Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Place RCS HPU Subloop In Service And Reset FCV Lockout Revision: NRC 2008

Task Number: N2-202001-01001 N2-202001-01023

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X____Perform _____Simulate

Evaluation Location:_____Plant ___X__Simulator

Expected Completion Time: 25 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC 181

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-29, Rev 12, Sect. E.1.0
2. NUREG K/A 202002 A4.02

Tools and Equipment:

1. None

Task Standard:

Hydraulic Power Unit "A" has been placed in service with Subloop 2 is in "LEAD" operation. FCV A motion inhibit is reset and all P602 annunciators associated with FCV A are clear.

Initial Conditions:

1. The plant is operating at rated power.
2. Recirc FCV HPU "A" tripped due to a hot oil condition 1 hour ago.
3. HPU "A" hot oil condition is now cleared, oil temperature is 100°F and the HPU is ready to be placed in service.
4. LOOP A HYDR FLUID OUTSIDE ISOL valves are closed to reduce flow control valve drifting.
5. Local pressure indication for HPU Subloop 2 is 0 psig

Initiating cue:

"(Operator's name), Place HPU "A" Subloop 2 in operation and reset the flow control valve lockup per N2-OP-29, Section E.1.0."

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary* **RECORD START TIME ____**	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-OP-29 obtained. Precautions & limitations reviewed & section E.1.0 referenced.	Sat/Unsat
3. NOTE: The LOOP A(B) HYDR FLUID OUTSIDE ISOL valves may be closed, to reduce flow control valve from drifting closed during an HPU/Control System failure. They can be left closed until after their HPU is restored to operation. CAUTION: IF a standby HPU Subloop remains pressurized (greater than 500 psig) when removed from service and is restarted without the other subloop in operation, this could cause RECIRC FCV motion. This should be avoided.	Reviews Note and Caution	Sat/Unsat
4. For the HPU being started, perform the following: • IF any of the following conditions exist, isolate 2RCS*SOV65A(B),	Reviews Procedure Step	Sat/Unsat

Performance Steps	Standard	Grade

2RCS*SOV66A(B), 2RCS*SOV67A(B), 2RCS*SOV68A(B), for the affected HPU by taking the LOOP A(B) HYDR FLUID OUTSIDE ISOL switch to CLOSE:

- Unexpected pressure (greater than 400 psig) WHILE the subloop is in standby
- Associated solenoid valve 2RCS-SOV106A(B) OR 2RCS-SOV107A(B) is known to be sticking partially open OR is NOT able to be over-ridden WHILE the solenoid coils are de-energized
- It is known that EITHER "OPERATE" OR "ISOLATE" coil is burned out
- FUSE BLOWN indicator is lit on the Modicon I/O module inside panel 2CEC-PNL634 at any of the following:
  - Subloop A1 - MTBA-2, west panel, left column, 2nd from top (total of 8)
  - Subloop A2 - MTBA-10, west panel, right column, 2nd from top (total of 8)
  - Subloop B1 - MTBB-2, east panel, left column, 2nd from top (total of 8)
  - Subloop B2 - MTBB-10, east panel, right column,2nd from top (total of 8)

Cue: Valves were previously closed. None of these conditions currently exist

5. IF the HPU has been idle for less than 2 hours OR controls on the HPU have NOT been repositioned since the last shutdown, perform the following:

Performance Steps	Standard	Grade
Cue/Note: Initial Conditions state that one hour has elapsed		
a. Verify open 2RCS-V2011A(B) AND V2011C(D), Return Filter Isolation.	Dispatches operator to verify local valve positions.	Sat/Unsat
Cue: 2RCS-V2011A and V2011C are open.		
b. Continue at Step E.1.14.	Continues to step E.1.14	Sat/Unsat
6. At 2CEC-PNL634 (South), Rack 1 for HPU A AND Rack 2 for HPU B, NEST 5, CARD 1, (R/C/L, labeled B35-K686A(B)) verify the red indicating lights for Channel 1 and 2 are NOT lit. IF lit depress the reset pushbuttons.	Verifies red indicating lights are NOT lit	Sat/Unsat
Cue: Red indicating lights for Channel 1 and 2 are extinguished.		
7. Momentarily depress BOTH READY pushbuttons	Depresses BOTH READY pushbuttons	**Pass/Fail**
Verify the following: o READY light illuminates. o MAINTENANCE light extinguishes. o Annunciator 602103(104), RECIRC FCV A(B) BACKUP HYDR INOPERABLE clears.	Verifies lights and annunciator	Sat/Unsat
8. Unless isolated per Step E.1.1.1 verify the following valves open: o 2RCS*SOV65A(B) o 2RCS*SOV66A(B) o 2RCS*SOV67A(B) o 2RCS*SOV68A(B)	At P602, opens valves using LOOP A HYDR FLUID OUTSIDE ISOL switch. Observes green "closed" lights extinguish and the red "open" lights are lit for the four outside isolation valves.	**Pass/Fail**
Note: Not isolated per E1.1.1		

Performance Steps	*Standard*	*Grade*
9. NOTE: Step 1.17 does not apply if I&C is to use the Standby Unit (SBU) at 2CEC-PNL634 to reduce % SERVO ERROR to zero or have verified that the signal to the servo valve is approximately zero. **Cue: If asked, I&C will NOT be using SBU to reduce % SERVO ERROR.**	Reads Note	Sat/Unsat
Using 2RCS-HC1603A(B), RECIRC LOOP A(B) FLOW CONTROL at 2CEC*PNL602, reduce % SERVO ERROR to zero. NOTE: Failure to zero the % SERVO ERROR will result in an unplanned reactivity transient, as the FCV opens.	At P602, Reduces % SERVO ERROR to ZERO using Loop A controller	**Pass/Fail**
10. Decide which subloop is to control the actuator AND depress its PUMP/FAN MTR RUN pushbutton.	Depresses PUMP/FAN MTR RUN pushbutton for HPU "A", Subloop 2	**Pass/Fail**
Verify the following: • PUMP/FAN MTR STOP light extinguishes. • PUMP/FAN MTR RUN light illuminates. • Selected loop LEAD light is illuminated AND other loop LEAD light is extinguished. • PRESSURIZED light illuminates OR 2RCS-PI1001A(B)-1(2) locally indicates 1850-1950 psi. • Annunciator 602101(102), RECIRC FCV A(B) HYDRAULICS INOPERABLE clears. **Cue: If asked, report local conditions are normal.**	Verifies indications	Sat/Unsat

Performance Steps	*Standard*	*Grade*
11. At 2CEC*PNL602, verify: • Annunciator 602111(112), RECIRC FCV A(B) HYDRAULICS MAINT REQ'D cleared. • Annunciator 602103(104), RECIRC FCV A(B) BACK UP HYDR INOPERABLE cleared. • Annunciator 602127(128), DRYWELL HIGH PRESSURE SWITCH A(B) TEST POSITION cleared. • Annunciator 602133(134), DRYWELL HIGH PRESSURE SYSTEM A(B) INTERLOCK cleared. • Annunciator 602105(106), RECIRC FCV A(B) MOTION INHIBIT, in alarm condition.	Verifies annunciators clear, with the exception of 602105	Sat/Unsat
12. Depress the applicable FCV MOTION INHIBIT RESET pushbutton at 2CEC*PNL602:	Depresses FCV MOTION INHIBIT RESET pushbutton	**Pass/Fail**
Verify the following: • LEAD subloop OPERATIONAL light illuminated • Annunciator 602105(106), RECIRC FCV A(B) MOTION INHIBIT extinguishes.	Verifies light illuminated and annunciator clear	Sat/Unsat
13. Report completion.	Report completion.	Sat/Unsat

TERMINATING CUE: Hydraulic Power Unit "A" Subloop 2 is in "operation" and FCV A motion inhibit is reset with all annunciators associated with FCV A cleared.

RECORD STOP TIME_____

Initial Conditions:

1. The plant is operating at rated power.
2. Recirc FCV HPU "A" tripped due to a hot oil condition 1 hour ago.
3. HPU "A" hot oil condition is now cleared, oil temperature is 100°F and the HPU is ready to be placed in service.
4. LOOP A HYDR FLUID OUTSIDE ISOL valves are closed to reduce flow control valve drifting.
5. Local pressure indication for HPU Subloop 2 is 0 psig

Initiating cue:

"(Operator's name), Place HPU "A" Subloop 2 in operation and reset the flow control valve lockup per N2-OP-29, Section E.1.0."

E. STARTUP

INITIALS

1.0 Hydraulic Power Unit Startup

(SOP)

(OSP) **NOTE:** The LOOP A(B) HYDR FLUID OUTSIDE ISOL valves may be closed, to reduce flow control valve from drifting closed during an HPU/Control System failure. They can be left closed until after their HPU is restored to operation.

CAUTION

(C6) IF a standby HPU Subloop remains pressurized (greater than 500 psig) when removed form service and is restarted wihtout the other subloop in operation, this could cause RECIRC FCV motion. This should be avoided.

1.1 For the HPU being started, perform the following:

(C11) 1.1.1 IF any of the following conditions exist, isolate 2RCS*SOV65A(B), 2RCS*SOV66A(B), 2RCS*SOV67A(B), 2RCS*SOV68A(B), for the affected HPU by taking the LOOP A(B) HYDR FLUID OUTSIDE ISOL switch to CLOSE:

- Unexpected pressure (greater than 400 psig) WHILE the subloop is in standby
- Associated solenoid valve 2RCS-SOV106A(B) OR 2RCS- SOV107A(B) is known to be sticking partially open OR is NOT able to be over-ridden WHILE the solenoid coils are de-energized
- It is known that EITHER "OPERATE" OR "ISOLATE" coil is burned out
- FUSE BLOWN indicator is lit on the Modicon I/O module inside panel 2CEC-PNL634 at any of the following:
  - Subloop A1 - MTBA-2, west panel, left column, 2nd from top (total of 8)
  - Subloop A2 - MTBA-10, west panel, right column, 2nd from top (total of 8)
  - Subloop B1 - MTBB-2, east panel, left column, 2nd from top (total of 8)
  - Subloop B2 - MTBB-10, east panel, right column,2nd from top (total of 8)

INITIALS

1.0 (Cont)

1.1.2 IF the HPU has been idle for less than 2 hours OR controls on the HPU have NOT been repositioned since the last shutdown, perform the following:

a. Verify open 2RCS-V2011A(B) AND V2011C(D), Return Filter Isolation. _____

b. Continue at Step E.1.14. _____

(C11) 1.2 Verify the following at the HPU:

1.2.1 N2-VLU-01, Attachment 29, Walkdown Valve Lineup completed, EXCEPT for any valves isolated in Step 1.1.1. _____

1.2.2 Attachment 3, Walkdown Electric Lineup completed. _____

1.2.3 Reservoir level between LOW (70 gal.) AND FULL (80 gal.) marks on the tank sightglass (fill per Subsection F.1.0). _____

1.2.4 Reservoir fluid temperature between 40° AND 150°F on 2RCS-TI1001A(B). _____

1.2.5 Louvers on BOTH heat exchangers fully open. _____

1.2.6 2RCS-V2011A(B) AND V2011C(D), Return Filter Isolation in the closed position (handle perpendicular to flow). _____

1.3 Verify the following indicators are illuminated at the Hydraulic Power Unit status panel on 2CEC-PNL634.

- SUB LOOP 1:
  1. PUMP/FAN MTR STOP _____
  2. MAINTENANCE _____
- SUB LOOP 2:
  1. PUMP/FAN MTR STOP _____
  2. MAINTENANCE _____
- Either - Subloop's LEAD light is illuminated. _____

1.4 IF during the performance of Steps E.1.5 AND E.1.6 temperature rises to 145° before stabilizing, stop the pump to allow reservoir to cool to 140°F. _____

INITIALS

1.0 (Cont)

1.5 IF reservoir temperature is less than 70°F, perform the following:

1.5.1 Adjust 2RCS-RV47A(B) OR 2RCS-RV48A(B), RELIEF VALVE on the sub loop to be started to minimum PRIOR to starting the pump. (Counterclockwise rotation lowers relief valve setting pressure) _____

1.5.2 After starting the pump AND temperature is > 70°F, adjust 2RCS-RV47A(B) OR 2RCS-RV48A(B) to 1900 psi on 2RCS- PI1001A(B) AND lock after setting. _____

1.6 Momentarily depress EITHER subloops PUMP/FAN MTR RUN pushbutton.

1.6.1 Verify the following:

- PUMP/FAN MTR STOP light extinguishes. _____
- PUMP/FAN MTR RUN light illuminates. _____
- PRESSURIZED light illuminates. _____
- 2RCS-PI1001A(B)-1(2) locally indicates 1850-1950 psi IF 2RCS-RV47A(B) OR 2RCS-RV48A(B), setting was NOT changed. _____

1.7 IF 2RCS-RV47A(B) OR 2RCS-RV48A(B) setting was changed, THEN set the relief valve to 500 psi. _____

1.8 WHEN either the pump has operated for 30 minutes OR reservoir temperature has stabilized, verify that:

- Subloop pressure 1850-1950 psi on 2RCS-PI1001A(B)-1(2). _____
- Reservoir temperature 120-140°F on 2RCS-TI1001A(B). _____
- No leakage occurs. _____
- Subloop pump suction vacuum indicator does NOT show red. IF necessary, reset by depressing the button on top of the vacuum indicator. _____
- PRESSURIZED light illuminated on 2CEC-PNL634. _____
- PRESS. FILTER light is extinguished on 2CEC-PNL634. _____

1.9 Open 2RCS-V2011A(B) OR V2011C(D), Return Filter Isolation for the operating subloop.

INITIALS

1.9 (Cont)

1.9.1 Verify the following:

- Return filter pressure is less than 50 psi on 2RCS-PI1002A(B)-1(2). _____
- RETURN LINE FILTER light remains extinguished on 2CEC-PNL634. _____

1.10 Shutdown the operating subloop by depressing the PUMP/FAN MTR STOP pushbutton AND verify: _____

1.10.1 Verify the following:

- Pressure lowers slowly to 1500-1725 psi locally, THEN lowers quickly to zero. _____
- PUMP/FAN MTR STOP light illuminated. _____
- PUMP/FAN MTR RUN light extinguishes. _____
- PRESSURIZED light extinguishes (time delay is normal). _____

1.11 Start the other subloop by depressing the PUMP/FAN MTR RUN pushbutton AND verify: _____

1.11.1 Verify the following:

- PUMP/FAN MTR RUN light illuminates. _____
- PUMP/FAN MTR STOP light extinguishes. _____
- PRESSURIZED light illuminates. _____
- PRESS. FILTER light remains extinguished AFTER several minutes. _____
- 1850-1950 psi on 2RCS-PI1001A(B)-1(2). _____
- Pump suction vacuum indicator does NOT show red. IF required, reset by depressing the button on top of the vacuum indicator. _____
- No leakage occurs. _____
- Reservoir temperature stabilizes at 120-140°F on 2RCS-TI1001A(B). _____

1.12 Slowly open the operating subloops 2RCS-V2011A(B) OR V2011C(D), Return Filter Iso. _____

INITIALS

1.12 (Cont)

1.12.1 Verify the following:

- RETURN LINE FILTER light remains extinguished on 2CEC-PNL634. _____
- Return filter pressure is less than 50 psi on 2RCS-PI1002A(B)-1(2). _____

1.13 Depress the operating subloop PUMP/FAN MTR STOP pushbutton. _____

1.13.1 Verify the following:

- PUMP/FAN MTR STOP light illuminates. _____
- PUMP/FAN MTR RUN light extinguishes. _____
- Pressure lowers slowly to 1500-1725 psi, THEN lowers quickly to zero. _____
- PRESSURIZED light extinguishes. _____

1.14 At 2CEC-PNL634 (South), Rack 1 for HPU A AND Rack 2 for HPU B, NEST 5, CARD 1, (R/C/L, labeled B35-K686A(B)) verify the red indicating lights for Channel 1 and 2 are NOT lit. IF lit depress the reset pushbuttons. _____

1.15 Momentarily depress BOTH READY pushbuttons _____

1.15.1 Verify the following:

- READY light illuminates. _____
- MAINTENANCE light extinguishes. _____
- Annunciator 602103(104), RECIRC FCV A(B) BACKUP HYDR INOPERABLE clears. _____

1.16 Unless isolated per Step E.1.1.1 verify the following valves open:

- 2RCS*SOV65A(B) _____
- 2RCS*SOV66A(B) _____
- 2RCS*SOV67A(B) _____
- 2RCS*SOV68A(B) _____

INITIALS

1.0 (Cont)

NOTE: Step 1.17 does not apply if I&C is to use the Standby Unit (SBU) at 2CEC-PNL634 to reduce % SERVO ERROR to zero or have verified that the signal to the servo valve is approximately zero.

1.17 Using 2RCS-HC1603A(B), RECIRC LOOP A(B) FLOW CONTROL at 2CEC*PNL602, reduce % SERVO ERROR to zero. _____

1.18 Decide which subloop is to control the actuator AND depress its PUMP/FAN MTR RUN pushbutton. _____

1.18.1 Verify the following:

- PUMP/FAN MTR STOP light extinguishes. _____
- PUMP/FAN MTR RUN light illuminates. _____
- Selected loop LEAD light is illuminated AND other loop LEAD light is extinguished.
- PRESSURIZED light illuminates OR 2RCS-PI1001A(B)-1(2) locally indicates 1850-1950 psi. _____
- Annunciator 602101(102), RECIRC FCV A(B) HYDRAULICS INOPERABLE clears.

1.19 At 2CEC*PNL602, verify:

- Annunciator 602111(112), RECIRC FCV A(B) HYDRAULICS MAINT REQ'D cleared. _____
- Annunciator 602103(104), RECIRC FCV A(B) BACK UP HYDR INOPERABLE cleared. _____
- Annunciator 602127(128), DRYWELL HIGH PRESSURE SWITCH A(B) TEST POSITION cleared. _____
- Annunciator 602133(134), DRYWELL HIGH PRESSURE SYSTEM A(B) INTERLOCK cleared. _____
- Annunciator 602105(106), RECIRC FCV A(B) MOTION INHIBIT, in alarm condition. _____

1.20 Depress the applicable FCV MOTION INHIBIT RESET pushbutton at 2CEC*PNL602: _____

1.20.1 Verify the following:

- LEAD subloop OPERATIONAL light illuminated _____
- Annunciator 602105(106), RECIRC FCV A(B) MOTION INHIBIT extinguishes. _____

INITIALS

1.0 (Cont)

1.21 IF HPU Fluid Containment IVs were closed in Step E.1.1.1, open the following valves as required HPU by taking the LOOP A(B) HYDR FLUID OUTSIDE ISOL switch to OPEN:

- 2RCS*SOV65A(B), Return _____
- 2RCS*SOV66A(B), Pilot _____
- 2RCS*SOV67A(B), Supply _____
- 2RCS*SOV68A(B), Drain _____

1.22 Equipment is now operational AND will control the actuator in response to a demand signal. _____

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Shifting Feedwater Pumps at Power Revision: NRC 2008

Task Number: N2-259001-01004

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X_____Perform _____Simulate

Evaluation Location:_____Plant ___X__Simulator

Expected Completion Time: 30 minutes Time Critical Task: NO Alternate Path Task: YES

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC-182
2. 65% Power with malfunction FW10C preset.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-3, Rev 21, Sect. F.13.0
2. NUREG K/A 259001 A4.02 3.7

Tools and Equipment:

1. None

Task Standard:

"C" Feedwater Pump is in service and level is under control in the normal band via MANUAL controller operation. "A" Feedwater Pump is secured with LV10A in manual and closed.

Initial Conditions:

1. The plant is operating at 65% power.
2. Feedwater Pump "C" is ready to be placed in service.
3. Pre-start checks are complete.

Initiating cue:

"(Operator's name), Remove Feedwater Pump "A" from service and place Feedwater Pump "C" in service, per N2-OP-3, Section F.13.0, commencing at step F.13.3".

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-OP-3 obtained. Precautions & limitations reviewed & section F.13.0 referenced.	Sat/Unsat
NOTE: JPM steps 3-6 may be reviewed, but are complete as indicated in the initiating cue. Performance steps begin at JPM step 7.		
3. NOTES: 1. All actions in this Subsection are performed at 2CEC*PNL851 and PNL603 unless otherwise noted. 2. Shifting Feedwater Pumps will be performed at approximately 65% power by securing one pump and starting the standby. 3. IF re-starting 2FWS-P1A (B,C) from operating temperatures (D.4.0), Electrical Maintenance should perform an inspection of windings at first opportunity. 4. Feedwater minimum flow setpoint will be lowered to 4 Kgpm for all three Feedwater Pumps and then restored to 8 Kgpm after pump swap(s) are	Reads notes.	Sat/Unsat

Performance Steps	Standard	Grade
complete. 5. Fourth Point Heater Drain Pumps may remain pumping forward during this evolution if feedwater heater level controllers are stable at 65% power, with the permission of the Shift Manager. 6. Steps 13.1 AND 13.2 may be performed simultaneously. 7. The following step requires key # 18 from the SM key locker. CAUTION Throughout this section if a plant casualty occurs such that Feedwater Pumps will remain on minimum flow for greater than 15 minutes, Reactor Power should be immediately reduced below 55% AND Feedwater Pump minimum flow should be returned to 8 Kgpm on all three Feedwater Pumps.		
4. Adjust ALL three Feedwater Pump minimum flow valve setpoints as follows: At 2CEC-PNL827, verify in auto AND lower tape setting for 2CNM-HIC68A, RX FD WTR P1A RECIRC controller, to 4 Kgpm. At 2CEC-PNL827, verify in auto AND lower tape setting for 2CNM-HIC68B, RX FD WTR P1B RECIRC controller, to 4 Kgpm. At 2CEC-PNL827, verify in auto AND lower tape setting for 2CNM-HIC68C, RX FD WTR P1C RECIRC controller, to 4 Kgpm. ***CUE: Min flow valve setpoints for all three feedwater pumps are set at 4 Kgpm.***	Dispatches operator to adjust setpoints of all 3 minimum flow valves.	Sat/Unsat
5. Perform pre-start checks locally for the associated Feedwater pump to be	Reviews step	Sat/Unsat

Performance Steps	Standard	Grade
started ONLY per step F.13.2.1 through F.13.2.7.		
NOTE: Pre-Start checks are complete		
6. Using N2-OP-101D, verify Reactor power has been reduced ≤ 65%.	Reviews step and determines power is at 65%	Sat/Unsat
NOTE: Power is at 65%. Rated MWth is 3467 and 65% power is 2253 MWth.		
7. Secure one of the two operating Feedwater Pumps 2FWS-P1A (B,C) as follows:		
Depress Manual (M) pushbutton on 2FWS-LV10A (B,C) controller.	Depresses M pushbutton on 2FWS-LV10A controller 2FWS-HIC1010A and yellow M light is lit.	**Pass/Fail**
DURING this evolution, verify that the remaining level control valve 2FWS-LV10B (C,A) maintains desired water level.	Verifies remaining LCV maintains level on an on-going basis during evolution.	Sat/Unsat
8. Slowly close 2FWS-LV10A (B,C) to the 2 to 4% valve position by using the slow CLOSE detent pushbutton on 2FWS-LV10A (B,C) controller.	Using 2FWS-HIC1010A slow detent close pushbutton, depresses until about 2-4% shown.	**Pass/Fail**
9. Close 2FWS-LV10A (B,C) to the 0% valve position by depressing the fast CLOSE detent pushbutton on 2FWS-LV10A (B,C) controller.	Using 2FWS-HIC1010A fast detent close pushbutton, depresses until 0% shown.	**Pass/Fail**
10. Secure 2FWS-P1A (B,C), REACTOR FW PMP 1A (B,C), by placing its control switch to Normal-After-STOP (Green flagged).	Places FW Pump "A" in green flagged position	**Pass/Fail**
11. Verify 2FWL-P2A (B,C), AUX LUBE OIL PMP 2A (B,C), auto starts.	Determines Aux Lube Oil Pump starts by observing AUX LUBE OIL PMP 2A red light ON.	Sat/Unsat

Performance Steps		Standard	Grade
12.	Confirm 2FWR-FV2A (B,C), REACTOR FD P1A (B,C) RECIRC VLV, closes immediately.	Determines valve closes by observing REACTOR FD P1A RECIRC VLV POSN meter indication goes to 0% VALVE POSITION.	Sat/Unsat
13.	At 2FWS-P1A (B,C), place the Auxiliary Lube Oil Pump control switch 2FWL-LCS752 (753, 754) to START AND verify 2FWL-P2A (B,C) remains running. **BOOTH OPERATOR: Activate remote to start aux oil pump.**	Dispatches operator to place Aux Lube Oil Pump control switch to START, determines pump remains running	Sat/Unsat
14.	IF 2FWS-P1A (B,C) is being placed in standby, open 2FWS-V25A (B,C) FD WTR PUMP 1A (B,C) WRMUP LN ISOLATION. ***CUE: If asked, the pump is being placed in standby. Report 2FWS-V25A is open.***	Dispatches operator to open warmup line isolation.	Sat/Unsat
15.	NOTE: The following step requires key # 18 from the SM key locker. IF the plant will remain at 65 % power for more than a shift, adjust ALL Feedwater Pump minimum flow valve setpoints as follows: At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68A, RX FD WTR P1A RECIRC controller to 8 k gpm. At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68B, RX FD WTR P1B RECIRC controller to 8 k gpm. At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68C, RX FD WTR P1C RECIRC controller to 8 k gpm.	Determines step is N/A	

Performance Steps	Standard	Grade
CUE: The plant will remain at 65% power for LESS than a shift.		
16. NOTE: The following step will be performed prior to starting the standby feed pump. Perform Feedwater Pump Warmup for the pump being started per subsection F.14.0.	Determines Step is N/A	
CUE: Another Operator has performed the warmup for Feedwater Pump C.		
NOTE: Min flow valve setpoints are at 4 Kgpm from previous steps.		
17. Adjust ALL three Feedwater Pump minimum flow valve setpoints as follows: At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68A, RX FD WTR P1A RECIRC controller to 4 k gpm. At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68B, RX FD WTR P1B RECIRC controller to 4 k gpm. At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68C, RX FD WTR P1C RECIRC controller to 4 k gpm.	Adjusts all 3 controllers	Sat/Unsat
18. Start the standby Feedwater Pump 2FWS-P1A (B,C) as follows: Verify open 2FWS-MOV47A (B,C), REACTOR FW PMP 1A (B,C) DISCH BLOCK VLV.	Verifies Discharge Block Valve is open by observing REACTOR FW PMP 1C DISCH BLOCK VLV FWS-MOV47C red light is ON and green light is OFF.	Sat/Unsat

Performance Steps	Standard	Grade
19. IF applicable, verify open 2FWS-V103A (B), FEEDWATER PUMP 1A (B) LOW FLOW LINE ISOL.	Determines step is NA, since Feedwater Pump C is being started.	Sat/Unsat
20. IF required, start the standby Condensate pump by placing 2CNM-P1A (B,C) control switch in Normal-After-START (Red-flagged). **Note: NOT required, since all Condensate Pumps are running.**	Determines three Condensate Pumps running.	Sat/Unsat
21. Verify sufficient Condensate Iron Prefilters are in service to support the maximum expected Condensate System flow rate. Refer to N2-OP-5A, Attachment 1. ***CUE: If asked, sufficient Iron Prefilters are in service***	Determines sufficient Condensate Iron Prefilters are in service	Sat/Unsat
22. NOTE: Nine Condensate Demineralizers in service is the preferred lineup in the next step. Verify at least eight Condensate Demineralizers are in service in accordance with N2-OP-5. ***CUE: Nine demineralizers are in service***	Dispatches operator to determine at least eight demineralizers are in service.	Sat/Unsat
23. IF all three Heater Drain pumps are NOT pumping forward, start the standby Condensate Booster pump as follows: Using 2CNM-PI39A (B,C), locally confirm condensate booster pump suction pressure is > 150 psig. Start 2CNM-P2A (B,C), CONDENSATE BOOSTER PMP 2A (B,C), by placing	Determines step is N/A because heater drain pumps are pumping forward.	Sat/Unsat

Performance Steps	Standard	Grade
the control switch to Normal-After-START (Red-flagged). At 2CNM-P2A (B,C), place the Auxiliary Lube Oil Pump control switch 2CNO-LCS706 (707, 708) to AUTO AND verify 2CNO-P2A (B,C) stops.		
24. For the Feedwater pump to be started, verify the level controllers are in Manual (M) AND valve positions are at 0% open.	Determines that controller 2FWS-HIC-1010C is in manual by observing yellow M light is lit and % VALVE POSITION meter indicates 0.	Sat/Unsat
25. CAUTION The next two steps shall be performed concurrently. IF feedwater pump suction pressure drops to 220 psig, start the third Condensate Booster pump if NOT already operating.	Reviews Caution	Sat/Unsat
26. NOTE: IF 2FWS-P1C is selected to start, the preferable power supply is from 2NPS-SWG003 if 2FWS-P1A will be left running, or 2NPS-SWG001 if 2FWS-P1B is to be left running.	NOTE: Since 2FWS-P1B is to be left running, the preferable power supply for 2FWS-P1C is 2NPS-SWG001.	
Start 2FWS-P1A (B,C) REACTOR FD P1A (B,C), by placing the control switch to Normal-After-Start (red flagged).	Rotates control switch REACTOR FW PMP 1C FROM BUS 001 FWS-P1C to red flagged position.	**Pass/Fail**
27. Confirm 2FWR-FV2A (B,C), REACTOR FD P1A (B,C) RECIRC VLV, starts to open.	Determines valve starts to open by observing REACTOR FD P1C RECIRC VLV POSN meter indication goes past 15% VALVE POSITION.	Sat/Unsat
28. WHEN 2FWR-FV2A (B,C) is ≥ 15% open, confirm 2FWS-P1A (B,C) starts.	When REACTOR FD P1C RECIRC VLV POSN meter indication goes past 15% VALVE POSITION, observe pump start by observing red light and ammeter FWS-P1C BUS 001 CURRENT indication.	Sat/Unsat

