



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

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

NRC S1

Simulator

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

JOB PERFORMANCE MEASURE

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

Faulted JPM? Yes

Facility JPM #: Modified from 0821115

K/A: A4.01 3.5 / 3.2

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

Task Standard:

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

Evaluation Location:

Simulator X In Plant _____ Lab _____ Other _____

Performance Level:

Perform X Simulate _____ Discuss _____

References:

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

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

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

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

Establish Alternate Charging Flow Path through 'A' HPSI Header - Unit 2
- The performance level to be used for this JPM is **Perform**,
- This is not a time critical JPM.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

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

INITIAL CONDITIONS:

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

INITIATING CUES:

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

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

START TIME: _____

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

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

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

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 8:(6)</u> ENSURE Charging Pump(s) have a suction flowpath from ONE of the following sources:</p> <p style="padding-left: 40px;">Boric Acid Makeup Tank Refueling Water Tank Volume Control Tank</p> <p><u>STANDARD:</u> <u>Verify</u> Charging Pump Suction Flowpath.</p> <p style="padding-left: 40px;">*EXAMINER'S CUE: Charging Pump Suction is from the Boric Acid Makeup Tank.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9:(7)</u> ENSURE Charging Pump(s) have a discharge flowpath by OPENING at least ONE 'A' HPSI Header Loop Isolation Valve:</p> <p style="padding-left: 40px;">HCV-3617 2A2 Cold Leg HCV-3627 2A1 Cold Leg HCV-3637 2B1 Cold Leg HCV-3647 2B2 Cold Leg</p> <p><u>STANDARD:</u> <u>POSITION</u> Any ONE of the four valves to OPEN.</p> <p style="padding-left: 40px;">*EXAMINER'S CUE: As any one of the four Valves is OPENED, indicate the Green light is OFF, Red light is ON.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10:(8)</u> START Charging Pump(s) AS NECESSARY.</p> <p><u>STANDARD:</u> <u>POSITION</u> the 2A Charging Pump to START.</p> <p style="padding-left: 40px;">*EXAMINER'S CUE: 2A Charging Pump indicates Green light OFF and Red light ON. Recirc Valve Indicates BOTH lights ON. 2A Charging pump red and green lights off.</p> <p style="padding-left: 40px;">EXAMINER'S NOTE: 2A Charging pump trips 5 seconds after start signal. Applicant should refer back to step 5.C for use of the 2C Charging pump.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST

<p><u>STEP 11:(5.C)</u> If desired to use ONLY the 2C Charging pump <u>Then</u> locally LOCK CLOSED V2338 2C Charging Pump Disc. To Common Disc. Header Isolation.</p> <p><u>STANDARD:</u> <u>DIRECT</u> THE SNPO to locally LOCK CLOSED V2338.</p> <p>*EXAMINER'S CUE: SNPO reports V2338 is LOCKED CLOSED.</p> <p>EXAMINERS NOTE: Closing V2338 is NOT critical due to all Charging Pumps have discharge check valves. V2429 (step 6) should remain closed due to the location of the break. If V2429 is re-opened the 2C Charging pump will pump out the break, not into the RCS.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12:(8)</u> START the 2C Charging pump AS NECESSARY</p> <p><u>STANDARD:</u> <u>POSITION</u> the 2C Charging Pump to START</p> <p>*EXAMINER'S CUE: 2C Charging pump indicates red light ON green light OFF. Recirc, Valve indicates Green light ON red Light OFF.</p> <p>*EXAMINER'S CUE: As the Recirc valve closes, depending on which SI header Valve is opened, R-46,47, 56 or 57 Alarms and Loop Pressure PIA-3329,3319,3339 or 3349 indicates 1980 psig.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 13:(9)</u> VERIFY flow to the RCS by ANY of the following:</p> <p style="padding-left: 40px;">Pressurizer level rising</p> <p style="padding-left: 40px;">Indicated flow on applicable HPSI Loop Flow Indicator</p> <p><u>STANDARD:</u> <u>OBSERVE</u> Pressurizer Level and HPSI flow for PROPER indication.</p> <p>*EXAMINER'S CUE: Pressurizer Level is slowly RISING and applicable HPSI Loop Flow (FI-3311, 3321, 3331 or 3341) indicates 44 gpm.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP (done):</u> NOTIFY the US that charging flow has been established through the 'A' High Pressure Safety Injection Header using the 2C Charging Pump.</p> <p><u>STANDARD:</u> <u>NOTIFY</u> the US that charging flow has been ESTABLISHED through the 'A' High Pressure Safety Injection Header using the 2C Charging Pump.</p> <p style="text-align: center;">EXAMINER'S CUE: US ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	
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STOP TIME: _____

JOB PERFORMANCE MEASURE

SIMULATOR JPM SETUP

1. **RESTORE** IC-88. **UNFREEZE** the Simulator.
2. **SELECT** the Lesson File Folder for JPM.
3. **OPEN** the Lesson File for 0821115 and **EXECUTE** the Lesson.
4. **TRIGGER** Step 1.
5. After Letdown isolates on high temperature, **CLOSE** all three Letdown valves and **PLACE** all Charging pumps in **STOP**.
6. Line up Emergency Boration by performing the following steps:
 - **START** 2A or 2B BA Pump.
 - **CLOSE** V2650, Tank 2A Recirc. Valve.
 - **CLOSE** V2651, Tank 2B Recirc Valve.
 - **OPEN** V2514, Emergency Borate.
7. The Simulator will automatically **FREEZE** after 2A Charging Pump recirc valve strokes full open. All SPTAs are performed by the scenario.
8. Ensure 2B Charging pump is in **STOP** and breaker is racked out.
9. **STORE** a temporary IC set if more than one student is to take the JPM. **Note:** The lesson will have to be stopped and then re-executed each time the temporary IC set is restored.
10. **UNFREEZE** the simulator when the student is ready.
11. **TRIGGER** STEP 'Open V2340' when directed to do so by the student.
12. **TRIGGER** STEP 'Close V2429' when directed to do so by the student.
13. **TRIGGER** STEP 'Close V2338' when directed to do so by the student.
14. **TRIGGER** STEP 'Open V3519' when directed to do so by the student.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

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

INITIATING CUES:

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

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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

A Chg Pwr



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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



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

MANUALLY ACTUATE AFAS-1 UNIT 2

NRC S-2

Simulator

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

JOB PERFORMANCE MEASURE

Task: 07009036, MANUALLY INITIATE AFAS

Faulted JPM? Yes

Facility JPM #: Modified from 0821077

K/A: 061.A2.04 3.4 / 3.8

Ability to predict the impacts of the following malfunctions or operations on the AFW and based on these predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: pump failure or improper operation.

Task Standard:

This JPM is complete when the operator reports that AFW flow has been restored to the 2A SG from the 2A or 2C AFW Pump.

Evaluation Location:

Simulator X In Plant _____ Lab _____ Other _____

Performance Level:

Perform X Simulate _____ Discuss _____

References:

None

Validation Time: 5 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

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Manually Actuate AFAS-1, Unit 2
- The performance level to be used for this JPM is **Perform**
- This is not a time critical JPM.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

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

INITIAL CONDITIONS:

A Steam Generator Tube Rupture occurred in SG 2B. The 2B SG has been isolated IAW 2-EOP-99 Appendix R and the RCS is being cooled down and depressurized. AFW to SG 2A has just automatically isolated due to the Feedwater Header differential pressure between the Steam Generators.

INITIATING CUES:

The US has directed you to:

1. Manually initiate AFAS-1 from RTGB-202
2. Restore SG 2A level to 60-70% NR at approximately 300 gpm.

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST

START TIME: _____

<p><u>STEP 1:</u> Manually initiate AFAS-1 by placing all four AFAS-1 INITIATION SWITCHES on RTGB-202 to the MANUAL position.</p> <p><u>STANDARD:</u> <u>PLACE</u> all four AFAS-1 INITIATION SWITCHES on RTGB-202 to the MANUAL position.</p> <p style="padding-left: 40px;">*EXAMINER'S CUE: All four AFAS-1 Initiation Switches on RTGB-202 are placed in the MANUAL position.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> OBSERVE valves MV-09-9, "Pump 2A Disch to SG 2A Valve" and MV-09-11, "Pump 2C to SG 2A" fails to OPEN.</p> <p style="text-align: center;">AND</p> <p>OBSERVE zero flow on FI-09-2A or FR-09-2A, "Header A Flow & Pressure" and on FI-09-2C or FR-09-2C, "Header C Flow & Pressure".</p> <p><u>STANDARD:</u> <u>OBSERVE</u> valves MV-09-9 and MV-09-11 FAIL TO STROKE OPEN. <u>OBSERVE</u> NO FLOW on FI(FR)-09-2A and FI(FR)-09-2C.</p> <p style="padding-left: 40px;">*EXAMINER'S CUE: MV-09-9 and MV-09-11 INDICATE Red lights OFF, Green lights ON.</p> <p style="padding-left: 40px;">FI-09-2A/FR-09-2A indicates 44 gpm flow and FI-09-2C/FR-09-2C indicates 0 flow to the SG 2A.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p><u>STEP 3:</u> THROTTLES valve MV-09-9, "Pump 2A Disch to SG 2A Valve" OR MV-09-11, "Pump 2C to SG 2A" to 150 to 250 GPM.</p> <p><u>STANDARD:</u> <u>POSITION</u> the control switch for MV-09-9 or MV-09-11 to the open position.</p> <p>*EXAMINER'S CUE: MV-09-9 or MV-09-11 indicates Green light OFF and Red light OFF,</p> <p>EVALUATOR'S NOTE: When Applicant attempts to throttle open either MV-09-9 OR MV-09-11, MV-09-9 or MV-09-11 will open for 5 seconds then trip as indicated by loss of light indication. When MV-09-9 or MV-09-11 trips it will automatically clear the fault on the other valve allowing it to be throttled.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> DETERMINES MV-09-9 OR MV -09-11 has tripped and throttles other valve (MV-09-9 OR MV-09-11).</p> <p><u>STANDARD:</u> <u>THROTTLES</u> MV-09-9 or MV-09-11 a total of >300 GPM as indicated on FI-09-2A/FR-09-2A and FI-09-2C/FR-092C and is restoring SG 1A level between 60% and 70% narrow range</p> <p>*EXAMINER'S CUE: MV-09-11 shows Green and Red lights ON;</p> <p>FR-09-2A OR FI-09-2C indicates ~300 gpm, SG 2A level is now 65% narrow range and STABLE.</p> <p>EVALUATOR'S NOTE: Due to the length of time to restore normal S/G level on the simulator, after student has throttled flow to raise the level, STATE that S/G level is being RESTORED to between 60 % and 70% NR level.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP (done):</u> Notify the US that AFAS-1 has been manually initiated and AFW flow has been re-established to the 2A SG using the 2A AFW pump or the 2C AFW Pump. Level in the 2A SG is being restored to normal level (60%-70% NR).</p> <p><u>STANDARD:</u> <u>NOTIFY</u> the US that AFW flow has been RESTORED to the 2A SG using the 2A AFW pump (or 2C AFW Pump) and level is returning to normal level (60%-70% NR).</p> <p style="text-align: center;">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>
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STOP TIME: _____

JOB PERFORMANCE MEASURE

SIMULATOR JPM SETUP

1. **RESTORE** IC-80.
2. **EXECUTE** Scenario S-2
3. **UNFREEZE** the Simulator for a few seconds, then **FREEZE**.
4. **ENSURE** step "Valves Fail Close" is triggered (remaining steps will Auto Trigger on candidates actions).
5. **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 Steam Generator Tube Rupture occurred in SG 2B. The 2B SG has been isolated IAW 2-EOP-99 Appendix R and the RCS is being cooled down and depressurized. AFW to SG 2A has just automatically isolated due to the Feedwater Header differential pressure between the Steam Generators.

INITIATING CUES:

INITIATING CUES:

The US has directed you to:

1. Manually initiate AFAS-1 from RTGB-202
2. Restore SG 2A level to 60-70% NR at approximately 300 gpm.



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

EMERGENCY BORATE

NRC S-3

Simulator

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

JOB PERFORMANCE MEASURE

Task: 07002650, EMERGENCY BORATE THE RCS

Faulted JPM? YES

Facility JPM #:

K/A: 004.A4.07 3.9 / 3.7

Ability to manually operate and/or monitor in the control room: Boration/dilution

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when emergency boration actions are established.

Evaluation Location:

Performance Level:

Simulator X In Plant _____ Lab _____ Other _____

Perform X Simulate _____ Discuss _____

References:

- 2-ONP-02.02, "Emergency Boration"

Validation Time: 5 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-ONP-02.02, "Emergency Boration"

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Emergency Borate - Unit 2.
- The performance level to be used for this JPM is **Perform**
- This is not a time critical JPM.
- You may use any approved reference materials normally available in the execution of this task, including logs.
- Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

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

INITIAL CONDITIONS:

A reactor trip on Unit 2 has just occurred following a 45-day run at 100% power. The unit has experienced an excess cooldown and Tcold is approaching 500°F.

INITIATING CUES:

You are the BRCO. The US has directed you to Emergency Borate IAW 2-ONP-02.02, "Emergency Boration"

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

START TIME: _____

ENTER 2-ONP-02.02, "Emergency Boration"	
<p><u>STEP 1(6.0.1)</u> PLACE the Makeup Mode Selector switch in MANUAL.</p> <p><u>STANDARD:</u> <u>POSITION</u> Makeup Mode Selector Switch to MANUAL.</p> <p style="margin-left: 40px;">EXAMINER'S CUE: Makeup Mode Selector Switch is in MANUAL.</p> <p style="margin-left: 40px;">EVALUATOR NOTE: If/when, SIAS actuates (at any time during this JPM), direct the BRCO to continue with the Emergency Boration. The BOP will verify the SIAS.</p> <p style="margin-left: 40px;">EVALUATOR NOTE: Candidate may use the Emergency Borate Op Aid which is a hard card that mirrors the steps in the ONP.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:(6.0.2)</u> ENSURE V2525, Boron Load Control Valve, is CLOSED.</p> <p><u>STANDARD:</u> <u>ENSURE</u> V2525 is CLOSED.</p> <p style="margin-left: 40px;">*EXAMINER'S CUE: V2525 shows Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:(6.0.3)</u> START 2A or 2B BA Pump.</p> <p><u>STANDARD:</u> <u>POSITION</u> 2A or 2B BAM Pump control switch to RUN.</p> <p style="margin-left: 40px;">*EXAMINER'S CUE: BAM Pump (2A or 2B) started by candidate shows Green light OFF, Red light ON.</p> <p style="margin-left: 40px;">EVALUATOR NOTE: Since the procedure doesn't specify which pump to run, either one is acceptable. Optimally, however, the candidate should start the pump associated with the Tech Spec designated BAM tank.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p><u>STEP 4: (6.0.4)</u> CLOSE V2650, Tank 2A Recirc. Valve.</p> <p><u>STANDARD:</u> POSITION V2650 control switch to CLOSE.</p> <p> *EXAMINER'S CUE: V2650 shows Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5: (6.0.5)</u> CLOSE V2651, Tank 2B Recirc Valve.</p> <p><u>STANDARD:</u> POSITION V2651 control switch to CLOSE.</p> <p> *EXAMINER'S CUE: V2651 shows Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6: (6.0.6)</u> OPEN V2514 Emergency Borate.</p> <p><u>STANDARD:</u> POSITION V2514 control switch to OPEN and OBSERVE that valve does NOT open.</p> <p> *EXAMINER'S CUE: V2514 shows Green light OFF, Red light OFF and M 42 annunciates.</p> <p> EVALUATOR NOTE: Faulted step – V2514 failed to open.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

2-ONP-02.02, CONTINGENCY ACTION; <u>If</u> V2514 fails to open, PERFORM the following:	
<p>STEP 7: (6.0.6.A.1) OPEN V2508, BA Gravity Feed B.</p> <p>STANDARD: <u>POSITION</u> V2508 control switch to OPEN and <u>OBSERVE</u> V2508 does not open.</p> <p>*EXAMINER'S CUE: V2508 shows Green light ON, Red light OFF.</p> <p>EVALUATOR NOTE: Faulted step – V2508 failed to open</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 8: (6.0.6.A.2) OPEN V2509, BA Gravity Feed A.</p> <p>STANDARD: <u>POSITION</u> V2509 control switch to OPEN and <u>OBSERVE</u> V2509 does not open.</p> <p>*EXAMINER'S CUE: V2509 shows Green light ON, Red light OFF.</p> <p>EVALUATOR NOTE: Faulted step – V2509 failed to open</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9: (6.0.6.A.3) CLOSE V2501 VCT Outlet Valve.</p> <p>STANDARD: Candidate realizes that V2501 should not be closed at this time because it will isolate the suction path to the charging pumps. Candidate leaves V2501 OPEN.</p> <p>*EXAMINER'S CUE: V2501 shows Green light OFF, Red light ON;</p> <p>EXAMINER'S NOTE: This step becomes a Critical Step if V2501 is closed and not reopened and charging pumps restarted if tripped.</p> <p>*EXAMINER'S CUE: If candidate states that V2501 can not be closed and is going to continue, acknowledge the request to continue with procedure.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p><u>STEP 10: (6.0.6.B.1)</u> If the Boric Acid Makeup Tanks are unavailable or both Gravity Feed valves failed to open, <u>THEN</u> perform the following:</p> <p align="center">OPEN V2504 Refuel Water to Charging Pumps</p> <p><u>STANDARD:</u> <u>OPENS</u> V2504</p> <p>EXAMINER'S CUE: V2504 shows 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 11: (6.0.6.B.2)</u> CLOSE V2501 VCT Outlet Valve</p> <p><u>STANDARD:</u> <u>CLOSES</u> V2501 VCT Outlet Valve</p> <p>EXAMINER'S CUE: V2501 shows Green light ON, Red light OFF.</p> <p>EVALUATOR NOTE: If SIAS occurs, V2501 closes.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12 (6.0.6.B.3):</u> STOP the running BAM pumps</p> <p><u>STANDARD:</u> <u>PLACES</u> the control switch for the BAM pump that was started in step 3 to the stop position.</p> <p>EXAMINER'S CUE: Previously running BAM pump indicates red light OFF green light ON.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 13: (6.0.6.B.4)</u> ENSURE V2508 BA Gravity Feed CLOSED</p> <p><u>STANDARD:</u> <u>ENSURES</u> V2508 BA Gravity Feed CLOSED</p> <p style="padding-left: 40px;">EXAMINER'S CUE: V2508 shows Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p> 	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 14: (6.0.6.B.5)</u> ENSURE V2509 BA Gravity Feed CLOSED</p> <p><u>STANDARD:</u> <u>ENSURES</u> V2509 BA Gravity Feed CLOSED</p> <p style="padding-left: 40px;">EXAMINER'S CUE: V2509 shows Green light ON, Red light OFF.</p> <p><u>COMMENTS:</u></p> 	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 15: (6.0.6.B.6)</u> ENSURES V2514 Emergency Borate CLOSED</p> <p><u>STANDARD:</u> <u>ENSURES</u> V2514 Emergency Borate CLOSED</p> <p style="padding-left: 40px;">EXAMINER'S CUE: V2514 shows Green light OFF, Red light OFF.</p> <p style="padding-left: 40px;">EVALUATOR NOTE: Requires SNPO to locally ensure this valve is closed.</p> <p><u>COMMENTS:</u></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** IC-85.
2. **EXECUTE** S-3 "Emergency Borate"
3. **UNFREEZE** the Simulator.
4. **ENSURE** scenario auto executes.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

A reactor trip on Unit 2 has just occurred following a 45-day run at 100% power. The unit has experienced an excess cooldown and Tcold is approaching 500°F.

INITIATING CUES:

You are the BRCO. The US has directed you to Emergency Borate IAW 2-ONP-02.02, "Emergency Boration"

REVISION NO.: 6A	PROCEDURE TITLE: EMERGENCY BORATION	PAGE: 6 of 9
PROCEDURE NO.: 2-ONP-02.02	ST. LUCIE UNIT 2	

6.0 OPERATOR ACTIONS

INSTRUCTIONS

CONTINGENCY ACTIONS

NOTE

- This Procedure may contain steps that could adversely affect reactivity. ENSURE that proper consideration and appropriate briefings occur prior to performance of steps that could challenge reactivity.
- An Operator Aid has been placed at RTGB-205 Panel "M". Any revision to this section of the procedure shall verify the validity of the Operator Aid and, if changes are necessary, a Label Request shall be initiated to incorporate these changes on a new Operator Aid placard.

