

Facility:	Shearon Harris	Task No.:	001001H201
Task Title:	<u>Perform Control Rod and Rod Position Indicator Exercise</u>	JPM No.:	2014 NRC Exam Simulator JPM CR a

K/A Reference: 001 A2.11 RO 3.7 SRO 4.0 **ALTERNATE PATH - YES**

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X    
Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

<b>Initial Conditions:</b>	<ul style="list-style-type: none"> <li>The plant is operating at 100% power.</li> <li>OST-1005, "Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3", is in progress. All prerequisites to perform the test have been met and a briefing has been conducted. The CRS has given permission to continue with this OST.</li> <li>'A' PRZ backup heaters have been energized to support OST-1005.</li> </ul>
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<b>Initiating Cue:</b>	<p>The CRS is directing you to continue OST-1005, Section 7.2.4, commencing with Control Bank D.</p> <p>The briefing has determined the following control rod test order shall be used:  CB-D, CB-A, CB-B, CB-C then SDB-A, SDB-B and SDB-C.</p> <p>NOTE: During the performance of this OST you will be required to obtain DRPI position when appropriate. Another operator will stay at the Reactor console while you are obtaining these values.</p>
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<b>Examiners Note:</b>	<p><b><i>To expedite the examination schedule, the candidate should review the INITIAL CONDITIONS, INITIATING CUE, and the marked up copy of OST-1005 prior to entering the simulator to perform the JPM.</i></b></p>
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Appendix C	Job Performance Measure Worksheet	Form ES-C-1
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Task Standard: The Reactor has been manually Tripped in response to continuous inward rod motion with rod control in manual.

Required Materials: None

General References: OST-1005, Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3, Rev. 21  
AOP-001, Malfunction of Rod Control and Indication System, Rev. 43  
EOP-E-0, Reactor Trip or Safety Injection, Rev. 3

Handouts: OST-1005 marked up with prerequisites and step 7.1 completed.

***To expedite the examination schedule, the candidate should review the INITIAL CONDITIONS, INITIATING CUE, and the marked up copy of OST-1005 prior to entering the simulator to perform the JPM.***

Time Critical Task: N/A

Validation Time: 15 minutes

CRITICAL STEP JUSTIFICATION	
<b>Step 4</b>	Must be performed to operate the correct bank of control rods.
<b>Step 5</b>	Must be performed to test control rod ability to freely move in the inward direction.
<b>Step 7</b>	Must be performed to test control rod ability to freely move in the outward direction.
<b>Step 11</b>	Must be performed to operate the correct bank of control rods.
<b>Step 12</b>	Must be performed to test control rod ability to freely move in the inward direction.
<b>Step 14</b>	Must be performed to be in compliance with an Abnormal Operating Procedure immediate action step and avoid placing the Reactor in a unanalyzed condition.

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-165
- Password “spurs”
- Place reactivity data sheet for IC-19 on plant status board (this will be used for obtaining boron concentrations for the RCS and BAT)
- May have to update rods
- Place Restricted Access signs on swing gates
- CRT displays – CRT 3: QP Startup and display QP POAH on CRT 4
- Go to RUN and wait ~ 10 seconds then silence and acknowledge alarms.

**GO TO FREEZE** and inform the lead examiner the Simulator is ready. **DO NOT GO TO RUN** until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Reset to IC-19, 100% power MOL
- Place Rod Control Selector Switch to AUTO
- Rod height CBD 218 steps
- Create malfunction to fail the rod selector switch to the selected bank and continuously demand rod motion on Trigger 1
  - imf crf15a (1 00:00:00 00:00:00) TRUE
  - ior xc1i110 (1 00:00:00 00:00:00) ASIS
- Slightly Open PZR Spray valves manually the place the ‘A’ PZR heater to on
  - Allow the plant to stabilize then place the PZR Spray valves back to AUTO
- FREEZE and SNAP.
- After the candidate is ready, place simulator in RUN.
- While Control Bank A is being inserted to 10 steps from the original position, activate Trigger 1

<b>Simulator Operator:</b>	<b><i>When directed by the Lead Examiner go to Run.</i></b>
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**Performance Step: 1** Obtain procedure.

**Standard:** Reviews procedure.

**Comment:**

**START TIME:** \_\_\_\_\_

**OST-1005, 7.2.4**

**Procedure Note:** **NOTE: IF** in Mode 1, **THEN** testing of Control Bank D can be conducted during lowering of plant power per Section 7.4. and the next section may be marked N/A.

**NOTE: IF** Control Bank D is less than 10 steps, **THEN** testing of Control Bank D rods can be conducted per Section 7.3. and the next section may be marked N/A.

**NOTE:** When inserting rods, the Bank Low Insertion and Bank Low-Low Insertion Limit Alarm may be actuated.

**Performance Step: 2** Control Bank D Testing  
For CONTROL BANK D, REFER to Attachment 1 and test the rod bank per the following instructions:

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

## PERFORMANCE INFORMATION

**OST-1005, Step 7.2.4.1.a**

**Performance Step: 3** For Control Bank D, record on Attachment 1 the initial rod heights as indicated by Group Step Counters and DRPI.

**Standard:** On Attachment 1, for Control Bank "D":

- Records both Group Position indications as "218".
- Records all DRPI position indications as "216".

**Comment:**

**OST-1005, Step 7.2.4.1.b**

√ **Performance Step: 4** Rotate the Rod Bank Selector to CBD.

<b>Evaluator Note:</b>	OMM-001 Att 13 provides Stable Plant TAVG Control Band of +/- 2° F and Trip Limit of +/- 10° F from TREF with Rod Control in manual.
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**Standard:** Locates the ROD BANK SELECTOR switch and rotates position to the "CB D" position.

Verifies 48 steps per minute on rod speed indicator, SI-408.

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b><i>During the performance of the OST-1005 procedure guidance allows the operator to step the control rods IN further than 10 total without any consequence. This can be an evaluator comment but it is OK.</i></b>
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**OST-1005, Step 7.2.4.1.c**

- √ **Performance Step: 5** With the Rod Motion lever, insert Control Bank D IN 10 steps as indicated by Group Step Counters.

**Standard:** Places the ROD MOTION lever to the "IN" position and inserts Control Bank "D" rods 10 steps by observing Group Step Counters.

**Comment:**

**OST-1005, Step 7.2.4.1.d**

- Performance Step: 6** Record on Attachment 1, the rod heights for Control Bank D, as indicated by Group Step Counters and DRPI.

**Standard:** On Attachment 1, for control Bank "D":

- Records both Group Position indications as "208".
- Records all DRPI position indications as "204".

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<p><b><i>During the performance of the OST-1005 procedure guidance allows the operator to step the control rods OUT further than 10 total without any consequence.</i></b></p> <p><b><i>This can be an evaluator comment but it is OK.</i></b></p> <p><b><i>IF a student does step Control Bank 'D' out past 218 steps (for example 219 / 218 steps)</i></b></p> <p><b><i>CUE: Return Control Bank 'D' to 218 steps and continue with OST-1005</i></b></p>
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**OST-1005, Step 7.2.4.1.e**

- √ **Performance Step: 7** With the Rod Motion lever, WITHDRAW Control Bank D OUT 10 steps as indicated by Group Step Counters.

**Standard:** Places the ROD MOTION lever in the "OUT" position and withdraws Control Bank "D" rods 10 steps by observing Group Step Counters.

- When completed both Control Bank "D" Group Step Counters should read 218 steps.

**Comment:**

**OST-1005, Step 7.2.4.1.f**

- Performance Step: 8** Record on Attachment 1, the final rod heights for Control Bank D, as indicated by Group Step Counters and DRPI.

**Standard:** On Attachment 1, for control Bank "D":

- Records both Group Position indications as "218".
- Records all DRPI position indications as "216".

**Comment:**



## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b><i>Based on the instructions provided on the initial cues the student should be testing Control Bank 'A' next.</i></b>
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**OST-1005, 7.2.1**

**NOTE:** When inserting rods, ALB 13/8-2, BANK LOW INSERTION and ALB 13/8-3, BANK LOW-LOW INSERTION LIMIT Alarms may be actuated.

**Procedure Note:**

**NOTE:** ALB 13/8-5, COMP ALARM ROD DEVIATION/SEQUENCE will annunciate during this procedure due to bank out of sequence, and should be considered an expected alarm.

**Performance Step: 9**

Control Bank A Testing

For CONTROL BANK A, REFER to Attachment 1 and test the rod bank per the following instructions:

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****OST-1005, Step 7.2.1.1.a****Performance Step: 10**

For Control Bank A, record on Attachment 1 the rod heights as indicated by Group Step Counters and DRPI.

**Standard:**

On Attachment 1, for Control Bank "A":

- Records both Group Position indications as "231".
- Records all DRPI position indications as "228".

**Comment:**

**OST-1005, Step 7.2.1.1.b**

√ **Performance Step: 11** Rotate the Rod Bank Selector to CB A.

**Standard:** Rotates the ROD BANK SELECTOR switch to the “CB A” position.

**Comment:**

<b>Simulator Operator:</b>	<b>When the rod bank selector switch is taken to “CBA” position AND rods have been inserted 2-3 steps actuate Trigger 1 (continuous demand for rod motion)</b>
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**OST-1005, Step 7.2.1.1.c – ALTERNATE PATH**

√ **Performance Step: 12** With the Rod Motion lever, insert Control Bank A IN 10 steps as indicated by Group Step Counters.

**Standard:** Places the ROD MOTION lever in the “IN” position and inserts Control Bank “A” rods 10 steps by observing Group Step Counters.

**Comment:**

**Alternate Path**

**Performance Step: 13** Monitors Rod Motion. When Rod Motion level is released CB A rods continue to step IN.

**Standard:** Determines rod motion continues without a demand observing:

- Group Step Counter continues to count in
- DRPI continues to lower
- Lowering Rx power
- Lowering Tavg

**Comment:**

## PERFORMANCE INFORMATION

**Evaluator Note:**

Placing rods in **MANUAL** is considered to be any position of the Rod Bank Selector switch other than **AUTO**. This meets the intent of the immediate actions for AOP-001.

**AOP-001 Immediate Actions**

- √ **Performance Step: 14** Informs the CRS of the continued rod motion with rods in manual and states entry conditions for AOP-001, (Malfunction of Rod Control and Indication System)

**Standard:**

- Informs the CRS.
- Initiates immediate actions of AOP-001
  - Check that < 2 control rods are dropped (YES)
  - Position Rod Bank Selector Switch to MAN (YES)
  - Check Control Bank motion STOPPED (NO)
- Trip the Reactor AND GO TO E-0
  - Locates MCB Reactor trip switch and turns switch to TRIP. (√)
- **EOP-E-0**
  - **Verify Reactor Trip**
    - Rx Trip and Bypass Bkrs – OPEN (YES)
    - Rod Bottom Lights – LIT (YES)
    - Neutron Flux – DROPPING (YES)
  - **Check Turbine Trip – All Throttle Valves Shut (YES)**

TURB STOP VLV 1	TSLB-2-11-1
TURB STOP VLV 2	TSLB-2-11-2
TURB STOP VLV 3	TSLB-2-11-3
TURB STOP VLV 4	TSLB-2-11-4

**Evaluator's Cue:**

Another Operator will complete the remaining actions of EOP-E-0.

**Comment:**

<b>Evaluator Cue:</b>	When the first immediate action of E-0 is implemented: Evaluation on this JPM is complete. Direct Simulator Operator to place the Simulator in Freeze.
<b>Simulator Operator:</b>	When directed by the Lead Examiner then go to Freeze.

**STOP TIME:** \_\_\_\_\_

√ - Denotes Critical Steps

Job Performance Measure No.: 2014 HNP NRC Exam Simulator JPM CR a  
Perform Control Rod and Rod Position Indicator Exercise per  
OST-1005

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The plant is operating at 100% power.</li><li>• OST-1005, "Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 – 3", is in progress. All prerequisites to perform the test have been met and a briefing has been conducted.</li><li>• The CRS has given permission to continue with this OST.</li><li>• 'A' PRZ backup heaters have been energized to support OST-1005.</li></ul>
<b>Initiating Cue:</b>	<p>The CRS is directing you to continue OST-1005, Section 7.2.4, commencing with Control Bank D.</p> <p>The briefing has determined the following control rod test order shall be used:</p> <p><b>CB-D, CB-A, CB-B, CB-C then SDB-A, SDB-B and SDB-C</b></p> <p>NOTE: During the performance of this OST you will be required to obtain DRPI position when appropriate. Another operator will stay at the Reactor console while you are obtaining these values.</p>

Facility: Shearon Harris Task No.: 301136H601

Task Title: Vent An Unisolable SI Accumulator during a Steam Generator Tube Rupture Event JPM No.: 2014 NRC Exam Simulator JPM CR b

K/A Reference: 006 A4.02 RO 4.0 SRO 3.8 **ALTERNATE PATH - YES**

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X    
 Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The unit was operating at 100% power when a leak developed in the 'A' Steam Generator.
- The crew entered AOP-016, Excessive Primary Plant Leakage.
- While implementing AOP-016 the leak rate increased and exceeded VCT makeup capability. The Reactor was manually tripped and an Safety Injection was activated.
- The crew has completed EOP E-0 and transitioned to and is implementing EOP-E-3, Steam Generator Tube Rupture.
- The crew has just completed EOP-E-3 step 89.

**Initiating Cue:**

- Your position is BOP and the CRS has directed you to continue implementing EOP-E-3 beginning at step 90.
- Another operator is responsible for the E-3 foldout page

Task Standard: Identify an Accumulator that cannot be isolated as directed by EOP-E-3, Steam Generator Tube Rupture and perform actions of OP-110, Safety Injection to vent the unisolable Accumulator.

Required Materials: Replacement copies of EOP-E-3, SG Tube Rupture, Rev. 1 and OP-110 Section 8.3, pages 17-19, Rev. 45

General References: EOP-E-3, Steam Generator Tube Rupture, Rev. 1 and OP-110 Section 8.3, Rev. 45

Time Critical Task: No

Validation Time: 15 minutes

Critical Step Justification	
<b>Step 3</b>	Must have power turned on to breakers for the valves to operate
<b>Step 4</b>	Must shut the Accumulator discharge valves to isolate the Accumulator or Nitrogen could be injected into the RCS potentially preventing loop flow as RCS pressure is decreased
<b>Step 12</b>	Shutting the Nitrogen supply valve to the Accumulators prevents increasing the Accumulator pressure which would occur if the vent valve was opened
<b>Step 14</b>	Opening the 'A' Accumulator vent valve will line up the 'A' Accumulator vent path to the Containment.
<b>Step 16</b>	Opening the Accumulator Vent Pressure Control Valve will vent the accumulator to the containment.



**2014 HNP NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-166
- Password “spurs”
- Switch check override Gen lockouts to Freeze
- Roll 86 Relays to trip position:
  - Run AMS file – Roll Gen 86 Relays
- Go to run
- Silence and Acknowledge annunciators
- Go to FREEZE
- Place RED off normal STAR placards on the following components:
  - ‘A’ SG PORV controller (it is set to 88%)
  - ‘A’ MSIV (it is closed)
  - 1AF-55 (it is closed)
  - 1AF-137 (it is closed)

Inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19
- Place the Simulator in RUN
- Insert a SG tube rupture on the ‘A’ SG of 420 gpm  
(I made it trigger 1 with a 30 second ramp time)
  - Imf sgn07a (1 0 0) 420 00:00:30 0
- Insert a failure of 1SI-246 to open (‘A’ accumulator discharge valve)
  - ior xaai067 (n 0 0) ASIS
- Activate trigger 1, when RCS leakage exceeds CVS makeup capability manually trip the Reactor and activate an SI
- Secure the RCPs when SI flow is > 200 gpm and RCS pressure is < 1400#
- Implement the other actions of E-0 up to the point to transition to E-3, implement the actions of E-3 up to step 90
  - Other things I did to get to a stable IC
  - Adjusted AFW flows prior to SG depressurization and after stabilization
  - Performed a rapid SG depressurization to cooldown the RCS using Steam Dumps (after securing the ‘A’ MSIV, B and C MSIV remain open)
  - Set ‘A’ SG PORV to 88%, set ‘B’ and ‘C’ SG PORV to maintain RCS temp at ~515°F
  - Depressurized the RCS to = ‘A’ SG pressure
  - Don’t be in a hurry to do this next step or you will cool down the RCS too much...To get the RCS to < 1000 # you will also have to depressurize the ‘A’ SG to ~ 950 psig by opening the ‘A’ SG PORV and correspondingly opening the PZR spray valves again to lower RCS pressure to < 1000 psig (approximately equal to ‘A’ SG pressure)
  - I placed all 3 letdown orifices in service to avoid going solid on the PZR
  - In the final setting prior to freezing the Simulator I had both PZR spray valves open ~10-15% to maintain RCS pressure stable and < 1000#
- Silence Acknowledge and Reset Annunciators
- Freeze and Snap these conditions to your exam IC

<b>Simulator Operator:</b>	<b><i>When directed by the Lead Examiner go to Run.</i></b>
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**START TIME:** \_\_\_\_\_**Performance Step: 1      OBTAINS PROCEDURE****Standard:**                      Obtains a copy of EOP-E-3, Steam Generator Tube Rupture and reviews step 90.