Performance Steps	Standard	Grade
29. Using 2CNM-FI68A (B,C), RX FD WTR P1A (B,C) FLOW meter, confirm 2FWS-P1A (B,C) flow is approximately 4000 gpm.	Determines flow on 2CNM-FI68C, RX FD WTR P1C FLOW meter is about 4000 gpm	Sat/Unsat
30. NOTES: 1. The following two steps are performed locally at the associated Feedwater pump just started. 2. The feedwater pump may be loaded as 2FWS-V25A (B,C) is shut.	Reviews notes	
Place the Auxiliary Lube Oil Pump control switch 2FWL-LCS752 (753, 754) to AUTO AND verify 2FWL-P2A (B,C) stops. **BOOTH OPERATOR: Activate remote FW03C to stop aux oil pump. Report to control room that the Aux LO pump control switch is in AUTO and the pump has stopped.**	Dispatches operator to place Aux Lube Oil Pump Control Switch in AUTO and verifies pump stops	Sat/Unsat
31. Close 2FWS-V25A (B,C), FD WTR PUMP 1A (B,C) WRMUP LN ISOLATION. ***CUE: If asked, report 2FWS-V25C is closed.***	Dispatches operator to close warmup line isolation.	Sat/Unsat
NOTES: 1. When opening 2FWS-LV10A (B,C) from a fully shut position, the initial 2 seconds of valve open signal serve only to "wake up" the control circuit computer with no additional action. Pressing the valve open push button for an additional 10 seconds in manual slow detent (2% position per second) serves to take the control circuit from the minus (–) 20% position to the 0% position PRIOR to any actual valve position indicator movement taking	Reviews Notes and Caution	Sat/Unsat

Performance Steps	Standard	Grade
place. 2. Once the LV10 valve circuitry reaches the 0% position, the first 1.5% to 2% of the valve stroke, as indicated by the position indicator, is used to release the seating force held by the compression of the SB spring. Therefore, the valve stem will not be lifted to establish flow until approximately 2% valve indication is reached. Reactor water level should be closely monitored during this evolution. CAUTION The fast detent position (20% position per second) should NOT be used to take the control circuit from the minus (--) 20% to 0% position as the LV10 will likely open beyond the desired position as the valve can only physically open at 6% per second, and will continue to open once the operator releases the open pushbutton if the demand signal is beyond the 0% position until valve position "catches up" to the circuit controller demand.		
32. Throttle open 2FWS-LV10A (B,C), Feedwater Pump 1A (B,C) Level Control Valve, by using the OPEN detent pushbutton on 2FWS-LV10A (B,C) controller.	Throttles OPEN detent pushbutton for controller 2FWS-HIC-1010C and observes % VALVE POSITION meter.	**Pass/Fail**
33. Verify 2FWS-LV10B (C,A) closes gradually as 2FWS-LV10A (B,C) slowly opens.	Determines valve is closing by observing % VALVE POSITION meter for 2FWS-LV10B.	Sat/Unsat
34. Continue to slowly open 2FWS-LV10A (B,C) UNTIL the input signal (vertical) AND output signal (horizontal) read the same on 2FWS-LV10A (B,C) controller.	Adjusts position using 2FWS-HIC-1010C until vertical and horizontal signals are equal.	**Pass/Fail**

Performance Steps	*Standard*	*Grade*
35. Place 2FWS-LV10A (B,C) in Auto by momentarily depressing the Auto (A) pushbutton on 2FWS-LV10A (B,C) controller.	Depresses 2FWS-HIC-1010C AUTO pushbutton and observe green AUTO light is lit.	**Pass/Fail**
Booth Operator: Malfunction FW10C is preset and when AUTO pushbutton is depressed, the malfunction becomes effective causing LV10C to go full open.		
As FWS-LV10C opens due to failure, FW flow and RPV water level will rise. Annunciator 603139 REACTOR WATER LEVEL HIGH/LOW alarms.	Observe and report 2FWS-LV10C is opening unexpectedly.	Sat/Unsat
36. Auto controller fails requiring manual control	Recognizes controller failure and returns 2FWS-HIC-1010C to manual control using controller pushbutton per N2-SOP-6 and stabilize RPV level to avoid Level 3 and Level 8 protective functions.	**Pass/Fail**
37. Report status to CRS	Status reported	Sat/Unsat

TERMINATING CUE: JPM is complete when level is being controlled manually in the normal band (between the low and high water level alarm setpoints).

RECORD STOP TIME_____

Initial Conditions:

1. The plant is operating at 65% power.
2. "C" Feedwater Pump is ready to be placed in service.
3. Pre-start checks are complete.

Initiating cue:

"(Operator's name), Remove Feedwater Pump "A" from service and place Feedwater Pump "C" in service, per N2-OP-3, Section F.13.0 Section F.13.0, commencing at step F.13.3"

13.0 Shifting Feedwater Pumps at 65% Power When Two Pumps Are In Service

NOTES:

1. All actions in this Subsection are performed at 2CEC*PNL851 and PNL603 unless otherwise noted.
2. Shifting Feedwater Pumps will be performed at approximately 65% power by securing one pump and starting the standby.
3. IF re-starting 2FWS-P1A (B,C) from operating temperatures (D.4.0), Electrical Maintenance should perform an inspection of windings at first opportunity.
4. Feedwater minimum flow setpoint will be lowered to 4 Kgpm for all three Feedwater Pumps and then restored to 8 Kgpm after pump swap(s) are complete.
5. Fourth Point Heater Drain Pumps may remain pumping forward during this evolution if feedwater heater level controllers are stable at 65% power, with the permission of the Shift Manager.
6. Steps 13.1 AND 13.2 may be performed simultaneously.
7. The following step requires key # 18 from the SM key locker.

****

CAUTION

Throughout this section if a plant casualty occurs such that Feedwater Pumps will remain on minimum flow for greater than 15 minutes, Reactor Power should be immediately reduced below 55% AND Feedwater Pump minimum flow should be returned to 8 Kgpm on all three Feedwater Pumps.

****

13.1 Adjust ALL three Feedwater Pump minimum flow valve setpoints as follows:

13.1.1 At 2CEC-PNL827, verify in auto AND lower tape setting for 2CNM-HIC68A, RX FD WTR P1A RECIRC controller, to 4 Kgpm. ____

13.1.2 At 2CEC-PNL827, verify in auto AND lower tape setting for 2CNM-HIC68B, RX FD WTR P1B RECIRC controller, to 4 Kgpm. ____

13.1.3 At 2CEC-PNL827, verify in auto AND lower tape setting for 2CNM-HIC68C, RX FD WTR P1C RECIRC controller, to 4 Kgpm. ____

13.2 Perform pre-start checks locally for the associated Feedwater pump to be started ONLY. ____

13.2.1 Verify cooling water valves are positioned as follows:

- 2CCS-V207A (B,C), RX FEED P1A (B,C) COOLER INLET ISOL, is open. .....(__)
- 2CCS-V206A, RX FEED P1A COOLER OUTLET ISOL, is open 6 notches. .....(__)
- 2CCS-V206B, RX FEED P1B COOLER OUTLET ISOL, is open 5.5 notches. .....(__)
- 2CCS-V206C, RX FEED P1B COOLER OUTLET ISOL, is open 4.5 notches. .....(__)
- 2CCS-V208A, RX FEED P1A COOLER OUTLET ISOL, is open 5 turns.....(__)
- 2CCS-V208B, RX FEED P1B COOLER OUTLET ISOL, is open 4.5 turns.....(__)
- 2CCS-V208C, RX FEED P1C COOLER OUTLET ISOL, is open 4 turns.....(__) ____

13.2.2 Using 2FWL-PDIS3A (B,C), confirm feedwater pump lube oil differential pressure is < 6 psid. ____

13.2.3 Using 2FWL-PI1A (B,C), confirm feedwater pump lube oil pressure is approximately 20 psig. ____

13.2.4 Using the flow sightglasses, confirm oil flow through each bearing. ____

13.2.5 Verify open the following valves:

- 2FWS-V165A (B,C), FD WTR PUMP 1A (B,C) WRMUP LN MAINT ISOL.....(__)
- 2FWS-V25A (B,C), FD WTR PUMP 1A (B,C) WRMUP LN ISOLATION.....(__) ____

NOTE: The grounding brush is located on the back side of the gearbox towards the motor side.

13.2.6 Verify that the grounding brush on 2FWS-GEAR1A (B,C) is making contact with the gear shaft. ____

13.2.7 Adjust Feedwater pump seal flows as follows as indicated on 2FWP-FI12E (C,A) AND FI12F (D,B):

a. Throttle open 2FWP-V35A (B,C) to obtain approximately 10.5 gpm (5 to 12 is acceptable). ____

b. Adjust 2FWP-V49A (B,C) AND V50A (B,C) as necessary so that inboard and outboard seal flows are within 1 gpm of each other. ____

13.3 Using N2-OP-101D, verify Reactor power has been reduced ≤ 65%.

****

CAUTION

Running the Feedwater Pumps at a minimum flow of 4 Kgpm for longer than 15 minutes may cause pump damage. The time that the Feedwater Pumps are at this reduced flow should be minimized.

****

13.4 Secure one of the two operating Feedwater Pumps 2FWS-P1A (B,C) as follows:

13.4.1 Depress Manual (M) pushbutton on 2FWS-LV10A (B,C) controller. ____

13.4.2 DURING this evolution, verify that the remaining level control valve 2FWS-LV10B (C,A) maintains desired water level. ____

13.4.3 Slowly close 2FWS-LV10A (B,C) to the 2 to 4% valve position by using the slow CLOSE detent pushbutton on 2FWS-LV10A (B,C) controller. ____

13.4.4 Close 2FWS-LV10A (B,C) to the 0% valve position by depressing the fast CLOSE detent pushbutton on 2FWS-LV10A (B,C) controller. ____

13.4.5 Secure 2FWS-P1A (B,C), REACTOR FW PMP 1A (B,C), by placing its control switch to Normal-After-STOP (Green flagged). ____

13.4.6 Verify 2FWL-P2A (B,C), AUX LUBE OIL PMP 2A (B,C), auto starts. ____

13.4.7 Confirm 2FWR-FV2A (B,C), REACTOR FD P1A (B,C) RECIRC VLV, closes immediately. ____

13.4.8 At 2FWS-P1A (B,C), place the Auxiliary Lube Oil Pump control switch 2FWL-LCS752 (753, 754) to START AND verify 2FWL-P2A (B,C) remains running. _____

13.5 IF 2FWS-P1A (B,C) is being placed in standby, open 2FWS-V25A (B,C) FD WTR PUMP 1A (B,C) WRMUP LN ISOLATION. _____

NOTE: The following step requires key # 18 from the SM key locker.

13.6 IF the plant will remain at 65 % power for more than a shift, adjust ALL Feedwater Pump minimum flow valve setpoints as follows:

13.6.1 At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68A, RX FD WTR P1A RECIRC controller to 8 k gpm. _____

13.6.2 At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68B, RX FD WTR P1B RECIRC controller to 8 k gpm. _____

13.6.3 At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68C, RX FD WTR P1C RECIRC controller to 8 k gpm. _____

NOTE: The following step will be performed prior to starting the standby feed pump.

13.7 Perform Feedwater Pump Warmup for the pump being started per subsection F.14.0. _____

13.8 Adjust ALL three Feedwater Pump minimum flow valve setpoints as follows:

13.8.1 At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68A, RX FD WTR P1A RECIRC controller to 4 k gpm. _____

13.8.2 At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68B, RX FD WTR P1B RECIRC controller to 4 k gpm. _____

13.8.3 At 2CEC-PNL827, verify in auto AND raise tape setting for 1CNM-HIC68C, RX FD WTR P1C RECIRC controller to 4 k gpm. _____

13.9 Start the stand by Feedwater Pump 2FWS-P1A (B,C) as follows:

13.9.1 Verify open 2FWS-MOV47A (B,C), REACTOR FW PMP 1A (B,C) DISCH BLOCK VLV. _____

13.9.2 IF applicable, verify open 2FWS-V103A (B), FEEDWATER PUMP 1A (B) LOW FLOW LINE ISOL. _____

13.9.3 IF required, start the standby Condensate pump by placing 2CNM-P1A (B,C) control switch in Normal-After-START (Red-flagged). _____

13.9.4 Verify sufficient Condensate Iron Prefilters are in service to support the maximum expected Condensate System flow rate. Refer to N2-OP-5A, Attachment 1. _____

NOTE: Nine Condensate Demineralizers in service is the preferred lineup in the next step.

13.9.5 Verify at least eight Condensate Demineralizers are in service in accordance with N2-OP-5. _____

(C1) 13.9.6 IF all three Heater Drain pumps are NOT pumping forward, start the standby Condensate Booster pump as follows:

a. Using 2CNM-PI39A (B,C), locally confirm condensate booster pump suction pressure is > 150 psig. _____

b. Start 2CNM-P2A (B,C), CONDENSATE BOOSTER PMP 2A (B,C), by placing the control switch to Normal-After-START (Red-flagged). _____

c. At 2CNM-P2A (B,C), place the Auxiliary Lube Oil Pump control switch 2CNO-LCS706 (707, 708) to AUTO AND verify 2CNO-P2A (B,C) stops. _____

13.9.7 For the Feedwater pump to be started, verify the level controllers are in Manual (M) AND valve positions are at 0% open. _____

* *

CAUTION

The next two steps shall be performed concurrently.

* *

13.9.8 IF feedwater pump suction pressure drops to 220 psig, start the third Condensate Booster pump if NOT already operating. _____

NOTE: IF 2FWS-P1C is selected to start, the preferable power supply is from 2NPS-SWG003 if 2FWS-P1A will be left running, or 2NPS-SWG001 if 2FWS-P1B is to be left running.

13.9.9 Start 2FWS-P1A (B,C) REACTOR FD P1A (B,C), by placing the control switch to Normal-After-Start (red flagged). ____

13.9.10 Confirm 2FWR-FV2A (B,C), REACTOR FD P1A (B,C) RECIRC VLV, starts to open. ____

13.9.11 WHEN 2FWR-FV2A (B,C) is ≥ 15% open, confirm 2FWS-P1A (B,C) starts. ____

13.9.12 Using 2CNM-FI68A (B,C), RX FD WTR P1A (B,C) FLOW meter, confirm 2FWS-P1A (B,C) flow is approximately 4000 gpm. ____

NOTES:

1. The following two steps are performed locally at the associated Feedwater pump just started.

2. The feedwater pump may be loaded as 2FWS-V25A (B,C) is shut.

13.9.13 Place the Auxiliary Lube Oil Pump control switch 2FWL-LCS752 (753, 754) to AUTO AND verify 2FWL-P2A (B,C) stops. ____

13.9.14 Close 2FWS-V25A (B,C), FD WTR PUMP 1A (B,C) WRMUP LN ISOLATION. ____

NOTES:

1. When opening 2FWS-LV10A (B,C) from a fully shut position, the initial 2 seconds of valve open signal serve only to "wake up" the control circuit computer with no additional action. Pressing the valve open push button for an additional 10 seconds in manual slow detent (2% position per second) serves to take the control circuit from the minus (–) 20% position to the 0% position PRIOR to any actual valve position indicator movement taking place.

2. Once the LV10 valve circuitry reaches the 0% position, the first 1.5% to 2% of the valve stroke, as indicated by the position indicator, is used to release the seating force held by the compression of the SB spring. Therefore, the valve stem will not be lifted to establish flow until approximately 2% valve indication is reached. Reactor water level should be closely monitored during this evolution.

* *

CAUTION

The fast detent position (20% position per second) should NOT be used to take the control circuit from the minus (--) 20% to 0% position as the LV10 will likely open beyond the desired position as the valve can only physically open at 6% per second, and will continue to open once the operator releases the open pushbutton if the demand signal is beyond the 0% position until valve position "catches up" to the circuit controller demand.

* *

13.10 Throttle open 2FWS-LV10A (B,C), Feedwater Pump 1A (B,C) Level Control Valve, by using the OPEN detent pushbutton on 2FWS-LV10A (B,C) controller. _____

13.11 Verify 2FWS-LV10B (C,A) closes gradually as 2FWS-LV10A (B,C) slowly opens. _____

13.12 Continue to slowly open 2FWS-LV10A (B,C) UNTIL the input signal (vertical) AND output signal (horizontal) read the same on 2FWS-LV10A (B,C) controller. _____

13.13 Place 2FWS-LV10A (B,C) in Auto by momentarily depressing the Auto (A) pushbutton on 2FWS-LV10A (B,C) controller. _____

13.14 IF additional feedwater pump swaps are to be performed to achieve the final lineup, go to step 13.2. _____

NOTE: The following step requires key # 18 from the SM key locker.

13.15 Adjust ALL Feedwater Pump minimum flow valve setpoints as follows:

13.15.1 At 2CEC-PNL827, verify in auto AND raise tape setting for 2CNM-HIC68A, RX FD WTR P1A RECIRC controller to 8 K gpm. ____

13.15.2 At 2CEC-PNL827, verify in auto AND raise tape setting for 2CNM-HIC68B, RX FD WTR P1B RECIRC controller to 8 K gpm. ____

13.15.3 At 2CEC-PNL827, verify in auto AND raise tape setting for 2CNM-HIC68C, RX FD WTR P1C RECIRC controller to 8 K gpm. ____

****

CAUTION

Positive bias should not be used on 2FWS-LV10A (C), because the valve will not fully close when the controller is given an automatic closure signal.

****

13.16 IF desired to operate with equal 2FWS-LV10 positions, perform the following:

13.16.1 Determine the positions of the two operating 2FWS-LV10 valves as indicated on the controllers. ____

13.16.2 Slowly adjust the bias tape setting on 2FWS-LV10A OR 2FWS-LV10C controller UNTIL the valve positions are equal. ____

13.17 IF desired to operate with unequal 2FWS-LV10 positions, slowly adjust the negative bias tape setting on 2FWS-LV10A OR LV10C controller UNTIL desired valve position is reached. ____

NOTE: Normal lineup for 100% Reactor power is three Condensate pumps, three Condensate Booster pumps, three Heater Drain pumps and two Feedwater pumps in service.

13.18 IF directed by the Shift Manager, stop the third Condensate Booster pump AND place it in standby in accordance with Subsection G.3.0. ____

13.19 IF necessary, remove Condensate Demineralizers from service in accordance with N2-OP-5. ____

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Initiate RCIC and Respond To Overspeed Trip (Alternate) Revision: NRC 2008

Task Number: N2-217000-01048

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X_Perform _____Simulate

Evaluation Location:_____Plant ____X__Simulator

Expected Completion Time: 25 minutes Time Critical Task: NO Alternate Path Task: YES

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC 183 Post Scram
2. Set remote RC01, RCIC Mech OS Trip to actuate when zarctum1 (RCIC speed) > 0.5 (3000 rpm)

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-35
2. N2-ARP-01 601305
3. NUREG K/A 217000 A4.02

Tools and Equipment:

1. None

Task Standard:
RCIC Trip/Throttle valve (2ICS*MOV150) is reset and injection established from P602.

Initial Conditions:
1. The plant has experienced a reactor scram and loss of feedwater.
2. N2-EOP-RPV is being implemented.

Initiating cue:
"(Operator's name), Initiate RCIC and maintain RPV water level between 160 inches and 200 inches".

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	❑ Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ___		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	❑ N2-EOP-HC-2 Attachment 5, Automatic RCIC Injection is obtained/referenced.	Sat/Unsat
3. ARM and DEPRESS RCIC MANUAL INITIATION pushbutton.	❑ ARM and DEPRESS RCIC MANUAL INITIATION pushbutton.	**Pass/Fail**
4. Verify system startup	❑ GLAND SEAL SYSTEM AIR COMPRESSOR starts. Red light ON. Green light OFF.	Sat/Unsat
	❑ ICS*MOV116 Cooling Water MOV opens. Red light ON. Green light OFF.	Sat/Unsat
*When 2ICS*MOV120 Steam Admission Valve opens, turbine speed and pump discharge pressure rise.*	❑ ICS*MOV120 Steam opens. Red light ON. Green light OFF.	Sat/Unsat
*When turbine speed exceeds 3000 RPM, 2ICS*MOV150 Trip Throttle Valve closes due to unexpected overspeed trip.*	❑ ICS*MOV126 opens. Red light ON. Green light OFF.	Sat/Unsat
5. Observes RCIC Turbine trip	❑ Observes Annunciators 601305 lit.	Sat/Unsat
Cue: When informed of RCIC Turbine trip, instruct candidate to "Reset the RCIC Turbine from P601 and reestablish injection to the RPV"	❑ Observes TURBINE TRIPPED amber postage stamp lit.	Sat/Unsat
	❑ Recognizes RCIC Turbine tripped	Sat/Unsat
	❑ Reports RCIC Turbine Tripped to SM	Sat/Unsat

Performance Steps	Standard	Grade
Cue: If directed to investigate, report overspeed trip mechanism is tripped.	☐ Dispatches operator to RCIC Room to investigate.	Sat/Unsat
6. Reset ICS*MOV150 at P601 per N2-OP-35 H.1.0, RCIC Turbine Reset.		
7. Verify cause is understood and corrected.	☐ Verify cause is understood and corrected.	Sat/Unsat
8. Places ICS*MOV150 switch to CLOSED until BOTH valve positions indicate valve is closed	☐ Places ICS*MOV150 switch to CLOSED until BOTH valve positions indicate valve is closed.(P601)	**Pass/Fail**
	☐ Observes ICS*MOV150 Green light **ON** (P601 Apron)	Sat/Unsat
	☐ Observes ICS*MOV150 Red light **OFF** (P601 Apron)	Sat/Unsat
	☐ Observes Trip/Throttle valve Green light **ON** (P601 verical)	Sat/Unsat
	☐ Observes Trip/Throttle valve Red light **OFF** (P601 vertical)	Sat/Unsat
9. Verify turbine speed is less than 3500 RPM.	☐ Verify turbine speed is less than 3500 RPM.	Sat/Unsat
10. IF RCIC turbine tripped on overspeed OR was locally tripped. Locally reset trip mechanism. **BOOTH OPERATOR: REMOTE RC01 to RESET.** **CUE: Report trip mechanism is reset.**	☐ Directs operator to locally reset the overspeed trip mechanism.	Sat/Unsat
11. IF an initiation signal is sealed in, perform the following:		
a. Throttle open ICS*MOV150	☐ Places ICS*MOV150 switch to OPEN (P601)	**Pass/Fail**

Performance Steps	Standard	Grade
	❑ Observes ICS*MOV150 Green light **OFF** (P601 Apron)	Sat/Unsat
	❑ Observes ICS*MOV150 Red light **ON** (P601 Apron)	Sat/Unsat
	❑ Observes Trip/Throttle valve Green light **OFF** (P601 verical)	Sat/Unsat
	☐ Observes Trip/Throttle valve Red light **ON** (P601 vertical)	Sat/Unsat
b. At 2ICS*MOV150, verify proper latching of the latch lever and trip hook. **CUE: Report trip mechanism is properly latched.**	❑ Directs operator to verify proper latching.	Sat/Unsat
c. Verify RCIC restarts	❑ Observe turbine speed and pump discharge pressure are rising.	Sat/Unsat
12. Establish RPV Injection	❑ Places ICS*MOV126 switch to OPEN (P601)	**Pass/Fail/ NA**
NOTE: IF RPV water level drops below 108 inches when the turbine is reset (MOV150 re-opened), ICS*MOV126 RCIC Injection Valve will automatically open and this step will not be a critical step.	❑ When RCIC flow is > 220 gpm, observe ICS*MOV143 Min Flow closes.	Sat/Unsat
	❑ When RCIC discharge pressure > reactor pressure, ICS*MOV156 and 157 Injection Check Valves open.	Sat/Unsat
	❑ RCIC Injection controlled at 600 gpm.	Sat/Unsat
13. Report completion.	❑ Report RCIC injecting.	Sat/Unsat

TERMINATING CUE: RCIC Trip/Throttle valve (2ICS*MOV150) is reset and injection established from P602.

RECORD STOP TIME_____

Initial Conditions:

1. **The plant has experienced a reactor scram and loss of feedwater.**
2. **N2-EOP-RPV is being implemented.**

Initiating cue:
"(Operator's name), Initiate RCIC and maintain RPV water level between 160 inches and 200 inches".

H. OFF NORMAL PROCEDURES

1.0 RCIC Turbine Reset

NOTE: The following Steps are performed at 2CEC*PNL601 unless noted otherwise.

(C1) 1.1 Verify cause of Turbine Trip is understood AND has been corrected.

1.2 IF a RCIC initiation signal is NOT sealed in, verify closed ICS*MOV120, TURB STM SUPPLY VLV.

1.3 Place 2ICS*MOV150 control switch to CLOSE, UNTIL BOTH valve position indications indicate valve is closed.

1.4 Verify turbine speed is less than 3500 RPM.

NOTE: The spring-loaded connecting rod must be pulled against spring force of the emergency trip spring to engage trip hook to latch lever on 2ICS*MOV150.

1.5 IF RCIC turbine tripped on overspeed OR was locally tripped, locally reset trip mechanism.

NOTE: If an initiation signal is sealed in, 2ICS*MOV150 should be jogged open. RCIC will restart and this procedure may be exited.

1.6 IF an initiation signal is sealed in, perform the following:

1.6.1 Throttle open 2ICS*MOV150.

NOTE: Proper latching of 2ICS*MOV150 Latch Lever and Trip hook can be verified by observing that the Trip hook is approximately fully engaged onto the Latch Lever as illustrated by Attachment 2.

(C6) 1.6.2 At 2ICS*MOV150, verify proper latching of the Latch Lever AND Trip Hook.

1.6.3 Verify RCIC restarts.

1.6.4 Exit this subsection.

* *

CAUTION

The Turbine Trip and Throttle Valve, 2ICS*MOV150, should not be tripped from full open position without steam flow available to avoid valve damage (see Precaution D.12.0).

* *

1.7 Open ICS*MOV150, TURBINE TRIP THROTTLE VLV just UNTIL red open light illuminates.

H. OFF NORMAL PROCEDURES

1.8 Depress TURBINE TRIPPED pushbutton AND verify ICS*MOV150 Closes.

1.9 Relatch AND open 2ICS*MOV150, as follows:

1.9.1 Hold 2ICS*MOV150 control switch in CLOSE UNTIL BOTH valve green closed lights are lit.

1.9.2 Open 2ICS*MOV150.

1.10 Verify Standby Condition Status Checks per Subsection F.1.0.

2.0 RCIC Turbine Reset With A Division I LOCA Signal Sealed In

NOTES: 1. 2ICS*MOV150 is load shed from the DIV I electrical bus when a DIV I LOCA signal is sealed in. Any RCIC turbine trip under this condition will have to be reset locally.

2. See Attachment 2 for a diagram of components referenced in this subsection.

(C1) 2.1 Verify cause of Turbine trip is understood AND has been corrected.

2.2 IF time permits, open breaker 2DMS*MCCA1-3D, 2ICS*MOV150 power supply.

2.3 Dispatch an Operator to RCIC room.

2.4 IF a RCIC initiation signal is NOT sealed in, close ICS*MOV120, TURB STM SUPPLY VLV, at 2CEC*PNL601.

NOTE: If the RCIC turbine was NOT locally tripped OR did NOT trip on overspeed the Latch Lever should engage the Trip Hook.

2.5 De-clutch AND manually turn ICS*MOV150, TURBINE TRIP THROTTLE VLV handwheel in clockwise direction UNTIL the Sliding Nut AND Latch Lever reach their upper limit.

2.6 Verify turbine speed is less than 3500 RPM.

2.7 IF RCIC turbine tripped on overspeed OR was locally tripped, reset trip mechanism locally as follows:

2.7.1 Pull spring-loaded connecting rod against spring force of emergency trip spring to engage trip hook to latch lever on 2ICS*MOV150. See Attachment 2.

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Shift RBCLCW and TBCLCW Pumps Revision: NRC 2008

Task Number: N2-SOP-14-01001

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X_____Perform _____Simulate

Evaluation Location:_____Plant ____X__Simulator

Expected Completion Time: 30 minutes Time Critical Task: NO Alternate Path Task: YES

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if <u>any</u> critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC 184
2. Remote CW-27 103.9°F, triggered from stopping CCS-P1A
3. Display computer point CCSFA01 on a monitor.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-13, Rev 07
2. N2-OP-14, Rev 05
3. ARP 601244
4. NUREG K/A 400000 A4.01

Tools and Equipment:

1. None

Task Standard:

RBCLCW and TBCLCW pumps are swapped and temperature is being controlled manually.

Initial Conditions:

1. The plant is operating at full power.

Initiating cue:

"(Operator's name), shift running RBCLCW Main Pumps from "A" to "C", then shift running TBCLCW Pumps from "A" to "C" to support equipment rotation".