1. **1** PLACE the Makeup Mode Selector switch in MANUAL.
2. ENSURE V2525, Boron Load Control Valve, is CLOSED.
3. START 2A or 2B BA Pump.
4. CLOSE V2650, Tank 2A Recirc. Valve.
5. CLOSE V2651, Tank 2B Recirc Valve.
6. OPEN V2514, Emergency Borate.

6.

A. If V2514 fails to open, PERFORM the following:

1. OPEN V2508, BA Gravity Feed B.
2. OPEN V2509, BA Gravity Feed A.
3. CLOSE V2501 VCT Outlet Valve.

REVISION NO.: 6A	PROCEDURE TITLE: EMERGENCY BORATION	PAGE: 7 of 9
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6.0 OPERATOR ACTIONS (continued)

INSTRUCTIONS

CONTINGENCY ACTIONS

6. (continued)

CAUTION

The RWT to Charging Pump Suction line shall not be used during a seismic event.

B. If the Boric Acid Makeup Tanks are unavailable or both Gravity Feed valves failed to open, Then perform the following:

1. OPEN V2504 Refuel Water to Charging Pumps.
2. CLOSE V2501 VCT Outlet Valve.
3. STOP the running BAM pumps.
4. ENSURE V2508 BA Gravity Feed B CLOSED.
5. ENSURE V2509 BA Gravity Feed A CLOSED.
6. ENSURE V2514 Emergency Borate CLOSED.



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

COOL THE QUENCH TANK

NRC S-4

Simulator

This JPM is NOT TIME CRITICAL

This is a NON-FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Cool the Quench Tank

Faulted JPM? No

Facility JPM #:

K/A: 007.A1.03 2.6 / 2.7

Ability to predict and/or monitor changes in parameters (to prevent exceeding design limit(s) associated with operating the PRTS controls including: Monitoring quench tank temperature.

Task Standard:

This JPM is complete when the Quench tank has been cooled to within normal operating temperature.

Evaluation Location:

Simulator X In Plant _____ Lab _____ Other _____

Performance Level:

Perform X Simulate _____ Discuss _____

References:

- 2-NOP-01.07, "Quench Tank Operation"

Validation Time: 15 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-NOP-01.07, "Quench Tank Operation"

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Cool the Quench Tank - Unit 2.
- The performance level to be used for this JPM is **Perform**
- This is not a time critical JPM.
- You may use any approved reference materials normally available in the execution of this task, including logs.
 - Indicate to me that you have finished the assigned task by returning the Candidate Cue Sheet that I provided to you.

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

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

INITIAL CONDITIONS:

Unit 2 has been operating at 100% power for 230 days. PORV 1474 has recently started weeping and as a result the Quench Tank temperature has risen above normal values.

INITIATING CUES:

The US has directed you to cool the Quench Tank IAW 2-NOP-01.07, "Quench Tank Operation" section 4.4, "Lowering the Quench Tank Temperature by Feed and Bleed" until the Quench Tank temperature is within normal operating temperature.

The Prerequisites and Initial Conditions of 2-NOP-01.07 are met.

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

START TIME: _____

4.4 <u>Lowering Quench Tank Temperature by Feed and Bleed</u>	
<p><u>STEP 1 (4.4.1)</u> ENSURE Section 2.0 Precautions and Limitations has been reviewed.</p> <p><u>STANDARD:</u> REVIEWS Section 2.0 paying particular attention to step 2.1.3: Cooling the Quench tank to less than 115°F could raise the possibility of PORV and Pressurizer Safety Valve leakage.</p> <p style="text-align: center;">EXAMINER'S CUE: None.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:(4.4.2)</u> ENSURE Section 3.0 Prerequisites and Initial Conditions has been reviewed.</p> <p><u>STANDARD:</u> REVIEWS Section 3.0. Prerequisites and Initial Conditions</p> <p style="text-align: center;">EXAMINER'S CUE: Unit Supervisor has initialed all Section 3.0</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:(4.4.3)</u> Lower Quench Tank Level to between 60% and 63% in accordance with Section 4.3, Lowering Quench Tank Level.</p> <p><u>STANDARD:</u> PERFORMS Section 4.3. Lowering Quench Tank Level.</p> <p style="text-align: center;">EXAMINER'S CUE: None</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p><u>STEP 4 (4.3.1)</u> ENSURE Section 2.0 Precautions and Limitations has been reviewed.</p> <p><u>STANDARD:</u> REVIEWS Section 2.0 paying particular attention to step 2.1.3: Cooling the Quench tank to less than 115°F could raise the possibility of PORV and Pressurizer Safety Valve leakage.</p> <p>EXAMINER'S CUE: None.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:(4.3.2)</u> ENSURE Section 3.0 Prerequisites and Initial Conditions has been reviewed.</p> <p><u>STANDARD:</u> REVIEWS Section 3.0. Prerequisites and Initial Conditions</p> <p>EXAMINER'S CUE: Unit Supervisor has initialed all Section 3.0</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6 (4.3.3)</u> MONITOR the Reactor Drain Tank as Quench Tank is drained to ensure there is ample volume to hold the water drained from the Quench Tank.</p> <p><u>STANDARD:</u> MONITORS Reactor Drain Tank while draining the Quench Tank.</p> <p>EXAMINER'S CUE: None.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 7:(4.3.4)</u> OPEN V6741, NITROGEN HEADER. RTGB-205.</p> <p><u>STANDARD:</u> POSITIONS V6741 to the OPEN Position</p> <p>EXAMINER'S CUE: V6741 indicates Red light on Green light 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 8: (4.3.5)</u> OPEN V1401, QUENCH TANK DRAIN. RTGB-203</p> <p><u>STANDARD:</u> POSITIONS V1401, QUENCH TANK DRAIN to the OPEN position.</p> <p>EXAMINER'S CUE: Red light on and green light off V1401, QUENCH TANK DRAIN.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9: (4.3.6)</u> IF the Quench Tank pressure lowers to less than 1 psig, THEN PERFORM the following</p> <p><u>STANDARD:</u> MONITORS Quench Tank pressure. If pressure lowers to less than 1 psig performs the following:</p> <p>B. IF necessary to maintain Quench Tank pressure, THEN EQUALIZE pressure between the Quench Tank and Reactor Drain Tank as follows:</p> <p align="center">(1) OPEN V1400, QUENCH TANK VENT. RTGB-203 (2) OPEN V6300, VENT VALVE. RTGB-205</p> <p>EXAMINER'S CUE: Quench Tank pressure is 1.5 psig.</p> <p>EVALUATOR NOTE: Quench Tank pressure should NOT lower less than 1 psig during performance of this task.</p> <p>EVALUATOR NOTE: Step 4.3.6 Continued on next page.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p>STEP 10: (4.3.6) IF the Quench Tank pressure lowers to less than 1 psig, THEN PERFORM the following</p> <p>STANDARD: <u>MONITORS</u> Quench Tank pressure. If pressure is between 2 and 4 psig performs the following:</p> <p style="padding-left: 40px;">C. WHEN Quench Tank pressure returns to between 2 and 4 psig, THEN OPEN V1401, Quench Tank Drain. RTGB-203</p> <p style="text-align: center;">EVALUATOR NOTE: Quench Tank pressure should NOT lower less than 1 psig during performance of this task. Step should be N/A.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 11: (4.3.7) If Quench Tank initial level was greater than 70%, THEN VERIFY Annunciator H-32, QUENCH TANK LEVEL HIGH / LOW, CLEAR when level is less than 70%</p> <p>STANDARD: <u>MONITORS</u> Quench Tank level, DETERMINES less than 70%.</p> <p>EXAMINER'S CUE: Quench Tank Level is 65%.</p> <p>EXAMINER'S NOTE: Initial level less than 70%, therefore step not applicable.</p> <p>COMMENTS:</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>STEP 12: (4.3.8) WHEN Quench Tank level is between 60% and 70%, THEN CLOSE V1401, QUENCH TANK DRAIN. RTGB-203</p> <p>STANDARD: <u>POSITIONS</u> V1401, QUENCH TANK DRAIN to the CLOSE position.</p> <p>EXAMINER'S CUE: Quench Tank level is 61%</p> <p>EXAMINER'S CUE: V1401, QUENCH TANK DRAIN indicate red light off green light on.</p> <p>EXAMINER'S NOTE: V1401, QUENCH TANK DRAIN will be closed when level is between 60-63% per Step 4.4.3</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 13: (4.3.9)</u></p> <p><u>STANDARD:</u></p> <p>EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>	<p>IF Quench Tank pressure is less than 2 psig, THEN ENSURE V1400, QUENCH TANK VENT, is CLOSED. RTGB-203</p> <p>ENSURES V1400, QUENCH TANK VENT, is CLOSED.</p> <p>Quench Tank pressure is 3 psig.</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 14: (4.3.10)</u></p> <p><u>STANDARD:</u></p> <p>EXAMINER'S CUE:</p> <p>EXAMINER'S CUE:</p> <p>EXAMINER'S NOTE:</p> <p><u>COMMENTS:</u></p>	<p>WHEN Quench Tank pressure is between 2 psig and 4 psig, THEN PERFORM the following:</p> <p>A. ENSURES V1400, QUENCH TANK VENT, is CLOSED.</p> <p>ENSURES V1400, QUENCH TANK VENT, is CLOSED.</p> <p>Quench Tank pressure is 3 psig</p> <p>V1400, Quench Tank Vent indicates red light off green light on</p> <p>V1400 was not opened, therefore step is not applicable.</p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 15: (4.3.10)</u></p> <p><u>STANDARD:</u></p> <p>EXAMINER'S CUE:</p> <p>EXAMINER'S CUE:</p> <p><u>COMMENTS:</u></p>	<p>WHEN Quench Tank pressure is between 2 psig and 4 psig, THEN PERFORM the following:</p> <p>B. ENSURES V6300, VENT VALVE, is CLOSED.</p> <p>ENSURES V6300, VENT VALVE, is CLOSED.</p> <p>Quench Tank pressure is 3 psig.</p> <p>V6300, VENT VALVE indicates red light off green light on.</p>	<p>____ SAT</p> <p>____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 16: (4.3.10)</u> WHEN Quench Tank pressure is between 2 psig and 4 psig, THEN PERFORM the following:</p> <p style="padding-left: 40px;">C. CLOSE V6741, NITROGEN HEADER.</p> <p><u>STANDARD:</u> <u>POSITIONS</u> V6741, NITROGEN HEADER to the CLOSED position.</p> <p style="margin-top: 20px;">EXAMINER'S CUE: Quench Tank pressure is 3 psig. EXAMINER'S CUE: V6741, NITROGEN HEADER indicates red light off green light on.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 17:(4.4.4)</u>RAISE Quench Tank level to between 67% and 70% in accordance with Section 4.2, Raising Quench Tank Level.</p> <p><u>STANDARD:</u> <u>PERFORMS</u> Section 4.2. Raising Quench Tank Level.</p> <p style="margin-top: 10px;">EXAMINER'S CUE: None</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 18 (4.2.1)</u> ENSURE Section 2.0 Precautions and Limitations has been reviewed.</p> <p><u>STANDARD:</u> <u>REVIEWS</u> Section 2.0 paying particular attention to step 2.1.3: Cooling the Quench tank to less than 115°F could raise the possibility of PORV and Pressurizer Safety Valve leakage.</p> <p style="margin-top: 10px;">EXAMINER'S CUE: None.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p><u>STEP 19:(4.2.2)</u>ENSURE Section 3.0 Prerequisites and Initial Conditions has been reviewed.</p> <p><u>STANDARD:</u> REVIEWS Section 3.0. Prerequisites and Initial Conditions</p> <p>EXAMINER'S CUE: Unit Supervisor has initialed all Section 3.0</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 20: (4.2.3)</u> OPEN V1400, QUENCH TANK VENT. RTGB-203</p> <p><u>STANDARD:</u> POSITIONS V1400, QUENCH TANK VENT to the OPEN position.</p> <p>EXAMINER'S CUE: Red light on and green light off on V1400, QUENCH TANK VENT.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 21: (4.2.4)</u> ENSURE HCV-15-1, PRIMARY WATER TO CONTAINMENT, is OPEN. RTGB-206</p> <p><u>STANDARD:</u> CHECKS HCV-15-1, PRIMARY WATER TO CONTAINMENT is OPEN.</p> <p>EXAMINER'S CUE: Red light on and green light off on HCV-15-1, PRIMARY WATER TO CONTAINMENT.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p><u>STEP 22: (4.2.5)</u> OPEN HCV-15-2, PMW TO QUENCH TANK. RTGB-203</p> <p><u>STANDARD:</u> POSITIONS HCV-15-2, PMW TO QUENCH TANK to the OPEN position.</p> <p>EXAMINER'S CUE: Red light on and green light off on HCV- 15-2, PMW TO QUENCH TANK.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 23: (4.2.6)</u> IF Quench Tank pressure reaches 14 psig, THEN PERFORM the following.</p> <p>A. CLOSE HCV-15-2, PMW TO QUENCH TANK. B. WHEN EITHER of the following conditions exist,</p> <ul style="list-style-type: none"> ▪ Quench Tank pressure is lowered to between 1 and 4 psig <li align="center">OR ▪ Quench Tank level is lowered to 60% to 63% <p>THEN OPEN HCV-15-2, PMW TO QUENCH TANK.</p> <p><u>STANDARD:</u> MONITORS Quench Tank pressure.</p> <p>EXAMINER'S CUE: Quench Tank pressure is 3 psig</p> <p>EXAMINER'S NOTE: Quench Tank should not reach these values so step should be not applicable.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p><u>STEP 24: (4.2.7)</u> IF Quench Tank initial level is less than 60%, THEN VERIFY Annunciator H-32, QUENCH TANK LEVEL HIGH/LOW, CLEAR when level exceeds than 60%.</p> <p><u>STANDARD:</u> MONITORS Quench Tank level, DETERMINES greater than 60%.</p> <p>EXAMINER'S CUE: Quench Tank Level is 61%.</p> <p>EXAMINER'S NOTE: Quench Tank will not be below this value so step should be not applicable.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 25 (4.2.8):</u> WHEN Quench Tank level has raised to between 60% and 70%, THEN CLOSE HCV-15-2.</p> <p><u>STANDARD:</u> POSITIONS HCV-15-2 to the CLOSED position.</p> <p>EXAMINER'S CUE: Quench Tank Level is 69%</p> <p>EXAMINER'S CUE: HCV-15-2 indicates red light off green light on</p> <p>EXAMINER'S NOTE: Per step 4.4.4, raise level to between 67% and 70%.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 26: (4.2.9)</u> WHEN Quench Tank pressure is less than or equal to 4 psig, THEN CLOSE V1400, QUENCH TANK VENT. RTGB-203</p> <p><u>STANDARD:</u> POSITIONS V1400, QUENCH TANK VENT, to CLOSE.</p> <p>EXAMINER'S CUE: Quench Tank pressure is 3 psig.</p> <p>EXAMINER'S CUE: V1400 indicates red light off green light on</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p><u>STEP 27: (4.2.10)</u> IF Quench Tank pressure is less than 1 psig, THEN PERFORM the following.</p> <p> A. OPEN V6741, NITROGEN HEADER.</p> <p> B. WHEN Quench Tank pressure is between 2 psig and 4 psig, THEN CLOSE V6741.</p> <p><u>STANDARD:</u> MONITORS Quench Tank pressure.</p> <p> EXAMINER'S CUE: Quench Tank pressure is 3 psig</p> <p> EXAMINER'S NOTE: Quench Tank should not reach these values so step should be not applicable.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 28: (4.4.5)</u> REPEAT the previous two steps until both of the following conditions are satisfied.</p> <ul style="list-style-type: none"> ▪ Quench Tank temperature is between 115°F and 120°F ▪ Quench Tank level is between 60% and 70% <p><u>STANDARD:</u> MONITORS Quench Tank temperature and Level</p> <p> EXAMINER'S CUE: Quench tank temperature indicates 115°F</p> <p> EXAMINER'S CUE: Quench tank level indicates 68%</p> <p> EXAMINERS NOTE: If performed on the simulator, Sections 4.4.3 and 4.4.4 may be performed numerous times until temperature is between 115°F and 120°F.</p> <p><u>COMMENTS:</u></p> <p align="center">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-86.
2. **UNFREEZE** the Simulator.
3. **INITIAL** Section 3.0 of 2-NOP-01.07, Prerequisites and Initial Conditions, as Unit Supervisor

**-JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET**

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

INITIAL CONDITIONS:

Unit 2 has been operating at 100% power for 230 days. PORV 1474 has recently started weeping and as a result the Quench Tank temperature has risen above normal values.

INITIATING CUES:

The US has directed you to cool the Quench Tank IAW 2-NOP-01.07, "Quench Tank Operation" section 4.4, "Lowering the Quench Tank Temperature by Feed and Bleed" until the Quench Tank temperature is within normal operating temperature.

The Prerequisites and Initial Conditions of 2-NOP-01.07 are met.

REVISION NO.: 5C	PROCEDURE TITLE: QUENCH TANK OPERATION	PAGE: 7 of 18
PROCEDURE NO.: 2-NOP-01.07	ST. LUCIE UNIT 2	

4.2 Raising Quench Tank Level

INITIAL

1. **ENSURE** Section 2.0 Precautions and Limitations, has been reviewed. _____
2. **ENSURE** Section 3.0, Prerequisites and Initial Conditions, has been reviewed. _____
3. **OPEN** V1400, QUENCH TANK VENT. RTGB-203 _____
4. **ENSURE** HCV-15-1, PRIMARY WATER TO CONTAINMENT, is OPEN. RTGB-206 _____
5. **OPEN** HCV-15-2, PMW TO QUENCH TANK. RTGB-203 _____

NOTE

- The following step may be repeated as necessary.
- Annunciator H-16, QUENCH TANK PRESS HIGH, alarms at 15 psig.
- Annunciator H-32, QUENCH TANK LEVEL HIGH/LOW alarms at 70% (HIGH) and 60% (LOW).

6. IF Quench Tank pressure reaches 14 psig, THEN PERFORM the following:
 - A. **CLOSE** HCV-15-2, PMW TO QUENCH TANK. _____
 - B. WHEN Quench Tank pressure is lowered to between 1 and 4 psig, THEN **OPEN** HCV-15-2. RTGB-203 _____
7. IF Quench Tank initial level is less than 60%, THEN **VERIFY** annunciator H-32, QUENCH TANK LEVEL HIGH / LOW, CLEAR when level exceeds 60%. _____
8. WHEN Quench Tank level is between 60% and 70%, THEN **CLOSE** HCV-15-2, PMW TO QUENCH TANK. RTGB-203 _____
9. WHEN Quench Tank pressure is less than or equal to 4 psig, THEN **CLOSE** V1400, QUENCH TANK VENT. RTGB-203 _____

REVISION NO.: 5C	PROCEDURE TITLE: QUENCH TANK OPERATION	PAGE: 8 of 18
PROCEDURE NO.: 2-NOP-01.07	ST. LUCIE UNIT 2	

4.2 Raising Quench Tank Level (continued)

INITIAL

10. IF Quench Tank Pressure is less than 1 psig, THEN **PERFORM** the following:

A. **OPEN** V6741, NITROGEN HEADER. _____

B. WHEN Quench Tank pressure is between 2 psig and 4 psig, THEN **CLOSE** V6741. (Section 7.1.3 Management Directive 1) _____

Performed By: _____
Print/Sign
Initials
Date

Reviewed By: _____
Unit Supervisor (Print/Sign)
Date

REVISION NO.: 5C	PROCEDURE TITLE: QUENCH TANK OPERATION	PAGE: 9 of 18
PROCEDURE NO.: 2-NOP-01.07	ST. LUCIE UNIT 2	

4.3 Lowering Quench Tank Level

INITIAL

1. **ENSURE** Section 2.0 Precautions and Limitations, has been reviewed. _____
2. **ENSURE** Section 3.0, Prerequisites and Initial Conditions, has been reviewed. _____
3. **MONITOR** the Reactor Drain Tank as Quench Tank is drained to ensure there is ample volume to hold the water drained from the Quench Tank. _____
4. **OPEN** V6741, NITROGEN HEADER. RTGB-205 _____
5. **OPEN** V1401, QUENCH TANK DRAIN. RTGB-203 _____

NOTE

- The following step may be repeated as necessary.
- Annunciator H-32, QUENCH TANK LEVEL HIGH/LOW alarms at 70% (HIGH) and 60% (LOW).

