PERFORMANCE MEASURE

SIMULATOR JPM SETUP

1. **RESTORE** IC-1. **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 about 5 minutes. All SPTAs are performed by the scenario.
8. **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.
9. **UNFREEZE** the simulator when the student is ready.
10. **TRIGGER STEP** 'Open V2340' when directed to do so by the student.
11. **TRIGGER STEP** 'Close V2429' when directed to do so by the student.
12. **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. Subsequent to the trip it was discovered that two CEAs had stuck out and emergency boration was begun. The SNPO reported a pipe break in the charging header between V2429 and V2523, and the emergency boration line-up was secured. With the loss of the Reactivity Control safety function, it was decided to enter 2-EOP-15.

INITIATING CUES:

You are the Desk RCO. The US has directed you to emergency borate using 'A' HPSI header and the 2A Charging Pump per 2-EOP-99, Appendix T, "Alternate Charging Flow Path to RCS Through 'A' HPSI Header."

REVISION NO.: 35	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 97 of 156
PROCEDURE NO.: 2-EOP-99		

APPENDIX T
ALTERNATE CHARGING FLOW PATH TO RCS THROUGH 'A' HPSI HEADER
(Page 1 of 2)

CAUTION

Use of this Appendix indicates a condition where the normal charging flowpath to the RCS has become unavailable due to a component or piping failure. This lineup will render the 2A HPSI Pump inoperable and letdown will not be possible due to loss of cooling flow through the Regenerative Heat Exchanger.

- 1. ENSURE letdown is ISOLATED.
- 2. PLACE ALL Charging Pumps in STOP.
- 3. PLACE 2A HPSI Pump in STOP.
- 4. CLOSE V3656, HPSI Pump 2A Discharge Valve.
- 5. DISPATCH an operator to perform the following valve alignment:
 - A. Locally OPEN V2340, Charging Pump Discharge to 'A' HPSI Header Isolation. (located in 2C Charging Pump Room)
 - B. If desired to use **ANY combination of Charging Pumps**,
Then locally LOCK CLOSED V2429, Charging Pump Discharge Isolation.
 - C. If desired to use **ONLY the 2C Charging Pump**,
Then locally LOCK CLOSED V2338, 2C Charging Pump Disch. to Common Disch. Header Isolation.
 - D. Locally OPEN V3519, Charging Pump to "A" HPSI Hdr Isol (Located in "A" HPSI pump room).
- 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

REVISION NO.: 35	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS ST. LUCIE UNIT 2	PAGE: 98 of 156
PROCEDURE NO.: 2-EOP-99		

APPENDIX T
ALTERNATE CHARGING FLOW PATH TO RCS THROUGH 'A' HPSI HEADER
(Page 2 of 2)

- 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)
- 8. START Charging Pump(s) **AS NECESSARY**.
- 9. VERIFY flow to the RCS by **ANY** of the following:
 - Pressurizer level rising
 - Indicated flow on applicable HPSI Loop Flow Indicator

END OF APPENDIX T

DRAFT



Reminder to the TPE Evaluator
Refer to the OJT/TPE Procedure and
follow the instructions.

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

**RESPOND TO HIGH RADIATION ALARM ON
SPENT FUEL MONITORS - UNIT 2**

**Bank JPM 0821117A/R07
Simulator
NRC S-5**

Developed/Revised by: J.W. Weeks 4/26/07
Date

Training Management Approval: Signature on file 6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: 07025090, ALIGN SFP VENTILATION TRAINS
07067430, RESPOND TO FUEL HANDLING ACCIDENT (DROPPED/DAMAGED FUEL)

Faulted JPM? Yes

Facility JPM #: 0821117A

K/A Rating(s): 3.1 B.01.05

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the US has been notified that the Fuel Handling Building ventilation line-up has been verified including contingency actions in accordance with 2-ONP-26.02.

Evaluation Location:

Simulator	In Plant	Lab	Other
<u> X </u>	<u> X </u>	<u> </u>	<u> </u>

Performance Level:

Perform	Simulate	Discuss
<u> X </u>	<u> X </u>	<u> </u>

References:

2-ONP-26.02, Area Radiation Monitors

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-ONP-26.02, "Area Radiation Monitors"

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 radiation alarm on Spent Fuel Monitors – Unit 2
- The performance level to be used for this JPM is **Perform**, or **Simulate**.
(Circle the performance level being used for this implementation of the JPM)
- 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 at 100% power. Refueling preparations are being made in the Fuel Handling Building with spent fuel movement in the spent fuel pool. Spent Fuel Pool Radiation Monitors, GAG007, GAG009, GAG011, and GAG012 are in High Alarm and GAG008 and GAG010 are in Alert Alarm. 2-ONP-26.02 is being implemented. The alarms have been verified valid. The fuel movement has been suspended and the FHB has been evacuated.

INITIATING CUES:

You are the Desk RCO. The US has directed you to verify proper Fuel Handling Building ventilation line-up in accordance with 2-ONP-26.02, "Area Radiation Monitors," step 4.2.2.D.

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

VERIFY the following fans are OFF:	
<p><u>STEP 1:</u> HVS-6, Fuel Pool Supply Fan.</p> <p><u>STANDARD:</u> ENSURE HVS-6 is OFF.</p> <p> *EXAMINER'S CUE: HVS-6 indicates Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> HVS-7, Fuel Handling Bldg Supply Fan.</p> <p><u>STANDARD:</u> ENSURE HVS-7 is OFF.</p> <p> *EXAMINER'S CUE: HVS-7 indicates Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> HVE-15, Fuel Handling Bldg Exhaust Fan.</p> <p><u>STANDARD:</u> ENSURE HVE-15 is OFF.</p> <p> *EXAMINER'S CUE: HVE-15 indicates Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> HVE-16A, Fuel Pool Exhaust Fan.</p> <p><u>STANDARD:</u> ENSURE HVE-16A is OFF.</p> <p> *EXAMINER'S CUE: HVE-16A indicates Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 5:</u> HVE-16B, Fuel Pool Exhaust Fan.</p> <p><u>STANDARD:</u> ENSURE HVE-16B is OFF.</p> <p>*EXAMINER'S CUE: HVE-16B indicates Green lights ON, Red lights OFF</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> HVE-17, Fuel Bldg Swgr Area Exhaust Fan (local indication only).</p> <p><u>STANDARD:</u> DIRECT the SNPO to locally STOP HVE-17.</p> <p>*EXAMINER'S CUE: SNPO reports that HVE-17 is STOPPED.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7:</u> VERIFY the following FHB dampers are CLOSED:</p> <ul style="list-style-type: none"> • D-33, Fuel Hdlg Bldg Inlet Damper • D-35, Fuel Hdlg Bldg Outlet Damper • D-29, Fuel Pool Inlet Damper • D-31, Fuel Pool Outlet Damper • D-34, Fuel Hdlg Bldg Inlet Damper • D-36, Fuel Hdlg Bldg Outlet Damper • D-30, Fuel Pool Inlet Damper • D-32, Fuel Pool Outlet Damper <p><u>STANDARD:</u> VERIFY Dampers D-29 through D-36 are CLOSED.</p> <p>*EXAMINER'S CUE: Dampers D-29 through D-36 indicate Green light ON, Red light OFF as each damper is verified.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

VERIFY the following components are aligned as indicated:	
<p>STEP 8: FCV-25-30, Fuel Handling Emerg Vent Vlv, is OPEN.</p> <p>STANDARD: OBSERVE FCV-25-30 CLOSED.</p> <p>*EXAMINER'S CUE: FCV-25-30 indicates Green light ON, Red Light OFF.</p> <p>EVALUATOR'S NOTE: Faulted Step FCV-25-30 failed to auto OPEN.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>CONTINGENCY ACTION:</p> <p>STEP 9: PERFORM the following on the HVCB:</p> <p>OPEN FCV-25-30 at the HVAC panel.</p> <p>STANDARD: POSITION FCV-25-30 control switch to OPEN.</p> <p>*EXAMINER'S CUE: FCV-25-30 indicates Green light OFF, Red Light ON. X-4 Alarms as delta-P lowers.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 10: FCV-25-32, SBVS Isolation Valve, is CLOSED.</p> <p>STANDARD: OBSERVE FCV-25-32 OPEN.</p> <p>*EXAMINER'S CUE: FCV-25-32 indicates Green light OFF, Red Light ON.</p> <p>EVALUATOR'S NOTE: Faulted Step FCV-25-32 failed to auto CLOSE.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 17:</u> HVE-6B, SBVS Exhaust Fan, is ON.</p> <p><u>STANDARD:</u> ENSURE HVE-6B is ON.</p> <p>*EXAMINER'S CUE: HVE-6B indicates Green light OFF, Red light ON.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP (done):</u> NOTIFY the US that the Fuel Handling Building ventilation line-up has been verified in accordance with 2-ONP-26.02 and FCV-25-30 and FCV-25-31 had to be manually opened, FCV-25-32 and FCV-25-33 had to be manually closed.</p> <p><u>STANDARD:</u> NOTIFY the US that the Fuel Handling Building ventilation line-up has been VERIFIED and FCV-25-30 and FCV-25-31 had to be manually OPENED and FCV-25-32 and FCV-25-33 had to be manually CLOSED.</p> <p>EXAMINER'S CUE: US ACKNOWLEDGES.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: _____