<b>Evaluator Note:</b>	<b>The candidate may take a minute to review EOP-E-3 steps prior to step 90 to understand what the current plant conditions and configuration is at this point in time.</b>
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**Comment:****EOP-E-3, Step 90.a****Performance Step: 2**      Check If SI Accumulators Should Be Isolated:  
RCS pressure - LESS THAN 1000 PSIG**Standard:**                      Reviews ERFIS/Main Control Board RCS pressure instruments to identify current RCS pressure.  
Identifies that RCS pressure is < 1000 psig**Comment:**

**EOP-E-3 Step 90.b**

- ✓ **Performance Step: 3**      Locally unlock **AND** close both breakers for each SI accumulator discharge valve:

1SI-246 (MCC-1A21-SA-5C)  
1SI-247 (MCC-1B21-SB-5C)  
1SI-248 (MCC-1A21-SA-3D)

**Standard:**

Contacts an Auxiliary Operator to locally unlock **AND** close both breakers for each SI accumulator discharge valve:

1SI-246 (MCC-1A21-SA-5C)  
1SI-247 (MCC-1B21-SB-5C)  
1SI-248 (MCC-1A21-SA-3D)

<b>Simulator Operator:</b>	<p><b>When contacted by candidate:</b> Acknowledge request to locally unlock <b>AND</b> close both breakers for each SI accumulator discharge valve:</p> <p>1SI-246 (MCC-1A21-SA-5C) 1SI-247 (MCC-1B21-SB-5C) 1SI-248 (MCC-1A21-SA-3D)</p> <p>NOTE: the following AMS file takes approximately 90 seconds to run so to reduce the time here execute the steps over 15-20 seconds then make a report that... <b>“all breaker for the SI Accumulator Discharge valves have been unlocked and closed.”</b></p> <p>RUN AMS file – sis/SI Accum Power Apply</p>
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**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>1SI-246 is failed as is and will not shut when the candidate attempts to shut the MCB position switch. This will require the candidate to use an Alternate Path to accomplish this task.</b>
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**EOP-E-3 Step 90.c**

✓ **Performance Step: 4** Shut SI accumulator discharge valves:

1SI-246  
1SI-247  
1SI-248

**Standard:**

Locates MCB SI accumulator discharge valve position switches and takes switch to shut for each valve.

- Places control switches for 1SI-246/247/248 to SHUT
- Identifies that **1SI-246** ('A' Accumulator discharge) will not shut (Green Light is off/Red Light On)
- Informs the CRS
- Reads RNO statement and performs RNO actions for 1SI-246 (ONLY)

**Comment:**

<b>Evaluator Cue:</b>	<b>Acknowledge the communication IF the CRS is informed that 1SI-246 will not SHUT.</b>
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**Alternate Path begins here – E-3 Step 90.c RNO**

**Performance Step: 5** Vent any unisolable accumulator using OP-110, "SAFETY INJECTION", Section 8.3.

**Standard:**

Reads step and obtains a copy of OP-110, "SAFETY INJECTION", Section 8.3

**Comment:**

## PERFORMANCE INFORMATION

**OP-110, Section 8.3, Venting the SI Accumulators****Section 8.3.1 - Initial Conditions****Performance Step: 6**

1. Accumulator pressure is approaching Technical Specification or alarm limit.
- OR
2. Accumulator is to be depressurized.
3. If Personnel are in Containment, Health Physics has been notified to monitor Containment O2 while venting SI Accumulators.
4. If the Accumulator is to be depressurized, the area 20 feet on either side of the vent on 236 foot elevation should be taped off with red and black warning tape and posted per SAF-NGGC-2172 to restrict access to this area.

**NOTE:** Accumulators were vented at beginning of R17 with purge secured. This resulted in low oxygen levels which required Containment to be evacuated. Containment Purge, Normal or Pre-entry, should be aligned if possible.

5. If Personnel are in Containment, Containment Purge is in service if available.

**Standard:**

Reviews the initial conditions and determines the following:

Item 1 – N/A

Item 2 – this is the reason for venting the 'A' Accumulator - to depressurize the Accumulator, initials step

Item 3 – N/A - no personnel are in Containment

Items 4 and 5 – N/A without personnel in Containment

Reads NOTE between initial condition steps 4 and 5, circle/slashes note to identify it was read

**Comment:**

<b>Evaluator Cue:</b>	<b>IF asked: There are NO personnel inside Containment.</b> <b>IF requested to tape off area for step 4: The Shift Manager will not approve Containment Entry. At this time taping the area off is not required.</b>
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PERFORMANCE INFORMATION

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**OP-110, Section 8.3.2, Note prior to Step 1****Performance Step: 7**

**NOTE:** To minimize any potential sluicing between Accumulators through leaking valves, Accumulator pressures should normally be left approximately equal (at or below 4 psid between lowest and highest ERFIS indications) at the completion of this Section.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****OP-110, Section 8.3.2, Step 1****Performance Step: 8**

**PERFORM** the following Steps on only **ONE** Accumulator at a time.

**Standard:**

Reads and initials step

**Comment:**

**OP-110, Section 8.3.2, Step 2****Performance Step: 9**

At the MCB, **PERFORM** the following:

**NOTE:** Nitrogen is the primary motive force to LTOPS. The impact on LTOPS operability should be determined prior to shutting 1SI-287 per Precaution and Limitation 4.0.6.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****Evaluator Cue:**

**If asked: LTOPS operability has been reviewed and determined that it is not required at the current RCS Temperature. You may continue with your procedure.**

**OP-110, Section 8.3.2, Step 2.a****Performance Step: 11**

**IF** necessary, **THEN INITIATE** an EIR.

**Standard:**

Candidate may ask for EIR (would be tracking) or may realize that LTOPS is still blocked.

**Comment:**

LTOPS has not been made OPERABLE yet. The RO may ask for a tracking EIR to track the status of N<sub>2</sub> to Containment for PORV Operability restoration in GP-006.

**Evaluator Cue:**

**IF CRS is asked to create EIR for LTOPS state:  
I have initiated an EIR for LTOPS.**

**OP-110, Section 8.3.2, Step 2.b**

- ✓ **Performance Step: 12**    **SHUT** 1SI-287, ACCUMULATORS & PRZ PORV N<sub>2</sub> SUPPLY.

**Standard:**                      Locates 1SI-287, ACCUMULATORS & PRZ PORV N<sub>2</sub> SUPPLY switch and places it to shut

**Comment:**                    **Red Light goes out and Green Light comes On.**

**OP-110, Section 8.3.2, Step 2.c**

- Performance Step: 13**    **DECLARE** the associated Accumulator inoperable per Tech Spec 3.5.1, due to being connected to Non-Safety piping (a one hour action statement in Modes 1 through 3 above 1000 psig).

**Standard:**                    N/A (RCS pressure is < 1000 psig)

**Comment:**

<b>Evaluator Cue:</b>	<b>Acknowledge any communications IF the student declares the Accumulator inoperable.</b>  <b>NOTE: Since the unit is NOT in Modes 1 – 3 with the RCS pressure &gt; 1000 psig the Accumulator is NOT inoperable and the LCO does not apply.</b>
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**OP-110, Section 8.3.2, Step 2.d**

- ✓ **Performance Step: 14**      **OPEN** the ACCUMULATOR N<sub>2</sub> SUPPLY & VENT for the Accumulator to be vented:
- 1SI-295, ACCUMULATOR A N<sub>2</sub> SUPPLY & VENT.
- Standard:**                      Locates MCB switch for 1SI-295, ACCUMULATOR A N<sub>2</sub> SUPPLY & VENT and takes switch to Open
- Comment:**                    **Green Light goes out and Red Light comes On.**

**OP-110, Section 8.3.2, Caution prior to Step 3**

- Performance Step: 15**      **CAUTION**  
In modes 1, 2, and 3, ensure Accumulators are maintained within Technical Specification limits for pressure and level when venting SI Accumulators.
- Standard:**                    Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)
- Comment:**

**OP-110, Section 8.3.2, Step 3**

- ✓ **Performance Step: 16**      **SLOWLY ADJUST** HC-936, 1SI-298 ACCUM VENT PRESS CNTL, control potentiometer output signal to open 1SI-298 and vent the Accumulator.
- Standard:**                    Locates MCB potentiometer for 1SI-298 and slowly increases the output signal to open the valve.
- Comment:**

**OP-110, Section 8.3.2, Step 4**

**Performance Step: 17**    **IF** the Accumulator is being depressurized with personnel in containment **AND** the oxygen concentration outside the taped off area decreases below 19.5%,  
**THEN STOP** venting until the concentration is restored to greater than 19.5% oxygen.

**Standard:**                      Marks step N/A, no personnel are in Containment

**Comment:**

**OP-110, Section 8.3.2, Step 5**

**Performance Step: 18** **VENT** the Accumulator to the desired pressure as indicated by the associated instruments:

- PI-921, 923, ACCUMULATOR TK A PRESS.

**Standard:** Observes pressure decreasing on PI-921 and PI-923  
(pressure instrumentation associated with the 'A' Accumulator)

**Evaluator Note:**

In addition to MCB indication the candidate can monitor the 'A' Accumulator pressure via multiple methods using the computer. (ERFIS or OSI-PI) During the pressure decrease annunciator ALB-01-7-1, ACCUMULATOR TANK A HIGH-LOW PRESS, will alarm (the low pressure setpoint is 602 psig). With all associated vent valves full open 'A' Accumulator pressure will decrease at ~10 psig per minute.

**Evaluator Cue:**

**To continue with OP-110 vent isolation the following information can be used at Evaluator discretion.**

**After observing the 'A' Accumulator High-Low pressure alarm and a decreasing trend on 'A' Accumulator pressure then cue the candidate:**

**Using time compression – the 'A' Accumulator pressure now reads zero psig.**

**Announce "I have the shift" END OF JPM**

**Direct the Simulator Operator to go to Freeze.**

**Comment:**

**STOP TIME:** \_\_\_\_\_

**Simulator Operator:**

**When directed by the Lead Examiner then go to Freeze.**

---

VERIFICATION OF COMPLETION

---

Job Performance Measure No.: 2014 NRC Exam Simulator JPM CR b  
Vent An Unisolable SI Accumulator during a Steam  
Generator Tube Rupture Event (E-3 and OP-110)

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The unit was operating at 100% power when a leak developed in the 'A' Steam Generator.</li><li>• The crew entered AOP-016, Excessive Primary Plant Leakage.</li><li>• While implementing AOP-016 the leak rate increased and exceeded VCT makeup capability. The Reactor was manually tripped and an Safety Injection was activated.</li><li>• The crew has completed EOP E-0 and transitioned to and are implementing EOP-E-3, Steam Generator Tube Rupture.</li><li>• The crew has just completed EOP-E-3 step 89.</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• Your position is BOP and the CRS has directed you to continue implementing EOP-E-3 beginning at step 90.</li><li>• Another operator is responsible for the E-3 foldout page</li></ul>

Facility: Harris Nuclear Plant

Task No.: 301149H601

Task Title: Align ECCS for Long Term  
RecirculationJPM No.: 2014 HNP NRC Exam  
Simulator JPM CR c

K/A Reference: 006 A4.05 RO 3.9 SRO 3.8

**ALTERNATE PATH - YES**

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_

Actual Performance:   X  Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_**READ TO THE EXAMINEE:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- A large break LOCA caused a reactor trip and safety injection
- SI has been reset and CCW has been aligned to the RHR HXs
- CSIP "A-SA" and CSIP "C-SB" (as "B") are running
- EOP-ES-1.3, Transfer to Cold Leg Recirculation, was just entered

**Initiating Cue:**

- Perform EOP-ES-1.3, the steps should be performed without delay in accordance with Step 1 CAUTION.

**Evaluator Note:**

This is NOT a time-critical JPM because the procedure would normally be read to the operator.

Task Standard: Recirculation flow established on both trains.

Required Materials: None

General References: EOP-ES-1.3, Transfer to Cold Leg Recirculation, Rev. 2

Handout: Use Simulator copy of EOP-ES-1.3 and ensure it is replaced after each use.

Time Critical Task: N/A

Validation Time: 10 minutes

Critical Step Justification	
<b>Step 6</b>	Required to isolate RHR pumps from RWST as suction source.
<b>Step 8</b>	Required to isolate one train to comply with WOG EOP BKG assumptions.
<b>Step 11</b>	Required to CLOSE 1CS-745 to isolate miniflow to RWST.
<b>Step 13</b>	Required to ensure a supply suction flowpath from sump to CSIP.
<b>Step 16</b>	Required to ensure the RWST suction is isolated while aligned for recirc.
<b>Step 21</b>	Required to establish injection flowpath.
<b>Step 24</b>	Critical to separate SI Trains during recirculation phase.

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-167
- Password “spurs”
- Roll 86 Relays to trip position:
  - Run AMS file – Roll Gen 86 Relays
- Go to Run
- Silence and Acknowledge annunciators

**GO TO FREEZE** and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19
- Go to run then to FREEZE
- Insert the follow changes to the setup:
  - Substitute CSIP “C” for CSIP “B” as follows:
    - irf cvc045 (n 00:00:00 00:00:00) ON
    - irf cvc046 (n 00:00:00 00:00:00) TRAINBIN
    - irf cvc049 (n 00:00:00 00:00:00) OFF
    - irf cvc050 (n 00:00:00 00:00:00) RACK\_OUT
  - Insert a failure of 1SI-340 to the OPEN position
    - irf sis029 (n 00:00:00 00:00:00) ENGAGED
  - Insert a failure of 1SI-4 to OPEN (failed SHUT)
    - irf sis017 (n 00 00:00:00 00:00:00) engaged
    - irf sis018 (n 00 00:00:00 00:00:00) 0 0 0
  - Insert a failure of PT-402 HIGH
    - imf pt:402 (n 00:00:00 00:00:00) 3000 0 2229.49
  - Insert a large break LOCA accident
    - imf rcs01a (n 00:00:00 00:00:00) 100 0 0
  - Go To Run – Let the Simulator run long enough for the Reactor to Trip and a Safety Injection to activate (about 60 seconds)
    - Go to FREEZE
  - Insert a failure of 1CS-746 to the OPEN position
    - Open 1 CS-746
    - irf cvc085 (n 00:00:00 00:00:00) ENGAGED
  - Go back to RUN
  - Perform actions of EOP-E-0 and EOP-E-1. Wait until RWST level is <23.4% on 2/4 Channels Annunciator ALB-4-2-4 is in alarm (ready to transition to EOP-ES-1.3)
    - Ensure SI RESET and CCW is aligned to the RHR heat exchangers
  - Silence Acknowledge and Reset Annunciators
  - Freeze and Snap these conditions to your exam IC



<b>Simulator Operator:</b>	<b>When directed by the Lead Evaluator place the Simulator in RUN.</b>
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**START TIME:** \_\_\_\_\_

**Performance Step: 1** Obtain copy of EOP-ES-1.3.

**Standard:** Enters EOP-ES-1.3.

<b>Evaluator's Cue:</b>	<b>Direct candidate to use Simulator copy of EOP-ES-1.3 if necessary.</b>
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**Comment:**

**EOP-ES-1.3, CAUTION Prior to Step 1**

- Performance Step: 2**
- Perform Steps 1 through 9 without delay. Do NOT implement Function Restoration Procedures prior to completion of these steps.
  - SI recirculation flow to RCS must be maintained at all times.
  - Switchover to recirculation may cause high radiation levels in the reactor auxiliary building. Radiation levels must be assessed prior to performance of local actions in the affected area.

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

PERFORMANCE INFORMATION

---

**EOP-ES-1.3, NOTE Prior to Step 1****Performance Step: 3**

- Foldout applies.
- A minimum of 142 INCHES CNMT wide range sump level ensures the recirculation sump strainers are completely submerged AND assures a long term recirculation suction source.
- The following sequence of steps to transfer to cold leg recirculation assumes operability of at least one train of safeguards equipment.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash) before Step 1 and may review the FOLDOUT items.