6. IF Quench Tank pressure lowers to less than 1 psig, THEN **PERFORM** the following:
 - A. **CLOSE** V1401, Quench Tank Drain. RTGB-203 _____
 - B. IF necessary to maintain Quench Tank pressure, THEN **EQUALIZE** pressure between the Quench Tank and Reactor Drain Tank as follows:
 - (1) **OPEN** V1400, QUENCH TANK VENT. RTGB-203 _____
 - (2) **OPEN** V6300, RDT VENT VALVE. RTGB-205 _____
 - C. WHEN Quench Tank pressure returns to between 2 and 4 psig, THEN **OPEN** V1401, Quench Tank Drain. RTGB-203 _____
7. IF Quench Tank initial level was greater than 70%, THEN **VERIFY** Annunciator H-32, QUENCH TANK LEVEL HIGH / LOW, CLEAR when level is less than 70%. _____
8. WHEN Quench Tank level is between 60% and 70%, THEN **CLOSE** V1401, QUENCH TANK DRAIN. RTGB-203 _____
9. IF Quench Tank pressure is less than 2 psig, THEN **ENSURE** V1400, QUENCH TANK VENT, is CLOSED. RTGB-203 _____

REVISION NO.: 5C	PROCEDURE TITLE: QUENCH TANK OPERATION	PAGE: 10 of 18
PROCEDURE NO.: 2-NOP-01.07	ST. LUCIE UNIT 2	

4.3 Lowering Quench Tank Level (continued)

INITIAL

10. WHEN Quench Tank pressure is between 2 psig and 4 psig, **THEN**
PERFORM the following:

A. ENSURE V1400, QUENCH TANK VENT, is CLOSED. _____

B. ENSURE V6300, VENT VALVE, is CLOSED. _____

C. CLOSE V6741, NITROGEN HEADER.
(Section 7.1.3 Management Directive 1) _____

Performed By: _____
Print/Sign Initials Date

Reviewed By: _____
Unit Supervisor (Print/Sign) Date

REVISION NO.: 5C	PROCEDURE TITLE: QUENCH TANK OPERATION ST. LUCIE UNIT 2	PAGE: 11 of 18
PROCEDURE NO.: 2-NOP-01.07		

4.4 Lowering Quench Tank Temperature by Feed and Bleed

INITIAL

1. **ENSURE** Section 2.0 Precautions and Limitations, has been reviewed.
2. **ENSURE** Section 3.0, Prerequisites and Initial Conditions, has been reviewed.
3. **LOWER** Quench Tank level to between 60% and 63% in accordance with Section 4.3, Lowering Quench Tank Level.
4. **RAISE** Quench Tank level to between 67% and 70% in accordance with Section 4.2, Raising Quench Tank Level.
5. **REPEAT** the previous two steps until both of the following conditions are satisfied:
 - Quench Tank temperature is between 115°F and 120°F.
 - Quench Tank level is between 60% and 70%.

Performed By: _____

Print/Sign	Initials	Date
_____	_____	_____

Reviewed By: _____ **Unit Supervisor (Print/Sign)** _____ **Date** _____



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

PLACE THE PRESSURIZER ON RECIRC.

NRC S-5

Simulator

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Place the Pressurizer on Recirc.

Faulted JPM? YES

Facility JPM #:

K/A: 010.A2.02 3.9 / 3.9

Ability to predict the impacts of the following malfunctions or operations on the PZR PCS: and based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Spray Valve Failures.

Task Standard:

This JPM is complete when the Reactor has been tripped and the 2B2 RCP has been stopped.

Evaluation Location:

Performance Level:

Simulator	In Plant	Lab	Other	Perform	Simulate	Discuss
X				X		

References:

- 2-GOP-101, "Reactor Operating Guidelines During Steady State and Scheduled Load Changes" Appendix A
- 2-0120035, "Pressurizer Pressure and Level"

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-GOP-101, "Reactor Operating Guidelines During Steady State and Scheduled Load Changes" Appendix A

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

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

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

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

INITIAL CONDITIONS:

Unit 2 is operating at 100%. 2A Heater drain pump has an oil leak and must be removed from service. The Unit Supervisor is preparing for a down power IAW 2-GOP-123, "Turbine Shutdown – Full Load to Zero Load"

INITIATING CUES:

The US has directed you to place the Pressurizer on recirc IAW 2-GOP-101, Appendix A "Pressurizer Recirculation Guidelines".

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

2-GOP-101 Appendix A	
<p><u>STEP 1(1.A)</u> PLACE all available Backup Heater Bank control switches to ON.</p> <p><u>STANDARD:</u> <u>POSITION</u> B-1, B-2, B-4, and B-6 to the ON position.</p> <p style="margin-left: 40px;">EXAMINER'S CUE: B-1, B-2, B-4, and B-6 indicate red light on green light off.</p> <p style="margin-left: 40px;">EXAMINER'S NOTE: B-3 and B-5 are already energized.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:(1.B)</u> <u>Slowly</u> REDUCE the AUTO setpoint on PIC-1100X or PIC-1100Y, the selected "Pressurizer Pressure" controller, to maintain normal operating pressure.</p> <p><u>STANDARD:</u> <u>SLOWLY</u> reduces PIC-1100X setpoint to approximately 2220 psia</p> <p style="margin-left: 40px;">EXAMINER'S CUE: PIC-1100X setpoint is 2220 psia.</p> <p style="margin-left: 40px;">EXAMINERS NOTE: PIC-1100X setpoint is required to be reduced to approximately 2220 psia to maintain 2250 psia.</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:(1.C)</u> OBSERVE HIC-1100, "Pressurizer Spray" output and PCV-1100E / 1100F, "Pressurizer Spray Valve" position indication to verify Main Spray flow.</p> <p><u>STANDARD:</u> OBSERVES PCV-1100E / 1100F, "Pressurizer Spray Valves" opening. DETERMINES spray valve PCV-1100E is full open and pressure is rapidly lowering. When PCV-1100E does not close, places the spray selector switch to the PCV-1100F position.</p> <p>EVALUATOR NOTE: PCV-1100E / 1100F, "Pressurizer Spray Valves" will start to open as indicated by red and green lights. PCV-1100E valve will open fully.</p> <p>EVALUATOR NOTE: Takes manual control of HIC-1100 in attempt to close the spray valves, not procedurally addressed.</p> <p>EVALUATOR'S CUE: If requested, provide Pressurizer Pressure and Level ONP.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:</u> Trip the Reactor</p> <p><u>STANDARD:</u> TRIPS the Reactor prior to automatic TMLP trip setpoint of approximately 2050 psia.</p> <p>EXAMINER'S CUE: All CEA's indicate rod bottom lights illuminated.</p> <p>EXAMINER'S NOTE: Applicant should trip the Reactor no later than 2/4 RPS TMLP PRE-TRIP setpoint of 2100 psia. Reactor will NOT trip automatically on TMLP.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> Starts 2B2 Rector Coolant Pump oil lift pumps.</p> <p><u>STANDARD:</u> POSITIONS 2B2 Reactor Coolant Pump oil lift pumps to the ON position.</p> <p>EXAMINER'S CUE: 2B2 Reactor Coolant Pump oil lift pumps indicate red light on green light off.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 6: Stop 2B2 Reactor Coolant Pump.</p> <p>STANDARD: POSITION 2B2 Reactor Coolant Pump to the STOP position.</p> <p style="margin-left: 100px;">EXAMINER'S CUE: 2B2 Reactor Coolant Pump indicates green light on red light off. AMP meter indicates '0'.</p> <p>COMMENTS:</p> <p style="text-align: center; margin-top: 20px;">END OF TASK</p>	<p>CRITICAL STEP</p> <p style="text-align: center; margin-top: 20px;">_____ SAT</p> <p style="text-align: center; margin-top: 10px;">_____ UNSAT</p>
---	---

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-1.
2. **EXECUTE** Scenario S-5 – Place the Pressurizer on Recirc.
3. **UNFREEZE** the Simulator.
4. **ENSURE** step “Sprays Full Open” auto triggers at 2225 psia

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

Unit 2 is operating at 100%. 2A Heater drain pump has an oil leak and must be removed from service. The Unit Supervisor is preparing for a down power IAW 2-GOP-123, "Turbine Shutdown – Full Load to Zero Load"

INITIATING CUES:

The US has directed you to place the Pressurizer on recirc IAW 2-GOP-101, Appendix A "Pressurizer Recirculation Guidelines".

REVISION NO.: 9B	PROCEDURE TITLE: REACTOR OPERATING GUIDELINES DURING STEADY STATE AND SCHEDULED LOAD CHANGES ST. LUCIE UNIT 2	PAGE: 12 of 15
PROCEDURE NO.: 2-GOP-101		

APPENDIX A
PRESSURIZER RECIRCULATION GUIDELINES
(Page 1 of 2)

NOTE

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

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

1. To place the Pressurizer on recirculation:
 - A. PLACE all available Backup Bank heater control switches to ON.
 - B. Slowly REDUCE the AUTO setpoint on PIC-1100X or PIC-1100Y, the selected "Pressurizer Pressure" controller, to maintain normal operating pressure.
 - C. OBSERVE HIC-1100, "Pressurizer Spray" output and PCV-1100E/1100F, "Pressurizer Spray Valve" position indication to verify Main Spray flow.

NOTE

Normally, the required number of Backup Bank heaters in service is dependent upon:

1. The magnitude of thermal losses from the system, including leakage to the Quench Tank.
2. The number of heater elements out of service.

The normal configuration is to have enough Backup Bank heaters in service to keep the Proportional Bank heaters at approximately 50% output.

2. To take the Pressurizer off recirculation:
 - A. REMOVE the additional Backup Bank heaters from service one at a time by returning the control switch to AUTO.
 - B. ADJUST the AUTO setpoint on PIC-1100X or PIC-1100Y, the selected "Pressurizer Pressure" controller, to maintain normal operating pressure.

REVISION NO.: 26	PROCEDURE TITLE: PRESSURIZER PRESSURE AND LEVEL	PAGE: 6 of 15
PROCEDURE NO.: 2-0120035	ST. LUCIE UNIT 2	

7.2 Subsequent Operator Actions (continued)

INSTRUCTIONS

1. A. (continued)

CONTINGENCY ACTIONS

1. A. (continued)

3. If both pressure channels are failed or automatic pressure control does NOT operate properly, Then operate spray controller in manual and energize or deenergize heaters as necessary.

NOTE

Divergence of Spray Line Temperatures between 2B1 and 2B2 Spray lines may indicate a stuck open spray valve. The stuck open spray valve would have the spray line with the higher temperature approaching cold leg temperature.

- B. Verify PCV 1100E, Spray Valve 2B2, and PCV 1100F, Spray Valve 2B1, CLOSED by observing BOTH of the following:

1. CLOSED valve position indication.

2. TIA-1103, Spray Line 2B1 Temperature, and TIA-1104, Spray Line 2B2 Temperature, approximately equal.

- B. If either spray valve is OPEN, Then perform the following:

1. If PCV 1100E, Spray Valve 2B2, is OPEN, Then PLACE the spray valve selector switch in PCV 1100F.

2. If PCV 1100F, Spray Valve 2B1, is OPEN, Then PLACE the spray valve selector switch in PCV 1100E.

REVISION NO.: 26	PROCEDURE TITLE: PRESSURIZER PRESSURE AND LEVEL ST. LUCIE UNIT 2	PAGE: 7 of 15
PROCEDURE NO.: 2-0120035		

7.2 Subsequent Operator Actions (continued)

INSTRUCTIONS

1. (continued)

- C. Verify SE-02-03, and SE-02-04,
Auxiliary Spray Valve(s), CLOSED.

CONTINGENCY ACTIONS

1. B. (continued)

3. If pressure continues to decrease due to a failed open main spray valve, Then consider performing the following:

- Trip the reactor and turbine

- Stop the RCP in the affected loop.

PCV 1100E-2B2 RCP

PCV 1100F-2B1 RCP

4. If the RCP in the affected loop has been secured and pressure continues to decrease, Then consider securing both 2B1 and 2B2 RCPs.

- C. If auxiliary spray valve(s) is OPEN, Then:

1. Attempt to close using key switch.
2. If auxiliary spray valves will NOT close, Then stop all charging and isolate letdown. Refer to 2-ONP-02.03, Charging and Letdown.
3. Review AP 0010134, Component Cycles and Transients, for applicability when plant is stabilized.



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

RESPOND TO CONTROL ROOM OUTSIDE AIR INTAKE RADIATION ALARMS

NRC S-6

Simulator

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Respond to Control Room outside air intake radiation alarms.

Faulted JPM? YES

Facility JPM #:

K/A: 072.A3.01 2.9 / 3.1

Ability to monitor automatic operation of the ARM system including: Changes in ventilation alignment.

Task Standard:

This JPM is complete when Unit 2 control room ventilation has been lined up IAW 2-ONP-25.02, "Ventilation Systems" Appendix B.

Evaluation Location:

Simulator X In Plant _____ Lab _____ Other _____

Performance Level:

Perform X Simulate _____ Discuss _____

References:

- 2-ONP-25.02, "Ventilation Systems"

Validation Time: 15 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 2-ONP-25.02, "Ventilation Systems"

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE

INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

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

SPECIFIC DIRECTIONS FOR SIMULATOR JPMs:

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

INITIAL CONDITIONS:

Unit 1 has experienced a LBLOCA. SIAS and CIAS have occurred, but a breach of the Containment is in progress. Unit 2 Control Room has Outside Air Intake Radiation Monitors are in high alarm

INITIATING CUES:

The US has directed you to verify Control Room ventilation and restore an outside air intake IAW 2-ONP-25-02, "Ventilation Systems" Appendix B

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

START TIME: _____

ENTER 2-ONP-25.02, "Ventilation Systems" Appendix B	
<p><u>STEP 1(1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">One (1) HVE-13A Inlet Damper (D-17A) OPEN</p> <p><u>STANDARD:</u> <u>CHECKS</u> One (1) HVE-13A Inlet Damper (D-17A) to be OPEN.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: HVE-13A Inlet Damper (D-17A) indicates red light ON green light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:(1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">One (1) HVE-13A Inlet Damper (D-18) OPEN</p> <p><u>STANDARD:</u> <u>CHECKS</u> One (1) HVE-13A Inlet Damper (D-18) to be OPEN.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: HVE-13A Inlet Damper (D-18) indicates red light ON green light OFF.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:(1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-24, kitchen Exhaust Isolation Valve CLOSED</p> <p><u>STANDARD:</u> <u>CHECKS</u> FCV-25-24, kitchen Exhaust Isolation Valve to be CLOSED.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: FCV-25-24, kitchen Exhaust Isolation Valve indicates red light OFF green light ON.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 4: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-16, North OAI Isolation Valve CLOSED</p> <p><u>STANDARD:</u> CHECKS FCV-25-16, North OAI Isolation Valve to be CLOSED. DETERMINES valve is open and notes that FCV-25-16, North OAI Isolation Valve needs to be CLOSED.</p> <p style="text-align: center;">EXAMINER'S NOTE: Student may reposition damper at this step though the step directs check.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-17, South OAI Isolation Valve CLOSED</p> <p><u>STANDARD:</u> CHECKS FCV-25-17, South OAI Isolation Valve CLOSED.</p> <p style="text-align: center;">EXAMINER'S CUE: FCV-25-17, South OAI Isolation Valve indicates red light OFF green light ON.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-18, Toilet Exhaust Isolation Valve CLOSED</p> <p><u>STANDARD:</u> CHECKS FCV-25-18, Toilet Exhaust Isolation Valve to be CLOSED</p> <p style="text-align: center;">EXAMINER'S CUE: FCV-25-18, Toilet Exhaust Isolation valve indicates red light OFF green light ON.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p>STEP 7: (1) CHECK the following system alignment:</p> <p style="padding-left: 40px;">One (1) Control Room Emergency Filter Fan (HVE-13A) START</p> <p>STANDARD: CHECKS One (1) Control Room Emergency Filter Fan (HVE-13A) to be RUNNING.</p> <p style="padding-left: 40px;">EVALUATOR CUE: Control Room Emergency Filter Fan (HVE-13A) indicates red light ON green light OFF.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 8: (1) CHECK the following system alignment:</p> <p style="padding-left: 40px;">One (1) HVE-13B Inlet Damper (D-17B) OPEN</p> <p>STANDARD: CHECKS One (1) HVE-13B Inlet Damper (D-17B) to OPEN</p> <p style="padding-left: 40px;">EXAMINER'S CUE: HVE-13B Inlet Damper (D-17B) indicates red light ON green light OFF.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 9: (1) CHECK the following system alignment:</p> <p style="padding-left: 40px;">One (1) HVE-13B Inlet Damper (D-19) OPEN</p> <p>STANDARD: CHECKS One (1) HVE-13B Inlet Damper (D-19) to be OPEN.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: HVE-13B Inlet Damper (D-19) indicates red light ON green light OFF.</p> <p style="padding-left: 40px;">EXAMNIERS NOTE: There are no controls for Damper D-19.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 10: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-25, kitchen Exhaust Isolation Valve CLOSED</p> <p><u>STANDARD:</u> <u>CHECKS</u> FCV-25-25, kitchen Exhaust Isolation Valve to be CLOSED</p> <p style="padding-left: 40px;">EXAMINER'S CUE: FCV-25-25, kitchen Exhaust Isolation Valve indicates red light OFF green light ON.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 11: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-14, North OAI Isolation Valve CLOSED</p> <p><u>STANDARD:</u> <u>CHECKS</u> FCV-25-14, North OAI Isolation Valve to be CLOSED. <u>DETERMINES</u> valve is open and notes that FCV-25-14, North OAI Isolation Valve needs to be CLOSED.</p> <p style="padding-left: 40px;">EXAMINER'S NOTE: Student may reposition damper at this step though the step directs check.</p> <p><u>COMMENTS:</u></p>	<p>FAULTED STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 12 (1):</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-15, South OAI Isolation Valve CLOSED</p> <p><u>STANDARD:</u> <u>CHECKS</u> FCV-25-15, South OAI Isolation Valve to be CLOSED</p> <p style="padding-left: 40px;">EXAMINER'S CUE: FCV-25-15, South OAI Isolation Valve indicates red light OFF green light ON</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 13: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">FCV-25-19, Toilet Exhaust Isolation Valve CLOSED</p> <p><u>STANDARD:</u> <u>CHECKS</u> FCV-25-19, Toilet Exhaust Isolation Valve to be CLOSED</p> <p style="text-align: center; padding-top: 20px;">EXAMINER'S CUE: FCV-25-19, Toilet Exhaust Isolation Valve indicates red light OFF green light ON.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 14: (1)</u> CHECK the following system alignment:</p> <p style="padding-left: 40px;">One (1) Control Room Emergency Filter Fan (HVE-13B) START</p> <p><u>STANDARD:</u> <u>CHECKS</u> Control Room Emergency Filter Fan (HVE-13B) to be RUNNING.</p> <p style="text-align: center; padding-top: 20px;">EXAMINER'S CUE: Control Room Emergency Filter Fan (HVE-13B) indicate red light ON green light OFF.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 15: (2)</u> If a Control Room Emerg Filter Fan did NOT start, Then manually START the applicable fan:</p> <ul style="list-style-type: none"> • HVE-13A. • HVE-13B. <p><u>STANDARD:</u> <u>DETERMINES</u> both HVE-13A and HVE-13B are running.</p> <p style="text-align: center; padding-top: 20px;">EXAMINER'S CUE: HVE-13A and HVE-13B indicate red light ON and green light OFF.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p>STEP 16: (3) If any damper failed to position properly, Then manually POSITION the damper, as indicated in step 1.</p> <p>STANDARD: <u>POSITION</u> the following if not previously performed:</p> <p><u>CLOSE</u> FCV-25-16, North OAI Isolation Valve <u>CLOSE</u> FCV-25-14, North OAI Isolation Valve</p> <p>EXAMINER'S CUE: FCV-25-16, North OAI Isolation Valve indicates red light OFF green light ON. FCV-25-14, North OAI Isolation Valve indicates red light OFF green light ON.</p> <p>EXAMINER'S NOTE: HVE-13B Inlet Damper (D-19) indicates red light off green light on. There are no controls for Damper D-19.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 17: (4) STOP HVE-14, Cntr Rm Toilet Exhaust Fan.</p> <p>STANDARD: <u>POSITIONS</u> HVE-14, Cntr Rm Toilet Exhaust Fan to the stopped position</p> <p>EXAMINER'S CUE: HVE-14 local switch position is in the down position.</p> <p>EXAMINER'S NOTE: HVE-14 is not modeled.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 18: (5) STOP HVE-33, Kitchen Exhaust Fan.</p> <p>STANDARD: <u>POSITIONS</u> HVE-33, Kitchen Exhaust Fan to the stopped position</p> <p>EXAMINER'S CUE: HVE-33, local switch position is in the down position</p> <p>EXAMINER'S NOTE: HVE-33 is not modeled.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 19: (6)</u> If both Control Room OAI Radiation Monitors on any intake are inoperable, Then REFER TO Tech Spec 3.3.3.1.</p> <p><u>STANDARD:</u> <u>DETERMINES</u> both Control Room OAI Radiation Monitors are operable.</p> <p style="text-align: center;">EXAMINER'S CUE: NONE</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 20: (7)</u></p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%; text-align: center;"> <p><u>NOTE</u></p> <p>Due to changing environmental conditions during long term events, it may be necessary to repeat steps 7 & 8 to maintain the lowest possible dose.</p> </div> <p>DETERMINE which Control Room OAI has the least amount of radiation:</p> <ul style="list-style-type: none"> • North OAI • South OAI <p><u>STANDARD:</u> <u>MONITORS</u> OAI on PC-11 or OAI RM 23s. DETERMINES lowest dose is South.</p> <p>EXAMINER'S CUE: South indicates south intake is not in alarm</p> <p>EXAMINERS NOTE: Applicant should refer to PC-11 or RM 23s OAI radiation monitors to determine which OAI has the lowest dose. The South OAI should indicate the lowest dose due to Unit 1 is North of Unit 2.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 21: (8.A)</u> When the OAI with the lowest amount of radiation has been determined, Then PERFORM the following:</p> <p style="margin-left: 40px;">OPEN the FCV on the lowest reading side:</p> <ul style="list-style-type: none"> • FCV-25-14, North OAI Isolation Valve • FCV-25-15, South OAI Isolation Valve <p><u>STANDARD:</u> <u>POSITIONS</u> FCV-25-15, South OAI Isolation Valve to OPEN</p> <p style="margin-left: 40px;">EXAMINER'S CUE: FCV-25-15, South OAI Isolation Valve indicate red light ON green light OFF. V-16 alarms.</p> <p style="margin-left: 40px;">EXAMINER'S NOTE: Inching valve to Open.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p style="text-align: center;">_____ SAT</p> <p style="text-align: center;">_____ UNSAT</p>
<p><u>STEP 22: (8.B)</u> When the OAI with the lowest amount of radiation has been determined, Then PERFORM the following:</p> <p style="margin-left: 40px;">THROTTLE the FCV on the lowest reading side throttle:</p> <ul style="list-style-type: none"> • FCV-25-16, North OAI Isolation Valve • FCV-25-17, South OAI Isolation Valve <p><u>STANDARD:</u> <u>THROTTLES</u> FCV-25-17, South OAI Isolation Valve</p> <p style="margin-left: 40px;">EXAMINER'S CUE: FCV-25-17, South OAI Isolation Valve indicates 450 CFM on FI 25-18B.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p style="text-align: center;">_____ SAT</p> <p style="text-align: center;">_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