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

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-1.
2. **UNFREEZE** the Simulator.
3. **SELECT** the JPM Lesson File Folder.
4. **OPEN** and **EXECUTE** the lesson for 0821117A. **ACKNOWLEDGE** the PC-11 alarm.
5. **FREEZE** the Simulator.
6. **STORE** a Temporary IC set if more than one student will be performing the JPM. **UNFREEZE** the Simulator for a few seconds and then **FREEZE** the Simulator. **ACKNOWLEDGE** the PC-11 alarm.
Note: The lesson will have to be stopped and then re-executed each time the temporary IC set is restored.
7. **UNFREEZE** the Simulator when the student is ready to begin.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

Unit 2 is at 100% power. Refueling preparations are being made in the Fuel Handling Building with spent fuel movement in the spent fuel pool. Spent Fuel Pool Radiation Monitors, GAG007, GAG009, GAG011, and GAG012 are in High Alarm and GAG008 and GAG010 are in Alert Alarm. 2-ONP-26.02 is being implemented. The alarms have been verified valid. The fuel movement has been suspended and the FHB has been evacuated.

INITIATING CUES:

You are the Desk RCO. The US has directed you to verify proper Fuel Handling Building ventilation line-up in accordance with 2-ONP-26.02, "Area Radiation Monitors," step 4.2.2.D.

REVISION NO.: 6	PROCEDURE TITLE: AREA RADIATION MONITORS	PAGE: 8 of 18
PROCEDURE NO.: 2-ONP-26.02	ST. LUCIE UNIT 2	

4.2 Fuel Handling Building Radiation Monitors

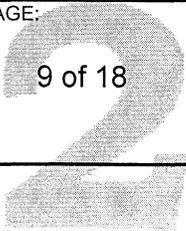
INSTRUCTIONS

1. DETERMINE alarm validity:
 - A. VERIFY PC-11 channel display for the affected channel is NOT blue (indicating system or equipment failure) or magenta (indicating PC-11 communications failure)
 - B. VERIFY PC-11 channel indication agrees with indication on the Control Room monitor for the affected channel (i.e., alert or high alarm):
 - RC-26-7, Spent Fuel
 - RC-26-8, Spent Fuel
 - RC-26-9, Spent Fuel
 - RC-26-10, Spent Fuel
 - RC-26-11, Spent Fuel
 - RC-26-12, Spent Fuel
 - C. VERIFY increased or increasing trend for the affected channel:
 - RR-26-1, (Channels 17, 18, 19) Spent Fuel
 - RR-26-2, (Channels 17, 18, 19) Spent Fuel
 - D. If only one FHB monitor is alarmed, Then CHECK the other FHB monitors for increasing radiation levels.
2. If a valid alarm exists, Then PERFORM the following:
 - A. If fuel movement is in progress, Then SUSPEND fuel movement.

CONTINGENCY ACTIONS

- 1.1 If the alarm is NOT valid, Then GO TO Appendix A, Inoperable Monitor.
- 1.2 If PC-11 Driver hang alarm appears refer to Appendix C.

REVISION NO.: 6	PROCEDURE TITLE: AREA RADIATION MONITORS	PAGE: 9 of 18
PROCEDURE NO.: 2-ONP-26.02	ST. LUCIE UNIT 2	



4.2 Fuel Handling Building Radiation Monitors (continued)

INSTRUCTIONS

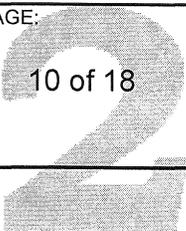
CONTINGENCY ACTIONS

2. (continued)
- B.** EVACUATE the fuel pool area and INSTRUCT personnel to remain on the landing outside the Fuel Handling Building door until monitored for contamination.
- C.** CONTACT Security to ensure all personnel have exited the FHB.

NOTE	
There are a total 6 Spent Fuel Pool Area monitors divided into 2 groups. Two out of three HIGH alarms on either train will initiate all actions.	
<u>SA Train</u>	<u>SB Train</u>
RC-26-7 (GAG-007)	RC-26-8 (GAG-008)
RC-26-9 (GAG-009)	RC-26-10 (GAG-010)
RC-26-11 (GAG-011)	RC-26-12 (GAG-012)

- D.** If **EITHER** of the following conditions exists:
- Two or more SA Train FHB monitors are in HIGH alarm condition
 - Two or more SB Train FHB monitors are in HIGH alarm condition
- Then PERFORM the following:

REVISION NO.: 6	PROCEDURE TITLE: AREA RADIATION MONITORS	PAGE: 10 of 18
PROCEDURE NO.: 2-ONP-26.02	ST. LUCIE UNIT 2	



4.2 Fuel Handling Building Radiation Monitors (continued)

INSTRUCTIONS

CONTINGENCY ACTIONS

2. D. (continued)

1. VERIFY the following fans are OFF:
 - HVS-6, Fuel Pool Supply Fan
 - HVS-7, Fuel Handling Bldg Supply Fan
 - HVE-15, Fuel Handling Bldg Exhaust Fan
 - HVE-16A, Fuel Pool Exhaust Fan
 - HVE-16B, Fuel Pool Exhaust Fan
 - HVE-17, Fuel Bldg Swgr Area Exhaust Fan (local indication only)

- 1.1 STOP the following fans at the HVAC panel or locally as conditions allow:
 - HVS-6, Fuel Pool Supply Fan
 - HVS-7, Fuel Handling Bldg Supply Fan
 - HVE-15, Fuel Handling Bldg Exhaust Fan
 - HVE-16A, Fuel Pool Exhaust Fan
 - HVE-16B, Fuel Pool Exhaust Fan
 - HVE-17, Fuel Bldg Swgr Area Exhaust Fan

2. VERIFY the following FHB dampers are CLOSED:
 - D-33, Fuel Hdlg Bldg Inlet Damper
 - D-35, Fuel Hdlg Bldg Outlet Damper
 - D-29, Fuel Pool Inlet Damper
 - D-31, Fuel Pool Outlet Damper
 - D-34, Fuel Hdlg Bldg Inlet Damper
 - D-36, Fuel Hdlg Bldg Outlet Damper
 - D-30, Fuel Pool Inlet Damper
 - D-32, Fuel Pool Outlet Damper

- 2.1 PULL the following fuses to FAIL CLOSED the applicable dampers (located behind the HVAC panel):
 - 120V AC SA F-21 (D-29/D-31)
 - 120V AC SA F-80 (D-33/D-35)
 - 120V AC SB F-21 (D-30/D-32)
 - 120V AC SB F-80 (D-34/D-36)

REVISION NO.: 6	PROCEDURE TITLE: AREA RADIATION MONITORS	PAGE: 11 of 18
PROCEDURE NO.: 2-ONP-26.02	ST. LUCIE UNIT 2	

4.2 Fuel Handling Building Radiation Monitors (continued)

INSTRUCTIONS

2. D. (continued)

3. VERIFY the following components are aligned as indicated:

- FCV-25-30, Fuel Handling Emerg Vent Vlv, is OPEN.
- FCV-25-32, SBVS Isolation Valve, is CLOSED.
- HVE-6A, SBVS Exhaust Fan, is ON.
- FCV-25-31, Fuel Handling Emerg Vent Vlv., is OPEN.
- FCV-25-33, SBVS Isolation Valve, is CLOSED.
- HVE-6B, SBVS Exhaust Fan, is ON.