**Comment:****EOP-ES-1.3, Step 1.a****Performance Step: 4**

Check RHR Pump Recirculation Alignment:  
Verify both RHR pumps – Running.

**Standard:**

Verifies both RHR pumps running by observing RED light ON, flow and/or current indicated.

**Comment:**

PERFORMANCE INFORMATION

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**EOP-ES-1.3, Step 1.b**

- Performance Step: 5**      Verify CNMT sump to RHR pump suction valves OPEN:
- Train A RHR pump: 1SI-300 AND 1SI-310
  - Train B RHR pump: 1SI-301 AND 1SI-311
- Standard:**
- Verifies Train A sump valves open by observing RED lights ON, green lights OFF on 1SI-300 and 1SI-310
  - Verifies Train B sump valves open by observing RED lights ON, green lights OFF on 1SI-301 and 1SI-311
- Comment:**

**EOP-ES-1.3, Step 2.a**

- √ **Performance Step: 6**      Establish RHR Pump Recirculation Alignment:  
Shut RWST to RHR pump suction valves:
- 1SI-322 (Train A)
  - 1SI-323 (Train B)
- Standard:**
- Places 1SI-322 and 1SI-323 handswitches to CLOSE
  - Verify valves closed by observing RED lights OFF, green lights ON on 1SI-322 and 1SI-323
- Comment:**

PERFORMANCE INFORMATION

---

**EOP-ES-1.3, Step 2.b**

**Performance Step: 7** Shut low head SI Train A to cold leg valve: 1SI-340

**Standard:**

- Places 1SI-340 Control Power ON
- Removes 1SI-340 from Pull-to-Lock position
- Verifies ORANGE Control Power Light ON
- Places 1SI-340 control switch to CLOSE
- Determines that 1SI-340 does NOT close by observing RED light ON, GREEN light OFF
- Goes to Step 1.c RNO

**Comment:**

**Note: the operator may make a second attempt at shutting 1SI-340 with the control switch.**

**EOP-ES-1.3, Step 2.b RNO – Alternate Path**

√ **Performance Step: 8** Shut low head SI Train B to cold leg valve: 1SI-341

**Standard:**

- Places 1SI-341 Control Power ON.
- Removes 1SI-341 from Pull-to-Lock position
- Verifies ORANGE Control Power Light ON.
- Places 1SI-341 handswitch to CLOSE.
- Verifies that 1SI-341 closes by observing RED light OFF, GREEN light ON.

**Comment:**

PERFORMANCE INFORMATION

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**EOP-ES-1.3, Step 2.c**

**Performance Step: 9** Check RHR Pump recirculation alignment – at least one train established.

**Standard:** Verifies both trains aligned with CNMT sump to RHR pump suction valves OPEN and RWST to RHR pump suction valves SHUT.

**Comment:**

**EOP-ES-1.3, Step 3.a**

**Performance Step: 10** Establish CSIP Recirculation Alignment:

a. Shut CSIP alternate miniflow isolation valves:

- 1CS-746 (Train A CSIP)
- 1CS-752 (Train B CSIP)

**Standard:**

- Places 1CS-746 control switch in CLOSE.
- Determines 1CS-746 did NOT close by observing RED light ON, GREEN light OFF.
- Goes to Step 3.a RNO.
- Places 1CS-752 control switch in CLOSE.
- Verifies 1CS-752 closed by observing RED light OFF, GREEN light ON.

**Comment:**

## PERFORMANCE INFORMATION

**EOP-ES-1.3, Step 3.a RNO – Alternate Path**

√ **Performance Step: 11** Shut the associated block valve: 1CS-745 (Train A CSIP).

**Standard:**

- Places 1CS-745 control switch in CLOSE.
- Verifies 1CS-745 closed by observing RED light OFF, GREEN light ON.

<b>Evaluator Note:</b>	<b>Shutting the associated block valve 1CS-745 is the critical element of this step. It is acceptable for the candidate to shut 1CS-753 in addition to 1CS-745, however only the shutting of 1CS-745 is critical.</b>
------------------------	---

**Comment:****EOP-ES-1.3, Step 3.b**

**Performance Step: 12** Verify normal miniflow isolation valves - SHUT

- 1CS-182
- 1CS-196
- 1CS-210
- 1CS-214

**Standard:**

Verifies at least one valve closed in each line (RED lights OFF, GREEN lights ON.)

**Comment:**

**EOP-ES-1.3, Step 3.c**

√ **Performance Step: 13** Open RHR discharge to CSIP suction valves:

- 1RH-25
- 1RH-63

**Standard:**

- Places control switches for both 1RH-25 and 1RH-63 in OPEN.
- Verifies 1RH-25 and 1RH-63 open by observing RED lights ON, GREEN lights OFF.

**Comment:****EOP-ES-1.3, Step 3.d**

**Performance Step: 14** Reset SI.

**Standard:** SI RESET in Initial Conditions

<b>Evaluator Note:</b>	<b>Candidate may reset again by locating both SI reset switches and momentarily taking each to RESET and then verify successful reset by Bypass Permissive Panel light 4-1 "SI ACTUATED" is extinguished.</b>
------------------------	---

**Comment:****EOP-ES-1.3, Step 3.e**

**Performance Step: 15** Manually realign safeguards equipment following a loss of offsite power.

**Standard:** Reads step and determines off-site power available.

**Comment:**

**EOP-ES-1.3, Step 3.f**

√ **Performance Step: 16** Shut RWST to CSIP suction valves AND place in pull-to-lock position:

- 1CS-291 (LCV-115B)
- 1CS-292 (LCV-115D)

**Standard:**

- Places LCV-115B and LCV-115D in CLOSE and then in PULL-TO-LOCK
- Verifies LCV-115B and LCV-115D closed by observing RED lights OFF, GREEN lights ON.

**Comment:****EOP-ES-1.3, Step 4.a**

**Performance Step: 17** Check Charging AND SI System Status:

- Check charging line isolation valves – SHUT

**Standard:**

- Checks Charging Line Isolation Valves 1CS-235 and 1CS-238 CLOSED by observing RED lights OFF, GREEN lights ON for each valve.
- May also check FCV-122.1 CLOSED by observing flow indication at ZERO.

**Comment:**



**EOP-ES-1.3, Step 4.b**

**Performance Step: 18** Verify Both Charging Pumps – RUNNING.

- Train A CSIP
- Train B CSIP

**Standard:** Verifies CSIPs 1A-SA and 1C-SB both running by observing RED lights ON, GREEN lights OFF.

**Comment:** CSIP 1C-SB is running in place of 'B' CSIP

<b>Evaluator Cue: (IF NEEDED)</b>	<b>IF the student thinks that step 4.b requires the 'B' CSIP to be running and performs the RNO step to consult plant operation staff then:  Cue: Operations Staff Acknowledges.</b>
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**EOP-ES-1.3, Step 4.c**

**Performance Step: 19** Check alternate cold leg AND hot leg injection valves – SHUT

- 1SI-52
- 1SI-86
- 1SI-107

**Standard:** Checks Alternate Cold leg AND Hot leg Injection Valves 1SI-52, 1SI-86 and 1SI-107 CLOSED by observing RED lights OFF, GREEN lights ON for each valve.

**Comment:**

**EOP-ES-1.3, CAUTION Prior to Step 5**

**Performance Step: 20** The maximum calculated dose rate in the vicinity of MCC 1A35-SA and MCC 1B35-SB is between 10 MREM/HR and 150 MREM/HR

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

**EOP-ES-1.3, Step 5.a**

√ **Performance Step: 21** Establish Recirculation Injection Flowpath:

- Open alternate high head SI to cold leg valve: 1SI-52

**Standard:**

- Places 1SI-52 Control Power ON.
- Verifies ORANGE Control Power Light ON.
- Places 1SI-52 control switch to OPEN.
- Verifies 1SI-52 open by observing RED light ON, green light OFF.

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>1SI-4 is failed SHUT and will not open from the MCB switch. Since 1SI-3 is OPEN step 5.b is met and the candidate should NOT perform the RNO action to stop the Train B CSIP.</b>
------------------------	--

**EOP-ES-1.3, Step 5.b**

**Performance Step: 22** Check any BIT outlet valve – open

- 1SI-3 - YES
- 1SI-4 -NO

**Standard:** Verifies that 1SI-3 is OPEN and 1SI-4 is NOT OPEN and will NOT OPEN by observing RED and GREEN OFF.  
Informs CRS that 1SI-4 will not OPEN

**Comment:**

<b>Evaluator Cue:</b>	<b>(IF informed of 1SI-4 not OPENING) Acknowledge – 1SI-4 will not open</b>
-----------------------	---

**EOP-ES-1.3, Step 5.c**

**Performance Step: 23** Check power for CSIP discharge cross-connect valves - Available

- 1CS- 219 (MCC 1A35- SA- 14E)
- 1CS- 217 (MCC 1B35- SB- 12C)
- 1CS- 218 (MCC 1A35- SA- 14D)
- 1CS- 220 (MCC 1B35- SB- 9D)

**Standard:**

- Checks power available by checking red position indicating lights on for CSIP discharge cross-connect valves

**Comment:**

**EOP-ES-1.3, Step 5.d**

- √ **Performance Step: 24** Shut CSIP discharge cross connect valves based on Table:  
CSIP "A" and CSIP "C" running:

- 1CS-217 and 1CS-219

**Standard:**

- Places control switches to CLOSE position for valves 1CS-217 and 1CS-219 (√)
- Verifies respective valves re-position by observing RED lights OFF, GREEN lights ON

**Comment:****EOP-ES-1.3, Step 6**

- Performance Step: 25** Check High Head SI Flow:

- Alternate header flow (Train A): FI-940
- Normal header flow (Train B): FI-943

**Standard:**

- Verifies Train A flow indication on FI-940.
- Verifies Train B flow indication on FI-943.

**Comment:**

<b>Evaluator Note:</b>	<b>After the candidate checks High Head SI flow on BOTH the Alternate and Normal Header the following cue maybe used to terminate the JPM</b>
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<b>Evaluator Cue:</b>	<b>CCW is currently aligned to the RHR heat exchangers, another operator will continue with ES-1.3. End of JPM Direct Simulator Operator to place the Simulator in Freeze.</b>
-----------------------	--

**Comment:**

**STOP TIME:** \_\_\_\_\_

<b>Simulator Operator:</b>	<b>When directed by the Lead Examiner then go to Freeze.</b>
----------------------------	--

VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2014 HNP NRC Exam Simulator JPM CR c  
Align ECCS for Long Term Recirculation (EOP-ES-1.3)  
EOP-ES-1.3, Transfer to Cold Leg Recirculation

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• A large break LOCA caused a Reactor trip and Safety Injection</li><li>• SI has been reset and CCW has been aligned to the RHR HXs</li><li>• CSIP "A-SA" and CSIP "C-SB" (as "B") are running</li><li>• EOP-ES-1.3, Transfer to Cold Leg Recirculation, was just entered</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• Perform EOP-ES-1.3, the steps should be performed without delay in accordance with Step 1 CAUTION.</li></ul>

## PERFORMANCE INFORMATION

Facility: Harris Nuclear Plant Task No.: 003001H101

Task Title: Start a RCP with Spray Valve Failure JPM No.: 2014 NRC Exam Simulator JPM CR d

K/A Reference: 003 A2.02 RO 3.7 SRO 3.9 **ALTERNATE PATH - YES**

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X  

Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- You are the extra RO during a plant startup.
- GP-004, Reactor Startup is in progress and is currently on HOLD.
- The plant has been stabilized with Shutdown Banks withdrawn.
- Two hours ago the "A" RCP was removed from service for maintenance.
- Maintenance has been completed and the "A" RCP is ready for operation.
- The previous crew has verified that all initial conditions to start the RCP are met and have initialed all steps

**Initiating Cue:**

- The CRS has instructed you to start "A" RCP, in accordance with OP-100, Reactor Coolant System, Section 5.1, Reactor Coolant Pump Start-up.
- The initial conditions have been verified.

**Evaluators Note:**

***To expedite the examination schedule, provide the candidate with a copy of OP-100 pages 1-16 with the initial conditions signed off prior to entering the simulator to perform the JPM. This will allow the candidate time to task preview the procedure.***

## PERFORMANCE INFORMATION

Task Standard: Start a RCP and respond to a failed open PZR spray valve when the pump is started in accordance with AOP-019, Malfunction of RCS Pressure Control

Required Materials: OP-100 mark up with Attachment 3 included.

General References: OP-100, Reactor Coolant System, Rev. 40 and AOP-019, Malfunction of RCS Pressure Control, Rev. 24

Time Critical Task: No

Validation Time: 10 minutes

Critical Step Justification	
<b>Step 9</b>	System interlock requires proper oil pressure be established prior to starting pump
<b>Step 13</b>	Administrative requirements state the System flow cannot be established until the lift oil pump breaker is closed for > 2 mins to prevent pump damage
<b>Step 21</b>	Entry conditions are met for AOP-019, Malfunction of RCS Pressure Control when PZR Spray valve controller PK-444C.1, PZR Spray Loop A, 1RC-107 fails open upon starting the 'A' RCP. AOP-019 requires the operator to perform the immediate actions including the RNO response to control a PZR Spray valve (shut valve) when that valve is NOT properly positioned for current PZR pressure or plant conditions. Performing these actions correctly will prevent an unnecessary Safety Injection from occurring.



## PERFORMANCE INFORMATION

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-168
- Password “spurs”
- Go to RUN
- CRT displays – CRT 2: QP VCT, CRT 3: QP TAVG and CRT 4: QP SGLVL
- Set Source Range Audio Multiplier to 1000 to establish audible counts
- Silence and Acknowledge annunciators

GO TO FREEZE and inform the lead examiner the Simulator is ready. **DO NOT GO TO RUN** until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-7, Mode 3 HSD, MOL conditions – RCS pressure 2235, RCS temp. 557°F, all rods in
- GO to run
- Secure the “A” RCP
- Wait approximately 5 minutes for the simulator to stabilize
- Create a conditional Trigger to open PZR spray valve PK-444C.1 with a 15 second delay and 45 second ramp after the control switch for the ‘A’ RCP is taken to start

To create the conditional trigger:

- Go to malfunctions
- Find PRS14A Pressurizer Spray Valve 444C Failure (with manual control)
  - Open the malfunction window
  - Set delay to 15 seconds
  - Set ramp time to 45 seconds
  - Set initial severity to 30 (that way the meter will not go to 0 – adjust this to whatever percent open 1RC-107 is at after securing the ‘A’ RCP and the simulator is stable)
  - Set the malfunction to Trigger 1
- Go to triggers
  - Click on Trigger 1
  - Click on ‘Assign File’
  - Choose RCP\_A\_START
  - (source file should now have RCP\_A\_START)
- Silence Acknowledge and Reset Annunciators
- FREEZE and Snap these conditions to your exam

## PERFORMANCE INFORMATION

<b>Simulator Operator:</b>	<b>When directed by the Lead Evaluator place the Simulator in Run</b>
<b>Evaluator Note:</b>	<p>The candidates should be briefed outside of the Simulator prior to performing this JPM. Provide them with a copy of the procedure (with initial conditions initialed as completed).</p> <p>This will allow them to review the Precautions and Limitations associated with OP-100 and have time for a task preview of the steps to accomplish starting the RCP. Expect that the candidates will take about 20 minutes to complete this review.</p> <p><b>During the performance of the JPM the candidate may use either MCB indication or ERFIS indications when reviewing RCP pump indications.</b></p>

**START TIME:** \_\_\_\_\_

### Obtain Procedure

**Performance Step: 1** Procedure obtained and begins the task of starting the RCP

**Standard:** Obtained OP-100 and reviews P & L's and Section 5.1 for 'A' RCP startup. Reviews and verifies initial conditions are satisfied.

**Comment:**

### OP-100, Section 5.1.2, Caution prior to Step 1

**Performance Step: 2** Only one RCP is to be started at any one time. If the motor is allowed to coast to a stop between starts, two successive starts are permitted. A third start may be made when the winding and the core have cooled by running for 20 minutes, or by standing idle for 45 minutes.

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

**OP-100, Section 5.1.2, Step 1.a**

**Performance Step: 3**      **VERIFY** the following before pump start:  
  
    **IF** jogging RCPs per GP-001, **THEN VERIFY** RCS Pressure is greater than 325 psig.

**Standard:**                      Step 1.a is marked N/A

**Comment:**

**OP-100, Section 5.1.2, Step 1.b**

**Performance Step: 4**      **VERIFY** # 1 Seal  $\Delta P$  is greater than 200 psid.

**Standard:**                      Locates PI-156A1 and verifies that the 'A' RCP #1 Seal  $\Delta P$  is greater than 200 psid.