STEP 23: (8.C) When the OAI with the lowest amount of radiation has been determined, Then PERFORM the following:

THROTTLE Control Room ventilation return air as necessary.

- PLACE PDIC-25-23A1, Cont Room to Outside Δ P to Man and ADJUST as necessary.
- PLACE PDIC-25-23B1, Cont Room to Outside Δ P to Man and ADJUST as necessary.

_____ SAT

_____ UNSAT

STANDARD: **PLACES** PDIC-25-23B1, Cont Room to Outside Δ P to MAN

EXAMINER'S CUE: PDIC-25-23B1, Cont Room to Outside Δ P is in manual and adjusted to zero demand. No adjustment is required.

EXAMINER'S NOTE: No adjustment necessary due to current system conditions.

COMMENTS:

STEP 24: (8.D) MAINTIAN parameters:

OAI	FCV	CONTROL ROOM PRESS MIN	FLOW INDICATION	FLOW RATE	INITIAL
NORTH	FCV-25-16	0.125 in. H ₂ O	FI-25-18A	\leq 450 scfm	
SOUTH	FCV-25-17	0.125 in. H ₂ O	FI-25-18B	\leq 450 scfm	

_____ SAT

_____ UNSAT

STANDARD: **MONITORS** above parameters

EXAMINER'S CUE: NONE

COMMENTS:

**JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST**

<p><u>STEP 25: (8.E)</u> If Control Room pressure indication is erratic and the required pressure differential can't be verified, Then MAINTAIN outside air intake air flow rate between 440 to 450 SCFM.</p> <p><u>STANDARD:</u> <u>MONITORS</u> Control Room pressure indication.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Control Room pressure indication is steady.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 26: (9)</u> Initiate a Data Sheet 30 to track wind direction on a (4) four hour frequency.</p> <p><u>STANDARD:</u> <u>INITIATES</u> Data Sheet 30 track wind direction.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Other RCO will initiate Data Sheet 30.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 27: (10)</u> If wind directions changes 90 degrees or more, in (4) four hours, Then, RE-PERFORM steps 7 and 8 above.</p> <p><u>STANDARD:</u> <u>MONITORS</u> wind direction on Data Sheet 30</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Other RCO will monitor wind direction</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p>STEP 28: (11) If desired, Then STOP ONE of the following Control Room Emerg Filter Fans:</p> <ul style="list-style-type: none"> • HVE-13A • HVE-13B <p>STANDARD: Both fans left running.</p> <p>EXAMINER'S CUE: Unit Supervisor directs keeping both fans running.</p> <p>EXAMINER'S CUE: HVE-13A and HVE-13B indicate red light ON green light OFF.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 29: (12.A & B) When initiating signals are CLEARED, Then PERFORM ALL of the following:</p> <p>ENSURE both Control Room Emerg Filter Fans are secured and their control switches are in auto.</p> <ul style="list-style-type: none"> • HVE-13A • HVE-13B <p>RESTORE Normal System Alignment per 2-NOP-25.07.</p> <p>STANDARD: DETERMINES current lineup needs to be maintained because release is still occurring.</p> <p>EXAMINER'S CUE: Unit 1 still has a Containment breach and release is still occurring.</p> <p>COMMENTS:</p> <p align="center">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

STOP TIME: _____

JOB PERFORMANCE MEASURE
SIMULATOR JPM SETUP

1. **RESTORE** IC-1.
2. **EXECUTE** S-6 RESPOND TO CR OAI RADIATION, ensure step "CR Ventilation Failures" are triggered.
3. **UNFREEZE** the simulator.
4. **TRIGGER** step "CR OAI RAD and **ACKNOWLEDGE** PC-11 alarm.
5. The last two steps will auto trigger on the candidates actions.
6. Scenario must be stopped and re-executed after each candidate.

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

Unit 1 has experienced a LBLOCA. SIAS and CIAS have occurred, but a breach of the Containment is in progress. Unit 2 Control Room has Outside Air Intake Radiation Monitors are in high alarm

INITIATING CUES:

The US has directed you to verify Control Room ventilation and restore an outside air intake IAW 2-ONP-25-02, "Ventilation Systems" Appendix B

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APPENDIX B
CIAS AND CONTROL ROOM OAI HIGH RADIATION
(Page 1 of 3)

INITIAL

1. CHECK the following system alignment:

HVAC PANEL	REQUIRED STATUS	A TRAIN /	B TRAIN /
One (1) HVE-13A Inlet Damper (D-17A)	OPEN		N/A
One (1) HVE-13A Inlet Damper (D-18)	OPEN		N/A
FCV-25-24, kitchen Exhaust Isolation Valve	CLOSED		N/A
FCV-25-16, North OAI Isolation Valve	CLOSED		N/A
FCV-25-17, South OAI Isolation Valve	CLOSED		N/A
FCV-25-18, Toilet Exhaust Isolation Valve	CLOSED		N/A
One (1) Control Room Emergency Filter Fan (HVE-13A)	START		N/A
One (1) HVE-13B Inlet Damper (D-17B)	OPEN	N/A	
One (1) HVE-13B Inlet Damper (D-19)	OPEN	N/A	
FCV-25-25, kitchen Exhaust Isolation Valve	CLOSED	N/A	
FCV-25-14, North OAI Isolation Valve	CLOSED	N/A	
FCV-25-15, South OAI Isolation Valve	CLOSED	N/A	
FCV-25-19, Toilet Exhaust Isolation Valve	CLOSED	N/A	
One (1) Control Room Emergency Filter Fan (HVE-13B)	START	N/A	

2. If a Control Room Emerg Filter Fan did NOT start, Then manually START the applicable fan:
- HVE-13A. _____
 - HVE-13B. _____
3. If any damper failed to position properly, Then manually POSITION the damper, as indicated in step 1. _____
4. STOP HVE-14, Cntr Rm Toilet Exhaust Fan. _____
5. STOP HVE-33, Kitchen Exhaust Fan. _____
6. If both Control Room OAI Radiation Monitors on any intake are inoperable, Then REFER TO Tech Spec 3.3.3.1. _____

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APPENDIX B
CIAS AND CONTROL ROOM OAI HIGH RADIATION
(Page 2 of 3)

NOTE

¶7,§1,§2 Due to changing environmental conditions during long term events, it may be necessary to repeat steps 7 & 8 to maintain the lowest possible dose.

INITIAL

7. DETERMINE which Control Room OAI has the least amount of radiation:

- North OAI _____
- South OAI _____

8. When the OAI with the lowest amount of radiation has been determined, Then PERFORM the following:

A. OPEN the FCV on the lowest reading side:

- FCV-25-14, North OAI Isolation Valve _____
- FCV-25-15, South OAI Isolation Valve _____

B. THROTTLE the FCV on the lowest reading side throttle:

- FCV-25-16, North OAI Isolation Valve _____
- FCV-25-17, South OAI Isolation Valve _____

C. THROTTLE Control Room ventilation return air as necessary.

- PLACE PDIC-25-23A1, Cont Room to Outside ΔP to Man and ADJUST as necessary.
- PLACE PDIC-25-23B1, Cont Room to Outside ΔP to Man and ADJUST as necessary.

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APPENDIX B
CIAS AND CONTROL ROOM OAI HIGH RADIATION
(Page 3 of 3)

8. (continued) INITIAL

D. MAINTAIN parameters:

OAI	FCV	CONTROL ROOM PRESS MIN	FLOW INDICATION	FLOW RATE	INITIAL
NORTH	FCV-25-16	0.125 in. H ₂ O	FI-25-18A	≤450 scfm	
SOUTH	FCV-25-17	0.125 in. H ₂ O	FI-25-18B	≤ 450 scfm	

E. If Control Room pressure indication is erratic and the required pressure differential can't be verified, Then MAINTAIN outside air intake air flow rate between 440 to 450 SCFM.

9. ¶7,§1,§2 Initiate a Data Sheet 30 to track wind direction on a (4) four hour frequency. _____

10. ¶7,§1,§2 If wind directions changes 90 degrees or more, in (4) four hours, Then, **RE-PERFORM** steps 7 and 8 above. _____

11. ¶1 If desired, Then STOP **ONE** of the following Control Room Emerg Filter Fans:

- HVE-13A _____
- HVE-13B _____

12. When initiating signals are CLEARED, Then PERFORM ALL of the following:

A. ENSURE both Control Room Emerg Filter Fans are secured and their control switches are in auto.

- HVE-13A _____
- HVE-13B _____

B. RESTORE Normal System Alignment per 2-NOP-25.07.

END OF APPENDIX B

/R21 /R21

JOB PERFORMANCE MEASURE



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

**RESTORE POWER TO 2A3 BUS VIA SBO
CROSSTIE**

**NRC
S-7**

Simulator or U2 Control Room

This JPM is a TIME CRITICAL

This is a NON-FAULTED JPM

JOB PERFORMANCE MEASURE

Task: 07052130, POWER A3/B3 4.16KV BUS FROM OPPOSITE UNIT'S DIESELS (SBO BREAKER)

Faulted JPM? No

Facility JPM #: 0821129T

K/A Rating(s): A.10.04 (3.4)

Duty Area(s): N/A

Task Information: N/A

Task Standard: This JPM is complete when Bus 2A3 is energized from Unit 1 via the SBO Crosstie Breakers.

Evaluation Location:

Simulator X In Plant X Lab _____ Other _____

Performance Level:

Perform X Simulate X Discuss _____

References:

- 2-EOP-99, Appendix V, SBO Crosstie from Unit 1 to Unit 2
- 2-EOP-99, Table 7, Vital Power Breaker Configuration/Station Blackout

Validation Time: 15 minutes

Time Critical: Yes

Tools/Equipment/Procedures Needed:

- 2-EOP-99, Appendix V, SBO Crosstie from Unit 1 to Unit 2
- 2-EOP-99, Table 7, Vital Power Breaker Configuration/Station Blackout

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE

SPECIFIC DIRECTIONS:

- The task you are to perform is: Restore Power to 2A3 4160 Switchgear via SBO Crosstie
- The performance level to be used for this JPM is Perform
- This IS 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 Station Blackout has occurred on Unit 2 **FIVE** minutes ago. Unit 1 is in a LOOP with both Emergency Diesel Generators in service. 2C AFW Pump is feeding both Steam Generators.

The SM and US have determined the need to crosstie electrical power from the 1A EDG to the 2A3 4.16 KV bus via the SBO AB Crosstie.

INITIATING CUES:

You are the Desk RCO.

The US has directed you to energize 4.16 KV Bus 2A3 from Unit 1 via the SBO crosstie breakers in accordance with 2-EOP-99, Appendix V.

Unit 1 is performing Appendix W of 1-EOP-99. FIVE minutes has elapsed since the SBO event occurred.

This is a **TIME CRITICAL** JPM.

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

START TIME: _____

APPENDIX V, SECTION 1: PREPARATIONS FOR CROSSTIE	
<p><u>STEP 1:</u> SELECT the train that will be used to receive AC power from Unit 1.</p> <p><u>STANDARD:</u> <u>SELECT</u> the A Train to be ENERGIZED (per Initiating Cue)</p> <p>*EXAMINER'S CUE: None.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:</u> VERIFY Table 7, Vital Power Breaker Configuration/Station Blackout, has been completed.</p> <p><u>STANDARD:</u> <u>PERFORM</u> Table 7 of 2-EOP-99.</p> <p>*EXAMINER'S CUE: Table 7 is complete after all breakers on the electric panel of RTGB-201 have been opened and green flagged.</p> <p>EXAMINER'S NOTE: Table 7 is attached pages 5 and 6.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:</u> DISPATCH an operator to locally PLACE the selected train EDG Output Breaker NORMAL/ISOLATE switch in ISOLATE.</p> <p><u>STANDARD:</u> <u>CONTACT</u> the SNPO and <u>DIRECT</u> him to place Breaker 2-20211 NORMAL/ISOLATE switch in ISOLATE.</p> <p>*EXAMINER'S CUE: The field operator reports Breaker 2-20211 is in Isolate. Breaker 2-20211 shows both Green and Red lights are OFF. Annunciator B-56 is in Alarm.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

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TABLE 7
VITAL POWER BREAKER CONFIGURATION / STATION BLACKOUT
(Page 1 of 2)

NOTE

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

☐ 1. OPEN and / or GREEN FLAG the following breakers:

- | | |
|--------------------------------------|---------------|
| • Auxiliary Transformer 2A (6.9 KV) | 2-30101 _____ |
| • S.U. Transformer 2A (6.9 KV) | 2-30102 _____ |
| • Auxiliary Transformer 2A (4.16 KV) | 2-20101 _____ |
| • S.U. Transformer 2A (4.16 KV) | 2-20102 _____ |
| • 4.16 KV Bus Tie 2A2-2A3 | 2-20109 _____ |
| • Station Service Transformer 2A1 | 2-20110 _____ |
| • 480V Bus 2A1 Feeder | 2-40103 _____ |
| • 4.16 KV Bus Tie 2A3-2A2 | 2-20209 _____ |
| • 480V Bus 2A5 Feeder | 2-40361 _____ |
| • PRZR Heater Transformer 2A3 | 2-20204 _____ |
| • DG 2A 4.16KV Breaker | 2-20211 _____ |
| • 4.16 KV Bus Tie 2A3-2AB | 2-20208 _____ |
| • Station Service Transformer 2A5 | 2-20210 _____ |
| • 480V 2A2 Feeder | 2-40219 _____ |
| • 480V Bus Tie 2A2-2AB | 2-40220 _____ |
| • 4.16 KV Bus Tie 2AB-2A3 | 2-20505 _____ |
| • Station Service Transformer 2A2 | 2-20213 _____ |
| • 480V Bus Tie 2AB-2A2 | 2-40702 _____ |

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

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TABLE 7
VITAL POWER BREAKER CONFIGURATION / STATION BLACKOUT
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1. (continued)

- | | |
|---------------------------------------|---------------|
| • 4.16 KV Bus Tie 2AB-2B3 | 2-20504 _____ |
| • 480V Bus Tie 2AB-2B2 | 2-40706 _____ |
| • Auxiliary Transformer 2B (6.9 KV) | 2-30201 _____ |
| • S.U. Transformer 2B (6.9 KV) | 2-30202 _____ |
| • Auxiliary Transformer 2B (4.16 KV) | 2-20301 _____ |
| • S.U. Transformer 2B (4.16 KV) | 2-20302 _____ |
| • 4.16 KV Bus Tie 2B2-2B3 | 2-20309 _____ |
| • Station Service Transformer 2B1 | 2-20310 _____ |
| • 480V Bus 2B1 Feeder | 2-40419 _____ |
| • 480V Bus Tie 2B1-2A1 | 2-40420 _____ |
| • 4.16 KV Bus Tie 2B3-2B2 | 2-20411 _____ |
| • 480V Bus Feeder 2B5 | 2-40653 _____ |
| • PRZR Heater Transformer 2B3 | 2-20403 _____ |
| • DG 2B 4.16 KV Breaker | 2-20401 _____ |
| • 4.16 KV Bus Tie 2B3-2AB | 2-20409 _____ |
| • Station Service Transformer 2B2/2B5 | 2-20402 _____ |
| • 480V 2B2 Feeder | 2-40503 _____ |
| • 480V Bus Tie 2B2-2AB | 2-40504 _____ |

END OF TABLE 7

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 4:</u> PLACE the following CCW Pumps in PULL TO LOCK:</p> <ul style="list-style-type: none"> • 2C CCW Pump • Selected train CCW Pump <p><u>STANDARD:</u> <u>POSITION</u> the 2A CCW Pump control switch to PULL-TO-LOCK and <u>VERIFY</u> the 2C CCW Pump control switch is in PULL-TO-LOCK</p> <p>*EXAMINER'S CUE: 2A and 2C CCW Pump Control switches are in PULL-TO-LOCK.</p> <p>EVALUATOR'S NOTE: Verifying the 2C CCW Pump control switch is in PULL-TO-LOCK is not necessary to complete the Critical Step.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 5:</u> PLACE the selected train Containment Spray Pump in STOP.</p> <p><u>STANDARD:</u> <u>POSITION</u> 2A CS Pump to STOP.</p> <p>*EXAMINER'S CUE: 2A CS Pump in STOP Position.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6:</u> PLACE the following Safety Injection Pumps in STOP:</p> <ul style="list-style-type: none"> • Selected train HPSI Pump • Selected train LPSI Pump <p><u>STANDARD:</u> <u>POSITION</u> 2A HPSI and 2A LPSI Pumps in STOP.</p> <p>*EXAMINER'S CUE: 2A HPSI and 2A LPSI pumps in STOP.</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> PLACE the following Charging Pumps in STOP:</p> <ul style="list-style-type: none"> • 2C Charging Pump • Selected train Charging Pump <p><u>STANDARD:</u> <u>POSITION</u> the 2A and 2C Charging Pump control switches to STOP.</p> <p>*EXAMINER'S CUE: 2A and 2C Charging Pump Control switches are in STOP (as each is positioned).</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:</u> PLACE ALL RCP Oil lift Pumps in OFF.</p> <p><u>STANDARD:</u> <u>POSITION</u> ALL RCP Oil Lift Pump control switches to OFF.</p> <p>*EXAMINER'S CUE: ALL RCP Oil Lift Pump control switches show Green lights ON, Red lights OFF. Annunciators J-17, J-18, J-19 and J-20 alarm.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9:</u> PLACE the selected train motor driven AFW Pump in STOP.</p> <p><u>STANDARD:</u> <u>POSITION</u> the 2A AFW Pump control switch to STOP</p> <p>*EXAMINER'S CUE: 2A AFW Pump control switch is in STOP. Annunciator G-44 alarms.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 10:</u> PLACE the following ICW Pumps in PULL TO LOCK:</p> <ul style="list-style-type: none"> • 2C ICW Pump • Selected train ICW Pump <p><u>STANDARD:</u> <u>POSITION</u> the 2A ICW Pump control switch to PULL-TO-LOCK and <u>VERIFY</u> and 2C ICW Pump control switch is in PULL-TO-LOCK.</p> <p>*EXAMINER'S CUE: 2A and 2C ICW Pump Control switches are in PULL-TO-LOCK.</p> <p>EVALUATOR'S NOTE: Verifying the 2C ICW Pump control switch is in PULL-TO-LOCK is not necessary to complete the Critical Step.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11:</u> PLACE ALL Containment Fan Coolers in STOP.</p> <p><u>STANDARD:</u> <u>POSITION</u> ALL Containment Fan Coolers to STOP</p> <p>*EXAMINER'S CUE: ALL Containment Fan Coolers control switches show Green lights ON, Red lights OFF. Annunciators T-22, T-23, T-24 and U-19 alarm.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12:</u> ENSURE further attempts to restore power to the selected train from a Unit 2 source are suspended while Unit to Unit crosstie efforts are in progress.</p> <p><u>STANDARD:</u> <u>NOTIFY</u> the US to SUSPEND attempts to restore while Unit to Unit crosstie efforts are in progress.</p> <p>EXAMINER'S CUE: US acknowledges.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