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-OP-13 & N2-OP-14 obtained. Precautions & limitations reviewed	Sat/Unsat
N2-OP-13 F.2.0 Start CCP-P1C		
3. For the Main CCP pump to be started, verify the pump casing is free of air as follows: Uncap AND throttle open 2CCP-V195 (V196, V197), P1A (B,C) VENT. WHEN a steady stream of water is observed, close AND recap 2CCP-V195 (V196, V197).	Dispatches operator to vent CCP-P1C casing using 2CCP-V197.	Sat/Unsat
CUE: Checked by local operator		
4. For the Main CCP pump to be started, at panel 2CEC*P601, start 2CCP-P1A (B,C), PMP 1A (B,C), by placing control switch in Normal-After-START (red flagged).	Places 2CCP-P1C control switch in red flagged position.	**Pass/Fail**
Note: The applicant will check board indications for amps and discharge pressure		
5. Confirm normal operating indications in accordance with Subsection F.1.0.	Ensures checked by local operator	Sat/Unsat

Performance Steps	Standard	Grade
CUE: Local indications are normal		
N2-OP-13 F.3.0 Stop CCP-P1A		
6. At 2CEC*PNL601, secure 2CCP-P1A (B,C), PMP 1A (B,C), by placing control switch in Normal-After-STOP. (Green flagged)	Places 2CCP-P1A control switch in green flagged position	**Pass/Fail**
7. IF required, place 2CCP-P1A (B,C) control switch in PULL TO LOCK.	May request required status	Sat/Unsat
8. Confirm normal operating indications in accordance with Subsection F.1.0.	Ensures local checks are made	Sat/Unsat
CUE: When asked, report local indications are normal.		
Examiner Note: The applicant will now refer to N2-OP-14 for TBCLCW operations		
N2-OP-14 F.3.0 Start CCS-P1C		
NOTES: 1. CCS system flow of greater than 8000 gpm requires more than one heat exchanger in service. 2. Actions in this Subsection are performed at 2CEC*PNL601 unless otherwise specified.		
9. IF time permits, perform the following: Dispatch an Operator to the pump to perform prestart inspection AND observe pump during start.	Dispatched operator to 2CCS-P1C perform prestart inspection and observe pump start.	Sat/Unsat
For the pump to be started, close 2CCS-V303A(B,C), TBCLC PUMP 1A(B,C) STOP CHECK.	Directs operator to close 2CCS-V303C TBCLC PUMP 1A(B,C) STOP CHECK	Sat/Unsat

Performance Steps	Standard	Grade
CUE: Pre-start checks complete; stop-check valve 2CCS-V303C is CLOSED		
10. Start 2CCS-P1A(B,C), PMP 1A(B,C), by placing the control switch to Normal-After-START (red flagged).	Places 2CCS-P1C control switch in red flagged position	**Pass/Fail**
11. Slowly open 2CCS-V303A(B,C).	Directs local operator to slowly open 2CCS-V303C.	Sat/Unsat
CUE: Valve has been opened		
12. Confirm normal operating indications in accordance with Subsection F.1.0.	Ensures checked by local operator	Sat/Unsat
CUE: When asked, report local indications are normal.		
N2-OP-14 F.4.0 Stop CCS-P1A 13. NOTES: 1. Actions in this Subsection are performed at 2CEC*PNL601 unless otherwise specified. 2. CCS Pump runout is 8,500 gpm. If system flow is greater than 8,000 gpm for one pump operations or 16,000 gpm for two pump operations, then starting an additional pump increases the probability of damaging tube vibrations in the CCS heat exchangers. Three CCS pump operation shall be avoided unless shifting of pumps is required. Confirm the CCS pump is NOT required for CCS System flow as follows: Computer Point CCSFA01 — Number of Running Pumps 1,000 - 8,200 GPM — 1 8,200 - 16,400 GPM — 2	Checks indications	Sat/Unsat
14. NOTE: 2CCS-V303A (B,C) is located at 2CCS-P1A (B,C) on TB Elev 250 Southwest.	Directs local operator to close 2CCS-V303A.	Sat/Unsat

Performance Steps	Standard	Grade
Close 2CCS-V303A (B,C), TBCLC PUMP 1A (B,C) STOP CHECK. ***Cue: Valve is closed***		
15. Secure 2CCS-P1A (B,C), PMP 1A (B,C), by placing the control switch in Normal-After-STOP. (Green flagged) ***Booth Operator: Malfunction to fail temperature controller REMOTE CW-27 103.9°F when CCS-P1A is stopped.***	Places 2CCS-P1A control switch in green flagged position	**Pass/Fail**
16. IF required, place 2CCS-P1A (B,C) control switch in PULL TO LOCK.	Determines 2CCS-P1A control switch is to remain green flagged, based on initiating cue (equipment rotation).	Sat/Unsat
17. Confirm normal operating indications for the running CCS Pump(s) in accordance with Subsection F.1.0. ***Examiner Note: Applicant will respond to annunciator 601244 and Computer Point CCSTC04 for TBCLCW HX DISCH TEMP***	Ensures checked by local operator	Sat/Unsat
18. Determines temp controller is failed and refers to ARP 601244	Determines ARP 601244 actions apply	Sat/Unsat
19. Places 2CCS-TIK104 in "M" Manual *2CCS-P1A may automatically restart due to the transient of repositioning the temperature control valve.*	Places controller TBCLC HEAT EXCHANGER TEMP CONTROLLER 2CCS-TIK104 in "M" Manual by depressing M button.	**Pass/Fail**
20. Manually controls temperature	Adjusts temperature downward to approximately 85°F (80 to 95), indicated on TBCLC HEAT EXCHANGER TEMP CONTROLLER 2CCS-TIK104	**Pass/Fail**
21. If 2CCS-P1A restarts, stops 2CCS-P1A	If 2CCS-P1A restarts, stops 2CCS-P1A	Sat/Unsat/ NA

Performance Steps	*Standard*	*Grade*
22. Report status to CRS	Report status.	Sat/Unsat

TERMINATING CUE: RBCLCW and TBCLCW pumps are swapped and temperature is being controlled manually.

RECORD STOP TIME_____

Initial Conditions:

1. The plant is operating at full power.

Initiating cue:

"(Operator's name), shift running RBCLCW Main Pumps from "A" to "C", then shift running TBCLCW Pumps from "A" to "C" to support equipment rotation".

E. STARTUP (Cont)

****

CAUTION

Crankcase heaters must be energized for at least 24 hours prior to starting the chiller compressor(s). Failure to do so could result in reduced lubrication and possible failure of the compressor. Crankcase heaters are energized when power is applied to the Chiller Skid.

****

5.5 PRIOR to starting an ADC Chiller, verify crankcase heaters have been energized for at least 24 hours.

5.6 Start the ADC Chiller Skid by placing the ON/OFF switch in the ON position.

5.7 Inside the control panel, set the control thermostat for the chiller to a nominal 70°F.

NOTE: The ADC Chiller thermostat will be adjusted to establish chilled water discharge temperature between 55 - 70°F. This is to maintain average Drywell temperature ≥ 75°F with no Drywell temperature below the minimum 70°F requirement.

(C1) 5.8 Adjust the ADC Chiller thermostat to establish chilled water discharge temperature between 55 - 70°F.

5.9 Using N2-PM-S014, monitor Drywell temperature.

F. NORMAL OPERATIONS

1.0 System Operating Status Checks

NOTE: Actions in this Subsection are performed at 2CEC*PNL601 unless otherwise specified.

1.1 Confirm CCP System normal operating indications are as follows:

- 2CCP-P1A (B,C) current is < 20 amps as indicated on ammeter AM-2CCPA51 (B51, C51), CCP-P1A (B,C) CURRENT.
- 2CCP-P3A (B,C) current is < 20 amps as indicated on ammeter AM-2CCPA60 (B60, C60), CCP-P3A (B,C) CURRENT.
- Main CCP Pump discharge header pressure is > 28 psig as indicated on 2CCP-PI125, PMPS 1A,B,C DISCH HDR PRESS meter.

1.1 (Cont)

- CCP Booster Pump discharge header pressure is > 50 psig as indicated on 2CCP-PI107, BSTR PMPS DISCH HDR PRESS meter.
- 2CCP-TIK108, RBCLC HEAT EXCHANGER TEMP CONTROLLER, is in Auto AND controlling temperature at 86°F.

NOTE: The next three steps are performed locally on Reactor Building Elev 328 by the main CCP Pumps.

1.2 For the running main CCP Pump(s), confirm the following:

- Pump discharge pressure is > 42 psig as indicated on 2CCP-PI58A (B,C).
- Pump suction pressure is > 0 psig as indicated on 2CCP-PI57A (B,C).
- No evidence of pump cavitation (unusual noise, suction/discharge pressure fluctuations).

1.3 For the idle main CCP Pump(s), verify the casing is free of air as follows:

1.3.1 Uncap AND throttle open 2CCP-V195 (V196, V197), P1A (B,C) VENT.

1.3.2 WHEN a steady stream of water is observed, close AND recap 2CCP-V195 (V196, V197).

1.4 Confirm 2CCP-TK1 level is being maintained 34 - 58" as indicated on 2CCP-LI121.

NOTE: The next step is performed locally on Reactor Building Elev 196 by the CCP Booster Pumps.

1.5 For the running CCP Booster Pump(s), confirm the following:

- Pump discharge pressure is > 50 psig as indicated on 2CCP-PI46A (B,C).
- Pump suction pressure is > 5 psig as indicated on 2CCP-PI45A (B,C).
- No evidence of pump cavitation (unusual noise, suction/discharge pressure fluctuations).

NOTE: The next step is performed locally on North Aux Bay Elev 175 in the CCP Heat Exchanger Room.

1.6 For the in service CCP Heat Exchanger(s), confirm the following:

- Service water pressure drop across 2CCP-E1A (B,C) is < 8 psid as indicated on 2SWP-PDI147A (B,C).
- With two heat exchangers in service, Service Water flow is ≤ 12,000 gpm as indicated on 2SWP-FI530.
- With three heat exchangers in service, SWP flow to CCP is limited to ≤ 12,000 gpm with SWP temperature < 82° F and ≤ 10,000 gpm with SWP temperature ≥ 82° F.
- With less than four OPERABLE Service Water pumps available and in operation AND NOT in Operational Condition 1, 2 OR 3, Service Water divisional cross-tie header pressure as indicated by SWPPA07(08) OR SWP*PI2A(B) is being maintained greater than OR equal to 63.5 psig.

NOTE: The next two steps are performed locally in the IAS Compressor area on Turbine Building Elev 250.

1.7 For the running CCP Mini Loop Pump, confirm the following:

- Pump discharge header pressure is > 45 psig as indicated on 2CCP-PI136.
- Pump suction pressure is > 4 psig as indicated on 2CCP-PI25A(B).
- No evidence of pump cavitation (unusual noise, suction/discharge fluctuations).

1.8 Confirm 2CCP-TK2 level is being maintained 6" - 24" as indicated on 2CCP-LI127.

2.0 Starting An Idle Main CCP Pump

NOTE: Actions in this Subsection are performed locally by 2CCP-P1A(B,C) on Reactor Building Elev. 328 unless otherwise specified.

2.1 For the Main CCP pump to be started, verify the pump casing is free of air as follows:

2.1.1 Uncap AND throttle open 2CCP-V195 (V196, V197), P1A (B,C) VENT.

2.1.2 WHEN a steady stream of water is observed, close AND recap 2CCP-V195 (V196, V197).

2.2 For the Main CCP pump to be started, at panel 2CEC*P601, start 2CCP-P1A (B,C), PMP 1A (B,C), by placing control switch in Normal-After-START (red flagged).

2.3 Confirm normal operating indications in accordance with Subsection F.1.0.

3.0 Securing An Operating Main CCP Pump

NOTE: Actions in this Subsection are performed locally by 2CCP-P1A (B,C) on Reactor Building Elev 328 unless otherwise specified.

3.1 At 2CEC*PNL601, secure 2CCP-P1A (B,C), PMP 1A (B,C), by placing control switch in Normal-After-STOP. (Green flagged)

3.2 IF required, place 2CCP-P1A (B,C) control switch in PULL TO LOCK.

3.3 Confirm normal operating indications in accordance with Subsection F.1.0.

4.0 Starting An Idle CCP Booster Pump

NOTE: Actions in this Subsection are performed locally by 2CCP-P3A (B,C) on Reactor Building Elev 196 unless otherwise specified.

4.1 For the CCP Booster Pump to be started, verify the casing is free of air as follows:

4.1.1 Uncap AND throttle open 2CCP-V795 (V800, V805), P3A (B,C) VENT.

4.1.2 WHEN a steady stream of water is observed, close AND recap 2CCP-V795 (V800, V805).

4.2 For the CCP Booster Pump to be started, at 2CEC*PNL601, start 2CCP-P3A (B,C), BOOSTER PMP 3A (B,C), by placing the control switch in Normal-After-START (Red flagged)

4.3 Confirm normal operating indications in accordance with Subsection F.1.0.

5.0 Securing An Operating CCP Booster Pump

NOTE: Actions in this Subsection are performed locally by 2CCP-P3A (B,C) on Reactor Building Elev 196 unless otherwise specified.

5.1 At 2CEC*PNL601, secure 2CCP-P3A (B,C), BOOSTER PMP 3A (B,C), by placing the control switch in Normal-After-STOP (Green flagged)

5.2 IF required, place 2CCP-P3A (B,C) control switch in PULL TO LOCK.

5.3 Confirm normal operating indications in accordance with Subsection F.1.0.

F. NORMAL OPERATIONS

1.0 (SOP) Normal Operating Indications

NOTE: Indications used in this Subsection are located on 2CEC*PNL601 unless otherwise specified.

System normal operating conditions are as follows:

- Pump discharge pressure is 107-113 (120-135 psig when three pumps running) psig as indicated on 2CCS-PI149, TBCLC PMPS DISCH HDR PRESS meter.
- 2CCS-P1A (B,C) current is < 58.5 amps as indicated on ammeter AM-2CCSA51 (B51, C51), CCS-P1A (B,C) CURRENT.
- 2CCS-TIK104, TBCLC HEAT EXCHANGER TEMP CONTROLLER, is in Auto AND controlling temperature at ≈ 85°F.

NOTE: CCS pump runout is 8,500 gpm. If system flow is greater than 8,000 gpm for one pump operations or 16,000 gpm for two pump operations, then starting an additional pump increases the probability of damaging tube vibrations in the CCS heat exchangers. Three CCS pump operation shall be avoided unless shifting of pumps is required.

- CCS System flow AND the number of running CCS Pumps is consistent with the following table:

Computer Point CCSFA01, TBCLCW PMP SUCTION FLW	Number of Running Pumps
1,000 - 8,200 GPM1	1
8,200 - 16,400 GPM2	2

NOTE: The following indications are located by the CCS Pumps on TB Elev 250 Southwest.

- Discharge pressure is 107-113 (120-135 psig when three pumps running) psig as indicated on 2CCS-PI1A (B,C).
- Suction pressure is stable as indicated on 2CCS-PI16A (B,C).
- Packing gland leakoff is maintaining the gland cool enough to maintain touch approximately 5 seconds.

NOTE: For 2CCS-P1A (B,C) leakage less than a constant drip could cause packing to overheat.

- For 2CCS-P1A (B,C) packing gland leakoff is reduced to a constant drip.
- Operating sound is normal.

F. NORMAL OPERATIONS (Cont)

NOTE: 2CCS-LI107 is located by 2CCS-TK1, Surge And Makeup Tank, on Turbine Building Elev 326 Southwest side.

- 2CCS-TK1 level is 55" - 70" as indicated on 2CCS-LI107.

2.0 Filling And Venting An Idle Pump With System Operating

NOTES:
1. Actions in this Subsection are performed at 2CCS-P1A (B,C) unless otherwise specified.
2. This Subsection assumes that 2CCS-P1A (B,C) is isolated, drained and the markup is ready to be cleared.

2.1 Close the following valves:

- 2CCS-V296A (B,C), STRAINER 1A (B,C) DRAIN.
- 2CCS-V6A (B,C), TBCLC PUMP 1A (B,C) CASING DRAIN.

2.2 Verify open 2CCS-V307A (B,C), TBCLC PUMP 1A (B,C) CASING VENT.

2.3 Verify a hose is connected to 2CCS-V307A (B,C) AND routed to a drain.

NOTE: 2CCS-V260, TBCLC PUMP DISCHARGE HEADER SAMPLE CONNECTION, is located on the discharge header upstream of 2CCS-TV104.

2.4 Connect a hose from 2CCS-V260 to 2CCS-V6A (B,C).

2.5 Throttle open 2CCS-V260.

2.6 Throttle open 2CCS-V6A (B,C) to commence filling the pump.

2.7 WHEN a steady stream of water is coming from 2CCS-V307A (B,C), close 2CCS-V307A (B,C).

2.8 Close the following valves:

- 2CCS-V6A (B,C)
- 2CCS-V260

2.9 Slowly crack open 2CCS-V1A (B,C), TBCLC PUMP 1A (B,C) SUCTION ISOLATION.

2.10 WHEN 2CCS-P1A (B,C) suction pressure is approximately that of the running pumps as indicated on 2CCS-PI16A (B,C), slowly open 2CCS-V1A (B,C) to the full open position.

F. NORMAL OPERATIONS (Cont)

2.11 Open 2CCS-V303A (B,C), TBCLC PUMP 1A (B,C) STOP CHECK, manual operator to the open position.

2.12 Remove hoses AND replace caps on the following valves:

- 2CCS-V260
- 2CCS-V6A (B,C)
- 2CCS-V307A (B,C)

3.0 (SOP) Starting An Idle Pump

NOTES:

1. CCS system flow of greater than 8000 gpm requires more than one heat exchanger in service.
2. Actions in this Subsection are performed at 2CEC*PNL601 unless otherwise specified.

3.1 IF time permits, perform the following:

3.1.1 Dispatch an Operator to the pump to perform prestart inspection AND observe pump during start.

3.1.2 For the pump to be started, close 2CCS-V303A(B,C), TBCLC PUMP 1A(B,C) STOP CHECK.

3.2 Start 2CCS-P1A(B,C), PMP 1A(B,C), by placing the control switch to Normal-After-START (red flagged).

3.3 Slowly open 2CCS-V303A(B,C).

3.4 Confirm normal operating indications in accordance with Subsection F.1.0.

4.0 Secure An Operating Pump

NOTES:

1. Actions in this Subsection are performed at 2CEC*PNL601 unless otherwise specified.
2. CCS Pump runout is 8,500 gpm. If system flow is greater than 8,000 gpm for one pump operations or 16,000 gpm for two pump operations, then starting an additional pump increases the probability of damaging tube vibrations in the CCS heat exchangers. Three CCS pump operation shall be avoided unless shifting of pumps is required.

4.1 Confirm the CCS pump is NOT required for CCS System flow as follows:

Computer Point CCSFA01, TBCLCW PMP SUCTION FLW	Number of Running Pumps
1,000 - 8,200 GPM1	1
8,200 - 16,400 GPM2	2

F. NORMAL OPERATIONS (Cont)

NOTE: 2CCS-V303A (B,C) is located at 2CCS-P1A (B,C) on TB Elev 250 Southwest.

****

CAUTION

The time the CCS Pump is operating with the discharge valve closed shall be minimized due to no minimum flow protection.

****

4.2 Close 2CCS-V303A (B,C), TBCLC PUMP 1A (B,C) STOP CHECK.

4.3 Secure 2CCS-P1A (B,C), PMP 1A (B,C), by placing the control switch in Normal-After-STOP. (Green flagged)

4.4 IF required, place 2CCS-P1A (B,C) control switch in PULL TO LOCK.

4.5 Confirm normal operating indications for the running CCS Pump(s)in accordance with Subsection F.1.0.

4.6 IF 2CCS-P1A (B,C) is to remain in standby, open 2CCS-V303A (B,C).

5.0 Filling And Venting An Idle Heat Exchanger With System Operating

NOTES:

1. Actions in this Subsection are performed on TB 250 Southwest unless otherwise specified.
2. This Subsection assumes that 2CCS-E1A (B,C) is isolated, drained and the markup is ready to be cleared.

5.1 Verify close the following valves:

NOTE: 2CCS-V88 (V87, V89) is located on top of the heat exchanger inlet line at Elev 262.

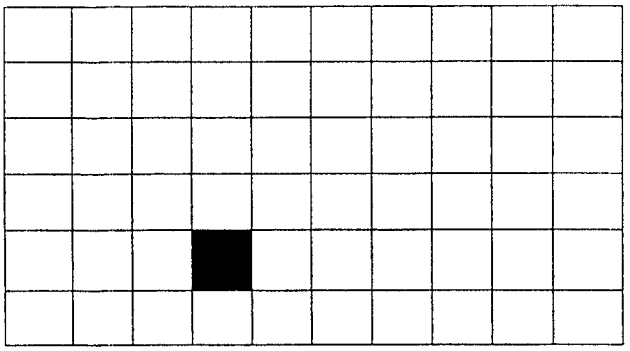
- 2CCS-V88 (V87, V89), CCS HX1A (B,C) INLET LINE VENT
- 2CCS-V109A (B,C), CCS HX1A (B,C) INLET LINE TEST CONN
- 2CCS-V11A (B,C), CCS HX1A (B,C) DRAIN
- 2CCS-V103A (B,C), CCS HX1A (B,C) VENT
- 2CCS-V110A (B,C), TBCLC HEAT EXCHANGER 1A (B,C) OUTLET TEST CONNECTION

Reflash: Yes

601244

TURBINE BLDG
CLOSED LOOP
COOLING SYS TROUBLE

244



Computer Point	Printout	Source	Setpoint
CCSBC04	TBCLCW PMP 1A AUTO START	Control switch in NORM and breaker closed	
CCSBC05	TBCLCW PMP 1B AUTO START	Control switch in NORM and breaker closed	
CCSBC06	TBCLCW PMP 1C AUTO START	Control switch in NORM and breaker closed	
CCSFC01	TBCLCW FLO BEL 2 PMP LIM	CCS-FE136	Less than 8000 gpm suction flow
CCSFC02	TBCLCW FLO BEL 1 PMP LIM	CCS-FE136	Less than 4000 gpm suction flow
CCSLC01	TBCLCW EXP TANK LEVEL	CCS-LS106	Greater than 82" above tk bottom
CCSLC02	TBCLCW EXP TANK LEVEL	CCS-LS106	Less than 45" above tk bottom
CCSPC01	TBCLCW PMP DIS	CCS-PS102	Disch Hdr Press less than 95#
CCSPC02	TBCLCW P1A SUCT PRESS	CCS-PS17A	Pmp A suction Press less than 25 psig

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Computer Point	Printout	Source	Setpoint
CCSPC03	TBCLCW P1B SUCT PRESS	CCS-PS17B	Pmp B suction Press less than 25 psig
CCSPC04	TBCLCW P1C SUCT PRESS	CCS-PS17C	Pmp C suction Press less than 25 psig
CCSTC01	TBCLCW PMP P1A MOTOR	51X Relay	Pump 1A motor overload
CCSTC02	TBCLCW PMP P1B MOTOR	51X Relay	Pump 1B motor overload
CCSTC03	TBCLCW PMP P1C MOTOR	51X Relay	Pump 1C motor overload
CCSTC04	TBCLCW HX DISCH TEMP	CCS-TE104	Greater than 101°F
CCSUC01	TBCLCW PMP P1A MOTOR	86 Relay	P1A motor electric fault
CCSUC02	TBCLCW PMP P1B MOTOR	86 Relay	P1B motor electric fault
CCSUC03	TBCLCW PMP P1C MOTOR	86 Relay	P1C motor electric fault
CCSUC04	TBCLCW P1A,B,C AT/FTS	Breaker	Pump breaker fails to close
CCSZC02	TBCLCW HX BYP TV104	Vlv limit sw	Full flow bypassing Heat Exchangers

Automatic Response

The following indicates an automatic trip of the respective pump:

CCSPC02(03)(04) TBCLCW P1A(B)(C) SUCT PRESS, pump trip after 5 sec. time delay
CCSUC01(02)(03) TBCLCW PMP P1A(B)(C) MOTOR
CCSCUC04 TBCLCW P1A(B)(C) AT/FTS

The following indicates an automatic start of the respective pump:

CCSBC04(05)(06) TBCLCW PMP 1A(B)(C) AUTO START
CCSPC01 TBCLCW PMP DIS HDR PRESS

Operator Actions
CCSPC02(03) (04), TBCLCW P1A(B)(C) SUCT PRESS.
CCSUC01 (02) (03), TBCLCW PMP P1A(B)(C) MOTOR
CCSUC04 TBCLCW P1A(B)(C) AT/FTS
CCSBC04 (05)(06), TBCLCW PMP 1A(B)(C) AUTO START
CCSPC01 TBCLCW PMP DIS HDR PRESS

Verify the appropriate automatic response

CCSFC01, TBCLCW FLO BEL 2 PMP LIM
CCSFC02, TBCLCW FLO BEL 1 PMP LIM
Observe the following operating conditions at Panel P601: Operating Pump currents less than 58.5 amps. TBCLC Disch Hdr Press 110 PSIG (108-112 psig)

CCSTC04, TBCLCW HX DISCH TEMP:
Verify temperature at 2CCS-TIK104 temp Controller at panel P601
Verify System Lineup
Place 2CCS-TIK104 in M (Manual)
Manually control temperature using 2CCS-TIK104 between 80 to 95°F
For temperature controller failure, refer to N2-OP-14, Subsection H.1.0 for CCS-TV104 local manual control
IF temp continues to rise: Notify Radwaste to remove any loads on the system
IF temp continued to rise: Refer to N2-OP-14, Subsection F.6.0 for placing an additional Heat Exchanger in service
IF temp continued to rise: Reduce Rx Power IAW N2-SOP-101D until temperature rise stops

CCSLC01, TBCLCW EXP TANK LEVEL
At 2CEC*PNL601 verify closed CCS-AOV105, TBCLCHEAD TK MAKEUP
Lower level in 2CCS-TK1 to ~ 62.5 in. (55-70 in.) or CCSLC01 is clear by either method provided:
1.1 Locally at 2CCS-TK1 open 2CCS-V101, CCS SURGE TANK DRAIN until desired level is achieved; OR
2.1 Uncap 2CCS-V11A(B,C) CCS HX1A(B,C) DRAIN and route a hose to an equipment drain.
2.2 Slowly throttle open 2CCS-V11A(B,C) until desired level is achieved.
2.3 IF required, 2CCS-V11A(B,C) may remain throttled open to maintain the desired level in 2CCS-TK1.
2.4 When draining is no longer required THEN close 2CCS-V11A(B,C), remove hose and re-install cap.

CCSLC02, TBCLCW EXP TANK LEVEL
Verify open CCS-AV0105, Surge Tk Lvl Control Valve
Raise Surge Tk lvl using CCS-V21, Emergency Makeup From MWS Isol until level is 62.5 in. (55-70 in.) from bottom of tank

CCSCZ02, TBCLCW HX BYP TV104
Remove heat exchanger from service in accordance with N2-OP-14, Section F.7.0 or reduce service water flow to inservice heat exchangers

CCSUC04, TBCLCW P1A,B,C, AT/FTS
Place the control switch for the affected pump in PULL TO LOCK
Verify system operation in accordance with N2-OP-14, Subsection F.1.0
IF all CCS pumps are tripped, attempt to restart any CCS pump
IF all CCS pumps are tripped AND none can be restarted, perform N2-SOP-14, Total Loss of CCS System

Possible Causes
Pump trip:
Electrical Fault
Low suction pressure caused by low surge tank lvl or pump start
Pump start:
Low discharge pressure caused by pump trip, added heat load or discharge pipe break

Possible Conditions (Cont)

Surge Tank Lvl:
- Makeup Vlv leaking through
- Over filling of tank
- Heat load transient causing shrink or swelling
- System leak
- Valving in improperly vented components

Temperature Trouble:
- Temp control vlv failure
- Instrument air failure
- Heat load transient

References

N2-OP-14, TURBINE CLOSED LOOP COOLING
PID-14F-A through F
ESK-9-7A through H
ESJ-9-7K
N2-SOP-14, TOTAL LOSS OF CCS SYSTEM

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Depressurize the RPV to the Main Condenser Revision: NRC 2008

Task Number:

Approvals:

9/30/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X_____Perform _____Simulate

Evaluation Location:_____Plant ____X__Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: YES

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC 185
2. Malfunction MS-13 "MSIV Isolation Failure"

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. EOP-6 Attachment 18
2. NUREG K/A 239001 A4.09

Tools and Equipment:

1. None

Task Standard:

RPV is depressurizing to Main Condenser using Bypass Valves or Drain valves

Initial Conditions:

1. A LOCA has occurred and an RPV Blowdown was required
2. Only 5 SRVs could be opened
3. EOP-6, Attachment 18 is in progress.

