FINAL SIM/IN-PLANT JPMS

CONTENTS:

☑ Final SIM/In-Plant JPMs
  - ○ 'As given' with changes made during administration annotated

Location of Electronic Files:

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Submitted By: _~Edwin Graff~_ Verified By: _~Mark J. Riches~_

✓

B.1.a
Complete 1-SI-85-2, Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)

WATTS BAR NUCLEAR PLANT
B.1.a
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Complete 1-SI-85-2, Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)

Alternate Path: None

Facility JPM #:   New

Safety Function: 1   **Title:**   Reactivity Control

K/A   001 A4.03   Ability to manually operate and/or monitor in the control room: CRDS mode control.

Rating(s):   4.0 / 3.7   **CFR:**   41.7/45.5 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator   **X**   In-Plant   Perform   **X**   Simulate

References: 1-SI-85-2,"Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)," Rev. 11.

Task Number: RO-085-SOI-85-2-001   **Title:**   Verify operability of each control bank/shutdown bank.

Task Standard: Applicant inserts and withdraws Control Bank D rods 10 steps, returning the bank to its original position. Applicant returns the 1-RBSS Rod Bank Select switch to the AS-FOUND position (AUTOMATIC).

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

===

Applicant: _____   _____   Time Start: _____
                    NAME   SSN   Time Finish: _____

Performance Rating: SAT _____ UNSAT _____   Performance Time ____

Examiner: _____   _____ / _____
                NAME   SIGNATURE   DATE

===

COMMENTS

_____

_____

_____

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WATTS B. NUCLEAR PLANT
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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.

2. Right click on 339, and then select RESET.

3. Enter the password.

4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5. Place 1-RBSS Rod Bank Selector switch in the CBC (Control Bank C) position on 1-M-4.

6. Place simulator in RUN and acknowledge any alarms. Ensure Tave - Tref deviation is < 3°.

7. ENSURE a marked-up copy of 1-SI-85-2 is available to the Examiner.

8. ENSURE "Extra Operator" is present in the simulator.

9. Place simulator in FREEZE until Examiner cue is given.

WATTS BAR NUCLEAR PLANT
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READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 is operating at 100% power.

2. Performance of 1-SI-85-2,"Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)," is in progress.

3. The procedure has been completed through Section 6.7 for Control Bank C.

INITIATING CUES:

1. The Unit Supervisor has directed you to complete 1-SI-85-2,"Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)."

2. Notify the Unit Supervisor when the control rods are returned to the "AS FOUND" position."

STEP/STANDARD	SAT/UNSAT

START TIME: _____

NOTE 1 Between rod bank movements, Tavg - Tref deviation may be adjusted using manual rod control or by adjusting turbine load.	
NOTE 2 Rod movement is verified by monitoring (RPIs) and Step Counters.	

<u>STEP 1</u>: **[1] ENSURE T**avg - Tref deviation is adjusted to allow for bank movement of ten steps. <u>STANDARD</u>: Applicant determines that the Tavg - Tref deviation is sufficient for bank movement. <u>COMMENTS</u>:	____ SAT ____ UNSAT

NOTE 1-XA-55-4B-87A, ROD INSERTION LIMIT LO, may actuate during the following test sections.

NOTE TO EVALUATOR: COLR Figure 1,"Control Bank Insertion Limits versus Thermal Power - Four Loop Operation," gives the 100% power Insertion Limit as 177 steps on Control Bank D. The 87-A, ROD INSERTION LIMIT LO, alarm is received at 10 steps above the actual insertion limit (187 steps).

STEP/STANDARD	SAT/UNSAT

STEP 2:   [2] **RECORD** the initial position of the following Step Counters:
 	
       1-CBDG1, CONTROL BANK D1: _____ steps.
 	
       1-CBDG2, CONTROL BANK D2: _____ steps.
 	
STANDARD:
 	
  Applicant records rod position for Control Bank D group 1 rods as 220 steps from demand counter 1-CBDG1 on 1-M-4.
 	
  Applicant records rod position for Control Bank D group 2 rods as 220 steps from demand counter 1-CBDG2 on 1-M-4.
 	
COMMENTS:
	____ SAT
	
	____ UNSAT

NOTE The operator has the option of moving Control Bank D five Steps in one direction, then 10 steps in the opposite direction and then return to normal. This method will have less overall effect on reactor power.

STEP/STANDARD	SAT/UNSAT

STEP 3:   [3] **PLACE** 1-RBSS, ROD BANK SELECT, in CBD.
 	
STANDARD:
 	
  Applicant places 1-RBSS, Rod Bank Select switch, in the CBD (control bank D) position.
 	
  Step is critical to allow movement of Control Bank D rods ONLY.
 	
COMMENTS:
	CRITICAL STEP
	
	____ SAT
	
	____ UNSAT

NOTE 1-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, will actuate if Control Bank D Rods are withdrawn past 220 Steps.

STEP/STANDARD	SAT/UNSAT
STEP 4: **[4] MOVE** Control Bank D at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and **VERIFY** movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit) STANDARD: Applicant may either comply with the information contained in the NOTE preceding Step 3 OR insert rods ten steps, and then withdraw the rods back to their original position. **Step is critical since it is used to determine if Control Bank D motion meets acceptance criteria of the surveillance procedure.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 5: **[5] VERIFY** Control Bank D1 and D2 Step Counters agree within plus or minus 2 steps. STANDARD: Applicant determines from 1-CBDG1 and 1-CBDG2 Step counter positions that rods are within the ± 2 step limit. COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 6: **[6]** **RETURN** Control Bank D to its original position as recorded in Step **[2]** of this section using 1-FLRM, ROD MOTION CONTROL. STANDARD: Applicant returns Control Bank D group 1 and group 2 rods to their original position of 220 steps. **Step is critical to ensure rod position is properly input into the bank overlap unit.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 7: **[7] IF** Rod Insertion Limit Lo Alarm 87-A does not clear, **THEN** • **REFER TO** Tech Spec LCO 3.1.7. • **CONTACT** System Engineer to reset 87-A USING ICS. STANDARD: Applicant states that the Rod Insertion Limit Lo alarm was not received during rod exercise and N/As this conditional step. COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

Section 6.9, Restoration

CAUTION	If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:

- **Tavg is not within 1°F of program,**

- **Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),**

- **Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].**

STEP 8: **[1] PLACE** 1-RBSS, ROD BANK SELECT, in MANUAL.   ___ SAT

STANDARD: ___ UNSAT

  Applicant rotates handswitch 1-RBSS counterclockwise from the CBD position to the MANUAL position.

COMMENTS:

STEP 9: **[2] IF** Tavg not on program, **THEN RETURN** Tavg - Tref within 1.5°F.   ___ SAT

STANDARD: ___ UNSAT

  Applicant determines that Tavg is on program, and N/As this conditional step.

COMMENTS:

STEP/STANDARD	SAT/UNSAT
STEP 10: **[3] RETURN** 1-RBSS, ROD BANK SELECT, to the as found position recorded in Section **4.3**, Step **[2]** (page 6 of 17). STANDARD: Applicant returns 1-RBSS to the AUTO position, since this was recorded as the AS FOUND position in Section 4.3, Step [2]. **Step is critical to returning the rod control system to the correct operational mode.** Applicant reports to the Unit Supervisor that 1-SI-85-2 actions have been completed. **EXAMINER CUE: Acknowledge report.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
END OF TASK	

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 is operating at 100% power.

2. Performance of 1-SI-85-2,"Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)," is in progress.

3. The procedure has been completed through Section 6.7 for Control Bank C.

INITIATING CUES:

1. The Unit Supervisor has directed you to complete 1-SI-85-2,"Reactivity Control Systems Movable Control Assemblies (Modes 1 and 2)."

2. Notify the Unit Supervisor when the control rods are returned to the "AS FOUND" position."

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

SURVEILLANCE INSTRUCTION

1-SI-85-2

REACTIVITY CONTROL SYSTEMS MOVABLE CONTROL ASSEMBLIES (MODES 1 AND 2)

Revision 11

Unit 1

QUALITY RELATED

PREPARED BY: _____John Lovell_____

SPONSORING ORGANIZATION: _____Operations_____

APPROVED BY: _____Craig Faulkner_____

Effective Date: __09/20/04__

LEVEL OF USE: CONTINUOUS

REVISION LOG

REVISION OR CHANGE NUMBER	EFFECTIVE DATE	AFFECTED PAGE NUMBERS	DESCRIPTION OF REVISION/CHANGE
7	12/18/03	2,4,5	Non-intent. Deleted reference to Rod Control P/A converter consistent with this device's removal from the plant design via DCN 51072. Also deleted reference to IMI-85.005 which has been canceled.
8	12/18/03	2,11-14	Non-intent. Added steps to refer to LCO 3.1.7 and to contact System Engineer to reset alarm 87-A if it does not clear (PER 03-018261-000). Also made editorial corrections.
9	3/17/04	2, 13	Non-intent. Changed note prior to Section 6.0, Step 47 to reference annunciator 64-F instead of 87-C due to DCN 51620.
10	7/12/04	2, 6, 11-14	Non-intent. Revised Step 4.3[1]. Renumber steps in Section 6.0.
11	09/20/04	1-3 6 7-15 9, 10 16 ALL	Non-Intent: Relocated previous revision Step 6.0[4], recording of 1-RBSS position, to PREREQUISITE 4.3[2] to facilitate restructure of Section 6.0 Restructured Section 6.0 such that the previous revision has been broken into subsections. Adds notes to Step 6.3[4] and 6.4[4] to alert Operator that CERPI Monitor indicated Rod Speed may be inaccurate while moving SBC or SBD rods. Replaced Step 8.1 list of QA records with "Completed Data Packages." Corrected typographical and format errors.

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 Purpose

This Surveillance Instruction (SI) provides detailed steps to verify operability of each Shutdown and Control Rod not fully inserted.

1.2 Scope

1.2.1 Operability Tests to be Performed

This instruction is performed by placing the rods in Bank Select, moving each bank at least 10 Steps, and returning the bank to its original position to verify all rods operable.

1.2.2 Surveillance Requirements Fulfilled and Modes

This SI satisfies the following Surveillance Requirement (SR):

SURVEILLANCE REQUIREMENT	APPLICABLE MODES	PERFORMANCE MODES
SR 3.1.5.2	1, 2	1, 2, 3

1.3 Frequency and Conditions

A. This SI is required to be performed at least once every 92 days.

B. This SI is required to be in frequency prior to Mode 2.

2.0 REFERENCES

2.1 Performance References

None

2.2 Developmental References

Unit 1 Technical Specification Section 3.1.5.2.

3.0 PRECAUTIONS AND LIMITATIONS

A. Nuclear Instrumentation must be observed closely for any unanticipated reactivity changes when moving rods.

B. Rods are required to be returned to their original position as soon as possible following required movement to prevent unnecessary T_{avg} - T_{ref} deviation.

C. Controlling bank rod insertion limits and delta flux limits must be observed during rod movement.

D. The Senior Reactor Operator (SRO) is to be contacted as soon as practical if any rod fails to move during performance of this instruction.

E. If any shutdown or control rod fails to move during the performance of this instruction, the actions of LCO 3.1.5 may be applicable.

F. Prior to rod movement, T_{avg} - T_{ref} deviation may need adjustment to ensure temperature limits will not be exceeded when rods are repositioned.

Date _____   <u>INITIALS</u>

4.0 PREREQUISITE ACTIONS

NOTE Throughout this instruction where an **IF/THEN** statement exists, the step may be **N/A** if condition does not exist.

4.1 Preliminary Actions

  [1] **RECORD** start date and time on Surveillance Task Sheet.   *ARO*

  [2] **RECORD** present plant Mode: ___/___   *ARO*

  [3] **ENSURE** the following:

     [a] Control Rod Drive MG Set (s) in SERVICE.   *ARO*

     [b] Reactor Trip Breakers CLOSED.   *ARO*

4.2 Approvals and Notifications

  [1] **OBTAIN** SM/SRO approval to perform this SI on Surveillance Task Sheet.   *ARO*

4.3 Field Preparations

  [1] **ENSURE** Precautions and Limitations in Section **3.0** have been REVIEWED.   *ARO*

  [2] **RECORD** the as found position of 1-RBSS, ROD BANK SELECT (Rod Bank Selector Switch).

     1-RBSS: ___AUTO___   *ARO*

5.0 ACCEPTANCE CRITERIA

Verify each rod not fully inserted has freedom of movement in the core equal to or greater than 10 Steps.

Date _____

INITIALS

6.0 PERFORMANCE

6.1 SHUTDOWN BANK A (SBA)

NOTE 1 Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2 Rod movement is verified by monitoring (RPIs) and Step Counters.

NOTE 3 Alarm 83D, ROD DEVIN & SEQ PWR RANGE TILT COMPUTER ALARM, may actuate when shutdown rods are inserted from fully withdrawn.

[1] **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of 10 steps.

[2] **RECORD** the initial position of the following Step Counters:

A. 1-SBAG1, SHUTDOWN BANK A1: __228__ steps.

B. 1-SBAG2, SHUTDOWN BANK A2: __228__ steps.

CAUTION **If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:**
- **T_{avg} is not within 1 °F of program,**
- **Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),**
- **Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].**

[3] **PLACE** 1-RBSS, ROD BANK SELECT, in SBA.

[4] **MOVE** Shutdown Bank A at least 10 Steps in any one direction, as indicated on appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)

[5] **VERIFY** Shutdown Bank A1 and A2 Step Counters agree within plus or minus 2 steps.

[6] **RETURN** Shutdown Bank A to its initial position recorded in Step [2] of this section.

Date _____   INITIALS

6.1 SHUTDOWN BANK B (SBB)

NOTE 1 Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2 Rod movement is verified by monitoring (RPIs) and Step Counters.

NOTE 3 Alarm 83D, ROD DEVIN & SEQ PWR RANGE TILT COMPUTER ALARM, may actuate when shutdown rods are inserted from fully withdrawn.

[1]   **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of 10 steps.

[2]   **RECORD** the initial position of the following Step Counters:

   A. 1-SBBG1, SHUTDOWN BANK B1: ___228___ steps.

   B. 1-SBBG2, SHUTDOWN BANK B2: ___228___ steps.

CAUTION If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:
- T_{avg} is not within 1 °F of program,
- Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),
- Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].

[3]   **PLACE** 1-RBSS, ROD BANK SELECT, in SBB.

[4]   **MOVE** Shutdown Bank B at least 10 Steps in any one direction, as indicated on the appropriate Step Counter, and

       VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)

[5]   **VERIFY** SHUTDOWN BANK B1 and B2 Step Counters agree within plus or minus 2 steps.

[6]   **RETURN** Shutdown Bank B to its original position as recorded in Step [2] of this section with 1-FLRM, ROD MOTION CONTROL.

Date _____   INITIALS

(6.3) SHUTDOWN BANK C (SBC)

(NOTE 1) Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

(NOTE 2) Rod movement is verified by monitoring (RPIs) and Step Counters.

(NOTE 3) Alarm 83D, ROD DEVIN & SEQ PWR RANGE TILT COMPUTER ALARM, may actuate when shutdown rods are inserted from fully withdrawn.

[1] **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of ten steps.   _ARJ_

[2] **RECORD** the initial position of the following Step Counter:

1-SBCG1, SHUTDOWN BANK C1: ____228____ steps.   _ARJ_

(CAUTION) **If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:**
- **T_{avg} is not within 1 °F of program,**
- **Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),**
- **Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].**

[3] **PLACE** 1-RBSS, ROD BANK SELECT, in SBC.   _ARJ_

(NOTE) During movement of SBC rods, CERPI Monitor Rod speed may be inaccurate.

[4] **MOVE** Shutdown Bank C at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit).   _ARJ_

[5] **RETURN** Shutdown Bank C to its original position as recorded in Step **[2]** of this section using 1-FLRM, ROD MOTION CONTROL.   _ARJ_

Date _____   INITIALS

6.4   SHUTDOWN BANK D (SBD)

NOTE 1   Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2   Rod movement is verified by monitoring (RPIs) and Step Counters.

NOTE 3   Alarm 83D, ROD DEVIN & SEQ PWR RANGE TILT COMPUTER ALARM, may actuate when shutdown rods are inserted from fully withdrawn.

[1]   **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of ten steps.

[2]   **RECORD** the initial position of the following Step Counter:

1-SBDG1, SHUTDOWN BANK D1: ____228____ steps.

CAUTION   If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:
- T_{avg} is not within 1 °F of program,
- Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),
- Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].

[3]   **PLACE** 1-RBSS, ROD BANK SELECT, in SBD.

NOTE   During movement of SBD rods, CERPI Monitor Rod speed may be inaccurate.

[4]   **MOVE** Shutdown Bank D at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)

[5]   **RETURN** Shutdown Bank D to its original position as recorded in Step [2] of this section using 1-FLRM, ROD MOTION CONTROL.

Date _____   INITIALS

6.5 CONNTROL BANK A (CBA)

NOTE 1 Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2 Rod movement is verified by monitoring (RPIs) and Step Counters.

[1] **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of ten steps.   _ARU_

NOTE 1-XA-55-4B-87A, ROD INSERTION LIMIT LO, may actuate during the following test sections.

[2] **RECORD** the initial position of the following Step Counter:

1-CBAG1, CONTROL BANK A1: ____228____ steps.   _ARU_

1-CBAG2, CONTROL BANK A2: ____228____ steps.   _ARU_

CAUTION **If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:**
- **T_{avg} is not within 1 °F of program,**
- **Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),**
- **Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].**

[3] **PLACE** 1-RBSS, ROD BANK SELECT, in CBA.   _ARU_

[4] **MOVE** Control Bank A at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)   _ARU_

[5] **VERIFY** Control Bank A1 and A2 Step Counters agree within plus or minus 2 steps.   _ARU_

[6] **RETURN** Control Bank A to its original position as recorded in Step [2] of this section using 1-FLRM, ROD MOTION CONTROL.   _ARU_

[7] IF Rod Insertion Limit Lo Alarm 87-A does not clear, **THEN**
- **REFER TO** Tech Spec LCO 3.1.7.   _N/A_
- **CONTACT** System Engineer to reset 87-A USING ICS.   _N/A_

Date _____   INITIALS

6.6   CONTROL BANK B (CBB)

NOTE 1 Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2 Rod movement is verified by monitoring (RPIs) and Step Counters.

[1]   **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of ten steps.   _ARJ_

NOTE 1-XA-55-4B-87A, ROD INSERTION LIMIT LO, may actuate during the following test sections.

[2]   **RECORD** the initial position of the following Step Counters:

1-CBBG1, CONTROL BANK B1: ____228____ steps.   _ARJ_

1-CBBG2, CONTROL BANK B2: ____228____ steps.   _ARJ_

CAUTION If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:
- T_{avg} **is not within 1 °F of program,**
- **Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),**
- **Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].**

[3]   **PLACE** 1-RBSS, ROD BANK SELECT, in CBB.   _ARJ_

[4]   **MOVE** Control Bank B at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)   _ARJ_

[5]   **VERIFY** Control Bank B1 and B2 Step Counters agree within plus or minus 2 steps.   _ARJ_

[6]   **RETURN** Control Bank B to its original position as recorded in Step **[2]** of this section using 1-FLRM, ROD MOTION CONTROL.   _ARJ_

[7]   **IF** Rod Insertion Limit Lo Alarm 87-A does not clear, **THEN**   _N/A_
- **REFER TO** Tech Spec LCO 3.1.7.
- **CONTACT** System Engineer to reset 87-A USING ICS.   _N/A_

Date _____   INITIALS

6.7 CONTROL BANK C (CBC)

NOTE 1 Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2 Rod movement is verified by monitoring (RPIs) and Step Counters.

[1] ENSURE T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of ten steps.   _ABC_

NOTE 1-XA-55-4B-87A, ROD INSERTION LIMIT LO, may actuate during the following test sections.

[2] RECORD the initial position of the following Step Counters:

1-CBCG1, CONTROL BANK C1: ___228___ steps.   _ABC_

1-CBCG2, CONTROL BANK C2: ___228___ steps.   _ABC_

CAUTION If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:
- T_{avg} is not within 1 °F of program,
- Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),
- Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].

[3] PLACE 1-RBSS, ROD BANK SELECT, in CBC.   _ABC_

[4] MOVE Control Bank C at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)   _ABC_

[5] VERIFY Control Bank C1 and C2 Step Counters agree within plus or minus 2 steps.   _ABC_

[6] RETURN Control Bank C to its original position as recorded in Step [2] of this section using 1-FLRM, ROD MOTION CONTROL.   _ABC_

[7] IF Rod Insertion Limit Lo Alarm 87-A does not clear, THEN
- REFER TO Tech Spec LCO 3.1.7.   _N/A_
- CONTACT System Engineer to reset 87-A USING ICS.   _N/A_

Date _____   INITIALS

6.8 CONTROL BANK D (CBD)

NOTE 1   Between rod bank movements, T_{avg} - T_{ref} deviation may be adjusted using manual rod control or by adjusting turbine load.

NOTE 2   Rod movement is verified by monitoring (RPIs) and Step Counters.

[1]   **ENSURE** T_{avg} - T_{ref} deviation is adjusted to allow for bank movement of ten steps.   _____

NOTE   1-XA-55-4B-87A, ROD INSERTION LIMIT LO, may actuate during the following test sections.

[2]   **RECORD** the initial position of the following Step Counters:

1-CBDG1, CONTROL BANK D1: _____ steps.   _____

1-CBDG2, CONTROL BANK D2: _____ steps.   _____

NOTE   The operator has the option of moving Control Bank D five Steps in one direction, then ten Steps in the opposite direction and then return to normal. This method will have less overall effect on Reactor Power.

[3]   **PLACE** 1-RBSS, ROD BANK SELECT, in CBD.   _____

NOTE   1-XA-55-4A-64F, C-11 BANK D AUTO WITHDRAWAL BLOCKED, will actuate if Control Bank D Rods are withdrawn past 220 Steps.

[4]   **MOVE** Control Bank D at least ten Steps in any one direction, as indicated on the appropriate Step Counter, and

VERIFY movement of the rods in the proper direction is indicated on the appropriate RPIs. (Acc Crit)   _____

[5]   **VERIFY** Control Bank D1 and D2 Step Counters agree within plus or minus 2 steps.   _____

[6]   **RETURN** Control Bank D to its original position as recorded in Step **[2]** of this section using 1-FLRM, ROD MOTION CONTROL.   _____

[7]   IF Rod Insertion Limit Lo Alarm 87-A does not clear, **THEN**
  • **REFER TO** Tech Spec LCO 3.1.7.   _____
  • **CONTACT** System Engineer to reset 87-A USING ICS.   _____

Date _____   <u>INITIALS</u>

6.9 RESTORATION

CAUTION   If rod movement demand exists via any of the following methods, the rod bank select switch should be moved through AUTO rapidly to avoid undesired rod movement:

- T_{avg} is not within 1 °F of program,
- Less than 5 minutes has elapsed since any change in rod control input (i.e, Tavg, Tref, or NIS),
- Demand is indicated on the Computer Enhanced Rod Position Indication (CERPI) monitors [1-M-4].

[1]   **PLACE** 1-RBSS, ROD BANK SELECT, in MANUAL.   _____

[2]   **IF** T_{avg} not on program, **THEN**

RETURN T_{avg} - T_{ref} within 1.5°F.   _____

[3]   **RETURN** 1-RBSS, ROD BANK SELECT, to the as found position recorded in Section **4.3**, Step **[2]** (page 6 of 17).   _____

[4]   **IF** Acceptance Criteria is not met, **THEN**

NOTIFY the SRO as soon as practical after observation of the noncompliance, for consideration of possible entry into LCO 3.1.5.   _____

Date _____   INITIALS

7.0 POST SURVEILLANCE ACTIVITIES

[1]   **NOTIFY** SM/SRO that Instruction is COMPLETE.   _____

[2]   **RECORD** completion date and time on Surveillance Task Sheet.   _____

8.0 RECORDS

8.1 QA Records

The Data Package is a QA record, and handled in accordance with the Document Control and Records Management (DCRM) program and containsthe following:

Completed Data Package.

8.2 Non-QA Records

None

SOURCE NOTES

SOURCE NOTE	SOURCE DOCUMENT	SUMMARY
None		

✓

B.1.b
Recover From High Pressurizer Level Condition

WATTS BAR NUCLEAR PLANT
B.1.b
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Recover From High Pressurizer Level Condition.

Alternate Path: Applicant establishes normal letdown in order to reduce pressurizer level to less than 92%.

Facility JPM #: 3-OT-JPMR023

Safety Function: 2 **Title:** RCS Inventory Control

K/A 028 AK3.05 Knowledge of the reasons for the following responses as they apply to the Pressurizer Level Control Malfunctions: Actions contained in EOP for PZR level malfunction.

Rating(s): 3.7 / 4.1 **CFR:** 41.5,41.10/45.6/45.13

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator **X** In-Plant _____ Perform **X** Simulate _____

References: FR-I.1, "High Pressure Level," Rev. 10

Task Number: RO-113-FR-I.1-001 **Title:** Respond to High Pressurizer Level

Task Standard: Applicant performs the actions contained in FR-I.1, High Pressurizer Level," and returns level to less than 92%.

Validation Time: 15 minutes **Time Critical:** Yes _____ No **X**

==

Applicant: _____ _____ Time Start: _____
                      NAME   SSN   Time Finish: _____

Performance Rating: SAT ____ UNSAT ____   Performance Time ___

Examiner: _____ _____/_____
                      NAME   SIGNATURE   DATE

==

COMMENTS

_____

_____

_____

_____

_____

_____

WATTS BAR NUCLEAR PLANT
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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.

2. Right click on 341, and then select RESET.

3. Enter the password.

4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5. Place simulator in RUN and acknowledge any alarms.

6. Place simulator in FREEZE until Examiner cue is given.

WATTS BAR NUCLEAR PLANT
B.1.b
Nov. 2009 NRC Exam

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. An Inadvertent Safety Injection has occurred.

2. Safety Injection has been terminated and ECCS pumps have been stopped.

3. While performing Step 14 of ES-1.1,"SI Termination," the STA has determined there is a Yellow Condition on the INVENTORY Status Tree due to high Pressurizer level.

4. You are the OAC.

INITIATING CUES:

1. You have been directed by the Unit Supervisor to perform the appropriate procedure for a Yellow Condition on the INVENTORY Status Tree.