SECTION 2: RECEIVING POWER FROM UNIT 1	
<p>STEP 13: <u>When</u> Unit 1 is ready to supply power to Unit 2, <u>Then</u> PERFORM ALL of the following:</p> <p style="margin-left: 40px;">A. CLOSE the Unit 2 SBO crosstie breaker, 2AB 4.16 KV BUS SBO TIE (20501).</p> <p>STANDARD: <u>OBTAIN</u> Key 155 and <u>POSITION</u> Breaker 2-20501 control switch to CLOSE.</p> <p>*EXAMINER'S CUE: Unit 1 reports READY to crosstie. Breaker 2-20501 indicates CLOSED. Annunciator B-1 Alarms.</p> <p style="margin-left: 40px;">If asked prior to closure, 2-20501 Green and Amber lights are LIT,</p> <p style="margin-left: 40px;">If asked after Bkr 2-20501 is closed, Green light OFF, Amber light ON, Red light ON.</p> <p>EVALUATOR'S NOTE: Student should verify that Unit 1 is ready to cross-tie before closing this breaker but this is not necessary to complete the Critical Step.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 14: <u>When</u> Unit 1 is ready to supply power to Unit 2, <u>Then</u> PERFORM ALL of the following:</p> <p style="margin-left: 40px;">B. REQUEST Unit 1 close their SBO crosstie breaker, 4160V SWGR 1AB UNIT X-TIE BKR (1-20501).</p> <p>STANDARD: <u>REQUEST</u> Unit 1 to CLOSE its SBO breaker, 1-20501.</p> <p>EXAMINER'S CUE: Unit 1 ACKNOWLEDGES and REPORTS Bkr 1-20501 is CLOSED. Green light is OFF, Red light is OFF.</p> <p>EVALUATOR'S NOTE: Record time Unit 1 closed Bkr 1-20501: _____ (End timed task) T_{U1Close}</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 15:</u> <u>When</u> Unit 1 is ready to supply power to Unit 2, <u>Then</u> PERFORM ALL of the following:</p> <p style="margin-left: 40px;">C. VERIFY the 2AB 4.16KV bus has power restored.</p> <p><u>STANDARD:</u> <u>VERIFY</u> the 2AB bus white lights are LIT and voltmeter VM-942 indicates approximately 4160V.</p> <p style="margin-left: 40px;">EXAMINER'S CUE: 2AB bus white lights are lit and VM-942 indicates 4160V.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 16:</u> ALIGN the selected train Vital 4.16KV bus to the 2AB 4.16KV bus by CLOSING the TWO crosstie breakers:</p> <p style="margin-left: 40px;">2AB-2A3 (20505)</p> <p style="margin-left: 40px;">2A3-2AB (20208)</p> <p><u>STANDARD:</u> <u>POSITION</u> breaker 20505 to CLOSE. <u>POSITION</u> breaker 20208 to CLOSE.</p> <p style="margin-left: 40px;">EXAMINER'S CUE: Breakers 20505 and 20208 are closed, Green lights OFF, Red lights ON.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p><u>STEP (done):</u> VERIFY the selected train Vital 4.16 KV bus has power restored.</p> <p><u>STANDARD:</u> <u>VERIFY</u> 2A3 4.16 KV bus has power RESTORED.</p> <p align="center">EXAMINER'S CUE: 2A3 bus white lights are lit and VM-954 indicates 4160V. Annunciator B-46 clears.</p> <p><u>COMMENTS:</u></p> <p align="center">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
---	-------------------------------------

STOP TIME: _____

TIME-CRITICAL CALCULATION:

Calculate $T_{sbo} = T_{U1Close} - \text{START TIME}$: $\frac{\quad}{T_{U1Close}} - \frac{\quad}{\text{START}} = \frac{\quad}{T_{sbo}}$ minutes = Critical time

If $T_{sbo} > 20$ minutes, then the Student fails this JPM.

SIMULATOR JPM SETUP

1. **RESTORE** IC-87.
2. **SELECT** the NRC Lesson Folder and **OPEN** File C-7.
3. **EXECUTE** Lesson C-7.
4. **UNFREEZE** the Simulator when the student is ready. The audible alarms will be automatically reinstated.
5. **TRIGGER** the step to place the 2A EDG output breaker in isolate when directed by the student.
6. **TRIGGER** the step to close the Unit 1 SBO crosstie breaker when directed by the student.

Setup for Subsequent Students

1. **STOP** the lesson.
2. **RESTORE** the Temporary Storepoint. Note: The Switch Check will be terminated with several items not being addressed. On the Switch Check, clear all items with the exception of the following:

Label	Description	Restored Value	Current Value
H_A203_A1_A18_3	HIC-1100 Auto Mode	False	True
H_A203_A1_A19_3	PIC-1100X Auto Mode	False	True
H_A203_A1_A19_14	PIC-1100X Local Setpoint	1450	2250
H_A203_A1_A20_3	PIC-1100Y Auto Mode	False	True
H_A203_A1_A20_14	PIC-1100Y Local Setpoint	1450	2250
H_A203_A1_A21_3	LIC-1110X Auto Mode	False	True
H_A203_A1_A22_3	LIC-1110Y Auto Mode	False	True

3. **EXECUTE** the lesson. **Do Not** **TRIGGER** Step 2 or Step 3.
4. **UNFREEZE** the Simulator when the student is ready.
5. **TRIGGER** the step to place the 2A EDG output breaker in isolate when directed by the student.
6. **TRIGGER** the step to close the Unit 1 SBO crosstie breaker when directed by the student.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A Station Blackout has occurred on Unit 2 **FIVE** minutes ago. Unit 1 is in a LOOP with both Emergency Diesel Generators in service. 2C AFW Pump is feeding both Steam Generators.

The SM and US have determined the need to crosstie electrical power from the 1A EDG to the 2A3 4.16 KV bus via the SBO AB Crosstie.

INITIATING CUES:

You are the Desk RCO.

The US has directed you to energize 4.16 KV Bus 2A3 from Unit 1 via the SBO crosstie breakers in accordance with 2-EOP-99, Appendix V.

Unit 1 is performing Appendix W of 1-EOP-99. FIVE minutes has elapsed since the SBO event occurred.

This is a **TIME CRITICAL** JPM.

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
(Page 1 of 9)

Section 1: Preparations for Crosstie

- ☐ 1. SELECT the train that will be used to receive AC power from Unit 1 (✓).

A Train _____ B Train _____

NOTE

All of the following factors should be considered:

- The potential for recovering a Unit 2 AC power source
- Equipment availability
- 10 CFR 50 Appendix R considerations ('A' train is preferred on Unit 2)

- ☐ 2. VERIFY Table 7, Vital Power Breaker Configuration / Station Blackout, has been completed.
- ☐ 3. DISPATCH an operator to locally PLACE the selected train EDG Output Breaker NORMAL / ISOLATE switch in ISOLATE.
- ☐ 4. PLACE the following CCW Pumps in PULL TO LOCK:
- ☐ 2C CCW Pump
 - ☐ Selected train CCW Pump
- ☐ 5. PLACE the selected train Containment Spray Pump in STOP.
- ☐ 6. PLACE the following Safety Injection Pumps in STOP:
- ☐ Selected train HPSI Pump
 - ☐ Selected train LPSI Pump
- ☐ 7. PLACE the following Charging Pumps in STOP:
- ☐ 2C Charging Pump
 - ☐ Selected train Charging Pump
- ☐ 8. PLACE **ALL** RCP Oil lift Pumps in OFF.

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
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Section 1: Preparations for Crosstie (continued)

- ☐ 9. PLACE the selected train motor driven AFW Pump in STOP.
- ☐ 10. PLACE the following ICW Pumps in PULL TO LOCK:
 - ☐ 2C ICW Pump
 - ☐ Selected train ICW Pump
- ☐ 11. PLACE **ALL** Containment Fan Coolers in STOP.
- ☐ 12. ENSURE further attempts to restore power to the selected train from a Unit 2 source are suspended while Unit to Unit crosstie efforts are in progress.

HOLDPOINT

Do not proceed to Section 2 until ALL steps of Section 1 have been completed.

End of Section 1

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
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Section 2: Receiving Power from Unit 1

- ☐ 1. When **Unit 1** is ready to supply power to Unit 2,
Then **PERFORM ALL** of the following:
- ☐ **A.** CLOSE the Unit 2 SBO crosstie breaker, 2AB 4.16 KV BUS SBO TIE (20501).
- ☐ **B.** REQUEST **Unit 1** close their SBO crosstie breaker, 4160V SWGR 1AB UNIT X-TIE BKR (**1-20501**).
- ☐ **C.** VERIFY the 2AB 4.16 KV bus has power restored.
- ☐ 2. ALIGN the selected train Vital 4.16 KV bus to the 2AB 4.16 KV bus by CLOSING the **TWO** crosstie breakers:

2AB to 2A3 (✓)	2AB to 2B3 (✓)
2AB-2A3 (20505)_____	2AB-2B3 (20504)_____
2A3-2AB (20208)_____	2B3-2AB (20409)_____

- ☐ 3. VERIFY the selected train Vital 4.16 KV bus has power restored.
- ☐ 4. If **TWO** Unit 1 EDGs are RUNNING,
Then **GO TO Section 3**, Restoring Loads With TWO Unit 1 EDGs Running.
- ☐ 5. If only **ONE** Unit 1 EDG is RUNNING,
Then **GO TO Section 4**, Restoring Loads With ONE Unit 1 EDG Running.
- ☐ 6. If Unit 1 has **Offsite Power**,
Then **GO TO Section 5**, Restoring Loads With Unit 1 Offsite Power.

End of Section 2

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE

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SECTION 3: Restoring Loads With TWO Unit 1 EDGs Running

- ☐ 1. VERIFY with **Unit 1** the crosstied EDG is carrying less than or equal to 2500 KW (350 amps).

CAUTION

Restoring power to the vital 480V Load Centers will cause load sequence to occur within 35 seconds. Unit 1 will need to closely monitor EDG KW and 1AB 4.16 KV bus amps to ensure an overload condition will not occur.

- ☐ 2. RESTORE power to the selected train vital 480V Load Centers by CLOSING the associated supply breakers:

* 2B2 and 2B5 Load Centers share a common 4.16KV supply breaker

2A2 480V Load Center (√)	2B2 480V Load Center (√)
STATION SERVICE XFMR 2A2 (20213)_____	*480 V STATION SERVICE XFMR 2B5 (20402)_____
480V 2A2 FEEDER (40219)_____	480V 2B2 FEEDER (40503)_____

2A5 480V Load Center (√)	2B5 480V Load Center (√)
480V STATION SERVICE XFMR 2A5 (20210)_____	*480V STATION SERVICE XFMR 2B5 (20402)_____
480V 2A5 FEEDER (40361)_____	480V 2B5 FEEDER (40653)_____

- ☐ 3. VERIFY with **Unit 1** that the crosstied EDG is operating satisfactorily.

NOTE

The crosstied EDG KW and AB 4.16KV amps should be checked frequently as equipment is restored. Potential loads should be balanced against available capacity to ensure an overload condition will NOT occur.
REFER TO Table 11, Emergency Diesel Generator Loading (SBO).

- ☐ 4. START Charging Pumps **AS NECESSARY** to maintain Inventory Control safety function.

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
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SECTION 3: Restoring Loads With TWO Unit 1 EDGs Running (continued)

- ☐ 5. RESTORE power to the 2AB 480V Load Center by CLOSING the **TWO** crosstie breakers:

2A2 to 2AB 480V Load Center (√)	2B2 to 2AB 480V Load Center (√)
480 V BUS TIE 2A2-2AB (40220)_____	480 V BUS TIE 2B2-2AB (40504)_____
480 V BUS TIE 2AB-2A2 (40702)_____	480 V BUS TIE 2AB-2B2 (40706)_____

- ☐ 6. START a CCW Pump.
REFER TO 2-NOP-14.02, Component Cooling Water System Operation.
- ☐ 7. START a ICW Pump.
REFER TO 2-NOP-21.03A(B)(C)-2A(2B)(2C) Intake Cooling Water System Operation.
- ☐ 8. START a motor driven AFW Pump **AS NECESSARY** to maintain RCS Heat Removal safety function.
- ☐ 9. START additional equipment as EDG load capacity permits. Do NOT exceed 3730 KW (530 amps) on the **Unit 1** EDG.

End of Section 3

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RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
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SECTION 4: Restoring Loads With ONE Unit 1 EDG Running

- ☐ 1. REQUEST **Unit 1** to VERIFY that the crosstied EDG is carrying less than or equal to 2500 KW. (350 amps)

CAUTION

Restoring power to the vital 480V Load Centers will cause load sequence to occur within 35 seconds. Unit 1 will need to closely monitor EDG KW and 1AB 4.16 KV amps to ensure an overload condition will not occur.

- ☐ 2. RESTORE power to the selected train vital 480V Load Centers by CLOSING the associated supply breakers:

* 2B2 and 2B5 Load Centers share a common 4.16KV supply breaker

2A2 480V Load Center (√)	2B2 480V Load Center (√)
STATION SERVICE XFMR 2A2 (20213)_____	*480V STATION SERVICE XFMR 2B5 (20402)_____
480V 2A2 FEEDER (40219)_____	480V 2B2 FEEDER (40503)_____

2A5 480V Load Center (√)	2B5 480V Load Center (√)
480V STATION SERVICE XFMR 2A5 (20210)_____	*480V STATION SERVICE XFMR 2B5 (20402)_____
480V 2A5 FEEDER (40361)_____	480V 2B5 FEEDER (40653)_____

- ☐ 3. VERIFY with **Unit 1** that the crosstied EDG is operating satisfactorily.

NOTE

The crosstied EDG KW and AB 4.16KV amps should be checked frequently as equipment is restored. Potential loads should be balanced against available capacity to ensure an overload condition will NOT occur.
REFER TO Table 11, Emergency Diesel Generator Loading (SBO).

- ☐ 4. START Charging Pumps **AS NECESSARY** to maintain Inventory Control safety function.

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SECTION 4: Restoring Loads With ONE Unit 1 EDG Running (continued)

- ☐ **5.** RESTORE power to the 2AB 480V Load Center by CLOSING the **TWO** crosstie breakers:

2A2 to 2AB 480V Load Center (✓)	2B2 to 2AB 480V Load Center (✓)
480V BUS TIE 2A2-2AB (40220)_____	480V BUS TIE 2B2-2AB (40504)_____
480V BUS TIE 2AB-2A2 (40702)_____	480V BUS TIE 2AB-2B2 (40706)_____

- ☐ **6.** START additional equipment as EDG load capacity permits. Do NOT exceed 3730 KW (530 amps) on the **Unit 1** EDG.

End of Section 4

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
(Page 8 of 9)

SECTION 5: Restoring Loads With Unit 1 Offsite Power

- ☐ 1. RESTORE power to the selected train vital 480V Load Centers by CLOSING the associated supply breakers:

* 2B2 and 2B5 Load Centers share a common 4.16KV supply breaker

2A2 480V Load Center (√)	2B2 480V Load Center (√)
STATION SERVICE XFMR 2A2 (20213)_____	*480V STATION SERVICE XFMR 2B5 (20402)_____
480V 2A2 FEEDER (40219)_____	480V 2B2 FEEDER (40503)_____

2A5 480V Load Center (√)	2B5 480V Load Center (√)
480V STATION SERVICE XFMR 2A5 (20210)_____	*480V STATION SERVICE XFMR 2B5 (20402)_____
480V 2A5 FEEDER (40361)_____	480V 2B5 FEEDER (40653)_____

NOTE

Maximum AB bus capacity is 550 amps. The AB 4.16KV amps should be checked frequently as equipment is restored. Potential loads should be balanced against available capacity to ensure an overload condition will NOT occur. **REFER TO** Table 11, Emergency Diesel Generator Loading (SBO).

- ☐ 2. START Charging Pumps **AS NECESSARY** to maintain Inventory Control safety function.
- ☐ 3. RESTORE power to the 2AB 480V Load Center by CLOSING the **TWO** crosstie breakers:

2A2 to 2AB 480V Load Center (√)	2B2 to 2AB 480V Load Center (√)
480V BUS TIE 2A2-2AB (40220)_____	480V BUS TIE 2B2-2AB (40504)_____
480V BUS TIE 2AB-2A2 (40702)_____	480V BUS TIE 2AB-2B2 (40706)_____

- ☐ 4. START a CCW Pump.
REFER TO 2-NOP-14.02, Component Cooling Water System Operation.

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APPENDIX V
RECEIVING AC POWER FROM UNIT 1 USING SBO CROSSTIE
(Page 9 of 9)

SECTION 5: Restoring Loads With Unit 1 Offsite Power (continued)

- ☐ 5. START a ICW Pump.
REFER TO 2-NOP-21.03A(B)(C)-2A(2B)(2C), Intake Cooling Water System Operation.
- ☐ 6. START a motor driven AFW Pump **AS NECESSARY** to maintain RCS Heat Removal safety function.
- ☐ 7. START additional equipment **AS NECESSARY**. Ensure 2AB 4.16 KV bus current will stay below 550 amps.

End of Section 5

END OF APPENDIX V



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

ALIGN THE 1C ICW PUMP TO THE 1A ICW HEADER - UNIT1

NRC P-1

Unit 1 Intake Structure

This JPM is NOT TIME CRITICAL

This is a NON-FAULTED JPM

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

Perform local actions to align the 1C ICW Pump the 1A ICW Header 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 is operating at 100% power steady state conditions.