Initiating cue:

"(Operator's name), Continue in N2-EOP-6, Attachment 18 at step 3.1.2 and depressurize the RPV to the Main Condenser

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	EOP-6, Attachment 18 obtained.	Sat/Unsat
3. IF a LOCA signal is present OR expected, using PA235 key, place the following LOCA override switches to OVERRIDE: (2CEC*PNL851)	Determines LOCA is present.	Sat/Unsat
LOCA OVERRIDE VLV IAS*SOV166	Using key, places switch in OVERRIDE	Sat/Unsat
LOCA OVERRIDE VLV IAS*SOV184	Using key, places switch in OVERRIDE	Sat/Unsat
Annunciators 601517 and 601519 alarms when switches are placed in OVERRIDE.		
4. Verify open the following valves (2CEC*PNL851)		
IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV	Open IAS*SOV166 and observe red light ON and green light OFF.	Sat/Unsat
IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV	Open IAS*SOV184 and observe red light ON and green light OFF.	Sat/Unsat

Performance Steps	Standard	Grade
5. Record differential pressure across the MSIVs using C33-R605 on 2CEC*PNL603 AND one or more of the following Trip Units: B22-N676A, STM LINE PRESS LO (2CEC*PNL609) B22-N676C, STM LINE PRESS LO (2CEC*PNL609) B22-N676B, STM LINE PRESS LO (2CEC*PNL611) B22-N676D, STM LINE PRESS LO (2CEC*PNL611) Note: PNL609 trip units are not within the scope of simulation. ***CUE: Differential Pressure is <150 psid***	Determines differential pressure is within 150 psid.	Sat/Unsat
6. IF differential pressure across the MSIVs is > 150 psid, open at least one pair of MSIVs by performing N2-OP-1, Section H.4.0 AND THEN continue at Step 3.1.7 N/A, differential pressure across the MSIVs is < 150 psid	Determines step is N/A, based on differential pressure.	Sat/Unsat
7. IF differential pressure across the MSIVs is < 150 psid, open at least one pair of MSIVs as follows: N/A, a pair of MSIVs will be opened per N2-OP-1, Section H.4.0 Verify MSIV isolation signals reset by performing the following: (2CEC*PNL602) Place control switches for the following to CLOSE: • MSS*AOV6A, MSIV	Places all eight MSIV control switches in CLOSE	Sat\Unsat

Performance Steps	Standard	Grade
• MSS*AOV6B, MSIV • MSS*AOV6C, MSIV • MSS*AOV6D, MSIV • MSS*AOV7A, MSIV • MSS*AOV7B, MSIV • MSS*AOV7C, MSIV • MSS*AOV7D, MSIV		
Booth Operator: Insert malfunction MS-13 when MSIVs are closed		
8. Depress pushbutton B22H-S33, INBD ISOL LOGIC RESET	Depresses pushbutton	Sat\Unsat
9. Depress pushbutton B22H-S32, OUTBD ISOL LOGIC RESET	Depresses pushbutton	Sat\Unsat
10. Open one pair of MSIVs as follows: (2CEC*PNL602) Place the control switch for ANY outboard MSIV to AUTO Place the control switch for the corresponding inboard MSIV to AUTO.	Places control switches for one pair of MSIVs to AUTO. MSIVs will not open	Sat/Unsat
Examiner Note: Applicant must continue in procedure because MSIVs will not open		
11. IF a pair of MSIVs can NOT be opened, align steam line drains to depressurize the RPV as follows: N/A, a pair of MSIVs are open		
Verify open MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. (2CEC-PNL824)	Opens MSS*MOV207 and observe red light ON and green light OFF.	**Pass/Fail**
Verify open MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV. (2CEC*PNL602)	Opens MSS*MOV111 and observe red light ON and green light OFF.	**Pass/Fail**

Performance Steps	Standard	Grade
12. NOTE: A CAT 60 key may be required for entry to 2EHS*MCC102.		
Place 2EHS*MCC102-7A, 2MSS*MOV112 MAIN STEAM LINE DRAIN OUTBD to ON (Aux Bay-North El 240)	Directs operator to locally close 2EHS*MCC102-7A AND place alarm circuit to enable.	Sat/Unsat
BOOTH OPERATOR: Enter Remote MS05B, 2MSS*MOV112 APP R CKT BKR, CLOSE		
CUE: Report the breaker is closed and alarm circuit is enabled.		
Place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE		
Verify open 2MSS*MOV112 (2CEC*PNL602)	Open 2MSS*MOV112 and observe red light ON and green light OFF.	**Pass/Fail**
Verify open MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING (2CEC*PNL602)	Open 2MSS-MOV187 and observe red light ON and green light OFF.	**Pass/Fail**
13. Using BYPASS VALVE OPENING JACK SELECTOR, depress AND hold the INCREASE pushbutton UNTIL bypass valves are full open (2CEC*PNL851)	Depresses and holds to attempt to open bypasses	Sat/Unsat
NOTE: Turbine Bypass Valves will NOT open due to low condenser vacuum.		
14. IF Bypass Valves are unavailable, verify open as many of the following steam line drains as possible to depressurize the RPV to the condenser:	Performs if bypass valves would not open	Sat/Unsat
N/A, Turbine Bypass Valves are available		
Open Turbine Stop Valve Drains (2CEC-PNL824):		

Performance Steps	Standard	Grade
MSS-MOV21A, TURBINE STOP VLV MSV3 DRAIN VLV MSS-MOV21B, TURBINE STOP VLV MSV4 DRAIN VLV MSS-MOV21C, TURBINE STOP VLV MSV1 DRAIN VLV MSS-MOV21D, TURBINE STOP VLV MSV2 DRAIN VLV **Examiner Note: Step only performed if bypass valves could not be opened. Degrading vacuum may have caused closure**		
15. Open MSS-MOV147, TURBINE CONTROL VLVS DRAIN VLV (2CEC-PNL824)	Performs if bypass valves did not open	Sat/Unsat
16. Open Main Steam Line Drains (2CEC-PNL824): MSS-AOV191, MAIN STM LINE HEADER DRAIN VLV MSS-AOV194, MAIN STM LINE HEADER DRAIN VLV MSS-AOV203, MAIN STM LINE HEADER DRAIN VLV MSS-AOV205, MAIN STM LINE HEADER DRAIN VLV MSS-AOV209, MAIN STM LINE HEADER DRAIN VLV MSS-AOV87A MSL A LOW POINT DRAIN VALVE MSS-AOV87B MSL B LOW POINT DRAIN VALVE MSS-AOV87C MSL C LOW POINT DRAIN VALVE	Performs if bypass valves did not open	Sat/Unsat

Performance Steps	Standard	Grade
MSS-AOV87D MSL D LOW POINT DRAIN VALVE MSS-AOV88A MSL DRAIN HEADER ISOL VALVE MSS-A0V88B MSL DRAIN HEADER ISOL VALVE		
17. Open MSL Drain Orifice Bypass (2CEC-PNL824): MSS-AOV85A, MAIN STM LINE DRAIN VLV MSS-AOV85B, MAIN STM LINE DRAIN VLV MSS-AOV85C, MAIN STM LINE DRAIN VLV MSS-AOV85D, MAIN STM LINE DRAIN VLV	Performs if bypass valves did not open	Sat/Unsat

TERMINATING CUE: RPV is depressurizing to Main Condenser via Bypass valves or Drain valves

RECORD STOP TIME_____

Initial Conditions:

1. A LOCA has occurred and an RPV Blowdown was required
2. Only 5 SRVs could be opened
3. N2-EOP-6, Attachment 18 is in progress.

Initiating cue:

Continue in N2-EOP-6, Attachment 18 at step 3.1.2 and depressurize the RPV to the Main Condenser

ATTACHMENT 18
DEPRESSURIZING THE RPV

1.0 PURPOSE

1.1 This procedure is used to support depressurizing the Reactor Pressure Vessel (RPV) as rapidly as possible should conditions develop that prevent or prohibit opening a sufficient number of Safety Relief Valves (SRV) to blowdown the RPV and keep it depressurized.
This depressurization is conducted irrespective of the resulting cooldown rate.

1.2 Applicability

1.2.1 Used to support N2-EOP-C2, RPV Blowdown, N2-EOP-C4, RPV Flooding, and N2-SAP-2, RPV, Containment And Radioactivity Release Control.

1.2.2 Depressurization may be accomplished using one or more of the following methods described in this attachment:

- Subsection 3.1 - Depressurizing to the Main Condenser (Utilizes N2-OP-1, Main Steam to open MSIVs if differential pressure across the MSIVs is > 150 psid).
- Subsection 3.2 - Depressurizing via use of RCIC (Utilizes N2-OP-35, Reactor Core Isolation Cooling to startup/shutdown RCIC and Attachment 20 of this procedure to defeat Level 2 low water level interlocks).
- Subsection 3.3 - Depressurizing via use of RHS Steam Condensing (Utilizes N2-OP-31, Residual Heat Removal System to startup/shutdown Steam Condensing).
- Subsection 3.4 - Depressurizing via use of RPV Head Vents

1.2.3 Defeating any isolation interlocks is authorized to accomplish this function, irrespective of the offsite release rate.

2.0 TOOLS AND MATERIALS

TOOL/MATERIAL	QTY	LOCATION
Flashlight	1	Control Room EOP Toolbox
EOP Jumper #19	1	2CEC*PNL609 Bay B
EOP Jumper #17	1	2CEC*PNL609 Bay C
EOP Jumper #15	1	2CEC*PNL611 Bay A
EOP Jumper #11	1	2CEC*PNL611 Bay C
EOP Jumper #7	1	2CEC*PNL618 Bay C
EOP Jumper #4	1	2CEC*PNL621
L660 Key	1	Control Room EOP Toolbox
PA235	6	Control Room CSO Desk
CAT 60 key	1	Control Room EOP Toolbox

NOTES: 1. Sections 3.1, 3.2, and 3.3 may be performed separately, concurrently, or in any order.

2. Keys PA235, PA1235, and PA2235 are interchangeable.

3.0 PROCEDURE

3.1 Depressurizing To The Main Condenser

N/A, the condenser will NOT be used for depressurizing.....(___)

NOTE: The intent of this section is to depressurize the RPV to the condenser with a vacuum established. However, if a vacuum does not exist this section will still be worked until completion.

3.1.1. IF any MSIV isolation signals exist OR are expected, defeat MSIV isolation interlocks as follows:

N/A, NO isolation signals are present NOR expected.....(___)

(T) **NOTE:** A L660 Key may be needed for entry into CEC*PNL609 and 2CEC*PNL611.

(T) • Using EOP Jumper #19, connect jumper from terminal B1 on relay B22H-K7J to terminal T4 on relay B22H-K7A in 2CEC*PNL609 Bay B (Figure 18-1)..... (__)

(T) • Using EOP Jumper #17, connect jumper from terminal T4 to terminal B1 on relay B22H-K7C in 2CEC*PNL609 Bay C. (Figure 18-2) ..... (__)

(T) • Using EOP Jumper #15, connect jumper from terminal 2 on fuse holder B22H-F6B to terminal 1 on relay B22H-K7F in 2CEC*PNL611 Bay A (Figure 18-3)..... (__)

(T) • Using EOP Jumper #11, connect jumper from terminal T4 to terminal B1 on relay B22H-K7D in 2CEC*PNL611 BAY C (Figure 18-4)..... (__)

Ⓣ 3.1.2 IF a LOCA signal is present OR expected, using PA235 key, place the following LOCA override switches to OVERRIDE: *(2CEC*PNL851)*

N/A, a LOCA signal is NOT present NOR expected .....(___)

- LOCA OVERRIDE VLV IAS*SOV166 ..... (__)
- LOCA OVERRIDE VLV IAS*SOV184 ..... (__)

3.1.3 Verify open the following valves *(2CEC*PNL851)*

- IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV..... (__)
- IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV..... (__)

3.1.4 Record differential pressure across the MSIVs using C33-R605 on 2CEC*PNL603 AND one or more of the following Trip Units:

- B22-N676A, STM LINE PRESS LO (2CEC*PNL609)
- B22-N676C, STM LINE PRESS LO (2CEC*PNL609)
- B22-N676B, STM LINE PRESS LO (2CEC*PNL611)
- B22-N676D, STM LINE PRESS LO (2CEC*PNL611)

_____ psid ..... (__)

3.1.5 IF differential pressure across the MSIVs is > 150 psid, open at least one pair of MSIVs by performing N2-OP-1, Section H.4.0 AND THEN continue at Step 3.1.7..... (__)

N/A, differential pressure across the MSIVs is ≤ 150 psid .....(___)

3.1.6 IF differential pressure across the MSIVs is ≤ 150 psid, open at least one pair of MSIVs as follows:

N/A, a pair of MSIVs will be opened per N2-OP-1, Section H.4.0 .....(___)

a. Verify MSIV isolation signals reset by performing the following: *(2CEC*PNL602)*

1. Place control switches for the following to CLOSE:

- MSS*AOV6A, MSIV ..... (__)
- MSS*AOV6B, MSIV ..... (__)
- MSS*AOV6C, MSIV ..... (__)
- MSS*AOV6D, MSIV ..... (__)
- MSS*AOV7A, MSIV ..... (__)
- MSS*AOV7B, MSIV ..... (__)
- MSS*AOV7C, MSIV ..... (__)
- MSS*AOV7D, MSIV ..... (__)

2. Depress pushbutton B22H-S33, INBD ISOL LOGIC RESET ..... (__)

3. Depress pushbutton B22H-S32, OUTBD ISOL LOGIC RESET ..... (__)

b. Open one pair of MSIVs as follows: *(2CEC*PNL602)*

1. Place the control switch for ANY outboard MSIV to AUTO ..... (__)

2. Place the control switch for the corresponding inboard MSIV to AUTO ..... (__)

3.1.7 IF a pair of MSIVs can NOT be opened, align steam line drains to depressurize the RPV as follows:

N/A, a pair of MSIVs are open .....(___)

a. Verify open MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. *(2CEC-PNL824)* ..... (__)

Ⓣ b. Verify open MSS*MOV111, MAIN STM LINE DRAIN ISOL VLV. *(2CEC*PNL602)* ..... (__)

NOTE: A CAT 60 key may be required for entry to 2EHS*MCC102.

c. Place 2EHS*MCC102-7A, 2MSS*MOV112 MAIN STEAM LINE DRAIN OUTBD to ON *(Aux Bay-North El 240)* ..... (__)

d. Place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to ENABLE ..... (__)

Ⓣ e. Verify open 2MSS*MOV112 *(2CEC*PNL602)* ..... (__)

f. Verify open MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING *(2CEC*PNL602)* ..... (__)

3.1.8 Using BYPASS VALVE OPENING JACK SELECTOR, depress AND hold the INCREASE pushbutton UNTIL bypass valves are full open *(2CEC*PNL851)* ..... (__)

N/A, Turbine Bypass Valves will NOT open .....(___)

3.1.9 IF Bypass Valves are unavailable, verify open as many of the following steam line drains as possible to depressurize the RPV to the condenser:

N/A, Turbine Bypass Valves are available .....(___)

a. Open Turbine Stop Valve Drains *(2CEC-PNL824)*:

- MSS-MOV21A, TURBINE STOP VLV MSV3 DRAIN VLV..... (__)
- MSS-MOV21B, TURBINE STOP VLV MSV4 DRAIN VLV..... (__)
- MSS-MOV21C, TURBINE STOP VLV MSV1 DRAIN VLV..... (__)
- MSS-MOV21D, TURBINE STOP VLV MSV2 DRAIN VLV..... (__)

3.1.9 (Cont)

b. Open MSS-MOV147, TURBINE CONTROL VLVS DRAIN VLV *(2CEC-PNL824)*..... (__)

c. Open Main Steam Line Drains *(2CEC-PNL824)*:

- MSS-AOV191, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV194, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV203, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV205, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV209, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV87A MSL A LOW POINT DRAIN VALVE..... (__)
- MSS-AOV87B MSL B LOW POINT DRAIN VALVE..... (__)
- MSS-AOV87C MSL C LOW POINT DRAIN VALVE ..... (__)
- MSS-AOV87D MSL D LOW POINT DRAIN VALVE ..... (__)
- MSS-AOV88A MSL DRAIN HEADER ISOL VALVE..... (__)
- MSS-A0V88B MSL DRAIN HEADER ISOL VALVE..... (__)

d. Open MSL Drain Orifice Bypass *(2CEC-PNL824)*:

- MSS-AOV85A, MAIN STM LINE DRAIN VLV..... (__)
- MSS-AOV85B, MAIN STM LINE DRAIN VLV..... (__)
- MSS-AOV85C, MAIN STM LINE DRAIN VLV..... (__)
- MSS-AOV85D, MAIN STM LINE DRAIN VLV..... (__)

3.2 Depressurizing Via Use Of RCIC

N/A, RCIC will NOT be used for depressurizing.....(___)

NOTES: 1. Step 3.2.1 may be delayed until after RCIC is operating if no isolation signals are present for 2ICS*MOV121 and 2ICS*MOV128.

2. A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

3.2.1 IF RCIC isolation interlocks are present or expected for 2ICS*MOV121 AND 2ICS*MOV128 perform the following:

N/A, RCIC Isolation Interlocks are NOT present NOR expected.....(___)

a. Remove relay E51A-K33 in 2CEC*PNL618 Bay C (Figure 18-5)..... (__)

(T) b. Install EOP Jumper #7 between terminal points AA-54 AND AA-107 in 2CEC*PNL618 Bay C (Figure 18-5)..... (__)

c. Remove relay E51A-K15 in 2CEC*PNL621 (Figure 18-6) ..... (__)

(T) d. Install EOP Jumper #4 between terminal points DD-1 AND DD-17 in 2CEC*PNL621 (Figure 18-6)..... (__)

e. Label relays with component identification, orientation AND attachment number..... (__)

f. Deliver relays to the SM..... (__)

3.2.2 Verify open the following valves *(2CEC*PNL601)*:

(T) a. ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV..... (__)

(T) b. ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV..... (__)

3.2.3 Operate RCIC to depressurize the RPV as follows:

a. Manually operate RCIC using N2-OP-35, Reactor Core Isolation Cooling, Subsection F.2.0 OR F.3.0 ..... (__)

b. If RPV water level is less than 108.8 inches (Level 2), defeat RCIC low level interlocks per Attachment 20 of this procedure..... (__)

N/A, RPV water level is above 108.8"..... (___)

c. Throttle OR stop RPV injection flow by establishing recirculation flow to the Condensate Storage Tank (CST) as required:

NOTES: 1. 2ICS*MOV124 and 2ICS*FV108 will not open unless Rx water level is above 108.8" (L2) or interlocks are defeated per Attachment 20 of this procedure.

2. As RPV pressure drops, RCIC injection flow may re-initiate or rise.

1. Open ICS*MOV124, TEST RETURN TO CONDENSATE STOR TK . *(2CEC*PNL601)* ..... (__)

2. Throttle RPV injection flow using ICS*FV108, TEST BYPASS TO CONDENSATE STOR TK THROTTLE. *(2CEC*PNL601)*..... (__)

3. Stop RPV injection flow by throttling open 2ICS*FV108 UNTIL ICS*V156, REACTOR INJECTION OUTBD CHECK VLV AND ICS*V157, REACTOR INJECTION INBD CHECK VLV remain closed. *(2CEC*PNL601)*..... (__)

(T) **NOTE:** A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

3.2.4 Defeat RCIC steam supply low pressure isolations by performing the following:

a. Remove the following relays:

- E51A-K79 (Figure 18-5), *(2CEC*PNL618 Bay C)* ..... (__)
- E51A-K86 (Figure 18-5), *(2CEC*PNL618 Bay C)* ..... (__)
- E51A-K66 (Figure 18-6) *(2CEC*PNL621)* ..... (__)
- E51A-K78 (Figure 18-6) *(2CEC*PNL621)* ..... (__)

b. Label relays with component identification, orientation AND attachment number ..... (__)

c. Deliver relays to the SM ..... (__)

3.3 Depressurizing Via Use of RHS Steam Condensing

N/A, RHS Steam Condensing will NOT be used for depressurizing ..... (___)

(T) **NOTE:** A L660 key may be needed to gain entry to 2CEC*PNL618 and 2CEC*PNL621.

3.3.1 Defeat RCIC isolation interlocks for ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV AND ICS*MOV128,TURBINE STM SUPPLY INBOARD ISOL VLV by performing the following:

a. Remove relay E51A-K33 in 2CEC*PNL618 Bay C (Figure 18-5)..... (__)

(T) b. Install EOP Jumper #7 between terminal points AA-54 AND AA-107 in 2CEC*PNL618 Bay C (Figure 18-5) ..... (__)

c. Remove relay E51A-K15 in 2CEC*PNL621 (Figure 18-6) ..... (__)

(T) d. Install EOP Jumper #4 between terminal points DD-1 AND DD-17 in 2CEC*PNL621 (Figure 18-6)..... (__)

e. Label relays with component identification, orientation AND attachment number ..... (__)

f. Deliver relays to the SM ..... (__)

3.3.2 Verify open the following valves *(2CEC*PNL601)*:

(T) a. ICS*MOV121, TURB STM SUPPLY OUTBOARD ISOL VLV ..... (__)

(T) b. ICS*MOV128, TURBINE STM SUPPLY INBOARD ISOL VLV ..... (__)

3.3.3 Operate the RHS system in the Steam Condensing Mode in accordance with N2-OP-31, Residual Heat Removal System Subsection F.9.0 ..... (__)

(T) **NOTE:** A L660 key may be needed to gain entry to 2CEC*PNL618 and 2CEC*PNL621.

3.3.4 Defeat RCIC steam supply low pressure isolations by performing the following:

a. Remove the following relays:

- E51A-K79 (Figure 18-5), *(2CEC*PNL618 Bay C)* ..... (__)
- E51A-K86 (Figure 18-5), *(2CEC*PNL618 Bay C)* ..... (__)
- E51A-K66 (Figure 18-6) *(2CEC*PNL621)* ..... (__)
- E51A-K78 (Figure 18-6) *(2CEC*PNL621)* ..... (__)

b. Label relays with component identification, orientation AND attachment number ..... (__)

c. Deliver relays to the SM ..... (__)

3.4 Depressurizing Via Use of RPV Head Vent

N/A, RPV Head Vent will NOT be used for depressurizing ..... (___)

3.4.1 Verify open the following valves: *(2CEC*PNL602)*

- MSS*MOV118, REACTOR VESSEL VENT ..... (__)
- MSS*MOV119, REACTOR VESSEL VENT ..... (__)

3.4.2 Verify closed MSS*MOV108, REACTOR VESSEL VENT ..... (__)

Initials/Date

4.0 RESTORATION

NOTES: 1. This section is not performed until specifically directed by the SM/EOP Director. This permission shall not be granted until the system/equipment is in a condition to support restoration.

2. Independent verification may be delayed until emergency conditions no longer exist per SM/EOP Director.

4.1 IF Turbine Bypass Valves were unavailable (Step 3.1.4.e performed), perform the following:

N/A, Turbine Bypass Valves were available.....(___)

4.1.1 Verify open turbine stop valve drains *(2CEC-PNL824)*:

- MSS-MOV21A, TURBINE STOP VLV MSV 3 DRAIN VLV..... (__)
- MSS-MOV21B, TURBINE STOP VLV MSV 4 DRAIN VLV..... (__)
- MSS-MOV21C, TURBINE STOP VLV MSV 1 DRAIN VLV..... (__)
- MSS-MOV21D, TURBINE STOP VLV MSV 2 DRAIN VLV..... (__) _____/_____

_____/_____
Ind. Verif

4.1.2 Verify open MSS-AOV201, REHEATING STM PIPING DRAIN VLV. *(2CEC-PNL824)* _____/_____

_____/_____
Ind. Verif

4.1.3 Verify open MSS-MOV147, TURBINE CONTROL VLVS DRAIN VLV. *(2CEC-PNL824)* _____/_____

_____/_____
Ind. Verif

Initials/Date

4.1.4 Verify open the following main steam line drain valves *(2CEC-PNL824)*:

- MSS-AOV191, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV194, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV203, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV205, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV209, MAIN STM LINE HEADER DRAIN VLV ..... (__)
- MSS-AOV87A, MSL A LOW POINT DRAIN VALVE..... (__)
- MSS-AOV87B, MSL B LOW POINT DRAIN VALVE..... (__)
- MSS-AOV87C, MSL C LOW POINT DRAIN VALVE ..... (__)
- MSS-AOV87D, MSL D LOW POINT DRAIN VALVE ..... (__)
- MSS-AOV88A, MSL DRAIN HEADER ISOL VALVE ..... (__)
- MSS-A0V88B, MSL DRAIN HEADER ISOL VALVE..... (__) _____/_____

_____/_____
Ind. Verif

4.1.5 Verify open the following main steam line drain orifice bypass valves:
(2CEC-PNL824)

- MSS-AOV85A, MAIN STM LINE DRAIN VLV..... (__)
- MSS-AOV85B, MAIN STM LINE DRAIN VLV..... (__)
- MSS-AOV85C, MAIN STM LINE DRAIN VLV..... (__)
- MSS-AOV85D, MAIN STM LINE DRAIN VLV..... (__) _____/_____

_____/_____
Ind. Verif

Initials/Date

4.2 Using BYPASS VALVE OPENING JACK SELECTOR, depress AND hold the DECREASE pushbutton UNTIL all bypass valves are closed. *(2CEC*PNL851)*

N/A, bypass valves were NOT used .....(___) ____/____

____/____
Ind. Verif

4.3 IF steam line drains were used to depressurize the RPV in Step 3.1.4.c, perform the following:

N/A, steam line drains were NOT used.....(___)

(T) 4.3.1 Verify closed MSS*MOV112, MAIN STM LINE DRAIN ISOL VLV: *(2CEC*PNL602)* ____/____

____/____
Ind. Verif

4.3.2 Verify closed MSS-MOV187, MAIN STM LINE PRESS EQL/WARMING: *(2CEC*PNL602)* ____/____

____/____
Ind. Verif

(T) **NOTE:** A CAT 60 key may be required for entry at 2EHS*MCC102.

4.3.3 Restore 2MSS*MOV112 power to normal as follows: *(Aux Bay-North El 240)*

a. Place 2EHS*MCC102-7A, ALARM CIRCUIT control switch to DISABLE..... (__)

b. Place 2EHS*MCC102-7A, 2MSS*MOV112, MAIN STEAM LINE DRAIN OUTBD to OFF..... (__) ____/____

____/____
Ind. Verif

4.3.4 Verify open MSS*MOV207, INSIDE MSIV'S UPSTREAM DRAIN VLV. *(2CEC-PNL824)* ____/____

____/____
Ind. Verif

Initials/Date

(T) 4.3.5 Verify closed 2MSS*MOV111. *(2CEC*PNL602)* _____/_____

_____/_____
Ind. Verif

4.4 IF IAS AND MSIV Isolations Interlocks were defeated by Step 3.1.1, perform the following:

N/A, IAS AND MSIV isolation interlocks were NOT defeated.....(___)

4.4.1 Verify open, the following valves *(2CEC*PNL851)*:

- IAS*SOV166, PRIMARY CNTMT OUTBD ISOL VLV TO SRV..... (__)
- IAS*SOV184, PRIMARY CNTMT INBD ISOL VLV TO SRV..... (__) _____/_____

_____/_____
Ind. Verif

4.4.2 Verify the following LOCA override switches in RESET *(2CEC*PNL851)*:

(T) • LOCA OVERRIDE VLV IAS*SOV166..... (__)

(T) • LOCA OVERRIDE VLV IAS*SOV184..... (__) _____/_____

_____/_____
Ind. Verif

4.4.3 Remove the following EOP Jumpers:

(T) • Remove EOP Jumper #19, from terminal B1 on relay B22H-K7J to terminal T4 on relay B22H-K7A in 2CEC*PNL609 Bay B. (Figure 18-1)..... (__)

(T) • Remove EOP Jumper #17, from terminal T4 to terminal B1 on relay B22H-K7C in 2CEC*PNL609 Bay C (Figure 18-2)..... (__)

(T) • Remove EOP Jumper #15, from terminal 2 on fuse holder B22H-F6B to terminal 1 on relay B22H-K7F in 2CEC*PNL611 Bay A. (Figure 18-3)..... (__)

Initials/Date

4.4.3 (Cont)

(T) • Remove EOP Jumper #11, from terminal T4 to terminal B1 on relay B22H-K7D in 2CEC*PNL611 BAY C (Figure 18-4) ..... (__) _____/_____

_____/_____
Ind. Verif

4.4.4 Align MSIVs per EOP Director/SM direction:

• MSIVs open per EOP Director/SM ..... (__)

• MSIVs closed per EOP Director/SM ..... (__) _____/_____

_____/_____
Ind. Verif

4.5 IF N2-OP-1, Subsection H.4.0 was used to open the MSIV's for Subsection 3.1 of this procedure, perform steps H.4.24 AND H.4.25 of N2-OP-1 to restore the valves and temporary alterations used. _____/_____

_____/_____
Ind. Verif

4.6 IF RCIC was used for depressurizing the RPV, perform the following:

N/A, RCIC was NOT used for depressurizing .....(___)

4.6.1 Shutdown RCIC in accordance with N2-OP-35, Reactor Core Isolation Cooling Subsection G.1.0 OR G.2.0. _____/_____

_____/_____
Ind. Verif

4.6.2 If RCIC/Steam Condensing steam supply valves are to be closed, perform the following: *(2CEC*PNL601)*

N/A, steam supply valves will NOT be closed .....(___)

(T) a. Verify closed ICS*MOV121,TURB STM SUPPLY OUTBOARD ISOL VLV ..... (__)

(T) b. Verify closed ICS*MOV128,TURBINE STM SUPPLY INBOARD ISOL VLV ..... (__) _____/_____

_____/_____
Ind. Verif

Initials/Date

4.6.3 If required, restore RCIC low level interlocks per Attachment 20 of this procedure.

N/A, RCIC low level interlocks were NOT defeated .....(___) _____/_____

_____/_____
Ind. Verif

4.7 IF RHS Steam Condensing was used for depressurizing the RPV in step 3.3, perform the following:

N/A, Steam Condensing was NOT used for depressurizing.....(___)

4.7.1 Shutdown RHS from the Steam Condensing Mode in accordance with N2-OP-31, Residual Heat Removal System Subsection F.10.0. _____/_____

_____/_____
Ind. Verif

4.7.2 If RCIC/Steam Condensing steam supply valves are to be closed, perform the following: *(2CEC*PNL601)*

N/A, steam supply valves will NOT be closed .....(___)

(T) a. Verify closed ICS*MOV121,TURB STM SUPPLY OUTBOARD ISOL VLV..... (__)

(T) b. Verify closed ICS*MOV128,TURBINE STM SUPPLY INBOARD ISOL VLV..... (__) _____/_____

_____/_____
Ind. Verif

4.8 IF RCIC isolation interlocks for 2ICS*MOV121 and 2ICS*MOV128 were defeated in Step 3.2.1 OR 3.3.1, perform the following:

N/A, Isolation interlocks were NOT defeated .....(___)

(T) **NOTE:** A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

4.8.1 Obtain relays from SM ..... (__)

Initials/Date

(T) 4.8.2 Remove EOP Jumper #7 from terminal points AA-54 AND AA-107 in 2CEC*PNL618 Bay C (Figure 18-5)..... (__)

4.8.3 Install relay E51A-K33 in 2CEC*PNL618 Bay C (Figure 18-5)..... (__)

(T) 4.8.4 Remove EOP Jumper #4 from terminal points DD-1 AND DD-17 in 2CEC*PNL621 (Figure 18-6) ..... (__)

4.8.5 Install relay E51-K15 in 2CEC*PNL621 (Figure 18-6)..... (__) _____/_____

_____/_____
Ind. Verif

(T) **NOTE:** A L660 Key may be needed for entry to 2CEC*PNL618 and 2CEC*PNL621.