2. You are to notify the Unit Supervisor when the procedure has been completed.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1: Obtain the correct procedure. STANDARD: A copy of FR-I.1 has been obtained. **EXAMINER'S CUE: After the performer has demonstrated the method of obtaining the correct instruction, the evaluator can provide a copy of the instruction.** COMMENTS:	___ SAT ___ UNSAT

STEP 2:   1.   **CHECK** SI terminated.
            •   Both SI pumps STOPPED.
            •   BIT isolated.
 	
STANDARD:
 	
Performer verifies SI pumps stopped:
 	
   1A-A SI Pump (green indicating lights on 1-HS-63-10A)
   1B-B SI pump (green indicating lights on 1-HS-63-15A)
 	
and:
 	
   Performer verifies BIT outlet valves are closed:
   1-FCV-63-25 (green indicating lights on 1-HS-63-25A)
   1-FCV-63-26 (green indicating lights on 1-HS-63-26A)
 	
COMMENTS:
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 3: 2. **RESET** Phase A and Phase B. STANDARD: The performer determines that Phase A and Phase B have been reset by checking Master ISOL Signal Status PNL 1-XX-55-6C & 6D red lights dark for both Phase A and Phase B. COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 4: 3. **ENSURE** cntmt air in service: a. Aux air press greater than 75 psig [M-15]. b. Cntmt air supply valves OPEN [M-15]: • 1-FCV-32-80. • 1-FCV-32-102. • 1-FCV-32-110. STANDARD: a. The performer verifies aux air pressure is approximately 95-100 psig on **both** trains using 1-PI-32-104A & 1-PI-32-105A on M-15. b. Valves listed are determined to be open by red indicating lights LIT on M-15: • 1-HS-32-80A, • 1-HS-32-102A • 1-HS-32-110A **CUE: If contacted, all air compressors are operating properly.** COMMENTS:	____ SAT ____ UNSAT

CAUTION: During RCS solid water operation, any change in charging or letdown flows could cause rapid RCS pressure changes.

STEP/STANDARD	SAT/UNSAT
<u>STEP 5:</u>　　4. **CHECK** at least one charging pump RUNNING. <u>STANDARD:</u> 1-HS-62-108A CCP 1A-A has a red light verified to be illuminated or amps on meter above handswitch. <u>COMMENTS:</u>	___ SAT ___ UNSAT
<u>STEP 6:</u>　　5. **CHECK** charging flow established. <u>STANDARD:</u> • Charging Flow Indicator, 1-FI-62-93A, indicating flow. • 1-FVC-62-90 (verified open by red lights on handswitch). • 1-FCV-62-91 (verified open by red lights on handswitch). • 1--FCV-62-85 (verified open by red lights on handswitch). • 1-FCV-62-89 is throttled open to establish flow through the Regen. Heat Exchanger. <u>COMMENTS:</u>	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 7</u>: 6. **CHECK** letdown in service. <u>STANDARD</u>: Letdown is determined to **NOT** be in service by letdown flow indicator, 1-FI-62-82, indicating no flow and all letdown valves are closed. Applicant enters the RESPONSE NOT OBTAINED column for actions. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 8</u>: 6. <u>**RESPONSE NOT OBTAINED:**</u> **ESTABLISH** letdown: a) **ENSURE** at least 60 gpm charging flow established. <u>STANDARD</u>: Applicant determines that charging flow is less than 60 gpm and adjusts charging flow rate on 1-FI-62-93A to greater than or equal to 60 gpm. **Step is critical to establishing cooling water for the letdown flowpath.** <u>COMMENTS</u>:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 9</u>:   b.) **OPEN** letdown isolation valves.
 	
    • 1-FCV-62-69
    • 1-FCV-62-70
    • 1-FCV062-77
 	
<u>STANDARD</u>:
 	
Applicant opens 1-FCV-62-69, 1-FCV-62-70 and 1-FCV-62-77 using each valve handswitch. Applicant verifies valves are open by observing GREEN lights DARK and RED lights LIT.
 	
Step is critical to establishing a letdown flowpath.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

<u>STEP 10</u>: c.) **PLACE** letdown pressure controller 1-HIC-62-81 in MANUAL at 40-50% OPEN if using 75 gpm orifice (20-30% if using 45 gpm orifice). <u>STANDARD</u>: Applicant places toggle switch for 1-HIC-62-81 in MANUAL and establishes a 40-50% open position on 1-HIC-62-81. **Step is critical to prevent opening the letdown relief valve on high pressure or causing flashing in the letdown line due to low pressure.** <u>COMMENTS</u>:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 11: d.) **OPEN** letdown orifice valves as needed. STANDARD: Applicant selects an orifice isolation valve (either 1-HS-62-73A OR 1-HS-62-74A are acceptable) and opens the valve. For the selected valve, the applicant verifies that the RED light is LIT and the GREEN light is DARK. **Step is critical to establishing a letdown flowpath.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 12: e.) **ADJUST** 1-HIC-62-81 for desired press, 320 psig at normal letdown temp. STANDARD: Applicant throttles closed on 1-HIC-62-81 to establish approximately 320 psig on 1-PI-62-81, LP LETDOWN PRESS. **Step is critical to prevent opening the letdown relief valve on high pressure or causing flashing in the letdown line due to low pressure.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 13</u>: f.) **PLACE** 1-HIC-62-81 in **AUTO**. <u>STANDARD</u>: Applicant places toggle switch for 1-HIC-62-81 in the AUTO (down) position. Applicant observes that letdown pressure does not change after transfer from MANUAL to AUTO is complete. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 14</u>: 7. **CHECK** charging and letdown flows established. <u>STANDARD</u>: Applicant observes charging flow on 1-FI-62-93A (greater than 60 gpm) and letdown flow on 1-FI-62-82 (approximately 75 gpm). <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 15</u>: 8. **CHECK** seal return flow established. <u>STANDARD</u>: Applicant observes that 1-FCV-62-61 and 1-FCV-62-63 are OPEN by RED lights LIT, GREEN lights DARK. <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 16</u>:   9. **CHECK** RCS press:
 	
     a.   Press less than 2335 psig.
 	
     b.   Press less than 2260 psig.
 	
<u>STANDARD</u>:
 	
Applicant determines RCS pressure, and reports actual conditions. The applicant may determine that pressure is greater than 2260 psig; depending on how quickly previous steps were performed.
 	
<u>COMMENTS</u>:
	___ SAT
	
	___ UNSAT

<u>STEP 17</u>: 9.b. **RESPONSE NOT OBTAINED**: b. **CONTROL** charging and letdown flow to reduce pressure to less than 2260 psig. <u>STANDARD</u>: If pressure is greater than 2260 psig, the applicant adjusts charging flow using 1-FCV-62-93 and 1-FCV-62-89 to establish a lowering trend on pressurizer pressure. <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 17</u>: 10. **CHECK** pzr PORVs CLOSED. <u>STANDARD</u>: Applicant determines that the pressurizer PORVs are closed by observing tailpipe temperatures on 1-M-4 and indicating lights GREEN for 1-PCV-68-340 and 1-PCV-68-334 in 1-M-5. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 18</u>: 11. **CONTROL** pzr heaters as necessary to establish pzr bubble <u>STANDARD</u>: Applicant determines that sufficient heaters are energized. <u>COMMENTS</u>:	___ SAT ___ UNSAT

<u>STEP 19</u>:   12. **ENSURE** pzr spray valves CLOSED
 	
        a. **CHECK** normal pzr spray valves **CLOSED**.
 	
        b. **ENSURE** aux spray valve **CLOSED**.
 	
<u>STANDARD</u>:
 	
Applicant determines that RCS is less than 2260 and the pressurizer spray valves are CLOSED by observing GREEN lights on 1-M-4.
 	
<u>COMMENTS</u>:
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 20</u>:   13. **CONTROL** charging and letdown:
 	
      a. **MAINTAIN** RCS press stable.
 	
      b. **LOWER** pzr level.
 	
<u>STANDARD</u>:
 	
Applicant determines that the charging-letdown flow imbalance established earlier at Step 9.b is reducing pressurizer level, and heaters are maintaining pressurizer pressure.
 	
Step is critical to ensure RCS parameters are being controlled by operator action, and that no other event is in progress.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

NOTE TO EVALUATOR: The applicant may or may not have dropped pressurizer level below 92% at this time. If level is less than 92%, Step 14 of the procedure will be the termination point for the JPM. If level is greater than 92%, the applicant will be directed to return to Step 13 to continue to reduce pressurizer level	
<u>STEP 21</u>: 14. CHECK pzr level less than 92%: <u>STANDARD</u>: Applicant determines that level is dropping, but has not reached 92%. <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 21: 14. **RESPONSE NOT OBTAINED:** IF pzr level greater than or equal to 92%, THEN GO TO Step 13. STANDARD: Applicant determines that level is dropping, but has not reached 92%. **Step is critical since performance of previous steps is required to reduce level.** CUE: **When the applicant addresses the return to step 13, state "another operator will continue the procedure from this point."** COMMENTS:	CRITICAL STEP ___ SAT ___ UNSAT
END OF TASK	

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. An Inadvertent Safety Injection has occurred.

2. Safety Injection has been terminated and ECCS pumps have been stopped.

3. While performing Step 14 of ES-1.1,"SI Termination," the STA has determined there is a Yellow Condition on the INVENTORY Status Tree due to high Pressurizer level.

4. You are the OAC.

INITIATING CUES:

1. You have been directed by the Unit Supervisor to perform the appropriate procedure for a Yellow Condition on the INVENTORY Status Tree.

2. You are to notify the Unit Supervisor when the procedure has been completed.

B.1.b

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

EMERGENCY OPERATING INSTRUCTIONS

FR-I.1

HIGH PRESSURIZER LEVEL

Revision 10

Unit 1

QUALITY RELATED

REQUESTED BY: _____ S. M. Baker _____

SPONSORING
ORGANIZATION: _____ OPERATIONS _____

APPROVED BY: _____ R. E. Bates _____

EFFECTIVE DATE: _____ 11/27/07 _____

LEVEL OF USE: CONTINUOUS

1.0 PURPOSE

This Instruction provides actions to respond to a high pressurizer level.

2.0 SYMPTOMS AND ENTRY CONDITIONS

2.1 Indications

Pzr level greater than or equal to 92% and RVLIS greater than 95%.

2.2 Transitions

FR-0, Status Tree, FR-I in YELLOW condition.

3.0 OPERATOR ACTIONS

Step	Action/Expected Response	Response Not Obtained

1. **CHECK** SI terminated.

   • Both SI pumps STOPPED.

   • BIT isolated.

   Response Not Obtained: **IF** SI has **NOT** been terminated, **THEN** **RETURN TO** Instruction in effect.

2. **RESET** Phase A and Phase B.

3. **ENSURE** cntmt air in service:

   a. Aux air press greater than 75 psig [M-15].

      Response Not Obtained: a. **DISPATCH** Operator to aux air compressors:

      1) **ENSURE** affected compressor(s) RUNNING.

      2) **ENSURE** affected train isolation valve CLOSED:
         • Train A, 0-FCV-32-82.
         • Train B, 0-FCV-32-85.

   b. Cntmt air supply valves OPEN [M-15]:
      • 1-FCV-32-80.
      • 1-FCV-32-102.
      • 1-FCV-32-110.

Step	Action/Expected Response	Response Not Obtained

CAUTION During RCS solid water operation, any change in charging or letdown flows could cause rapid RCS pressure changes.

4.   **CHECK** at least one charging pump RUNNING.

        IF CCS to RCP thermal barrier established,
THEN:

a) **ENSURE** RCP seal flow control 1-FCV-62-89 CLOSED.

b) **START** one charging pump.

c) ** **GO TO** Step 5.

IF both CCS to RCP thermal barrier **AND** seal injection flow **NOT** established,
THEN:

a) Locally **ISOLATE** RCP seals USING Appendix A (FR-I.1), RCP Seals and Thermal Barrier Isolation.

b) **CLOSE** charging isolation 1-FCV-62-90 or 1-FCV-62-91.

c) **WHEN** seal injection isolated, **THEN** **START** one charging pump.

Step	Action/Expected Response	Response Not Obtained

| 5. | **CHECK** charging flow established. | **ESTABLISH** normal charging:

a) **ENSURE** RCP seal flow control 1-FCV-62-89 CLOSED.

b) **OPEN** charging isolation 1-FCV-62-90 and 1-FCV-62-91.

c) **ENSURE** charging valve 1-FCV-62-85 or 1-FCV-62-86 OPEN.

d) **CONTROL** 1-FCV-62-89 and 1-FCV-62-93 to maintain:

  • Seal flow to each RCP between 8 and 13 gpm if seal injection has not been isolated.

  • Charging flow between 55 and 60 gpm. |

Step	Action/Expected Response	Response Not Obtained
6.	**CHECK** letdown in service.	**ESTABLISH** letdown: a) **ENSURE** at least 60 gpm charging flow established. b) **OPEN** letdown isolation valves: • 1-FCV-62-69. • 1-FCV-62-70. • 1-FCV-62-77. c) **PLACE** letdown press controller 1-HIC-62-81 in MANUAL at 40-50% OPEN if using 75 gpm orifice (20-30% OPEN if using 45 gpm orifice). d) **OPEN** letdown orifice valves as needed. e) **ADJUST** 1-HIC-62-81 for desired press, 320 psig at normal letdown temp. f) **PLACE** 1-HIC-62-81 in AUTO.

Step	Action/Expected Response	Response Not Obtained

7. **CHECK** charging and letdown flows established.

PLACE excess letdown in service:

a) **OPEN** 1-FCV-70-143.

b) **OPEN** 1-FCV-70-85.

c) **OPEN** 1-FCV-62-54.

d) **OPEN** 1-FCV-62-55.

e) **ENSURE** 1-FCV-62-59 in NORMAL.

f) **ADJUST** 1-FCV-62-56 to maintain excess letdown heat exchanger outlet temp less than 225°F.

g) **CONTROL** 1-FCV-62-89 and 1-FCV-62-93 to maintain:

- Seal injection flow between 8 and 13 gpm for each RCP.

- Pzr level dropping.

8. **CHECK** seal return flow established.

IF RCP seal injection flow established, **THEN** **OPEN** RCP seal return valves 1-FCV-62-61 and 1-FCV-62-63.

Step	Action/Expected Response	Response Not Obtained

9. **CHECK** RCS press:

    a. Press less than 2335 psig.

        a. **ENSURE** at least one pzr PORV and associated block valve OPEN UNTIL press less than 2335 psig.

    b. Press less than 2260 psig.

        b. **CONTROL** charging and letdown flow to reduce pressure to less than 2260 psig.

10. **CHECK** pzr PORVs CLOSED.

    IF RCS press less than 2335 psig, **THEN** **ENSURE** pzr PORVS or block valves CLOSED.

11. **CONTROL** pzr heaters as necessary to establish pzr bubble.

| Step | Action/Expected Response | Response Not Obtained |

12. **ENSURE** pzr spray valves CLOSED.

    a. **CHECK** normal pzr spray valves CLOSED.

      a. **IF** RCS press less than 2260 psig, **THEN** **CLOSE** pzr spray valve.

      IF pzr spray valve failed OPEN, **THEN**

      STOP RCP(s) as necessary to stop spray flow.

    b. **ENSURE** aux spray valve CLOSED.

      b. **IF** aux spray valve failed OPEN, **THEN**

      OPEN normal pzr spray valve on RCS loop with RCP stopped:

      • RCS Loop 1   1-PCV-68-340

      • RCS Loop 2   1-PCV-68-320

      IF both RCPs on RCS loop 1 and loop 2 running, **THEN**

      1) **ISOLATE** letdown:

        • **ENSURE** 1-FCV-62-76 CLOSED.

        • **ENSURE** 1-FCV-62-72 CLOSED.

        • **ENSURE** 1-FCV-62-73 CLOSED.

        • **ENSURE** 1-FCV-62-74 CLOSED.

        • **ENSURE** 1-FCV-62-69 CLOSED.

        • **ENSURE** 1-FCV-62-70 CLOSED.

Step	Action/Expected Response	Response Not Obtained

12. (continued)

                   2) **CLOSE** charging isolation valves 1-FCV-62-90 and 1-FCV-62-91.

                   3) **ESTABLISH** excess letdown:

                        a) **OPEN** 1-FCV-70-143.

                        b) **OPEN** 1-FCV-70-85.

                        c) **OPEN** 1-FCV-62-54.

                        d) **OPEN** 1-FCV-62-55.

                        e) **ENSURE** 1-FCV-62-59 in NORMAL.

                        f) **ADJUST** 1-FCV-62-56 to maintain excess letdown heat exchanger outlet temp less than 225°F.

13. **CONTROL** charging and letdown:

    a. **MAINTAIN** RCS press stable.

    b. **LOWER** pzr level.

14. **CHECK** pzr level less than 92%.

                                                 IF pzr level greater than or equal to 92%, **THEN** ** **GO TO** Step 13.

15. **RETURN TO** Instruction in effect.

                                   – End –

APPENDIX A (FR-I.1)

Page 1 of 2

RCP SEALS AND THERMAL BARRIER ISOLATION
MAIN CONTROL ROOM - Performed by NUO

NOTE   These steps can be performed in any order.

1. **DISPATCH** operator to perform next page, Attachment 1 (FR-I.1).

2. **CLOSE** 1-FCV-62-61 and/or 1-FCV-62-63, RCP seal return valves [M-5].

    IF 1-FCV-62-61 or 1-FCV-62-63 can NOT be CLOSED,
    THEN
    DIRECT operator to perform local isolation per Step 2 of Attachment 1.

3. **ISOLATE** RCP thermal barrier:

    • **PLACE** both Thermal Barrier Booster Pumps in Pull-To-Lock [M-27B].

    • **CLOSE** 1-FCV-70-90 and/or 1-FCV-70-87, CCS thermal barrier return valves [M-27B].

    • **CLOSE** 1-FCV-70-133 and/or 1-FCV-70-134, CCS thermal barrier supply valves [M-27B].

    IF at least one of the thermal barrier supply valves and one of the thermal barrier return valves can NOT be CLOSED,
    THEN
    DIRECT operator to perform local isolation per Step 3 of Attachment 1.

APPENDIX A (FR-I.1)
ATTACHMENT 1
Page 2 of 2

RCP SEALS AND THERMAL BARRIER ISOLATION
LOCAL-Performed by NAUO

NOTE • These steps can be performed in any order.

• Step 1 must always be performed.

1. **ISOLATE** RCP seal injection [reach rods outside seal water injection filter cubicles]:

   • **CLOSE** 1-ISV-62-549, CVCS SEAL WTR INJ FLTR B OUT ISOL [A5T/713]

   • **CLOSE** 1-BYV-62-546, CVCS SEAL WTR INJ FLTR BYP [A5T/713]

   • **CLOSE** 1-ISV-62-550, CVCS SEAL WTR INJ FLTR A OUT ISOL [A5T/713]

NOTE Step 2 to be performed only if MCR is unable to close either 1-FCV-62-61 or 1-FCV-62-63.

2. **ISOLATE** RCP seal return valves [reach rods outside seal return filter cubicle]:

   • **CLOSE** 1-ISV-62-642, CVCS SEAL WTR RETURN FILTER INLET ISOL [A5T/713]

   • **CLOSE** 1-BYV-62-643, CVCS SEAL WTR RETURN FILTER BYPASS [A5T/713]

NOTE Step 3 to be performed only if MCR is unable to close at least one of the thermal barrier supply and one of the thermal barrier return isolation valves.

3. **ISOLATE** RCP thermal barrier:

   • **CLOSE** 1-FCV-70-90, THERMAL BARRIER CCS RETURN [above south side of BIT]

   • **CLOSE** 1-ISV-70-677A, CCS THRM BAR BSTR PUMP 1A-A DISCH ISOLATION [A5W/737]

   • **CLOSE** 1-ISV-70-677B, CCS THRM BAR BSTR PUMP 1B-B DISCH ISOLATION [A5W/737]

✓

B.1.c
Align an RHR train for Hot Leg Recirculation per ES-1.4.

WATTS BAR NUCLEAR PLANT
B.1.c
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Align an RHR train for Hot Leg Recirculation per ES-1.4

Alternate Path: During alignment of "A" Train, 1-FCV-74-33 Train "A" RHR Crosstie, will not open, therefore the operator will need to realign "A" Train RHR to cold leg recirc and then align "B" RHR Train to Hot Leg Recirc.

Facility JPM #: 3-OT-JPMR071A

Safety Function: 3   **Title:** RCS Pressure Control

K/A 006 A4.04   Ability to manually operate and/or monitor in the control room: RHRS.

Rating(s): 3.7 / 3.6   **CFR:** 41.7/45.5 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator   **X**   In-Plant _____   Perform   **X**   Simulate _____

References: ES-1.4, "Transfer to Hot Leg Recirculation," Rev. 10.

Task Number: RO-113-ES-1.4-001   **Title:**

Task Standard: Applicant attempts to align RHR Train "A" to supply hot leg recirc. Since the attempt is unsuccessful due to a valve failure, the applicant places RHR Train "B" in hot leg recirc.

Validation Time: 10 minutes   **Time Critical:** Yes _____ No **X**

===

Applicant: _____ _____ Time Start: _____
                          NAME   SSN   Time Finish: _____

Performance Rating: SAT _____ UNSAT _____   Performance Time ___

Examiner: _____ _____/_____
                          NAME   SIGNATURE   DATE

===

COMMENTS

_____

_____

_____

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.

2. Right click on 340, and then select RESET.

3. Enter the password.

4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5. ENSURE the following information appears on the Director Summary Screen:

Key		Type	Event	Delay	Inserted	Ramp	Initial	Final	Value
hs-74-33a	hs-74-33a rhr heat exch a bypass sw	R		00:00:00		00:00:00		close	close

6. Place simulator in RUN and acknowledge any alarms.

7. Place simulator in FREEZE until Examiner cue is given.

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DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. A Large Break LOCA has occurred.

2. Three hours have elapsed since the Large Break LOCA occurred.

3. ES-1.3, "Transfer to Containment Sump" has been completed.

4. You are the Operator at the Controls.

INITIATING CUES:

1. The Unit Supervisor directs you to align RHR for hot leg recirculation using ES-1.4, "Transfer to Hot Leg Recirculation."

2. You are to notify the Unit Supervisor when RHR is aligned for hot leg recirculation.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

NOTE   If problems are encountered during transfer to hot leg, then cold leg recirc should be continued or restored during TSC evaluation of corrective actions.

STEP 1: 1. **ALIGN** RHR Train A for hot leg recirc:

      a. **CLOSE** RHR Train A cold leg isolation valve 1-FCV-63-93.

STANDARD:

Applicant closes 1-FCV-63-93, RHR Train A cold leg isolation valve, by rotating handswitch to the left, and observing that the Red indicating light is DARK and the Green indicating light is LIT.

NOTE TO EVALUATOR:

131-F ESF COMPONENT NOT NORMAL will alarm when 1-FCV-63-93 is closed. This is an expected alarm.

COMMENTS:

    ____ SAT

    ____ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 2</u>: b. **ENSURE** RHR Train B discharge crosstie valve 1-FCV-74-35 CLOSED. <u>STANDARD</u>: Applicant determines that 1-FCV-74-35, RHR Train B discharge crosstie valve is closed by observing that the Red indicating light is DARK and the Green indicating light is LIT. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 3</u>. c. **ENSURE** RHR Train A spray valve 1-FCV-72-40 CLOSED. <u>STANDARD</u>: Applicant determines that 1-FCV-72-40, RHR Train A spray valve is closed by observing that the Red indicating light is DARK and the Green indicating light is LIT. <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 4</u>: d. **ENSURE** RHR Train B spray valve 1-FCV-72-41 CLOSED. <u>STANDARD</u>: Applicant determines that 1-FCV-72-41, RHR Train B spray valve is closed by observing that the Red indicating light is DARK and the Green indicating light is LIT. <u>COMMENTS</u>:	___ SAT ___ UNSAT

NOTE TO EVALUATOR: An override is active which prevents the applicant from opening 1-FCV-74-33.

STEP/STANDARD	SAT/UNSAT

<u>STEP 5</u>: e. **OPEN** RHR Train A discharge crosstie valve 1-FCV-74-33.
 	
<u>STANDARD</u>:
 	
   Applicant opens attempts to open 1-FCV-74-33, RHR Train A discharge crosstie valve, by rotating handswitch to the right.
 	
Note to Evaluator: Valve will NOT open.
 	
   Applicant enters RNO column, since the failure of 1-FCV-74-33 will prevent completion of Step 1 Action/Expected Response actions.
 	
<u>COMMENTS</u>:
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 6: **Step 1 <u>RESPONSE NOT OBTAINED</u>** **IF** Train A **NOT** available for hot leg recirc, **THEN:** 1) **RETURN** RHR Train A to cold leg recirc alignment. 2) **GO TO** Step 2. <u>STANDARD</u>: Applicant opens 1-FCV-63-93, RHR Train A cold leg valve to re-establish RHR Train A cold leg recirculation alignment. **NOTE TO EVALUATOR: 131-F ESF COMPONENT NOT NORMAL will clear, and then re-flash when 1-FCV-63-93 is opened.** <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 7:</u> 2. **ALIGN** RHR Train B for hot leg recirc:
 	
  a. **CLOSE** RHR Train B cold leg isolation valve 1-FCV-63-94.
 	
<u>STANDARD</u>:
 	
  Applicant closes 1-FCV-63-94, RHR Train B cold leg isolation valve, by rotating handswitch to the left, and observing that the Red indicating light is DARK and the Green indicating light is LIT.
 	
NOTE TO EVALUATOR: 131-F ESF COMPONENT NOT NORMAL will alarm when 1-FCV-63-94 is closed. This is an expected alarm.
 	