1. The 1A ICW Pump is to be taken out of service for routine maintenance.
2. The 1C ICW Pump is to be aligned and started on the 1A ICW Header during the anticipated two hours required to complete the maintenance in the 1A ICW Pump.
3. The AB Busses have just been electrically aligned to the "A" Side
4. The 1C ICW Pump is mechanically aligned to the "B" Train

INITIATING CUES:

You are the ANPO. The Unit Supervisor has directed you to perform the following in accordance with 1-NOP-21.03C, Section 4.1:

1. Align the 1C ICW Pump to supply the 1A ICW Header
2. Observe the starting of the 1C ICW Pump

NOTE: All Prerequisites for 1-NOP-21.03C, Section 4.1 are complete

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST

START TIME: _____

1-NOP-21.03C, Section 4.1, Starting 1C ICW Pump on A Header with Header Pressurized.	
<p><u>STEP 1:(4.0)</u></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><u>NOTE</u></p> <p>Review of ATTACHMENT 1 prior to performance of this procedure is recommended</p> </div> <p><u>STANDARD:</u> <u>REVIEWS</u> ATTACHMENT 1</p> <p>EXAMINER'S CUE: None</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;"><u>NOTE</u></p> <ol style="list-style-type: none"> 1. Proper CLOSED alignment of crosstie valve requires the valve indicator arrow to lineup with the "V" notch on the indicator plate. (ATTACHMENT 1 Step 2) 2. System Performance Group/OSE shall be notified if crosstie valve is not aligned properly. 3. If two ICW Pumps are electrically aligned AND operating on the same electrical bus while the unit is in Modes 1, 2 or 3 (SIAS NOT blocked), the associated Off-Site Power source must be declared inoperable in accordance with Technical Specification. (Section 7.1.3 Management Directive 3) </div> <p><u>STEP 2 (4.1.1)</u> ENSURE Locked Closed SB21211, 1C ICW Pump Cross Tie Disch. to B Train Isol. (INTK/9/N-4/W-C)</p> <p><u>STANDARD:</u> <u>UNLOCK</u>, <u>CLOSE</u>, and <u>LOCK</u> SB21211.</p> <p>EXAMINER'S CUE: SB21211 is UNLOCKED, Indicator arrow aligned with the "V" notch, handwheel is RELOCKED</p> <p>EVALUATOR'S NOTE: See Note above:</p> <ol style="list-style-type: none"> 1. Per note in the procedure, the proper CLOSED alignment of the crosstie valve requires the valve indicator arrow to line up with the "V" notch on the indicator plate. 2. N/A for this JPM 3. Unit Supervisor is aware of Tech Spec. concern <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p>STEP 3:(4.1.2) ENSURE Locked Open SB21165, 1C ICW Pump Crosstie Disch. to A Train Isol. (INTK/9/N-4/W-C)</p> <p>STANDARD: <u>UNLOCK</u>, <u>ENSURE OPEN</u>, and <u>LOCK</u> SB21165.</p> <p>EXAMINER'S CUE: SB21165 is UNLOCKED, pointer indicates OPEN, handwheel is RELOCKED</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 4:(4.1.3) ENSURE 1C ICW Pump motor lube oil level approximately at STANDSTILL level mark.</p> <p>STANDARD: <u>OBSERVE</u> 1C ICW Pump motor bearing sightglass for <u>PROPER</u> oil <u>LEVEL</u>.</p> <p>EXAMINER'S CUE: Motor Oil level in upper and lower sightglass is ½ full</p> <p>EXAMINER'S NOTE: If candidate starts to climb ladder to upper sightglass access door, give him the cue above for the upper sightglass. The lower sightglass is also difficult to see via the access door. If candidate starts to go under the wall, give the cue above for the lower sightglass. However, the candidate should discuss any safety above 6' requirements if he were to need to climb.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 5:(4.1.4) VERIFY LOCKED OPEN SB21206, 1C ICW Pump Disch. Valve. (INTK/18/S-4/W-C)</p> <p>STANDARD: <u>VERIFY</u> SB21206 is <u>LOCKED OPEN</u>.</p> <p>EXAMINER'S CUE: SB21206 is LOCKED in the OPEN Position</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6:(4.1.5) CLOSE SH21204, PI-21-5C Isol. for 1C ICW Pp. Disch. Press. (INTK/23/N-3/W-C)</p> <p>STANDARD: <u>POSITION</u> SH21204 to <u>CLOSED</u>.</p> <p>EXAMINER'S CUE: SH21204 is CLOSED (Valve handle perpendicular to pipe)</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 7:(4.1.6)</u> CLOSE the local instrument isolation for PT-21-8A, A ICW Hdr. Pressure Transmitter.</p> <p><u>STANDARD:</u> <u>POSITION</u> the local instrument isolation for PT-21-8A to <u>CLOSED</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Local Instrument Isolation for PT-21-8A to CLOSED. If candidate wants to stop JPM because valve TAG and procedure do not agree, inform him that the US has confirmed that it is the correct valve.</p> <p style="padding-left: 40px;">EVALUATOR'S NOTE: Valve handle should be perpendicular to the pipe. Valve TAG reads: ICW Pump DISCH HDR Train A PRESS</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>
<div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;"> <p><u>CAUTION</u></p> <p>Starting pump while it is rotating backwards could result in damage to the pump. (ATTACHMENT 1 Step 1)</p> </div> <p><u>STEP 8:(4.1.7)</u> VERIFY the 1C ICW Pump shaft is not rotating backwards.</p> <p><u>STANDARD:</u> <u>OBSERVE</u> the 1C ICW Pump shaft.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: The 1C ICW Pump shaft is stationary.</p> <p style="padding-left: 40px;">EVALUATOR'S NOTE: Per note in the procedure, starting the pump while it is rotating backwards could result in motor damage.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 9:(4.1.8)</u> START 1C ICW pump.</p> <p><u>STANDARD:</u> <u>NOTIFY</u> the Control Room that 1C ICW Pump is ready to <u>START</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Control Room acknowledges makes plant announcement and REPORTS the 1C ICW Pump has been Started. The 1C ICW Pump is now running.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>____ SAT</p> <p>____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 10:(4.1.9)</u> <u>WHEN</u> 1C ICW Pump amps stabilize, <u>THEN</u> stop the 1A ICW pump and place the control switch to the PULL TO LOCK position.</p> <p><u>STANDARD:</u> None, this is a Control Room Step.</p> <p>EXAMINER'S CUE: Control Room makes announcement they are securing/stopping the 1A ICW Pump.</p> <p>EXAMINER'S CUE: Control Room informs you that the 1A ICW Pump control switch is in PULL to LOCK (or Step 9 is complete).</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11:(4.1.10)</u> <u>VERIFY</u> the 1A ICW Pump shaft comes to rest.</p> <p><u>STANDARD:</u> <u>OBSERVE</u> the 1A ICW Pump shaft.</p> <p>EXAMINER'S CUE: The 1A ICW Pump shaft is stationary.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12:(4.1.11)</u> <u>SLOWLY</u> OPEN SH21204, PI-21-5C Isol.</p> <p><u>STANDARD:</u> <u>POSITION</u> SH21204, PI-21-5C Isolation valve, <u>SLOWLY</u> to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: SH21204 is <u>SLOWLY</u> positioned to fully counterclockwise. If asked, local pressure indication, PI-21-5C, indicates 41 psig and is stable.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 13:(4.1.12)</u> Slowly OPEN the local instrument isolation for PT-21-8A, 1A ICW PUMP DISCH HDR PRESS.</p> <p><u>STANDARD:</u> <u>SLOWLY POSITION</u> the local instrument isolation for PT-21-8A to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: Local Instrument Isolation for PT-21-8A SLOWLY positioned parallel to the pipe.</p> <p>EVALUATOR'S NOTE: Valve handle should be parallel to the pipe.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 14:(4.1.13)</u> OPEN SH54064, 1C ICW Pump Acid Return ISOL. (INTK/17/N-3/W-C)</p> <p><u>STANDARD:</u> <u>POSITION</u> SH54064 to <u>OPEN</u> (valve handle parallel to the pipe)..</p> <p>EXAMINER'S CUE: SH54064, 1C ICW Pump Acid Return ISOL, is positioned parallel to the pipe.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 15:(4.1.14)</u> CLOSE SH54062, 1A ICW PUMP ACID RETURN ISOL (INTK/17/N-3/W-C).</p> <p><u>STANDARD:</u> <u>POSITION</u> SH54062 to CLOSE (valve handle perpendicular to the pipe).</p> <p>EXAMINER'S CUE: SH54062, 1A ICW Pump Acid Return ISOL, is positioned perpendicular to the pipe..</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 16:(4.1.15)</u> Independently VERIFY the following valve line-up:</p> <ul style="list-style-type: none"> • SH21204 PI-21-5C ISOL (INTK/23/N-3/W-C) OPEN • LOCAL INSTRUMENT VALVE FOR PT-21-8A (INTK/20/4/W-C) OPEN <p><u>STANDARD:</u> <u>REQUEST</u> NWE or Unit Supervisor to assign someone to perform IV's..</p> <p>EXAMINER'S CUE: IV's have been completed</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p><u>STEP 17:(Done)</u> NOTIFY Control Room that the 1C ICW Pump is ALIGNED and SUPPLYING the 1A ICW Header in accordance with 1-NOP-21.03C, Section 4.1.</p> <p><u>STANDARD:</u> <u>NOTIFY</u> Control Room that the 1C ICW Pump is <u>ALIGNED</u> and <u>SUPPLYING</u> the 1A ICW Header</p> <p align="center">EXAMINER'S CUE: UNIT SUPERVISOR ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p align="right">END OF TASK</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:

Unit 1 is operating at 100% power steady state conditions.

1. The 1A ICW Pump is to be taken out of service for routine maintenance.
2. The 1C ICW Pump is to be aligned and started on the 1A ICW Header during the anticipated two hours required to complete the maintenance in the 1A ICW Pump.
3. The AB Busses have just been electrically aligned to the "A" Side
4. The 1C ICW Pump is mechanically aligned to the "B" Train

INITIATING CUES:

You are the ANPO. The Unit Supervisor has directed you to perform the following in accordance with 1-NOP-21.03C, Section 4.1:

1. Align the 1C ICW Pump to supply the 1A ICW Header
2. Observe the starting of the 1C ICW Pump.

NOTE: All Prerequisites for 1-NOP-21.03C, Section 4.1 are complete

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4.0 INSTRUCTIONS

INITIAL

NOTE

Review of ATTACHMENT 1 prior to performance of this procedure is recommended.

4.1 Starting 1C ICW Pump on A Header with Header Pressurized

NOTE

- Proper CLOSED alignment of crosstie valve requires the valve indicator arrow to line up with the "V" notch on the indicator plate. (ATTACHMENT 1 Step 2)
- System Performance Group/OSE shall be notified if crosstie valve is not aligned properly.
- If two ICW Pumps are electrically aligned AND operating on the same electrical bus while the unit is in Modes 1, 2 or 3 (SIAS NOT blocked), the associated Off-Site Power Source must be declared inoperable in accordance with Technical Specifications. (Section 7.1.3 Management Directive 3)

1. **ENSURE** Locked Closed SB21211, 1C ICW PUMP CROSS TIE DISCH TO B TRAIN ISOL (INTK/9/N-4/W-C). _____
2. **ENSURE** Locked Open SB21165, 1C ICW PUMP CROSSTIE DISCH TO 'A' TRAIN ISOL (INTK/9/N-4/W-C). _____
3. **ENSURE** 1C ICW Pump motor lube oil level approximately at STANDSTILL level mark. _____
4. **VERIFY** LOCKED OPEN SB21206, 1C ICW PUMP DISCH ISOL (INTK/18/S-4/W-C). _____
5. **CLOSE** SH21204, PI-21-5C ISOL (INTK/23/N-3/W-C). _____
6. **CLOSE** the local instrument isolation for PT-21-8A, 1A ICW PUMP DISCH HDR PRESS (INTK/20/4/W C). _____

CAUTION

Starting pump while it is rotating backwards could result in damage to the pump. (ATTACHMENT 1 Step 1)

7. **VERIFY** 1C ICW Pump shaft is NOT rotating backwards. _____

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PROCEDURE NO.: 1-NOP-21.03C	ST. LUCIE UNIT 1	

4.1 Starting 1C ICW Pump on A Header with Header Pressurized (continued)

INITIAL

8. **START** 1C ICW PUMP. _____
9. WHEN 1C ICW Pump amps stabilize, THEN **STOP** 1A ICW Pump and **PLACE** control switch to PULL TO LOCK position. _____
10. VERIFY 1A ICW pump shaft comes to rest. _____
11. Slowly **OPEN** SH21204, PI-21-5C ISOL. _____
12. Slowly **OPEN** the local instrument isolation for PT-21-8A, 1A ICW PUMP DISCH HDR PRESS. _____
13. **OPEN** SH54064, 1C ICW PUMP ACID RETURN ISOL (INTK/17/N-3/W-C). _____
14. **CLOSE** SH54062, 1A ICW PUMP ACID RETURN ISOL (INTK/17/N-3/W-C). _____
15. Independently **VERIFY** the following valve line-up:

Component Number	Component Description	Location	Position Required	Verified By
SH21204	PI-21-5C ISOL	INTK/23/N-3/W-C	OPEN	
N/A	LOCAL INSTRUMENT VALVE FOR PT-21-8A	INTK/20/4/W-C	OPEN	

Performed By: _____
 _____ Print/Sign _____ Initials _____ Date

Performed By: _____
 _____ Print/Sign _____ Initials _____ Date

Performed By: _____
 _____ Print/Sign _____ Initials _____ Date

Verified By: _____
 _____ Print/Sign _____ Initials _____ Date



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

**ALIGN EMERGENCY COOLING WATER TO THE 1A
INSTRUMENT AIR COMPRESSOR AND START THE 1A
INSTRUMENT AIR COMPRESSOR**

NRC P-2

Unit 1 Turbine Building

This JPM is NOT TIME CRITICAL

This is a FAULTED JPM

NRC 19A P-2 Turbine Building
Page 2 of 10

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Align Emergency Cooling Water to the 1A Instrument Air Compressor
- 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:

A loss of off-site power has been diagnosed and is in progress.
The 1A and 1B TCW Pumps are de-energized.

INITIATING CUES:

You are the NPO.

The US has just directed you to perform the following IAW 1-EOP-99, "Appendices/Figures/Tables/Data Sheets," Appendix H, Operation of the 1A and 1B Instrument Air Compressors.

1. Align the Emergency Cooling System to the 1A Instrument Air Compressor
2. Start the compressor

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

START TIME: _____

Appendix H, Operation of the 1A and 1B Instrument Air Compressors, Section 1: Placing 1A Instrument Air Compressor in Service.	
<p><u>STEP 1:(1)</u> ENSURE the following Breakers are aligned as indicated.</p> <p style="padding-left: 40px;">Bkr 41324 (MCC 1A6) - Instrument Air Compr. 1A - ON</p> <p><u>STANDARD:</u> <u>ENSURE</u> Bkr 41324 <u>ON</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Bkr 41324 pointer indicates to the 12 o'clock position. If the candidate wants to stop the JPM because the procedure and the Breaker TAG nomenclature do not agree, tell him that the US has confirmed that it is the right breaker.</p> <p style="padding-left: 40px;">EXAMINER'S NOTE: The breaker TAG reads: INSTR AIR COMPR 1A</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 2:(1)</u> ENSURE the following Breakers are aligned as indicated.</p> <p style="padding-left: 40px;">Bkr 42434 (MCC 1AB) - Instr Air Compr Cooler Fan - ON</p> <p><u>STANDARD:</u> <u>ENSURE</u> Bkr 42434 <u>ON</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Bkr 42434 pointer indicates to the 12 o'clock position.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:(1)</u> ENSURE the following Breakers are aligned as indicated.</p> <p style="padding-left: 40px;">Bkr 42435 (MCC 1AB) – Instr Air Compr Cool System Wtr Pp - ON</p> <p><u>STANDARD:</u> <u>ENSURE</u> Bkr 42435 <u>ON</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: Bkr 42435 pointer indicates to the 12 o'clock position.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

2. If TCW is NOT available, Then PERFORM the following:

A. ALIGN 1A Instrument Air Compressor for emergency cooling and operation.

STEP 4:(2) V13197 1A Instr Air Comp Jacket Inlet Isol – OPEN

STANDARD: **ALIGN** V13197 to **OPEN**.

EXAMINER'S CUE: V13197 is rotated counter clockwise to hard stop.

COMMENTS:

**CRITICAL
STEP**

_____ SAT

_____ UNSAT

STEP 5:(2) V13201 1A Instr Air Comp Jacket Outlet Isol - OPEN

STANDARD: **ALIGN** V13201 to **OPEN**.

EXAMINER'S CUE: V13201 is fully counter clockwise to hard stop.

EXAMINER'S NOTE: V13201 is already/normally aligned OPEN.

COMMENTS:

_____ SAT

_____ UNSAT

STEP 6:(2) SH13383 Air Compr Outlet Hdr Isol - CLOSE

STANDARD: **ALIGN** SH13383 to **CLOSE**.

EXAMINER'S CUE: SH13383 is rotated so that the handle is perpendicular to the pipe.

EXAMINER'S NOTE: Ladder required >6'. Candidate should discuss usage requirements and any PPE requirements that apply.

COMMENTS:

**CRITICAL
STEP**

_____ SAT

_____ UNSAT

STEP 7:(2) SH13380 Air Compr Inlet Hdr Isol - CLOSE

STANDARD: **ALIGN** SH13380 to **CLOSE**.

EXAMINER'S CUE: SH13380 is rotated so that the handle is perpendicular to the pipe.

EXAMINER'S NOTE: Ladder required >6'. Candidate should discuss usage requirements and any PPE requirements that apply.

COMMENTS:

**CRITICAL
STEP**

_____ SAT

_____ UNSAT

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 8:(2)</u> V13417 Air Compr Coolers Inlet from Recirc Pump Isol - OPEN</p> <p><u>STANDARD:</u> <u>ALIGN</u> V13417 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: V13417 is fully counter clockwise to hard stop.</p> <p>EXAMINER'S NOTE: V13417 is already/normally aligned OPEN.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9:(2)</u> V13420 Air Compr Coolers Inlet from Recirc Pump Isol - OPEN</p> <p><u>STANDARD:</u> <u>ALIGN</u> V13420 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: V13420 is fully counter clockwise to hard stop.</p> <p>EXAMINER'S NOTE: V13420 is already/normally aligned OPEN.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10:(2)</u> V13424 1A Recirc Pump from Head Tank Isol - OPEN</p> <p><u>STANDARD:</u> <u>ALIGN</u> V13424 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: V13424 is fully counter clockwise to hard stop.</p> <p>EXAMINER'S NOTE: V13424 is already/normally aligned OPEN.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11:(2)</u> SH13419 Fan Cooler Inlet Isol - OPEN</p> <p><u>STANDARD:</u> <u>ALIGN</u> SH13419 to <u>OPEN</u>.</p> <p>EXAMINER'S CUE: SH13419 is rotated so that the handle is parallel to the pipe.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 12:(2)</u> SH13418 1A Recirc Pump Disch Isol - OPEN</p> <p><u>STANDARD:</u> <u>ALIGN</u> SH13418 to <u>OPEN</u>.</p> <p> EXAMINER'S CUE: SH13418 is rotated so that the handle is parallel to the pipe.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 13:(2)</u> V18109 Instr Air Rcvr Inlet from 1A Aftercooler Isol - OPEN</p> <p><u>STANDARD:</u> <u>ENSURE</u> V18109 is <u>OPEN</u>.</p> <p> EXAMINER'S CUE: V18109 is rotated counter clockwise to hard stop.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 14:(2)</u> V18586 1C / 1D Instr Air Comps Disch Isol - CLOSE</p> <p><u>STANDARD:</u> <u>ALIGN</u> V18586 to <u>CLOSE</u>.</p> <p> EXAMINER'S CUE: V18586 is rotated clockwise to hard stop.</p> <p><u>COMMENTS</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 15:(2.B.)</u> ENSURE the Instrument Air Compressor Head Tank is at least $\frac{3}{4}$ full.</p> <p><u>STANDARD:</u> <u>ENSURE</u> the tank is <u>AT LEAST $\frac{3}{4}$ FULL</u> of water.</p> <p> EXAMINER'S CUE: The Head Tank is FULL of water.</p> <p> EVALUATOR'S NOTE: The candidate should be able to get the cue from the actual head tank level. Provide this cue only if the actual head tank level is less than $\frac{3}{4}$ full.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE **PERFORMANCE CHECKLIST**

<p><u>STEP 16:(2.C)</u> START the Emergency Cooling System Recirculation Pump.</p> <p><u>STANDARD:</u> <u>DEPRESS</u> the START pushbutton for the Inst. Air Comp. Water Pump and <u>OBSERVE</u> the Red indicating light is <u>ILLUMINATED</u>.</p> <p align="center">EXAMINER'S CUE: Emergency Cooling Pump indicates Red light ON and Green light OFF.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 17:(2.D)</u> START the Emergency Cooling System Radiator Fan.</p> <p><u>STANDARD:</u> <u>DEPRESS</u> the START pushbutton for the Inst. Air Comp. Cooler Fan and <u>OBSERVE</u> the Red indicating light is <u>ILLUMINATED</u>.</p> <p align="center">EXAMINER'S CUE: Emergency Cooling System Fan indicates Red light ON and Green light OFF.</p> <p align="center">EXAMINER'S NOTE: Start button inside control box south of radiator.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 18:(3)</u> If TCW is available, <u>Then</u> ALIGN the 1A Instrument Air Compressor for normal cooling and operation.</p> <p><u>STANDARD:</u> <u>DETERMINE</u> that this step is <u>NOT APPLICABLE</u>.</p> <p align="center">EXAMINER'S CUE: None</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 19:(4)</u> Locally START the 1A Instrument Air Compressor.</p> <p><u>STANDARD:</u> <u>POSITION</u> the local control switch to <u>RUN</u>.</p> <p align="center">EXAMINER'S CUE: 1A Instrument Air Compressor is RUNNING.</p> <p align="center">EXAMINER'S NOTE: Control switch East of 1A Instrument Air Compressor.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP (done):</u> NOTIFY Unit 1 Control Room that the 1A Instrument Air Compressor has been aligned to the Emergency Cooling System and that the 1A Compressor is RUNNING.</p> <p><u>STANDARD:</u> <u>NOTIFY</u> Unit 1 Control Room that the 1A Instrument Air Compressor has been aligned to the Emergency Cooling System and that the 1A Instrument Air Compressor is <u>RUNNING</u>.</p> <p style="text-align: center;">EXAMINER'S CUE: CONTROL ROOM ACKNOWLEDGES that the 1A Air Compressor has been aligned to the Emergency Cooling System and is RUNNING.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center; margin-top: 20px;">END OF TASK</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:

A loss of off-site power has been diagnosed and is in progress.
The 1A and 1B TCW Pumps are de-energized.