**Comment:**

**OP-100, Section 5.1.2, Note prior to Step 1.c**

**Performance Step: 5**      NOTE: VCT Outlet Temp TE-116 should be used for seal injection water temperature.

**Standard:**                      Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

## PERFORMANCE INFORMATION

**OP-100, Section 5.1.2, Step 1.c****Performance Step: 6**

**VERIFY** Seal Injection flow is between 8 and 13 gpm at a temperature between 60 and 130°F.

**Standard:**

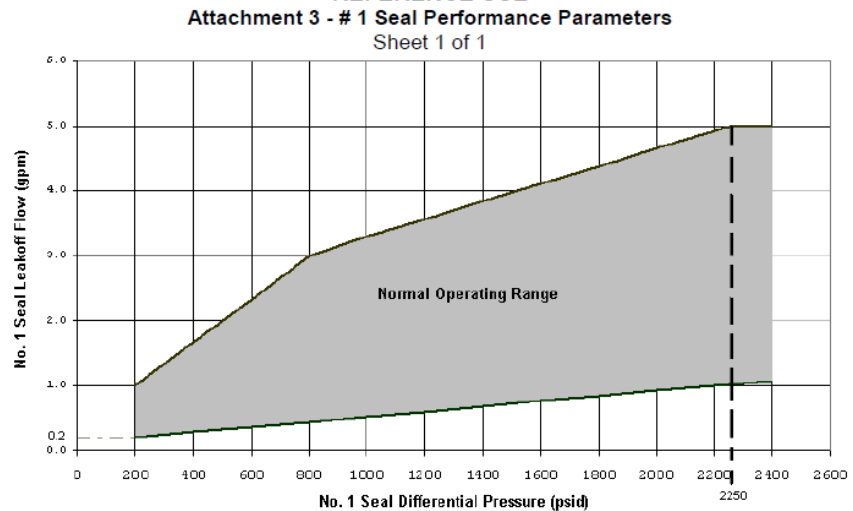
Locates seal injection flow indication FI-156A and verifies flow between 8-13 gpm and also verifies VCT temperature indicator TI-116.1 reading between 60-130°F. The candidate may use ERFIS points rather than MCB indications.

**Comment:****OP-100, Section 5.1.2, Step 1.d****Performance Step: 7**

**VERIFY** # 1 Seal Leakoff is in the normal operating range of Attachment 3.

**Standard:**

Locates #1 Seal Leakoff flow indicator FR-154A and verifies that it meets Attachment 3 requirements (see below).



<b>Evaluator Note:</b>	<b>Seal Leakoff flow is also available via multiple programs on the Plant Computer (ERFIS, OSI-PI, etc). It is acceptable for the candidate to complete this step using ANY of the available indications.</b>
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**Comment:**

**OP-100, Section 5.1.2, Caution prior to Step 2**

**Performance Step: 8** CAUTION: RCPs shall not be started with one or more of the RCS cold leg temperatures less than or equal to 325°F unless the secondary water temperature is less than 50°F above each of the RCS cold leg temperatures. This caution is only applicable to the first RCP to be started.

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

- Understands the caution is N/A.

**Comment:**

**OP-100, Section 5.1.2, Step 2**

✓ **Performance Step: 9** **START** the RCP Oil Lift Pump.

**Standard:** Locates 'A' RCP Oil Lift Pump switch and starts the oil lift pump.  
**(Critical to start the RCP Oil Lift Pump)**

**START Time** \_\_\_\_\_

**Comment:** Note: Procedure requires a minimum of 2 minutes run time for the lift pump before starting the RCP.

**OP-100, Section 5.1.2, Step 3**

**Performance Step: 10** **VERIFY** the amber permissive light on the lift pump control switch is lit indicating proper lift oil pressure has been achieved.

**Standard:** Locates amber permissive light on the 'A' RCP Oil Lift Pump Switch and verifies it is lit.

**Comment:**

## PERFORMANCE INFORMATION

**OP-100, Section 5.1.2, Step 4**

**Performance Step: 11** **ALLOW** the RCP Oil Lift Pump to run for a minimum of 2 minutes before starting an RCP.

**Standard:** Waits minimum of 2 minutes after starting the oil lift pump prior to starting the 'A' RCP.

**Comment:**

**OP-100, Section 5.1.2, Note prior to Step 5**

**Performance Step: 12** When an RCP is started, the RCP ammeter will go off scale high, and then decrease to the normal hot or cold running amps after 15 to 25 seconds.

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

<b>Evaluator Note:</b>	<b>When the 'A' RCP start switch is taken to "start" a timer starts and runs for 15 seconds after which 1RC-107 will ramp open over 45 seconds lowering RCS pressure and requiring the operator to enter into AOP-019. Annunciators ALB-009-5-1, PZR High-Low Press and ALB-009-3-3, PZR Cont Low Press and Heaters On will alarm ~60 seconds after 1RC-107 begins to fail open. IF no actions are taken a SI will occur ~4:30 minutes from event onset.</b>
------------------------	--

**OP-100, Section 5.1.2, Step 5**

✓ **Performance Step: 13**    **START** the RCP.

**Standard:**                      Locates control switch for 'A' RCP and starts 'A' RCP

**Comment:**                    **START Time** \_\_\_\_\_ (**≥ 2minutes since lift pump start**)

The two minute minimum is not critical but ensures start permissives are met for the RCP start.

**OP-100, Section 5.1.2, Step 6**

**Performance Step: 14**    **VERIFY** the following normal operating parameters:

- Running amps: Hot 460 to 540 amps Cold 715 amps
- RCS flow: Greater than or equal to 98%
- # 1 Seal  $\Delta P$  Greater than 200 psid
- # 1 Seal leakoff in the normal operating range of Attachment 3
- Motor Winding temperature <300°F

**Standard:**                    Locates and verifies each parameter is in the normal operating range (ERFIS or MCB indications may be used)

**Comment:**                    **Note: Hot running motor amp range of 460 to 540 amps will apply.**

## PERFORMANCE INFORMATION

<b>Evaluators Note:</b>	<b>The actions to secure the 'A' RCP oil lift pump do not have to be performed since the RCS pressure reduction will take precedence over this step.</b>
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**OP-100, Section 5.1.2, Note prior to Step 7**

**Performance Step: 15** NOTE: The oil lift pump should be run at least 1 minute after starting an RCP.  
After at least 1 minute, STOP the RCP OIL LIFT PUMP.

**Standard:** Waits at least 1 minute then secures the 'A' RCP oil lift pump.

**Comment:** Secure Time \_\_\_\_\_ ( $\geq$  1 minute since RCP start)

**ALTERNATE PATH**

**Performance Step: 16** Identifies RCS pressure lowering and Spray valve 1RC-107 failure

**Annunciators:**

- ALB-009-5-1, PZR High-Low Press
- ALB-009-3-3, PZR Cont Low Press and Heaters On

**Standard:** Identifies RCS pressure lowering  
Identifies PZR Spray Loop A PCV-444C (1RC-107) red indication light and valve demand increasing (or at 100%)  
Acknowledges alarms and reports conditions to CRS

May review APP or directly enter AOP-019 based on current plant indications

Announces "AOP-019 Entry Conditions met, taking immediate actions for AOP-019."

**Comment:**

<b>Evaluator Cue:</b>	<b>CRS acknowledges report</b>
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<b>Evaluator Note:</b>	<b>Securing 'A' RCP is an action contained in AOP-019 but this action is not performed immediately. Stopping the 'A' RCP would be performed at step 14 in Section 3.1 of the procedure unless other trip limits on the RCP are exceeded prior to reaching this step.</b>
------------------------	--

**AOP-019, Malfunction of RCS Pressure Control**

**Performance Step: 17**      • Steps 1 through 3 are immediate actions

**Standard:** Performs immediate actions from memory without accessing or reading from the AOP

**Comment:**

**AOP-019, Step 1**

**Performance Step: 18**      **CHECK** that a bubble exists in the PRZ. **(YES)**

**Standard:** States that a bubble exists in the PRZ

**Comment:**

**AOP-019, Step 2**

**Performance Step: 19**      **VERIFY** ALL PRZ PORVs **AND** associated block valves properly positioned for current PRZ pressure and plant conditions. **(YES)**

**Standard:** Verifies ALL PRZ PORVs **AND** associated block valves properly Positioned by observing green shut lights indicated for all PZR PORV and all red open lights on for PZR PORV Block Valve control switches.

**Comment:**

**AOP-019, Step 3**

**Performance Step: 20**    **CHECK** BOTH PRZ Spray Valves properly positioned for current PRZ pressure and plant conditions.

PCV-444C PZR Spray Loop A (1RC-107) - OPEN - **NO**  
PCV-444D PZR Spray Loop B (1RC-103) - SHUT - **YES**

**Standard:**    Identifies that the PZR Spray valves are NOT properly positioned for current plant conditions.

- Takes RNO actions

**Comment:**    **1RC-107 should not be full open (or going full open for this condition).**  
**1RC-103 is shut which is its proper position.**

**AOP-019, Step 3 RNO**

✓ **Performance Step: 21**    CONTROL PRZ Spray Valves using ONE of the following methods (listed in order of preference):

- AFFECTED Spray Valve controller in MANUAL (if only one is obviously malfunctioning)
- OR**
- PK-444A, Master Pressure Controller, in MANUAL
- OR**
- BOTH individual Spray Valve controllers in MANUAL

**Standard:**    Places PCV-444C PZR Spray Loop A controller to manual and lowers the output to zero (0).  
Stops RCS pressure reduction caused from open spray valve.  
Stabilizes RCS pressure.

**Comment:**    **(Critical to stop the RCS pressure reduction using one of the methods listed to prevent an unnecessary automatic SI from occurring.)**

**AOP-019, Malfunction of RCS Pressure Control****Performance Step: 22** Obtain copy of AOP-019**Standard:** Announces immediate actions of AOP-019 are complete and obtains a copy of AOP-019 to continue actions associated with the procedure.**Evaluator Cue:** CRS acknowledges report**Comment:**

<b>Examiner Cue:</b>	<b>After the candidate has shut 1RC-107 and has obtained a copy of AOP-019: Evaluation on this JPM is complete. Announce END OF JPM  Direct Simulator Operator to place the Simulator in FREEZE.</b>
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**STOP TIME:** \_\_\_\_\_

<b>Simulator Operator:</b>	<b>When directed by the Lead Examiner then go to Freeze.</b>
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VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2014 HNP NRC Exam Simulator JPM d  
Start A Reactor Coolant Pump, IAW OP-100, Section 5.1,  
Reactor Coolant Pump Start-up - **Alternate Path** -  
Pressurizer Spray Valve fails open after pump start  
OP-100

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• You are the extra RO during a plant startup.</li><li>• GP-004, Reactor Startup is in progress and is currently on HOLD.</li><li>• The plant has been stabilized with Shutdown Banks withdrawn.</li><li>• Two hours ago the "A" RCP was removed from service for maintenance.</li><li>• Maintenance has been completed and the "A" RCP is ready for operation.</li><li>• The previous crew has verified that all initial conditions to start the RCP are met and have initialed all steps</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• The CRS has instructed you to start "A" RCP, in accordance with OP-100, Reactor Coolant System, Section 5.1, Reactor Coolant Pump Start-up.</li><li>• The initial conditions have been verified.</li></ul>

Facility: Harris Nuclear Plant Task No.: 061007H101

Task Title: Using ESW System As A Backup Source Of Water To AFW JPM No.: 2014 NRC Exam Simulator JPM CR e

K/A Reference: 054 AA1.01 RO 4.5 SRO 4.4 **ALTERNATE PATH - NO**

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X  

Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

A LOCA has occurred and EOP-E-1, Loss of Reactor or Secondary Coolant is being implemented. Both A and B Motor Driven AFW pumps are in operation.

**Initiating Cue:**

A leak has developed in the Condensate Storage Tank (CST) and level has decreased to less than 10 percent.

Your directions are to secure the B Motor Driven AFW pump per OP-137 section 7.1 and to switch the AFW water supply from the CST to ESW Header A for the A Motor Driven AFW pump and the Turbine Driven AFW pump per OP-137, Auxiliary Feedwater System, Section 8.1.

You will silence all alarms and another RO will address alarms not associated with this evolution.

**Examiners Note:**

***To expedite the examination schedule, the candidate should review the INITIAL CONDITIONS, INITIATING CUE, and the copy of OP-137 prior to entering the simulator to perform the JPM.***

Task Standard: Train A ESW is supplying AFW pumps.

Required Materials: OP-137 pages 32-33, step 2 and 3 marked N/A and pages 36-38  
OP-169 page 15, initial condition 7.1.1, step 1.a and 1.b and step 2,  
AH2 B-SA and AH-3 B-SA and step 3 marked N/A

General References: OP-137, Auxiliary Feedwater System, Rev. 38, OP-169, Containment  
Cooling and Ventilation, Rev. 24

Time Critical Task: No

Validation Time: 15 Minutes

CRITICAL STEP JUSTIFICATION	
Step 7	Isolation of ESW flow will ensure required cooling to maintain EDG operable for LOSP.
Step 9	Isolation of ESW flow will ensure required cooling to maintain EDG operable for LOSP.
Step 12	Opening 1SW-121SA provides ESW suction from the A header to the "A" MDAFW pump
Step 13	Opening 1SW-123SA provides ESW suction from the A header to the "A" MDAFW pump
Step 23	Opening 1SW-124SA provides ESW suction from the A header to the TDAFW pump
Step 24	Opening 1SW-126SA provides ESW suction from the A header to the TDAFW pump

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-169 password “spurs”
- NOTE: It may be necessary to override the 86 Generator lockouts if they are tripped prior to going to run.
  - Run AMS file – Roll Gen 86 Relays
- Go to RUN
- Silence and Acknowledge annunciators

**GO TO FREEZE** and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

The following setup information is how this exam IC was developed.

- Initial Simulator IC was IC-19
- Level transmitter LI-9010A1 SA should read 8.5 %
  - imf LT:901a (n 00:00:00) 8.5 0
- Level transmitter LI-9010B1 SB should read 8.3%)
  - imf LT:901b (n 0 0) 8.3 0

3 Annunciators will be on due to these actions:

ALB-017-4-5 CST Empty

ALB-017-5-5 CST Low Minimum Level

ALB-017-6-5 CST Hi-Hi/Lo-Lo Level

- IMF RCS18A (n 0 0) 15 0  
Small Break LOCA A Loop 15% of 4.5” line
- Implement E-0 then E-1 as necessary
- Secure the TDAFW Pump
  - Close 1MS-70
  - Close 1MS-72
- Restore power to 1A-1 and 1B-1
- Reduce AFW flow to 300 KPPH total
- Silence, acknowledge and reset annunciators
- GO TO FREEZE and create a snap IC



<b>Simulator Operator:</b>	<b><i>When directed by the Lead Examiner go to Run.</i></b>
----------------------------	---

**START TIME:** \_\_\_\_\_

<b>Evaluator Note:</b>	<b>There isn't a step in OP-137 that directs when to secure the B MDAFW Pump. It will be at the candidate's discretion when to stop the pump. The JPM step to stop the pump is placed after lining up ESW to the A MDAFW Pump just as a place keeper. The candidate can secure the B MDAFW at any time prior to, during, or after the ESW alignment.</b>
------------------------	--

**Performance Step: 1**      STOPS B MDAFW PUMP

<b>Evaluator Cue:</b>	<b>When Operator determines that he needs copy of OP-137 section 7.1. Give marked-up copy of procedure.</b>
-----------------------	---

**Standard:**      Locates MCB control switch for B MDAFW and identifies that the RED light is lit.

Takes the control switch for 'B' MDAFW Pump from neutral to STOP and identifies that the RED light is out and the GREEN light is lit.

**Comment:****Performance Step: 2**      OBTAIN PROCEDURE**Standard:**      Locates OP-137 and refers to Section 8.1 and reviews initial conditions.

<b>Evaluator Cue:</b>	<b>Initial conditions have been met for OP-137 Section 8.1.</b>
-----------------------	---

**Comment:**

## PERFORMANCE INFORMATION

**OP-137 section 8.1.2 Cautions prior to step 1****Performance Step: 3**

Caution: The Emergency Service Water System serves as a backup source of water to the Auxiliary Feedwater System if the Condensate Storage Tank volume is exhausted or unavailable. Since the Emergency Service Water System uses raw reservoir water, it is only used in extreme emergencies.