  Step is critical since it will allow RHR flow to be directed later to the correct hot leg.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

<u>STEP 8:</u> b. **ENSURE** RHR Train A discharge crosstie valve 1-FCV-74-33 CLOSED. <u>STANDARD</u>: (Applicant has already attempted to open 1-FCV-74-33 unsuccessfully.) Applicant determines that 1-FCV-74-33 is closed by observing the RED indicating light DARK, GREEN indicating light LIT. <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 9</u>: c. **ENSURE** RHR Train A spray valve 1-FCV-72-40 CLOSED. <u>STANDARD</u>: Applicant ensures 1-FCV-72-40, RHR Train A spray valve is closed by observing Green indicating light is LIT and Red indicating light is DARK. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 10</u>: d. **ENSURE** RHR Train B spray valve 1-FCV-72-41 CLOSED. <u>STANDARD</u>: Applicant ensures 1-FCV-72-41, RHR Train B spray valve is closed by observing Green indicating light is LIT and Red indicating light is DARK. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 11</u>: e. **OPEN** RHR Train B discharge crosstie valve 1-FCV-74-35. <u>STANDARD</u>: Applicant opens 1-FCV-74-35, RHR Train B discharge crosstie valve, by rotating handswitch to the right, and observing that the Red indicating light is LIT and the Green indicating light is DARK. **Step is critical since it will allow RHR flow to be directed to the hot leg.** <u>COMMENTS</u>:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 12</u>: f. **OPEN** RHR hot leg injection valve 1-FCV-63-172. <u>STANDARD</u>: Applicant opens 1-FCV-63-172, RHR hot leg injection valve, by rotating handswitch to the right, and observing that the Red indicating light is LIT and the Green indicating light is DARK. **Step is critical since it will allow RHR flow to be directed to the hot leg.** <u>COMMENTS</u>:	**CRITICAL STEP** ___ SAT ___ UNSAT
<u>STEP 13</u>: g. **ENSURE** RHR heat exchanger outlet 1-FCV-74-28 OPEN. <u>STANDARD</u>: Applicant ensures 1-FCV-74-28 RHR heat exchanger outlet valve is open by observing 1-XI-74-28 RHR HX B OUTLET FLOW CNTL FCV-74-28 Red light is LIT. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 14</u>: h. **ENSURE** RHR hot leg flow on 1-FI-63-173. <u>STANDARD</u>: Applicant ensures flow is indicated on 1-FI-63-173, RHR to HL 1&3 FLOW <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 15:   i. **CLOSE** RHR Train A cold leg isolation 1-FCV-63-93.
 	
STANDARD:
 	
   Applicant closes 1-FCV-63-93, RHR Train A cold leg isolation valve, by rotating handswitch to the left, and observing that the Red indicating light is DARK and the Green indicating light is LIT.
 	
   Step is critical since it will allow RHR flow to be directed to the hot leg.
 	
   Applicant informs the Unit Supervisor that RHR has been aligned for hot leg recirculation.
 	
CUE: **Repeat back information provided by the applicant to the Unit Supervisor.**
 	
COMMENTS:
	CRITICAL STEP
	___ SAT
	
	___ UNSAT

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. A Large Break LOCA has occurred.

2. Three hours have elapsed since the Large Break LOCA occurred.

3. ES-1.3, "Transfer to Containment Sump" has been completed.

4. You are the Operator at the Controls.

INITIATING CUES:

1. The Unit Supervisor directs you to align RHR for hot leg recirculation using ES-1.4, "Transfer to Hot Leg Recirculation."

2. You are to notify the Unit Supervisor when RHR is aligned for hot leg recirculation.

B.1.c

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

EMERGENCY OPERATING INSTRUCTIONS

ES-1.4

TRANSFER TO HOT LEG RECIRCULATION

Revision 10

Unit 1

QUALITY RELATED

REQUESTED BY: S. M. Baker

SPONSORING
ORGANIZATION: OPERATIONS

APPROVED BY: A. K. Keefer

EFFECTIVE DATE: 11/22/06

LEVEL OF USE: CONTINUOUS

1.0 PURPOSE

This Instruction provides the necessary actions for transferring ECCS from cold leg recirculation to hot leg recirculation.

2.0 SYMPTOMS AND ENTRY CONDITIONS

2.1 Indications

3 hours has elapsed since initiation of event,

> **AND**

Switchover to containment sump COMPLETE.

2.2 Transitions

E-1, Loss of Reactor or Secondary Coolant.

Whenever a decision is made, based on a recommendation from the TSC, that transfer to hot-leg recirc is required. Transfer to hot-leg recirc may be required, eventually, after transferring to cold-leg recirc during the implementation of:

a. ES-1.2, Post LOCA Cooldown and Depressurization

b. ECA-3.1, SGTR and LOCA - Sub-Cooled Recovery

c. ECA-3.2, SGTR and LOCA - Saturated Recovery

3.0 OPERATOR ACTIONS

| Step | Action/Expected Response | Response Not Obtained |

NOTE   If problems are encountered during transfer to hot leg, then cold leg recirc should be continued or restored during TSC evaluation of corrective actions.

1.   **ALIGN** RHR Train A for hot leg recirc:

    a. **CLOSE** RHR Train A cold leg isolation valve 1-FCV-63-93.

    b. **ENSURE** RHR Train B discharge crosstie valve 1-FCV-74-35 CLOSED.

    c. **ENSURE** RHR Train A spray valve 1-FCV-72-40 CLOSED.

    d. **ENSURE** RHR Train B spray valve 1-FCV-72-41 CLOSED.

    e. **OPEN** RHR Train A discharge crosstie valve 1-FCV-74-33.

    f. **OPEN** RHR hot leg injection valve 1-FCV-63-172.

    g. **ENSURE** RHR heat exchanger outlet 1-FCV-74-16 OPEN.

    h. **ENSURE** RHR hot leg flow on 1-FI-63-173.

    i. **CLOSE** RHR Train B cold leg isolation 1-FCV-63-94.

    j. ** **GO TO** Step 3.

IF Train A **NOT** available for hot leg recirc, **THEN:**

    1) **RETURN** RHR Train A to cold leg recirc alignment.

    2) ** **GO TO** Step 2.

Step	Action/Expected Response	Response Not Obtained
2.	**ALIGN** RHR Train B for hot leg recirc: a. **CLOSE** RHR Train B cold leg isolation valve 1-FCV-63-94. b. **ENSURE** RHR Train A discharge crosstie valve 1-FCV-74-33 CLOSED. c. **ENSURE** RHR Train A spray valve 1-FCV-72-40 CLOSED. d. **ENSURE** RHR Train B spray valve 1-FCV-72-41 CLOSED. e. **OPEN** RHR Train B discharge crosstie valve 1-FCV-74-35. f. **OPEN** RHR hot leg injection valve 1-FCV-63-172. g. **ENSURE** RHR heat exchanger outlet 1-FCV-74-28 OPEN. h. **ENSURE** RHR hot leg flow on 1-FI-63-173. i. **CLOSE** RHR Train A cold leg isolation 1-FCV-63-93.	**IF** Train B **NOT** available for hot leg recirc, **THEN:** 1) **RETURN** RHR Train B to cold leg recirc alignment. 2) **CONSULT** TSC. 3) ** **GO TO** Step 3.

Step	Action/Expected Response	Response Not Obtained
3.	**ALIGN** SI pumps for hot leg recirc: a. **STOP** SI pump A-A. b. **CLOSE** Train A crosstie valve 1-FCV-63-152. c. **OPEN** Train A hot leg injection valve 1-FCV-63-156. d. **START** SI pump A-A. e. **ENSURE** Train A hot leg flow on 1-FI-63-151. f. **STOP** SI pump B-B. g. **CLOSE** Train B crosstie valve 1-FCV-63-153. h. **OPEN** Train B hot leg injection valve 1-FCV-63-157. i. **START** SI pump B-B. j. **ENSURE** Train B hot leg flow on 1-FI-63-20. k. **ENSURE** power restored to 1-FCV-63-22 using Appendix A (ES-1.4), 1-FCV-63-22 Breaker Operation. l. **CLOSE** SI pump cold leg injection valve 1-FCV-63-22.	**IF** SI pumps **NOT** available for hot leg recirc, **THEN:** 1) **RETURN** SI pumps to cold leg recirc alignment. 2) **CONSULT** TSC.

Step	Action/Expected Response	Response Not Obtained

4. **RECORD** hot leg recirc flow:

   • RHR to hot legs 1 & 3 flow 1-FI-63-173.

   • SI pump A flow 1-FI-63-151.

   • SI pump B flow 1-FI-63-20.

5. **RETURN TO** Instruction in effect.

– End –

APPENDIX A
(ES-1.4)
Page 1 of 1

1-FCV-63-22
BREAKER OPERATION

CLOSE the following to restore power to 1-FCV-63-22:

BOARD	COMPT	NOMENCLATURE
480 V Reactor MOV Board 1B1-B	2F2	1-BKR-63-22A SIP COLD LEG INJECTION (1-FCV-63-22) SHUNT TRIP BREAKER

✓

B.1.d
Start Standby Main Feedwater Pump

WATTS BAR NUCLEAR PLANT
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Task: Start Standby Main Feedwater Pump.

Alternate Path: Standby MFP amps increase to the "RED" region, requiring the pump to be removed from service, and for manual control of the MFP MASTER CONTROLLER.

Facility JPM #:   New

Safety Function: 4S   **Title:**   Heat Removal from the Core - Secondary

K/A   059 A4.03   Ability to manually operate and monitor in the main control room: Feedwater control during power increase and decrease.

Rating(s):   2.9 / 2.9   **CFR:**   41.7 / 45.5 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator   **X**   In-Plant   Perform   **X**   Simulate

References: SOI-2&3.01 "Condensate And Feedwater Systems," Rev. 106.
GOI-7, "Generic Equipment Operating Guidelines," Rev. 38.

Task Number: **Title:**

Task Standard: Applicant starts the Standby Main Feedwater pump in parallel with the Main Feedwater Pumps, and then shuts the pump down in response to high motor amps. Applicant controls MFP MASTER CONTROLLER to compensate for the loss of the Standby Main Feedwater pump.

Validation Time: 10   minutes   **Time Critical:**   Yes _____   No **X**

==

Applicant: _____   _____   Time Start: _____
                       NAME   SSN   Time Finish: _____

Performance Rating: SAT ____ UNSAT ____   Performance Time ___

Examiner: _____   _____/_____
                 NAME   SIGNATURE   DATE

==

COMMENTS

_____

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1.   ENSURE NRC Examination Security has been established.

2.   Right click on 338, and then select RESET.

3.   Enter the password.

4.   Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5.   ENSURE the following information appears on the Director Summary Screen:

	Key		Type	Event	Delay	Inserted	Ramp	Initial	Final	Value
	fw54	sby fw pump bearing wear		30	00:00:25		00:00:18		20	0

6.   Place simulator in RUN and acknowledge any alarms.

7.   Load "Simulator JPM Event Files" from the NRC Exam Flash Drive.

8.   ENSURE marked-up copy of SOI-2&3.01 "Condensate and Feedwater Systems," is available to the Examiner. Ensure that Step 8.9.[1] of SOI-2&3.01 is marked, "N/A."

9.   Place simulator in FREEZE until Examiner cue is given.

WATTS BAR NUCLEAR PLANT
B.1.d
Nov. 2009 NRC Exam

DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 is at 100% power.

2. You are the Control Room Operator (CRO).

INITIATING CUES:

1. The Unit Supervisor has directed you to place the Standby Main Feed Pump in service using SOI-2&3.01, "Condensate and Feedwater Systems," Section 8.9, Replacing Turbine Driven MFP with SMFP, or Periodic Operation of SMFP.

2. The SMFP is aligned for service per SOI-2&3.01 Section 5.9.

3. Inform the Unit Supervisor when the Standby Main Feedwater Pump is in service, and is providing 3500 gpm of feedwater flow.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1:   Obtain a copy of the procedure.

     ___ SAT

STANDARD:

     ___ UNSAT

A copy of SOI-2&3.01 has been located.

EXAMINER'S CUE: **After the applicant has demonstrated the method of obtaining the correct instruction, the evaluator can provide a copy of the instruction.**

COMMENTS:

NOTE TO EVALUATOR: The following actions are taken from SOI-2&3.01, "Condensate and Feedwater System," Section 8.9, Replacing Turbine Driven MFP with SMFP, or Periodic Operation of SMFP.

CAUTIONS

1) MFP discharge should remain less than 1185 psig when possible. Short duration press up to 1363 psig (MFP Disch Press Admin Limit) is acceptable, but care must be taken to prevent sudden pressure elevations from lifting #1 Heater Reliefs at 1650 psig.

2) Tripping either MFP with runback circuitry enabled will cause a BOP runback. Runback circuitry may be verified at 1-L-262 [729, T3J] using PIS-47-13 display. RLY1 indicates load >67% and RLY3, indicates load >85%. Impulse pressure equivalent to 85% load enables the runback circuitry.

3) MFP 1B must NOT be operated at a higher speed than MFP 1A or in the resonance speed range between 4900 and 5000 rpm due to high vibration on the inboard bearing and turning gear motor. Speed controllers have been calibrated to prevent this condition; however, a WO should be generated if the controllers fail to control this occurrence.

STEP/STANDARD	SAT/UNSAT

NOTES

1) One MFP is capable of delivering sufficient flow to maintain 67% load.

2) Unit load can be maintained at 85% with the SMFP and one MFP in operation.

3) Unit load can be maintained at 100% for periodic operation of SMFP with one TDMFP partially unloaded.

4) Starting a main feed pump (SBMFP or MFPT) may cause perturbation in heater drain tank levels that may NOT be compensated for by the level controllers.

5) In Mode 1, entry into Tech Spec 3.3.2 condition J may be suspended for up to 4 hours when removing one of two Turbine Driven Main Feedwater Pumps (TDMFWP) from service. Refer to Tech Spec 3.3.2 table 3.3.2-1.

6) In Mode 2, trip function of all Turbine Driven Main Feedwater Pumps (TDMFWP) is required when one or more (TDMFWP) is supplying feedwater to the Steam Generators. Refer to Tech Spec 3.3.2 condition J.

STEP 2:   **[1] IF** one TDMFP is to be completely shutdown, **THEN ENSURE** Turbine Runback circuitry reset by verifying RLY3, PIS-47-13 DISPLAY **NOT** actuated (<85%) [Panel 1-L-262] [729/T3J].

___ SAT

___ UNSAT

STANDARD:

Applicant determines from INITIAL CONDITIONS that the Main Feedwater pumps will remain in service, and determines this step is N/A.

COMMENTS:

STEP/STANDARD	SAT/UNSAT
STEP 3: [2] **ENSURE** SMFP is aligned for service per Section 5.9. STANDARD: Applicant determines from INITIAL CONDITIONS that the SMFP is aligned per Section 5.9. COMMENTS	___ SAT ___ UNSAT
STEP 4: [3] **VERIFY** 1-FIC-3-208 [1-FIC-3-208], STANDBY MFWP RECIRC CONTROL [1-M-3], in AUTO, **AND SET** at 90% (1500 gpm). STANDARD: Applicant determines from controller 1-FIC-3-208 that the controller is in AUTO and is set at 90%. COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 5: [4] **ENSURE** 1-FCV-3-205 [1-HS-3-205], STANDBY MAIN FEEDWATER PUMP DISCHARGE ISOL [T1J/729], OPEN. STANDARD: Applicant contacts TB AUO and asks if 1-FCV-3-205 is OPEN. **CUE:** **As TB AUO, when contacted report that 1-FCV-3-205 is open.** COMMENTS:	___ SAT ___ UNSAT
STEP 6: [5] **ENSURE** 1-FCV-2-265 [1-HS-2-265], STANDBY MAIN FW PUMP SUCT ISOL [T1J/729], OPEN. STANDARD: Applicant contacts TB AUO and asks if 1-FCV-2-265 is OPEN. **CUE:** **As TB AUO, when contacted report that 1-FCV-2-265 is open.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 7:   [6] **VERIFY** 1-PI-2-129, MFW PMPS SUCT PRESS [1-M-3], as follows:
 	
    A. Greater than 100 psig (below 50% load).
 	
    B. Greater than 250 psig (at or above 50% load).
 	
STANDARD:
 	
Applicant observes 1-PI-2-129 and determines that suction pressure is approximately 410-430 psig, sufficient for starting the SMFP.
 	
COMMENTS:
	___ SAT
	
	___ UNSAT

STEP 8: [7] **ENSURE** 1-FCV-3-208 [1-HS-3-208], STANDBY MAIN FEEDWATER PUMP MIN FLOW [T1J/729], CLOSED. STANDARD: Applicant contacts TB AUO and asks if 1-FCV-3-208 is CLOSED. **CUE: As TB AUO, when contacted report that 1-FCV-3-208 is closed.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

CAUTION

Manual operation of TDMFP speed control during MFP starts/stops will minimize system fluctuations.

STEP 9: [8] **CONTROL** TDMFP speed in MAN. STANDARD: Applicant places 1-PC-46-20, MFPT A & B MASTER SPEED CONTROL in MANUAL. **Step is critical to ensure that feedwater oscillations are avoided when starting the SMFP.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 10: [9] **IF** SMFP to operate with TDMFP, **THEN SLOWLY RAISE** TDMFP speed until SMFP minimum flow head is achieved (above 1200 psig). STANDARD: Applicant raises TDMFP speed until pressure is slightly above 1200 psig. **Step is critical to ensure that feedwater oscillations are avoided when starting the SMFP.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: When the SFMP is started it may load to approximately 2000 gpm if MFP header pressure is lower than 1200 psig.

<u>STEP 11</u>: [10] **IF** SMFP to operate with TDMFP, **THEN START** SMFP with 1-HS-3-200A, STANDBY MFWP, and **LOWER** TDMFP flow, or **SHUTDOWN** TDMFP per Section 7.3. <u>STANDARD</u>: Applicant starts SMFP with 1-HS-3-200A, observes amps on 1-EI-3-200, STANDBY MFWP AMPS, and pressure on 1-PI-3-203A, STANDBY MFWP DISCH PRESS. Applicant reduces TDMFP flow by reducing the control signal from 1-PC-46-20, MFPT A & B MASTER SPEED CONTROL, and observes a rise in flow from the SMFP. Per the INITIATING CUES the applicant will load the SMFP to between 3000 to 4000 gpm. **Step is critical to ensure that the SMFP is properly loaded.** <u>COMMENTS</u>:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: After the applicant loads the SMFP to approximately 3500 gpm, cue the console operator to insert the failure of the SMFP. This will cause the SMFP amps to enter the RED area, and for annunciator 14-D, M-1 thru M-6 MOTOR OVERLOAD to alarm.

STEP 12: Operator recognizes that the SMFP is operating with high amps, reports the condition and then stops the SMFP.	**CRITICAL STEP**
STANDARD:	___ SAT
Applicant observes amps on 1-EI-3-200, STANDBY MFWP AMPS rising into the RED operating band.	___ UNSAT

Upon receipt of the WHITE OVERLOAD light on 1-HS-3-200A, and alarm 14-D, "M-1 THRU M-6 MOTOR OVERLOAD," the applicant determines that the SMFP should be stopped, and stops the pump within 3 minutes of receipt of these two indications.

                                                                TIME

- **WHITE OVERLOAD light comes on**   _____
- **14-D, "M-1 THRU M-6 MOTOR OVERLOAD," alarms.**   _____

- **Applicant trips the SMFP.**   _____

Step is critical to protect the SMFP.

COMMENTS:

Note to Evaluator: Approx. 2 minutes after receipt of the WHITE OVERLOAD light above, alarm 63-F, "SG LEVEL DEVIATION" alarms.

STEP/STANDARD	SAT/UNSAT
STEP 13: Operator places 1-PC-46-20, MFPT A & B MASTER SPEED CONTROL in MANUAL and controls MFP speed to stabilize the feedwater system after the trip of the SMFP. **STANDARD:** Applicant places 1-PC-46-20, MFPT A & B MASTER SPEED CONTROL in MANUAL and raises main feedwater pump speed to compensate for the loss of the SMFP flow. Applicant monitors MFP suction pressure to ensure that pressure remains above 250 psig. Applicant monitors SG narrow range levels to ensure that levels are stabilized. **Step is critical to ensure that feedwater oscillations are avoided after the SMFP is stopped.** **EVALUATOR CUE:** **After the applicant has placed 1-PC-46-20, MFPT A & B MASTER SPEED CONTROL in MANUAL, and taken action to raise MFP speed/pressure/flow, state "another operator will control the plant from this point."** **COMMENTS:** **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. **Unit 1 is at 100% power.**

2. **You are the Control Room Operator (CRO).**

INITIATING CUES:

1. **The Unit Supervisor has directed you to place the Standby Main Feed Pump in service using SOI-2&3.01, "Condensate and Feedwater Systems," Section 8.9, Replacing Turbine Driven MFP with SMFP, or Periodic Operation of SMFP.**

2. **The SMFP is aligned for service per SOI-2&3.01 Section 5.9.**

3. **Inform the Unit Supervisor when the Standby Main Feedwater Pump is in service, and is providing 3500 gpm of feedwater flow.**

Date_____   INITIALS

8.9 Replacing Turbine Driven MFP with SMFP, or Periodic Operation of SMFP

CAUTIONS

1) MFP discharge should remain less than 1185 psig when possible. Short duration press up to 1363 psig (MFP Disch Press Admin Limit) is acceptable, but care must be taken to prevent sudden pressure elevations from lifting #1 Heater Reliefs at 1650 psig.

2) Tripping either MFP with runback circuitry enabled will cause a BOP runback. Runback circuitry may be verified at 1-L-262 [729, T3J] using PIS-47-13 display. RLY1 indicates load >67% and RLY3, indicates load >85%. Impulse pressure equivalent to 85% load enables the runback circuitry.

3) MFP 1B must **NOT** be operated at a higher speed than MFP 1A or in the resonance speed range between 4900 and 5000 rpm due to high vibration on the inboard bearing and turning gear motor. Speed controllers have been calibrated to prevent this condition; however, a WO should be generated if the controllers fail to control this occurrence.

NOTES

1) One MFP is capable of delivering sufficient flow to maintain 67% load.

2) Unit load can be maintained at 85% with the SMFP and one MFP in operation.

3) Unit load can be maintained at 100% for periodic operation of SMFP with one TDMFP partially unloaded.

4) Starting a main feed pump (SBMFP or MFPT) may cause perturbation in heater drain tank levels that may **NOT** be compensated for by the level controllers.

5) In Mode 1, entry into Tech Spec 3.3.2 condition J may be suspended for up to 4 hours when removing one of two Turbine Driven Main Feedwater Pumps (TDMFWP) from service. Refer to Tech Spec 3.3.2 table 3.3.2-1.

6) In Mode 2, trip function of all Turbine Driven Main Feedwater Pumps (TDMFWP) is required when one or more (TDMFWP) is supplying feedwater to the Steam Generators. Refer to Tech Spec 3.3.2 condition J.

[1] **IF** one TDMFP is to be completely shutdown, **THEN**

ENSURE Turbine Runback circuitry reset by verifying RLY3, PIS-47-13 DISPLAY **NOT** actuated (<85%) [Panel 1-L-262] [729/T3J]   _____

Date_____   INITIALS

8.9   Replacing Turbine Driven MFP with SMFP, or Periodic Operation of SMFP (continued)

[2]   **ENSURE** SMFP is aligned for service per Section 5.9.   _____

[3]   **VERIFY** 1-FIC-3-208 [1-FIC-3-208], STANDBY MFWP RECIRC CONTROL [1-M-3], in AUTO, **AND**

       SET at 90% (1500 gpm).   _____

[4]   **ENSURE** 1-FCV-3-205 [1-HS-3-205], STANDBY MAIN FEEDWATER PUMP DISCHARGE ISOL [T1J/729], OPEN.   _____

[5]   **ENSURE** 1-FCV-2-265 [1-HS-2-265], STANDBY MAIN FW PUMP SUCT ISOL [T1J/729], OPEN.   _____

[6]   **VERIFY** 1-PI-2-129, MFW PMPS SUCT PRESS [1-M-3], as follows:

       A.   Greater than 100 psig (below 50% load).   _____

       B.   Greater than 250 psig (at or above 50% load).   _____

[7]   **ENSURE** 1-FCV-3-208 [1-HS-3-208], STANDBY MAIN FEEDWATER PUMP MIN FLOW [T1J/729], CLOSED.   _____

CAUTION
Manual operation of TDMFP speed control during MFP starts/stops will minimize system fluctuations.

[8]   **CONTROL** TDMFP speed in MAN.   _____

[9]   **IF** SMFP to operate with TDMFP, **THEN**

       SLOWLY RAISE TDMFP speed until SMFP minimum flow head is achieved (above 1200 psig).   _____

[10]   **IF** SMFP to operate with TDMFP, **THEN**

       START SMFP with 1-HS-3-200A, STANDBY MFWP, and

       LOWER TDMFP flow, or

       SHUTDOWN TDMFP per Section 7.3.   _____

Date_____   INITIALS

8.9   Replacing Turbine Driven MFP with SMFP, or Periodic Operation of SMFP (continued)

[11]   **ENSURE** SMFP operation in accordance with Section 5.9.   _____

[12]   **RETURN** TDMFP speed control to AUTO, as desired.   _____

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B.1.e
Align Control Rod Drive Mechanism Coolers.

WATTS BAR NUCLEAR PLANT
B.1.e
Nov. 2009 NRC Exam

Task: Align Control Rod Drive Mechanism (CRDM) Coolers.

Alternate Path: None.

Facility JPM #: New

Safety Function: 5 **Title:** Containment Integrity

K/A 022 A4.01 Ability to manually operate and/or monitor in the control room: CCS fans.

Rating(s): 3.6 / 3.6 **CFR:** 41.7 / 45.5 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator **X** In-Plant _____ Perform **X** Simulate _____

References: SOI-30.03, "Containment HVAC and Pressure Control," Rev. 42.

Task Number: RO-30-SOI-30-002 **Title:** Startup/Place in Standby Alignment the Upper Compartment Coolers.

Task Standard: Applicant shuts down CRDM coolers C-A and D-B, and places CRDM coolers A-A and B-B in service using SOI-30.03, "Containment HVAC and Pressure Control."

Validation Time: 10 minutes **Time Critical:** Yes _____ No **X**

==

Applicant: _____ _____ Time Start: _____
　　　　　　　　　　NAME 　　　　　　　　　 SSN 　　 Time Finish: _____

Performance Rating: SAT ____ UNSAT ____ 　　　 Performance Time ___

Examiner: _____ _____/_____
　　　　　　　　 NAME 　　　　　　　 SIGNATURE 　　　　　 DATE

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COMMENTS

_____

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WATTS B NUCLEAR PLANT
B.1.e
Nov. 2009 NRC Exam

SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.