4.9 IF RCIC steam supply low pressure isolation interlocks were defeated in step 3.2.4 OR 3.3.4, perform the following:

4.9.1 Obtain relays from SM ..... (__) _____/_____

4.9.2 Install the following relays:

- E51A-K79 (Figure 18-5), *(2CEC*PNL618 Bay C)* ..... (__)
- E51A-K86 (Figure 18-5), *(2CEC*PNL618 Bay C)* ..... (__)
- E51A-K66 (Figure 18-6), *(2CEC*PNL621)* ..... (__)
- E51A-K78 (Figure 18-6), *(2CEC*PNL621)* ..... (__) _____/_____

_____/_____
Ind. Verif

Initials/Date

4.10 IF RPV Head Vents were used in Subsection 3.4, perform the following:

N/A, RPV Head Vent to Suppression Pool was NOT used .....(___)

4.10.1 IF RPV pressure is greater than or equal to 5 psig AND use of the RPV head vents is no longer required, re-align the head vents as follows: *(2CEC*PNL602)*

N/A, RPV pressure is less than 5 psig OR use of the head vents is still required.....(___)

a. Verify closed the following valves: *(2CEC*PNL602)*

- MSS*MOV118, REACTOR VESSEL VENT..... (__)
- MSS*MOV119, REACTOR VESSEL VENT..... (__) _____/_____

_____/_____
Ind. Verif

b. Verify open MSS*MOV108, REACTOR VESSEL VENT *(2CEC*PNL602)* _____/_____

_____/_____
Ind. Verif

4.11 SM Review

SM verify that restoration is complete. Record comments in Remarks below.

Remarks:_____
_____
_____
_____
_____

_____/_____/_____
SM Signature Date Time

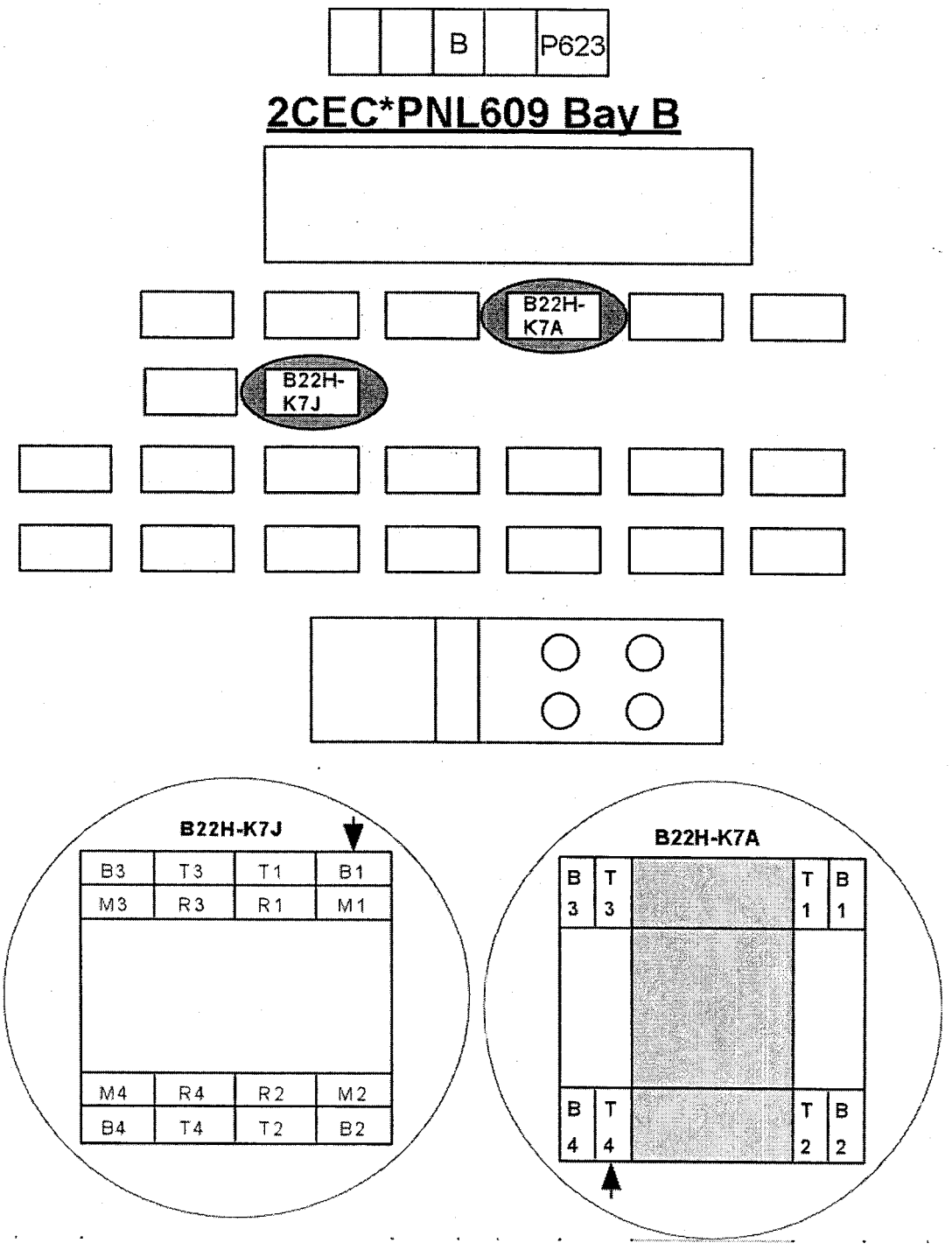
B
P623
2CEC*PNL609 Bay B
B22H-K7A
B22H-K7J
B22H-K7J
B3 T3 T1 B1
M3 R3 R1 M1
M4 R4 R2 M2
B4 T4 T2 B2
B22H-K7A
B 3
T 3
T 1
B 1
B 4
T 4
T 2
B 2

FIGURE 18-1

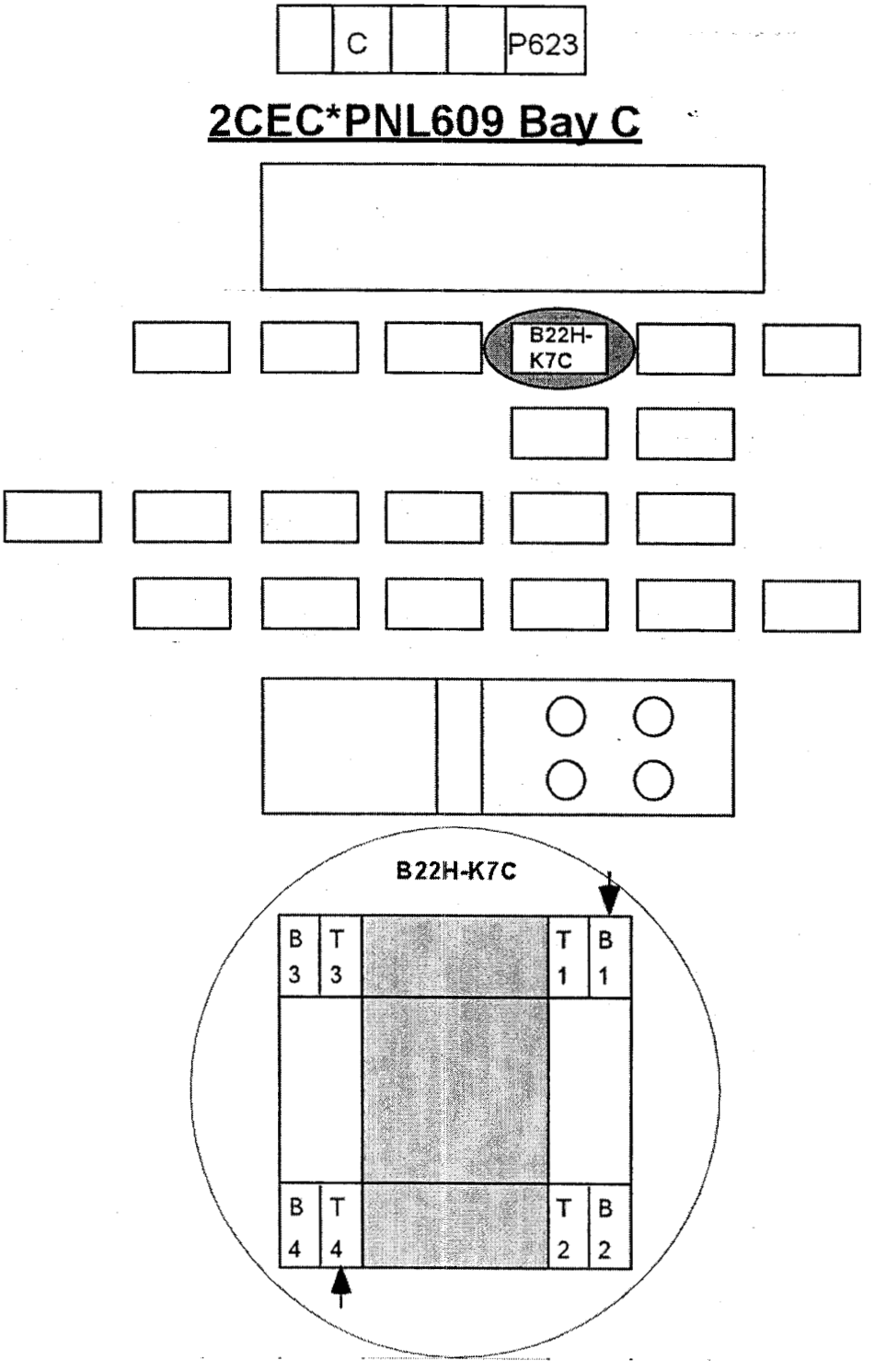

FIGURE 18-2

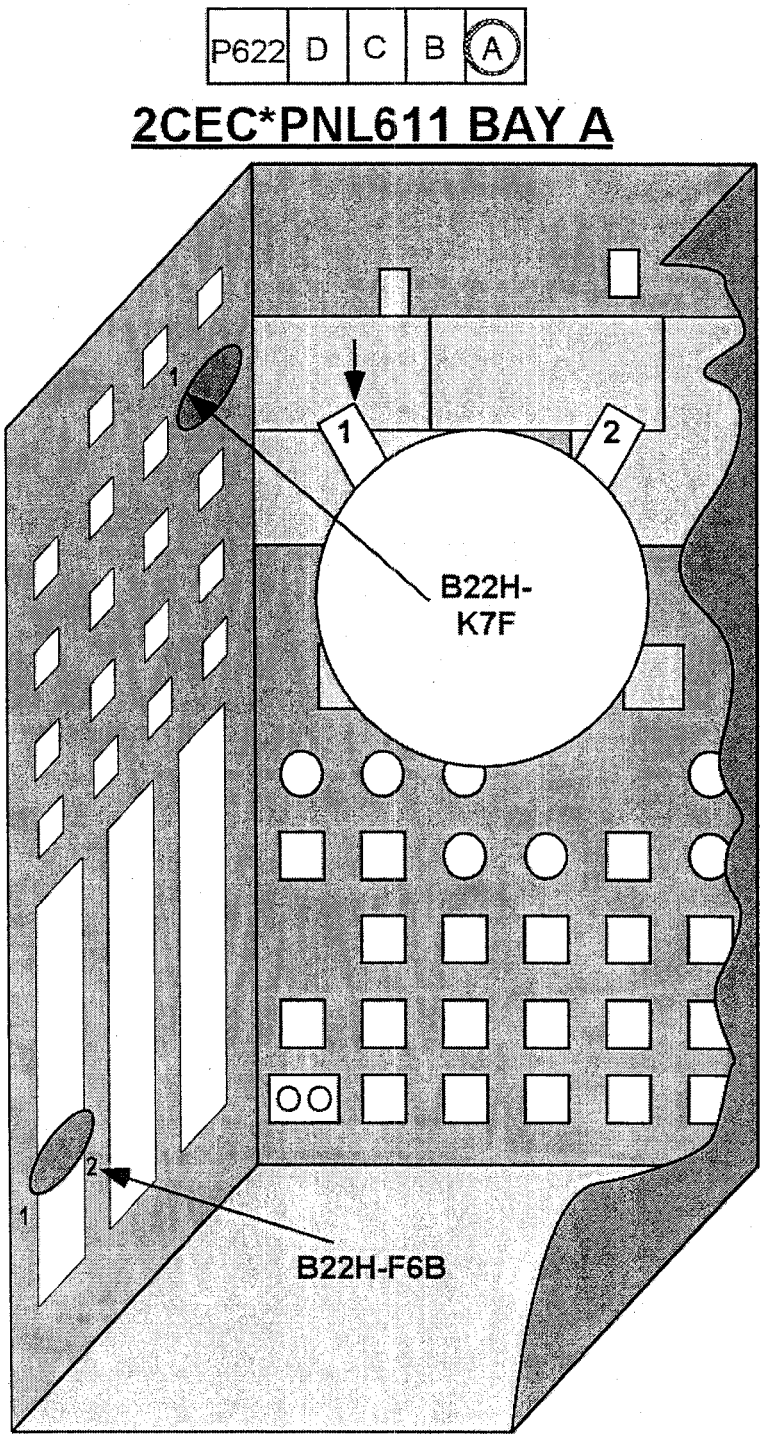

FIGURE 18-3

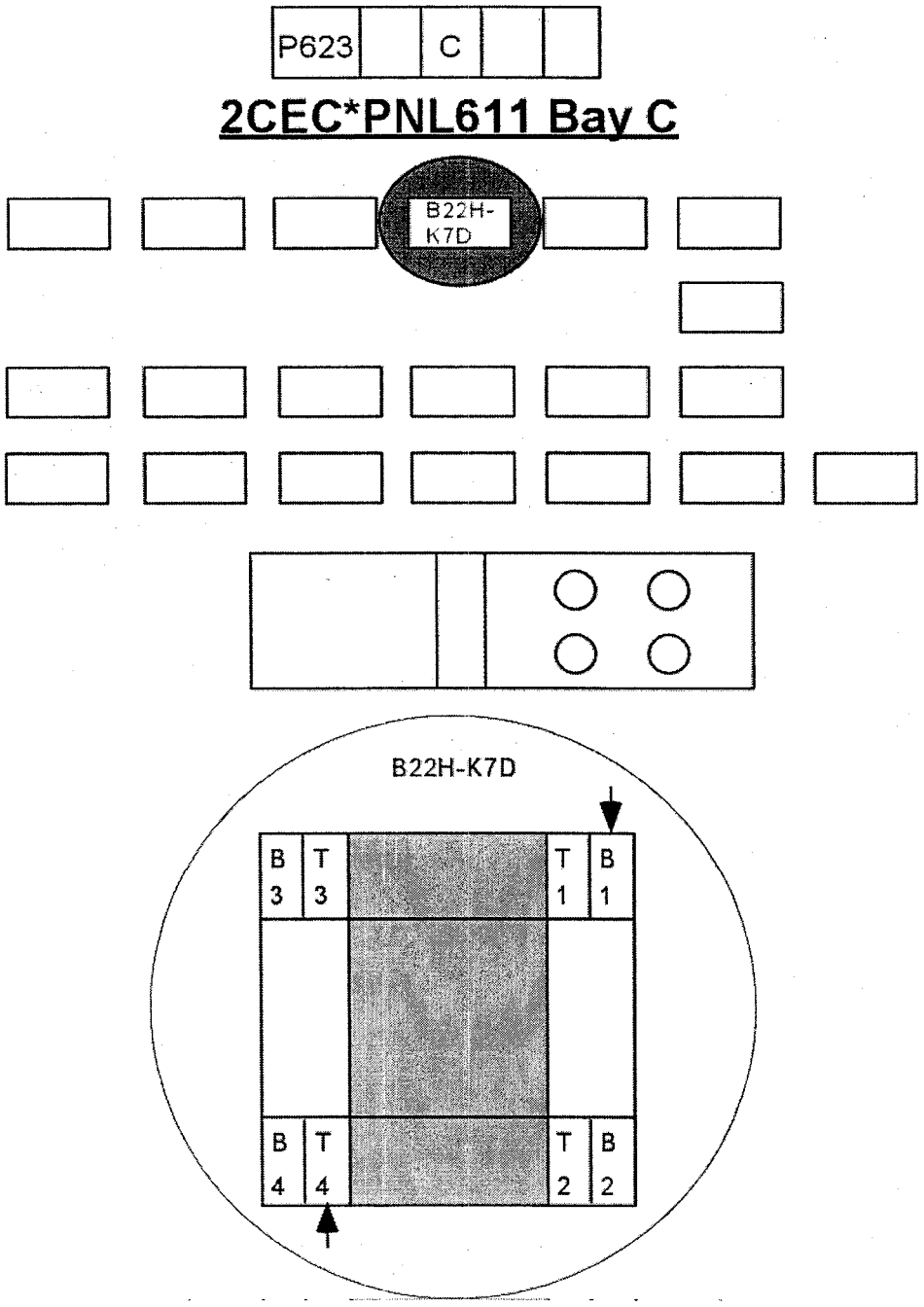

FIGURE 18-4

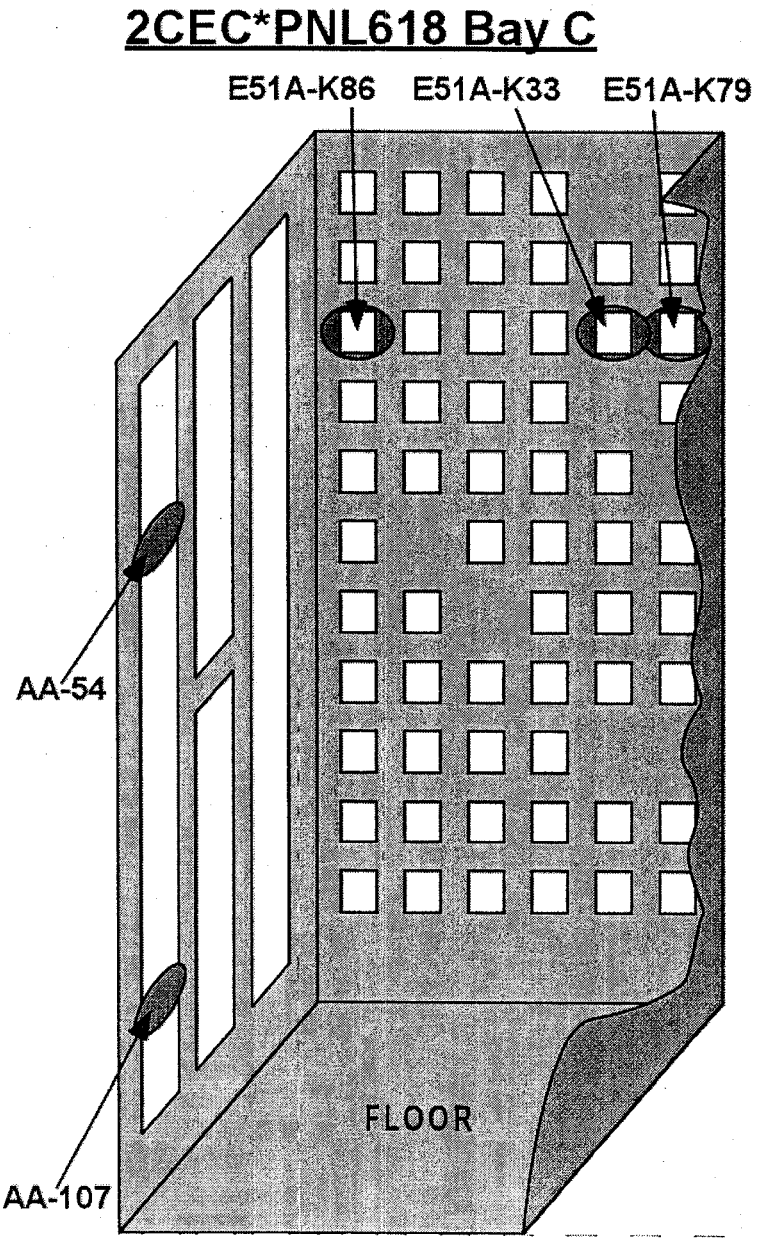

FIGURE 18-5

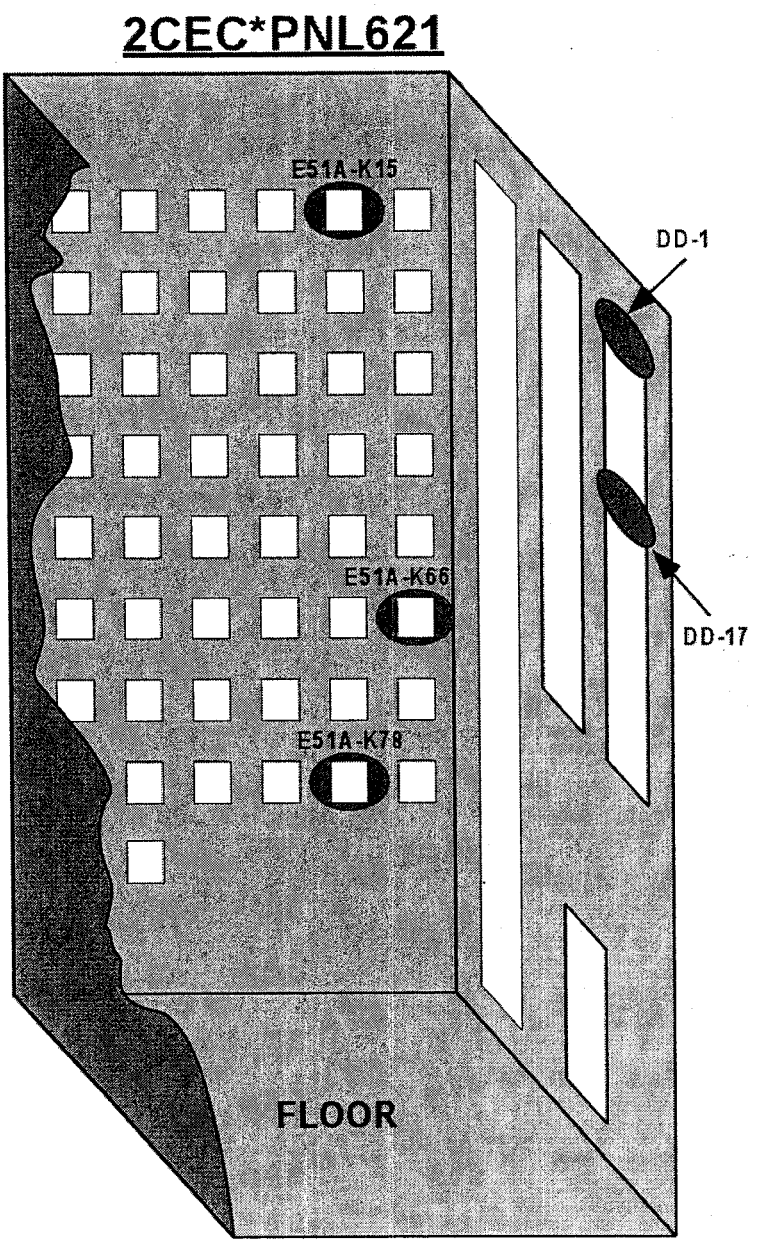

FIGURE 18-6

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Energize Reserve Station Transformer 1B and NPS-SWG003. Revision: NRC 2008
Task Number: N2-262000-01002, N2-SOP-03-01001

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X_____Perform _____Simulate

Evaluation Location:_____Plant ____X__Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if <u>any</u> critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

Reset to IC-186. Place simulator in RUN. After 86's trip/roll, delete malfunction ED02B to restore Line 6 and open MDS-2, to place in correct SOP-3 fault identification lineup.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-SOP-03

Tools and Equipment:

1. None

Task Standard:

Reserve Transformer 1B energized from Line 6. NPS-SWG003 energized from Reserve Transformer 1B. NNS-SWG013 and NNS-SWG015 energized from NPS-SWG003.

Initial Conditions:
1. The plant experienced a Loss of Line 6.
2. The plant was manually scrammed.
3. Immediate and Subsequent Actions of N2-SOP-3 are complete.
4. Fault Identification and Isolation per Attachment 1 Section 1.6 are complete.
5. Power has been restored to Line 6 and Power Control has verified its reliability.
6. Ask the operator for any questions.

Initiating cue:
" (Operator's name), Energize Reserve Station Transformer 1B from Line 6 per N2-SOP-3. Then restore power to 2NPS-SWG003 from Transformer 1B, NNS-SWG013 and NNS-SWG015 from 2NPS-SWG003 per N2-SOP-3."

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	☐ Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	☐ N2-SOP-3 obtained. Precautions & Limitations are reviewed and Attachment 1 Section 1.7 referenced.	Sat/Unsat
3. Review Attachment 1 Section 1.7 Power Restoration to determine applicable Attachment to Energize Reserve Transformer 1B	☐ Per step 1.7.2, determines performance of Attachment 6 is required.	Sat/Unsat
4. At Panel 808 (CB 288'), verify reset 86-2SPRY01 (RES STA SER XFMR 1B PRIM PROT LO RELAY).	☐ Verifies 86 device is reset	Sat/Unsat
Cue: If asked, inform the candidate that 86-SPRY01 is reset.		
5. At Panel 809 (CB 288'), verify reset 86-2SPRZ08 (RES STA SER XFMR 1B BU PROT LOCKOUT RELAY).	☐ Verifies 86 device is reset	Sat/Unsat
Cue: If asked, inform the candidate that 86-SPRZ08 is reset.		
6. Determine step 6.2 is N/A	☐ Marks N/A block for step 6.2	Sat/Unsat
7. Determine section 6.3 is applicable	☐ Carries out the actions of section 6.3	Sat/Unsat

Performance Steps	Standard	Grade
8. Close MDS2 - (115 KV MOD SWITCH 63) LINE 6.	❑ Places MDS2 control switch to CLOSE ❑ Observes MDS2 red light – ON ❑ Observes MDS2 green light – OFF	**Pass/Fail** Sat/Unsat Sat/Unsat
9. Close MDS4 - (115 KV CIRCUIT SWITCHER CKT SWITCH 38).	❑ Places MDS4 control switch from PULL-TO-LOCK to NORMAL-AFTER-OPEN ❑ Places MDS4 control switch to CLOSE ❑ Observes MDS4 red light – ON ❑ Observes MDS4 green light – OFF The following annunciators clear with no required action: ❑ 852421 "MOT Operator CKT 2YUC-MDS4" ❑ 852435 "RES STA SER XFMER 1B Loss of Voltage"	**Pass/Fail** **Pass/Fail** Sat/Unsat Sat/Unsat
10. IF required, place in Normal-After-Trip 2NPS-SWG003-1.	❑ Places 3-1 control switch from PULL-TO-LOCK to NORMAL-AFTER-TRIP. ❑ Observes 3-1 green light – ON	**Pass/Fail** Sat/Unsat
11. Return to Attachment 1 Section 1.7.	❑ Per step 1.7.8, determines performance of Attachment 7 is required.	Sat/Unsat
12. Step 7.1 Prerequisites **Cue: If asked, 7.1.4 lockouts have been verified reset. Step 7.1, Prerequisites, are completed**		
12. Determines section 7.2 is applicable	❑ Carries out the actions of section 7.2	Sat/Unsat
13. Place 3-14 in Pull-to-Lock.	❑ Places 3-14 control switch in PULL-TO-LOCK ❑ Observes 3-14 green/red lights – OFF The following annunciator clears with no required action: ❑ 852560 "13.8KV Bus NPS003 ACB 3-1/14/16 Auto Trip/FTC	**Pass/Fail** Sat/Unsat
14. Place the SYNC switch to ON (SYNCHRONIZE RES STA SVCE XFMR 1B).	❑ Rotates the SYNC switch to ON	**Pass/Fail**

Performance Steps	Standard	Grade
15. Close 3-1.	❑ Rotates 3-1 control switch to CLOSE ❑ Observes 3-1 red light – ON ❑ Observes 3-1 green light – OFF Numerous annuciators clear. Numerous annunciators alarm. Numerous annunciators reflash. None of these requires action.	**Pass/Fail** Sat/Unsat Sat/Unsat
16. Place the SYNC switch to OFF.	❑ Rotates the SYNC switch to OFF	**Pass/Fail**
17. Close 13-6.	❑ Rotates 13-6 control switch from PULL-TO-LOCK to NORMAL-AFTER-TRIP. ❑ Observes 13-6 green light – ON ❑ Rotates 13-6 control switch to CLOSE ❑ Observes 13-6 red light – ON ❑ Observes 13-6 green light – OFF The following annunciator clears with no required action: ❑ 852527 "4KV Bus NNS 013 Undervoltage"	**Pass/Fail** Sat/Unsat **Pass/Fail** Sat/Unsat Sat/Unsat
18. Return to Attachment 1 Section 1.7.	❑ Per step 1.7.10, determines performance of Attachment 9 is required.	Sat/Unsat
19. Step 9.1 Prerequisites **Cue: If asked, 9.1.4 lockout is verified reset.** **Step 9.1, Prerequisites, are completed**		
20. Determines section 9.2 is applicable	❑ Carries out the actions of section 7.2	Sat/Unsat
21. Verify closed 3-6.	❑ Rotates 3-6 control switch from PULL-TO-LOCK to NORMAL-AFTER-TRIP. ❑ Observes 3-6 green light – ON ❑ Rotates 3-6 control switch to CLOSE ❑ Observes 3-6 red light – ON ❑ Observes 3-6 green light – OFF	**Pass/Fail** Sat/Unsat **Pass/Fail** Sat/Unsat Sat/Unsat
22. Close 15-3	❑ Rotates 15-3 control switch from PULL-TO-LOCK to NORMAL-AFTER-TRIP. ❑ Observes 15-3 green light – ON	**Pass/Fail** Sat/Unsat

Performance Steps	*Standard*	*Grade*
	❑ Rotates 15-3 control switch to CLOSE	**Pass/Fail**
	❑ Observes 15-3 red light – ON	Sat/Unsat
	❑ Observes 15-3 green light – OFF	Sat/Unsat

23. Reports that Reserve Station Transformer 1B is energized from Line 6, and 2NPS-SWG003 & NNS-SWG013 are energized from Reserve Station Transformer 1B

Cue: Acknowledge report.