INITIATING CUES:

You are the NPO.

The US has just directed you to perform the following IAW 1-EOP-99, "Appendices/Figures/Tables/Data Sheets," Appendix H, Operation of the 1A and 1B Instrument Air Compressors.

1. Align the Emergency Cooling System to the 1A Instrument Air Compressor
2. Start the compressor

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PROCEDURE NO.: 1-EOP-99	ST. LUCIE UNIT 1	

APPENDIX H
OPERATION OF THE 1A AND 1B INSTRUMENT AIR COMPRESSORS
(Page 1 of 4)

Section 1: Placing 1A Instrument Air Compressor in Service

- ☐ 1. ENSURE the following breakers are aligned as indicated.

Component ID	Component Name	POSITION (√)
Bkr 41324 (MCC 1A6)	Instrument Air Compr. 1A	ON ____
Bkr 42434 (MCC 1AB)	Instr Air Compr Cooler Fan	ON ____
Bkr 42435 (MCC 1AB)	Instr Air Compr Cool System Wtr Pp	ON ____

- ☐ 2. If TCW is NOT available,
Then PERFORM the following:

- ☐ A. ALIGN 1A Instrument Air Compressor for **emergency** cooling and operation.

Component ID	Component Name	POSITION (√)
V13197	1A Instr Air Comp Jacket Inlet Isol	OPEN ____
V13201	1A Instr Air Comp Jacket Outlet Isol	OPEN ____
SH13383	Air Comprs Outlet Hdr Isol	CLOSE ____
SH13380	Air Comprs Inlet Hdr Isol	CLOSE ____
V13417	Air Compr Coolers Inlet from Recirc Pump Isol	OPEN ____
V13420	Air Compr Coolers Inlet from Recirc Pump Isol	OPEN ____
V13424	1A Recirc Pump from Head Tank Isol	OPEN ____
SH13419	Fan Cooler Inlet Isol	OPEN ____
SH13418	1A Recirc Pump Disch Isol	OPEN ____
V18109	Instr Air Rcvr Inlet from 1A Aftercooler Isol	OPEN ____
V18586	1C / 1D Instr Air Comps Disch Isol	CLOSE ____

- ☐ B. ENSURE the Instrument Air Compressor Head Tank level is at least 3/4 full.
- ☐ C. START the Emergency Cooling System Recirculation Pump.
- ☐ D. START the Emergency Cooling System Radiator Fan.

REVISION NO.: 39	PROCEDURE TITLE: APPENDICES / FIGURES / TABLES / DATA SHEETS	PAGE: 56 of 155
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APPENDIX H
OPERATION OF THE 1A AND 1B INSTRUMENT AIR COMPRESSORS
(Page 2 of 4)

Section 1: Placing 1A Instrument Air Compressor in Service (continued)

- ☐ 3. If TCW is available,
Then ALIGN 1A Instrument Air Compressor for **normal** cooling and operation:

Component ID	Component Name	POSITION (√)
V13197	1A Instr Air Comp Jacket Inlet Isol	OPEN ____
V13201	1A Instr Air Comp Jacket Outlet Isol	OPEN ____
V18109	Instr Air Rcvr Inlet from 1A Aftercooler Isol	OPEN ____
V18586	1C / 1D Instr Air Comps Disch Isol	CLOSE ____

- ☐ 4. Locally START the 1A Instrument Air Compressor.
- ☐ 5. NOTIFY Unit 1 Control Room that 1A Instrument Air Compressor is running.

End of Section 1



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

BLEND TO THE VCT USING LOCAL CONTROL

NRC P-3

Unit 1 RAB

This JPM is NOT TIME CRITICAL

This is a NON-FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Blend to the VCT using local control

Faulted JPM? No

Facility JPM #:

K/A: 004.K4.04 3.2 / 3.1

Knowledge of CVCS design features(s) and/or interlock(s) which provide for the following: Manual/automatic transfers of control.

Task Standard:

This JPM is complete when the VCT is being blended to the normal VCT level.

Evaluation Location:

Simulator In Plant Lab Other
 X

Performance Level:

Perform Simulate Discuss
 X

References:

- 1-ONP-02.01, "Boron Concentration Control"

Validation Time: 25 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- 1--ONP-02.01, "Boron Concentration Control"

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is to Blend to the VCT using Local 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.

INITIAL CONDITIONS:

Unit 1 is at 100% power steady state.

1. FCV-2161, Boric Acid Makeup Isolation has failed to open.
2. The VCT level necessitates a blended makeup to bring level back to normal range.

INITIATING CUES:

You are the SNPO.

The US has directed you to implement the SNPO actions of 1-ONP-02.01, "Boron Concentration Control" Appendix A to:

1. Locally blend to the VCT to within normal operating level range using the 1B BAMT.
2. Control room desires 30 gpm primary water flow and 5 gpm boric acid flow (a blend ratio of 6:1).

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

Appendix A
Local Operation Of Boron Concentration Control

STEP 1:(1) STATION an operator at the Boric Acid station and establish communication with the control room.

STANDARD: **COMMUNICATE** with the control room when on station

_____ SAT

EXAMINER'S CUE: Control room acknowledges you are on station and verifies communication

_____ UNSAT

EXAMINER'S CUE: (Appendix step 2) Control room notifies the Makeup Mode Selector switch is in manual.

EXAMINER'S CUE: (Appendix step 3) Control room informs you the 1B Boric Acid pump is running.

EXAMINER'S CUE: (Appendix step 4) Control room states FCV-2161 fails to open and directs continuance with step 5.

EXAMINER'S NOTE: First SNPO action is step 5 of the ONP Appendix.

COMMENTS:

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 2:(5)</u> IF FCV-2161 fails to operate, <u>Then</u> DIRECT the operator to OPEN V2164, BAM Pump Strainer Bypass Isol.</p> <p><u>STANDARD:</u> <u>ROTATES</u> V2164 fully counter clockwise to the open position.</p> <p>EXAMINER'S NOTE: Initial cue stated FCV-2161 has failed to open.</p> <p>EXAMINER'S CUE: V2164 has been rotated fully counter clockwise</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 3:(6)</u> ENSURE V2514 is CLOSED</p> <p><u>STANDARD:</u> <u>COMMUNICATES</u> with control room to determine V2514 to be closed.</p> <p>EXAMINER'S NOTE: This is a Control room operated valve.</p> <p>EXAMINER'S CUE: Control room confirms V2514 is closed.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4:(7)</u> ENSURE FCV-2210Y is CLOSED</p> <p><u>STANDARD:</u> <u>COMMUNICATES</u> with control room to determine FCV-2210Y to be closed.</p> <p>EXAMINER'S NOTE: This is a Control room operated valve.</p> <p>EXAMINER'S CUE: Control room confirms FCV-2210Y is closed.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p style="text-align: center;">CAUTION</p> <ul style="list-style-type: none"> V2174 provides a direct Boric Acid flow path to the Charging pump suction at 20 gpm. V2180 provides a direct Primary Water flow path to the Charging pump suction. <p>STEP 5:(8) DIRECT the operator at the Boric Acid station to throttle V2174, EMERG Boration From BAM Pumps Disc Isol, OPEN to the calculated blend ratio.</p> <p>STANDARD: <u>ROTATES</u> Counter clockwise V2174 two(2) turns</p> <p style="margin-top: 20px;">EXAMINERS NOTE: Blend ratio is 30 gallons Primary water for every 5 gallons Boric acid. (6:1 as per cue)</p> <p>EXAMINER'S CUE: Control room directs V2174 to be opened 2 turns.</p> <p>EXAMINER'S CUE: V2174 has been turned counter clockwise two (2) turns.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 6:(9) MONITOR FR-2210 for boric acid flow rate and ADJUST V2174 as necessary.</p> <p>STANDARD: <u>COMMUNICATES</u> with control room to determine boric acid flow rate.</p> <p style="margin-top: 20px;">EXAMINER'S CUE: Control room states boric acid flow rate is 3 gpm.</p> <p>EXAMINER'S CUE: Control room directs V2174 opened an additional ½ turn.</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 7:(9)</u> MONITOR FR-2210 for boric acid flow rate and ADJUST V2174 as necessary</p> <p><u>STANDARD:</u> <u>ROTATES</u> V2174 counter clockwise an additional ½ turn and communicates with control room to determine boric acid flow rate. <u>DETERMINES</u> 5 gpm is desired flow rate.</p> <p>EXAMINER'S CUE: V2174 is turned counter clockwise an additional ½ turn and the Control room states boric acid flow is 5 gpm.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 8:(10)</u> 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 1C Charging pump room.</p> <p><u>STANDARD:</u> <u>ROTATES</u> V2180 counter clockwise 4 turns.</p> <p>EXAMINER'S CUE: Control room directs V2180 opened 4 turns. EXAMINER'S CUE: V2180 has been rotated counter clockwise 4 turns.</p> <p>EXAMINER'S NOTE: V2180 is a locked closed valve. Candidate should discuss actions required to manipulate V2180.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 9:(11)</u> Monitor FR-2210 for Reactor Makeup Water flow rate and ADJUST V2180 as necessary.</p> <p><u>STANDARD:</u> <u>COMMUNICATES</u> with control room to determine Reactor Makeup Water flow rate. <u>DETERMINES</u> 45 gpm is 15 gpm greater than the desired flow rate.</p> <p>EXAMINER'S CUE: Control room states Reactor Makeup Water flow rate is 45 gpm. EXAMINER'S CUE: Control room directs V2180 closed 1 full turn.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 10:(11)</u> Monitor FR-2210 for Reactor Makeup Water flow rate and ADJUST V2180 as necessary.</p> <p><u>STANDARD:</u> ROTATES V2180 clockwise one(1) full turn and communicates with control room to determine flow rate.</p> <p>DETERMINES 30 gpm is the desired flow rate.</p> <p>EXAMINER'S CUE: Control room states Reactor Makeup Water flow rate is 30 gpm.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11:(12)</u> MONITOR for any abnormal change in Tave.</p> <p><u>STANDARD:</u> COMMUNICATES with control room to determine acceptable blend and Tave.</p> <p>EXAMINER'S CUE: Control room states no changes in Boric Acid flow or Reactor Makeup flow rates are needed at this time.</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 12:(13)</u> MONITOR for any abnormal change in RCS Boron concentration.</p> <p><u>STANDARD:</u> COMMUNICATES with control room to determine any change in RCS Boron concentration.</p> <p>EXAMINER'S CUE: Control room states no changes in RCS Boron concentration.</p> <p><u>COMMENTS</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

<p><u>STEP 13:(14)</u> DIRECT the operator to adjust V2174 and V2180 as required to maintain the VCT in the normal band and plant conditions stable.</p> <p><u>STANDARD:</u> <u>COMMUNICATES</u> with the control room to determine acceptability of current flow rates.</p> <p style="text-align: center;">EXAMINER'S CUE: Control room states no changes are needed as this time.</p> <p><u>COMMENTS:</u></p> <p style="text-align: center;">END OF TASK</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
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STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

Unit 1 is at 100% power steady state.

1. FCV-2161, Boric Acid Makeup Isolation has failed to open.
2. The VCT level necessitates a blended makeup to bring level back to normal range.

INITIATING CUES:

You are the SNPO.

The US has directed you to implement the SNPO actions of 1-ONP-02.01, "Boron Concentration Control" Appendix A to:

1. Locally blend to the VCT to within normal operating level range using the 1B BAMT.
2. Control room desires 30 gpm primary water flow and 5 gpm boric acid flow (a blend ratio of 6:1).

REVISION NO.: 5B	PROCEDURE TITLE: BORON CONCENTRATION CONTROL ST. LUCIE UNIT 1	PAGE: 14 of 16
PROCEDURE NO.: 1-ONP-02.01		

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 1A or 1B Boric Acid pump.
4. OPEN FCV-2161, Boric Acid Makeup Isol.
5. If FCV-2161 fails to operate, Then DIRECT the operator to OPEN V2164, BAM Pump Strainer Bypass Isol.
6. ENSURE V2514 is CLOSED.
7. ENSURE FCV-2210Y is CLOSED.

CAUTION

- V2174 provides a direct Boric Acid flow path to the Charging pump suction at 20 gpm.
- V2180 provides a direct Primary Water flow path to the Charging pump suction.

8. DIRECT the operator at the Boric Acid station to throttle V2174, EMERG Boration From BAM Pumps Disch Isol, OPEN to the calculated blend ratio.
9. MONITOR FR-2210 for boric acid flow rate and ADJUST V2174 as necessary.
10. 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 1C Charging pump room.
11. MONITOR FR-2210 for Reactor Makeup Water flow rate and ADJUST V2180 as necessary.
12. MONITOR for any abnormal change in Tave.
13. MONITOR for any abnormal change in RCS Boron concentration.
14. DIRECT the operator to adjust V2174 and V2180 as required to maintain the VCT in the normal band and plant conditions stable.

END OF APPENDIX A

/RSB

/RSB



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

RESPOND TO CCW EXCESSIVE ACTIVITY - UNIT 1

NRC C-8 (RO)

Unit 1 Control Room

This JPM is NOT TIME CRITICAL

This is a NON-FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Respond to CCW Excessive Activity – Unit 1

Faulted JPM? No

Facility JPM #: 0821030

K/A: 008.K1.04 3.3 / 3.3

Knowledge of the physical connection and/or cause-effect relationship between the CCWS and the following systems: RCS, in order to determine source(s) of RCS leakage into the CCWS.

Task Standard:

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

Evaluation Location:

Simulator	In Plant	Lab	Other
	X		

Performance Level:

Perform	Simulate X	Discuss
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References:

- ONP 1-0310030, "Component Cooling Water - Off Normal Operations"
- ONP 1-0310031, "Component Cooling Water Excessive Activity"
- 1-APP-01-S-6, "Annunciator Response Procedure"

Validation Time: 15 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- ONP 1-0310030, "Component Cooling Water - Off Normal Operations"
- ONP 1-0310031, "Component Cooling Water Excessive Activity"
- 1-ARP-01-S-6, "Annunciator Response Procedure"

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is: Respond to CCW Excessive Activity – 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 is operating at 100% power, steady state conditions, MOL.

1. Annunciator S-6 (CCW SURGE TANK LEVEL HIGH/COMPARTMENT A LEVEL LOW) has illuminated.
2. A SNPO was dispatched to locally investigate the CCW Surge Tank.
 - a. He reports that level is greater than 4 feet (sightglass full) and
 - b. LCV-14-1, Demin Water to Surge Tank, is closed with no make-up flow indicated.
3. All operator actions of 1-ARP-01-S6 have been carried out.

INITIATING CUES:

The US has directed you to perform the actions required by ONP 1-0310030, "Component Cooling Water – Off Normal Operation," to determine the cause for the high Surge Tank level.

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST

START TIME: _____

ONP 1-0310030, "Component Cooling Water – Off Normal Operation" Step 6.2 Subsequent Actions, Step 5.	
<p><u>STEP 1:(6.2.5.A.1)</u> <u>If</u> abnormal level conditions exist in the CCW Surge Tank, <u>Then</u> perform the following:</p> <p style="margin-left: 40px;">A. High level in the CCW Surge Tank.</p> <p style="margin-left: 80px;">1. Check the CCW Radiation Monitors (Channel 56 & 57) for abnormal trends. If high radiation is indicated, refer to ONP 1-0310031, "Component Cooling Water Excessive Activity."</p> <p><u>STANDARD:</u> <u>OBSERVE</u> channels 56 & 57 for trends.</p> <p>EXAMINER'S CUE: Channel 56 reads $2.8 \text{ e}^{-6} \mu\text{Ci/ml}$ and channel 57 reads $3.8 \text{ e}^{-6} \mu\text{Ci/ml}$. Both are trending up but not in alarm.</p> <p>EXAMINER'S NOTE: At the point, the Student must refer to ONP 1-0310031, "Component Cooling Water Excessive Activity". When effort is made to get the procedure, provide a copy of this ONP.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
ONP 1-0310031, "Component Cooling Water Excessive Activity." Step 7.2 Subsequent Actions	
<p><u>STEP 2:(7.2.1)</u> Notify Health Physics and Chemistry Department of CCW excessive activity.</p> <p><u>STANDARD:</u> <u>CONTACT</u> the Chemistry and HP Technicians and <u>INFORM</u> them that there is excessive activity in the CCW system.</p> <p>EXAMINER'S CUE: CHEMISTRY and HP TECHNICIANS NOTIFIED</p> <p><u>COMMENTS:</u></p>	 <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p><u>STEP 3:(7.2.2)</u> Determine the primary leak rate per 1-OSP-01.03, Reactor Coolant System Inventory Balance.</p> <p><u>STANDARD:</u> N/A.</p> <p>EXAMINER'S CUE: The Unit Supervisor reports that OSP-01.03, Reactor Coolant System Inventory Balance, has been performed and the leak rate is 0.5 GPM.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p><u>STEP 4:(7.2.3)</u> If the plant is in Mode 3 through 6 (SIAS BLOCKED), <u>Then</u> perform safety function status check of the LOW Mode Off-Normal Procedure for the current plant condition.</p> <p><u>STANDARD:</u> DETERMINE step is NOT APPLICABLE Unit is in Mode 1</p> <p>EXAMINER'S CUE: Acknowledge that the step is not applicable.</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>
<p>Inspect the following components for RCS leakage:</p>	
<p><u>STEP 5:(7.2.4.A)</u> Verify RCS inleakage from the RCP(s) seal cooler is NOT occurring by the following:</p> <p style="margin-left: 40px;">1. NO unexplained increase in RCP lower seal temperature.</p> <p><u>STANDARD:</u> Verify no unexplained INCREASE in any RCP lower cavity seal temperature</p> <p>EXAMINER'S CUE: Lower seal cavity temperatures indicate 100°F to 115°F</p> <p>EXAMINER'S NOTE: Candidate will review the RCP DCS screen to assess RCP lower cavity seal temperatures</p> <p><u>COMMENTS:</u></p>	<p>____ SAT</p> <p>____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p>STEP 6: (7.2.4.A.2) Verify RCS inleakage from the RCP(s) seal cooler is NOT occurring by the following:</p> <p style="margin-left: 40px;">2. DCS Computer Points are NOT in alarm</p> <ul style="list-style-type: none"> 33X193_A, 1A1 RCP CL Tube Lk Vlv Cls/Pwr FA 33X293_A, 1A2 RCP CL Tube Lk Vlv Cls/Pwr FA 33X194_A, 1B1 RCP CL Tube Lk Vlv Cls/Pwr FA. 33X294_A, 1B2 RCP CL Tube Lk Vlv Cls/Pwr FA <p>STANDARD: VERIFY DCS computer points are NOT in alarm by checking either the alarm screen or RCP displays.</p> <p style="text-align: center;">EXAMINER'S CUE: No RCP DCS computer points are in alarm EXAMINER'S NOTE: The candidate will review the DCS alarm screen to verify no computer points in alarm</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p>STEP 7: (7.2.4.B) Verify the outlet temperature of the sample heat exchangers (HX) does NOT indicate possible leakage.</p> <p>STANDARD: CONTACT the SNPO and give directions to CHECK the outlet temperatures on the sample heat exchangers for ABNORMAL values.</p> <p style="text-align: center;">EXAMINER'S CUE: SNPO REPORTS Pressurizer Steam Space Sample heat exchanger return temperature is approximately 130°F, all others are <90°F.</p> <p>COMMENTS:</p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p>CONTINGENCY ACTIONS.</p>	
<p>STEP 8: (7.2.4.B) If a sample heat exchanger indicates possible leakage, Then go to Appendix A, Isolation of the Sample Heat Exchangers.</p> <p>STANDARD: GO TO Appendix A and DETERMINE 1C Sample Heat Exchanger (Pressurizer Steam Space) requires isolation.</p> <p style="text-align: center;">EXAMINER'S CUE: NONE</p> <p>COMMENTS:</p>	<p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