2. Right click on 343, and then select RESET.

3. Enter the password.

4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5. Place simulator in RUN and acknowledge any alarms.

6. ENSURE the following cooler configuration:

Lower CNTMT Coolers	Upper CNTMT Coolers	CRDM Coolers
A - RUNNING	A- RUNNING	A - OFF
B - RUNNING	B - RUNNING	B - OFF
C - RUNNING	C - RUNNING	C - RUNNING
D - OFF	D - OFF	D - RUNNING

6. Place simulator in FREEZE until Examiner cue is given.

WATTS BAR NUCLEAR PLANT
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DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Predictive Maintenance has requested that the 1C-A CRDM Cooler be removed from service in order to perform maintenance on its 480V supply breaker.

2. You are an extra operator assigned to the shift.

INITIATING CUES:

1. The Unit Supervisor directs you to place 1A-A and 1B-B CRDM Coolers in service and place 1C-A and 1D-B CRDM Coolers in reserve using SOI-30.03," Containment HVAC and Pressure Control" to support the upcoming maintenance.

2. Notify the Unit Supervisor when the CRDM coolers have been aligned.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

<u>STEP 1</u>:　　　Obtain the proper procedure. <u>STANDARD</u>:　A copy of SOI-30.03 is obtained by the applicant. **EXAMINER'S CUE:　After the applicant has demonstrated the method of obtaining the correct instruction, the evaluator can provide a copy of the instruction.** <u>COMMENTS</u>:	___ SAT ___ UNSAT

NOTE TO EVALUATOR　The following actions are taken from SOI-30.03, Section 5.6,"CRDM Shroud Cooling Alignment and CRDM Cooler Startup."

CAUTION

Under certain shutdown configurations, starting of CRDM Coolers has the potential to cause the ice condenser lower inlet doors to open if they are NOT properly restrained.

NOTES

1) Normally, two CRDM Coolers are in service and two in reserve. CRDM Coolers 1A-A and 1B-B should be operated together OR 1C-A and 1D-B should be operated together for power train separation. Deviation from this alignment requires 1A-A and 1C-A OR 1B-B and 1D-B to ensure proper air flow.

2) The temperature indicated on each cooler's TIC is that cooler's air inlet temperature. CRDM Cooler air outlet temperature is displayed on ICS points. ICS Point T1014A, OP REFUEL GATE, may be used to determine the temperature in the CRDM shroud area.

STEP/STANDARD	SAT/UNSAT

STEP 2:   [1] **IF** CRDM CLR D-B is to be used to cool shroud [1-M-9], **THEN**
      [1.1] **ENSURE** 1-HS-30-80A, CRDM CLR D-B MTR 1&2, in A-AUTO and 1-HS-30-81A, CRDM CLR D-B SHROUD SUCT, in P-AUTO, **AND START** CRDM CLR D-B with 1-HS-30-80A.
      [1.2] **ENSURE** CRDM CLR D-B is RUNNING.
      [1.3] **ENSURE** 1-TCO-30-81, CRDM CLR D-B SHROUD SUCT, is OPEN, and 1-TCO-30-82, CRDM CLR D-B LWR CNTMT SUCT, is CLOSED.
 	
STANDARD:
 	
Applicant determines that CRDM CLR D-B is in service, and will be placed in reserve. Applicant enters N/A for this step.
 	
COMMENTS:
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 3: [2] **IF** CRDM CLR A-A is to be used to cool shroud [1-M-9], **THEN**
    [2.1] **ENSURE** 1-HS-30-83A, CRDM CLR A-A MTR 1&2, in A-AUTO and 1-HS-30-84A, CRDM CLR A-A SHROUD SUCT, in P- AUTO, **AND START** CRDM CLR with 1-HS-30-83A.
    [2.2] **ENSURE** CRDM CLR A-A is RUNNING.
    [2.3] **ENSURE** 1-TCO-30-84, CRDM CLR A-A SHROUD SUCT, is OPEN, and 1-TCO-30-85, CRDM CLR A-A LWR CNTMT SUCT, is CLOSED.
 	
STANDARD:
 	
Applicant ensures 1-HS-30-83A, CRDM CLR A-A MTR 1&2, in A-AUTO and 1-HS-30-84A, CRDM CLR A-A SHROUD SUCT, in P- AUTO, and starts CRDM CLR with 1-HS-30-83A.
 	
Applicant ensures 1-TCO-30-84, CRDM CLR A-A SHROUD SUCT, is OPEN, and 1-TCO-30-85, CRDM CLR A-A LWR CNTMT SUCT, is CLOSED.
 	
Shaded text is CRITICAL STEP to start CRDM fan.
 	
COMMENTS:
	CRITICAL STEP (shaded portion)
	
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 4</u>:   [3] **IF** CRDM CLR B-B is to be used to cool shroud [1-M-9], **THEN**
 	
    [3.1] **ENSURE** 1-HS-30-92A, CRDM CLR B-B MTR 1&2, in A-AUTO and 1-HS-30-93A, CRDM CLR B-B SHROUD SUCT, in P-AUTO, **AND START** CRDM CLR with 1-HS-30-92A.
    [3.2] **ENSURE** CRDM CLR B-B is RUNNING.
    [3.3] **ENSURE** 1-TCO-30-93, CRDM CLR B-B SHROUD SUCT, is OPEN, and 1-TCO-30-94, CRDM CLR B-B LWR CNTMT SUCT, is CLOSED.
 	
<u>STANDARD</u>:
 	
Applicant ensures 1-HS-30-92A, CRDM CLR B-B MTR 1&2, in A-AUTO and 1-HS-30-93A, CRDM CLR B-B SHROUD SUCT, in P-AUTO, and starts CRDM CLR with 1-HS-30-92A.
 	
Applicant ensures 1-TCO-30-93, CRDM CLR B-B SHROUD SUCT, is OPEN, and 1-TCO-30-94, CRDM CLR B-B LWR CNTMT SUCT, is CLOSED
 	
Shaded text is <u>CRITICAL STEP</u> to start CRDM fan.
 	
<u>COMMENTS</u>:
	CRITICAL STEP (shaded portion)
	
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 5:   [4] **IF** CRDM CLR C-A is to be used to cool shroud [1-M-9], **THEN**
    [4.1] **ENSURE** 1-HS-30-88A, CRDM CLR C-A MTR 1&2, in A-AUTO and 1-HS-30-89A, CRDM CLR C-A SHROUD SUCT, in P-AUTO, **AND START** CRDM CLR with 1-HS-30-88A.
    [4.2] **ENSURE** CRDM CLR C-A is RUNNING.
    [4.3] **ENSURE** 1-TCO-30-89, CRDM CLR C-A SHROUD SUCT, is OPEN, and 1-TCO-30-90, CRDM CLR C-A LWR CNTMT SUCT, is CLOSED.
 	
STANDARD:
 	
Applicant determines that CRDM CLR C-A is in service, and will be placed in reserve. Applicant enters N/A for this step.
 	
COMMENTS:
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 6</u>:   [5] **IF** CRDM Cooler is to be placed in reserve, **THEN ENSURE** the following: (N/A coolers in service)
    [5.1] 1-HS-30-80A, CRDM CLR D-B MTR 1&2, in A-AUTO, and Cooler **NOT** running.
    [5.2] 1-HS-30-83A, CRDM CLR A-A MTR 1&2, in A-AUTO, and Cooler **NOT** running.
    [5.3] 1-HS-30-92A, CRDM CLR B-B MTR 1&2, in A-AUTO, AND Cooler **NOT** running.
    [5.4] 1-HS-30-88A, CRDM CLR C-A MTR 1&2, in A-AUTO, and Cooler **NOT** running.
 	
<u>STANDARD</u>:
 	
Applicant determines that CRDM CLRS D-B and C-A will be placed in reserve at this time.
 	
Applicant enters N/A for steps 5.2 and 5.3.
 	
Applicant performs Step 5.1, stops CRDM CLR D-B by placing 1-HS-30-80A to STOP, then returning the switch to A-AUTO.
 	
Applicant performs Step 5.4, stops CRDM CLR C-A by placing 1-HS-30-88A to STOP, then returning the switch to A-AUTO.
 	
<u>Shaded portion critical to ensure coolers are in reserve, and will auto start, per directions.</u>
 	
<u>COMMENTS</u>:
	CRITICAL STEP (shaded portion only)
	
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 7</u>: Extra Operator reports that the containment coolers have been aligned as requested, per SOI-30.03," Containment HVAC and Pressure Control." <u>STANDARD</u>: **CUE: Repeat back information provided by the applicant.** <u>COMMENTS</u>: **END OF TASK**	

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. **Predictive Maintenance has requested that the 1C-A CRDM Cooler be removed from service in order to perform maintenance on its 480V supply breaker.**

2. **You are an extra operator assigned to the shift.**

INITIATING CUES:

1. **The Unit Supervisor directs you to place 1A-A and 1B-B CRDM Coolers in service and place 1C-A and 1D-B CRDM Coolers in reserve using SOI-30.03," Containment HVAC and Pressure Control" to support the upcoming maintenance.**

2. **Notify the Unit Supervisor when the CRDM coolers have been aligned.**

Date_____   INITIALS

5.6   CRDM Shroud Cooling Alignment and CRDM Cooler Startup

CAUTION

Under certain shutdown configurations, starting of CRDM Coolers has the potential to cause the ice condenser lower inlet doors to open if they are **NOT** properly restrained.[1]

NOTES

1) Normally, two CRDM Coolers are in service and two in reserve. CRDM Coolers 1A-A and 1B-B should be operated together OR 1C-A and 1D-B should be operated together for power train separation. Deviation from this alignment requires 1A-A and 1C-A OR 1B-B and 1D-B to ensure proper air flow.

2) The temperature indicated on each cooler's TIC is that cooler's air inlet temperature. CRDM Cooler air outlet temperature is displayed on ICS points. ICS Point T1014A, OP REFUEL GATE, may be used to determine the temperature in the CRDM shroud area.

---

[1]   **IF** CRDM CLR D-B is to be used to cool shroud [1-M-9], **THEN**

[1.1]   **ENSURE** 1-HS-30-80A, CRDM CLR D-B MTR 1&2, in A-AUTO and 1-HS-30-81A, CRDM CLR D-B SHROUD SUCT, in P-AUTO, **AND**

START CRDM CLR D-B with 1-HS-30-80A.   _____

[1.2]   **ENSURE** CRDM CLR D-B is RUNNING.   _____

[1.3]   **ENSURE** 1-TCO-30-81, CRDM CLR D-B SHROUD SUCT, is OPEN, and 1-TCO-30-82, CRDM CLR D-B LWR CNTMT SUCT, is CLOSED.   _____

Date_____   INITIALS

5.6   CRDM Shroud Cooling Alignment and CRDM Cooler Startup (continued)

[2]   **IF** CRDM CLR A-A is to be used to cool shroud [1-M-9], **THEN**   _____

    [2.1]   **ENSURE** 1-HS-30-83A, CRDM CLR A-A MTR 1&2, in A-AUTO and 1-HS-30-84A, CRDM CLR A-A SHROUD SUCT, in P-AUTO, **AND**

        START CRDM CLR with 1-HS-30-83A.   _____

    [2.2]   **ENSURE** CRDM CLR A-A is RUNNING.   _____

    [2.3]   **ENSURE** 1-TCO-30-84, CRDM CLR A-A SHROUD SUCT, is OPEN, and 1-TCO-30-85, CRDM CLR A-A LWR CNTMT SUCT, is CLOSED.   _____

[3]   **IF** CRDM CLR B-B is to be used to cool shroud [1-M-9], **THEN**

    [3.1]   **ENSURE** 1-HS-30-92A, CRDM CLR B-B MTR 1&2, in A-AUTO and 1-HS-30-93A, CRDM CLR B-B SHROUD SUCT, in P-AUTO, **AND**

        START CRDM CLR with 1-HS-30-92A.   _____

    [3.2]   **ENSURE** CRDM CLR B-B is RUNNING.   _____

    [3.3]   **ENSURE** 1-TCO-30-93, CRDM CLR B-B SHROUD SUCT, is OPEN, and 1-TCO-30-94, CRDM CLR B-B LWR CNTMT SUCT, is CLOSED.   _____

[4]   **IF** CRDM CLR C-A is to be used to cool shroud [1-M-9], **THEN**

    [4.1]   **ENSURE** 1-HS-30-88A, CRDM CLR C-A MTR 1&2, in A-AUTO and 1-HS-30-89A, CRDM CLR C-A SHROUD SUCT, in P-AUTO, **AND**

        START CRDM CLR with 1-HS-30-88A.   _____

    [4.2]   **ENSURE** CRDM CLR C-A is RUNNING.   _____

    [4.3]   **ENSURE** 1-TCO-30-89, CRDM CLR C-A SHROUD SUCT, is OPEN, and 1-TCO-30-90, CRDM CLR C-A LWR CNTMT SUCT, is CLOSED.   _____

Date_____ INITIALS

5.6 CRDM Shroud Cooling Alignment and CRDM Cooler Startup (continued)

[5]   IF CRDM Cooler is to be placed in reserve, **THEN**

ENSURE the following: (N/A coolers in service)

[5.1]   1-HS-30-80A, CRDM CLR D-B MTR 1&2, in A-AUTO, and Cooler **NOT** running.

_____
IV

[5.2]   1-HS-30-83A, CRDM CLR A-A MTR 1&2, in A-AUTO, and Cooler **NOT** running.

_____
IV

[5.3]   1-HS-30-92A, CRDM CLR B-B MTR 1&2, in A-AUTO, AND Cooler **NOT** running.

_____
IV

[5.4]   1-HS-30-88A, CRDM CLR C-A MTR 1&2, in A-AUTO, and Cooler **NOT** running.

_____
IV

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B.1.f
Reinstate Source Range Detectors
Following a Reactor Trip

WATTS BAR NUCLEAR PLANT
B.1.f
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Reinstate source range detectors following a reactor trip.

Alternate Path: Applicant determines that Intermediate Range Channel 135 has failed high and manually reinstates the Source Range detectors.

Facility JPM #: Modified from SQN.

Safety Function: 7   **Title:** Instrumentation

K/A 015 A4.01   A4 Ability to manually operate and/or monitor in the control room: Selection of controlling NIS channel.

Rating(s): 3.6* / 3.6   **CFR:** 41.7 / 45.5 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator   **X**   In-Plant _____   Perform   **X**   Simulate _____

References: ES-0.1 "Reactor Trip Response," Rev. 21.

Task Number: **Title:**

Task Standard: Applicant determines that the Source Range detectors DID NOT reenergize as expected and takes the actions of ES-0.1, "Reactor Trip Response" to manually reenergize and align the Source Range per Step 18 RESPONSE NOT OBTAINED.

Validation Time: 10   minutes   **Time Critical:**   Yes _____ No **X**
===

Applicant: _____ _____ Time Start: _____
                        NAME   SSN   Time Finish: _____

Performance Rating: SAT _____ UNSAT _____   Performance Time ___

Examiner: _____ _____/_____
                     NAME   SIGNATURE   DATE
===

COMMENTS

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WATTS BAR NUCLEAR PLANT
B.1.f
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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.

2. Right click on 337, and then select RESET.

3. Enter the password.

4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5. ENSURE the following information appears on the Director Summary Screen:

	Key		Type	Event	Delay	Inserted	Ramp	Initial	Final	Value
	ni04a	ir channel failure ir chnl 1	M		00:00:00	00:00:00	00:00:00		200	200

6. Place simulator in RUN and acknowledge any alarms.

7. Place simulator in FREEZE until Examiner cue is given.

DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 was inadvertently tripped from 100% power ~20 minutes ago.

2. ES-0.1,"Reactor Trip Response," was entered and the crew just completed Step 17.

INITIATING CUES:

1. The US directs you as the OAC to ensure source range monitors are reinstated per ES-0.1, Step 18.

2. Inform the US when the source range monitors have been reinstated and all functions of the source range monitors are in service.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

<u>STEP 1:</u> 18. **ENSURE** nuclear instrumentation operation: a. **CHECK** intermediate range flux less than $1.66 \times 10\text{-}4$ %. <u>STANDARD</u>: Applicant determines that Intermediate Range N135 has failed high and is not indicative of current conditions. Applicant determines that N136 is indicating correctly and continues to step 1.b. **<u>EXAMINER CUE</u>:** **Upon recognition of the failed intermediate range channel, if/when the applicant states that AOI-4," Nuclear Instrumentation Malfunctions," should be implemented, provide the cue "Another operator will perform AOI-4 actions."** <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 2</u>:   b.   **CHECK** source range detectors energized.
 	
<u>STANDARD</u>:
 	
   Applicant determines that the source range detectors are NOT energized and enters RESPONSE NOT OBTAINED COLUMN for actions.
 	
   Step is critical since additional actions are required based on the discovery of the failure of the source ranges to re-energize.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

<u>STEP 3</u>:   **<u>RESPONSE NOT OBTAINED</u>**
 	
      b.   Manually **ENERGIZE** Source Range detectors:
 	
          Simultaneously **PLACE** 1-N33A and 1-N33B to RESET.
 	
<u>STANDARD</u>:
 	
   Applicant places 1-N33A SR TRIP TR A RESET-BLOCK P-6, and 1-N33B, SR TRIP TR B RESET-BLOCK P-6, to the RESET position SIMULTANEOUSLY.
 	
   Step is critical since the circuit requires SIMULTANEOUS operation of 1-N33A and 1N33B to successfully energize the Source Range Detectors.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 4</u>: c. **SELECT** STARTUP SCREEN on 1-NR-92-145 to display SRMs and IRMs. <u>STANDARD</u>: Applicant uses the touch screen function on 1-NR-92-145 and selects a combination of SRMs and IRMs that DOES NOT include the failed N35 Intermediate Range Channel. <u>COMMENTS</u>:	___ SAT ___ UNSAT
<u>STEP 5</u>: d. **ENSURE** audio count rate operation. <u>STANDARD</u>: Applicant determines that the audio count rate is functioning properly by audible confirmation. <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 6: e. **RESET** shutdown monitor alarm setpoints [M-13]. Applicant resets the shutdown monitor setpoints by depressing the ALARM SETPOINT RESET pushbutton on 1-M-13. **Step is critical to ensure the shutdown monitor alarm circuit is properly initialized after the trip.** STANDARD: COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 7: f. **ENSURE** shutdown monitor ALARM LED(s) dark, **AND** HIGH FLUX AT SHUTDOWN bistable lights dark, **THEN PLACE** HIGH FLUX AT SHUTDOWN alarm block switches in NORMAL [M-13]. STANDARD: After the applicant resets the shutdown monitor setpoints by depressing the ALARM SETPOINT RESET pushbutton on 1-M-13, the shutdown monitor ALARM LED(s) will be DARK. On the Source Range drawers, the HIGH FLUX AT SHUTDOWN bistable lights will be DARK. **Step is critical to ensure the shutdown monitor alarm circuit is properly initialized after the trip.** Applicant determines that Step 18 has been completed and informs the Unit Supervisor of completion. COMMENTS: **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 was inadvertently tripped from 100% power ~20 minutes ago.

2. ES-0.1, Reactor Trip Response was entered and the crew just completed Step 17.

INITIATING CUES:

1. The US directs you as the OAC to ensure source range monitors are reinstated per ES-0.1, Step 18.

2. Inform the US when the source range monitors have been reinstated and all functions of the source range monitors are in service.

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT

EMERGENCY OPERATING INSTRUCTIONS

ES-0.1

REACTOR TRIP RESPONSE

Revision 21

Unit 1

QUALITY RELATED

REQUESTED BY: _____ S. Baker _____

SPONSORING
ORGANIZATION: _____ OPERATIONS _____

APPROVED BY: _____ A. K. Keefer _____

EFFECTIVE DATE: _____ 12/21/07 _____

LEVEL OF USE: CONTINUOUS

1.0 PURPOSE

This Instruction provides the necessary actions to stabilize and control the plant following a reactor trip without a safety injection.

2.0 SYMPTOMS AND ENTRY CONDITIONS

2.1 Alarms

A. Reactor trip annunciator lit.

B. Turbine trip annunciator lit greater than 50% Reactor Power.

2.2 Indications

C. Reactor trip bistables lit [status panels M-5 or M-6].

D. Rapid drop in neutron flux indication.

E. Rod Position Indicators at bottom of scale.

F. Rapid drop in megawatts to zero with initial power greater than 50% Reactor Power.

2.3 Transitions

E-0, Reactor Trip or Safety Injection.

3.0 OPERATOR ACTIONS

Step	Action/Expected Response	Response Not Obtained

CAUTION Plant conditions, AFW pump start signals and flow requirements should be evaluated as time allows.

1. **MONITOR** SI actuation criteria:

   - **IF** SI actuation occurs during the performance of this Instruction,
     THEN
     ** **GO TO** E-0,
        Reactor Trip or Safety Injection.

2. **CHECK** Generator PCBs OPEN.   **OPEN** manually.

Step	Action/Expected Response	Response Not Obtained

3. **MONITOR** RCS temperature stable at or trending to 557°F:

- **IF** any RCP running, **THEN** **MONITOR** RCS Loop T-avg trending to 557°F.

  OR

- **IF** NO RCP running, **THEN** **MONITOR** RCS Loop T-cold trending to 557°F.

IF temperature is less than 557°F, **THEN** **ENSURE** steam dumps, S/G PORVs, and blowdown isolation valves CLOSED.

IF cooldown continues, **THEN:**

- **ENSURE** total feed flow is less than or equal to 500 gpm:

  a. **REFER TO** SOI-3.02, Auxiliary Feedwater System, for manual control of TDAFWP.

- **MAINTAIN** at least one S/G NR level greater than 29%, or total feed flow between 410 and 500 gpm for heat sink.

IF cooldown continues after AFW flow is controlled, **THEN:**

- **CLOSE** MSIVs.

- **ENSURE** MSIV bypasses CLOSED.

- **PLACE** steam dump controls OFF.

IF temperature is less than 547°F after AFW is controlled, **THEN** **INITIATE** boration:

- **REFER TO** AOI-34, Immediate Boration.

IF temperature is greater than 564°F, **THEN** **ENSURE** either steam dumps, or S/G PORVs OPEN.

WHEN cooldown is controlled, **THEN** **RETURN** AFW to AUTO as desired.

Step	Action/Expected Response	Response Not Obtained

4. **ENSURE** AFW operation:

   a. AFW established:

     • Both MD AFW pumps RUNNING.

     • TD AFW pump RUNNING.

     • LCVs in AUTO or controlled in MANUAL.

   b. Heat sink available:

     • Total feed flow greater than 410 gpm,

     OR

     • At least one S/G NR level greater than 29%.

5. **CHECK** MFW status:

   a. **CHECK** RCS T-avg less than 564°F.

   b. **ENSURE** MFW isolation:

     • MFW isolation and bypass isolation valves CLOSED.

     • MFW reg and bypass reg valves CLOSED.

     • MFP A and B TRIPPED.

     • Standby MFP STOPPED.

     • Cond demin pumps TRIPPED.

     • Cond booster pumps TRIPPED.

Response Not Obtained:

a. **ESTABLISH** feed flow from AFW or MFW as necessary.

b. IF heat sink can **NOT** be established,
THEN
** **GO TO** FR-H.1, Loss Of Secondary Heat Sink.

a. **WHEN** T-avg is less than 564 °F,
THEN
PERFORM Substep 5b.

  ** **GO TO** Step 6.

b. Manually **CLOSE** valves, and **STOP** pumps, as necessary.

IF valves can **NOT** be closed,
THEN
CLOSE #1 heater outlet valves.

Step	Action/Expected Response	Response Not Obtained
6.	**ENSURE** all control rods fully inserted: • RPIs at bottom scale.	**IF** two or more control rods are **NOT** fully inserted, **THEN** **INITIATE** boration of 3250 gals of greater than or equal to 6120 ppm boron for each rod not fully inserted: • **REFER TO** AOI-34, Immediate Boration.
7.	**ANNOUNCE** reactor trip over PA system.	
8.	**MONITOR** S/G levels: a. At least one S/G NR level greater than 29%. b. S/G NR levels less than 50% and controlled.	a. **ENSURE** feed flow greater than 410 gpm. b. **IF** any S/G NR level continues to rise, **THEN** **ISOLATE** feed flow to affected S/G.
9.	**CONTROL** S/G NR levels between 29% and 50%.	
10.	**INITIATE** BOP realignment: • **REFER TO** AOI-17, Turbine Trip.	

Step	Action/Expected Response	Response Not Obtained

11. **MONITOR** pzr pressure:

a. Pzr pressure greater than 1870 psig.

    a. **ENSURE** SI actuated.

    ** **GO TO** E-0,
    Reactor Trip or Safety Injection.

b. Pzr pressure trending to 2235 psig.

    b. **IF** pressure is
    greater than 2235 psig
    AND rising,
    THEN:

    • **ENSURE** pzr heaters OFF.

    • **CONTROL** RCS press with
    ONE of the following, in order
    listed:

      1) Normal pzr sprays.

      2) Aux spray with normal
      letdown in service.

      3) Pzr PORV(s).

    IF pressure is
    less than 2235 psig
    AND dropping,
    THEN:

    1) **ENSURE** pzr PORV or
    associated block valve
    CLOSED.

    2) **ENSURE** pzr spray valves
    CLOSED,

    OR

    STOP RCP(s) as necessary
    to stop spray flow.

    3) **ENSURE** aux spray valve
    CLOSED.

    4) **TURN** pzr heaters ON as
    necessary.

Step	Action/Expected Response	Response Not Obtained

12. **CHECK** charging in service.

ESTABLISH charging:

a. **ENSURE** at least one charging pump RUNNING.

b. **CLOSE** seal flow control 1-FCV-62-89.

c. **OPEN** charging 1-FCV-62-90 and 1-FCV-62-91.

d. **ENSURE** charging valve 1-FCV-62-85 or 1-FCV-62-86 OPEN.

e. **ENSURE** seal water return 1-FCV-62-61 and 1-FCV-62-63 OPEN.

f. **ADJUST** 1-FCV-62-89 and 1-FCV-62-93 to establish:

- Seal injection flow between 8 and 13 gpm for each RCP.