CONTINGENCY ACTIONS

3.1 PERFORM the following on the HVCB:

- OPEN FCV-25-30 at the HVAC panel
- CLOSE FCV-25-32 at the HVAC panel
- START HVE-6A at the HVAC panel
- OPEN FCV-25-31 at the HVAC panel.
- CLOSE FCV-25-33 at the HVAC panel.
- START HVE-6B at the HVAC panel.

REVISION NO.: 6	PROCEDURE TITLE: AREA RADIATION MONITORS	PAGE: 12 of 18
PROCEDURE NO.: 2-ONP-26.02	ST. LUCIE UNIT 2	

4.2 Fuel Handling Building Radiation Monitors (continued)

INSTRUCTIONS

CONTINGENCY ACTIONS

2. (continued)
 - E. NOTIFY Health Physics to perform applicable surveys.
 - F. ATTEMPT to identify and isolate the source of increased activity.
 - G. REFER TO EPIP-00, Discovery & Identification of an Emergency Condition (Including Chemical, Fire and Natural Emergencies).
 - H. If alarm is due to fuel handling accident, Then **GO TO ONOP 2-1600030**, Accidents Involving New or Spent Fuel.
3. If the following conditions exist:
 - FHB alarm condition has been corrected
 - Affected FHB monitors are NOT in a HIGH alarm condition

Then PERFORM Appendix B, Fuel Pool Ventilation Restoration.

END OF SECTION 4.2

1/RS



DRAFT

Reminder to the TPE Evaluator
Refer to the OJT/TPE Procedure and
follow the instructions.

St. Lucie Nuclear Plant
Operations Training
JOB PERFORMANCE MEASURE
Bank JPM 0821021/Rev 12
PLACE LTOP IN SERVICE - UNIT 1
Unit 1 Control Room
NRC C-6

Developed/Revised by: J. D. Carpenter

on file
Date

Training Management Approval: Signature on file

6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: Place Low Temperature Overpressure Protection in Service on Unit 1.

Faulted JPM? No

Facility JPM #: 0821021

K/A Rating(s): A.03.05 A.04.05 A.08.16 (3.7 Average)

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when LTOP has been placed in service.

Evaluation Location:

Simulator	In Plant X	Lab	Other
-----------	---------------	-----	-------

Performance Level:

Perform	Simulate X	Discuss
---------	---------------	---------

References:

- 1-GOP-305, "Reactor Plant Cooldown – Hot Standby to Cold Shutdown"

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 1-GOP-305, "Reactor Plant Cooldown – Hot Standby to Cold Shutdown"

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: Place Low Temperature Overpressure Protection in Service on 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 experienced a LOCA from a full power condition. 1-EOP-3 is being implemented. RCS temperature is 290°F and Pressurizer pressure is 500 psia. Annunciator H-15, PORV LOW RANGE CONDITION SELECT LOW, is in alarm.

INITIATING CUES:

You are the Desk RCO. The US has directed you to place LTOP in service in accordance with 1-GOP-305, "Reactor Plant Cooldown – Hot Standby to Cold Shutdown."

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

1-GOP-305, Step 6.34 <u>When</u> RCS temperature is less than 304°F, but greater than 281°F, <u>Then</u> place LTOP in service as follows:		
<u>STEP 1:</u>	Verify Annunciator H-15, PORV Low Range Condition Select Low, is in alarm.	
<u>STANDARD:</u>	<u>VERIFY</u> Annunciator H-15 is in ALARM (per Initial Condition)	_____ SAT
	EXAMINER'S CUE: Annunciator H-15 is in ALARM	_____ UNSAT
<u>COMMENTS:</u>		
<u>STEP 2:</u>	Verify Annunciator H-21, Przr Relief Valve Anticipatory Alarm, is NOT in alarm.	
<u>STANDARD:</u>	<u>VERIFY</u> Annunciator H-21 is NOT in ALARM	_____ SAT
	EXAMINER'S CUE: Annunciator H-21 is CLEAR	_____ UNSAT
<u>COMMENTS:</u>		
<u>STEP 3:</u>	Perform the following for V1402, PORV: A. CLOSE V1403, PORV Block Vlv.	CRITICAL STEP
<u>STANDARD:</u>	<u>POSITION</u> V1403 to CLOSED	_____ SAT
	EXAMINER'S CUE: V1403 indicates Green light ON, Red light OFF	_____ UNSAT
<u>COMMENTS:</u>		

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 4:</u> Perform the following for V1402, PORV:</p> <p>B. PLACE the selector switch for PORV V1402 in the LOW RANGE position.</p> <p><u>STANDARD:</u> POSITION HS-1402 mode selector switch to LOW RANGE</p> <p>EXAMINER'S CUE: HS-1402 mode switch is in LOW RANGE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> Perform the following for V1402, PORV:</p> <p>C. Verify PORV V1402 did NOT open.</p> <p><u>STANDARD:</u> VERIFY that PORV V1402 remains CLOSED</p> <p>EXAMINER'S CUE: V1402 indicates Green light ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> Perform the following for V1402, PORV:</p> <p>D. OPEN V1403, PORV Block Vlv.</p> <p><u>STANDARD:</u> POSITION V1403 to OPEN</p> <p>EXAMINER'S CUE: V1403 indicates Green light OFF, Red light ON</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7:</u> Perform the following for V1404, PORV:</p> <p>A. CLOSE V1405, PORV Block Vlv.</p> <p><u>STANDARD:</u> POSITION V1405 to CLOSED</p> <p>EXAMINER'S CUE: V1405 indicates Green light ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 8:</u> Perform the following for V1404, PORV:</p> <p>B. PLACE the selector switch for PORV V1404 in the LOW RANGE position.</p> <p><u>STANDARD:</u> POSITION HS-1404 mode selector switch to LOW RANGE</p> <p>EXAMINER'S CUE: HS-1404 mode switch is in LOW RANGE</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9:</u> Perform the following for V1404, PORV:</p> <p>C. Verify PORV V1404 did NOT open.</p> <p><u>STANDARD:</u> VERIFY that PORV V1404 remains CLOSED</p> <p>EXAMINER'S CUE: V1404 indicates Green light ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10:</u> Perform the following for V1404, PORV:</p> <p>D. OPEN V1405, PORV Block Vlv.</p> <p><u>STANDARD:</u> POSITION V1405 to OPEN</p> <p>EXAMINER'S CUE: V1405 indicates Green light OFF, Red light ON H-15 Clears</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 11:</u> Perform testing of PORVs V1402 and V1403 in accordance with Data Sheet 24, Valve Testing Procedures, of OP-1-0010125A, Surveillance Data Sheets.</p> <p><u>STANDARD:</u> DETERMINE PORV testing will be PERFORMED later</p> <p>EXAMINER'S CUE: PORV testing will be PERFORMED later</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP (done):</u> NOTIFY the US that LTOP has been placed in service.</p> <p><u>STANDARD:</u> NOTIFY the US that LTOP has been placed IN SERVICE.</p> <p>EXAMINER'S CUE: US ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p align="center">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

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 experienced a LOCA from a full power condition. 1-EOP-3 is being implemented. RCS temperature is 290°F and Pressurizer pressure is 500 psia. Annunciator H-15, PORV LOW RANGE CONDITION SELECT LOW, is in alarm.

INITIATING CUES:

You are the Desk RCO. The US has directed you to place LTOP in service in accordance with 1-GOP-305, "Reactor Plant Cooldown – Hot Standby to Cold Shutdown."

REVISION NO.: 26	PROCEDURE TITLE: LOSS OF COOLANT ACCIDENT	PAGE: 30 of 67
PROCEDURE NO.: 1-EOP-03	ST. LUCIE UNIT 1	

4.0 OPERATOR ACTIONS (continued)

INSTRUCTIONS

CONTINGENCY ACTIONS

* **42. Containment Spray Termination**

If CS pump(s) are operating and **ALL** of the following conditions are satisfied,

- Containment pressure is less than 5 psig and stable or lowering
- Containment Spray is NOT required for Containment cooling
- Containment Spray is NOT required for HPSI subcooling
- Containment Spray is NOT required for iodine removal

Then TERMINATE Containment Spray **ONE** train at a time.
REFER TO Appendix P, Restoration of Components Actuated by ESFAS.

* **43. SIT Isolation/Venting**

When RCS pressure is less than 325 psia and controlled, Then ISOLATE the SITs as necessary to prevent SIT injection.
REFER TO 1-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown.

43.1 If isolation of **ONE OR MORE** SITs is NOT possible, Then DEPRESSURIZE the affected SIT(s) by Venting.
REFER TO 1-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown.