APPENDIX A, ISOLATION OF THE SAMPLE HEAT EXCHANGERS, 1C SAMPLE HEAT EXCHANGER (PRESSURIZER STEAM SPACE.	
<p><u>STEP 9:(3.A.1)</u> <u>If</u> the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, <u>Then</u> isolate the heat exchanger by the following:</p> <p style="margin-left: 40px;">1. Close V5202, Pressurizer Steam Space Sample (RTGB 106).</p> <p><u>STANDARD:</u> <u>POSITION</u> V5202 handswitch to CLOSE</p> <p style="margin-left: 40px;">EXAMINER'S CUE: Green light is ON, Red light is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 10:(3.A.2)</u> <u>If</u> the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, <u>Then</u> isolate the heat exchanger by the following:</p> <p style="margin-left: 40px;">2. Close V5205, Pressurizer Steam Space Sample (RTGB 106).</p> <p><u>STANDARD:</u> <u>POSITION</u> V5205 handswitch to CLOSE</p> <p style="margin-left: 40px;">EXAMINER'S CUE: Green light is ON, Red light is OFF</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 11(3.A.3)</u> <u>If</u> the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, <u>Then</u> isolate the heat exchanger by the following:</p> <p style="margin-left: 40px;">3. Close V05007, 1C Sample HX Outlet Isol.</p> <p><u>STANDARD:</u> <u>CONTACT</u> the SNPO to CLOSE V05007</p> <p style="margin-left: 40px;">EXAMINER'S CUE: SNPO reports V05007 CLOSED.</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>

JOB PERFORMANCE MEASURE PERFORMANCE CHECKLIST

<p>STEP 12:(3.A.4) If the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, <u>Then</u> isolate the heat exchanger by the following:</p> <p style="margin-left: 40px;">4. Close V14506, 1C Sample HX Inlet Isol.</p> <p>STANDARD: <u>CONTACT</u> the SNPO to CLOSE V14506</p> <p style="margin-left: 40px;">EXAMINER'S CUE: SNPO reports V14506 CLOSED</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p style="text-align: center;">_____ SAT</p> <p style="text-align: center;">_____ UNSAT</p>
<p>STEP 13:(3.A.5) If the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, <u>Then</u> isolate the heat exchanger by the following:</p> <p style="margin-left: 40px;">5. Close 14502, 1C Sample HX Outlet Isol.</p> <p>STANDARD: <u>CONTACT</u> the SNPO to CLOSE V14502</p> <p style="margin-left: 40px;">EXAMINER'S CUE: SNPO reports V14502 CLOSED</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p style="text-align: center;">_____ SAT</p> <p style="text-align: center;">_____ UNSAT</p>
<p>STEP 14:(3.A.6) If the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, <u>Then</u> isolate the heat exchanger by the following:</p> <p style="margin-left: 40px;">6. Continue to monitor trends after HX has been isolated to verify leak has stopped. Contact SNPO to determine Pressurizer Steam Space outlet temperature.</p> <p>STANDARD: <u>Monitor</u> CCW Radiation Monitor (Channels 56 & 57) to VERIFY leak has been ISOLATED. <u>Contact</u> SNPO to determine Pressurizer Steam Space outlet temperature.</p> <p style="margin-left: 40px;">EXAMINER'S CUE: CCW Radiation Monitor (Channels 56 & 57) have stabilized. SNPO REPORTS Pressurizer Steam Space Sample heat exchanger return temperature is approximately 120°F and lowering.</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

<u>STEP (done):</u> Notify the US that the 1C Sample Heat Exchanger has been isolated.	<div>_____ SAT</div> <div>_____ UNSAT</div>
<u>STANDARD:</u> <u>NOTIFY</u> the US that the 1C Sample Heat Exchanger has been ISOLATED	
EXAMINER'S CUE: US AKNOWLEDGES	
<u>COMMENTS:</u>	
END OF TASK	

STOP TIME: _____

JOB PERFORMANCE MEASURE
CANDIDATE CUE SHEET

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

INITIAL CONDITIONS:

Unit 1 is operating at 100% power, steady state conditions, MOL.

1. Annunciator S-6 (CCW SURGE TANK LEVEL HIGH/COMPARTMENT A LEVEL LOW) has illuminated.
2. A SNPO was dispatched to locally investigate the CCW Surge Tank.
 - a. He reports that level is greater than 4 feet (sightglass full) and
 - b. LCV-14-1, Demin Water to Surge Tank, is closed with no make-up flow indicated.
3. All operator actions of 1-ARP-01-S6 have been carried out.

INITIATING CUES:

The US has directed you to perform the actions required by ONP 1-0310030, "Component Cooling Water – Off Normal Operation," to determine the cause for the high Surge Tank level.

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PROCEDURE NO.: 1-0310030		

6.2 Subsequent Action (continued)

NOTE

CCW Surge Tank vent (RCV-14-1) diverts from atmosphere to the Chemical Drain Tank on high radioactivity in the CCW System.

5. If abnormal level conditions exist in the CCW Surge Tank, Then PERFORM the following:

A. High Level in the CCW Surge Tank.

1. CHECK the CCW Radiation Monitors (Channel 56 & 57) for abnormal trends. If high radiation is indicated, REFER to ONOP 1-0310031, Component Cooling Water Excessive Activity.
2. CHECK the CCW Surge Tank Makeup Flow meter (FQ-14-14) for flow. If makeup flow is indicated, CLOSE V14100, Makeup Isol, and VERIFY V14101, Alternate Makeup Supply, is closed.
3. Evaluate S/G Blowdown Sample Heat Exchangers as a source of in leakage.

B. Low Level in the CCW Surge Tank

1. CHECK the CCW Surge Tank Makeup Flow Meter (FQ-14-14) for flow:
 - a. If no flow is indicated:
 1. VERIFY LCV-14-1, CCW Surge Tank Fill Valve, and V14100, Makeup Isol, are open.
 2. VERIFY a Demin Water Pump is running.

CAUTION

Use the fire system as a makeup source only as a last resort.

- b. If flow is indicated:
 1. COMMENCE a visual search of the CCW System for evidence of leakage.
 2. REFER to Appendix A to aid in the leak search.
 3. ISOLATE the leak, if possible.

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PROCEDURE NO.: 1-0310031		

7.2 Subsequent Operator Actions

INSTRUCTIONS

1. Notify Health Physics and Chemistry Department of CCW excessive activity.
2. Determine the primary leak rate per 1-OSP-01.03, Reactor Coolant System Inventory Balance.
3. If plant is in Mode 3 through 6 (SIAS Blocked), Then perform safety function status check of Low Mode Off-Normal Procedure for current plant condition.
4. Inspect the following components for indication of RCS inleakage:
 - A. Verify RCS inleakage from the RCP(s) seal cooler is NOT occurring by the following:
 1. NO unexplained increase in RCP lower seal temperature.
 2. DCS Computer Points are NOT in alarm:
 - 33X193_A, 1A1 RCP CL Tube Lk Vlv CIs / Pwr FA
 - 33X293_A, 1A2 RCP CL Tube Lk Vlv CIs / Pwr FA
 - 33X194_A, 1B1 RCP CL Tube Lk Vlv CIs / Pwr FA
 - 33X294_A, 1A2 RCP CL Tube Lk Vlv CIs / Pwr FA

CONTINGENCY ACTIONS

4.
 - A. If RCP seal cooler leakage is indicated, Then:
 1. Monitor RCP seal cavity temperature per ONOP 1-0120034 (Reactor Coolant Pump Off-Normal).
 2. If DCS Computer Points 33X193_A, 33X293_A, 33X194_A or 33X294_A are in alarm, Then ensure the Hx Isol. Valve has been closed and GO TO ONOP 1-0120034 (Reactor Coolant Pump Off-Normal).

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PROCEDURE NO.: 1-0310031		

APPENDIX A
ISOLATION OF THE SAMPLE HEAT EXCHANGERS
 (Page 2 of 2)

3. 1C SAMPLE HEAT EXCHANGER (PRESSURIZER STEAM SPACE)

- A. If the 1C Sample Heat Exchanger is suspected of causing the increase in CCW activity, Then isolate the heat exchanger by the following:
1. Close V5202, Przr. Steam Space Sample (RTGB-106).
 2. Close V5205, Przr. Steam Space Sample (RTGB-106).
 3. Close V05007, 1C Sample Hx Outlet Isol.
 4. Close V14506, 1C Sample Hx Inlet Isol.
 5. Close V14502, 1C Sample Hx Outlet Isol.
 6. Continue to monitor trends after Hx has been isolated to verify leak has been stopped.

4. 1D SAMPLE HEAT EXCHANGER (SHUTDOWN COOLING)

- A. If the 1D Sample Heat Exchanger is suspected of causing the increase in CCW activity, Then isolate the heat exchanger by the following:
1. Close V05010, 1D Sample Hx Inlet from SITs Isol.
 2. Close V5127, 1D Sample Hx Inlet from 1A LPSI Pump Disch. Isol.
 3. Close V5130, 1D Sample Hx Inlet from HPSI Pumps Min-flow Isol.
 4. Close V5161, 1D Sample Hx Inlet from SDC Suct. Isol.
 5. Close V05011, 1D Sample Hx Outlet Isol.
 6. Close V14505, 1D Sample Hx Inlet Isol.
 7. Close V14501, 1D Sample Hx Outlet Isol.
 8. Continue to monitor trends after Hx has been isolated to verify leak has been stopped.

END OF APPENDIX A



St. Lucie Nuclear Plant

JOB PERFORMANCE MEASURE

VENT REACTOR VESSEL HEAD USING RCGVS - UNIT 1

**NRC C-9
(RO)**

Unit 1 Control Room

This JPM is NOT TIME CRITICAL

This is a NON-FAULTED JPM

JOB PERFORMANCE MEASURE

Task: Vent the reactor vessel head using the Reactor Coolant Gas Vent System on Unit 1.

Faulted JPM? No

Facility JPM #: 0821213

K/A Rating(s): A.03.06.208 A.03.06.234 B.01.06.193
B.01.06.195 B.01.06.212 B.01.06.433, (2.82 – Average)

Duty Area(s): N/A

Task Information: N/A

Task Standard:

This JPM is complete when the candidate has successfully vented the reactor vessel head and secured from the vent lineup.

Evaluation Location:

Simulator In Plant Lab Other
X

Performance Level:

Perform Simulate Discuss
X

References:

- ONP 1-0120037, "Reactor Coolant Gas Vent System Off-Normal Operation."

Validation Time: 10 minutes

Time Critical: No

Tools/Equipment/Procedures Needed:

- ONP 1-0120037, Reactor Coolant Gas Vent System Off-Normal Operation.

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

- None

Radiological Protection and RWP Requirements:

- None

Candidate: _____
Name

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

Performance Rating: Sat _____ Unsat _____

Examiner: _____ **Signature:** _____

Comments

JOB PERFORMANCE MEASURE
INITIAL CONDITIONS AND SPECIFIC DIRECTIONS

SPECIFIC DIRECTIONS:

- The task you are to perform is:

Vent the reactor vessel head using the Reactor Coolant Gas Vent System 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:

A LOCA has occurred on Unit 1, forming a non-condensable bubble in the reactor vessel head. Pressurizer level has been restored to 80% with Pressurizer pressure at 650 psia.

The subsequent actions of ONP 1-0120037 have been completed up to the point of venting. Calculations show the void size is about 800 cubic feet, and the maximum vent time is 31 minutes.

INITIATING CUES:

You are the Desk RCO. The Unit Supervisor has directed you to vent the reactor vessel head to the Quench Tank IAW ONP 1-0120037, beginning with step 7.3.14. The Unit Supervisor has issued the appropriate keys to perform the task.

JOB PERFORMANCE MEASURE
PERFORMANCE CHECKLIST

START TIME: _____

ONP 1-0120037, Reactor Coolant Gas Vent System Off-Normal Operation, Step 7.3.14 – 7.3.16	
<p><u>STEP 1(14):</u> COMMENCE venting as follows:</p> <p style="padding-left: 40px;">B. OPEN V1441, Reactor Vent Valve A to Hdr, to vent reactor vessel head.</p> <p><u>STANDARD:</u> At CRAC, <u>POSITION</u> V1441 keyswitch to <u>OPEN</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: V1441 shows 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 2(14):</u> COMMENCE venting as follows:</p> <p style="padding-left: 40px;">B. OPEN V1445, Hdr Vent to Quench Tank (B), to commence venting.</p> <p><u>STANDARD:</u> At CRAC, <u>POSITION</u> V1445 keyswitch to <u>OPEN</u>.</p> <p style="padding-left: 40px;">EXAMINER'S CUE: V1445 shows Green light OFF, Red light ON. If asked, Quench Tank pressure is rising. If asked, another operator will vent the Quench Tank as required.</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 3(15):</u> TERMINATE venting when (any of the following):</p> <ul style="list-style-type: none"> A. Time period determined in Step 5.3.4 is met (31 minutes per cue) B. Pressurizer pressure decreases by 200 psi C. Pressurizer level decreases below 25% level D. Reactor coolant subcooling less than 20°F E. The reactor vessel head is refilled as indicated by QSPDS reactor vessel level display <p><u>STANDARD:</u> MONITOR above parameters and DETERMINE that QSPDS indicating a full reactor vessel head (no voids) is a termination criterion</p> <p style="margin-left: 40px;">EXAMINER'S CUE: Elapsed time is 27 minutes; Pressurizer pressure is 530 psia, dropping slowly Pressurizer level is 40% RCS subcooling is 30°F RVLMS on QSPDS indicates all sensor levels bright orange (digital values = 100%)</p> <p><u>COMMENTS:</u></p>	<p>CRITICAL STEP</p> <p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 4(15):</u> TERMINATE venting when (any of the following):</p> <ul style="list-style-type: none"> A. Time period determined in Step 5.3.4 is met (31 minutes per cue) B. Pressurizer pressure decreases by 200 psi C. Pressurizer level decreases below 25% level D. Reactor coolant subcooling less than 20°F E. The reactor vessel head is refilled as indicated by QSPDS reactor vessel level display <p><u>STANDARD:</u> At CRAC, POSITION V1441 key switches to CLOSE.</p> <p style="margin-left: 40px;">EXAMINER'S CUE: V1441 shows Green lights 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 5(15):</u> TERMINATE venting when (any of the following):</p> <ul style="list-style-type: none"> A. Time period determined in Step 5.3.4 is met (31 minutes per cue) B. Pressurizer pressure decreases by 200 psi C. Pressurizer level decreases below 25% level D. Reactor coolant subcooling less than 20°F E. The reactor vessel head is refilled as indicated by QSPDS reactor vessel level display <p><u>STANDARD:</u> At CRAC, <u>POSITION</u> V1445 keyswitches to <u>CLOSE</u>.</p> <p style="text-align: center;">EXAMINER'S CUE: V1445 shows Green lights ON, Red light OFF</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP 6(16):</u> RE-ESTABLISH Pressurizer level and EVALUATE the response of the Pressurizer level trend to determine if a gas bubble existed in the head. IF a gas bubble existed and the venting was terminated prior to the vessel being completely refilled, THEN return to Step 5.3.12.</p> <p><u>STANDARD:</u> <u>DETERMINE</u> that vessel was <u>COMPLETELY VENTED</u> of all voids and no further venting is required</p> <p style="text-align: center;">EXAMINER'S CUE: Pressurizer level has been re-established at 80%; NO indication of head voiding was observed when restoring Pressurizer level</p> <p><u>COMMENTS:</u></p>	<p>_____ SAT</p> <p>_____ UNSAT</p>
<p><u>STEP (done):</u> NOTIFY Control Room that task is complete.</p> <p><u>STANDARD:</u> <u>NOTIFY</u> Control Room that reactor vessel head has been vented to Containment per ONP 1-0120037 and reactor vessel head indicates full.</p> <p style="text-align: center;">EXAMINER'S CUE: UNIT SUPERVISOR ACKNOWLEDGES</p> <p><u>COMMENTS:</u></p> <p style="text-align: center; margin-top: 20px;">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:

A LOCA has occurred on Unit 1, forming a noncondensable bubble in the reactor vessel head. Pressurizer level has been restored to 80% with Pressurizer pressure at 650 psia.

The subsequent actions of ONP 1-0120037 have been completed up to the point of venting. Calculations show the void size is about 800 cubic feet, and the maximum vent time is 31 minutes.

INITIATING CUES:

You are the Desk RCO. The Unit Supervisor has directed you to vent the reactor vessel head to the Quench Tank IAW ONP 1-0120037, beginning with step 7.3.14. The Unit Supervisor has issued the appropriate keys to perform the task.

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PROCEDURE NO.: 1-0120037		

7.3 Subsequent Operator Actions (continued)

CAUTION

UNDER NO CIRCUMSTANCES SHOULD BOTH VENT VALVES IN THE VENTING FLOWPATH BE POWERED FROM THE SAME ELECTRICAL TRAIN. THE REACTOR VESSEL HEAD AND PRESSURIZER SHOULD NOT BE VENTED SIMULTANEOUSLY.

13. Observe the Pressurizer level trend during the reactor vessel venting and, from the following conditions, determine the probable status of the RCS:

- A. Controllable Pressurizer level - gaseous voids exist in the RCS other than the reactor vessel head or Pressurizer.

The orifice in the head vent is sized to limit water relief to within the make-up capability of one Charging Pump (44 GPM @ 2250 psia). Therefore, if no gases are present in the vessel head, then the Pressurizer level should remain controllable.

- B. Decreasing pressurizer level - gaseous voids exist in the reactor vessel head.

The venting of gases will result in a rapid decrease in Pressurizer level due to the mass flow rate of the gases being greater than the mass input being provided by the Charging System.

CAUTION

IF PRESSURIZER LEVEL DECREASES TO <20%, THEN ATTEMPT TO RESTORE LEVEL BY THE CVCS SYSTEM (ISOLATE LETDOWN, MAXIMUM CHARGING). IF LEVEL CANNOT BE RESTORED, THEN MANUALLY INITIATE SAFETY INJECTION.

14. Commence venting as follows:

- A. Venting Pressurizer or reactor vessel head to Containment.

_____ Open V1444, Pzr Vent Valve B to Hdr, to vent Pressurizer,

OR

_____ Open V1442, Reactor Vent Valve B to Hdr, to vent reactor vessel head.

AND

_____ Open V1446, Hdr Vent to Containment (A), to commence venting.

REVISION NO.: 5B	PROCEDURE TITLE: REACTOR COOLANT GAS VENT SYSTEM OFF-NORMAL OPERATION ST. LUCIE UNIT 1	PAGE: 8 of 12
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7.3 Subsequent Operator Actions (continued)

14. (continued)

B. Venting Pressurizer or reactor vessel head to Quench Tank.

_____ Open V1443, Pzr Vent Valve A to Hdr, to vent Pressurizer,

OR

_____ Open V1441, Reactor Vent Valve A to Hdr, to vent reactor vessel head.

AND

_____ Open V1445, Hdr Vent to Quench Tank (B), to commence venting.

C. Venting Pressurizer or reactor vessel head to accumulator.

_____ Open V1443, Pzr Vent Valve A to Hdr, to vent Pressurizer,

OR

_____ Open V1441, Reactor Vent Valve A to Hdr, to vent reactor vessel head.

AND

_____ Open V1449, Hdr Vent to Accumulator (B), to commence venting.

15. Terminate venting when:

A. TIME PERIOD DETERMINED IN STEP 5.3.4 IS MET,

OR

B. PRESSURIZER PRESSURE DECREASES BY 200 PSI,

OR

C. PRESSURIZER LEVEL DECREASES BELOW 25% LEVEL,

OR

D. REACTOR COOLANT SUB COOLING LESS THAN 20°F

OR

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7.3 Subsequent Operator Actions (continued)

15. (continued)

E. THE REACTOR VESSEL HEAD IS REFILLED AS INDICATED BY QSPDS REACTOR VESSEL LEVEL DISPLAY.

- 16.** Re-establish Pressurizer level and evaluate the response of the Pressurizer level trend to determine if a gas bubble existed in the head. If a gas bubble existed and the venting was terminated prior to the vessel being completely refilled, then return to Step 5.3.12.

NOTE

If multiple venting operations are required and the Containment hydrogen concentration is ≥ 3 volume percent, then provisions must be made to remove or reduce the volume of hydrogen from the Containment prior to re-opening the reactor vessel head vent.

- 17.** Return to the appropriate operating procedures following successful completion of the venting of the reactor vessel head.

END OF SECTION 7.0