Caution: Isolating Service Water to the Containment Fan Coolers will make the Coolers inoperable, therefore only one Train of ESW should be aligned to the suction of the AFW pumps unless a determination has been made on the desirability of making both Trains of Containment Fan Coolers inoperable.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****OP-137 section 8.1.2 Step 1****Performance Step: 4**

To supply AFW Pump 1A-SA from ESW header A, Perform the following:

- a. Declare A train Containment Fan Coolers inoperable

**Standard:**

Notifies CRS to declare A Train of Containment Fan Coolers INOPERABLE

<b>Evaluator Cue:</b>	<b>CRS acknowledges 'A' Train CFCs are inoperable</b>
-----------------------	---

**Comment:**

<b>Evaluator NOTE:</b>	<p><b>After Candidate determines that they need to use OP-169 to perform the next step then provide the candidate with a marked up copy of OP-169 Sect. 7.1</b></p> <p><b>CUE: The CRS has reviewed OP-169 and has N/A'd the steps that are not required to be performed.</b></p>
------------------------	---

**OP-137 section 8.1.2 Step 1.b**

**Performance Step: 5** Verify A Train Containment Fan Coolers are secured per OP-169

**Standard:** Obtains copy of OP-169 section 7.1 Rev. 24 and perform step 2

**Comment:**

**OP-169 section 7.1 step 2.**

**Performance Step: 6** PLACE the control switch for each of the following fans to be removed from service to STOP:

**Standard:** Locates switch for AH-2 A-SA and Identifies that the Red LO SPD light is lit.

Takes the control switch for AH-2 A-SA from neutral to STOP. Verifies that the RED light goes out and the GREEN light is lit.

**Standard:** Locates switch for AH-3 A-SA and identifies that the Red LO SPD light is lit.

Takes the control switch for AH-3 A-SA from neutral to STOP. Verifies that the RED light goes out and the GREEN light is lit.

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>Per EOP Users Guide</b> “Unless otherwise specified, a required task need not be fully completed before proceeding to the next instruction. Generally, it is sufficient to begin a task and have assurance that it is progressing satisfactorily”. Operator may start next valve stroke before current step is complete.
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**OP-137 section 8.1.2 Step 1.c**

✓ **Performance Step: 7** SHUT 1SW-92 SA, CNMT FAN COOLER AH-3 INLET.

**Standard:** Locates the control switch for 1SW-92 SA and identifies that the RED Light is lit.

Takes the control switch for 1SW-92 SA from neutral to shut.  
Verifies that the RED light goes out and the GREEN light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 1.d**

**Performance Step: 8** SHUT 1SW-97 SA, CNMT FAN COOLER AH-3 OUTLET.

**Standard:** Locates the control switch for 1SW-97 SA and identifies that the RED Light is lit.

Takes the control switch for 1SW-97 SA from neutral to shut.  
Verifies that the RED light goes out and the GREEN light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 1.e**

✓ **Performance Step: 9** SHUT 1SW-91 SA, CNMT FAN COOLER AH-2 INLET.

**Standard:** Locates the control switch for 1SW-91 SA and identifies that the RED Light is lit.

Takes the control switch for 1SW-91 SA from neutral to shut.  
Verifies that the RED light goes out and the GREEN light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 1.f**

**Performance Step: 10** SHUT 1SW-109 SA, CNMT FAN COOLER AH-2 OUTLET.

**Standard:** Locates the control switch for 1SW-109 SA and identifies that the RED Light is lit.

Takes the control switch for 1SW-109 SA from neutral to shut.  
Verifies that the RED light goes out and the GREEN light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 1.g**

**Performance Step: 11** CLOSE 1SW-122, AFW PUMP 1A-SA SW DRAIN ISOLATION.

**Standard:** Directs AO to SHUT 1SW-122

<b>Simulator Operator:</b>	<p><b>NOTE: 1SW-122 is not modeled on the Simulator</b></p> <p><b>AO acknowledges direction to shut 1SW-122, AFW Pump 1A-SA SW Drain Isolation.</b></p> <p><b>Pause 10-15 seconds then report that 1SW-122, AFW Pump 1A SW Drain Isolation has been SHUT</b></p>
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**Comment:**

**OP-137 section 8.1.2 Step 1.h**

- ✓ **Performance Step: 12** OPEN 1SW-121 SA, SW HEADER A TO AUX FW MOTOR PUMP A-SA.

**Standard:** Locates MCB control switch for 1SW-121 SA and identifies that the green light is lit.

Takes control switch for 1SW-121 SA from neutral to open and identifies that the GREEN light is out and the RED light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 1.i**

- ✓ **Performance Step: 13** OPEN 1SW-123 SA, SW HEADER A TO AUX FW MOTOR PUMP A-SA.

**Standard:** Locates MCB control switch for 1SW-123 SA and identifies that the green light is lit.

Takes control switch for 1SW-123 SA from neutral to open and identifies that the GREEN light is out and the RED light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 1.j**

- Performance Step: 14** Monitor AFW system parameters to ensure proper operation.

**Standard:** Monitors PI-2150A1 A DISCH PRESS and PI-2250A1 A SUCT PRESS/ Monitors Aux Feedwater Flow on FI-2050A1, B1, and C1.

(Candidate may report to CRS that ESW is aligned to A AFW Pump. If so acknowledge information and direct candidate to continue lineup)

**Comment:**

**OP-137 section 8.1.2 Caution prior to step 3**

**Performance Step: 15**     **CAUTION:** Do NOT cross tie the ESW trains together via the TDAFW pump suction supply from ESW. Crosstie is prevented by performing only Step 8.1.2.3 OR 8.1.2.4

**Standard:**                      Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

**OP-137 section 8.1.2 Step 3**

**Performance Step: 16**     To supply AFW Pump 1X-SAB from ESW header A:  
   a.        Declare A train Containment Fan Coolers inoperable

**Standard:**                      No action required (already declared)

**Comment:**

**OP-137 section 8.1 Step 3.b**

**Performance Step: 17**     Verify A Train Containment Fan Coolers are secured per OP-169

**Standard:**                      No action required (already performed)

**Comment:**

**OP-137 section 8.1.2 Step 3.c**

**Performance Step: 18** Verify shut 1SW-92 SA, Cnmt Fan Cooler AH-3 inlet

**Standard:** No action required (already performed)

**Comment:**

**OP-137 section 8.1.2 Step 3.d**

**Performance Step: 19** Shut 1SW-97 SA, Cnmt Fan Cooler AH-3 outlet

**Standard:** No action required (already performed)

**Comment:**

**OP-137 section 8.1.2 Step 3.e**

**Performance Step: 20** Verify shut 1SW-91 SA, Cnmt Fan Cooler AH-2 inlet

**Standard:** No action required (already performed)

**Comment:**

**OP-137 section 8.1.2 Step 3.f**

**Performance Step: 21** Verify Shut 1SW-109 SA, Cnmt Fan Cooler AH-2 outlet

**Standard:** No action required (already performed)

**Comment:**



**OP-137 section 8.1.2 Step 3.g**

**Performance Step: 22** Shut 1SW-125, AFW Pump 1X-SAB SW Header A Drain Isolation

**Standard:** Contacts AO and tells him to close 1SW-125.

<b>Simulator Operator OR Evaluator Cue:</b>	<b>NOTE: 1SW-125 is not modeled on the Simulator.</b>
	<b>AO acknowledges direction to shut 1SW-125, AFW Pump 1X-SAB SW Header A Drain Isolation.</b>
	<b>(Pause 10 – 15 seconds) AO reports 1SW-125 closed.</b>

**Comment:**

**OP-137 section 8.1.2 Step 3.h.**

✓ **Performance Step: 23** OPEN 1SW-124 SA, SW HEADER A TO AUX FW TURBINE PMP

**Standard:** Locates MCB control switch for 1SW-124SA and identifies that the green light is lit.

Takes control switch for 1SW-124 SA from neutral to open and identifies that the GREEN light is out and the RED light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 3.i**

- ✓ **Performance Step: 24** Open 1SW-126 SA, SW HEADER A TO AUX FW TURBINE PUMP

**Standard:** Locates MCB control switch for 1SW-126 SA and identifies that the GREEN light is lit

Takes control switch for 1SW-126 SA from neutral to open and identifies that the GREEN light is out and the RED light is lit.

**Comment:**

**OP-137 section 8.1.2 Step 3.j**

**Performance Step: 25** Monitor AFW System to ensure proper operation.

**Standard:** No action required 1X-SAB AFW pump is not running but TDAFW pump Suction pressure should be seen to increase.

Report to CRS that 'A' ESW Header is supplying the 'A' MDAFW pump and the TDAFW pump.

<b>Evaluator Cue:</b>	<p><b>CRS acknowledges that 'A' ESW Header is supplying the 'A' MDAFW Pump and the TDAFW Pump.</b></p> <p><b>Announce: End of JPM</b></p> <p><b>Direct Simulator Operator to place the Simulator in FREEZE.</b></p>
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**Comment:**

**STOP TIME:** \_\_\_\_\_

<b>Simulator Operator:</b>	<b><i>When directed by the Lead Examiner go to Freeze.</i></b>
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Job Performance Measure No.: 2014 HNP NRC Exam Simulator JPM CR e  
Using ESW System As A Backup Source Of Water To AFW  
OP-137, Auxiliary Feedwater System

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	A LOCA has occurred and EOP-E-1, Loss of Reactor or Secondary Coolant is being implemented. Both A and B Motor Driven AFW pumps are in operation.
<b>Initiating Cue:</b>	<p>A leak has developed in the Condensate Storage Tank (CST) and level has decreased to less than 10 percent.</p> <p>Your directions are to secure the B Motor Driven AFW pump per OP-137 section 7.1 and to switch the AFW water supply from the CST to ESW Header A for the A Motor Driven AFW pump and the Turbine Driven AFW pump per OP-137, Auxiliary Feedwater System, Section 8.1.</p> <p>You will silence all alarms and another RO will address alarms not associated with this evolution.</p>

Facility: Harris Nuclear Plant Task No.: 022001H101

Task Title: Swapping Containment Fan Cooler Lead Fans JPM No.: 2014 NRC Exam Simulator JPM CR f

K/A Reference: 022 A4.01 RO 3.6 / SRO 3.6 **ALTERNATE PATH - NO**

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:   X  

Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The plant is operating at 100% power
- 'A' Train equipment is in service
- The oncoming shift will be performing fourth quarter sequencer testing in accordance with OST-1094 and OST-1095, Sequencer Block Circuit And Containment Fan Cooler Testing Train A (B) Quarterly Interval All Modes

**Initiating Cue:**

- The CRS is directing you to swap all of the Containment Fan Cooler Lead Fans to the 1B-SA and 1B-SB position in accordance with OP-169, Containment Cooling And Ventilation, Section 8.8

**Examiners Note:**

***To expedite the examination schedule, provide the candidate with a copy of OP-169 section 8.8 prior to entering the simulator to perform the JPM. This will allow the candidate time to task preview the procedure.***

Task Standard: Containment Fan Coolers lead selector switches are in the 1B-SB position.

Required Materials: OP-169, Containment Cooling And Ventilation, pages 1-6, and pages 35-39, Rev. 24

General References: OP-169, Containment Cooling And Ventilation, Revision 24

Handouts: OP-169, Section 8.8

Time Critical Task: N/A

Validation Time: 15 minutes

Critical Step Justification	
<b>Step 5</b>	Stopping the running fan in the train not selected as the lead fan must be performed in order to comply with procedure and to not have all Containment fans in service when not required. This step will leave only the lead fans in operation.
<b>Step 7</b>	Step must be properly performed in order to meet the intent of JPM. If the Lead Fan Selector Switch is not determined and properly aligned then the swap of Lead fans will not occur.
<b>Step 11</b>	To comply with OP-169, Precaution and Limitation #11 - After any fan cooler is started in low speed, the fan should be allowed to come up to speed for approximately 15 seconds before shifting to fast speed. This reduces the starting current required for high speed operation.
<b>Step 14</b>	Step must be properly performed in order to meet the intent of JPM. If the Lead Fan Selector Switch is not determined and properly aligned then the swap of Lead fans will not occur.
<b>Step 18</b>	To comply with OP-169, Precaution and Limitation #11 - After any fan cooler is started in low speed, the fan should be allowed to come up to speed for approximately 15 seconds before shifting to fast speed. This reduces the starting current required for high speed operation.

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-19

Silence and Acknowledge annunciators

**GO TO FREEZE** and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

**NOTE: There are no special needs for this JPM it can be ran in any 100% power IC**

- Initial Simulator IC was IC-19
- Silence Acknowledge and Reset Annunciators
- Freeze and Snap these conditions to your exam IC

<b>Simulator Operator:</b>	<b><i>When directed by the Lead Examiner go to Run.</i></b>
----------------------------	---

START TIME: \_\_\_\_\_

**Performance Step: 1      OBTAIN PROCEDURE**

**Standard:** Has task previewed OP-169 section 8.8 in preparations of swapping Containment Fan Cooler Lead Fans.

**Comment:**

**OP-169, Section 8.8 Initial Conditions**

**Performance Step: 2** It is desired to select other fan as lead in Containment Fan Cooler Unit(s).

**Standard:** Initials section 8.8.1 initial conditions.

**Comment:**

**OP-169, Section 8.8.2 Notes prior to step 1**

**Performance Step: 3** **NOTE:** Due to circuit design, swapping the Containment Fan Cooler Lead Fan Selector Switch (for lead fan on Sequencer start) may cause the running fans to trip. To minimize the potential impact, the selector switch should not be repositioned when fans are running, unless the selected fan is no longer operable or CRS permission is obtained.

**NOTE:** The following step should be repeated as needed on **one** Containment Fan Cooler Unit at a time.

**Standard:** Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**



---

PERFORMANCE INFORMATION

---

**OP-169, Section 8.8.2 Caution prior to step 1****Performance Step: 4**

**CAUTION** - Failure of equipment to secure in this section will result in the associated EDG being inoperable. Tech Spec 3.8.1.1 is applicable until the breaker for the affected load is opened.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<p>Per the procedure note <b>ONLY</b> one Containment Fan Cooler Unit (there are 2 fans per unit) will be stopped at a time and the steps will be repeated for the second Unit.</p> <p>During the performance of the JPM annunciators associated with AH-2 (ALB-27-7-2) and AH-3 (ALB-27-8-2) low flow alarms will come in. These are expected alarms during starting and stopping these Air Handlers.</p>
------------------------	--

**OP-169, Section 8.8.2 step 1****✓ Performance Step: 5**

**IF** any fan is running in the Containment Fan Cooler Unit in which the LEAD FAN SEL switch will be repositioned, **THEN PERFORM** the following:  
**a. PLACE** the control switch for each running fan in the unit in which the LEAD FAN SEL switch will be repositioned to STOP:

AH-1 unit

- AH-1 A-SB - **OFF**
- AH-1 B-SB - **OFF**

AH-2 unit

- AH-2 A-SA - **RUNNING**
- AH-2 B-SA - **RUNNING**

AH-3 unit

- AH-3 A-SA - **RUNNING**
- AH-3 B-SA - **RUNNING**

AH-4 unit

- AH-4 A-SB - **OFF**
- AH-4 B-SB - **OFF**

**Standard:**

Identifies that Train 'A' are in service and that both fans in AH-2 unit and AH-3 unit is operating.

Locates MCB controls for Containment Fan Cooler Unit AH-2 and takes control switch to STOP for AH-2 A-SA and AH-2 B-SA

**Comment:**

## PERFORMANCE INFORMATION

**OP-169, Section 8.8.2 Note prior to step 1.b****Performance Step: 6**

For AH-1 and AH-4, OST-1095 verifies that 1A-SB is selected during first and third quarters, and that 1B-SB is selected for second and fourth quarters.  
For AH-2 and AH-3, OST-1094 verifies that 1A-SA is selected during first and third quarters, and that 1B-SA is selected for second and fourth quarters.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****OP-169, Section 8.8.2 step 1.b****✓ Performance Step: 7**

PLACE the LEAD FAN SEL switch in the desired position for the Containment Fan Cooler Unit in which the fans were just secured:

- 1A-SB (1B-SB) for AH-1
- **1A-SA (1B-SA) for AH-2**
- 1A-SA (1B-SA) for AH-3
- 1A-SB (1B-SB) for AH-4

**Standard:**

Locates MCB Lead Fan Selector switch for AH-2 and rotates switch to the 1B-SA position.