- Pzr level between 25% and 30%.

g. **WHEN** pzr level is greater than 25%, **THEN** **PLACE** 1-FCV-62-93 in AUTO.

| Step | Action/Expected Response | Response Not Obtained |

13. **MONITOR** pzr level:

    a. Pzr level greater than 17%.

        a. **PERFORM** the following:

          1) **ENSURE** letdown isolation 1-FCV-62-69 or 1-FCV-62-70 CLOSED.

          2) **ENSURE** pzr heaters OFF.

          3) **MAINTAIN** charging flow.

          4) **WHEN** pzr level is greater than 17%, **THEN** **OPERATE** pzr heaters as necessary to stabilize press.

    b. Pzr level trending to 25%.

        b. **CONTROL** charging and letdown to establish pzr level between 25% and 30%.

Step	Action/Expected Response	Response Not Obtained

14 **CHECK** letdown in service.

WHEN pzr level is greater than 17%,
THEN
ESTABLISH letdown:

a. **ENSURE** at least 80 gpm charging flow established.

b. **OPEN** letdown isolation valves:

   • 1-FCV-62-69.

   • 1-FCV-62-70.

   • 1-FCV-62-77.

c. **PLACE** letdown pressure controller 1-HIC-62-81, in MANUAL at 40-50% OPEN if using 75 gpm orifice (20-30% OPEN if using 45 gpm orifice).

d. **OPEN** letdown orifice valves as needed.

e. **ADJUST** 1-PCV-62-81 for desired letdown pressure, 320 psig at normal letdown temp.

f. **PLACE** 1-HIC-62-81 in AUTO.

Step	Action/Expected Response	Response Not Obtained
15	**MONITOR** cntmt conditions: • Cntmt pressure NORMAL. • Upper cntmt hi range radiation NORMAL. • Lower cntmt hi range radiation NORMAL. • Cntmt rad recorders NORMAL. • Cntmt sump level NORMAL. • Cntmt temp ann window DARK [104-B].	**REFER** TO AOI-6, Small Reactor Coolant System Leak.
16	**CHECK** secondary side radiation. • S/G discharge monitors NORMAL. • Condenser vacuum exhaust rad monitors NORMAL. • S/G blowdown rad monitors NORMAL.	**REFER TO** AOI-33, Steam Generator Tube Leak.

Step	Action/Expected Response	Response Not Obtained

17. **MONITOR** electrical board status:

a. **CHECK** offsite power available.

   a. **RESTORE** offsite power USING AOI-35, Loss of Offsite Power.

b. **CHECK** all shutdown boards **ENERGIZED** by offsite power.

   b. **ENERGIZE** shutdown boards USING:

     • SOI-211 Shutdown Boards

     OR

     • AOI-43 Loss of Shutdown Boards

     OR

     • SOI-82 Diesel Generators

c. **CHECK** all unit boards **ENERGIZED.**

   c. **ENERGIZE** unit boards USING SOI-201, Unit Boards.

d. **PLACE** any unloaded D/G in standby USING SOI-82 Diesel Generators.

| Step | Action/Expected Response | Response Not Obtained |

18. **ENSURE** nuclear instrumentation operation:

   a. **CHECK** intermediate range flux less than 1.66×10^{-4} %.

   a. **WHEN** intermediate range flux is less than 1.66×10^{-4} %,
   THEN
   PERFORM Substeps 18b thru f.

   ** **GO TO** Step 19.

   b. **CHECK** source range detectors energized.

   b. Manually **ENERGIZE** Source Range detectors:

   Simultaneously **PLACE** 1-N33A and 1-N33B to RESET.

   c. **SELECT** STARTUP SCREEN on 1-NR-92-145 to display SRMs and IRMs.

   d. **ENSURE** audio count rate operation.

   e. **RESET** shutdown monitor alarm setpoints [M-13].

   f. **ENSURE** shutdown monitor ALARM LED(s) dark,
   AND
   HIGH FLUX AT SHUTDOWN bistable lights dark,
   THEN
   PLACE HIGH FLUX AT SHUTDOWN alarm block switches in NORMAL [M-13].

Step	Action/Expected Response	Response Not Obtained

19. **CONTROL** S/G pressure:

    a. **CHECK** condenser available:

        • Permissive C-9 LIT [65-E].

        • MSIVs OPEN.

    b. **PLACE** steam dump controls OFF:

        • 1-HS-1-103A, STEAM DUMP FSV "A".

        • 1-HS-1-103B, STEAM DUMP FSV "B".

    c. **PLACE** steam dump mode switch in STEAM PRESSURE.

    d. **ENSURE** steam dump demand indicator 1-XI-1-33 reading zero.

    e. **PLACE** steam dump controls ON:

        • 1-HS-1-103A, STEAM DUMP FSV "A".

        • 1-HS-1-103B, STEAM DUMP FSV "B".

    f. **ADJUST** steam dump demand controller to 84% (1092 psig).

Response Not Obtained column:

    a. **CONTROL** pressure with S/G PORVs.

    ** **GO TO** Step 20.

Step	Action/Expected Response	Response Not Obtained

NOTE   Either Loop 1 or 2 pzr spray valve is effective for Loop 2 RCP in service or for Loops 1, 3, & 4 RCPs in service.

20.   **CHECK** RCP(s) RUNNING to provide normal pzr spray.

ESTABLISH normal pzr spray, Loop 2 preferred:

REFER TO SOI-68.02, Reactor Coolant Pumps (Loop 2 OR Loops 1, 3, and 4).

WHEN RCP start conditions are established,
THEN
START Loop 2 RCP to provide normal pzr spray.

IF Loop 2 RCP can **NOT** be started,
THEN
START ALL other RCPs to establish normal pzr spray.

IF an RCP can **NOT** be started,
THEN
MONITOR natural circulation per the Foldout Page.

IF natural circulation is **NOT** established,
THEN
DUMP steam at a greater rate.

Step	Action/Expected Response	Response Not Obtained

21. **INITIATE** surveillances and reports:
    - **REFER TO** Appendix A (ES-0.1), Surveillances and Reports.

22. **MAINTAIN** stable plant conditions:
    - RCS pressure 2235 psig.
    - Pzr level 25%.
    - S/G NR levels between 29% and 50%.
    - RCS temperature 557°F:

    a) **IF** any RCP running,
       THEN
       MONITOR RCS Loop T-avg trending to 557°F.

       OR

    b) **IF** NO RCP running,
       THEN
       MONITOR RCS Loop T-cold trending to 557°F.

Step	Action/Expected Response	Response Not Obtained

23. **DETERMINE** if natural circulation cooldown is required:

    a. **CHECK** the following:

      1) At least one RCP is available.

      2) Cooldown to Cold Shutdown is desired.

    b. ** **GO TO** GO-6,
       Unit Shutdown From Hot
       Standby To Cold Shutdown,
       OR
       GO-5,
       Unit Shutdown From 30%
       Reactor Power To Hot
       Standby, as appropriate.

Response Not Obtained column:

1) ** **GO TO** ES-0.2,
   Natural Circulation Cooldown.

2) ** **GO TO** GO-5,
   Unit Shutdown From 30%
   Reactor Power To
   Hot Standby.

– End –

APPENDIX A
(ES-0.1)
Page 1 of 1

SURVEILLANCES AND REPORTS

1. **INITIATE** surveillances and reports (as necessary):

   a. **NOTIFY** IMs to check P-4 contacts USING 1-SI-99-4-A and 1-SI-99-4-B, Test of Reactor Trip P-4 ESFAS Interlock.

   b. **IF** reactor power dropped by greater than or equal to 15% in one hour, **THEN** **NOTIFY** Chemistry to initiate power change sampling requirements.

   c. **PERFORM** shutdown margin calc USING 1-SI-0-10, Shutdown Margin or REACTINW Computer Program.

   d. **INITIATE** TI-127, Reactor/Turbine Trip Report, Event Critique, Root Cause Analysis.

   e. **NOTIFY** NRC of reactor trip USING SPP-3.5, Regulatory Reporting Requirements.

FOLDOUT for ES-0.1

SI ACTUATION CRITERIA

ACTUATE SI and ** **GO TO** E-0, Reactor Trip or Safety Injection IF:

- RCS pressure less than 1870 psig, **OR**
- Cntmt pressure greater than 1.5 psig, **OR**
- S/G pressure less than 675 psig, **OR**
- Pzr level cannot be maintained greater than 15% [33% ADV], **OR**
- RCS Subcooling less than 65°F.

NATURAL CIRCULATION CRITERIA

- RCS subcooling greater than 65°F.
- S/G pressure controlled or dropping.
- T-hot stable or dropping.
- Incore T/Cs stable or dropping.
- T-cold at saturation temp for S/G press.

AFW OPERATION

- **IF** CST volume less than 5000 gal,
  THEN
  MONITOR AFW pumps to ensure suction transfer.

WATTS BAR NUCLEAR PLANT
B.1.g
Nov. 2009 NRC Exam

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B.1.g
Transfer 6.9 KV RCP Board 1D from Alternate to Normal.

WATTS BAR NUCLEAR PLANT
B.1.g
Nov. 2009 NRC Exam

Task: Transfer 6.9 KV RCP Board 1D from Alternate to Normal.

Alternate Path: None

Facility JPM #:   3-OT-JPMR042.

Safety Function: 6   **Title:**   Electrical

K/A   062 A4.01   Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard).

Rating(s):   3.3 / 3.1   **CFR:**   41.4/45.5 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator   **X**   In-Plant _____   Perform   **X**   Simulate _____

References: SOI-202.4, "6.9KV Reactor Coolant Pump Board 1D," Rev. 10.
                 AOI-24, "RCP Malfunctions during Pump Operation," Rev. 29.

Task Number: RO-202-SOI-202-002   **Title:**   Transfer the 6.9 KV Reactor Coolant Board from Alternate to Normal

Task Standard: Applicant performs actions in accordance with SOI-202.4 Section 8.1 to transfer 1D RCP Board from its ALTERNATE to NORMAL power supply and restore the RCP control switches to a normal alignment.

Validation Time: 5   minutes   **Time Critical:**   Yes _____ No **X**_____

==

Applicant: _____ _____   Time Start: _____
                    NAME   SSN   Time Finish: _____

Performance Rating: SAT ____ UNSAT ____   Performance Time ___

Examiner: _____ _____/_____
                 NAME   SIGNATURE   DATE

==

COMMENTS

_____

_____

_____

_____

_____

_____

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SIMULATOR OPERATOR INSTRUCTIONS:

1.　ENSURE NRC Examination Security has been established.

2.　Right click on 345, and then select RESET.

3.　Enter the password.

4.　Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5.　Place simulator in RUN and acknowledge any alarms.

6.　Place simulator in FREEZE until Examiner cue is given.

7.　Have copy of SOI-202.04 with all of Section 4.0 signed off and the SRO approval signed off in Section 8.1, step 1.

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B.1.g
Nov. 2009 NRC Exam

DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. A unit startup is in progress.

2. The 6.9 KV boards are being transferred per GO-3, "Unit Startup from Less than 4% Reactor Power to 30% Reactor Power," Section 5.4, Step [19.4].

3. You are the Operator-at-the Controls.

INITIATING CUES:

1. The Unit Supervisor has directed you to transfer 6.9 KV Reactor Coolant Pump Board 1D from ALTERNATE to NORMAL and to restore the controls to a normal alignment in accordance with SOI-202.04 "6.9KV Reactor Coolant Pump Board 1D."

2. Inform the Unit Supervisor when 6.9 KV Reactor Coolant Pump Board 1D has been transferred to NORMAL and the controls have been restored to normal alignment in accordance with SOI-202.04.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1: Obtain a copy of the procedure. STANDARD: A copy of SOI-202.04 section 8.1 has been obtained. **EXAMINER'S CUE:** **After the applicant has demonstrated the method of obtaining the correct instruction, the evaluator can provide a copy of the instruction.** COMMENTS:	___ SAT ___ UNSAT
STEP 2: **[1] OBTAIN** SRO approval. STANDARD: Applicant observes that SRO approval has already been granted by initials in Step 1. COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 3. [2] **ENSURE** MSB has verified Time Delay Relay (TDR) 1-62-068- 0074 contact points 1 and 5 closed (located on left side panel in compartment 1D3 of RCP BD 1D). STANDARD: Applicant ensures that the MSB has verified Time Delay Relay (TDR) 1-62-068- 0074 contact points 1 and 5 closed. **CUE: When contacted as MSB, state that Time Delay Relay (TDR) 1-62-068- 0074 contact points 1 and 5 have been verified closed.** COMMENTS:	___ SAT ___ UNSAT

NOTE

IF Unit is out of service, Bd may be energized by backfeeding from USSTs.

STEP/STANDARD	SAT/UNSAT
STEP 4: [3] **CHECK** voltage 6560 to 7260V to Normal ACB 2124 on 1-EI-57-58, USST 1B \VOLTS [1-M-1]. STANDARD: Applicant reads voltage 6560 to 7260V to Normal ACB 2124 on 1-EI-57-58, USST 1B VOLTS, on Panel 1M-1. COMMENTS:	___ SAT ___ UNSAT
STEP 5: [4] **ENSURE** 1-HS-68-73AA, RCP 2 NORMAL BKR & LIFT PMP [1-M-5], PUSHED IN to place handswitch in control of ACB 2124. STANDARD: Applicant locates and ensures 1-HS-68-73AA, RCP 4 NORMAL BKR & LIFT PMP, is pushed in. COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 6:</u> [5] **ENSURE** 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR [1-M-5], PUSHED IN to place ACB 2624 auto transfer in MANUAL. <u>STANDARD:</u> Applicant pushes 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR in on Panel 1-M-5. <u>COMMENTS:</u>	___ SAT ___ UNSAT
<u>STEP 7:</u> [6] **MONITOR** 1-EI-68-73A, RCP 4 AMPS [1-M-5] during transfer to ensure RCP Amp load transfers to Normal supply. <u>STANDARD:</u> Applicant locates and monitors 1-EI-68-73A, RCP 4 AMPS on Panel 1-M-5. <u>COMMENTS:</u>	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

CAUTION Release handswitches SLOWLY after transfer is complete to prevent inadvertent breaker actuation.

STEP/STANDARD	SAT/UNSAT
<u>STEP 8</u>: **Start of Critical Step(s)** **[7] PLACE AND HOLD** 1-HS-68-73AA, RCP 4 NORMAL BKR & LIFT PMP, in START, **AND PLACE** 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR, in STOP. **End of Critical Step(s)** <u>STANDARD</u>: Applicant acknowledges that this is a "two-handed" evolution. Applicant reads step, locates each handswitch, and then places and holds 1-HS-68-73AA, RCP 4 NORMAL BKR in START. While holding 1-HS-68-73AA in START, the applicant places 1-HS-68-73BA in STOP. Critical step annotation is part of the actual plant procedure. **Step is critical to transfer the RCP motor power supply from its ALTERNATE feed breaker to its NORMAL feed breaker.** <u>COMMENTS</u>:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 9: **[8] ENSURE** NORMAL ACB 2124 CLOSED, and Alt ACB 2624 OPEN. STANDARD: Applicant determines the RED light is lit on 1-HS-68-73AA and GREEN light is lit on 1-HS-68-73BA. Note to evaluator 2124 and 2624 ACB numbers are engraved in the respective handswitch handle grips COMMENTS:	___ SAT ___ UNSAT
STEP 10: **[9] If** desired to place Board Transfer in AUTO, **THEN PULL** 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR, out to PULL AUTO. STANDARD: Applicant places 1-HS-68-73BA in the PULL AUTO position by pulling the handswitch up. **Step is critical to restore the capability of the RCP motor power supply to automatically transfer back to the alternate feeder if normal supply is lost.** CUE: **If asked, state "Take the necessary actions to place the plant in the normal alignment."** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 10</u>: Applicant reports that that RCP #4 has been transferred to its normal power supply and the RCP controls have been placed in a normal alignment in accordance with SOI-202.04. STANDARD: Applicant returns task handout sheet to examiner **CUE: Repeat back information provide by the applicant.** <u>COMMENTS</u>: **End of JPM**	___ SAT ___ UNSAT

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1.   A unit startup is in progress.

2.   The 6.9 KV boards are being transferred per GO-3, "Unit Startup from Less than 4% Reactor Power to 30% Reactor Power," Section 5.4, Step [19.4].

3.   You are the Operator-at-the Controls.

INITIATING CUES:

1.   The Unit Supervisor has directed you to transfer 6.9 KV Reactor Coolant Pump Board 1D from ALTERNATE to NORMAL and to restore the controls to a normal alignment in accordance with SOI-202.04 "6.9KV Reactor Coolant Pump Board 1D."

2.   Inform the Unit Supervisor when 6.9 KV Reactor Coolant Pump Board 1D has been transferred to NORMAL and the controls have been restored to normal alignment in accordance with SOI-202.04.

TVA

Watts Bar Nuclear Plant

Unit 1

System Operating Instruction

SOI-202.04

**6.9KV Reactor Coolant Pump
Board 1D**

Revision 0010

Quality Related

Level of Use: Continuous Use

Effective Date: 11-19-2007

Responsible Organization: OPS, Operations

Prepared By: R. D. Dobbs

Approved By: Kathy Keefer

Revision Log

Revision or Change Number	Effective Date	Affected Page Numbers	Description of Revision/Change
Rev 4	12/02/94	All	Revise to latest format; change checklist position to Racked Open instead of racked up.
Rev 5	09/19/95	All	Update to latest format. Writers Guide review. Correct GOI/GO instruction references. Revise Sect 8.1 & 8.2 to change 2 steps in the Bd transfer, to 1 step, since it happens at the same time. Change Sect 8.1 & 8.2 Step that ensured RCP Bd was energized after the actual transfer step, to a monitoring step just before actual transfer step. Remove position requirements from RCP breakers in Checklist 1 since pump may be off or on. Corrected Steps referenced in Sect 5.0 Steps [19] & [20] NOTE. Other minor corrections & Clarifications.
CN-1	09/16/95	2, 15	Correct compt # on Checklist 1.
6	7/27/00	2, 4, 5	Non-intent. Delete reference to PAI-10.10, which has been canceled. Incorporate CN-1.
7	5/10/04	2, 7, 8, 11-13, 15	Non-intent. Incorporated critical steps. Incorporated additional CV requirement from PER 03-012913-000. Changed required bus voltage ranges to match 1-15E500 print design output.
8	03/23/05	2.9	Deleted reference to load shed contingency in accordance with DCN 51321. Procedure change evaluation (50.59) provided.
9	8/23/07	All	This procedure has been converted from Word 95 to Word 2002(XP) using Rev.8 by Lorie Dake
10	11/19/07	2, 5, 11 12	Provided check of TDR 62 contact closure on normal feeder to ensure transfer. Rearranged transfer steps to prevent signoff during transfer operation.

Table of Contents

1.0 INTRODUCTION

1.1 Purpose

To provide Instructions for Operation of 6.9kV Reactor Coolant Pump (RCP) Board 1D.

1.2 Scope

This Instruction includes the following operations:

A. Alignment for Normal Operation.

B. Transferring the Board from Normal To Alternate Supply.

C. Transferring the Board from Alternate To Normal Supply.

2.0 REFERENCES

2.1 Performance References

A. GO-3, Unit Startup from Less Than 4% Reactor Power to 30% Reactor Power.

B. GO-5, Unit Shutdown from 30% Reactor Power to Hot Standby.

2.2 Developmental References

A. FSAR 8.2.

B. GOI-7, Generic Equipment Operating Guidelines

C. SOI-68.02, Reactor Coolant Pumps

D. Tech Specs

E. TVA Drawings:

1. 1-15E500-1

2. 1-45W705

3. 1-45W720

4. 1-45W760-68 Series

3.0   PRECAUTIONS AND LIMITATIONS

A.   Protective Relaying must remain IN SERVICE, and Trip Fuses must be IN PLACE before energizing a feeder or bus.

B.   All Breakers on a board should be OPEN, and Protective Grounds REMOVED before energizing the board.

C.   When removing/installing 7200V line-side or bus PT fuses, Electrically-Rated Protective Gloves shall be used.

D.   6.9kV RCP BOARD Supply Breakers must be OPEN BEFORE closing Auxiliary Overcurrent Breaker.

E.   Each ACB's closing spring must be verified charged after racking or operating the ACB. [1]

F.   This Instruction covers only aligning RCP Board for standby readiness, and to transferring board supplies. RCP is started and shutdown in SOI-68.02.

G.   Electrical Maintenance must verify Time Delay Relay (TDR) 1-62-068-0074 contact points 1 and 5 for the Normal Feeder Breaker to be closed prior to RCP transfer from Alternate to Normal Feeder Breaker during plant startup to ensure proper pump transfer.

Date _____   **Initials**

4.0 PREREQUISITE ACTIONS

NOTES

1) Throughout Instruction where IF/THEN exists, the step is N/A if stated condition does not exist.

2) Signoffs/information in unused Sections may be left blank.

4.1 Preliminary Actions

[1] **INDICATE** Section to be performed, and reason for use:

5.0   Startup   _____   7.0   Shutdown   __N/A__

6.0   Normal
Operation   __N/A__   8.0   Infrequent
Operations   ð l

Section/ Reason/ Remarks: _align to Normal_
_from alternate _____

_____

4.2 Field Preparations

[1] **REVIEW** plant procedures, processes, and programs in progress to ensure adequate configuration of components necessary for system operation.

[2] **REVIEW** Section 3.0 Precautions and Limitations.

4.3 Approvals and Notifications

[1] **COORDINATE** system operations/manipulations with UO.

Date_____   **Initials**

5.0   STARTUP

[1]   **OBTAIN** SRO approval.
                                                                        _____
                                                                        SRO

[2]   **CHECK** voltage 6560 to 7260V to Normal ACB 2124 on
        1-EI-57-58, USST 1B VOLTS [1-M-1]
        (N/A if conditions warrant).   _____

[3]   **CHECK** voltage 6560 to 7260V to Alt ACB 2624 on
        1-EI-57-113, START BUS B VOLTAGE [1-M-5].   _____

[4]   **ENSURE** ACB 2124, 1-HS-68-73AA, RCP 4 NORMAL BKR &
        LIFT PUMP [1-M-5], is OPEN.   _____

[5]   **ENSURE** ACB 2624, 1-HS-68-73BA, RCP 4 ALTERNATE
        BKR &
        XFER SELECTOR [1-M-5], is OPEN.   _____

[6]   **ENSURE** RCP 4 AUX OC BKR Green light [1-M-5], is LIT.   _____

[7]   **ENSURE** the following:

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	
NORM 250V DC FDR FOR 6.9KV RCP BD 1D	250Vdc Turb Bldg Dist Bd 2	ON	0-BKR-239-2A222		CV
ALT 250V DC FDR FOR 6.9KV RCP BD 1D	250Vdc Turb Bldg Dist Bd 1	ON	0-BKR-239-1A222		CV
250V DC SUPPLY TO RCP 1B, 1D, 2B, 2D OC PROT BKR	250Vdc Turb Bldg Dist Bd 1	ON	0-BKR-239-1A216		CV

[8]   **ENSURE** the following at RCP Bd 1D, 1-BD-202-D [1]:

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	
NORM SUPPLY FROM USST 1B	C/1D2	Racked UP & OPEN	1-BKR-202-2124/1D		CV
ALT SUPPLY FROM RCP START BUS B	C/1D4	Racked UP & OPEN	1-BKR-202-2624/1D		CV

[9]   **PLACE** 250V DC SUPPLY TRANSFER SWITCH [C/1D3], in
        250V DC CONTROL BUS NORMAL FEEDER FROM
        250V DC TURB BLDG DIST BD 2.   _____

                                                                        _____
                                                                        CV

[10]   **ENSURE** RCP 4 OC PROT BKR 250V DC CNTL
        BUS INDICATING LIGHT (Red) [C/1D3], is LIT.   _____

Date_____   **Initials**

5.0   STARTUP (continued)

[11]   **CHECK** RCP BD 1D NOR & ALT FDR BKR 250V DC CNTL
        BUS INDICATING LIGHT (Red) [C/1D3], is LIT.   _____

[12]   **ENSURE** RCP 4 Bd 1D Overcurrent and Differential Relays
        [C/1D3], INSTALLED and NO flags visible.   _____

[13]   **ENSURE** REACTOR COOLANT PUMP 4 Aux Overcurrent
        Relays [C/1D3], INSTALLED and NO flags visible.   _____

[14]   **ENSURE** REACTOR COOLANT PUMP 4 Overcurrent Relays
        [C/1D1], INSTALLED and NO flags visible.   _____

[15]   **ENSURE** RCP BD 1D LOCKING-OUT RELAY 86-1D [C/1D3],
        RESET.   _____

[16]   **ENSURE** REACTOR COOLANT PUMP 4 LOCKING-OUT
        RELAY 861D2 [C/1D3], is RESET.   _____

[17]   **ENSURE** BREAKER 2124 TRANSFER SWITCH,
        1-XS-68-73A, RCP 4 [C/1D2], in NORMAL.   _____

[18]   **ENSURE** BREAKER 2624 TRANSFER SWITCH,
        1-XS-68-73B, RCP 4 [C/1D4], in NORMAL.   _____

NOTE
Steps 5.0[19] and 5.0[20]are N/A if RCP NOT required to be operable.

[19]   **CLOSE** 1-BKR-68-73 AUX OVERCURRENT PROT RCP 4
        (1-PMP-68-73), using BREAKER 52-1D CONTROL SWITCH
        [C/1D3].   _____

                                                                     _____
                                                                        CV

[20]   **CHECK** AUX OC BKR for RCP 4 Red light [1-M-5], is LIT.   _____

NOTE
RCP Bd 1D is now available for service. Bd will be energized when RCP is started in SOI-68.02.

6.0 NORMAL OPERATION

Alternate Supply to 6.9kV Reactor Coolant Pump (RCP) Bd 1D is from RCP Start Bus B, with normal Supply from Unit Station Service Transformer (USST) 1B.

Each 6.9kV RCP Bd can be selected for auto or manual transfer between normal and alternate supply breakers. Manual transfers are "fast" (6 cycles or less), and can be made from normal to alternate or alternate to normal. Auto transfers can only be made from normal to alternate supply. Transfers initiated by generator PCB (52Z) trip signal on the RCP Bds are fast. Control power is from 250Vdc Turbine Bldg Dist system.