* **44. LTOP Initiation**

PRIOR to cooling RCS T_{COLD} to less than 281°F, INITIATE low temperature over-pressurization protection.
REFER TO 1-GOP-305, Reactor Plant Cooldown – Hot Standby to Cold Shutdown.

REVISION NO.: 16	PROCEDURE TITLE: REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN ST. LUCIE UNIT 1	PAGE: 26 of 89
PROCEDURE NO.: 1-GOP-305		

INITIAL

CAUTION

- ¶₄ The amount of time the SDC System is operated with RCS temperature above 300°F should be minimized. Prolonged operation at elevated temperatures may result in undesirable rates of LPSI Pump seal degradation.
- LTOP is required to be placed in service with a setpoint of 530 psia prior to lowering RCS temperature to less than or equal to 281°F. Ref: Tech Spec 3.4.13.

NOTE

If common train ECCS work is required, the following step may be bypassed until the completion of the work. The cooldown may continue using the ADVs or SBCS.

6.30 Place the SDC System in service in accordance with 1-NOP-03.05, Shutdown Cooling. _____

6.31 Direct ENG / CSI to perform the applicable portion of Appendix B, RCS / Pressurizer Nozzle Penetration Checks, of OP 1-0120022, Reactor Coolant System Leak Test, as soon as practical. _____
US

6.32 If continued RCP operation is desired, Then MAINTAIN RCS pressure between 265 psia and the minimum RCS pressure for RCP operation as determined from 1-NOP-01.02, Appendix B. _____

CAUTION

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

6.33 Continue to operate the RCPs to cool down the Steam Generators. _____

6.34 When RCS temperature is less than 304°F, but greater than 281°F, Then place LTOP in service as follows:

1. Verify Annunciator H-15, PORV Low Range Condition Select Low, is in alarm. _____
2. Verify Annunciator H-21, Przr Relief Valve Anticipatory Alarm, is NOT in alarm. _____

REVISION NO.: 16	PROCEDURE TITLE: REACTOR PLANT COOLDOWN - HOT STANDBY TO COLD SHUTDOWN ST. LUCIE UNIT 1	PAGE: 27 of 89
PROCEDURE NO.: 1-GOP-305		

6.34 (continued)

INITIAL

- 3. Perform the following for V1402, PORV:
 - A. CLOSE V1403, PORV Block Vlv. _____
 - B. PLACE the selector switch for PORV V1402 in the LOW RANGE position. _____
 - C. Verify PORV V1402 did NOT open. _____
 - D. OPEN V1403, PORV Block Vlv. _____
- 4. Perform the following for V1404, PORV:
 - A. CLOSE V1405, PORV Block Vlv. _____
 - B. PLACE the selector switch for PORV V1404 in the LOW RANGE position. _____
 - C. Verify PORV V1404 did NOT open. _____
 - D. OPEN V1405, PORV Block Vlv. _____
- 5. Perform testing of PORVs V1402 and V1403 in accordance with Data Sheet 24, Valve Testing Procedures, of OP-1-0010125A, Surveillance Data Sheets. _____

6.35 §1 Prior to decreasing RCS temperature below 270°F, remove one HPSI Pump from service for compliance with Technical Specification 3.5.3.b as follows:

- 1. If the 1A HPSI Pump is to be removed from service, Then perform the following:
 - A. LOCK CLOSED V3656, HPSI Pump 1A Discharge. _____ /
IV
 - B. Perform Section 3A: 1A HPSI Pump of Appendix D, Cooldown Configuration Control. _____

OR

DRAFT



St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

**ALIGN 2C CCW PUMP TO SUPPLY THE 'B' CCW
HEADER – UNIT 2**

NRC S-7

Developed/Revised by: Larry Rich 4/01/08
Date

Training Management Approval:  6/1/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: Align the 2C CCW pump to the 'B' CCW header in accordance with 2-0310030 COMPONENT COOLING WATER OFF-NORMAL OPERATION.

Faulted JPM? No

Facility JPM #: N/A

K/A Rating(s): 008 A2.01 3.3/3.6

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is completed when the 2C CCW pump is operating on the 'B' CCW header and the 2AB 4.16 KV bus is aligned to the 'B' side.

Evaluation Location:

Simulator	In Plant	Lab	Other
X			

Performance Level:

Perform	Simulate	Discuss
X		

References:

- 2-0310030 COMPONENT COOLING WATER OFF-NORMAL OPERATION.
- 2-NOP-52.02 ALIGNMENT OF 2AB BUSES AND COMPONENTS

Validation Time: 15 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-0310030 COMPONENT COOLING WATER OFF-NORMAL OPERATION.
- 2-NOP-52.02 ALIGNMENT OF 2AB BUSES AND COMPONENTS

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: Start the 2C CCW pump on the 'B' side and align the 2AB 4.16KV bus to the 'B' side.
- 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:

The Unit is at 100% power. The 2B CCW pump has tripped and cannot be started. The 2C CCW pump is available to be aligned and started on the 2B CCW header.

INITIATING CUES:

The US directs you to align and start the 2C CCW on the 2B header in accordance with 2-0310030 COMPONENT COOLING WATER OFF-NORMAL OPERATION.

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

2-0310030 COMPONENT COOLING WATER OFF-NORMAL OPERATION.	
<p><u>STEP 1:</u> ENSURE Closed MV-14-1 2C CCW Pump Discharge to A Header.</p> <p><u>STANDARD:</u> <u>CLOSE</u> MV-14-1 2C CCW Pump Discharge to A Header.</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> ENSURE Closed MV-14-3 2C CCW Pump Suction from A Header:</p> <p><u>STANDARD:</u> <u>CLOSE</u> MV-14-3 2C CCW Pump Suction from A Header</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 3:</u> ENSURE open MV-14-2 2C CCW Pump Discharge to B Header:</p> <p><u>STANDARD:</u> OPEN MV-14-2 2C CCW Pump Discharge to B Header.</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 4:</u> ENSURE open MV-14-4 2C CCW Pump Suction from B Header</p> <p><u>STANDARD:</u> OPEN MV-14-4 2C CCW Pump Suction from B Header</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 5:</u> REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header</p> <p><u>STANDARD:</u> VERIFY Brk. 1-20501, 4.16KV Bus 1AB SBO X-Tie is OPEN</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 6:</u> REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header</p> <p><u>STANDARD:</u> VERIFY Brk. 2-20501, 4.16KV Bus 2AB SBO X-Tie is open.</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7</u> REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header</p> <p><u>STANDARD:</u> OPEN Brk 2-20505 2AB – 2A3 Tie</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header</p> <p><u>STANDARD:</u> OPEN Brk. 2-20208, 4.16KV Bus 2A3 – 2AB Tie</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 7</u> REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header</p> <p><u>STANDARD:</u> CLOSE Brk 2-20409 2B3 – 2AB Tie</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header</p> <p><u>STANDARD:</u> CLOSE Brk. 2-20504 2AB – 2B3 Tie.</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> Start the 2C CCW pump</p> <p><u>STANDARD:</u> START 2C CCW pump</p> <p>EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 7</u> Start the 2C CCW Pump</p> <p><u>STANDARD:</u> VERIFY the annunciators associated with CCW flows and pressures are clear and indications return to normal.</p> <p style="text-align: center;">EXAMINERS CUE:</p> <p><u>COMMENTS:</u></p>	<p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>
<p><u>STEP 8:</u> Place the 2B CCW pump control switch in the PULL TO LOCK position</p> <p><u>STANDARD:</u> PLACES control switch in PULL TO LOCK.</p> <p style="text-align: center;">EXAMINERS CUE: Inform the Candidate JPM is complete if Candidate continues with remainder of AB electrical lineup.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: right;">CRITICAL STEP</p> <p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>

STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

The Unit is at 100% power. The 2B CCW pump has tripped and cannot be started. The 2C CCW pump is available to be aligned and started on the 2B CCW header.

INITIATING CUES:

The US directs you to align and start the 2C CCW on the 2B header in accordance with 2-0310030 COMPONENT COOLING WATER OFF-NORMAL OPERATION.