TERMINATING CUE: Reserve Transformer 1B energized from Line 6. NPS-SWG003 energized from Reserve Transformer 1B. NNS-SWG013 and NNS-SWG015 energized from NPS-SWG003.

RECORD STOP TIME_____

Initial Conditions:

1. The plant experienced a Loss of Line 6.
2. The plant was manually scrammed.
3. Immediate and Subsequent Actions of N2-SOP-3 are complete.
4. Fault Identification and Isolation per Attachment 1 Section 1.6 are complete.
5. Power has been restored to Line 6 and Power Control has verified its reliability.
6. Ask the operator for any questions.

Initiating cue:

RO- " (Operator's name), Energize Reserve Station Transformer 1B from Line 6, then restore power to 2NPS-SWG003 and NNS-SWG013 per N2-SOP-3 Attachment 1 Section 1.7 Power Restoration."

Initial Conditions:

1. The plant experienced a Loss of Line 6.
2. The plant was manually scrammed.
3. Immediate and Subsequent Actions of N2-SOP-3 are complete.
4. Fault Identification and Isolation per Attachment 1 Section 1.6 are complete.
5. Power has been restored to Line 6 and Power Control has verified its reliability.
6. Ask the operator for any questions.

Initiating cue:
" (Operator's name), Energize Reserve Station Transformer 1B from Line 6 per N2-SOP-3. Then restore power to 2NPS-SWG003 from Transformer 1B, NNS-SWG013 and NNS-SWG015 from 2NPS-SWG003 per N2-SOP-3."

Candidate: *Direct ALL communications and announcements through the JPM Evaluator, first.*

1.6 Fault Identification and Isolation

NOTE: Do **NOT** reset any Relay Targets UNTIL they have been logged.

1.6.1 Dispatch operators to the following areas, as applicable, to investigate for the cause of the loss of power **AND** report all protective devices actuated:

NOTE: This step is **NOT** sequence dependent AND is to be performed on a NOT to interfere with power restoration basis.

- For each relay target that is tripped, perform the following:
  - Record relay name..... (__)
  - Reset relay target..... (__)
- NMP Unit 2 switchyard..... (__)
- Scriba switchyard..... (__)
- 13.8 KV Non-Safety Related switchgear..... (__)
- 4.16 KV Non-Safety Related switchgear..... (__)
- 4.16 KV Emergency switchgear..... (__)
- Relay Room..... (__)

1.6.2 (C2) To aid in determining the cause for the loss of power, perform the following:

- Contact Electrical Maint. For assistance..... (__)
- Scan all Control Room panels for abnormal indications which may aid in identifying the cause for loss of power..... (__)
- Request assistance from I&C AND Meter & Test as necessary..... (__)
- Refer to electrical diagrams AND load lists as necessary to identify affected loads..... (__)

1.6.3 Notify System Power Control of loss of power AND any known causes..... (__)

NOTE: A loss of Aux Boiler Transformer will be indicated by annunciator 852433 AUX BOILER TRANSFORMER LOSS OF VOLTAGE.

1.6.4 IF..... Aux Boiler Transformer is de-energized,

THEN.. Verify the following:

N/A, Aux Boiler Transformer is energized(__)

At Panel 852:

- MDS5 to Pull-to-Lock ..... (__)
- 18-2 to Pull-to-Lock ..... (__)
- 2-5 to Pull-to-Lock ..... (__)

NOTE: A loss of Line 5 AND Reserve Station Service Transformer 1A will be indicated by zero voltage on 115KV FEED FROM SCRIBA STATION LINE KILOVOLTS AND annunciator 852434 RES STA SER XFMER 1A LOSS OF VOLTAGE.

1.6.5 IF..... Line 5 AND Reserve Station Service Transformer 1A are de-energized,

THEN.. Verify the following:

N/A, Line 5 AND Reserve Transformer 1A are energized ..... (__)

At Panel 852:

- MDS3 to Pull-to-Lock ..... (__)
- MDS10 to Open ..... (__)
- MDS1 to Open ..... (__)
- 16-2 to Pull-to-Lock ..... (__)
- 1-1 to Pull-to-Lock ..... (__)
- 2-1 to Pull-to-Lock ..... (__)
- 3-16 to Pull-to-Lock ..... (__)

NOTE: A loss of 2NPS-SWG001 will be indicated by annunciator 852509 13.8 KV BUS NPS 001 UNDERVOLTAGE.

1.6.6 IF..... 2NPS-SWG001 is de-energized,

THEN.. Verify the following:

N/A, 2NPS-SWG001 is energized ..... (__)

At Panel 852:

- 11-3 to Pull-to-Lock ..... (__)
- 14-2 to Pull-to-Lock ..... (__)

1.6.6 (Cont)

At Panel 851:

- 2CNM-P2A to Pull-to-Lock ..... (__)
- 2CNM-P2C (from SWG001) to Pull-to-Lock ..... (__)
- 2FWS-P1A to Pull-to-Lock ..... (__)
- 2FWS-P1C (from SWG001) to Pull-to-Lock ..... (__)
- 2CWS-P1A to Pull-to-Lock ..... (__)
- 2CWS-P1C to Pull-to-Lock ..... (__)
- 2CWS-P1E to Pull-to-Lock ..... (__)
- 2IAS-C3A to Pull-to-Lock ..... (__)
- 2CNM-P1A to Pull-to-Lock ..... (__)
- 2CNM-P1C to Pull-to-Lock ..... (__)

At Panel 603:

- 2RDS-P1A to Pull-to-Lock ..... (__)

At Panel 602:

- 2WCS-P1A to Pull-to-Lock ..... (__)

At Panel 601:

- 2CCP-P1C to Pull-to-Lock ..... (__)
- 2CCP-P3C to Pull-to-Lock ..... (__)
- 2CCP-P1A to Pull-to-Lock ..... (__)
- 2CCS-P1A to Pull-to-Lock ..... (__)
- 2CCS-P1C to Pull-to-Lock ..... (__)

NOTE: A loss of 2ENS*SWG101 will be indicated by zero volts on 4KV EMER BUS 101 VOLTS.

1.6.7 IF..... 2ENS*SWG101 is de-energized,

THEN .. Verify the following:

N/A, 2ENS*SWG101 is energized ..... (__)

At Panel 852:

- 101-1 to Pull-to-Lock ..... (__)
- 101-13 to Pull-to-Lock ..... (__)
- 101-10 to Pull-to-Lock ..... (__)
- 101-11 to Pull-to-Lock ..... (__)

1.6.7 (Cont)

At Panel 601:

- 2RHS*P1A to Pull-to-Lock ..... (__)
- 2CSL*P1 to Pull-to-Lock ..... (__)

At Panel 873:

- 2SFC*P1A to Pull-to-Lock..... (__)

NOTE: A loss of Line 6 AND Reserve Station Service Transformer 1B will be indicated by zero voltage on 115KV FEED FROM JAF ENERGY CENTER LINE KILOVOLTS AND annunciator 852435 RES STA SER XFMER 1B LOSS OF VOLTAGE.

1.6.8 IF..... Line 6 AND Reserve Station Service Transformer 1B are de-energized,

THEN.. Verify the following:

N/A, Line 6 AND Reserve Transformer 1B are energized..... (__)

At Panel 852:

- MDS4 to Pull-to-Lock..... (__)
- MDS20 to Open ..... (__)
- MDS2 to Open ..... (__)
- 17-2 to Pull-to-Lock..... (__)
- 3-1 to Pull-to-Lock..... (__)
- 1-16 to Pull-to-Lock..... (__)

NOTE: A loss of 2NPS-SWG003 will be indicated by annunciator 852529 13.8 KV BUS NPS 003 UNDERVOLTAGE.

1.6.9 IF..... 2NPS-SWG003 is de-energized,

THEN.. Verify the following:

N/A, 2NPS-SWG003 is energized..... (__)

At Panel 852:

- 13-6 to Pull-to-Lock..... (__)
- 15-3 to Pull-to-Lock..... (__)

1.6.9 (Cont)

At Panel 851:

- 2CNM-P2B to Pull-to-Lock ..... (__)
- 2CNM-P2C (from SWG003) to Pull-to-Lock ..... (__)
- 2FWS-P1B to Pull-to-Lock ..... (__)
- 2FWS-P1C (from SWG003) to Pull-to-Lock ..... (__)
- 2CWS-P1B to Pull-to-Lock ..... (__)
- 2CWS-P1D to Pull-to-Lock ..... (__)
- 2CWS-P1F to Pull-to-Lock ..... (__)
- AUTO TURNING GEAR MOTORS to Pull-to-Lock ..... (__)
- 2IAS-C3B to Pull-to-Lock ..... (__)
- 2CNM-P1B to Pull-to-Lock ..... (__)
- 2CNM-P1C to Pull-to-Lock ..... (__)

At Panel 603:

- 2RDS-P1B to Pull-to-Lock ..... (__)

At Panel 602:

- 2WCS-P1B to Pull-to-Lock ..... (__)

At Panel 601:

- 2CCP-P1B to Pull-to-Lock ..... (__)
- 2CCP-P3B to Pull-to-Lock ..... (__)
- 2CCP-P3A to Pull-to-Lock ..... (__)
- 2CCS-P1B to Pull-to-Lock ..... (__)

NOTE: A loss of 2ENS*SWG103 will be indicated by zero volts on 4KV EMER BUS 103 VOLTS.

1.6.10 IF..... 2ENS*SWG103 is de-energized,

THEN.. Verify the following:

N/A, 2ENS*SWG103 is energized ..... (__)

At Panel 852:

- 103-14 to Pull-to-Lock ..... (__)
- 103-4 to Pull-to-Lock ..... (__)
- 103-2 to Pull-to-Lock ..... (__)
- 103-8 to Pull-to-Lock ..... (__)

At Panel 601:

- 2RHS*P1B to Pull-to-Lock ..... (__)
- 2RHS*P1C to Pull-to-Lock ..... (__)

1.6.10 (Cont)

At Panel 875:

- 2SFC*P1B to Pull-to-Lock..... (__)

NOTE: A loss of 2ENS*SWG102 will be indicated by zero volts on 4KV EMER BUS 102 VOLTS.

1.6.11 IF..... 2ENS*SWG102 is de-energized,

THEN.. Verify the following:

N/A, 2ENS*SWG102 is energized..... (__)

At Panel 852:

- 102-1 to Pull-to-Lock..... (__)
- 102-4 to Pull-to-Lock..... (__)
- 102-5 to Pull-to-Lock..... (__)

At Panel 601:

- 2CSH*P1 to Pull-to-Lock..... (__)

Initials/Date

1.6.12 Identify any faulted components/busses, notify SM/CRS. ____/____
SM/CRS

1.6.13 Isolate any faulted components/busses ..... (__)

1.6.14 Reset lockouts caused by power loss ..... (__)

1.6.15 IF..... **ONLY** Line 5 **OR** Line 6 is lost (NOT BOTH),

N/A, Neither OR BOTH Lines were lost ..... (__)

AND... NO physical damage is noted in the Scriba OR NMP U2 switchyards,

AND... **NONE** of the following 86 devices were tripped:

At Panel 805 (CB 288')

- ☐ 86-2SPRX01 (RES STA SER XFMR 1A PRIM PROT LO RELAY)
- ☐ 86-1-2SPRX01 (RES STA SER XFMR 1A PRIM TRANSFER TRIP LO RELAY)

At Panel 806 (CB 288')

- ☐ 86-2SPRZ01 (RES STA SER XFMR 1A BU PROT LOCKOUT RELAY)
- ☐ 86-1-2SPRZ01 (RES STA SER XFMER B/U TRANSFER TRIP LO RELAY)

At Panel 808 (CB 288')

- ☐ 86-2SPRY01 (RES STA SER XFMR 1B PRIM PROT LO RELAY)

At Panel 809 (CB 288')

- ☐ 86-2SPRZ08 (RES STA SER XFMR 1B BU PROT LOCKOUT RELAY)

At Panel 811 (CB 288')

- ☐ 86-2SPRY11 (AUX BOILER XFMR ABS-X1 PRIM PROT LOCKOUT RELAY)

At Panel 802 (CB 288')

- ☐ 86-2SPRX11 (AUX BOILER SER XFMR BU PROT LOCKOUT RELAY)

1.6.15 (Cont)

****

CAUTION

Attempting to energize the lost 115KV buses from the remaining offsite line, BEFORE the 115KV Line fault is isolated, may result in a complete loss of offsite power.

****

THEN.. a. **DO NOT** attempt to re-energize the lost 115KV busses UNTIL the 115KV Line fault location is known AND isolated.

AND... b. Perform Attachment 13 (Single Line Fault Evaluation Line 5(6)) of this procedure to locate the fault..... (__)

1.6.16 WHEN..The fault is identified AND isolated,

THEN.. Determine the appropriate lineup to restore power to the plant utilizing Section 1.7 ..... (__)

1.7 Power Restoration

NOTE: Steps 1.7.1 through 1.7.11 may be performed in any order.

1.7.1 IF..... Reserve Station Service Transformer 1A is de-energized,

N/A, Reserve Transformer 1A is energized..... (__)

THEN.. Perform Attachment 2 of this procedure..... (__)

1.7.2 IF..... Reserve Station Service Transformer 1B is de-energized,

N/A, Reserve Transformer 1B is energized..... (__)

THEN.. Perform Attachment 6 of this procedure..... (__)

1.7.3 IF..... Aux Boiler Transformer is de-energized,

N/A, Aux Boiler Transformer is energized..... (__)

THEN.. Perform Attachment 10 of this procedure..... (__)

1.7.4 IF..... 2ENS*SWG101 is de-energized,

OR..... Offsite power is to be restored to 2ENS*SWG101 WHILE Div I Diesel is supplying the bus,

N/A, 2ENS*SWG101 is energized AND restoration not required..... (__)

THEN.. Perform Attachment 4 of this procedure..... (__)

1.7.5 IF..... 2ENS*SWG103 is de-energized,

OR..... Offsite power is to be restored to 2ENS*SWG103 WHILE Div II Diesel is supplying the bus,

N/A, 2ENS*SWG103 is energized AND restoration not required..... (__)

THEN.. Perform Attachment 8 of this procedure..... (__)

1.7.6 IF..... 2ENS*SWG102 is de-energized,

OR..... Offsite power is to be restored to 2ENS*SWG102 WHILE Div III Diesel is supplying the bus,

N/A, 2ENS*SWG102 is energized AND restoration not required ..... (__)

THEN.. Perform Attachment 11 of this procedure..... (__)

1.7.7 IF..... 2NPS-SWG001 is de-energized,

N/A, 2NPS-SWG101 is energized..... (__)

THEN.. Perform Attachment 3 of this procedure..... (__)

1.7.8 IF..... 2NPS-SWG003 is de-energized,

N/A, 2NPS-SWG003 is energized..... (__)

THEN.. Perform Attachment 7 of this procedure..... (__)

1.7.9 IF..... 2NNS-SWG014 is de-energized,

N/A, 2NNS-SWG014 is energized..... (__)

THEN.. Perform Attachment 5 of this procedure..... (__)

1.7.10 IF..... 2NNS-SWG015 is de-energized,

N/A, 2NNS-SWG015 is energized..... (__)

THEN.. Perform Attachment 9 of this procedure..... (__)

1.7.11 IF..... All LOCA signals are cleared,

N/A, LOCA signals not cleared..... (__)

THEN.. Verify in OFF the following:

- Div I EDG LOCA SIGNAL BYPASS..... (__)
- Div II EDG LOCA SIGNAL BYPASS..... (__)

ATTACHMENT 6: ENERGIZING RESERVE STATION SERVICE TRANSFORMER 1B

NOTE: The following steps are performed at Panel 852 UNLESS otherwise noted.

6.1 Prerequisites

6.1.1 (C5) PRIOR to executing the following steps, power must be available from Line 5 OR Line 6. Contact System Power Control to verify availability AND reliability of the offsite source(s) PRIOR to restoration.

6.1.2 Attachment 1 Section 1.6 Fault Identification and Isolation is complete.

6.1.3 Upon completion of Attachment 6, return to Attachment 1 Section 1.7 as appropriate to restore power to the plant.

* *

CAUTION

Attempting to energize Reserve Station Service Transformer 1B WITHOUT resetting lockout relays 86-2SPRY01 OR 86-2SPRZ08 may result in a complete loss of offsite power.

* *

6.1.4 At Panel 808 (CB 288'), verify reset 86-2SPRY01 (RES STA SER XFMR 1B PRIM PROT LO RELAY).

6.1.5 At Panel 809 (CB 288'), verify reset 86-2SPRZ08 (RES STA SER XFMR 1B BU PROT LOCKOUT RELAY).

6.2 Energizing Reserve Station Service Transformer 1B from Line 5

N/A, Reserve Transformer 1B will NOT be energized from Line 5 .... (__)

6.2.1 Close MDS1 - (115 KV MOD SWITCH 53) LINE 5.

6.2.2 Close MDS10 - (115 KV MOD SWITCH 8107).

6.2.3 Close MDS20 - (115 KV MOD SWITCH 8106).

6.2.4 Close MDS4 - (115 KV CIRCUIT SWITCHER CKT SWITCH 38).

6.2.5 IF required, place in Normal-After-TRIP 2NPS-SWG003-1.

6.2.6 Return to Attachment 1 Section 1.7.

6.3 Energizing Reserve Station Service Transformer 1B from Line 6

N/A, Reserve Transformer 1B will NOT be energized from Line 6 ..... (__)

6.3.1 Close MDS2 - (115 KV MOD SWITCH 63) LINE 6.

6.3.2 Close MDS4 - (115 KV CIRCUIT SWITCHER CKT SWITCH 38).

6.3.3 IF required, place in Normal-After-Trip 2NPS-SWG003-1.

6.3.4 Return to Attachment 1 Section 1.7.

ATTACHMENT 7: ENERGIZING 2NPS-SWG003

NOTE: The following steps are performed at Panel 852 UNLESS otherwise noted.

7.1 Prerequisites

7.1.1 PRIOR to executing the following steps, power must be available from one of the following sources:

- Reserve Station Service Transformer 1B (Attachment 6)
- Reserve Station Service Transformer 1A (Attachment 2)

7.1.2 Attachment 1 Section 1.6 Fault Identification and Isolation is complete.

7.1.3 Upon completion of Attachment 7, return to Attachment 1 Section 1.7 as appropriate to restore power to the plant.

7.1.4 Verify reset the following lockouts:

At Panel 813 (CB 288'):

☐ 86-2NPSY01 (13.8KV BUS NPS-003 PROT LOCKOUT RLY)

At Panel 810 (CB 288'):

☐ 86-2SPXX01 (AUX XFMR ATX-XS3 PROT LOCKOUT RELAY)

At Panel 813 (CB 288'):

☐ 86-2NNSY04 (4.16KV BUS NNS-013 PROT LOCKOUT RLY)

At Panel 815 (CB 288'):

☐ 86-2NNSX05 (4.16KV BUS NNS-012 PROT LOCKOUT RELAY)

At Panel 867 (CB 288'):

☐ 86-2SPGZ01 (GENERATOR BACKUP PROT LOCKOUT RELAY 2)

7.2 Energizing 2NPS-SWG003 from Reserve Station Service Transformer 1B

N/A, 2NPS-SWG003 will NOT be energized from Reserve Transformer 1B..... (__)

7.2.1 Place 3-14 in Pull-to-Lock.

7.2.2 Place the SYNC switch to ON (SYNCHRONIZE RES STA SVCE XFMR 1B).

7.2.3 Close 3-1.

7.2.4 Place the SYNC switch to OFF.

7.2.5 Close 13-6.

7.2.6 Return to Attachment 1 Section 1.7.

7.3 Energizing 2NPS-SWG003 from Reserve Station Service Transformer 1A

N/A, 2NPS-SWG003 will NOT be energized from Reserve Transformer 1A..... (__)

7.3.1 Place 3-14 in Pull-to-Lock.

7.3.2 At Switchgear 2NPS-SWG003, perform the following:

a. Remove breaker from cubicle 3-1.

b. Verify the following:

- At Panel 852, 3-16 is in Pull-to Lock.
- Control circuit fuses are removed.
- Circuit breaker is OPEN.

c. Install circuit breaker in cubicle 3-16.

d. Install control circuit fuses.

7.3.3 Place the SYNC switch to ON (SYNCHRONIZE RES STA SVCE XFMR 1A).

7.3.4 Close 3-16.

7.3.5 Place the SYNC switch to OFF.

7.3.6 Close 13-6.

7.3.7 Return to Attachment 1 Section 1.7.

ATTACHMENT 9: ENERGIZING 2NNS-SWG015 (STUB BUS)

NOTE: The following steps are performed at Panel 852 UNLESS otherwise noted.

9.1 Prerequisites

9.1.1 PRIOR to executing the following steps, power must be available from one of the following sources:

- 2NPS-SWG003 (Attachment 7)
- 2ENS*SWG103 (Division II Emergency Switchgear) (Attachment 8)

9.1.2 Attachment 1 Section 1.6 Fault Identification and Isolation is complete.

9.1.3 Upon completion of Attachment 9, return to Attachment 1 Section 1.7 as appropriate to restore power to the plant.

9.1.4 At Panel 804 (CB 288'), verify reset 86-2NNSY15 (4.16KV BUS NNS-015 PROTECTION LOCKOUT RELAY)

9.2 Energizing 2NNS-SWG015 (Stub Bus) from 2NPS-SWG003

N/A, 2NNS-SWG015 will NOT be energized from 2NPS-SWG003..... (__)

9.2.1 Verify closed 3-6.

9.2.2 Close 15-3.

9.2.3 Return to Attachment 1 Section 1.6.

9.3 Energizing 2NNS-SWG015 (Stub Bus) from 2ENS*SWG103

N/A, 2NNS-SWG015 will NOT be energized from 2ENS-SWG003..... (__)

****

CAUTION

Energizing 2NNS-SWG015 from 2ENS*SWG103 WHEN the Div II Diesel is supplying the bus is NOT permitted during a LOCA.

****

9.3.1 Place 15-3 in Pull-to-Lock.

NOTE: The following step requires a PA 2235 Key located in the CRO's desk.

9.3.2 IF 2NNS-SWG015 is needed for SBO recovery, THEN at Panel 852, place the Div II LOCA SIGNAL BYPASS switch to ON.

9.3.3 Do NOT exceed the emergency diesel generator rating, 4400 KW (4840 KW 2 hour limit) WHEN re-energizing STUB Bus 2NNS-SWG015.

9.3.4 At 2ENS*SWG103 (CB 261'), verify reset 86-2ENSY12. (Breaker 103-8)

9.3.5 Close 103-8.

9.3.6 Close 15-8.

9.3.7 Return to Attachment 1 Section 1.6.

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Initiate Suppression Chamber Cooling And Spray using RHS "A" Revision: NRC 2008

Task Number: N2-205000-01013

Approvals:

9/22/08

General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: __X____Perform _____Simulate

Evaluation Location:_____Plant ____X__Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Simulator

Simulator Set-up:

1. Reset to IC 187

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. EOP-6 Attachment 22
2. NUREG K/A 226001 A4.01

Tools and Equipment:

1. None

Task Standard:

Suppression Pool Cooling & Spray initiated using RHS "A"

Initial Conditions:

1. A Small Break LOCA has occurred.
2. Primary Containment Control EOP has been entered.

Initiating cue:

"(Operator's name), Place RHR Loop A in Suppression Pool Cooling and Spray operation per N2-EOP-6, Attachment 22".

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	EOP-6, Attachment 22 obtained. Step 3.1 identified	Sat/Unsat
3. Start Suppression Chamber Spray:		
N/A, Suppression Chamber Spray is NOT required	Determines Suppression Chamber Spray is required	Sat/Unsat
IF Drywell Sprays are required concurrently with Suppression Chamber Sprays, perform Subsection 3.2		
N/A, Drywell Spray is NOT required	Determines step N/A	
Suppression Chamber Spray using RHS A. (2CEC*PNL601)	Determines step to be used	
N/A, RHS A will NOT be used		
4. IF a LOCA signal is present AND suppression chamber spray operation is directed WITH drywell pressure less than 1.68 psig, perform the following to bypass the high drywell pressure interlock for 2RHS*MOV33A:	Determines bypass not required because DWP is >1.68 psig.	Sat/Unsat

Performance Steps	Standard	Grade
N/A, high drywell pressure interlock will NOT be bypassed NOTE: A L660 key may be needed to gain entry to 2CEC*PNL629. Remove relay E12A-K108A in 2CEC*PNL629, Bay B (Figure 22-4) Install EOP Jumper #42 on terminal points BBB-49 AND AA-119 in 2CEC*PNL629, Bay B (Figure 22-4) Deliver relay E12A-K108A to SM		
5. NOTE: Verifying SWP*MOV90A open may be delayed until after sprays are in service. **This step is NOT sequence critical.** Verify open SWP*MOV90A, HEAT EXCHANGER 1A, SVCE WTR INLET VLV	Open SWP*MOV90A, HEAT EXCHANGER 1A, SVCE WTR INLET VLV	**Pass/Fail/ NA**
6. Verify closed AND IF possible overridden, RHS*MOV24A, LPCI A INJECTION VLV **Failure to override injection valve closed can result in pump runout, if the valve auto opens with FV38A open during Suppression Pool Cooling operation.**	Determines valve is closed by green light ON and red light OFF indication. Places control switch to CLOSE to obtain the amber override light lit.	Sat/Unsat **Pass/Fail**
7. Verify running RHS*P1A, PMP 1A	Determines pump is running by red light ON, green light OFF OR motor amps indication.	Sat/Unsat
8. IF operation in Containment Spray mode AND a trip of 2RHS*P1A occurs, perform emergency refill per Section 3.3	Determines step N/A	Sat/Unsat

Performance Steps		Standard	Grade
9.	Open RHS*MOV33A, OUTLET TO SUPPR POOL SPRAY	Open RHS*MOV33A, OUTLET TO SUPPR POOL SPRAY	**Pass/Fail**
10.	Verify ≥450 gpm on SUPPR SPRAY HEADER FLOW. (2RHS*FI64A)	Determines flow is acceptable	Sat/Unsat
11.	IF Suppression Pool Cooling is directed, throttle open RHS*FV38A, RETURN TO SUPPR POOL COOLING to establish a flow of approximately 7450 gpm (E12-R603A) N/A, Suppression Pool Cooling was NOT directed	Throttle open RHS*FV38A, RETURN TO SUPPR POOL COOLING to attain desired flow rate (7400 to 7500 gpm).	**Pass/Fail**
12.	Verify RHS*MOV4A, PMP 1A MINIMUM FLOW VLV position as follows: IF RHS A is in Suppression Pool Cooling/Spray, verify closed 2RHS*MOV4A OR IF RHS A is in Suppression Chamber Spray ONLY, verify open RHS*MOV4A	Verifies RHS*MOV4A, PMP 1A MINIMUM FLOW VLV valve is closed by green light ON and red light OFF indication.	Sat/Unsat
13.	Verify open SWP*MOV90A, HEAT EXCHANGER 1A, SVCE WTR INLET VLV	Verify open SWP*MOV90A, HEAT EXCHANGER 1A, SVCE WTR INLET VLV by red light ON and green light OFF indication. If valve was previously opened, this is not a critical step.	**Pass/Fail/ NA**
14.	NOTE: Post LOCA, in order to supply greater than 2000 gpm SWP to RHR Heat Exchangers with less than 5 SWP pumps in service it may be necessary to isolate Turbine Bldg. loads IAW N2-OP-31 Section H.12.0.		
	Throttle open SWP*MOV33A, HEAT EXCHANGER 1A SVCE WTR OUTLET VLV to establish Service Water flow to RHR Heat Exchanger 1A NOT to exceed 7400 gpm. (E12-R602A)	Throttles open SWP*MOV33A, HEAT EXCHANGER 1A SVCE WTR OUTLET VLV and verifies flow remains less than 7400 GPM	**Pass/Fail**

Performance Steps	*Standard*	*Grade*
15. NOTE: 2RHS*MOV8A is interlocked in the open position for 10 minutes following a Division I ECCS initiation. WHEN possible, close RHS*MOV8A, HEAT EXCHANGER 1A INLET BYPASS VLV	If possible, close RHS*MOV8A, HEAT EXCHANGER 1A INLET BYPASS VLV OR determines step is N/A	Sat/Unsat/ NA
16. Report completion.	Report completion.	Sat/Unsat

TERMINATING CUE: Suppression Pool Cooling and Spray is in operation

RECORD STOP TIME_____

Initial Conditions:

1. A Small Break LOCA has occurred.
2. Primary Containment Control EOP has been entered.

Initiating cue:

"(Operator's name), Place RHR Loop A in Suppression Pool Cooling and Spray operation per N2-EOP-6, Attachment 22".