The RCP Bd is protected by overcurrent, ground overcurrent, and differential current protective relays. Manual control of the two supply breakers of each board is provided in the MCR. Instrumentation gives operator the voltage of each board and the amps on either supply breaker. The following alarms are provided:

RCP BD 1D UV/CNTL PWR FAILURE/TRANSFER [98E].

RCP BOARD UNDERFREQ/UNDERVOLTAGE [122E].

GO-1 initially energizes RCP Bds from the alternate supply using SOI-68.02 (starts RCP). When directed by GO-3 during startup or GO-5 during shutdown, the RCP Bd will be transferred using this Instruction.

7.0 SHUTDOWN

RCPs are SHUT DOWN and 6.9kV RCP Bds are deenergized in SOI-68.02.

Date ~~~~   **Initials**

8.0   INFREQUENT OPERATIONS

8.1   Transfer RCP Bd 1D from Alternate to Normal

[1]   **OBTAIN** SRO approval.

                                                 _____
                                                      SRO

[2]   **ENSURE** MSB has verified Time Delay Relay (TDR) 1-62-068-0074 contact points 1and 5 closed (located on left side panel in compartment 1D3 of RCP BD 1D).

                                                 _____

NOTE
IF Unit is out of service, Bd may be energized by backfeeding from USSTs.

[3]   **CHECK** voltage 6560 to 7260V to Normal ACB 2124 on 1-EI-57-58, USST 1B \VOLTS [1-M-1].

                                                 _____

[4]   **ENSURE** 1-HS-68-73AA, RCP 4 NORMAL BKR & LIFT PMP [1-M-5], PUSHED IN to place handswitch in control of ACB 2124.

                                                 _____

[5]   **ENSURE** 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR [1-M-5], PUSHED IN to place ACB 2624 auto transfer in MANUAL.

                                                 _____

[6]   **MONITOR** 1-EI-68-73A, RCP 4 AMPS [1-M-5] during transfer to ensure RCP Amp load transfers to Normal supply.

                                                 _____

Date_____   **Initials**

8.1   Transfer RCP Bd 1D from Alternate to Normal (continued)

CAUTION

Release handswitches SLOWLY after transfer is complete to prevent inadvertent breaker actuation.

Start of Critical Step(s)

[7]   **PLACE AND HOLD** 1-HS-68-73AA, RCP 4 NORMAL BKR & LIFT PMP, in START, **AND**

      PLACE 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR, in STOP.   _____

                                                                                 CV

End of Critical Step(s)

[8]   **ENSURE** Normal ACB 2124 CLOSED, and Alt ACB 2624 OPEN.   _____

[9]   **IF** desired to place Board Transfer in AUTO, **THEN**

      PULL 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER SELECTOR, out to PULL AUTO.   _____

Date_____   **Initials**

8.2   Transfer RCP Bd 1D from Normal to Alternate

[1]   **OBTAIN** SRO approval.

_____
SRO

[2]   **CHECK** voltage 6560 to 7260V to Alt ACB 2624 on
1-EI-57-113, START BUS B VOLTAGE [1-M-5].

_____

[3]   **ENSURE** 1-HS-68-73AA, RCP 4 NORMAL BKR & LIFT PMP
[1-M-5], PUSHED IN to place handswitch in control of ACB
2124.

_____

[4]   **ENSURE** 1-HS-68-73BA, RCP 4 ALTERNATE BKR & XFER
SELECTOR [1-M-5], PUSHED IN to place ACB 2624 auto
transfer in MANUAL.

_____

[5]   **MONITOR** 1-EI-68-73A, RCP 4 AMPS [1-M-5] during transfer
to ensure RCP Amp load transfers to Alt supply.

_____

Date_____   Initials

8.2   Transfer RCP Bd 1D from Normal to Alternate (continued)

CAUTION

Release handswitches SLOWLY after transfer is complete to prevent inadvertent breaker actuation

---

| Start of Critical Step(s) |

[6]   **PLACE AND HOLD** 1-HS-68-73BA, RCP 4 ALTERNATE BKR
       & XFER SELECTOR, in START, **AND**

       PLACE 1-HS-68-73AA, RCP 4 NORMAL BKR & LIFT PUMP,
       in STOP.   _____

                                                                  _____
                                                                     CV

| End of Critical Step(s) |

[7]   **ENSURE** Alt ACB 2624 CLOSED, and Normal ACB 2124
       OPEN.   _____

Date_____   **Initials**

8.3   Transfer RCP Bd 1D Control Power from Normal to Alternate

NOTE
Transfer of Control Power may result in loss of loads

[1]   **OBTAIN** SRO approval.

                                                                          _____
                                                                             SRO

[2]   **ENSURE** 0-BKR-239-1A222, ALT 250V DC FDR FOR 6.9KV
        RCP BD 1D [250Vdc TB Dist Bd 1], is ON.

                                                                          _____
                                                                              CV

[3]   **PLACE** 250V DC SUPPLY TRANSFER SWITCH [C/1D3], in
        250V DC CONTROL BUS ALTERNATE FEEDER FROM
        250V DC TURB BLDG DIST BD 1.

                                                                          _____
                                                                              CV

Date_____   **Initials**

8.4   Transfer RCP Bd 1D Control Power from Alternate to Normal.

NOTE
Transfer of Control Power may result in loss of loads.

[1]   **OBTAIN** SRO approval.

                                                                 _____
                                                                    SRO

[2]   **ENSURE** 0-BKR-239-2A222, NORM 250V DC FDR FOR
        6.9KV RCP BD 1D [250Vdc TB Dist Bd 2], is ON.

                                                                 _____

                                                                    CV

[3]   **PLACE** 250V DC SUPPLY TRANSFER SWITCH [C/1D3], in
        250V DC CONTROL BUS NORMAL FEEDER FROM
        250V DC TURB BLDG DIST BD 2.

                                                                 _____

                                                                    CV

9.0   RECORDS

9.1   QA Records

The following documents are QA records and are handled per the Document Control and Records Management (DCRM) program:

1.   Section 4.0

2.   Section 5.0

3.   Section 8.0

4.   Checklist 1

9.2   Non-QA Records

None

Checklist 1
(Page 1 of 1)

RCP Bd 1D Power Alignment Verification

DATE COMPLETE _____

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	
6.9kV RCP Bd 1D, 1-BD-202-D					
NORM SUPPLY FROM USST 1B	C/1D2	Racked UP	1-BKR-202-2124/1D		CV
ALT SUPPLY FROM RCP START BUS B	C/1D4	Racked UP	1-BKR-202-2624/1D		CV

Source Notes
(Page 1 of 1)

Requirements Statement	Source Document	Implementing Statement
Ensure closing spring charged on 6.9kV and 480v breakers when breakers are initially made operable.	SOER 82-16, Rec 2	1

B.1.h
Alternate Component Cooling Water Pumps

WATTS BAR NUCLEAR PLANT
B.1.h
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Alternate 1A-A and 1B-B Component Cooling Water Pumps.

Alternate Path: Must re-start 1A-A CCS Pump due to failure of the 1B-B CCS Pump.

Facility JPM #: New.

Safety Function: 8   **Title:** Plant Service Systems

K/A   008 A2.01   Ability to (a) predict the impacts of the following malfunctions or operations on the CCWS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of CCW pump.

Rating(s): 3.3 / 3.6   **CFR:** 41.5 / 43.5 / 45.3 / 45.13

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator   **X**   In-Plant _____   Perform   **X**   Simulate _____

References: SOI-70.01,"Component Cooling Water (CCS) System," Rev. 61
AOI-15, "Loss of Component Cooling Water," Rev. 31

Task Number: RO-070-SOI-70-023   **Title:** Alternate CCS and TBBPs.

Task Standard: Applicant performs actions to alternate CCS pumps by performing SOI-70.01"Component Cooling Water(CCS) System," Section 8.8 "Alternate CCS Pumps [0-M-27B". After swapping pumps, the applicant responds to the shearing of 1B-B CCS pump shaft, and returns the 1A-A CCS pump to service.

Validation Time: 15 minutes   **Time Critical:** Yes _____ No **X**

===

Applicant: _____   _____   Time Start: _____
         NAME   SSN   Time Finish: _____

Performance Rating: SAT ____ UNSAT ____   Performance Time ___

Examiner: _____   _____/_____
         NAME   SIGNATURE   DATE

===

COMMENTS

_____

_____

_____

_____

_____

WATTS B, NUCLEAR PLANT
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SIMULATOR OPERATOR INSTRUCTIONS:

1. ENSURE NRC Examination Security has been established.

2. Right click on 346, and then select RESET.

3. Enter the password.

4. Select "Yes" on the INITIAL CONDITION RESET pop-up window.

5. ENSURE the following information appears on the Director Summary Screen:

Key		Type	Event	Delay	Inserted	Ramp	Initial	Final	Value
cc03a	ccs pump 1a-a auto start inhibit	M		00:00:00		00:00:00		InActive	Active
ccr09	1-70-505b ccs pmp 1b-b disch isol valve	R	1	00:00:00		00:00:00		0.25	1
ccr08	1-70-505a ccs pmp 1a-a disch isol valve	R	2	00:00:00		00:00:00		025	1
cc07b	ccs pump 1b-b shaft break	M	3	00:00:00		00:00:00		InActive	InActive

6. Place simulator in RUN and acknowledge any alarms.

7. Place simulator in FREEZE until Examiner cue is given.

8. When requested, enter Event 1 to manipulate 1-ISV-70-505b 1B-B CCS Pump Discharge isolation valve. Use remote function ccr09 to close1-70-505b to 25% open, and then modify the remote function to open the valve to 100%.

9. When requested, enter Event 2 to manipulate 1-ISV-70-505a 1A-A CCS Pump Discharge isolation valve. Use remote function ccr08 to close 1-70-505a 75% and report the valve position. After the 1A-A CCS pump is stopped, then modify the remote function to open the valve to 100%.

10. When cued by the Examiner, enter cc07b to shear the shaft on 1B-B CCS pump.

11. Ensure that a copy of SOI-70.01Section 8.8, "Alternate CCS Pumps [0-M-27B] is in the simulator booth.

WATTS BAR NUCLEAR PLANT
B.1.h
Nov. 2009 NRC Exam

READ TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 is operating at 100% power.

2. Work Control has requested that the 1B-B CCS pump be placed in service and the 1A-A CCS pump be stopped to support upcoming testing.

3. Assistant Unit Operators have been briefed and are standing by to support the pump swap.

4. You are the Control Room Operator.

INITIATING CUES:

1. The Unit Supervisor has directed you to start 1B-B CCS pump and stop 1A-A CCS pump per SOI-70.01,"Component Cooling Water (CCS) System."

2. You are to inform the Unit Supervisor when the pump swap is complete.

STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1.: Obtain the appropriate procedure. STANDARD: Applicant determines that SOI-70.01, "Component Cooling Water (CCS) System," Subsection 8.8, "Alternate CCS Pumps [0-M-27B]," is the appropriate procedure.	___ SAT ___ UNSAT

CAUTION
CCS Pump damage may occur below 900 gpm per pump.

NOTES
1) Pump starting guidelines are in GOI-7. 2) Throttling the discharge valves on the OPERABLE A train or B train pump requires entry into LCO 3.7.7 in MODES 1-4. 3) Performing this Section will require communications with the Control Room Operator and additional personnel in the field.

STEP/STANDARD	SAT/UNSAT

STEP 2: [1] **UNLOCK** and **THROTTLE** disch on pump to be placed in service: (**N/A** if **NOT** starting):

CRITICAL STEP

___ SAT

___ UNSAT

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
CCS PUMP 1A-A DISCHARGE ISOLATION	A3S/713	25% OPEN	1-ISV-70-505A	
CCS PUMP 1B-B DISCHARGE ISOLATION	A3S/713	25% OPEN	1-ISV-70-505B	
CCS PUMP C-S DISCHARGE ISOLATION	A3S/713	25% OPEN	0-ISV-70-505	
CCS PUMP 2B-B DISCHARGE ISOLATION	A2T/713	25% OPEN	2-ISV-70-505B	

STANDARD:

Applicant contacts Aux Bldg AUO to locate 1-ISV-70-505B, CCS PUMP 1B-B DISCHARGE ISOLATION and directs the AUO to open the valve 25%.

Applicant enters N/A for the 1A and C-S CCS pumps.

Step is critical to properly align pump to be started.

Simulator Operator NOTE: **Use Event 1 to cause remote function ccr09 to open 1-ISV-70-505b 25%.**

Simulator Operator CUE: **When requested, report that the discharge valve 1-ISV-70-505B CCS PUMP 1B-B DISCHARGE ISOLATION is 25% open.**

COMMENTS:

STEP/STANDARD	SAT/UNSAT

CAUTION

Pump damage may occur below 900 gpm per pump.

NOTES

Pump starting guidelines are in GOI-7.

STEP 3: [2] **START** pump to be placed in service (**N/A** Pumps **NOT** started):

CRITICAL STEP

___ SAT

___ UNSAT

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
CCS PMP 1A-A	0-M-27B	START	1-HS-70-46A	
CCS PMP 1B-B	0-M-27B	START	1-HS-70-38A	
CCS PMP C-S NORMAL ACB	0-M-27B	START	2-HS-70-51A	
CCS PMP C-S ALT ACB	0-M-27B	START	1-HS-70-51A	
CCS PMP 2B-B	0-M-27B	START	2-HS-70-33A	

STANDARD:

Applicant places 1-HS-70-38A CCS PMP 1B-B on 0-M-27B to START, and verifies RED light LIT, GREEN light DARK on handswitch 1-HS-70-38A.

Step is critical to start the correct pump.

COMMENTS:

STEP/STANDARD	SAT/UNSAT

NOTE
Supply Header 1A total flow can be verified locally at 1-FI-70-199 [1-L-214/A, A3T/713]. Supply Header 1B flow can be verified locally at 0-FI-70-201 [0-PNL-276-L643, A5S/713].

STEP/STANDARD	SAT/UNSAT

<u>STEP 4</u>:   [3] **OPEN SLOWLY** the disch valve of the Pump started in Step 8.8[2] **WHILE CLOSING** the discharge valve of the Pump to be removed from service.
 	
<u>STANDARD</u>:
 	
    Applicant contacts Aux Bldg AUO to slowly open 1-ISV-70-505B, CCS PUMP 1B-B DISCHARGE ISOLATION to 100%.
 	
    Applicant contacts Aux Bldg AUO to slowly close 1-ISV-70-505A, CCS PUMP 1A-A DISCHARGE ISOLATION.
 	
    Step is critical to properly align pumps during the transfer.
 	
<u>**Simulator Operator NOTE:**</u>
    Modify remote function ccr09 to 100% to fully open 1-ISV-70-505b. When requested, report that the discharge valve 1-ISV-70-505B CCS PUMP 1B-B DISCHARGE ISOLATION is open.
 	
    Modify remote function ccr08 to 0% to fully close 1-ISV-70-505a. When requested, report that the discharge valve 1-ISV-70-505A CCS PUMP 1A-A DISCHARGE ISOLATION is closing.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT
<u>STEP 5</u>: [4] **LOCK OPEN** the disch valve of the Pump started in Step 8.8[2]. <u>STANDARD</u>: Applicant contacts Aux Bldg AUO to lock open 1-ISV-70-505B, CCS PUMP 1B-B DISCHARGE ISOLATION. **Simulator Operator CUE:** **When requested, report that the discharge valve 1-ISV-70-505B CCS PUMP 1B-B DISCHARGE ISOLATION is locked open.** <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 6</u>: [5] **WHEN** the disch valve of the Pump to be removed from service is 75% CLOSED, **THEN STOP** the Pump to be removed from service. **(N/A** Pumps **NOT** stopped)

CRITICAL STEP

___ SAT

___ UNSAT

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
CCS PMP 1A-A	0-M-27B	A-P AUTO	1-HS-70-46A	
CCS PMP 1B-B	0-M-27B	A-P AUTO	1-HS-70-38A	
CCS PMP C-S NORMAL ACB	0-M-27B	A-P AUTO	2-HS-70-51A	
CCS PMP C-S ALT ACB	0-M-27B	A-P AUTO	1-HS-70-51A	
CCS PMP 2B-B	0-M-27B	A-P AUTO	2-HS-70-33A	

<u>STANDARD</u>:

Applicant directs the Aux Bldg AUO to call when 1-ISV-70-505A, CCS PUMP 1A-A DISCHARGE ISOLATION is 75% closed.

Applicant stops the 1A-A CCS pump using 1-HS-70-46A. Verifies RED light DARK, Green Light LIT, motor amps drop to zero, and discharge pressure drops to zero.

Step is critical to properly align pumps during the transfer.

<u>Simulator Operator CUE</u>:

When requested, report that the discharge valve 1-ISV-70-505A CCS PUMP 1A-A DISCHARGE ISOLATION is closing. Use remote function ccr08 to close 1-70-505a.

<u>COMMENTS</u>:

STEP/STANDARD	SAT/UNSAT
<u>STEP 7</u>: [6] **VERIFY** flow between 900 to 6800 gpm. <u>STANDARD</u>: Applicant determines from flow indications in the Control Room that flow is approximately 5500 gpm. Applicant may contact the Aux Bldg AUO to check flow locally. **Simulator Operator CUE:** **If requested, report that flow is 5600 gpm on 1A header.** <u>COMMENTS</u>:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 8:   [7] **OPEN and LOCK** disch valve for Pump **STOPPED. (N/A** valves for pump **NOT** stopped)

CRITICAL STEP

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL	
CCS PUMP 1A-A DISCHARGE ISOLATION	A3S/713	LOCK OPEN	1-ISV-70-505A		CV
CCS PUMP 1B-B DISCHARGE ISOLATION	A3S/713	LOCK OPEN	1-ISV-70-505B		CV
CCS PUMP C-S DISCHARGE ISOLATION	A3S/713	LOCK OPEN	0-ISV-70-505		CV
CCS PUMP 2B-B DISCHARGE ISOLATION	A2T/713	LOCK OPEN	2-ISV-70-505B		CV

___ SAT

___ UNSAT

STANDARD:

   Applicant contacts Aux Bldg AUO to have 1-ISV-70-505A, CCS PUMP 1A-A DISCHARGE ISOLATION opened completely and locked in the open position.

Critical step to ensure Pump 1A-A discharge isolation is locked open to ensure pump readiness for service.

CUE:

   When requested, report that the discharge valve 1-ISV-70-505A CCS PUMP 1A-DISCHARGE ISOLATION is open, and locked.

COMMENTS:

STEP/STANDARD	SAT/UNSAT

STEP 9: [8] **ENSURE** running pump's 480V ACB Closing Spring is CHARGED (**N/A** Pumps **NOT** running):

_____ SAT

_____ UNSAT

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL	
480V SD Bd 1A1-A					
CCS PUMP 1A-A (1-PMP-70-46)	C/3B	CLOSING SPRING CHARGED	1-BKR-70-46		CV
480V SD Bd 1B1-B					
CCS PUMP 1B-B (1-PMP-70-38)	C/3C	CLOSING SPRING CHARGED	1-BKR-70-38		CV
480V SD Bd 2B2-B					
NORMAL FDR FOR CCS PUMP C-S (0-PMP-70-51)	C/2D	CLOSING SPRING CHARGED	0-BKR-70-51A		CV
480V SD Bd 1A2-A					
ALT FDR FOR CCS PUMP C-S (0-PMP-70-51)	C/3B	CLOSING SPRING CHARGED	0-BKR-70-51B		CV
480V SD Bd 2B1-B					
COMPONENT COOLING SYSTEM PUMP 2B-B, 2-MTR-70-33	C/3C	CLOSING SPRING CHARGED	2-BKR-70-33		CV

STANDARD:

   Applicant contacts Control Bldg AUO to go to 480V SD Board 1B1-B to ensure that the closing spring for 1B-B CCS Pump, 1- BKR-70-38, is charged.

CUE:

   When requested, report as the Control Bldg AUO that the closing spring for 1B-B CCS Pump, 1- BKR-70-38, is charged.

COMMENTS:

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: Cue Console Operator to insert malfunction cc08b, to shear the shaft on 1B-B CCS pump. Malfunction cc03a prevents the 1A-A CCS pump from auto starting on low header pressure.

NOTE TO EVALUATOR: The applicant may respond to the sheared shaft by stopping the 1B-B CCS pump and starting the 1A-A CCS pump based on receipt of 240-E RX BLDG SUPPLY HDR FLOW LO.

OR

The applicant may immediately enter AOI-15 "Loss of Component Cooling Water (CCS)," to accomplish actions.

NOTE TO EVALUATOR: The following actions are taken from AOI-15, "Loss of Component Cooling Water (CCS),"

<u>STEP 10</u>:   1. **CHECK** CCS pumps status:
        a. **CHECK** any CCS pump TRIPPED or running pump NOT pumping forward:
        • ERCW/CCS Motor trip out alarm,
        • Low header pressure (train A or B),
        • Multiple low flow alarms.
 	
<u>STANDARD</u>:
 	
    Applicant determines that the 1B-B CCS pump is no longer pumping forward, based on low header pressure and multiple low flow alarms.
 	
    May have been accomplished prior to AOI-15 entry, based on PRUDENT OPERATOR ACTIONS.
 	
    Step is critical to determine subsequent actions to take.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 11</u>:   b. **CHECK** at least one U-1 Train A header supply pump RUNNING AND pumping forward:
    • 1A-A
    • 1B-B
 	
<u>STANDARD</u>:
 	
  Applicant starts the 1A-A CCS pump using 1-HS-70-46A, verifies Green light DARK, Red light LIT. Verifies low pressure alarms clear, and multiple flow alarms clear.
 	
  May have been accomplished prior to AOI-15 entry, based on PRUDENT OPERATOR ACTIONS.
 	
Step is critical to determine subsequent actions to take.
 	
<u>COMMENTS</u>:
	CRITICAL STEP
	
	___ SAT
	
	___ UNSAT

<u>STEP 12</u>:   c. **CHECK** any Train B header supply pump RUNNING AND pumping forward:
    •   C-S
    •   2B-B
 	
<u>STANDARD</u>:
 	
  Applicant determines that the C-S CCS Pump is running by observing the Red light is LIT and the Green light is DARK.
 	
<u>COMMENTS</u>:
	___ SAT
	
	___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 13: d. **PLACE** any non-operable or tripped CCS pump in STOP/PULL-TO-LOCK. STANDARD: Applicant stops the 1B-B CCS pump using 1-HS-70-38A, verifies Green light LIT, Red light DARK. **Step is critical to place the pump in a position where a restart of the damaged pump cannot occur.** May have been accomplished prior to AOI-15 entry, based on PRUDENT OPERATOR ACTIONS. COMMENTS: **END OF TASK**	**CRITICAL STEP** ___ SAT ___ UNSAT

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

1. Unit 1 is operating at 100% power.

2. Work Control has requested that the 1B-B CCS pump be placed in service and the 1A-A CCS pump be stopped to support upcoming testing.

3. Assistant Unit Operators have been briefed and are standing by to support the pump swap.

4. You are the Control Room Operator.

INITIATING CUES:

1. The Unit Supervisor has directed you to start 1B-B CCS pump and stop 1A-A CCS pump per SOI-70.01,"Component Cooling Water (CCS) System."

2. You are to inform the Unit Supervisor when the pump swap is complete.

Date_____   **INITIALS**

8.8   Alternate CCS Pumps[0-M-27B]

CAUTION
CCS Pump damage may occur below 900 gpm per pump.

NOTES
1) Pump starting guidelines are in GOI-7. 2) Throttling the discharge valves on the OPERABLE A train or B train pump requires entry into LCO 3.7.7 in MODES 1-4. 3) Performing this Section will require communications with the Control Room Operator and additional personnel in the field.

[1]   **UNLOCK** and **THROTTLE** disch on pump to be placed in service:
(**N/A** if **NOT** starting):

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
CCS PUMP 1A-A DISCHARGE ISOLATION	A3S/713	25% OPEN	1-ISV-70-505A	
CCS PUMP 1B-B DISCHARGE ISOLATION	A3S/713	25% OPEN	1-ISV-70-505B	
CCS PUMP C-S DISCHARGE ISOLATION	A3S/713	25% OPEN	0-ISV-70-505	
CCS PUMP 2B-B DISCHARGE ISOLATION	A2T/713	25% OPEN	2-ISV-70-505B	

Date_____   INITIALS

8.8   Alternate CCS Pumps[0-M-27B] (continued)

CAUTION
Pump damage may occur below 900 gpm per pump

NOTE
Pump starting guidelines are in GOI-7

[2]   **START** pump to be placed in service **(N/A** Pumps **NOT** started):

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
CCS PMP 1A-A	0-M-27B	START	1-HS-70-46A	
CCS PMP 1B-B	0-M-27B	START	1-HS-70-38A	
CCS PMP C-S NORMAL ACB	0-M-27B	START	2-HS-70-51A	
CCS PMP C-S ALT ACB	0-M-27B	START	1-HS-70-51A	
CCS PMP 2B-B	0-M-27B	START	2-HS-70-33A	

NOTE
Supply Header 1A total flow can be verified locally at 1-FI-70-199 [1-L-214/A, A3T/713]. Supply Header 1B flow can be verified locally at 0-FI-70-201 [0-PNL-276-L643, A5S/713].