JOB PERFORMANCE MEASURE
SIMULATOR SETUP SHEET

1. IC #1
2. Ensure AB 4.16KV bus aligned to A side
3. Ensure 2C CCW pump aligned to A side
4. Stop (do not place in pull to lock) 2B CCW pump

REVISION NO.: 36	PROCEDURE TITLE: COMPONENT COOLING WATER - OFF-NORMAL OPERATION ST. LUCIE UNIT 2	PAGE: 7 of 22
PROCEDURE NO.: 2-0310030		

6.2 Subsequent Action (continued)

3. A. (continued)

CAUTION

If 2AB AC and DC Busses are not all completely powered from the A side, Then do NOT take Technical Specification Credit for the 2C CCW pump until alignment has been completed.

6. VERIFY the pressures and flows return to normal.
7. PLACE the 2A CCW pump control switch to the PULL TO LOCK position.
8. If the 480V Load Center 2AB and DC bus 2AB are NOT completely aligned to the A side, Then REALIGN the 480V Load Center 2AB and DC bus 2AB to the A side per 2-NOP-52.02, Alignment of 2AB Busses and Components.

B. Loss of the 2B CCW Pump.

1. ENSURE Closed:
 - MV-14-1, 2C CCW Pump Discharge to A Header
 - AND
 - MV-14-3, 2C CCW Pump Suction from A Header
2. ENSURE Open:
 - MV-14-2, 2C CCW Pump Discharge to B Header
 - AND
 - MV-14-4, 2C CCW Pump Suction from B Header
3. If SDC is in service and CCW is completely lost to an SDC Heat Exchanger, Then SDC flow must be terminated to the affected heat exchanger prior to restoring CCW flow. REFER to ONOP 2-0440030, Shutdown Cooling Off-Normal.
4. ¶₂ If the 2C CCW Pump is NOT electrically aligned to the B Electrical Bus AND the Unit is in Modes 1-4, Then REALIGN the 2AB 4.16KV Bus to the B Side per 2-NOP-52.02 PRIOR to starting the 2C CCW Pump on the 2B CCW Header.

REVISION NO.: 36	PROCEDURE TITLE: COMPONENT COOLING WATER - OFF-NORMAL OPERATION ST. LUCIE UNIT 2	PAGE: 8 of 22
PROCEDURE NO.: 2-0310030		

6.2 Subsequent Action (continued)

3. B. (continued)

5. START the 2C CCW Pump.

CAUTION

If 2AB AC and DC Busses are not all completely powered from the B side, Then do NOT take Technical Specification Credit for the 2C CCW pump until alignment has been complete.

6. VERIFY the pressures and flows return to normal.

7. PLACE the 2B CCW pump control switch in the PULL TO LOCK position.

8. ¶₂ If the 480V Load Center 2AB and DC bus 2AB are NOT completely aligned to the B side, Then REALIGN the 480V Load Center 2AB and DC bus 2AB to the B side per 2-NOP-52.02, Alignment of 2AB Busses and Components.

C. Loss of two (2) CCW Pumps

CAUTION

- REFER to off-normal operating procedure 2-ONP-25.01, Loss of RCB Cooling Fans, for appropriate direction.
- §_{1,2} Sufficient Containment Fan Coolers (HVS-1A, HVS-1B, HVS-1C or HVS-1D) are required to be in operation to maintain Containment air temperature less than or equal to 120°F. This is necessary to maintain the reactor vessel support structure within design basis. Operator action is required within 45 minutes, to restore air temperature to less than or equal to 120°F or initiate reactor trip cooldown to at least Hot Shutdown.

1. ¶₃ If the health and safety of the public is in jeopardy, Then ATTEMPT **ONLY ONE** restart.



DRAFT

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

**LOCAL OPERATION OF BORON
CONCENTRATION CONTROL – UNIT 2**

NRC P-1

Developed/Revised by: Larry Rich 4/01/08
Date

Training Management Approval:  6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

Task: Perform local blend to the VCT in accordance with 2-ONP-02.01 Boron Concentration Control.

Faulted JPM? No

Facility JPM #: N/A

K/A Rating(s): 004 A4.07 3.9/3.7

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is completed 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-ONP-02.01 Boron Concentration Control

Validation Time: 20 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-ONP-02.01 Boron Concentration Control

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 Appendix A of 2-ONP-02.01 Boron Concentration Control.
- 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 Boric Acid and Primary water flow on FR-2210Y and FR-2210X to blend to the VCT. The crew has implemented 2-ONP-02.01 Boron Concentration Control.

INITIATING CUES:

The US directs you to locally blend to the VCT using Appendix A from 2-ONP-02.01 Boron Concentration Control. The blend ratio is 10:1.

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

Appendix A of 2-ONP-02.01 Boron Concentration Control	
<p><u>STEP 1:</u> Establish communication with the Control Room.</p> <p><u>STANDARD:</u> <u>ESTABLISH</u> Communications with Unit 2 Control Room using Radio at the Boric Acid station.</p> <p align="center">EXAMINERS CUE: Unit 2 Control Room acknowledges communications</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> Start 2A or 2B Boric Acid Pump:</p> <p><u>STANDARD:</u> <u>VERIFY</u> Control Room has started 2A or 2B Boric Acid Pump</p> <p align="center">EXAMINERS CUE: Control Room has started 2A Boric Acid Pump</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 3:</u> ENSURE V2514 is CLOSED:</p> <p><u>STANDARD:</u> ENSURE Control Room has verified V2514 is CLOSED. EXAMINERS CUE: Control Room has ensured V2514 is closed.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> ENSURE FCV-2210Y is CLOSED</p> <p><u>STANDARD:</u> ENSURE Control Room FCV-2210Y is CLOSED EXAMINERS CUE: Control Room has ensured FCV-2210Y is closed.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;"><u>CAUTION</u></p> <ul style="list-style-type: none"> V2647 provides a direct Boric Acid flow path to the Charging pump suction at 20 gpm when full open. With V2647 open, the Boric Acid flow rate can NOT be monitored V2180 provides a direct Primary Water flow path to the Charging pump suction </div> <p>EXAMINERS CUE: Control Room calls to OPEN V2647 EMERG Boration from BAM Pumps Dish Isol ¼ turn OPEN.</p> <p><u>STEP 5:</u> DIRECT the Operator at the Boric Acid station to throttle V2647, EMERG Boration From BAM Pumps Disch Isol, OPEN ¼ turn.</p> <p><u>STANDARD:</u> <u>OPENS</u> V2647 ¼ turn and communicates to Control Room valve is ¼ turn open.</p> <p>EXAMINERS CUE: V2647 is turned Counter Clockwise ¼ turn EXAMINERS CUE: Acknowledges as Control Room V2647 is ¼ turn open.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>EXAMINERS CUE: Control Room calls to OPEN V2180 PMW to Charging Pumps Suct Manual Isol 1 (one) turn open.</p> <p><u>STEP 6:</u> DIRECT the Operator at the Boric Acid station to throttle V2180, PMW to Charging Pumps Suct Manual Isol, OPEN to the calculated blend ration. V2180 is located in the 2A Charging Pump Room.</p> <p><u>STANDARD:</u> <u>OPENS</u> V2180, PMW to Charging Pumps Suct Manual Isol, 1 (one) turn open and communicates to Control Room valve is 1 (one) turn open.</p> <p>EXAMINERS CUE: V2180 is turned Counter Clockwise 1 (one) turn open. EXAMINERS CUE: Acknowledges as Control Room V2180 is 1 (one) turn open.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

REVISION NO.: 6C	PROCEDURE TITLE: BORON CONCENTRATION CONTROL	PAGE: 16 of 19
PROCEDURE NO.: 2-ONP-02.01	ST. LUCIE UNIT 2	

APPENDIX A
LOCAL OPERATION OF BORON CONCENTRATION CONTROL
(Page 1 of 1)

1. Station an operator at the Boric Acid station and establish communication with the Control Room.
2. ¶₁ PLACE the Makeup Mode Selector switch in MANUAL.
3. START 2A or 2B BA pump.
4. ENSURE V2514 is CLOSED.
5. ENSURE FCV-2210Y is CLOSED.

CAUTION

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

6. DIRECT the operator at the Boric Acid station to throttle V2647, EMERG Boration From BAM Pumps Disch Isol, OPEN ¼ turn.
7. DIRECT the operator at the Boric Acid station to throttle V2180, PMW to Charging Pumps Suct Manual Isol, OPEN to the calculated blend ratio. V2180 is located in the 2A Charging Pump Room.
8. MONITOR FRC-2210X for Reactor Makeup Water flow rate and ADJUST V2180 as necessary.
9. If the reactor makeup water flow indication malfunctions, Then DIRECT the operator to OPEN V2180 ¼ turn.
10. MONITOR for any abnormal change in Tave.
11. DIRECT the operator to adjust V2180 and V2647 as required to maintain the VCT in the normal band and plant conditions stable.