ATTACHMENT 22
CONTAINMENT SPRAYS

1.0 PURPOSE

1.1 To provide instruction for operating the RHS system in the containment spray mode. The intent is to use containment sprays to assist in controlling containment pressure, hydrogen concentration or drywell temperature.

1.2 Applicability

1.2.1 When used to support N2-EOP-PC, Primary Containment Control; N2-EOP-PCH, Hydrogen Control; N2-SAP-1, Primary Containment Flooding or N2-SAP-2, RPV, Containment And Radioactivity Release Control.

2.0 TOOLS AND MATERIALS

TOOL/MATERIAL	QTY	LOCATION
EOP Jumper #35	1	2CEC*PNL705B (For RHS A)
EOP Jumper #36	1	2CEC*PNL705B (For RHS A)
EOP Jumper #33	1	2CEC*PNL704A (For RHS B)
EOP Jumper #34	1	2CEC*PNL704A (For RHS B)
EOP Jumper #42	1	2CEC*PNL629, Bay B
EOP Jumper #43	1	2CEC*PNL618, Bay C
PA235 KEY	2	Control Room CSO Desk
F315 KEY	1	Control Room EOP Toolbox

NOTE: PA235, PA1235 and PA2235 are interchangeable.

3.0 PROCEDURE

NOTE: Drywell and Suppression Chamber sprays may be used concurrently.

3.1 Start Suppression Chamber Spray

N/A, Suppression Chamber Spray is NOT required.....(___)

3.1.1 IF Drywell Sprays are required concurrently with Suppression Chamber Sprays, perform Subsection 3.2..... (___)

N/A, Drywell Spray is NOT required.....(___)

3.1.2 Suppression Chamber Spray using RHS A. (*2CEC*PNL601*)

N/A, RHS A will NOT be used.....(___)

a. IF a LOCA signal is present AND suppression chamber spray operation is directed WITH drywell pressure less than 1.68 psig, perform the following to bypass the high drywell pressure interlock for 2RHS*MOV33A:

N/A, high drywell pressure interlock will NOT be bypassed .....(___)

(T) **NOTE:** A L660 key may be needed to gain entry to 2CEC*PNL629.

1. Remove relay E12A-K108A in 2CEC*PNL629, Bay B (Figure 22-4)..... (__)

2. Install EOP Jumper #42 on terminal points BBB-49 AND AA-119 in 2CEC*PNL629, Bay B (Figure 22-4) ..... (__)

3. Deliver relay E12A-K108A to SM..... (__)

(T) **NOTE:** Verifying SWP*MOV90A open may be delayed until after sprays are in service.

b. Verify open SWP*MOV90A, HEAT EXCHANGER 1A, SVCE WTR INLET VLV..... (__)

c. Verify closed AND IF possible overridden, RHS*MOV24A, LPCI A INJECTION VLV..... (__)

d. Verify running RHS*P1A, PMP 1A..... (__)

e. IF operation in Containment Spray mode AND a trip of 2RHS*P1A occurs, perform emergency refill per Section 3.3..... (__)

f. Open RHS*MOV33A, OUTLET TO SUPPR POOL SPRAY ..... (__)

g. Verify ≥450 gpm on SUPPR SPRAY HEADER FLOW. (*2RHS*FI64A*)..... (__)

3.1.2 (Cont)

h. IF Suppression Pool Cooling is directed, throttle open RHS*FV38A, RETURN TO SUPPR POOL COOLING to establish a flow of approximately 7450 gpm *(E12-R603A)*..... (__)

N/A, Suppression Pool Cooling was NOT directed .....(__)

i. Verify RHS*MOV4A, PMP 1A MINIMUM FLOW VLV position as follows:

- IF RHS A is in Suppression Pool Cooling/Spray, verify closed 2RHS*MOV4A..... (__)

OR

- IF RHS A is in Suppression Chamber Spray ONLY, verify open 2RHS*MOV4A ..... (__)

j. Verify open SWP*MOV90A, HEAT EXCHANGER 1A, SVCE WTR INLET VLV..... (__)

NOTE: Post LOCA, in order to supply greater than 2000 gpm SWP to RHR Heat Exchangers with less than 5 SWP pumps in service it may be necessary to isolate Turbine Bldg. loads IAW N2-OP-31 Section H.12.0.

k. Throttle open SWP*MOV33A, HEAT EXCHANGER 1A SVCE WTR OUTLET VLV to establish Service Water flow to RHR Heat Exchanger 1A NOT to exceed 7400 gpm. *(E12-R602A)*..... (__)

NOTE: 2RHS*MOV8A is interlocked in the open position for 10 minutes following a Division I ECCS initiation.

l. WHEN possible, close RHS*MOV8A, HEAT EXCHANGER 1A INLET BYPASS VLV..... (__)

3.1.2 (Cont)

m. At 2SWP*RUZ23A, RHS*E1A SVCE WTR EFFLUENT, start Radiation Monitor 2SWP*RE23A by performing the following: *(2CEC*PNL880B)*

NOTE: A F315 Key is required to start 2SWP*RE23A.

N/A, 2SWP*RE23A is in service OR will be started by Radiation Protection.....(___)

Ⓣ 1. Place the keylock switch to the ENABLE position..... (__)

2. Depress PMP..... (__)

3. Depress 1 ..... (__)

4. Depress 0 ..... (__)

5. Depress 1 ..... (__)

6. Depress ENT ..... (__)

7. Verify EQUIP FAIL light is extinguished..... (__)

Ⓣ 8. Place the keylock switch to the DISABLE position..... (__)

9. At the DRMS console, perform the following:

a) Restore Alarm Group SWP23A to alarming..... (__)

b) Select SWP23A on Status Grid ..... (__)

c) Verify sample pump is ON ..... (__)

d) Verify SWP23A Alarms and Conditions indicate normal..... (__)

n. Notify Radiation Protection to start Radiation Monitor 2SWP*RE23A..... (__)

N/A, 2SWP*RE23A is already in service OR will be started by Operations .....(___)

3.1.3 Suppression Chamber Spray using RHS B (*2CEC*PNL601*).

N/A, RHS B will NOT be used.....(___)

a. IF a LOCA signal is present AND suppression chamber spray operation is directed WITH drywell pressure less that 1.68 psig, perform the following to bypass the high drywell pressure interlock for 2RHS*MOV33B:

N/A, high drywell pressure interlock will NOT be bypassed .....(___)

(T) **NOTE:** A L660 key may be needed to gain entry to 2CEC*PNL618.

1. Remove relay E12A-K108B in 2CEC*PNL618, Bay B (Figure 22-5) ..... (__)

2. Install EOP Jumper #43 on terminal points BB-50 AND CC-32 in 2CEC*PNL618, Bay C (Figure 22-6)..... (__)

3. Deliver relay E12A-K108B to SM ..... (__)

(T) **NOTE:** Verifying SWP*MOV90B open may be delayed until after sprays are in service.

b. Verify open SWP*MOV90B, HEAT EXCHANGER 1B SVCE WTR INLET VLV..... (__)

c. Verify closed AND IF possible overridden, RHS*MOV24B, LPCI B INJECTION VLV ..... (__)

d. Verify running RHS*P1B, PMP 1B ..... (__)

e. IF operating in Containment Spray mode AND a trip of 2RHS*P1B occurs, perform emergency refill per Section 3.4..... (__)

f. Open RHS*MOV33B, OUTLET TO SUPPR POOL SPRAY ..... (__)

g. Verify ≥450 gpm on SUPPR SPRAY HEADER FLOW (*2RHS*FI64B*)..... (__)

3.1.3 (Cont)

h. IF Suppression Pool Cooling is directed, throttle open RHS*FV38B, RETURN TO SUPPR POOL COOLING to establish a flow of approximately 7450 gpm *(E12-R603B)*..... (__)

N/A, Suppression Pool Cooling was NOT directed .....(__)

i. Verify RHS*MOV4B, PMP 1B MINIMUM FLOW VLV position as follows:

- IF RHS B is in Suppression Pool Cooling/Spray, verify closed 2RHS*MOV4B ..... (__)

  OR

- IF RHS B is in Suppression Chamber Spray ONLY, verify open 2RHS*MOV4B ..... (__)

j. Verify open SWP*MOV90B, HEAT EXCHANGER 1B SVCE WTR INLET VLV..... (__)

NOTE: Post LOCA, in order to supply greater than 2000 gpm SWP to RHR Heat Exchangers with less than 5 SWP pumps in service it may be necessary to isolate Turbine Bldg. loads IAW N2-OP-31 Section H.12.0.

k. Throttle open SWP*MOV33B, HEAT EXCHANGER 1B SVCE WTR OUTLET VLV to establish Service Water flow to RHR Heat Exchanger 1B NOT to exceed 7400 gpm (*E12-R602B*)..... (__)

NOTE: 2RHS*MOV8B is interlocked in the open position for 10 minutes following a Division II ECCS initiation.

l. WHEN possible, close RHS*MOV8B, HEAT EXCHANGER 1B INLET BYPASS VLV..... (__)

3.1.3 (Cont)

m. At 2SWP*RUZ23B, RHS*E1B SVCE WTR EFFLUENT, start Radiation Monitor 2SWP*RE23B by performing the following: *(2CEC*PNL880D)*

(T) **NOTE**: A F315 Key is required to start 2SWP*RE23B.

N/A, 2SWP*RE23B is in service OR will be started by Radiation Protection.....(___)

(T) 1. Place the keylock switch to the ENABLE position..... (__)

2. Depress PMP..... (__)

3. Depress 1 ..... (__)

4. Depress 0 ..... (__)

5. Depress 1 ..... (__)

6. Depress ENT ..... (__)

7. Verify EQUIP FAIL light is extinguished..... (__)

(T) 8. Place the keylock switch to the DISABLE position..... (__)

9. At the DRMS console, perform the following:

a) Restore Alarm Group SWP23B to alarming..... (__)

b) Select SWP23B on Status Grid ..... (__)

c) Verify sample pump is ON ..... (__)

d) Verify SWP23B Alarms and Conditions indicate normal..... (__)

n. Notify Radiation Protection to start Radiation Monitor 2SWP*RE23B..... (__)

N/A, 2SWP*RE23B is already in service OR will be started by Operations .....(___)

3.2 Start Drywell Spray

N/A, Drywell Spray is NOT required.....(___)

3.2.1 Drywell Spray using RHS A (*2CEC*PNL601*).

N/A, RHS A will NOT be used.....(___)

a. IF Drywell spray valve interlocks are not met, defeat the RHS*MOV15A/25A interlock by performing the following:

N/A, Drywell spray valve interlocks do NOT need to be defeated...(___)

(T) (T) **NOTE:** A L660 key may be needed to gain entry to 2CEC*PNL705B.

- At 2CEC*PNL705B, install EOP Jumper #35 from terminal strip TC201, TB2 terminal 6 to terminal strip TC201, TB2 terminal 8. (Figure 22-1) .....(__) (T)
- At 2CEC*PNL705B, install EOP Jumper #36 from terminal strip TC201, TB1 terminal 10 to terminal strip TC201, TB1 terminal 14. (Figure 22-1) .....(__)

NOTE: Verifying SWP*MOV90A open may be delayed until after sprays are in service.

b. Verify open SWP*MOV90A, HEAT EXCHANGER 1A SVCE WTR INLET VLV.....(__)

c. Verify closed AND IF possible overridden, RHS*MOV24A, LPCI A INJECTION VLV.....(__)

d. Verify running RHS*P1A, PMP 1A.....(__)

3.2.1 (Cont)

e. IF RHS A Suppression Chamber Spray is required concurrently with Drywell Sprays, perform the following:

N/A, Suppression Chamber Spray is NOT required.....(___)

1. Open RHS*MOV33A, OUTLET TO SUPPR POOL SPRAY..... (__)

2. Verify ≥450 gpm on SUPPR SPRAY HEADER FLOW (*2RHS*FI64A*)..... (__)

f. IF operating in the Containment Spray mode AND a trip of 2RHS*P1A occurs, perform emergency refill per Section 3.3..... (__)

g. Verify closed, RHS*FV38A, RETURN TO SUPPR POOL COOLING..... (__)

h. Verify open, RHS*MOV4A, PMP 1A MINIMUM FLOW VLV..... (__)

i. Open RHS*MOV25A, OUTLET TO DRYWELL SPRAY..... (__)

j. Open RHS*MOV15A, OUTLET TO DRYWELL SPRAY..... (__)

k. Verify closed, RHS*MOV4A, PMP 1A MINIMUM FLOW VLV..... (__)

l. Verify approximately 7450 gpm on DRYWELL SPRAY HEADER FLOW (*2RHS*FI63A*)..... (__)

m. Verify open SWP*MOV90A, HEAT EXCHANGER 1A SVCE WTR INLET VLV..... (__)

NOTE: Post LOCA, in order to supply greater than 2000 gpm SWP to RHR Heat Exchangers with less than 5 SWP pumps in service it may be necessary to isolate Turbine Bldg. loads IAW N2-OP-31 Section H.12.0.

n. Throttle open SWP*MOV33A, HEAT EXCHANGER 1A SVCE WTR OUTLET VLV to establish Service Water flow to RHR Heat Exchanger 1A NOT to exceed 7400 gpm (*E12-R602A*)..... (__)

NOTE: 2RHS*MOV8A is interlocked in the open position for 10 minutes following a Division I ECCS initiation.

3.2.1 (Cont)

o. WHEN possible, close RHS*MOV8A, HEAT EXCHANGER 1A INLET BYPASS VLV..... (__)

p. At 2SWP*RUZ23A, RHS*E1A SVCE WTR EFFLUENT, start Radiation Monitor 2SWP*RE23A by performing the following: *(2CEC*PNL880B)*

(T) **NOTE**: A F315 Key is required to start 2SWP*RE23A.

N/A, 2SWP*RE23A is in service OR will be started by Radiation Protection..... (__)

(T) 1. Place the keylock switch to the ENABLE position..... (__)

2. Depress PMP..... (__)

3. Depress 1 ..... (__)

4. Depress 0 ..... (__)

5. Depress 1 ..... (__)

6. Depress ENT ..... (__)

7. Verify EQUIP FAIL light is extinguished..... (__)

(T) 8. Place the keylock switch to the DISABLE position..... (__)

9. At the DRMS console, perform the following:

a) Restore Alarm Group SWP23A to alarming..... (__)

b) Select SWP23A on Status Grid ..... (__)

c) Verify sample pump is ON ..... (__)

d) Verify SWP23A Alarms and Conditions indicate normal..... (__)

q. Notify Radiation Protection to start Radiation Monitor 2SWP*RE23A..... (__)

N/A, 2SWP*RE23A is already in service OR will be started by Operations ..... (__)

3.2.2 Drywell Spray using RHS B (*2CEC*PNL601*).

N/A, RHS B will NOT be used.....(___)

a. IF Drywell spray valve interlocks are not met, defeat the RHS*MOV15B/25B interlock by performing the following:

N/A, Drywell spray valve interlocks do NOT need to be defeated...(___)

Ⓣ **NOTE:** A L660 key may be needed to gain entry to 2CEC*PNL704A.

Ⓣ • At 2CEC*PNL704A, install EOP Jumper #33 from terminal strip TC110, TB2 terminal 7 to terminal strip TC112, TB2 terminal 19. (Figure 22-2) ..... (__)

Ⓣ • At 2CEC*PNL704A, install EOP Jumper #34 from terminal strip TC108, TB1 terminal 2 to terminal strip TC108, TB1 terminal 4. (Figure 22-3) ..... (__)

NOTE: Verifying SWP*MOV90B open may be delayed until after sprays are in service.

b. Verify open SWP*MOV90B, HEAT EXCHANGER 1B SVCE WTR INLET VLV..... (__)

c. Verify closed AND IF possible overridden, RHS*MOV24B, LPCI B INJECTION VLV ..... (__)

d. Verify running RHS*P1B, PMP 1B..... (__)

3.2.2 (Cont)

e. IF Suppression Chamber Sprays are required concurrently with Drywell Sprays, perform the following:

N/A, Suppression Chamber Spray is NOT required.....(___)

1. Open RHS*MOV33B, OUTLET TO SUPPR POOL SPRAY..... (__)

2. Verify ≥450 gpm on SUPPR SPRAY HEADER FLOW (*2RHS*FI64B*)..... (__)

f. IF operating in the Containment Spray mode AND a trip of 2RHS*P1B occurs, perform emergency refill per Section 3.4 ..... (__)

g. Verify closed, RHS*FV38B, RETURN TO SUPPR POOL COOLING ..... (__)

h. Verify open, RHS*MOV4B, PMP 1B MINIMUM FLOW VLV ..... (__)

i. Open RHS*MOV25B, OUTLET TO DRYWELL SPRAY ..... (__)

j. Open RHS*MOV15B, OUTLET TO DRYWELL SPRAY ..... (__)

k. Verify closed, RHS*MOV4B, PMP 1B MINIMUM FLOW VLV..... (__)

l. Verify approximately 7450 gpm on DRYWELL SPRAY HEADER FLOW (*2RHS*FI63B*)..... (__)

m. Verify open SWP*MOV90B, HEAT EXCHANGER 1B SVCE WTR INLET VLV..... (__)

NOTE: Post LOCA, in order to supply greater than 2000 gpm SWP to RHR Heat Exchangers with less than 5 SWP pumps in service it may be necessary to isolate Turbine Bldg. loads IAW N2-OP-31, Section H.12.0.

n. Throttle open SWP*MOV33B, HEAT EXCHANGER 1B SVCE WTR OUTLET VLV to establish Service Water flow to RHR Heat Exchanger 1B NOT to exceed 7400 gpm (*E12-R602B*)..... (__)

NOTE: 2RHS*MOV8B is interlocked in the open position for 10 minutes following a Division II ECCS initiation.

3.2.2 (Cont)

o. WHEN possible, close RHS*MOV8B, HEAT EXCHANGER 1B INLET BYPASS VLV..... (__)

p. At 2SWP*RUZ23B, RHS*E1B SVCE WTR EFFLUENT, start Radiation Monitor 2SWP*RE23B by performing the following: *(2CEC*PNL880D)*

(T) **NOTE**: A F315 Key is required to start 2SWP*RE23B.

N/A, 2SWP*RE23B is in service OR will be started by Radiation Protection.....(___)

(T) 1. Place the keylock switch to the ENABLE position..... (__)

2. Depress PMP..... (__)

3. Depress 1 ..... (__)

4. Depress 0 ..... (__)

5. Depress 1 ..... (__)

6. Depress ENT ..... (__)

7. Verify EQUIP FAIL light is extinguished..... (__)

(T) 8. Place the keylock switch to the DISABLE position..... (__)

9. At the DRMS console, perform the following:

a) Restore Alarm Group SWP23B to alarming..... (__)

b) Select SWP23B on Status Grid ..... (__)

c) Verify sample pump is ON ..... (__)

d) Verify SWP23B Alarms and Conditions indicate normal..... (__)

q. Notify Radiation Protection to start Radiation Monitor 2SWP*RE23B..... (__)

N/A, 2SWP*RE23B is already in service OR will be started by Operations .....(___)

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Align Service Water to SFC Heat Exchanger 1A Revision: NRC 2008

Task Number:

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: _____Perform ___X__Simulate

Evaluation Location:___X___Plant _____Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Plant

Simulator Set-up:

1. NA

Directions to Operators:

Read Before Every JPM Performance:

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This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

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Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-SOP-38, Rev 04
2. NUREG K/A 233000 K1.02

Tools and Equipment:

1. None

Task Standard:

Service Water is aligned to SFC 1A

Initial Conditions:

1. The Control Room has been evacuated
2. A loss of Spent Fuel Pool Cooling has occurred

Initiating cue:

"(Operator's name), Align Service Water to SFC Heat Exchanger 1A per N2-SOP-38, Attachment 5".

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-SOP-38 obtained.	Sat/Unsat
3. Obtain SM permission to supply Service Water Cooling to SFC Heat Exchanger 1A UNLESS directed otherwise by the SM, verify Chemistry has sampled (C1) the CCP system AND sample results meet SPDES AND ODCM requirements for discharge N/A, the SM directs sampling to be performed later	Requests SM permission	**Sat/Unsat**
CUE: SM has granted permission and Chemistry sample is satisfactory		
4. In the Division I Switchgear Room, place the following breakers in OFF:		
2EHS*MCC103-4A, CL LOOP CLG WTR TO SFP CLG HE A SPLY V 2CCP*MOV14A	Locates breaker and places in OFF	**Pass/Fail**
2EHS*MCC103-4B, CL LOOP CLG WTR FR SFP CLG HE A RTN V 2CCP*MOV18A	Locates breaker and places in OFF	**Pass/Fail**

Performance Steps	Standard	Grade
5. In North Aux Bay Elev 240, place the following breakers in OFF:		
2EHS*MCC102-2A, SWP TO SPENT FUEL POOL HE 2SWP*MOV17A	Locates breaker and places in OFF	**Pass/Fail**
2EHS*MCC102-2B, SWP FROM SPENT FUEL POOL HE 2SWP*MOV18A	Locates breaker and places in OFF	**Pass/Fail**
6. NOTE: 2CCP*MOV14A and MOV18A are located on RB Elev 215 outside the 2SFC*E1A Room.		
Manually close the following valves:		
2CCP*MOV14A, SFC HEAT EXCHANGER RBCLC INLET	Locates and closes valve	**Pass/Fail**
2CCP*MOV18A, SFC HEAT EXCHANGER RBCLC OUTLET	Locates and closes valve	**Pass/Fail**
7. NOTE: 2SWP*MOV17A and MOV18A are located on RB Elev 196 by the North stairwell.		
Manually open the following valves:		
2SWP*MOV17A, SFC HEAT EXCHANGER SERVICE WTR INLET	Locates and manually opens valve	**Pass/Fail**
2SWP*MOV18A, SFC HEAT EXCHANGER SERVICE WTR OUTLET	Locates and manually opens valve	**Pass/Fail**
8. Throttle 2CCP*V12, SFC HX 1A OUTLET ISOL, to maintain Spent Fuel Pool temperature 80 – 100°F	Throttles valve while monitoring temperatures until desired range is reached	**Pass/Fail**
CUE/NOTE: The applicant should state that temperature can be monitored at Refuel Floor (or alternate methods). Provide feedback that the appropriate	Identifies Refuel Floor or alternate methods such as using process computer points in the Remote	Sat/Unsat

Performance Steps	*Standard*	*Grade*
temperature has been reached once satisfied that an appropriate location to monitor temperature has been determined.	Shutdown Room or local temperature indicator 2SFC-TI7A(B)as location for temperature monitoring. Alternate methods that may be identified are using process computer points in the Remote Shutdown Room or local temperature indicator 2SFC-TI7A(B).	
9. IF not previously done, contact Chemistry to sample the CCP System AND determine if sample meets requirements for discharge	Requests Chemistry provide sample	Sat/Unsat

Examiner Note: JPM may be terminated at this point

TERMINATING CUE: Service Water is providing cooling to SFC Heat Exchanger 1A

RECORD STOP TIME_____

Initial Conditions:

1. The Control Room has been evacuated
2. A loss of Spent Fuel Pool cooling has occurred

Initiating cue:

Align Service Water to SFC Heat Exchanger 1A per N2-SOP-38, Attachment 5

ATTACHMENT 5: SWAPPING SFC HEAT EXCHANGER COOLING DURING CONTROL ROOM EVACUATION

NOTES:

1. This subsection provides contingency actions in the event of a loss of Spent Fuel Pool Cooling due to loss of CCP or high CCP temperature. This procedure assumes that the Control Room has been evacuated and the SFC System is in service.

2. With no cooling or circulation, the Fuel Pool temperature may rise at a rate of about 5.3°F/hour. This rate will vary depending upon the decay heat associated with the fuel present. Action should be taken immediately to restore cooling.

1.0 Aligning Service Water to SFC Heat Exchanger 1A

N/A, 2SFC*P1A is NOT in service ..... (__)

****

CAUTIONS

1. Service Water Cooling to the SFC Heat Exchanger is intended for emergency use only and requires SM authorization.

2. Opening of 2SWP*MOV17A or 2SWP*MOV18A with CCP cut into the SFC Heat Exchanger will result in a rapid loss of the CCP System.

3. 2CCP*MOV14A/18A and 2SWP*MOV17A/18A are not provided with 8-hour battery pack lighting. Sealed beam portable lighting may be required at the valve locations if a loss of power occurs during Control Room evacuation.

4. During Modes 4, 5 or during movement of irradiated fuel assemblies in the secondary containment, or during CORE ALTERATIONS, or during Operations with a Potential for Draining the Reactor Vessel (OPDRVs), if Service Water divisional cross-tie header pressure is <63.5 psig (as indicated by SWPPA07 (08) or 2SWP*PI2A(B)) with <4 OPERABLE Service Water pumps in operation for greater than one hour, the associated safety related equipment will be declared inoperable and actions required by the Technical Specifications are applicable.

****

1.1 Perform the following:

1.1.1 Obtain SM permission to supply Service Water Cooling to SFC Heat Exchanger 1A ..... (__)

1.1.2 (C1) UNLESS directed otherwise by the SM, verify Chemistry has sampled the CCP system AND sample results meet SPDES AND ODCM requirements for discharge ..... (__)

N/A, the SM directs sampling to be performed later ..... (__)

1.2 In the Division I Switchgear Room, place the following breakers in OFF:

- 2EHS*MCC103-4A, CL LOOP CLG WTR TO SFP CLG HE A SPLY V 2CCP*MOV14A ..... (__)
- 2EHS*MCC103-4B, CL LOOP CLG WTR FR SFP CLG HE A RTN V 2CCP*MOV18A ..... (__)

1.3 In North Aux Bay Elev 240, place the following breakers in OFF:

- 2EHS*MCC102-2A, SWP TO SPENT FUEL POOL HE 2SWP*MOV17A..... (__)
- 2EHS*MCC102-2B, SWP FROM SPENT FUEL POOL HE 2SWP*MOV18A..... (__)

NOTE: 2CCP*MOV14A and MOV18A are located on RB Elev 215 outside the 2SFC*E1A Room.

1.4 Manually close the following valves:

- 2CCP*MOV14A, SFC HEAT EXCHANGER RBCLC INLET ..... (__)
- 2CCP*MOV18A, SFC HEAT EXCHANGER RBCLC OUTLET ..... (__)

NOTE: 2SWP*MOV17A and MOV18A are located on RB Elev 196 by the North stairwell.

1.5 Manually open the following valves:

- 2SWP*MOV17A, SFC HEAT EXCHANGER SERVICE WTR INLET..... (__)
- 2SWP*MOV18A, SFC HEAT EXCHANGER SERVICE WTR OUTLET..... (__)

1.6 Throttle 2CCP*V12, SFC HX 1A OUTLET ISOL, to maintain Spent Fuel Pool temperature 80 – 100°F..... (__)

1.7 IF not previously done, contact Chemistry to sample the CCP System AND determine if sample meets requirements for discharge..... (__)

1.8 IF the CCP water is contaminated with measurable levels of radioactivity, notify Chemistry Supervision to evaluate the batch discharge of CCP water in accordance with effluent monitoring requirements..... (__)

N/A, The CCP water meets discharge requirements OR evaluation previously completed ..... (__)

1.9 WHEN SWP cooling to 2SFC*E1A from outside the Control Room is NO longer required, perform the following:

1.9.1 Verify plant control has been transferred back to the Control Room ..... (__)

1.9.2 In the Division I Switchgear Room, place the following breakers in ON:

- 2EHS*MCC103-4A, CL LOOP CLG WTR TO SFP CLG HE A SPLY V 2CCP*MOV14A ..... (__)

- 2EHS*MCC103-4B, CL LOOP CLG WTR FR SFP CLG HE A RTN V 2CCP*MOV18A ..... (__)

1.9.3 In North Aux Bay Elev 240, place the following breakers in ON:

- 2EHS*MCC102-2A, SWP TO SPENT FUEL POOL HE 2SWP*MOV17A ..... (__)

- 2EHS*MCC102-2B, SWP FROM SPENT FUEL POOL HE 2SWP*MOV18A ..... (__)

1.9.4 WHEN the CCP System has been restored to normal, shift 2SFC*E1A cooling supply to CCP in accordance with N2-OP-13, Subsection H.6.0 ..... (__)

2.0 Aligning Service Water to SFC Heat Exchanger 1B

N/A, 2SFC*P1B is NOT in service ..... (__)

****

CAUTIONS

1. Service Water Cooling to the SFC Heat Exchanger is intended for emergency use only and requires SM authorization.

2. Opening of 2SWP*MOV17B or 2SWP*MOV18B with CCP cut into the SFC Heat Exchanger will result in a rapid loss of the CCP System.