[3]   **OPEN SLOWLY** the disch valve of the Pump started in Step 8.8[2]

       WHILE CLOSING the discharge valve of the Pump to be removed from service   _____

[4]   **LOCK OPEN** the disch valve of the Pump started in Step 8.8[2].   _____

                                                                      _____
                                                                      CV

Date_____   INITIALS

8.8   Alternate CCS Pumps[0-M-27B] (continued)

[5]   **WHEN** the disch valve of the Pump to be removed from
service is 75% CLOSED, **THEN**

STOP the Pump to be removed from service. **(N/A** Pumps
NOT stopped**)**

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL
CCS PMP 1A-A	0-M-27B	A-P AUTO	1-HS-70-46A	
CCS PMP 1B-B	0-M-27B	A-P AUTO	1-HS-70-38A	
CCS PMP C-S NORMAL ACB	0-M-27B	A-P AUTO	2-HS-70-51A	
CCS PMP C-S ALT ACB	0-M-27B	A-P AUTO	1-HS-70-51A	
CCS PMP 2B-B	0-M-27B	A-P AUTO	2-HS-70-33A	

[6]   **VERIFY** flow between 900 to 6800 gpm.   _____

[7]   **OPEN and LOCK** disch valve for Pump STOPPED. **(N/A**
valves for pump **NOT** stopped**)**

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL	
CCS PUMP 1A-A DISCHARGE ISOLATION	A3S/713	LOCK OPEN	1-ISV-70-505A		CV
CCS PUMP 1B-B DISCHARGE ISOLATION	A3S/713	LOCK OPEN	1-ISV-70-505B		CV
CCS PUMP C-S DISCHARGE ISOLATION	A3S/713	LOCK OPEN	0-ISV-70-505		CV
CCS PUMP 2B-B DISCHARGE ISOLATION	A2T/713	LOCK OPEN	2-ISV-70-505B		CV

Date_____   INITIALS

8.8   Alternate CCS Pumps[0-M-27B] (continued)

[8]   **ENSURE** running pump's 480V ACB Closing Spring is
CHARGED
(N/A Pumps **NOT** running):

NOMENCLATURE	LOC	POSITION	UNID	PERF INITIAL	
480V SD Bd 1A1-A					
CCS PUMP 1A-A (1-PMP-70-46)	C/3B	CLOSING SPRING CHARGED	1-BKR-70-46		CV
480V SD Bd 1B1-B					
CCS PUMP 1B-B (1-PMP-70-38)	C/3C	CLOSING SPRING CHARGED	1-BKR-70-38		CV
480V SD Bd 2B2-B					
NORMAL FDR FOR CCS PUMP C-S (0-PMP-70-51)	C/2D	CLOSING SPRING CHARGED	0-BKR-70-51A		C'V
480V SD Bd 1A2-A					
ALT FDR FOR CCS PUMP C-S (0-PMP-70-51)	C/3B	CLOSING SPRING CHARGED	0-BKR-70-51B		CV
480V SD Bd 2B1-B					
COMPONENT COOLING SYSTEM PUMP 2B-B, 2-MTR-70-33	C/3C	CLOSING SPRING CHARGED	2-BKR-70-33		CV

WATTS BAR NUCLEAR PLANT
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B.1.i
Isolate RCP Seal Injection and Thermal Barrier Flow.

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EVALUATION SHEET

Task: Isolate RCP seal injection and thermal barrier flow.

Alternate Path: N/A

Facility JPM #:   3-OT-JPMA024

Safety Function: 1   **Title:**

K/A   055 EK3.02   EK3 Knowledge of the reasons for the following responses as they apply to the Station Blackout: Actions contained in EOP for loss of offsite and onsite power.

Rating(s):   4.3/4.6   **CFR:**   41.5/41.10/45.6/45.13

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator _____   In-Plant   **X**   Perform   **X**   Simulate _____

References: ECA-0.0 "Loss of Shutdown Power," Rev.19.

Task Number: RO-113-ECA-0.0-001   **Title:**

Task Standard: Applicant locates and closes the valves listed in Appendix "A", Attachment 1 of ECA-0.0, "Loss of Shutdown Power."

Validation Time: 10   minutes   **Time Critical:**   Yes _____ No   **X**
==
Applicant: _____   _____   Time Start: _____
                        NAME   SSN   Time Finish: _____

Performance Rating: SAT _____ UNSAT _____   Performance Time ____

Examiner: _____   _____/_____
                        NAME   SIGNATURE   DATE
==

COMMENTS

_____

_____

_____

_____

_____

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Tools/Equipment/Procedures Needed:

Hard Hat, Safety Glasses, Hearing Protection, Gloves, and Plant Approved Shoes.

ECA-0.0 Appendix "A"

NOTE: Start this JPM in the MCR.

EVALUATOR NOTE: Provide copy of ECA-0.0 Attachment "A" (page 2 of 2) to the applicant with APPLICANT CUE SHEET.

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DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating/operating cues.

NO MANIPULATION OF PLANT EQUIPMENT SHALL OCCUR DURING THIS JPM. SIMULATE ALL MANIPULATIONS.

When you complete the task successfully, the objective for this job performance measure will be satisfied.

Ensure that you indicate to me when you fully understand your task.

INITIAL CONDITIONS:

1. Unit 1 has just entered Mode 3 following a shutdown required by Tech. Specs due to the loss of 6.9kV Shutdown Board 1B-B.

2. The "B" CVCS Seal Injection Water Filter is in service.

3. A tornado on site caused a complete loss of off-site power and the 1A-A Diesel Generator failed to start.

4. The crew transitioned to ECA-0.0, "Loss of Shutdown Power" due to the loss of shutdown power and is progressing through the steps.

5. Attempts are being made to restore shutdown power.

6. You are an AUO on shift.

INITIATING CUES:

1. The control room crew was unable to isolate RCP seal return valves or thermal barrier.

2. The CRO has directed you to perform local actions of Attachment 1 of Appendix "A" of ECA 0.0 to isolate the RCP seals and thermal barrier.

3. You are to notify the CRO when you have finished Attachment 1 of Appendix A, ECA-0.0.

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STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1: Obtain a copy of Appendix "A" of ECA-0.0. STANDARD: A copy of Appendix A of ECA-0.0 has been obtained. **EXAMINER'S CUE: Provide copy of Appendix A Attachment 1 (page 2 of 2) of ECA-0.0 to the applicant.** COMMENTS:	___ SAT ___ UNSAT

Note
- **Appendix "A" steps can be performed in any order. (Steps 1- 3)**
- **Step 1 must always be performed.**

STEP 2: **[STEP 1] ISOLATE** RCP seal injection [reach rods outside seal water injection filter cubicles]: • **CLOSE** 1-ISV-62-549, CVCS SEAL WTR INJ FLTR B OUT ISOL [A5T/713]. STANDARD: 1-ISV-62-549 has been located and turned clockwise to close. **Step is critical because it isolates the flow path from CVCS to RCP seals preventing thermal shock to shaft and seal if CVCS charging is restored.** ****CUE: After the applicant demonstrates how to close valve, state that the hand wheel turns several turns and stops.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

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STEP/STANDARD	SAT/UNSAT
STEP 3: [STEP 1 continued] • **CLOSE** 1-BYV-62-546, CVCS SEAL WTR INJ FLTR BYP [A5T/713]. STANDARD: 1-BYV-62-546 has been located and checked closed. ****CUE:** After the applicant demonstrates how to check valve closed, state that the hand wheel does <u>not</u> turn when clockwise motion is applied. COMMENTS:	___ SAT ___ UNSAT
STEP 4: [STEP 1 continued] • **CLOSE** 1-ISV-62-550, CVCS SEAL WTR INJ FLTR A OUT ISOL [A5T/713]. STANDARD: 1-ISV-62-550 has been located and checked closed. ****CUE:** After the applicant demonstrates how to check valve closed, state that the hand wheel does <u>not</u> turn when clockwise motion is applied. COMMENTS:	___ SAT ___ UNSAT

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STEP/STANDARD	SAT/UNSAT

NOTE Step 2 to be performed only if MCR is unable to close either 1-FCV-62-61 or 1-FCV-62-63. **Examiner Cue:** IF/when Control Room is contacted to determine if 1-FCV-62-61 or 1-FCV-62-63 is CLOSED, respond that neither 1-FCV-62-61 nor 1-FCV-62-63 is CLOSED.	

STEP 5: **[Step 2] ISOLATE** RCP seal return valves [reach rods outside filter cubicle]: • **CLOSE** 1-ISV-62-642, CVCS SEAL WTR RETURN FILTER INLET ISOL [A5T/713]. STANDARD: 1-ISV-62-642 has been located and turned clockwise to close. **Step is critical to isolate flow path from RCP seals to VCT.** ****CUE:** **After the applicant demonstrates how to close valve, state that the hand wheel turns several turns and stops.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP 6: **[STEP 2 continued]** • **CLOSE** 1-BYV-62-643, CVCS SEAL WTR RETURN FILTER BYPASS [A5T/713]. STANDARD: 1-BYV-62-643 has been located and checked closed. ****CUE:** **After the applicant demonstrates how to check valve closed, state that the hand wheel does not turn when clockwise motion is applied.** COMMENTS:	___ SAT ___ UNSAT

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STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: Stop applicant before entering BIT room (for ALARA concerns) and have candidate describe valve location (valve 1-FCV-70-90). Use posted survey map. After candidate describes the valve's approximate location, simulate the performance of the next step without entering the BIT Room.

NOTE Step 3 to be performed only if MCR is unable to close at least one of the thermal barrier supply and one of the thermal barrier return isolation valves.

NOTE TO EVALUATOR: If/when Control Room is contacted, respond that no thermal barrier supply or return isolation valve is closed.

STEP 7:   **[STEP 3] ISOLATE** RCP thermal barrier:
 	
    • **CLOSE** 1-FCV-70-90, THERMAL BARRIER CCS RETURN [above south side of BIT].
 	
STANDARD: 1-FCV-70-90 has been located, actuator engaged and turned clockwise to close.
 	
This step is critical to isolate flow path to protect CCS from steam formation in CCS.
 	
EXAMINER NOTE: This valve is in the BIT room overhead, just below the ceiling in the southwest corner behind the BIT. <u>ALARA Considerations:</u> If candidate attempts to climb up to valve without first checking with RADCON, stop candidate and require contact with RADCON. See note preceding this step.
 	
    CUE: After the applicant demonstrates how to close valve, state that the hand wheel turns many turns and stops.
 	
COMMENTS:
	CRITICAL STEP
	
	____ SAT
	
	____ UNSAT

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STEP/STANDARD	SAT/UNSAT
STEP 8: **[STEP 3 continued]** • **CLOSE** 1-ISV-70-677A, CCS THRM BAR BSTR PUMP 1A-A DISCH ISOLATION [A5W/737]. STANDARD: 1-ISV-70-677A has been located and turned clockwise to close. **Step is critical to isolate flow path to prevent thermal shock to RCP seals when CCS is restored.** ***CUE:*** **After the applicant demonstrates how to close valve, state that the hand wheel turns many turns and stops.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 9: **[STEP 3 continued]** • **CLOSE** 1-ISV-70-677B, CCS THRM BAR BSTR PUMP 1B-B DISCH ISOLATION [A5W/737]. STANDARD: 1-ISV-70-677B has been located and turned clockwise to close. **Step is critical to isolate flow path to prevent thermal shock to RCP seals when CCS is restored.** ***CUE:*** **After the applicant demonstrates how to close valve, state that the hand wheel turns many turns and stops.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

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STEP/STANDARD	SAT/UNSAT
STEP 10: Inform the Control Room Operator that Attachment 1 of Appendix A, ECA-0.0 has been completed. **STANDARD:** The control room operator has been informed that Attachment 1 of Appendix "A" has been completed. ****CUE:** When notified, acknowledge the report using "repeat back". **COMMENTS:**	___ SAT ___ UNSAT
END OF TASK	

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating/operating cues.

NO MANIPULATION OF PLANT EQUIPMENT SHALL OCCUR DURING THIS JPM. SIMULATE ALL MANIPULATIONS.

When you complete the task successfully, the objective for this job performance measure will be satisfied.

Ensure that you indicate to me when you fully understand your task.

INITIAL CONDITIONS:

1. Unit 1 has just entered Mode 3 following a shutdown required by Tech. Specs due to the loss of 6.9kV Shutdown Board 1B-B.
2. The "B" CVCS Seal Injection Water Filter is in service.
3. A tornado on site caused a complete loss of off-site power and the 1A-A Diesel Generator failed to start.
4. The crew transitioned to ECA-0.0, "Loss of Shutdown Power" due to the loss of shutdown power and is progressing through the steps.
5. Attempts are being made to restore shutdown power.
6. You are an AUO on shift.

INITIATING CUES:

1. The control room crew was unable to isolate RCP seal return valves or thermal barrier.
2. The CRO has directed you to perform local actions of Attachment 1 of Appendix "A" of ECA 0.0 to isolate the RCP seals and thermal barrier.
3. You are to notify the CRO when you have finished Attachment 1 of Appendix A, ECA-0.0.

APPENDIX A (ECA-0.0)
ATTACHMENT 1
Page 2 of 2

RCP SEALS AND THERMAL BARRIER ISOLATION
LOCAL-Performed by NAUO

NOTE • These steps can be performed in any order.

• Step 1 must always be performed.

1. **ISOLATE** RCP seal injection [reach rods outside seal water injection filter cubicles]:

• **CLOSE** 1-ISV-62-549, CVCS SEAL WTR INJ FLTR B OUT ISOL [A5T/713]

• **CLOSE** 1-BYV-62-546, CVCS SEAL WTR INJ FLTR BYP [A5T/713]

• **CLOSE** 1-ISV-62-550, CVCS SEAL WTR INJ FLTR A OUT ISOL [A5T/713]

NOTE Step 2 to be performed only if MCR is unable to close either 1-FCV-62-61 or 1-FCV-62-63.

2. **ISOLATE** RCP seal return valves [reach rods outside seal return filter cubicle]:

• **CLOSE** 1-ISV-62-642, CVCS SEAL WTR RETURN FILTER INLET ISOL [A5T/713]

• **CLOSE** 1-BYV-62-643, CVCS SEAL WTR RETURN FILTER BYPASS [A5T/713]

NOTE Step 3 to be performed only if MCR is unable to close at least one of the thermal barrier supply and one of the thermal barrier return isolation valves.

3. **ISOLATE** RCP thermal barrier:

• **CLOSE** 1-FCV-70-90, THERMAL BARRIER CCS RETURN [above south side of BIT]

• **CLOSE** 1-ISV-70-677A, CCS THRM BAR BSTR PUMP 1A-A DISCH ISOLATION [A5W/737]

• **CLOSE** 1-ISV-70-677B, CCS THRM BAR BSTR PUMP 1B-B DISCH ISOLATION [A5W/737]

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B.1.j
Installation Of Temporary Cooling (HPFP) To CCP 1A-A Oil Coolers

WATTS BAR NUCLEAR PLANT
B.1.j
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Installation Of Temporary Cooling (HPFP) To CCP 1A-A Oil Coolers

Alternate Path: N/A

Facility JPM #: 3-OT-JPMA170

Safety Function: **Title:**

K/A   076 A2.01   Ability to (a) predict the impacts of the following malfunctions or operations on the SWS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of SWS

Rating(s): 3.5 / 3.7   **CFR:**   41.5 / 43.5 / 45/3 / 45/13

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator _____ In-Plant __X__   Perform __X__ Simulate _____

References: AOI-13, "Loss of Essential Raw Cooling Water (ERCW) System," Rev. 36.

Task Number: **Title:**

Task Standard: Applicant aligns temporary cooling to CCP 1A-A Oil Coolers per Appendix E of AOI-13 "Loss of Essential Raw Cooling Water."

Validation Time: 20   minutes   **Time Critical:**   Yes _____ No __X__

===

Applicant: _____   _____ Time Start: _____
                   NAME   SSN   Time Finish: _____

Performance Rating: SAT _____ UNSAT _____   Performance Time ___

Examiner: _____   _____ / _____
                   NAME   SIGNATURE   DATE

===

Validation Time: 20   minutes   **Time Critical:**   Yes _____ No __X__

===

COMMENTS

_____

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WATTS BAR NUCLEAR PLANT
B.1.j
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Tools/Equipment/Procedures Needed:
Hard Hat, Safety Glasses, Hearing Protection, Gloves and Plant Approved Shoes.
AOI-13, Appendix E latest revision.

SAFETY CONSIDERATIONS:

Hot pipes, high noise, and heat.

The Electrical panel is designated as a Reactor Trip Hazard, so the examiner and the candidate must ensure that they do not violate the requirements for maintaining a safe distance from the panel while simulating switch manipulations.

NOTE: Start this JPM at the Rad Waste AUO desk.

READ TO APPLICANT

DIRECTION APPLICANT:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating/operating cues.

NO MANIPULATION OF PLANT EQUIPMENT SHALL OCCUR DURING THIS JPM. SIMULATE ALL MANIPULATIONS.

When you complete the task successfully, the objective for this job performance measure will be satisfied.

Ensure that you indicate to me when you fully understand your task.

INITIAL CONDITIONS:

1. **Unit 1 has been manually tripped due loss of Intake Pumping Station.**

2. **The RCPs have been stopped and Diesel Generator EMERGENCY STOP pushbuttons have been depressed.**

3. **You are an AUO assigned to the shift.**

INITIATING CUES:

1. **The Unit Operator (UO) has dispatched you to perform AOI-13, Appendix E "Installation of Temporary Cooling to CCP 1A-A Oil Coolers."**

2. **You are to notify the UO when you have completed Appendix E for placing temporary cooling on CCP 1A-A.**

STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1: Obtain a copy of the procedure. STANDARD: A copy of AOI-13 Appendix E has been obtained.	___ SAT
EXAMINER'S CUE: *After the applicant has identified the correct instruction, the evaluator provides a copy of the instruction.* COMMENTS:	___ UNSAT

CAUTION	**This appendix should be completed as quickly as possible.**
NOTE 1	If the accountability siren sounds, operator should continue performing this appendix. The SM should be aware of task assignments and personnel locations.
NOTE 2	Temporary cooling to CCP 1A-A oil coolers is accomplished by installing a fitting to a 1" tee in the CCS piping to the oil heat exchangers on the CCP pump skid (typically a C-zone area), and then connecting a hose from the nearest HPFP hose station to the fitting.

STEP/STANDARD	SAT/UNSAT

NOTE: TO EVALUATOR: The following step requires the applicant to obtain the adapter. There is also a pipe wrench and hose wrench tools that will be needed later in this task. The applicant may obtain these additional tools at this time.

Also note that these materials are stored in a gangbox labeled for "Radioactive Material Storage Area."

STEP/STANDARD	SAT/UNSAT
STEP 2: **[1] OBTAIN** adapter labeled "AOI-13 Appendix E" from gangbox [at east end of 0-L-2 near the Radwaste Operator's desk on Elevation 692 of the Auxiliary Bldg.] STANDARD: Applicant obtains the adapter labeled "AOI-13 Appendix E". **This step is critical to provide adapter for HPFP fire hose.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 3: **[2] ENSURE** 1-ISV-67-1016B, CCP OIL CLR ERCW SUP XTIE ISOL, CLOSED. [NE corner on pump ~6' off floor]. STANDARD: Applicant locates 1-ISV-67-1016B and ensures valve is closed by trying to turn valve hand wheel clockwise. **CUE: After the applicant has demonstrated the method of ensuring the valve is closed, state that when valve hand wheel rotation was attempted in the clockwise direction, the hand wheel did _not_ move.** COMMENTS:	___SAT ___UNSAT

STEP/STANDARD	SAT/UNSAT

NOTE: TO EVALUATOR: The following two steps require the applicant to obtain a ladder. After one is located, simulate its use (do not allow the EOP ladder seal to be broken.)

There are <u>contaminated areas and catch basins in the pump room</u> and appropriate radiological precautions taken for these areas as directed by RWP should be utilized.

<u>There is an EOP ladder just outside the pump room door.</u>

STEP 4: [3] **CLOSE** 1-THV-70-554A, CCP 1A-A OIL COOLERS OUTLET THROTTLE. [NE corner on pump ~6' off floor]. STANDARD: Applicant locates and closes 1-THV-70-554A by turning valve hand wheel clockwise. **Step is critical to ensure proper flow path to the drain which will be established later in the procedure.** **CUE:** After the applicant has demonstrated the method of closing , state that valve hand wheel travels several turns in the clock wise direction and stops. COMMENTS:	**CRITICAL STEP** _____SAT _____UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 5:   [4]   **CLOSE** 1-THV-70-553A, CCP 1A-A OIL COOLERS INLET ISOLATION. [North of pump ~8' off floor].

CRITICAL STEP

STANDARD:

___ SAT

Applicant locates and closes 1-THV-70-553A by turning valve hand wheel clockwise.

___ UNSAT

Step is critical to ensure proper flow path to the oil cooler after HPFP is aligned later in the procedure.

CUE: **After the applicant has demonstrated the method of closing, state that valve hand wheel travels several turns in the clock wise direction and stops.**

COMMENTS:

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: The hose station is located just outside the pump room door (south of door).

The hose retainer must be released and the entire hose played out. It must be routed so that there are no kinks and when charged will not impact instrument lines, gages, etc.

The pump room door will also need to be propped open.

STEP/STANDARD	SAT/UNSAT
STEP 6: [5] **ROUTE** hose from the nearest HPFP hose station to CCP 1A-A: • 1-ISV-26-668 [near Waste Gas Decay Tank Gallery] A3T, 692'] (Preferred) • 0-ISV-26-662 [near east side of Building Elevator, A8T, 692'] (Optional—Extra Hose Required) STANDARD: The applicant locates suitable HPFP hose station (1-ISV-62-668 (preferred) (Next to Column A3T) and demonstrates how the hose will be routed from the hose station to CCP-1A-A pump room. **Step is critical to align a source of water from the HPFP header to the CCP 1A-A oil cooler.** CUE: **When applicant locates a suitable fire hose station and demonstrates how the fire hose will be routed, state the fire hose had been routed as you have stated.** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP/STANDARD	SAT/UNSAT

<u>STEP 7:</u> **[6]** **ENSURE** 1-ISV-70-800 CCP GEAR OIL CLR CCS INLET ISOLATION [SW corner of pump base] and -ISV-70-801, CCP 1A-A LUBE OIL CLR CCS INLET ISOLATION Valves [NW corner of pump base], CLOSED. <u>STANDARD:</u> Applicant locates and closes 1-ISV-70-800 and 1-ISV-70-801 by rotating respective hand wheels clockwise until valves are closed. **Step is critical to isolate cooler before removing pipe plug in the next step.** **CUE:** **After the applicant has demonstrated the method of closing each valve , state that respective valve hand wheel travels several turns in the clock wise direction and stops.** <u>COMMENTS:</u>	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: The following step requires use of a pipe wrench or suitable substitute. If applicant has not stated how he/she would obtain tool, the stated actions provided by the cues cannot occur.

STEP 8:   [7]   **REMOVE** pipe plug from the threaded inlet on the 1" tee labeled "AOI-13 Appendix E" using pipe wrench [between 1-ISV-70-800 and 1-ISV-70-801], AND CONNECT adapter to the threaded inlet. | **CRITICAL STEP**

STANDARD:

Applicant removes pipe plug from threaded inlet on the 1" tee labeled "AOI-13 Appendix E" using pipe wrench in the counter clockwise direction. The applicant threads the adapter to the threaded inlet and tightens with pipe wrench turning in the clockwise direction until snug. | ___ SAT

___ UNSAT

Step is critical to enable aligning HPFP to oil cooler.

  CUE: **After the applicant locates the 1" tee, and demonstrates how to remove the pipe plug with appropriate tools turning counter clockwise, then state that the stated action has occurred.**

  CUE: **After the applicant demonstrates how the adapter will be installed on the 1" tee with clockwise rotation using proper tools, then state that the action has occurred.**

COMMENTS:

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: The following step may require use of a hose wrench or suitable substitute.

The applicant may be able to tighten the fire hose to adapter sufficiently by hand.

Note: The hose nozzle must be removed before connecting to the adapter.

STEP 9: **[8]** **CONNECT** fire hose to the adapter threaded to the inlet on the 1" tee between 1-ISV-70-800 and 1-ISV-70-801. STANDARD: Applicant connects fire hose to the adapter between 1-ISV-70-800 and 1-ISV-70-801 by twisting the adapter female collar onto the fire hose male connection. **Step is critical to enable aligning HPFP to oil cooler.** **CUE:** **After the applicant demonstrates how fire hose is installed on the adapter, then state that the action has occurred.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 10: **[9]** **CHECK** all hose connections are complete and hose not kinked. STANDARD: Applicant walks down and checks all hose connections complete and hose is not kinked. **CUE:** **When checked indicate that all connections are tight, and hose is laid out as stated.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

NOTE TO EVALUATOR: The following step requires that a Chicago drain plug be unlocked and removed and may require use of suitable hose to route drain water to floor drain.	
STEP 11: [10] **ENSURE** cap removed, **THEN OPEN** 1-DRV-70-782A, CCP 1A-A OIL COOLER OUTLET DRAIN [NE corner of pump].	**CRITICAL STEP**
STANDARD:	___ SAT
Applicant locates and opens 1-DRV-70-782A by rotating valve hand wheel counter clock wise.	___ UNSAT
Step is critical to provide drain path of HPFP from oil cooler.	
CUE: After the applicant has demonstrated the method of opening the valve, state that the valve hand wheel travels several turns in the counter-clockwise direction and then stops.	
CUE: If asked, state that a little water drained and then stopped.	
COMMENTS:	

STEP/STANDARD	SAT/UNSAT
STEP 12: [11] **ENSURE** 1-ISV-70-800 and 1-ISV-70-801, CCP GEAR OIL CLR CCS INLET ISOLATION and CCP 1A-A LUBE OIL CLR CCS INLET ISOLATION Valves, **OPEN**. STANDARD: Applicant locates and opens 1-ISV-70-800 and 1-ISV-70-801 by rotating respective hand wheels counter-clockwise until valves are open. **Step is critical to align cooling water flow from HPFP to oil cooler.** **CUE: After the applicant has demonstrated the method of opening each valve , state that respective valve hand wheel travels several turns in the counter-clock wise direction and stops.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 13: **[12]** **OPEN** Hose Station Valve to provide HPFP to CCP 1A-A Oil Coolers. STANDARD: Applicant slowly opens 1-ISV-26-668 to pressurize line and supply cooling water to oil cooler by operating the respective hose station hand wheel counter-clockwise until valve is fully open. **Step is critical to supply HPFP to oil cooler.** **CUE:** **After the applicant demonstrates how to open the fire hose station valve, state that hand wheel rotates counter-clockwise several turns. If asked, state that the hose has become rigid, and if checked, state that flow was observed from drain (only if drain plug and drain valve in JPM Step 11 was performed satisfactorily).** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT
STEP 14: **[13]** **NOTIFY** UO that temporary cooling water connection to CCP 1A-A is complete. STANDARD: Applicant notifies the Unit Operator that temporary cooling water connection is complete. **CUE:** **When notified, role play as the Unit Operator and acknowledge report using repeat back.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 15: **[14] NOTIFY** Fire Ops of the breach of CCP 1A-A pump room door AND **ADDRESS** OR-14.8.1.b (Hourly Roving Fire Watch) and OR-14.6.1. STANDARD: Applicant notifies fire OPS of the breach of the door, and the Unit Operator to address OR-14.8.1.b and OR-14.6.1. **CUE:** **When notified, role play as the Fire OPS and Unit Operator acknowledge request using repeat back.** COMMENTS:	___ SAT ___ UNSAT
STEP 16: **[15] COORDINATE** with Maintenance or Fire Ops to install smoke removal fan to circulate air through CCP 1A-A room. STANDARD: Applicant notifies Fire OPS or Maintenance to install smoke removal fan to circulate air in CCP 1A-A pump room. **CUE:** **When notified, role play as the Fire OPS or Maintenance acknowledge request using repeat back.** COMMENTS: **END OF TASK**	___ SAT ___ UNSAT

TIME STOP: _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO TRAINEE:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating/operating cues.