END OF APPENDIX A

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>EXAMINERS CUE: Reactor Makeup water flow indication FRC-2210X has malfunctioned. You are to OPEN V2180 ¼ turn.</p> <p><u>STEP 7</u> <u>IF</u> the Reactor Makeup water flow indication malfunctions, <u>Then</u> DIRECT the operator to OPEN V2180 ¼ turn.</p> <p><u>STANDARD:</u> <u>CLOSES</u> V2180 from 1 (one) turn open to ¼ turn open and communicates to control room V2180 is ¼ turn open.</p> <p>EXAMINERS CUE: V2180 is turned clockwise to ¼ turn open from 1 (one) turn open</p> <p>EXAMINERS CUE: Acknowledges as control room V2180 is ¼ turn open</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> MONITOR for any abnormal change in Tave.</p> <p>EXAMINERS CUE: Control room states Tave is constant. JPM is complete</p> <p><u>STANDARD:</u> <u>COMMUNICATES</u> with control room to ensure Tave is not changing.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

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 Boric Acid and Primary water flow on FR-2210Y and FR-2210X to blend to the VCT. The crew has implemented 2-ONP-02.01 Boron Concentration Control.

INITIATING CUES:

The US directs you to locally blend to the VCT using Appendix A from 2-ONP-02.01 Boron Concentration Control. The blend ratio is 10:1

DRAFT



Reminder to the TPE Evaluator
Refer to the OJT/TPE Procedure and
follow the instructions.

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

ALIGN UNIT 2 CST TO SUPPLY 1C AFW PUMP

Bank JPM 0821062/Rev 17

**Unit 1 and 2 CSTs, 1C AFW PP
NRC P-2**

Developed/Revised by: Ron Lauver 9/25/2006

Date

Training Management Approval: SIGNATURE on file [Signature] 6/4/08

Date

DRAFT

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Align Unit 2 CST to Supply the 1C AFW Pump.
- 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 experiencing a Total Loss of Feedwater event. Unit 1 CST is unavailable, and Unit 2 CST level is 43 feet.

INITIATING CUES:

You are the Unit 1 NPO. The Unit 1 US has directed you to line up the 1C AFW Pump to take a suction from the Unit 2 CST IAW 1-ONP-09.02, "Auxiliary Feedwater," Appendix D.

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

1-ONP-09.02, "Auxiliary Feedwater," Appendix D, SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.	
<p><u>STEP 1:</u> NOTIFY Unit 2 Control Room.</p> <p><u>STANDARD:</u> NOTIFY Unit 2 Control Room that Unit 2 CST will be ALIGNED to supply the 1C AFW Pump.</p> <p>* EXAMINER'S CUE: Unit 2 Control Room ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> At the Unit 2 CST, establish flow from the Unit 2 CST to Unit 1 AFW Pumps by one of the following:</p> <p style="padding-left: 40px;">1. <u>If</u> the Unit 2 CST level is greater than 40 feet, <u>Then</u> LOCK OPEN V12803, CST Inlet to / from Unit 1 Isol.</p> <p><u>STANDARD:</u> UNLOCK and POSITION V12803 to OPEN and then RELOCK.</p> <p>* EXAMINER'S CUE: V12803 is OPEN and LOCKED.</p> <p>EVALUATOR'S NOTE: Initiating Cue gives Unit 2 CST level as 43 Feet. Valve does not have to be re-locked to meet the Critical Step.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> Lock Open V12805, CST Crosstie to Unit 1 Isol.</p> <p><u>STANDARD:</u> UNLOCK and POSITION V12805 to OPEN and then RELOCK.</p> <p>* EXAMINER'S CUE: V12805 is OPEN and LOCKED.</p> <p>EVALUATOR'S NOTE: Valve does not have to be re-locked to meet the Critical Step.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 4: To supply 1C AFW pump, perform the following:</p> <p style="padding-left: 40px;">1. Lock closed V12506, Unit 1 CST to 1C AFW Pump at the Unit 1 CST.</p> <p>STANDARD: UNLOCK and POSITION V12506 to CLOSE and then RELOCK.</p> <p>* EXAMINER'S CUE: V12506 is CLOSED and LOCKED.</p> <p>EVALUATOR'S NOTE: Valve does not have to be re-locked to meet the Critical Step.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 5: To supply 1C AFW pump, perform the following:</p> <p style="padding-left: 40px;">2. Lock open V12175, Unit 2 CST to 1C AFW Pump at the Unit 1 CST.</p> <p>STANDARD: UNLOCK and POSITION V12175 to OPEN and then RELOCK.</p> <p>* EXAMINER'S CUE: V12175 is OPEN and LOCKED.</p> <p>EVALUATOR'S NOTE: Valve does not have to be re-locked to meet the Critical Step.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 6: To supply 1C AFW pump, perform the following:</p> <p style="padding-left: 40px;">3. Open the PI-12-18C, 1C AFW Pump Suct Press, instrument isolation valve.</p> <p>STANDARD: POSITION PI-12-18C instrument isolation to OPEN.</p> <p>* EXAMINER'S CUE: PI-12-18C instrument isolation valve is OPEN.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

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

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 7: To supply 1C AFW pump, perform the following:</p> <p style="padding-left: 40px;">4. Verify greater than 3 psig suction pressure on PI-12-18C, 1C AFW Pump Suction Pressure.</p> <p>STANDARD: <u>VERIFY GREATER THAN</u> 3 psig on PI-12-18C.</p> <p>* EXAMINER'S CUE: PI-12-18C INDICATES 15 psig.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 8: To supply 1C AFW pump, perform the following:</p> <p style="padding-left: 40px;">5. PERFORM the following:</p> <p style="padding-left: 80px;">a. OPERATE 1C Auxiliary Feedwater Pump as necessary.</p> <p>STANDARD: <u>OPERATE</u> 1C Auxiliary Feedwater Pump as necessary.</p> <p>* EXAMINER'S CUE: Contact control room.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP (done): NOTIFY Unit 1 US that the task is COMPLETE.</p> <p>STANDARD: <u>NOTIFY</u> Unit 1 US that 1C AFW Pump is <u>LINED UP</u> to take a <u>SUCTION</u> on the Unit 2 CST IAW 1-ONP-09.02 , Appendix D.</p> <p>* EXAMINER'S CUE: Unit 1 US ACKNOWLEDGES.</p> <p>EXAMINER'S NOTE: If candidate continues onward, then inform him "This JPM is complete."</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

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 is experiencing a Total Loss of Feedwater event. Unit 1 CST is unavailable, and Unit 2 CST level is 43 feet.

INITIATING CUES:

You are the Unit 1 NPO. The Unit 1 US has directed you to line up the 1C AFW Pump to take a suction from the Unit 2 CST IAW 1-ONP-09.02, "Auxiliary Feedwater," Appendix D.

REVISION NO.: 2A	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 19 of 28
PROCEDURE NO.: 1-ONP-09.02	ST. LUCIE UNIT 1	

APPENDIX D
SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.
(Page 1 of 6)

1. §1 If Unit 1 CST becomes unavailable, Unit 1 AFW pumps can be supplied from Unit 2 CST by performing the following:

¶_{2,3,4}

CAUTION

- During the performance of this Appendix, close communications with the Unit 2 Control Room must be maintained to ensure administrative requirements and safety issues are considered in regards to both units. In the event the Unit 1 AFW Pump suction pressure decreases to 3 psig during the performance of this appendix, the AFW Pump discharge valves must be throttled to maintain suction pressure.
- Performance of this Appendix will require Unit 1 to enter action statement for Tech. Spec. 3.7.1.2 and 3.7.1.3. Unit 2 will be in action statement for Tech. Spec. 3.7.1.3 and possibly 3.7.1.2 depending on valve selection in Step 1B.

NOTE

- In the event Unit 2 CST is utilized to supply condensate to Unit 1, a minimum of 182,000 19'6" gallons must be maintained in the Unit 2 CST unless Unit 2 is in Modes 4, 5, or 6. This is to ensure that Unit 2 has the capability to cool the RCS to less than 350 degrees.
- The following valve lineups shall be performed with pumps off.