**Comment:**

## PERFORMANCE INFORMATION

**OP-169, Section 8.8.2 Note prior to step 1.c****Performance Step: 8**

**NOTE:** When shifting speed of the Containment Fan Coolers from high speed to low speed, allow at least 30 seconds for the fan to coast down before starting in low speed to minimize equipment stresses.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****OP-169, Section 8.8.2 step 1.c****Performance Step: 9**

For the Containment Fan Cooler Unit in which the LEAD FAN SEL switch was just manipulated, **PLACE** the control switches for any fan that was secured in Step 8.8.2.1.a to LO-SPD:

**AH-2 unit**

- **AH-2 A-SA**
- **AH-2 B-SA**

**Standard:**

Locates AH-2 A-SA control switch and starts fan in LO-SPD  
Locates AH-2 B-SA control switch and starts fan in LO-SPD

**Comment:**

## PERFORMANCE INFORMATION

**OP-169, Section 8.8.2 Note prior to step 1.d****Performance Step: 10**

**NOTE:** After any fan cooler is started in low speed, the fan should be allowed to come up to speed for approximately 15 seconds before shifting to fast speed. This reduces the starting current required for high speed operation.

**NOTE:** Step 8.8.2.1.e must be performed without delay following Step 8.8.2.1.d. The fan should not be allowed to coast down before being started in fast speed. These two steps should be performed together, one fan at a time.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:****OP-169, Section 8.8.2 steps 1.d and 1.e****✓ Performance Step: 11**

**PLACE** the control switches for any fan that was started in Step 8.8.2.1.c to STOP:

AH-2 unit

- **AH-2 A-SA**
- **AH-2 B-SA**

**PLACE** the control switches for any fan that was stopped in Step 8.8.2.1.d to HI-SPD:

AH-2 unit

- **AH-2 A-SA**
- **AH-2 B-SA**

**Standard:**

Locates AH-2 unit control switches for:

AH-2 A-SA Takes control switches to STOP then to HI-SPD

AH-2 B-SA Takes control switches to STOP then to HI-SPD

**Comment:**

**OP-169, Section 8.8.2 step 1.f**

**Performance Step: 12**     **REPEAT** Steps 8.8.2.1.a through 8.8.2.1.e as needed for the remaining Containment Fan Cooler Units in which there are fans running.

**Standard:**               Reads step and returns to steps 8.8.2.1.a through 8.8.2.1.e for AH-3

**Comment:**

**OP-169, Section 8.8.2 step 1**

**Performance Step: 13**     **IF** any fan is running in the Containment Fan Cooler Unit in which the LEAD FAN SEL switch will be repositioned,  
**THEN PERFORM** the following:  
**a. PLACE** the control switch for each running fan in the unit in which the LEAD FAN SEL switch will be repositioned to STOP:

AH-3 unit

- AH-3 A-SA - **RUNNING**
- AH-3 B-SA - **RUNNING**

**Standard:**               Identified that Train 'A' is in service and that both fans in AH-2 unit and AH-3 unit is operating.  
  
Locates MCB controls for Containment Fan Cooler Unit AH-3 and takes control switch to STOP for AH-3 A-SA and AH-3 B-SA

**Comment:**

**OP-169, Section 8.8.2 step 1.b**

- ✓ **Performance Step: 14** PLACE the LEAD FAN SEL switch in the desired position for the Containment Fan Cooler Unit in which the fans were just secured:
- 1A-SB (1B-SB) for AH-1
  - 1A-SA (1B-SA) for AH-2
  - **1A-SA (1B-SA) for AH-3**
  - 1A-SB (1B-SB) for AH-4

**Standard:** Locates MCB Lead Fan Selector switch for AH-3 and rotates switch to the 1B-SA position.

**Comment:**

**OP-169, Section 8.8.2 Note prior to step 1.c**

**Performance Step: 15** **NOTE: When shifting speed of the Containment Fan Coolers from high speed to low speed, allow at least 30 seconds for the fan to coast down before starting in low speed to minimize equipment stresses.**

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

**OP-169, Section 8.8.2 step 1.c**

**Performance Step: 16** For the Containment Fan Cooler Unit in which the LEAD FAN SEL switch was just manipulated, **PLACE** the control switches for any fan that was secured in Step 8.8.2.1.a to LO-SPD:

**AH-3 unit**

- **AH-3 A-SA**
- **AH-3 B-SA**

**Standard:** Locates AH-3 A-SA control switch and starts fan in LO-SPD  
Locates AH-3 B-SA control switch and starts fan in LO-SPD

**Comment:**

**OP-169, Section 8.8.2 Note prior to step 1.d**

**Performance Step: 17** **NOTE:** After any fan cooler is started in low speed, the fan should be allowed to come up to speed for approximately 15 seconds before shifting to fast speed. This reduces the starting current required for high speed operation.  
**NOTE:** Step 8.8.2.1.e must be performed without delay following Step 8.8.2.1.d. The fan should not be allowed to coast down before being started in fast speed. These two steps should be performed together, one fan at a time.

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**



**OP-169, Section 8.8.2 steps 1.d and 1.e**

- ✓ **Performance Step: 18** **PLACE** the control switches for any fan that was started in Step 8.8.2.1.c to STOP:

AH-3 unit

- AH-3 A-SA
- AH-3 B-SA

**PLACE** the control switches for any fan that was stopped in Step 8.8.2.1.d to HI-SPD:

AH-3 unit

- AH-3 A-SA
- AH-3 B-SA

**Standard:**

Locates AH-3 unit control switches for:

AH-3 A-SA Takes control switches to STOP then to HI-SPD

AH-3 B-SA Takes control switches to STOP then to HI-SPD

**Comment:****OP-169, Section 8.8.2 Note prior to step 2**

- Performance Step: 19** **NOTE:** For AH-1 and AH-4, OST-1095 verifies that 1A-SB is selected during first and third quarters, and that 1B-SB is selected for second and fourth quarters.

For AH-2 and AH-3, OST-1094 verifies that 1A-SA is selected during first and third quarters, and that 1B-SA is selected for second and fourth quarters.

**Standard:**

Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

**Comment:**

**OP-169, Section 8.8.2 step 2**

**Performance Step: 20** **IF** there is no fan running in the Containment Fan Cooler Unit, **THEN PLACE** the LEAD FAN SEL switch in the desired position for the Containment Fan Cooler Unit:

- 1A-SB (1B-SB) for AH-1
- 1A-SA (1B-SA) for AH-2
- 1A-SA (1B-SA) for AH-3
- 1A-SB (1B-SB) for AH-4

**Standard:** Identifies that AH-1 and AH-4 do not have fans running and places LEAD FAN SEL switches to 1B-SB for each AH.

**AH-1 LEAD FAN SEL switch to 1B-SB**

**AH-4 LEAD FAN SEL switch to 1B-SB**

**Comment:**

**OP-169, Section 8.8.2 step 3**

**Performance Step: 21** **VERIFY** that the fans selected in Steps 8.8.2.1.c and 8.8.2.2 are OPERABLE.

**Standard:** Initials step that fans selected in Steps 8.8.2.1.c and 8.8.2.2 are OPERABLE.

<b>Evaluator Cue:</b>	<p><b>When student identifies or states that the fans are operable</b></p> <p><b>CUE:</b></p> <p><b>I will get a second operator to complete the configuration closeout. Evaluation on this JPM is complete.</b></p> <p><b>END OF JPM</b></p> <p><b>Inform the Simulator Operator to place Simulator in FREEZE</b></p>
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**STOP TIME:** \_\_\_\_\_

<b>Simulator Operator:</b>	<b>When directed by the Lead Examiner then go to Freeze.</b>
----------------------------	--

Job Performance Measure No.: 2014 NRC Exam Simulator JPM CR f  
Swapping Containment Fan Cooler Lead Fans  
OP-169, Containment Cooling and Ventilation, Section 8.8

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The plant is operating at 100% power</li><li>• 'A' Train equipment is in service</li><li>• The oncoming shifts will be performing fourth quarter sequencer testing in accordance with OST-1094 and OST-1095, Sequencer Block Circuit And Containment Fan Cooler Testing Train A (B) Quarterly Interval All Modes</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• The CRS is directing you to swap all of the Containment Fan Cooler Lead Fans to the 1B-SA and 1B-SB position in accordance with OP-169, Containment Cooling And Ventilation, Section 8.8</li></ul>

1 Facility: Harris Nuclear Plant Task No.: 301092H401

Task Title: Reset CVIS and Restore RM-3502A to Operation JPM No.: 2014 NRC Exam Simulator JPM CR g

K/A Reference: 073 A4.02 RO 3.7 SRO 3.7 **ALTERNATE PATH - NO**

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_ Actual Performance:  X   
 Classroom \_\_\_\_\_ Simulator  X  Plant \_\_\_\_\_

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The plant is operating at 100% power
- Breaker 105 opened resulting in a loss of 1A-SA 6.9 KV Bus
- The 'A' EDG has re-energized the bus

**Initiating Cue:**

- You are the BOP and the CRS has directed you to perform AOP-025, Loss Of One Emergency AC Or One Emergency DC Bus Attachment 3 - Resetting CVIS and Restoring RM-3502A Operation
- You will silence all alarms and another RO will address alarms not associated with this evolution.

**Evaluator Note:**

**At this time provide the candidate a copy of AOP-025, Attachment 3**

Task Standard: CVIS reset and RM-3502A restored to operation.

Required Materials: AOP-025 Attachment 3, OP-118 section 6.3

General References: AOP-025, Loss Of One Emergency AC Or One Emergency DC Bus,  
Revision 38  
OP-118, Radiation Monitoring System, Revision 32

Handouts: AOP-025, Attachment 3  
OP-118, Section 6.3

Time Critical Task: N/A

Validation Time: 10 minutes

Critical Step Justification	
Step 9	Proper completion of this step restores operations to Containment Vacuum Breakers and results in exiting Tech Spec 3.0.3
Step 10	Must open the Sample Panel valve to line up flow to the Rad Monitor. Without opening the valve the Rad Monitor will not be monitoring anything.
Step 11	Must depress the "flow" pushbutton to allow the Rad Monitor to obtain flow through the monitor.

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-171
- password “spurs”
- Go to RUN
- Silence and Acknowledge annunciators

**GO TO FREEZE** and inform the lead examiner the Simulator is ready. **DO NOT GO TO RUN** until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

The following setup information is how this exam IC was developed.

- Initial Simulator IC was IC-19
- Go to run
- Insert a loss of 6.9KV Emergency Bus 1A-SA (Normal Feed Bkr 105)
  - imf eps05a (n 00:00:00 00:00:00) true
- Reduce AFW flow to minimum (recirc flow only)
  - Shut 1MS-70
  - Shut 1AF-147, 143, 149
- Allow sequencer to reach Load Block-9
- Re-energize 480V Emergency Bus 1A1
- Allow SG levels to stabilize (about 5-10 minutes)
- Silence, Acknowledge and Reset Annunciators
- Freeze and Snap these conditions to your exam IC

<b>Simulator Operator:</b>	<b>When directed by the Lead Examiner place the Simulator in Run.</b>
----------------------------	---

**START TIME:** \_\_\_\_\_

**Performance Step: 1** Obtain/review procedure.

**Standard:** Reviews AOP-025, Loss Of One Emergency AC Bus or One Emergency DC Bus, Attachment 3

<b>Evaluator's Cue:</b>	<b>Provide OP-118, Section 6.3 when the need is determined.</b>
-------------------------	---

**Comment:**

**AOP-025, Attachment 3 Step 1.a.1**

**Performance Step: 2** Perform the following to reset CVIS:  
Verify operability of RM 3561A(B) and RM 3561C(D) as follows:  
(1) Perform Channel Checks per OP-118, Radiation Monitoring System, Section 6.3.

**Standard:** Obtain OP-118, Section 6.3 and performs channel checks

**Comment:**



## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>The evaluation of all the channels may be performed using the group display to satisfy the channel check. Evaluation of the trend for each individual channel is acceptable but not required therefore the candidate may verify RM's 3561A through D.</b>
------------------------	--

**Performance Step: 3**      **Perform Channel Checks per OP-118, Radiation Monitoring System, Section 6.3.**

**Standard:**                      At RM-11:

- Selects RM 3561 A from Group 2 **or** Grid 2 **or** Grid 6
- Verifies each monitor status indicates "green".
- Depresses the <HOURLY TREND> key and reviews the current value for each channel.
- After checking RM 3561 A

Proceeds to check RM 3561 C

<b>Evaluator Cue:</b>	<b>After &lt;HOURLY TREND&gt; is selected for RM 3561 A cue:</b>  <b>If asked the current value and trend is consistent with the recorded hourly data over the past 24 hours.</b>
-----------------------	---

**Comment:**

## PERFORMANCE INFORMATION

**Performance Step: 4**      **Perform Channel Checks per OP-118, Radiation Monitoring System, Section 6.3. Continued:**

**Standard:**                      At RM-11:

- Selects RM 3561 C from Group 2 **or** Grid 2 **or** Grid 6
- Verifies each monitor status indicates “green”.
- Depresses the <HOURLY TREND> key and reviews the current value for each channel.
- After checking RM 3561 C – Restores RM-11 screen to desired Grid display

Returns to AOP-025, Attachment 3.

<b>Evaluator Cue:</b>	<p><b>After &lt;HOURLY TREND&gt; is selected for RM 3561 C cue:</b></p> <p><b>If asked the current value and trend is consistent with the recorded hourly data over the past 24 hours.</b></p> <p><b>Note: Returning Grid display to any display (#1 – #6) is OK</b></p>
-----------------------	--

**AOP-025, Attachment 3 Step 1.a.2:**

**Performance Step: 5**      Perform the following to reset CVIS:

(2) Direct Health Physics to perform HPP-780, Radiation Monitor System, Operators Manual, for the monitors affected by the loss of power **RM 3561A** and **3561C**.

**Standard:**                      Contacts Health Physics.

<b>Evaluator Cue:</b>	<p><b>Acknowledge request,</b> <b>(state: using time compression)</b> <b>HPP-780 checks have been completed.</b></p>
-----------------------	--

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>Placing 1CP-9 / 1CP-5, and 1CP-6 / 1CP-3 and both Air Handlers to the Shut / Stopped conditions ensures that when the Containment Isolation Signal is reset the equipment will be in a known alignment.</b>
------------------------	--

**AOP-025, Attachment 3 Step 1.b**

- Performance Step: 6** Perform the following to reset CVIS:
- Momentarily place the following Containment Purge Dampers in SHUT:
- Normal Purge Inlet/Discharge 1CP-9 & 5
  - Normal Purge Inlet/Discharge 1CP-6 & 3

- Standard:** Momentarily selects each of the following to SHUT:
- Switch for 1CP-9 and 1CP-5 (**Already Shut– Green Light On/Red Light off**)
  - Switch for 1CP-6 and 1CP-3 (**Already Shut– Green Light On/Red Light off**)

**Comment:**

**AOP-025, Attachment 3 Step 1.c**

- Performance Step: 7** Perform the following to reset CVIS:
- Momentarily place Normal Purge Supply Fan (AH-82A and AH-82B) control switches to STOP.

- Standard:** Momentarily place each of the following control switches to STOP:
- AH-82A (**Already STOPPED – Green Light on/Red Light off**)
  - AH-82B (**Already STOPPED - – Green Light on/Red Light off**)

**Comment:**

**AOP-025, Attachment 3, Note prior to Step 1.d**

**Performance Step: 8** The following step will restore Containment Vacuum Breakers and result in exiting Tech Spec 3.0.3.

**Standard:** Operator reads and placekeeps at any procedure note or caution (initials, checks or circle/slash)

Informs CRS of Tech Spec 3.0.3 exit point

<b>Evaluator Cue:</b>	<b>Acknowledge report.</b>
-----------------------	----------------------------

**Comment:**

**AOP-025, Attachment 3 Step 1.d**

- ✓ **Performance Step: 9** Perform the following to reset CVIS:
- Reset CVIS using both CNMT Ventilation Isol Train A (B) Switch

**Standard:** Resets both CVIS trains using the respective switches.

**Comment:** **There is no definitive indication to verify that CVIS has been reset**

## PERFORMANCE INFORMATION

**AOP-025, Attachment 3, Step 2.a**

- ✓ **Performance Step: 10** Perform the following to restore RM 3502A:  
Open the following RCS Leak Det Sample Isol Valves:

- 1SP-16 and 1SP-939
- 1SP-916 and 1 SP-918

**Standard:**

Locates MCB switches on AEP-1

- 1SP-16 and 1SP-939 (**already open - 'B' Train valves – Red Lights On**) **Both lights on 1 control switch.**
- Momentarily place switch (both lights on one control switch) for 1SP-916 and 1SP-918 to Open – **critical element. Green Lights out and Red Lights On.**

**Comment:****AOP-025, Attachment 3, Step 2.b**

- ✓ **Performance Step: 11** Start the RM 3502A sample pump by depressing the FLOW pushbutton on RM 3502A.