NO MANIPULATION OF PLANT EQUIPMENT SHALL OCCUR DURING THIS JPM. SIMULATE ALL MANIPULATIONS.

When you complete the task successfully, the objective for this job performance measure will be satisfied.

Ensure that you indicate to me when you fully understand your task.

INITIAL CONDITIONS:

1. **Unit 1 has been manually tripped due loss of Intake Pumping Station.**

2. **The RCPs have been stopped and Diesel Generator EMERGENCY STOP pushbuttons have been depressed.**

3. **You are an AUO assigned to the shift.**

INITIATING CUES:

1. **The Unit Operator (UO) has dispatched you to perform AOI-13, Appendix E "Installation of Temporary Cooling to CCP 1A-A Oil Coolers."**

2. **You are to notify the UO when you have completed Appendix E for placing temporary cooling on CCP 1A-A.**

Appendix E
Page 1 of 3

Installation of Temporary Cooling (HPFP) to CCP 1A-A Oil Coolers

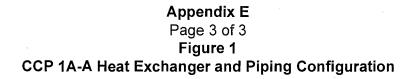**CAUTION** **This appendix should be completed as quickly as possible.**

NOTE 1 If the accountability siren sounds, operator should continue performing this appendix. The SM should be aware of task assignments and personnel locations.

NOTE 2 Temporary cooling to CCP 1A-A oil coolers is accomplished by installing a fitting to a 1" tee in the CCS piping to the oil heat exchangers on the CCP pump skid (typically a C-Zone area), and then connecting a hose from the nearest HPFP hose station to the fitting.

[1] **OBTAIN** adapter labeled "AOI-13 Appendix E" from gang-box [at east end of 0-L-2 near the Radwaste Operator's desk on Elevation 692 of the Auxiliary Bldg.] ☐

[2] **ENSURE** 1-ISV-67-1016B, CCP OIL CLR ERCW SUP XTIE ISOL, CLOSED [NE corner on pump ~6' off floor]. ☐

[3] **CLOSE** 1-THV-70-554A, CCP 1A-A OIL COOLERS CCS OUTLET THROTTLE. [NE corner on pump ~6' off floor]. ☐

[4] **CLOSE** 1-ISV-70-553A, CCP 1A-A OIL COOLERS CCS INLET ISOLATION. [North of pump ~8' off floor]. ☐

[5] **ROUTE** hose from the nearest HPFP hose station to CCP 1A-A.

- 1-ISV-26-668 [near Waste Gas Decay Tank Gallery, A3T, 692'] (Preferred) ☐

- 0-ISV-26-662 [near east side of Building Elevator, A8T, 692'] (Optional-- Extra Hose Required) ☐

[6] **ENSURE** 1-ISV-70-800, CCP 1A-A GEAR OIL CLR CCS INLET ISOLATION [SW corner of pump base] and 1-ISV-70-801, CCP 1A-A LUBE OIL CLR CCS INLET ISOLATION [NW corner of pump base], **CLOSED**. ☐
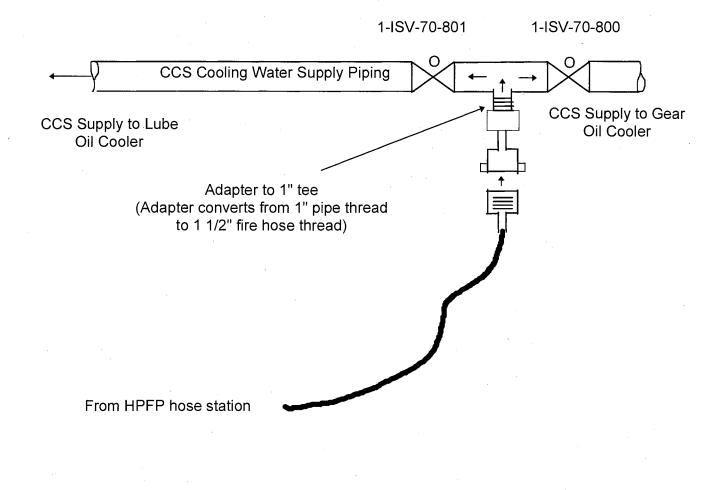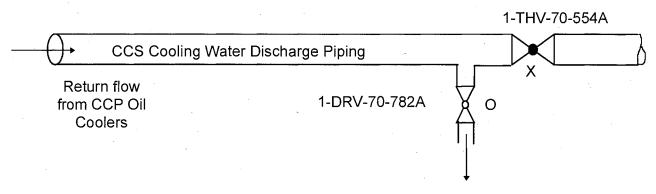
Appendix E
Page 2 of 3

NOTE Performance of the following step may result in water drainage from the 1" tee.

[7] **REMOVE** plug from the threaded inlet on the 1" tee labeled "AOI-13 Appendix E" using pipe wrench [between 1-ISV-70-800 and 1-ISV-70-801], **AND**

CONNECT adapter to the threaded inlet. ☐

[8] **CONNECT** fire hose to the adapter threaded to the inlet on the 1" tee between 1-ISV-70-800 and 1-ISV-70-801. ☐

[9] **CHECK** all hose connections are complete and hose not kinked. ☐

[10] **ENSURE** cap removed, **THEN**

OPEN 1-DRV-70-782A, CCP 1A-A OIL COOLERS CCS OUTLET DRAIN [NE corner of pump]. ☐

[11] **ENSURE** 1-ISV-70-800 and 1-ISV-70-801, CCP 1A-A GEAR OIL CLR CCS INLET ISOLATION and CCP 1A-A LUBE OIL CLR CCS INLET ISOLATION Valves, **OPEN.** ☐

[12] **OPEN** Hose Station Valve to provide HPFP to CCP 1A-A Oil Coolers. ☐

[13] **NOTIFY** UO that temporary cooling water connection to CCP 1A-A is complete. ☐

[14] **NOTIFY** Fire Ops of the breach of CCP 1A-A pump room door ☐

AND
ADDRESS OR-14.8.1.b (Hourly Roving Fire Watch) and OR-14.6.1. ☐

[15] **COORDINATE** with Maintenance or Fire Ops to install smoke removal fan to circulate air through CCP 1A-A room. ☐

Appendix E
Page 3 of 3
Figure 1
CCP 1A-A Heat Exchanger and Piping Configuration

1-ISV-70-801   1-ISV-70-800

CCS Cooling Water Supply Piping

CCS Supply to Lube
Oil Cooler

CCS Supply to Gear
Oil Cooler

Adapter to 1" tee
(Adapter converts from 1" pipe thread
to 1 1/2" fire hose thread)

From HPFP hose station

1-THV-70-554A

CCS Cooling Water Discharge Piping

Return flow
from CCP Oil
Coolers

1-DRV-70-782A

✓

B.1.k
Alignment Upper Containment Monitor To The Lower Containment Locally

WATTS BAR NUCLEAR PLANT
B.1.k
Nov. 2009 NRC Exam

EVALUATION SHEET

Task: Alignment Upper Containment Monitor To The Lower Containment Locally

Alternate Path: N/A

Facility JPM #: 3-OT-JPMA044

Safety Function: 7 **Title:** Instrumentation

K/A 073 K1.01 Knowledge of the physical connections and/or cause-effect relationships between the PRM system and the following systems: Those systems served by PRMs.

Rating(s): 3.6 / 3.9 **CFR:** 41.2 to 41.9 / 45.7 to 45.8

Preferred Evaluation Location: **Preferred Evaluation Method:**

Simulator _____ In-Plant **X**   Perform **X**   Simulate _____

References: SOI-90.02 "Gaseous Process Radiation Monitors," Rev.46.

Task Number: AUO-090-SOI-90.2-005 **Title:**

Task Standard: 1-RM-90-112 is located, and valves are aligned and 1-RM-90-112 is sampling the lower containment per SOI-90.02 Section 8.1.

Validation Time: minutes   **Time Critical:** Yes _____ No **X**
===
Applicant: _____   _____ Time Start: _____
                NAME   SSN   Time Finish: _____

Performance Rating: SAT _____ UNSAT _____   Performance Time ___

Examiner: _____   _____/_____
                NAME   SIGNATURE   DATE
===

COMMENTS

_____

_____

_____

_____

_____

_____

_____

Tools/Equipment/Procedures Needed:

Hard Hat, Safety Glasses, Flashlight, Hearing Protection, Gloves and Plant Approved Shoes.

A copy of the latest revision of SOI-90.02.

ALARA considerations apply.

WATTS BAR NUCLEAR PLANT
B.1.k
Nov. 2009 NRC Exam

DIRECTIONS TO APPLICANT

DIRECTION TO APPLICANT:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating/operating cues.

NO MANIPULATION OF PLANT EQUIPMENT SHALL OCCUR DURING THIS JPM. SIMULATE ALL MANIPULATIONS.

When you complete the task successfully, the objective for this job performance measure will be satisfied.

Ensure that you indicate to me when you fully understand your task.

INITIAL CONDITIONS:

1. **Unit 1 is at 10 % power following a startup.**

2. **1-RM-90-106 "Lower Containment Air Monitor" and 1-RM-90-112 "Upper Containment Air Monitor" were aligned and were sampling their respective containments (normal alignment).**

3. **1-RM-90-106 has tripped, neither sample pump could be restarted, and the monitor was shutdown per the appropriate procedure.**

4. **You are the Auxiliary Bldg AUO.**

INITIATING CUES:

1. **You have been directed by the OAC to align 1-RM-90-112 to sample lower containment using SOI-90.02, "Gaseous Process Radiation Monitors," Section 8.1, "Align Upper Containment Monitor to Lower Containment."**

2. **You are to notify the MCR operator when you have completed this alignment.**

STEP/STANDARD	SAT/UNSAT

START TIME: _____

STEP 1: Obtain a copy of the appropriate instruction. STANDARD: A copy of SOI-90.02 Section 8.1 has been obtained. **EXAMINER'S CUE: After the applicant identifies correct instruction, the evaluator can provide a copy of the instruction.** COMMENTS:	___ SAT ___ UNSAT

NOTE: If any Radiation Monitor experiences sufficient elevated reading above normal request MIG to perform purge.

NOTE: Chemistry should be notified to address compensatory measures for any radiation monitor required operable per Tech Specs/ODCM, which is being removed from service.

STEP 2: **[Step 1] ENSURE** Upper Containment Air Monitor Aligned per Section 5.2. STANDARD: The applicant determines that Upper Containment Air Monitor is aligned normal per task assignment sheet. CUE: **IF asked, state that Section SOI-90.02 Section 5.2 has been completed and the Upper Containment Monitor is sampling Upper Containment.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 3: **[Step 2]** **NOTIFY** Chem lab of intent to realign monitors so that proper sampling of Cntmt. and release permits are addressed. STANDARD: The applicant notifies Chem Lab of the intent to realign upper containment monitor to the lower containment. **CUE:** **Respond as Chem Lab, using repeat back to the notification.** COMMENTS:	___ SAT ___ UNSAT

NOTE:

If 1-RM-90-112 is aligned in place of 1-RM-90-106, it is inoperable until MIG completes PM 639W (1-LPR-090-0112A-B file 2), which recalibrates the monitor alarm setpoints.

STEP 4: **[Step 3] NOTIFY** MIG to perform PM 639W to align 1-RM-90-112 to lower containment. STANDARD: The applicant determines that lower containment air monitor has been shut down based on task assignment sheet. **CUE:** **Respond as the Operator at the Controls if contacted, using repeat back that MIG has performed PM 639W.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 5: **[Step 4] ENSURE** 1-RE-90-106 and 1-RE-90-112 pumps are OFF before aligning monitor. The following handswitches control power to the sample pumps: [A3U/737 on top of monitor enclosure]: • 1-HS-90-106A • 1-HS-90-106B • 1-HS-90-112A • 1-HS-90-112B STANDARD: The applicant locally checks 106 and 112 monitor sample pumps <u>and turns off the running sample pump on the 112 monitor.</u> **Step is critical prevent burn-up of sample pump during valve alignments to follow.** **NOTE TO EVALUATOR:** **Underlined portion above is critical portion of this step.** CUE: **IF asked and when checked, state the following for respective monitor:** • **RM-106 sample pumps "off" green light is LIT and both handswitch stop pushbuttons are IN.** • **RM-112, sample pump 112A in service red "on" light is LIT and sample pump 112B green "off" light is LIT.** • **State sample pump for 112A green light is LIT when running pumps handswitch STOP pushbutton is depressed.** COMMENTS:	**CRITICAL STEP** ___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 6: **[Step 5] INITIAL** the monitor sample pump STOPPED (**N/A** pump **NOT** stopped): [5.1] 1-HS-90-112A [5.2] 1-HS-90-112B STANDARD: The applicant stops the sample pump with 1-HS-90-112A and records the pump that was stopped. COMMENTS:	___ SAT ___ UNSAT

NOTE TO EVALUATOR: JPM steps 7, 8, and 9 are part of the same procedure step, and can be performed in any order.

STEP 7: **[STEP 6]** PERFORM THE FOLLOWING:	**CRITICAL STEP**

NOMENCLATURE	LOCATION	POSITION	UNID
LOWER CONTAINMENT SUP TO 1-RE-90-112 CROSS TIE	A3U/737	OPEN	1-ISIV-90-112A

STANDARD: Applicant locates 1-ISIV-90-112A and rotates hand wheel counter clockwise until valve is fully open. **Step is critical align to upper containment monitor to lower containment.** CUE: **After applicant indicates how to open the valve, state that the valve handle rotated several turns in the counter clockwise direction and stopped.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 8:   [STEP 6] PERFORM THE FOLLOWING: | **CRITICAL STEP**

NOMENCLATURE	LOCATION	POSITION	UNID
CNTMT TO RM-106 CIV-CVI INSIDE CNTMT	0-M-12	CLOSED	1-HS-90-110
CNTMT TO RM-106 CIV-CVI OUTSIDE CNTMT	0-M-12	CLOSED	1-HS-90-111
CNTMT TO RM-112 CIV-CVI OUTSIDE CNTMT	0-M-12	CLOSED	1-HS-90-113
CNTMT TO RM-112 CIV-CVI INSIDE CNTMT	0-M-12	CLOSED	1-HS-90-114
CNTMT TO RM-112 CIV-CVI INSIDE CNTMT	0-M-12	CLOSED	1-HS-90-115

STANDARD: Applicant contacts the control room and has the above valves positioned to the CLOSED position. <u>Valves 90-113, 90-114, 90-115 are closed and verified closed by communication with the control room</u>. Valves 90-110 & 111 are verified closed by communication with the control room.

___ SAT

___ UNSAT

Step is critical to ensure proper flow path from lower containment to the upper containment monitor.

NOTE TO EVALUATOR: Underlined portion above is the only portion that is critical.

CUE: **Respond as the MCR when contacted, and state that 1-HS-90-110 & 111 hand switches were already closed, 1-HS-90-113, 114, &115 hand switches have been placed to the CLOSED position.**

COMMENTS:

STEP/STANDARD	SAT/UNSAT

STEP 9: [STEP 6] PERFORM THE FOLLOWING:	CRITICAL STEP

NOMENCLATURE	LOCATION	POSITION	UNID
CNTMT TO RM-112 CIV-CVI INSIDE CNTMT	0-M-12	OPEN	1-HS-90-116
CNTMT TO RM-112 CIV-CVI OUTSIDE CNTMT	0-M-12	OPEN	1-HS-90-117
CNTMT TO RM-106 CIV-CVI OUTSIDE CNTMT	0-M-12	OPEN	1-HS-90-107
CNTMT TO RM-106 CIV-CVI INSIDE CNTMT	0-M-12	OPEN	1-HS-90-108
CNTMT TO RM-106 CIV-CVI INSIDE CNTMT	0-M-12	OPEN	1-HS-90-109

STANDARD: Applicant contacts the control room and has the above valves positioned to the OPEN position. Valves 90-116, 90-117 are opened and verified open by communication with MCR. Valves 90-107, 90-108, & 90-109 are verified open by communication with control room.

___ SAT

___ UNSAT

Step is critical to ensure proper flow path from lower containment to the upper containment monitor.

NOTE TO EVALUATOR: Underlined portion above is the only portion that is critical.

   CUE: **Respond as the MCR when contacted, that 1-HS-90-116 & 117 hand switches have been placed to the OPEN position.**

   CUE: **Respond as the MCR when contacted, that 1-HS-90-107, 108, &109 hand switches were already in the OPEN position.**

COMMENTS:

STEP/STANDARD	SAT/UNSAT

STEP 10: **[STEP 7] START** the monitor sample pump STOPPED in Step 8.1[4] (N/A pump NOT started):

    [7.1] 1-HS-90-112A

    [7.2] 1-HS-90-112B

STANDARD: The applicant starts monitor sample pump using 1-HS-90-112A.

Step is critical to establish flow from lower containment to the upper containment monitor.

    CUE: **When applicant indicates how pump is started and if asked, state sample pump for 112 red "on" light is LIT and green "off" light is OFF. Supply the following if/when asked:**
1-FI-90-112A indicates ≈ 12 SCFM.
1-FI-90-112C indicates ≈ 2.1 SCFM.
1-PI-90-112B indicates 2" vacuum.
1-PI-90-112A indicates 4" vacuum.
Iodine Low Flow red alarm light is LIT.

COMMENTS:

CRITICAL STEP

___ SAT

___ UNSAT

STEP/STANDARD	SAT/UNSAT

STEP 11:   **[STEP 8] IF** IODINE LOW FLOW ALARM on skid comes in, **THEN RESET** with 1-HS-90-112JB.
 	
STANDARD: The applicant resets the iodine low flow alarm with 1-HS-90-112JB.
 	
     CUE: **If asked and when checked, state that Iodine Low Flow red light is LIT.**
 	
     CUE: **If asked, state that light turns off when applicant operates 1-HS-90-112JB to reset.**
 	
COMMENTS:
	___ SAT
	
	___ UNSAT

STEP 12: **[STEP 9] PERFORM** MONITOR SOURCE CHECK [0-M-12], and **ENSURE** 1-RM-90-112 (A, B & C) green OPERATE Lights LIT and red HIGH & yellow ALERT Lights NOT LIT., **ENSURE** ANN 173-A UPR CNTMT AIR 1-RM-112 RAD HI, NOT LIT. **ENSURE** ANN 173-D UPR CNTMT AIR 1-RM-112 INSTR MALF, NOT LIT. STANDARD: Applicant contacts the control room to have the 112 monitor source checked and verifies that green operate lights are LIT and High & Alert lights are NOT LIT and ANNs windows 173-A and 173-D are NOT LIT. **CUE:** **When contacted as the MCR, state that the monitor source check was successful and that green OPERATE light is LIT, that High & Alert lights for monitor are NOT LIT and ANN windows 173-A & 173-D are NOT LIT.** COMMENTS:	___ SAT ___ UNSAT

STEP/STANDARD	SAT/UNSAT
STEP 13: [STEP 10] ENSURE Local Panel Lights RESET STANDARD: The applicant verifies that Filter Failure light is NOT LIT, verifies that the Particulate LOW Flow Light is NOT LIT, and verifies that the Iodine LOW flow Light is NOT LIT. CUE: If asked and when checked, state that Iodine Low Flow light is NOT LIT, that the Particulate Low flow light is NOT LIT, and that the Filter Fail light is NOT LIT. COMMENTS:	___ SAT ___ UNSAT
STEP 14: Notify Operator At Controls that Upper Containment Monitor has been aligned to Lower Containment. STANDARD: The applicant contacts the control room and reports that the Upper Containment Monitor is aligned to Lower Containment. CUE: When notified, acknowledge the report using "repeat back." COMMENTS:	___ SAT ___ UNSAT
END OF TASK	

STOP TIME _____

APPLICANT CUE SHEET

(RETURN TO EXAMINER UPON COMPLETION OF TASK)

DIRECTION TO APPLICANT:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating/operating cues.

NO MANIPULATION OF PLANT EQUIPMENT SHALL OCCUR DURING THIS JPM. SIMULATE ALL MANIPULATIONS.

When you complete the task successfully, the objective for this job performance measure will be satisfied.

Ensure that you indicate to me when you fully understand your task.

INITIAL CONDITIONS:

1. **Unit 1 is at 10 % power following a startup.**

2. **1-RM-90-106 "Lower Containment Air Monitor" and 1-RM-90-112 "Upper Containment Air Monitor" were aligned and were sampling their respective containments (normal alignment).**

3. **1-RM-90-106 has tripped, neither sample pump could be restarted, and monitor was shutdown per the appropriate procedure.**

4. **You are the Auxiliary Bldg AUO.**

INITIATING CUES:

1. **You have been directed by the OAC to align 1-RM-90-112 to sample lower containment using SOI-90.02, "Gaseous Process Radiation Monitors," Section 8.1, "Align Upper Containment Monitor to Lower Containment."**

2. **You are to notify the MCR operator when you have completed this alignment.**

B.1.k

Date_____   INITIALS

8.0   INFREQUENT OPERATIONS

NOTE

If any Radiation Monitor experiences sufficient elevated reading above normal request MIG to perform purge.

8.1   Align Upper Containment Monitor to Lower Containment

NOTE

Chemistry should be notified to address compensatory measures for any radiation monitor required operable per Tech Specs/ODCM, which is being removed from service.

---

[1]   **ENSURE** Upper Containment Air Monitor Aligned per Section 5.2.   _____

[2]   **NOTIFY** Chem lab of intent to realign monitors so that proper sampling of Cntmt. and release permits are addressed.   _____

NOTE

If 1-RM-90-112 is aligned in place of 1-RM-90-106, it is inoperable until MIG completes PM 639W (1-LPR-090-0112A-B file 2), which recalibrates the monitor alarm setpoints.

---

[3]   **NOTIFY** MIG to perform PM 639W to align 1-RM-90-112 to lower containment.   _____

Date_____   **INITIALS**

8.1   Align Upper Containment Monitor to Lower Containment (continued)

[4]   **ENSURE** 1-RE-90-106 and 1-RE-90-112 pumps are OFF before aligning monitor. The following handswitches control power to the sample pumps:
[A3U/737 on top of monitor enclosure]:

- 1-HS-90-106A

_____
_____
CV

- 1-HS-90-106B

_____
_____
CV

- 1-HS-90-112A

_____
_____
CV

- 1-HS-90-112B

_____
_____
CV

[5]   **INITIAL** the monitor sample pump STOPPED (**N/A** pump **NOT** stopped):

[5.1]   1-HS-90-112A   _____

[5.2]   1-HS-90-112B   _____

Date_____   INITIALS

8.1   Align Upper Containment Monitor to Lower Containment (continued)

[6]   **PERFORM** the following:

NOMENCLATURE	LOCATION	POSITION	UNID	PERF INITIAL	VERIF INITIAL
LOWER CONTAINMENT SUP TO 1-RE-90-112 CROSS TIE	A3U/737	OPEN	1-ISIV-90-112A		CV
CNTMT TO RM-106 CIV-CVI INSIDE CNTMT	0-M-12	CLOSED	1-HS-90-110		CV
CNTMT TO RM-106 CIV-CVI OUTSIDE CNTMT	0-M-12	CLOSED	1-HS-90-111		CV
CNTMT TO RM-112 CIV-CVI OUTSIDE CNTMT	0-M-12	CLOSED	1-HS-90-113		CV
CNTMT TO RM-112 CIV-CVI INSIDE CNTMT	0-M-12	CLOSED	1-HS-90-114		CV
CNTMT TO RM-112 CIV-CVI INSIDE CNTMT	0-M-12	CLOSED	1-HS-90-115		CV
CNTMT TO RM-112 CIV-CVI INSIDE CNTMT	0-M-12	OPEN	1-HS-90-116		CV
CNTMT TO RM-112 CIV-CVI OUTSIDE CNTMT	O-M-12	OPEN	1-HS-90-117		CV
CNTMT TO RM-106 CIV-CVI OUTSIDE CNTMT	0-M-12	OPEN	1-HS-90-107		CV
CNTMT TO RM-106 CIV-CVI INSIDE CNTMT	0-M-12	OPEN	1-HS-90-108		CV
CNTMT TO RM-106 CIV-CVI INSIDE CNTMT	0-M-12	OPEN	1-HS-90-109		CV

[7]   **START** the monitor sample pump STOPPED in Step 8.1[4] **(N/A pump NOT started):**

[7.1]   1-HS-90-112A   _____

[7.2]   1-HS-90-112B   _____

[8]   **IF** IODINE LOW FLOW ALARM on skid comes in, **THEN**

RESET with 1-HS-90-112JB.   _____

Date_____   INITIALS

8.1   **Align Upper Containment Monitor to Lower Containment (continued)**

[9]   **PERFORM** Monitor Source Check [0-M-12], **AND**

ENSURE 1-RM-90-112 (A,B&C) green OPERATE Lights LIT and red HIGH & yellow ALERT Lights NOT LIT.

_____
CV

ENSURE ANN 173-A UPR CNTMT AIR 1-RM-112 RAD HI, NOT LIT

_____
CV

ENSURE ANN 173-D UPR CNTMT AIR 1-RM-112 INSTR MALF, NOT LIT.

_____
CV

[10]   **ENSURE** Local Panel Lights RESET.

_____
CV