A. Notify Unit 2 Control Room

B. §1 At the Unit 2 CST, establish flow from Unit 2 CST to Unit 1 AFW Pumps by one of the following:

1. If the Unit 2 CST level is greater than 40 feet, Then LOCK OPEN V12803, CST Inlet to / from Unit 1 Isol.

2. If the Unit 2 CST level is less than or equal to 40 feet, Then perform one of the following:

a. LOCK OPEN V12801, 2C AFW Pump Suct to / from Unit 1 Isol.

OR

b. LOCK OPEN V12802, 2A/2B AFW Pump Suct to / from Unit 1 Isol.

REVISION NO.: 2A	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 20 of 28
PROCEDURE NO.: 1-ONP-09.02	ST. LUCIE UNIT 1	

APPENDIX D
SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.
(Page 2 of 6)

1. (continued)

C. Lock open V12805, CST Crosstie to Unit 1 Isol.

D. To supply 1A and 1B AFW Pumps, perform the following in the order listed:

CAUTION

§₂ The internals have been removed from V12176 per PCM 07053. V12497 must be Locked Closed prior to opening V12177, or water will transfer from Unit 2 CST to Unit 1 CST.

1. Lock closed V12497, Unit 1 CST to 1A/1B AFW pumps at the Unit 1 CST.
2. Lock open V12177, Unit 2 CST to 1A/1B AFW Pumps at the Unit 1 CST.
3. Verify greater than 3 psig suction pressure on PI-12-18A and / or PI-12-18B, 1A and / or 1B AFW Pumps Suction Pressure.

CAUTION

When restoring steam generator level, feed rate should be maintained less than or equal to 150 gpm until a level increase is observed or continuous flow has been maintained for five minutes. Feedwater should NOT be restored to a dry steam generator if another steam generator is available. If both steam generators are dry, feedwater should only be restored to one.

4. ¶_{2,3,4} PERFORM the following:
 - a. OPERATE 1A and 1B AFW Pumps as necessary.

CAUTION

Performance of the following step terminates AFW Pump recirc flow to the Unit 1 CST.

- b. CLOSE the operating pump(s) recirc isolation valve to Unit 1 CST.
 - V09100, 1A AFW Pump Recirc Isol
 - V09101, 1B AFW Pump Recirc Isol

REVISION NO.: 2A	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 21 of 28
PROCEDURE NO.: 1-ONP-09.02	ST. LUCIE UNIT 1	

APPENDIX D
SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.
(Page 3 of 6)

1. D. (continued)

NOTE

With the operating pumps recirc isolation valve closed, flow should not be throttled below 75 gpm.

5. ¶_{2,3,4} If AFW Pump suction pressure decreases to less than 3 psig as indicated on PI-12-18A or PI-12-18B, Then THROTTLE the discharge valve on the running AFW Pump(s).
- MV-09-9, 1A AFW Pump Disch to 1A S/G
 - MV-09-10, 1B AFW Pump Disch to 1B S/G
6. If the Unit 2 CST level decreases to less than or equal to 40 feet, and V12803 CST Inlet to / from Unit 1 Isol, was opened in Step 1.B.1, Then perform the following:
- a. STOP the running AFW Pumps.
 - b. At Unit 2, LOCK CLOSED V12803, CST Inlet to / from Unit 1 Isol.
 - c. At Unit 2, perform one of the following:
 1. LOCK OPEN V12801, 2C AFW Pump Suct to / from Unit 1 Isol.

OR

 2. LOCK OPEN V12802, 2A/2B AFW Pump Suct to / from Unit 1 Isol.
 - d. START the Unit 1 AFW Pumps as necessary.

E. To supply 1C AFW pump, perform the following:

1. Lock closed V12506, Unit 1 CST to 1C AFW Pump at the Unit 1 CST.
2. Lock open V12175, Unit 2 CST to 1C AFW Pump at the Unit 1 CST.

REVISION NO.: 2A	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 22 of 28
PROCEDURE NO.: 1-ONP-09.02	ST. LUCIE UNIT 1	

APPENDIX D
SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.
(Page 4 of 6)

1. E. (continued)
3. Open the PI-12-18C, 1C AFW Pump Suct Press, instrument isolation valve.
 4. Verify greater than 3 psig suction pressure on PI-12-18C, 1C AFW Pump Suction Pressure.

CAUTION

When restoring steam generator level, feed rate should be maintained less than or equal to 150 gpm until a level increase is observed or continuous flow has been maintained for five minutes. Feedwater should NOT be restored to a dry steam generator if another steam generator is available. If both steam generators are dry, feedwater should only be restored to one.

5. ¶_{2,3,4} PERFORM the following:
 - a. OPERATE 1C Auxiliary Feedwater Pump as necessary.

CAUTION

Performance of the following step terminates AFW Pump recirc flow to the Unit 1 CST.

- b. CLOSE V09399, 1C AFW Pump Recirc Isol.

NOTE

With the pump recirc valve closed, flow should not be throttled below 100 gpm.

6. ¶_{2,3,4} If AFW Pump suction pressure decreases to less than 3 psig as indicated on PI-12-18C, Then THROTTLE the discharge valves on the 1C AFW Pump.
 - MV-09-11, 1C AFW Pump Disch to 1A S/G
 - MV-09-12, 1C AFW Pump Disch to 1B S/G

REVISION NO.: 2A	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 23 of 28
PROCEDURE NO.: 1-ONP-09.02	ST. LUCIE UNIT 1	

APPENDIX D
SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.
(Page 5 of 6)

1. E. (continued)

7. §₁ If the Unit 2 CST level decreases to less than or equal to 40 feet, and V12803, CST Inlet to / from Unit 1 Isol, was opened in Step 1.B.1, Then perform the following:

- a. STOP the running Auxiliary Feedwater pumps.
- b. At Unit 2, LOCK CLOSED V12803, CST Inlet to / from Unit 1 Isol.
- c. At Unit 2, perform one of the following:

1. LOCK OPEN V12801, 2C AFW Pump Suct to / from Unit 1 Isol.

OR

2. LOCK OPEN V12802, 2A/2B AFW Pump Suct to / from Unit 1 Isol.

d. START the Unit 1 AFW Pumps as necessary.

F. Restoration of System Alignment:

UNIT 1	UNIT 2
<u>INITIAL/IV</u>	<u>INITIAL/IV</u>

1. Supplying 1A and 1B AFW pumps

STOP 1A AFW Pump /

STOP 1B AFW Pump /

Lock OPEN V09100, 1A AFW Pump Recirc Isol. /

Lock OPEN V09101, 1B AFW Pump Recirc Isol. /

CAUTION

§₂ The internals have been removed from V12176 per PCM 07053. V12177 must be Locked Closed prior to opening V12497, or water will transfer from Unit 2 CST to Unit 1 CST.

Lock CLOSED V12177, Unit 2 CST to 1A/1B AFW Pumps /

REVISION NO.: 2A	PROCEDURE TITLE: AUXILIARY FEEDWATER	PAGE: 24 of 28
PROCEDURE NO.: 1-ONP-09.02	ST. LUCIE UNIT 1	

APPENDIX D
SUPPLYING UNIT 1 AFW PUMPS FROM THE UNIT 2 C.S.T.
(Page 6 of 6)

1.	F.	1.	(continued)	<u>UNIT 1</u> <u>INITIAL/IV</u>	<u>UNIT 2</u> <u>INITIAL/IV</u>
			Lock OPEN V12497, Unit 1 CST to 1A/1B AFW Pumps	___/___	
			Lock CLOSED V12805, CST Cross-tie to Unit 1 Isol		___/___
			Lock CLOSED V12801, 2C AFW Pump Suct to / from Unit 1 Isol		___/___
			Lock CLOSED V12802, 2A/2B AFW Pump Suct to / from Unit 1 Isol		___/___
			Lock CLOSED V12803, CST Inlet to / from Unit 1 Isol		___/___
		2.	Supplying 1C AFW pump		
			Lock OPEN V09399, 1C AFW Pump Recirc Isol	___/___	
			Lock CLOSED V12175, Unit 2 CST to 1C AFW Pump	___/___	
			Lock OPEN V12506, Unit 1 CST to 1C AFW Pump	___/___	
			Lock CLOSED V12805, CST Cross-tie to Unit 1 Isol		___/___
			Lock CLOSED V12803, CST Inlet to / from Unit 1 Isol		___/___
			Close the PI-12-18C, 1C AFW Pump Suct Press, instrument isolation valve	___/___	

END OF APPENDIX D

DRAFT



Reminder to the TPE Evaluator
Refer to the OJT/TPE Procedure and
follow the instructions.