**Standard:**

- Locates RM-3502A FLOW pushbutton on Panel – Radiation Monitor Control and Display Unit 1 Train A Bay 2 and depresses the FLOW push button on monitor display RC-1LT-3502A-SA CNMT LEAK DET SYS then verifies that the push button is illuminated. (critical element)
- Reports to CRS AOP-025 Attachment 3 is complete.

**Comment:**

<b>Evaluator Cue:</b>	<b>CRS Acknowledge report.</b>  <b>END of JPM</b>  <b>Direct the Simulator Operator to place the Simulator in FREEZE.</b>
-----------------------	---

**STOP TIME:** \_\_\_\_\_

## PERFORMANCE INFORMATION

<b>Simulator Operator:</b>	<b>When directed by the Lead Examiner then go to Freeze.</b>
----------------------------	--

**Examiners Pages follow:**

The following pages are what the candidate's copy of the paper work for the channel checks should look like when completed. This is provided to allow the examiner to make comments on how the procedure was filled out by the candidate. It is not intended to be pass/fail criteria.

**6.3. Channel Checks****6.3.1. Initial Conditions**

1. Channel check of a radiation monitor, Plant Vent Stack Flow Rate Monitor, or Turbine Building Vent Stack Flow Rate Monitor is required.

OP**6.3.2. Procedural Steps**

**NOTE:** Channel checks from an RM-11 is the preferred method for all equipment except RM-3589 and RM-3590.

**NOTE:** For Tech Spec Surveillance purposes, Radiation Monitors in the following groups may be channel checked using the GROUP MENU function.

- Containment (Area Radiation Monitors only), Group 2
- Fuel Handling Building, Group 14
- Main Control Room Air Intakes, Group 27

1. **PERFORM** a channel check for the required radiation monitor as follows:

- a. **IF** it is desired to perform channel checks for Radiation Monitors using the GROUP MENU function,  
**THEN PERFORM** the following:

- (1) **DISPLAY** the appropriate group as defined in the note above.

OP

- (2) **PERFORM** a qualitative assessment of the performance of individual monitors in the selected group as compared to similar monitors in the group.

OP3561A 3561C

- b. **SELECT** the radiation monitor channel.

OPOP

- c. **IF** the channel selected is green,  
**THEN CONTINUE** with Step 6.3.2.1.e.

OPOP

- d. **IF** the channel selected is OTHER than green,  
**THEN PERFORM** the following:

- (1) **DEPRESS** the STATUS key

N/AN/A

- (2) **REVIEW** for failures.

↓↓

## PERFORMANCE INFORMATION

## 6.3.2 Procedural Steps (continued)

**NOTE:**

In Step 6.3.2.1.d(3), it is only allowed to have a Loss Of Sample Flow for channels not in service (WRGM mid or high range), or for a monitor with the sample pump secured by procedure.

**NOTE:**

A **non-effluent** radiation monitor that has a loss of communication status on the RM-11 should be channel checked from its RM-23 per step 6.3.2.4. If the monitor passes this channel check, then it is not required to be declared inoperable.

- (3) **IF** any of the following "groups" has an item with a "\*\*\*\*", **THEN DECLARE** the radiation monitor inoperable unless the above notes apply:

3561A 3561C

N/A N/A

- RM-11 POLL STATUS
- RM-11 COMMUNICATIONS
- OPERATE FAILURE

- e. **DEPRESS** the TREND HOURLY key.

OP | OP

- f. **IF** this procedure is being used to return the monitor to service after maintenance, **THEN**:

- (1) **CHECK** that the instrument is reading an expected value by pressing the TREND 10 MIN Button and checking the present indication.
- (2) **CHECK** that the instrument is reading an expected value by pressing the TREND DAILY Button and checking the present indication.

N/A N/A

↓ ↓

## PERFORMANCE INFORMATION

## 6.3.2 Procedural Steps (continued)

**NOTE:** **OPERATING EXPERIENCE:** On 11/26/12 RM-3546-1 was returned to service at 1728 following maintenance. Per OWP-RM-15, MST-I0379, HPP-780, and OST-2044 channel checks were all done SAT; and the monitor declared OPERABLE. Following return to service the monitor database became corrupted; monitor displayed 1.64 E-2, approximately two decades below normal. This was not caught at the 2100 channel check. At 0900 on the 27th, the RWCR operator questioned the constant 1.64 E-2 reading vice a varying number. Ultimately the database error was discovered and corrected. Qualitative assessments of rad monitors must use diverse indications if available, or trend history to determine operability. CR 574702.

**NOTE:** RM-11 historical trends may not be available or sufficient for determining if channel checks are satisfactory. ERFIS or OSI-PI data should be used when available to determine if current values are 'normal' in relation to previous data.

3561A 3561C

- g. **PERFORM** a qualitative assessment of the current value and trend of the radiation monitor readings.

OP OP

**NOTE:** WRGM's have two sample flow monitors, SMPL FLOW1 will indicate flow when the low range is in service, and SMPL FLOW2 will indicate flow when the mid or high range is in service.

- h. **IF** required,  
**THEN CHECK** for proper indication of sample flow referencing the note above.

OP OP



## PERFORMANCE INFORMATION

## 6.3.2 Procedural Steps (continued)

**CAUTION**

For a vent stack radiation monitor (WRGM OR PIG) channel that is INOPERABLE, the vent stack flow rate monitor must be channel checked through another OPERABLE vent stack radiation monitor channel at the RM-11.

**CAUTION**

If another operable associated vent stack radiation monitor channel is not available, the associated stack flow rate monitor locally may be channel checked per Section 8.4 or declared inoperable and perform Section 8.5.

- i. **IF** required,  
**THEN PERFORM** a Stack Flow Rate Monitor process flow check as follows (this check may be performed during channel checks above while the appropriate monitor is selected):

- (1) **IF** channel check cannot be performed using an RM-11,  
**THEN PERFORM** channel check per section 8.4.

N/A

**NOTE:** The summation of design flows in the following step may differ from the PROC FLOW N. The PROC FLOW N value uses design flow rates with a built in correction factor.

- (2) **REFERENCE** Attachment 7 for the Plant Vent Stack, **OR** Attachment 8 for the Turbine Building Vent Stack, as required, to determine estimated flow based on fans that are currently exhausting to the stack.
- (3) **SELECT** the appropriate radiation monitor channel.
- (4) **DEPRESS** the MONITOR ITEMS button.
- (5) **CHECK** item 001 is reading 0.
- (6) **IF** item 001 value is greater than 0,  
**THEN CONTACT** Health Physics to determine if a substitute value is valid.
- (7) **DEPRESS** the TREND HOURLY key.
- (8) **COMPARE** PROC FLOW N to the estimated flow obtained in step 6.3.2.1.i(2).

**6.3.2 Procedural Steps (continued)**

- (9) **IF** PROC FLOW N does not match estimated flow within a reasonable amount, **OR** is not updating with ventilation shifts,  
**THEN PERFORM** the following:
- (a) **IF** channel checking FT-01TV3536, Turbine Bldg Vent Stack Flow Rate Flow Transmitter,  
**THEN DECLARE** FT-01TV3536 inoperable N/A  
**AND PROCEED** to Section 8.5. \_\_\_\_\_
- (b) **IF** channel checking PNL-21AV-3509-1, Plant Isokinetic Control Panel,  
**THEN DECLARE** PNL-21AV-3509-1 inoperable  
**AND PROCEED** to Section 8.5. \_\_\_\_\_
2. **IF** these checks are being performed as part of a surveillance test,  
**THEN DOCUMENT** the results as required in the appropriate surveillance. N/A \_\_\_\_\_
3. **RESTORE** the RM-11 to the desired Grid Display when channel checks are complete by depressing the desired grid key. OP \_\_\_\_\_

**CAUTION**

If either RM-11 in the MCR or RWCR are unavailable, Section 8.3 contains the actions and impact on operability of effluent radiation monitors.

4. **IF** desired,  
**THEN PERFORM** channel checks on non-effluent radiation monitors at the respective radiation monitor RM-23, RM-23L, or RM-23P:
- a. **CHECK** the green OPER light is lit for each channel. N/A
- b. **PERFORM** the following for each of the channels available:
- (1) **SELECT** the available channel. \_\_\_\_\_
- (2) **CHANNEL CHECK** the value displayed. \_\_\_\_\_

VERIFICATION OF COMPLETION

---

Job Performance Measure No.: 2014 HNP NRC Exam Simulator JPM CR g  
Reset CVIS and Restore RM-3502A to Operation IAW  
AOP-025, Loss Of One Emergency AC Or One Emergency  
DC Bus, Attachment 3

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The plant is operating at 100% power</li><li>• Breaker 105 opened resulting in a loss of 1A-SA 6.9 KV Bus</li><li>• The 'A' EDG has re-energized the bus</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• You are the BOP and the CRS has directed you to perform AOP-025, Loss Of One Emergency AC Or One Emergency DC Bus Attachment 3 - Resetting CVIS and Restoring RM-3502A Operation</li><li>• You will silence all alarms and another RO will address alarms not associated with this evolution.</li></ul>

Facility: Harris Nuclear Plant

Task No.: 088018H101

Task Title: Restoring the Control Room Area  
HVAC System to Normal After a  
Control Room Isolation SignalJPM No.: 2014 NRC Exam  
Simulator JPM CR h

K/A Reference: APE067 AA1.05 RO 3.0 SRO 3.1

**ALTERNATE PATH - YES**

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:

Simulated Performance: \_\_\_\_\_

Actual Performance:   X  Classroom \_\_\_\_\_ Simulator   X   Plant \_\_\_\_\_**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The unit is operating at 100% power when a fire occurred at the Emergency Shutdown Diesel Generator during testing.
- The smoke from the fire caused a Control Room Ventilation Isolation signal to occur.  
(Smoke detected at the normal intake Zone 1-150)
- The Fire Brigade has put the fire out and the smoke has been cleared.

**Initiating Cue:**

- You are the BOP.
- The CRS has directed you to restore the Control Room Area HVAC System to normal in accordance with OP-173, Control Room Area HVAC System, Section 8.4. The initial conditions are satisfied and the HVAC system is in operation per section 8.1 of OP-173.

Task Standard: Place the Control Room Area HVAC system in normal operation

Required Materials: Replacement copy of OP-173, Control Room Area HVAC System, Rev. 34 for each JPM performed

General References: OP-173, Control Room Area HVAC System, Rev. 34, ALB-030-6-4, Rev. 34

Time Critical Task: No

Validation Time: 15 minutes

CRITICAL STEP JUSTIFICATION	
<b>Step 4</b>	Must reset both trains of Control Room ventilation or the system cannot be taken out of the Emergency filtration lineup.
<b>Step 7</b>	Must open the normal intake valves to return system lineup to normal flow path for operation.
<b>Step 10</b>	Must start a normal exhaust fan to obtain flow and obtain correct damper alignment.
<b>Step 12</b>	Must stop both emergency filtration fans to return to normal filtration lineup and to shift dampers back to normal lineup.
<b>Step 13</b>	Must shut emergency exhaust Recirc dampers to complete normal alignment of Control Room ventilation system.
<b>Step 18</b>	Must start the standby fan to re-establish Main Control Room ventilation.

**2014 NRC Exam - SIMULATOR SETUP****Simulator Operator**

- Reset to IC-172
- Password "spurs"
- Go to RUN
- Ensure RM-11 is NORMAL
- Silence and Acknowledge annunciators

**GO TO FREEZE** and inform the lead examiner the Simulator is ready. DO NOT GO TO RUN until directed by the lead examiner. (The examiner has provided to the candidate with initial conditions and the initiating cues prior to placing the simulator in RUN.)

To recreate the IC setup for this JPM:

- Initial Simulator IC was IC-19 – go to RUN
- Enter a Control Room Isolation Signal (CRIS) (the JPM has the signal in due to smoke but there isn't a relay that can be individually used so use the one for Radiation)
  - irf rms011 (n 00:00:00 00:00:00) 0.0005 00:00:00
  - irf rms013 (n 00:00:00 00:00:00) 0.0005 00:00:00
- After the fans and dampers have completed switching positions reset the rad monitors to 1e-7 or they will not clear (value is < the alarm setpoint on RM-11)
  - mrf rms011 (n 00:00:00 00:00:00) 1e-007 00:00:00
  - mrf rms013 (n 00:00:00 00:00:00) 1e-007 00:00:00
  - Reset RM-11 back to normal
- Start the Motor Driven Fire Pump
  - irf msc029 (n 0 0 ) START
- Place 2 alarms to on to simulate a fire
- Fire Detection System Trouble
  - ian xn30a07 (n 0 0) ALARM\_ON
- Reflash Fire Pump System Trouble
  - ian xn30b07 (n 0 0) ALARM\_ON
- Create a conditional Trigger to trip AH-15 A SA when the control switch for Emergency Filtration Recirc Damper CA-D61 SB is taken to SHUT

To create the conditional trigger:

- Go to malfunctions
- Find Control Room Normal Support Fan AH-15-1A assign Trigger 1 with switch to STOP and GREEN light OFF
  - ior xdi085 (1 00:00:00 00:00:00) STOP
  - ior xd2o085 (1 00:00:00 00:00:00) OFF
- Wait for ALB 30-3-3 CNT Room Air Low ΔP to alarm
- Find Annunciator ALB-030-6-4 assign Trigger 1 to alarm on
  - ior xn30d06 (1 00:00:00 00:00:00) ALARM\_ON
- Go to triggers
  - Click on Trigger 1
  - Click on 'Assign File'
  - Choose CZD61Shut
  - (source file should now have CZD61Shut)
- Silence, Acknowledge and Reset the annunciators
- Freeze and Snap and save these conditions to your exam IC

<b>Simulator Operator:</b>	<b><i>When directed by the Lead Examiner go to Run.</i></b>
----------------------------	---

**START TIME:** \_\_\_\_\_**Performance Step: 1**      Previews procedure**Standard:**                      OP-173 and refers to Section 8.4

<b>IF asked by candidate</b>  <b>Evaluator Cue:</b>	<b>Initial Conditions have been satisfied</b> <b>Control Room Area HVAC System in operation per</b> <b>Section 8.1, 8.2 or 8.3</b>
---	--

**Comment:****OP-173, Section 8.4 Note prior to Step 1****Performance Step: 2**      NOTE: The following Step will cause ALB-030/1-1, Control Room Isolation Train A, and ALB-030/2-1, Control Room Isolation Train B, to clear**Standard:**                      Operator reads and placekeeps any note or caution (initials, checks or circle/slash)**Comment:**



PERFORMANCE INFORMATION

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**OP-173, Section 8.4 Caution prior to Step 1****Performance Step: 3**

CAUTION: Failure of equipment to secure in this section will result in the associated EDG being inoperable. Tech Spec 3.8.1.1 is applicable until the breaker for the affected load is opened.

**Standard:**

Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:****OP-173, Section 8.4 Step 1****✓ Performance Step: 4**

PLACE the CONTROL ROOM ISOL TRAIN A and B RESET switches to RESET.

- CONTROL ROOM ISOL TRAIN A RESET
- CONTROL ROOM ISOL TRAIN B RESET

**Standard:**

Locates and momentarily operates the Control Room Isol Train A reset switch to reset and the Train B reset switch to reset (ALB-030/1-1 and ALB-030/2-1 alarms clears. Operator resets alarm using reset button on MCB and reports to CRS.