3. 2CCP*MOV14B/18B and 2SWP*MOV17B/18B are not provided with 8-hour battery pack lighting. Sealed beam portable lighting may be required at the valve locations if a loss of power occurs during Control Room evacuation.

4. During Modes 4, 5 or during movement of irradiated fuel assemblies in the secondary containment, or during CORE ALTERATIONS, or during Operations with a Potential for Draining the Reactor Vessel (OPDRVs), if Service Water divisional cross-tie header pressure is <63.5 psig (as indicated by SWPPA07 (08) or 2SWP*PI2A(B)) with <4 OPERABLE Service Water pumps in operation for greater than one hour, the associated safety related equipment will be declared inoperable and actions required by the Technical Specifications are applicable.

****

2.1 Perform the following:

2.1.1 Obtain SM permission to supply Service Water Cooling to SFC Heat Exchanger 1B ..... (__)

2.1.2 UNLESS directed otherwise by the SM, verify Chemistry has sampled the CCP system AND sample results meet SPDES AND ODCM requirements for discharge ..... (__)

N/A, the SM directs sampling to be performed later ..... (__)

2.2 In the Division II Switchgear Room, place the following breakers in OFF:

- 2EHS*MCC303-4A, CL LOOP CLG WTR TO SFP CLG HE B SPLY V 2CCP*MOV14B ..... (__)

- 2EHS*MCC303-4B, CL LOOP CLG WTR FROM SFP CLG HE B RTN V 2CCP*MOV18B ..... (__)

2.3 In South Aux Bay Elev 240, place the following breakers in OFF:

- 2EHS*MCC302-2A, SWP TO SPENT F POOL HE 2SWP*MOV17B..... (__)
- 2EHS*MCC302-2B, SWP FROM SPENT F POOL HE 2SWP*MOV18B..... (__)

NOTE: 2CCP*MOV14B and MOV18B are located on RB Elev 215 outside the 2SFC*E1B Room.

2.4 Manually close the following valves:

- 2CCP*MOV14B, SFC HEAT EXCHANGER RBCLC INLET..... (__)
- 2CCP*MOV18B, SFC HEAT EXCHANGER RBCLC OUTLET..... (__)

NOTE: A ladder is needed to operate 2SWP*MOV17B. It is located about 12 feet in the air on RB Elev 175 by the CSH Pump Room. 2SWP*MOV18B is located on RB Elev 196 by Az 180 on the mezzanine.

2.5 Manually open the following valves:

- 2SWP*MOV17B, SFC HEAT EXCHANGER SERVICE WTR INLET..... (__)
- 2SWP*MOV18B, SFC HEAT EXCHANGER SERVICE WTR OUTLET..... (__)

2.6 Throttle 2CCP*V272, SFC HX 1B OUTLET ISOL, to maintain Spent Fuel Pool temperature 80 – 100°F..... (__)

2.7 IF not previously done, contact Chemistry to sample the CCP System AND determine if sample meets requirements for discharge..... (__)

2.8 IF the CCP water is contaminated with measurable levels of radioactivity, notify Chemistry Supervision to evaluate the batch discharge of CCP water in accordance with effluent monitoring requirements..... (__)

N/A, The CCP water meets discharge requirements OR evaluation previously completed..... (__)

2.9 WHEN SWP cooling to SFC Heat Exchanger 1B from outside the Control Room is NO longer required, perform the following:

2.9.1 Verify plant control has been transferred back to the Control Room ..... (__)

2.9.2 In the Division II Switchgear Room, place the following breakers in ON:

- 2EHS*MCC303-4A, CL LOOP CLG WTR TO SFP CLG HE B SPLY V 2CCP*MOV14B ..... (__)

- 2EHS*MCC303-4B, CL LOOP CLG WTR FROM SFP CLG HE B RTN V 2CCP*MOV18B ..... (__)

2.9.3 In South Aux Bay Elev 240, place the following breakers in ON:

- 2EHS*MCC302-2A, SWP TO SPENT F POOL HE 2SWP*MOV17B ..... (__)

- 2EHS*MCC302-2B, SWP FROM SPENT F POOL HE 2SWP*MOV18B ..... (__)

2.9.4 WHEN the CCP System has been restored to normal, shift 2SFC*E1B cooling supply to CCP in accordance with N2-OP-13, Subsection H.6.0 ..... (__)

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Isolating An HCU With Cooling Water Flow Revision: NRC 2008

Task Number:

Approvals:

7/23/08

General Supervisor Operations Training (Designee) Date

NA EXAMINATION SECURITY
General Supervisor Operations (Designee) Date

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: _____Perform ___X___Simulate

Evaluation Location:___X__Plant _____Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Plant

Simulator Set-up:

1. NA

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-30, Rev 14
2. NUREG K/A 201001 A1.06

Tools and Equipment:

1. None

Task Standard:

HCU 34-23 is isolated with cooling water maintained.

Initial Conditions:

HCU 34-23 was declared inoperable and will be out of service for an extended period of time.

Initiating cue:

"(Operator's name), Isolate HCU 34-23 WITH cooling water per N2-OP-30".

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-OP-30 obtained. Section F.8.2 identified for use	Sat/Unsat
3. IF an RDS Pump is in service, verify ≤79 HCUs are isolated.	Determines criteria is met	Sat/Unsat
CUE: NO other HCUs are isolated		
4. Close 2RDS*V101, (34-23) Insert Isolation.	Locates and closes valve	**Pass/Fail**
5. Close 2RDS*V102, (34-23) Withdraw Isolation.	Locates and closes valve	**Pass/Fail**
6. Close 2RDS-V113, (34-23) Charging Water Isolation.	Locates and closes valve	**Pass/Fail**
7. CAUTION Rx water will drain out of 2RDS*V107 if a Reactor Scram occurs. ATTACH drain line to HCU at 2RDS*V107, (34-23) Accumulator	Locates and attaches drain line	Sat/Unsat

Performance Steps	Standard	Grade
Drain AND route to floor/equipment drain. (Lubricant use N/A for Swagelok Fittings)		
8. Slowly open 2RDS*V107 (34-23) to depressurize accumulator.	Opens valve and observes accumulator pressure lowering	**Pass/Fail**
9. Close 2RDS*V107 (34-23).	Locates and closes valve	**Pass/Fail**
10. Open 2RDS*V107 (34-23) one turn.	Locates and opens valve	**Pass/Fail**
11. Close 2RDS-V103, (34-23) Drive Water Isolation.	Locates and closes valve	**Pass/Fail**
12. Close 2RDS-V105, (34-23) Exhaust Water Isolation.	Locates and closes valve	**Pass/Fail**
13. Open 2RDS*V101, (34-23) Insert Isolation.	Locates and opens valve	**Pass/Fail**
14. If the HCU is to have maintenance OR is to be out of service for an extended period of time perform the following:	Locates and closes valve	**Pass/Fail**
NOTE: Per initial Conditions, the HCU will be out of service for an extended period of time		
Close 2RDS*V111, (34-23) Gas Accumulator Charging Valve.		
15. Using two wrenches, slowly loosen AND remove the cap from connector P6.	Loosens and removes cap from connector	Sat/Unsat

Performance Steps		*Standard*	*Grade*
16.	Connect nitrogen charging rig.	Connects rig	Sat/Unsat
17.	Open 2RDS*V111, (34-23) AND, utilizing the nitrogen charging rig vent valve, slowly bleed off nitrogen.	Locates and opens valve	**Pass/Fail**
18.	Verify Nitrogen pressure on the accumulator pressure gauge is at 0 psig.	Verifies pressure is 0	Sat/Unsat
19.	Disconnect charging rig.	Disconnects rig	Sat/Unsat
20.	NOTE: While torquing cap, use a wrench on P6 connector to prevent connector movement at instrument block. Apply thin coat of Nickel NEVER SEEZ on P6 connector threads, THEN reinstall the cap AND torque the cap to 150-200 in-lbs.	Reinstalls Cap	Sat/Unsat

TERMINATING CUE: HCU 34-23 is isolated with cooling water maintained and charging rig has been disconnected.

RECORD STOP TIME_____

Initial Conditions:

HCU 34-23 was declared inoperable and will be out of service for an extended period of time.

Initiating cue:

Isolate HCU 34-23 WITH cooling water per N2-OP-30

Initials

8.0 Isolating An HCU

NOTE: Where XX-YY appears, XX-YY is the number of the HCU being manipulated.

****

CAUTIONS

1. Isolating an HCU without cooling water should be performed when reactor water temperature is less than 200°F, or isolating an HCU without cooling water when reactor water temperature is greater than 200°F should be minimized (less than one shift duration) or seal degradation could occur.

2. When returning an isolated HCU to service, extreme care must be taken. Restore cooling water slowly or thermal shock and seal damage could occur.

(C12) 3. Isolating HCUs with 2RDS*V101(XX-YY) or 2RDS*V104(XX-YY) closed raises the Cooling Water Differential Pressure. A Cooling Water Differential Pressure of 35 psid is sufficient to operate the Collet Piston and unlatch Control Rods which could result in unplanned Control Rod withdrawals. Isolating more than 80 HCUs with a CRD Pump in service could raise Cooling Water Differential Pressure to ≥35 psid and result in unplanned Control Rod withdrawals. Refer to INPO SEN 264.

****

8.1 Isolate an HCU for maintenance WITHOUT cooling water by performing the following:

(C12) 8.1.1 IF an RDS Pump is in service, verify ≤79 HCUs are isolated. _____

8.1.2 Close 2RDS*V101, (XX-YY) Insert Isolation. _____

8.1.3 Close 2RDS*V102, (XX-YY) Withdraw Isolation. _____

8.1.4 Close 2RDS-V113, (XX-YY) Charging Water Isolation. _____

8.1.5 Close 2RDS-V104, (XX-YY) Cooling Water Isolation. _____

8.1.6 Close 2RDS-V105, (XX-YY) Exhaust Water Isolation. _____

8.1.7 Close 2RDS-V103, (XX-YY) Drive Water Isolation. _____

Initials

8.1.8 Close 2RDS*V112, (XX-YY) Scram Discharge Isolation. _____

8.1.9 Close 2RDS*V116, (XX-YY) Scram Pilot Air Isolation. _____

8.1.10 At the electrical box place BOTH 2RDS*SWXX-YYA AND B, NORM-TEST-SRI toggle switches to TEST. _____

8.1.11 Using thread lubricant, (Locktite 58031 - symbol number 95-74-180), ATTACH drain line to HCU at 2RDS*V107, (XX-YY) Accumulator Drain AND route to floor/equipment drain. (Lubricant use N/A for Swagelok Fittings) _____

8.1.12 Slowly open 2RDS*V107 (XX-YY) to depressurize accumulator. _____

8.1.13 IF the HCU is to have maintenance OR is to be out of service for an extended period of time, perform the following:

a. Close 2RDS*V111, (XX-YY) Gas Accumulator Charging Valve. _____

b. Using two wrenches, slowly loosen AND remove the cap from connector P6. _____

c. Connect nitrogen charging rig. _____

(C3) d. Open 2RDS*V111 (XX-YY) AND, utilizing the nitrogen charging rig vent valve, slowly bleed off nitrogen. _____

e. Verify Nitrogen pressure on the accumulator pressure gauge is at 0 psig. _____

f. Disconnect charging rig. _____

NOTE: While torquing cap, use a wrench on P6 connector to prevent connector movement at instrument block.

g. Apply thin coat of Nickel NEVER SEEZ on P6 connector threads, THEN reinstall the cap AND torque the cap to 150-200 in-lbs. _____

Initials

NOTES:

1. The following step is to be performed to prevent control rod movement, not for maintenance.

2. A withdrawn control rod that is stuck should be disarmed hydraulically, preferably with cooling water flow, per the following step (hydraulically disarming a withdrawn control rod that is stuck is required in accordance with Technical Specification 3.1.3).

8.2 Isolate an HCU WITH cooling water flow by performing the following:

(C12) 8.2.1 IF an RDS Pump is in service, verify ≤79 HCUs are isolated. _____

8.2.2 Close 2RDS*V101, (XX-YY) Insert Isolation. _____

8.2.3 Close 2RDS*V102, (XX-YY) Withdraw Isolation. _____

8.2.4 Close 2RDS-V113, (XX-YY) Charging Water Isolation. _____

****

CAUTION

Rx water will drain out of 2RDS*V107 if a Reactor Scram occurs.

****

8.2.5 Using thread lubricant, (Locktite 58031 - symbol number 95-74-180), ATTACH drain line to HCU at 2RDS*V107, (XX-YY) Accumulator Drain AND route to floor/equipment drain. (Lubricant use N/A for Swagelok Fittings) _____

8.2.6 Slowly open 2RDS*V107 (XX-YY) to depressurize accumulator. _____

8.2.7 Close 2RDS*V107 (XX-YY). _____

8.2.8 Open 2RDS*V107 (XX-YY) one turn. _____

8.2.9 Close 2RDS-V103, (XX-YY) Drive Water Isolation. _____

8.2.10 Close 2RDS-V105, (XX-YY) Exhaust Water Isolation. _____

8.2.11 Open 2RDS*V101, (XX-YY) Insert Isolation. _____

Initials

8.2.12 If the HCU is to have maintenance OR is to be out of service for an extended period of time perform the following:

a. Close 2RDS*V111, (XX-YY) Gas Accumulator Charging Valve. _____

b. Using two wrenches, slowly loosen AND remove the cap from connector P6. _____

c. Connect nitrogen charging rig. _____

(C3) d. Open 2RDS*V111, (XX-YY) AND, utilizing the nitrogen charging rig vent valve, slowly bleed off nitrogen. _____

e. Verify Nitrogen pressure on the accumulator pressure gauge is at 0 psig. _____

f. Disconnect charging rig. _____

NOTE: While torquing cap, use a wrench on P6 connector to prevent connector movement at instrument block.

g. Apply thin coat of Nickel NEVER SEEZ on P6 connector threads, THEN reinstall the cap AND torque the cap to 150-200 in-lbs. _____

8.3 Total HCU Isolation for online maintenance (verifies 2RDS*V102 & 2RDS*V103 shut)

NOTE: This section is used to determine whether the 2RDS*V102 and 2RDS*V103 valves provide adequate isolation for online maintenance. If inadequate isolation is found, this section directs performance of either Section F.8.2 when the control rod drive is to remain isolated, or Section F.17.0 when the control rod drive is to be returned to service.

HCU #_____

(C12) 8.3.1 IF an RDS Pump is in service, verify ≤79 HCUs are isolated. _____

8.3.2 Close 2RDS*V101, (XX-YY) Insert Isolation. _____

8.3.3 Close 2RDS*V102, (XX-YY) Withdraw Isolation. _____

8.3.4 Close 2RDS*V113, (XX-YY) Charging Water Isolation. _____

Initials

8.3.5 Close 2RDS-V104, (XX-YY) Cooling Water Isolation. _____

8.3.6 Close 2RDS-V105, (XX-YY) Exhaust Water Isolation. _____

8.3.7 Close 2RDS-V103, (XX-YY) Drive Water Isolation. _____

8.3.8 Close 2RDS*V112, (XX-YY) Scram Discharge Isolation. _____

8.3.9 Close 2RDS*V116, (XX-YY) Scram Pilot Air Isolation. _____

8.3.10 At the electrical box place BOTH 2RDS*SWXX-YYA AND B, NORM-TEST-SRI toggle switches to TEST. _____

8.3.11 Plug in M&TE 4780 series box to 120V AC GFI protected outlet. _____

8.3.12 Using DVM, check AC voltage on each plug by manipulating switches on M&TE 4780 series box. _____

8.3.13 Remove clip and lift Directional Control Valve (DCV) Coils from the following DCVs:

- 2RDS*V120 .....(__)
- 2RDS*V121 .....(__)
- 2RDS*V122 .....(__)
- 2RDS*V123 .....(__)

_____

NOTE: Directional Control Valve (DCV) coils with amphenol connectors are included in the M&TE 4780 A/B/C kit.

8.3.14 Plug M&TE 4780 series test device amphenol connectors into DCV coils with amphenol connectors and install these DCV coils on the following DCVs:

- 2RDS*V120 .....(__)
- 2RDS*V121 .....(__)
- 2RDS*V122 .....(__)
- 2RDS*V123 .....(__)

_____

Initials

NOTE: The following sequence will assure that the directional control valves will open.

8.3.15 On M&TE 4780 series box, Place Toggle switch to ON, Open each directional control valve in the following order:

a. 2RDS*V123 _____

b. 2RDS*V122 _____

c. 2RDS*V121 _____

d. 2RDS*V120 _____

8.3.16 Using thread lubricant, (Locktite 58031 - symbol number 95-74-180), ATTACH drain line to HCU at 2RDS*V107, (XX-YY) Accumulator Drain AND route to floor/equipment drain. (Lubricant use N/A for Swagelok Fittings) _____

8.3.17 De-pressurize accumulator water side as follows:

a. Throttle open 2RDS-V107. _____

b. WHEN accumulator water pressure has been relieved, open 2RDS-V107. _____

8.3.18 IF the water does not stop draining from 2RDS-V107 THEN verify closed HCU boundary valves closed in Step F.8.3.2 AND consult with SM to determine if work can continue. _____

8.3.19 On M&TE 4780 box, Place Toggle switches to OFF, to close each directional control valve in the following order:

a. 2RDS*V123 _____

b. 2RDS*V122 _____

c. 2RDS*V121 _____

d. 2RDS*V120 _____

Initials

8.3.20 Remove M&TE 4780 series test device DCV coils with amphenol connectors from the following DCVs:

- 2RDS*V120 .....(__)
- 2RDS*V121 .....(__)
- 2RDS*V122 .....(__)
- 2RDS*V123 .....(__)

_____

8.3.21 Install and connect DCV Coils from the following DCVs:

- 2RDS*V120 .....(__)
- 2RDS*V121 .....(__)
- 2RDS*V122 .....(__)
- 2RDS*V123 .....(__)

_____

8.4 IF the plant is online continue with Subsection F.17.0 AND exit this subsection. _____

8.5 After HCU maintenance is completed, perform Attachment 1, A. Operational Valve Lineup. _____

8.6 As required, perform CRD venting HCU per Subsection E.4.0. _____

Constellation Energy Group
OPERATOR JOB PERFORMANCE MEASURE

Title: Off Gas Recovery After Automatic Shutdown Revision: NRC 2008

Task Number:

Approvals:

9/22/08
General Supervisor Date
Operations Training (Designee)

NA EXAMINATION SECURITY
General Supervisor Date
Operations (Designee)

NA EXAMINATION SECURITY
Configuration Control Date

Performer:_____(RO/SRO)

Trainer/Evaluator:_____

Evaluation Method: _____Perform ___X___Simulate

Evaluation Location:___X__Plant _____Simulator

Expected Completion Time: 20 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time:_____ Completion Time:_____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature:_____ Date:_____

Recommended Start Location:

Plant

Simulator Set-up:

1. NA

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SM, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
   - Self-verification shall be demonstrated.
3. During Training JPM:
   - Self-verification shall be demonstrated.
   - No other verification shall be demonstrated.

References:

1. N2-OP-42, Rev 09
2. NUREG K/A 271000 A1.08

Tools and Equipment:

1. None

Task Standard:

Off Gas system operating in a stable manner

Initial Conditions:

1. The plant is operating at 30% power.
2. OffGas has automatically shut down
3. Recombiner temperature is 390°F
4. H2 concentration is 1%
5. The Off Gas High Radiation trip has NOT occurred

Initiating cue:

"(Operator's name), Recover Off Gas after an automatic shutdown per N2-OP-42, Step H.1.5.4

Performance Steps	*Standard*	*Grade*
1. Provide repeat back of initiating cue. *Evaluator Acknowledge repeat back providing correction if necessary*	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat
RECORD START TIME ____		
2. Obtain a copy of the reference procedure and review/utilize the correct section.	N2-OP-42 obtained. Section 1.0 identified for use	Sat/Unsat
Note: Action begins at procedure step 1.5.4		
3. Reset the Offgas circuits by depressing AND releasing the following RESET pushbuttons: RESET RE13A&B red pushbutton RESET SYSTEM A black pushbutton RESET SYSTEM B black pushbutton RESET VAC PUMP VP-1A black pushbutton RESET VAC PUMP VP-1B black pushbutton	Resets pushbuttons identified	**Pass/Fail**
4. Open 2OFG-LV20A(B), CONDENSER 1A(B) LEVEL CONTROLLER, to allow process flow to recycle back to the Main Condenser.	Opens level controller	**Pass/Fail**

Performance Steps	Standard	Grade
5. Open 2OFG-AOV1A(B), PREHTR E1A(B) INLET ISOL, by placing the control switch to STARTUP.	Locates and opens valve	**Pass/Fail**
6. Verify open 2OFG-AOV103, OFFGAS EXHAUST TO MAIN STACK.	Determines valve is open	Sat/Unsat
7. NOTE: When both 2OFG-AOV1A and AOV1B are open, 2CCS-MOV45A and MOV45B will each automatically open to mid position. If only 2OFG-AOV1A(B) is open, the associated 2CCS-MOV45A(B) will automatically open fully. The valves are located in the OFG Bldg El 261' Hallway. Locally, verify 2CCS-MOV45A(B), OFFGAS CONDENSER 1A(B) OUTLET ISOLATION, is in the proper position. **CUE: Isolation is in the proper position**	Determines valve in proper position	Sat/Unsat
8. Verify one Dryer is in service with its associated valve control switch in OPEN (2OFG-AOV4A/5A, 4B/5B, 4C/5C).	Determines one dryer is in service and associated switch in OPEN	Sat/Unsat
9. IF required, start 2OFG-P1A AND P1B, VACUUM PUMP VP-1A(B). **CUE: VP-1A "ON" light is LIT**	Locates and verifies control switch is in AUTO	Sat/Unsat
10. WHEN recombination is occurring, as indicated by OFG Recombiner temperature rising, place 2OFG-LV20A(B) control switch in AUTO. **CUE: Temperature is slowly rising after the TIs are located**	Determines temperature rising by checking the following: • TI-30A - Left side of Panel • TI-30B - Right side of Panel Then, Places control switch in AUTO	**Pass/Fail**

Performance Steps	Standard	Grade
11. Open 2OFG-AOV11A(B), CONDENSER 1A(B) OUTLET ISOLATION, by placing the control switch to STARTUP.	Places control switch to STARTUP and observes valve open	**Pass/Fail**
12. WHEN the OFG System stabilizes, perform the following: Push the RESET SYSTEM A(B) pushbutton. Return the Recombiner Train Isolation AOV control switches to AUTO. **CUE: System has stabilized**	Determines system stable. Locates and pushes SYSTEM RESET button. Returns the following AOV control switches to AUTO: • AOV-1A • AOV-1B • AOV11A • AOV11B	**Pass/Fail** **Pass/Fail**

TERMINATING CUE: When Off Gas system is operating and stable, this JPM is complete

RECORD STOP TIME_____

Initial Conditions:

1. The plant is operating at 30% power.
2. OffGas has automatically shut down
3. Recombiner temperature is 390°F
4. H2 concentration is 1%
5. The Off Gas High Radiation trip has NOT occurred

Initiating cue:

"(Operator's name), Recover Off Gas after an automatic shutdown IAW N2-OP-42, Step 1.5.4

H. OFF-NORMAL PROCEDURES

1.0 (SOP) (EOP) OFG System Recovery After Automatic Shutdown

NOTES: 1. Loss of the OFG System will result in a rapid loss of condenser vacuum. Depending upon plant operating conditions, this may result in a Turbine Trip, MSIV Closure and Reactor Scram. The time available to correct the situation is dependent on several variables including Reactor power, condenser air in-leakage and CWS temperature.

2. Performance of this subsection may be required by the EOPs. Changes to this subsection (including renumbering) are required to be reviewed by the EOP coordinator.

1.1 Dispatch an operator to 2OFG-IPNL122 to determine the cause of the loss of the OFG System.

1.2 Commence reducing Reactor power in accordance with N2-SOP-101D, Rapid Power Reduction.

1.3 Enter N2-SOP-09, Loss of Condenser Vacuum, AND execute concurrently with this procedure.

1.4 At 2OFG-IPNL122, perform the appropriate Annunciator Response Procedures.

NOTE: All actions in Step H.1.5 are performed at 2OFG-IPNL122 unless otherwise noted.

1.5 WHEN the cause of the OFG System automatic shutdown has been identified AND corrected, recover the system as follows:

NOTE: If OFG Recombiner temperatures are < 290°F, recovery of the OFG System will not be possible in a timely manner and the system shall be considered non-recoverable.

1.5.1 Verify 2OFG-RBNR1A(B) are ready to resume H2/O2 recombination by observing temperature ≥ 290°F on TEMPERATURE TI-30A(B) RECOMBINER 1A(B) using selector switch TEMPERATURE RBNR-1A(B), TE31A(B), TE32A(B), TE33A(B).

****

CAUTION

If H_2 concentrations downstream of the operating Recombiner Train are > 4%, no valves are to be operated until H_2 concentrations are < 4% due to the potential for hydrogen ignition and detonation. This may be overridden in an emergency by SM direction.

****

1.5.2 Verify H_2 concentration downstream of Recombiner Train is < 4% by observing OFF GAS SYSTEM 1A(B), HYD SYS 1A(B)% LFL is reading < 4%.

1.5.3 IF required, Offgas System High Radiation Trip may be defeated in accordance with Attachment 6, Removal and Restoration of Offgas System High Radiation Monitor Trips.

1.5.4 Reset the Offgas circuits by depressing AND releasing the following RESET pushbuttons:

- RESET RE13A&B red pushbutton
- RESET SYSTEM A black pushbutton
- RESET SYSTEM B black pushbutton
- RESET VAC PUMP VP-1A black pushbutton
- RESET VAC PUMP VP-1B black pushbutton

1.5.5 Open 2OFG-LV20A(B), CONDENSER 1A(B) LEVEL CONTROLLER, to allow process flow to recycle back to the Main Condenser.

1.5.6 Open 2OFG-AOV1A(B), PREHTR E1A(B) INLET ISOL, by placing the control switch to STARTUP.

1.5.7 Verify open 2OFG-AOV103, OFFGAS EXHAUST TO MAIN STACK.

NOTE: When both 2OFG-AOV1A and AOV1B are open, 2CCS-MOV45A and MOV45B will each automatically open to mid position. If only 2OFG-AOV1A(B) is open, the associated 2CCS-MOV45A(B) will automatically open fully. The valves are located in the OFG Bldg El 261' Hallway.

1.5.8 Locally, verify 2CCS-MOV45A(B), OFFGAS CONDENSER 1A(B) OUTLET ISOLATION, is in the proper position.

1.5.9 Verify one Dryer is in service with its associated valve control switch in OPEN (2OFG-AOV4A/5A, 4B/5B, 4C/5C).

1.5.10 IF required, start 2OFG-P1A AND P1B, VACUUM PUMP VP-1A(B).

1.5.11 WHEN recombination is occurring, as indicated by OFG Recombiner temperature rising, place 2OFG-LV20A(B) control switch in AUTO.

1.5.12 Open 2OFG-AOV11A(B), CONDENSER 1A(B) OUTLET ISOLATION, by placing the control switch to STARTUP.

1.5.13 WHEN the OFG System stabilizes, perform the following:

a. Push the RESET SYSTEM A(B) pushbutton.

b. Return the Recombiner Train Isolation AOV control switches to AUTO.

1.5.14 IF required, reperform Steps H.1.5.4 through H.1.5.12 to return the second OFG Recombiner Train to service.

1.5.15 IF Offgas System High Radiation Trip was defeated, restore Offgas System High Radiation Trip in accordance with Attachment 6, Removal and Restoration of Offgas System High Radiation Monitor Trips.

1.6 IF the OFG System can NOT be returned to service in a timely manner, continue to lower Reactor power in accordance with N2-SOP-101D.

1.7 IF a Turbine trip occurs, refer to N2-SOP-21, Turbine Trip.

1.8 IF a Scram occurs, refer to N2-SOP-101C, Reactor Scram.

2.0 Offgas Vacuum Pump High Suction Pressure Trip

NOTES:
1. All actions in this Subsection are performed at 2OFG-IPNL122 unless otherwise noted.
2. When a high suction pressure occurs, the operating vacuum pump trips and the standby pump auto starts. The high pressure signal to the tripped pump seals in and must be reset in order to place the pump in standby or in service.

2.1 Verify the cause of the high suction pressure trip has been determined AND corrected.