St. Lucie Nuclear Plant

Operations Training

JOB PERFORMANCE MEASURE

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

**Bank JPM 0821067/Rev 16
1B Battery Charger Room
NRC P-3**

Developed/Revised by: signature on file

6/4/08
Date

Training Management Approval: signature on file

6/4/08
Date

DRAFT

JOB PERFORMANCE MEASURE

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

Faulted JPM? No

Facility JPM #: 0821067

K/A Rating(s): B.01.01 B.01.03 B.01.05
B.01.02 B.01.04 B.01.06, (RO 3.4) (SRO 3.7)

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:

<u>Simulator</u>	<u>In Plant</u> X	<u>Lab</u>	<u>Other</u>	<u>Perform</u>	<u>Simulate</u> X	<u>Discuss</u>
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References:

OP 1-0970020, "Operation of the 120V Instrument AC System (Class 1E)"

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- OP 1-0970020, "Operation of the 120V Instrument AC System (Class 1E)"

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: 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 OP 1-0970020, "Operation of the 120V Instrument AC System (Class 1E)."

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

START TIME: _____

OP 1-0970020, "Operation of the 120V Instrument AC System (Class 1E)," Step 8.6 Removing the 1B Inverter From Service		
<p><u>STEP 1:</u> Close the following maintenance bypass bus breaker on the maintenance bypass bus for ALTERNATE feed.</p> <ul style="list-style-type: none"> • Inverter 1B: Maintenance Bypass Bus 1B CKT 13 <p><u>STANDARD:</u> POSITION Maintenance Bypass Bus 1B CKT 13 Breaker to ON.</p> <p>EXAMINER'S CUE: CKT 13 Breaker is ON</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>	
<p><u>STEP 2:</u> Verify the following maintenance bypass bus power available light in Transfer panel is on.</p> <p>Transfer Panel 1B</p> <ul style="list-style-type: none"> • L/1010-2 Maint. Bypass Bus 1B Feed to Instr. Bus 1MB <p><u>STANDARD:</u> VERIFY light L/1010-2 is ON at Transfer Panel 1B.</p> <p>EXAMINER'S CUE: Light L/1010-2 is ON</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>	

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 3:</u> Verify the following sync signal breaker on the maintenance bypass bus is closed.</p> <ul style="list-style-type: none"> • Inverter 1B: Maintenance Bypass Bus 1B CKT 3 <p><u>STANDARD:</u> VERIFY Inverter 1B Maintenance Bypass Bus 1B CKT 3 Breaker is CLOSED.</p> <p style="text-align: center;">EXAMINER'S CUE: CKT 3 Breaker is ON.</p> <p><u>COMMENTS:</u></p>	<p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>
<p><u>STEP 4:</u> Verify the "IN SYNC" light is on (on the applicable inverter).</p> <p><u>STANDARD:</u> VERIFY IN SYNC light is "ON" on Inverter 1B</p> <p style="text-align: center;">EXAMINER'S CUE: IN SYNC light on Inverter 1B is ON</p> <p><u>COMMENTS:</u></p>	<p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>
<p><u>STEP 5:</u> Place the following Transfer switch in the Maintenance Bypass Bus position.</p> <ul style="list-style-type: none"> • Transfer Panel 1B Transfer switch SS-1010-1 1MB Maintenance Bypass Bus 1B <p><u>STANDARD:</u> POSITION Transfer switch SS-1010-1 to MAINTENANCE BYPASS BUS 1B</p> <p style="text-align: center;">EXAMINER'S CUE: Transfer switch SS-1010-1 is in MAINTENANCE BYPASS BUS 1B POSITION</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p style="text-align: right;">_____ SAT</p> <p style="text-align: right;">_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 6:</u> Notify the Control Room the 1B instrument bus is being powered from the Maintenance Bypass Bus.</p> <p><u>STANDARD:</u> NOTIFY Control Room that 1B Instrument Bus is now being powered from the Maintenance Bypass Bus.</p> <p align="center">EXAMINER'S CUE: CONTROL ROOM ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7:</u> Open the inverter breakers on the front of the 1B inverter in the following order:</p> <p>A. 1MB-CB-6 (Inverter System Output) B. 1MB-CB-4 (Inverter Alternate Source) C. 1MB-CB-2 (Inverter Output) D. 1MB-CB-1 (DC Input)</p> <p><u>STANDARD:</u> POSITION Breakers 1MB-CB-6, 1MB-CB-4, 1MB-CB-2, and 1MB-CB-1 on Inverter 1B to OFF in that order</p> <p align="center">EXAMINER'S CUE: As Student positions these Breakers, cue that the respective breaker is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> Open the 1B inverter supply breaker on the 125V DC bus.</p> <ul style="list-style-type: none"> • Inverter 1B: DC Bus 1B 1-60224 <p><u>STANDARD:</u> POSITION DC Bus 1B Breaker 1-60224 to OFF</p> <p align="center">EXAMINER'S CUE: Breaker 1-60224 is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 9:</u> Open the 1B sync signal breaker on the maintenance bypass bus.</p> <p> • Inverter 1B: Maintenance Bypass Bus 1B CKT 3</p> <p><u>STANDARD:</u> POSITION Maintenance Bypass Bus 1B CKT 3 Breaker to OFF</p> <p> EXAMINER'S CUE: CKT 3 breaker is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP (done):</u> Notify the Control Room the 1B inverter is out of service.</p> <p><u>STANDARD:</u> NOTIFY the Control Room that Inverter 1B has been REMOVED from service</p> <p> EXAMINER'S CUE: CONTROL ROOM ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p align="center">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: _____

REVISION NO.: 19B	PROCEDURE TITLE: OPERATION OF THE 120V INSTRUMENT AC SYSTEM (CLASS 1E) ST. LUCIE UNIT 1	PAGE: 15 of 32
PROCEDURE NO.: 1-0970020		

8.6 Removing the 1B Inverter From Service

INITIAL

CAUTION

- Incorrect execution of this section can result in the actuation of Safeguards equipment and a Reactor Trip. If any discrepancies are noted during the execution of this section, notify the Control Room immediately.
- Prior to closing the applicable maintenance bypass bus breaker, verify that the affected maintenance bypass bus is not currently in use.

NOTE

§1 Re-energize the Instrument Bus from its associated inverter within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

1. Close the following maintenance bypass bus breaker on the maintenance bypass bus for ALTERNATE feed.
 - Inverter 1B: Maintenance Bypass Bus 1B CKT 13
2. Verify the following maintenance bypass bus power available light in Transfer panel is on.

Transfer Panel 1B:

 - L/1010-2 Maint. Bypass Bus 1B Feed to Instr. Bus 1MB

CAUTION

The "IN SYNC" light shall be verified to be on prior to removing the instrument inverter from service. If light is not on, stop. Do not continue. Notify E/M Department.

3. Verify the following sync signal breaker on the maintenance bypass bus is closed.
 - Inverter 1B: Maintenance Bypass Bus 1B CKT 3

A. Verify the "IN SYNC" light is on (on the applicable inverter).

SNPO

REVISION NO.: 19B	PROCEDURE TITLE: OPERATION OF THE 120V INSTRUMENT AC SYSTEM (CLASS 1E) ST. LUCIE UNIT 1	PAGE: 16 of 32
PROCEDURE NO.: 1-0970020		

8.6 Removing the 1B Inverter From Service (continued)

4. Place the following Transfer switch in the Maintenance Bypass Bus position.
 - Transfer Panel 1B: Transfer switch SS-1010-1 1MB Maintenance Bypass Bus 1B
5. Notify the Control Room the 1B instrument bus is being powered from the Maintenance Bypass Bus.
6. Open the inverter breakers on the front of the 1B inverter in the following order:
 - A. 1MB-CB6 (Inverter System Output)
 - B. 1MB-CB4 (Inverter Alternate Source)
 - C. 1MB-CB2 (Inverter Output)
 - D. 1MB-CB1 (DC Input)
7. Open the 1B inverter supply breaker on the 125V DC bus.
 - Inverter 1B: DC bus 1B 1-60224
8. Open the 1B sync signal breaker on the maintenance bypass bus.
 - Inverter 1B: Maintenance Bypass Bus 1B CKT 3
9. Notify the Control Room the 1B inverter is out of service.

END OF SECTION 8.6

/R19B

/R19 /R19 /R19 /R19