**Comment:**

**OP-173, Section 8.4, Step 2**

- Performance Step: 5** Shut any of the following EMER FILT SOUTH (NORTH) OUTSIDE AIR INLET valves that are open,
- EMER FILT SOUTH OUTSIDE AIR INLET 1CZ-9 SA
  - EMER FILT SOUTH OUTSIDE AIR INLET 1CZ-10 SB
  - EMER FILT NORTH OUTSIDE AIR INLET 1CZ-11 SA
  - EMER FILT NORTH OUTSIDE AIR INLET 1CZ-12 SB
- Standard:** Locates valves and verifies ALL outside air inlets are closed. (Position indication lights are all green.)
- Comment:**

**OP-173, Section 8.4, Note prior to Step 3**

- Performance Step: 6** NOTE: Performing steps 8.4.2.3 through 8.4.2.6 quickly will minimize excessive pressurization of the Main Control Room
- Standard:** Operator reads and placekeeps any note or caution (initials, checks or circle/slash).
- Comment:**

**OP-173, Section 8.4, Step 3**

- ✓ **Performance Step: 7** **OPEN** the following Control Normal Outside Air Intake Valves:
- NORMAL INTAKE 1CZ-1 SA
  - NORMAL INTAKE 1CZ-2 SB
- Standard:** Locates and Opens NORMAL INTAKES  
1CZ-1 SA and 1CZ-2 SB (Green Light goes off and Red Light comes on)
- Comment:**

**OP-173, Section 8.4, Step 4**

**Performance Step: 8** If more than one NORMAL SUPPLY FAN AH-15 ASA (BSB) is running, stop one fan.

**Standard:** Identifies ONLY one NORMAL SUPPLY FAN is running (AH-15 ASA) and there is no need to stop a fan

**Comment:**

**OP-173, Section 8.4, Step 5**

**Performance Step: 9**

Verify associated valves/dampers align for the stopped train as follows:	
AH-15 IN CZ-D1 (CZ-D2)	Shut (indication) on SLB-5 (6)
AH-15 IN CZ-25 (CZ-26)	Shut (indication) on SLB-5 (6)
CONT ROM NORMAL RECIRC DAMPER CZ-D69 SA (CZ-D70 SB)	Shut

**Standard:** Locates and verifies the associated valves/dampers aligned for the stopped train.

AH-15 IN CZ-D1 (CZ-D2)	<b>Shut</b> (indication) on SLB-5 (6)
AH-15 IN CZ-25 (CZ-26)	<b>Shut</b> (indication) on SLB-5 (6)
CONT ROM NORMAL RECIRC DAMPER CZ-D69 SA (CZ-D70 SB)	<b>Shut</b>

**Comment:**

**OP-173, Section 8.4, Step 6**

- ✓ **Performance Step: 10** Start NORMAL EXHAUST FAN E-9 A (B)

**Standard:** Takes Normal Exhaust Fan E-9 A fan switch to start, confirms RED light is lit

**Comment:**

**OP-173, Section 8.4, Step 7**

- Performance Step: 11** Verify the following valves/dampers are aligned as indicated:

E-9A(B) IN CZ-D6 (CZ-D7)	Open (located on SLB-7)
E-9A(B) OUT CZ-D12 (CZ-13)	Modulates (located on SLB-7)
NORMAL EXHAUST 1CZ-3 SA and 1CZ-4 SB	Open

**Standard:** Verifies:

E-9A IN CZ-D6	<b>Open</b> (located on SLB-7)
E-9A OUT CZ-D12	<b>Modulates</b> (located on SLB-7)
NORMAL EXHAUST 1CZ-3 SA and 1CZ-4 SB	<b>Open</b>

**Comment:**

**OP-173, Section 8.4, Steps 8, 9 and 10**

- ✓ **Performance Step: 12** If running, THEN STOP BOTH EMERGENCY FILTRATION FAN R-2 A-SA and R-2 B-SB and verify:

R2 INLET CZ-23 (CZ-24)	Shut [located on SLB-5 (6)]
R2 DISCH CZ-21 (CZ-22)	Shut [located on SLB-5 (6)]
EMERGENCY FILTRATION DISCHARGE 1CZ-19 SA and 1CZ-20 SB	Shut

**Standard:**

Locates and stops both EMERGENCY FILTRATION FANS R-2 A-SA and R-2 B-SB (**critical to stop fans**) and verifies:

R2 INLET CZ-23 (CZ-24)	<b>Shut</b> [located on SLB-5 (6)]
R2 DISCH CZ-21 (CZ-22)	<b>Shut</b> [located on SLB-5 (6)]
And verifies that EMERGENCY FILTRATION DISCHARGE 1CZ-19 SA and 1CZ-20 SB	<b>Shut</b>

**Comment:**

**NOTE: Alternate Path Starts Here**

<b>Lead Examiner and Simulator Operator:</b>	<b>When the candidate shuts CZ-D61 SB a conditional trigger will trip the running Control Room Emergency Supply Fan breaker (AH-15 ASA breaker 1A36-SA-5A )</b>
--	---

**OP-173, Section 8.4, Step 11**

- ✓ **Performance Step: 13** Shut the EMERGENCY FILTRATION RECIRC dampers  
EMERGENCY FILTRATION RECIRC DAMPER CZ-D66 SA  
and  
EMERGENCY FILTRATION RECIRC DAMPER CZ-D61 SB

**Standard:** Locates the control switches and **SHUTS** the EMERGENCY FILTRATION RECIRC dampers  
CZ-D66 SA (Green Light On)  
and  
**CZ-D61 SB (supply breaker 1A36-SA-5A trips)Green light On**

**Comment:**

**Supply breaker 1A36-SA-5A for AH-15 ASA trips open**

**Performance Step: 14** Annunciator ALB-030-6-4, CONT ROOM HVAC NORMAL  
SUPPLY FANS AH-15 LOW FLOW-O/L

**Standard:** Acknowledges alarm and identifies that AH-15A SA has lost green indication on MCB and reports information to CRS.  
Pulls APP and reviews response for alarm

<b>Evaluator Cue:</b>	<b>The CRS acknowledges the report. If the candidate identifies the AH-15A SA has tripped and determines the APP will be addressed after the task to restore ventilation is complete as the CRS direct the candidate to address the APP before continuing with the task.</b>
-----------------------	--

**Comment:**

**Response to ALB-030-6-4, CONT ROOM HVAC NORMAL  
SUPPLY FANS AH-15 LOW FLOW-O/L**

- Performance Step: 15**    **PERFORM** Corrective Actions:
- a. **CHECK** AH-15 fans status indication on MCB.
  - b. **IF** fan is tripped, **THEN PERFORM** the following:
    - (1) **START** the standby fan using OP-173, Control Room Area HVAC System.
    - (2) **IF** white fan trouble light is LIT, **THEN DISPATCH** an operator to check overload relays on 1A36-SA-5A or 1B36-SB-3A.
    - (3) **DISPATCH** an operator to check for tripped breaker on 1A36-SA-5A or 1B36-SB-3A.
  - c. **CHECK** damper alignment on MCB for CZ-D1SA-1, CZ-D2SB-1, CZ-25 and CZ-26.
  - d. **IF** alb-030-6-3 is ALARMING, THEN REFER TO ALB-030-6-3

- Standard:**
- Identifies that AH-15 ASA has tripped and the white fan trouble light is NOT lit
  - Start the standby fan:
    - Obtains a copy of OP-173 section 5.1, Control Room Area HVAC and starts the standby fan

**Comment:**

**OP-173, Section 5.1, Startup of Normal Supply and Exhaust Fans**

- Performance Step: 16**    **PERFORM** Corrective Actions:
- (1) START** the standby fan using OP-173, Control Room Area HVAC System.
- Section 5.1.1 Initial Conditions**
- 1. Attachment 1 is complete**
  - 2. Attachment 2 is complete**

**Standard:**                      Reviews initial conditions of Attachment 1 and Attachment 2 for completeness

<b>Lead Evaluator Cue:</b>	<b>Using time compression the Initial Conditions are met.</b>
----------------------------	---

**Standard:**                      Initials section 5.1.1 step 1 and 2 for initial conditions complete

**Comment:**

**OP-173, Section 5.1.2, Notes prior to step 1**

- Performance Step: 17**    **NOTE:** The following Steps align Train A Control Room Area HVAC components to service. Train B nomenclature is in parenthesis.
- NOTE:** If Swapping Control Room Ventilation Fans, it is preferable to secure the running fan first, then start the desired fans with this section.

- Standard:**
- Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**



**OP-173, Section 5.1.2, step 1**

- ✓ **Performance Step: 18** START the NORMAL SUPPLY FAN AH-15 BSB

**Standard:** Locates MCB switch for AH-15 BSB and takes switch to start

**Comment:**

**OP-173, Section 5.1.2, step 2**

**Performance Step: 19** **VERIFY** that the following components are aligned properly:  
 AH-15 IN CZ-D2 .....Open SLB-6  
 AH-15 DISCH CZ-26 .....Open SLB-6  
 NORMAL INTAKE 1CZ-1 SA and 1CZ-2 SB.....Open  
 CONT RM NORMAL RECIRC DAMPER CZ-D70 SB... Open  
 NORMAL EXHAUST FAN E-9B..... Running  
 E-9B IN CZ-D7 .....Open SLB-7  
 E-9B OUT CZ-D13 .....Modulates SLB-7  
 NORMAL EXHAUST 1CZ-3 SA and 1CZ-4 SB .....Open

**Standard:** **VERIFIES** that the following components are aligned properly:  
 AH-15 IN CZ-D2 .....**Open SLB-6**  
 AH-15 DISCH CZ-26 .....**Open SLB-6**  
 NORMAL INTAKE 1CZ-1 SA and 1CZ-2 SB.....**Open**  
 CONT RM NORMAL RECIRC DAMPER CZ-D70 SB... **Open**  
 NORMAL EXHAUST FAN E-9B..... **Running**  
 E-9B IN CZ-D7 .....**Open SLB-7**  
 E-9B OUT CZ-D13 .....**Modulates SLB-7**  
 NORMAL EXHAUST 1CZ-3 SA and 1CZ-4 SB .....**Open**

<b>Evaluator Cue:</b>	<b>After verification of step 2 components</b> <b>CUE: Another Operator will continue with any remaining ventilation restoration. END OF JPM</b>
-----------------------	---

**STOP TIME:** \_\_\_\_\_

VERIFICATION OF COMPLETION

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Job Performance Measure No.: 2014 HNP NRC Exam Simulator JPM h  
Restoring the Control Room Area HVAC System to Normal  
After a Control Room Isolation Signal  
OP-173, Control Room Area HVAC System

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The unit is operating at 100% power when a fire occurred at the Emergency Shutdown Diesel Generator during testing.</li><li>• The smoke from the fire caused a Control Room Ventilation Isolation signal to occur. (Smoke detected at the normal intake Zone 1-150)</li><li>• The Fire Brigade has put the fire out and the smoke has been cleared.</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• You are the BOP.</li><li>• The CRS has directed you to restore the Control Room Area HVAC System to normal in accordance with OP-173 "Control Room Area HVAC System", Section 8.4. The initial conditions are satisfied and the HVAC system is in operation per section 8.1 of OP-173.</li></ul>

Facility: Harris Nuclear Plant

Task No.: 063007H104

Task Title: Shift Battery ChargersJPM No.: 2014 NRC Exam  
In-Plant JPM i

K/A Reference: 063 G2.1.30 RO 4.4 SRO 4.0

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Date: \_\_\_\_\_

Method of testing:Simulated Performance:   X  

Actual Performance: \_\_\_\_\_

Classroom \_\_\_\_\_ Simulator \_\_\_\_\_ Plant   X  **READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The plant is operating at 100% power
- 1A-SA BATTERY CHARGER is scheduled for maintenance this shift.

**Initiating Cue:**

The CRS directs you to shift from 1A-SA BATTERY CHARGER to 1B-SA BATTERY CHARGER in accordance with OP-156.01, DC Electrical Distribution, Section 8.3.

**Evaluator:**

**At this time provide the student a copy of OP-156.01, Section 8.3.**

Task Standard: 1B-SA BATTERY CHARGER in SERVICE; 1A-SA BATTERY CHARGER secured.

Required Materials: Standard PPE

General References: OP-156.01, DC Electrical Distribution, Revision 36

Handouts: OP-156.01 Section 8.3, Rotation of Train A Battery Chargers  
Pages 1-6, and 46-50, Rev 36

Time Critical Task: N/A

Validation Time: 20 minutes

**SIMULATOR SETUP**

N/A

This is an In-Plant JPM

<b>CRITICAL STEP JUSTIFICATION</b>	
<b>Step 4</b>	Must place DP-1A-SA circuit to the ON position to line up input power.
<b>Step 5</b>	Must place DC Output breaker to ON to obtain output power.
<b>Step 8</b>	Must place AC input breaker to the ON position to obtain input power.
<b>Step 17</b>	Must select OFF for the AC input breaker to secure AC input power.
<b>Step 18</b>	Must select OFF for the DC output breaker to secure DC output power.
<b>Step 19</b>	Must place DP-1A-SA-30 to OFF to complete the lineup to secure the charger.

## PERFORMANCE INFORMATION

**BEFORE YOU START THIS JPM****INPLANT JPM SAFETY CONSIDERATIONS:****CAUTION:** EQUIPMENT MAY AUTO START OR MAY BE ENERGIZED**- SIMULATE ONLY - DO NOT OPERATE ANY ACTUAL PLANT EQUIPMENT!!!**

Before entering the performance location of this JPM, ensure you **AND** the candidate have the proper PPE for the area you are going to go to or will travel through to get there.

Avoid contacting any plant equipment.

Follow ALARA practices in the RCA.

Do NOT remove ladders from their storage locations. Have the candidate simulate obtaining and using a ladder if one would be needed during the actual performance of this task.

**NOTE:****Add one minute for Take a Minute Core 4 checks.****START TIME:** \_\_\_\_\_**OP-156.01, DC Electrical Distribution****Section 8.3, Rotation of Train A Battery Chargers**

**Performance Step: 1**      Previews task contained in procedure

**Standard:**                      Reviews OP-156.01, Section 8.3

**Comment:**

**OP-156.01 Step 8.3.1 Initial Condition**

**Performance Step: 2**      Initial Condition:

- A Train Battery Charger is in operation per Section 5.3.

**Standard:**                      Initial Conditions met based on JPM Initial Conditions or observation of A Train Battery Charger in operation.

**Comment:**

## PERFORMANCE INFORMATION

**OP-156.01 Step 8.3.2 NOTES prior to step 1****Procedure Note:**

- The following Steps describe placing Battery Charger 1B-SA in operation and removing Battery Charger 1A-SA from operation. Nomenclature for placing Battery Charger 1A-SA in operation and removing Battery Charger 1B-SA from operation is in parenthesis.
- Amperage and voltage should be monitored before and after rotation of Battery Chargers to detect any potential problems.
- It is recommended that Safety Related Battery Charger rotations occur Monday through Friday day shift, to provide reasonable assurance of Electrical support if problems occur.

**Standard:**

Operator reads and placekeeps any note or caution (initials, checks or circle/slash at each bulleted item to indicate read and understood)

**Comment:****OP-156.01 Step 8.3.2 step 1****Performance Step: 3**

At Battery Charger 1B-SA, VERIFY the following switch lineup:  
SWITCH      POSITION  
 AC INPUT      OFF  
 DC OUTPUT    OFF  
 NORMAL/EQUALIZE NORMAL

**Standard:**

At Battery Charger 1B (1A)-SA locates the following switches and verifies position of each:

<b>Examiners Cue:</b>	<u>SWITCH</u>	<u>VERIFIED POSITION</u>
	AC INPUT	<b>OFF</b>
	DC OUTPUT	<b>OFF</b>
	NORMAL/EQUALIZE	<b>NORMAL</b>

**Comment:**



**Step 8.3.2 NOTE prior to step 2**

**Procedure Note:** A momentary ground may exist when the DC breakers are closed. If a ground is received the associated DC Bus Trouble alarm will be received on ALB-015.

**Standard:** Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**

**Step 8.3.2 step 2**

√ **Performance Step: 4** PLACE DP-1A-SA-31, Battery Charger 1B-SA, to ON.

**Standard:** Places DP-1A-SA Circuit 31 to the ON position

<b>Examiners Cue:</b>	<b>DP-1A-SA Circuit 31 is ON.</b>
-----------------------	-----------------------------------

**Comment:**

**Step 8.3.2 step 3**

√ **Performance Step: 5** At Battery Charger 1B-SA, PLACE the DC Output Breaker to ON.

**Standard:** Places 1B-SA BATTERY CHARGER DC OUTPUT BREAKER to the ON position.

<b>Examiners Cue:</b>	<b>1B-SA BATTERY CHARGER DC OUTPUT BREAKER is in the ON position.</b>
-----------------------	---

**Comment:**

## PERFORMANCE INFORMATION

**Step 8.3.2 Notes Prior to step 4****Performance Step: 6**

NOTE: To prevent an inadvertent High Voltage trip, the output filters should be allowed to charge for a minimum of 30 seconds before closing the AC Input Breaker. The AC Input and Feeder Breaker may trip if the filter capacitors are not fully charged when the AC Input Breaker is closed.

NOTE: A Low DC Volt alarm is normal during the time required to charge the output rectifiers. This alarm should clear before closing the AC input breaker, or a High Voltage trip could occur. Failure of the Low DC Volt alarm to clear could indicate the DC Output breaker tripped after manually shutting. The DC Output breaker may not indicate its tripped condition.

NOTE: Steadily decreasing voltage is indicative of an internal fault in the battery charger being placed in service. If this is observed, the battery charger should NOT be placed on line until the cause is found and corrected.

**Standard:**

Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:****Step 8.3.2 step 4****Performance Step: 7**

MONITOR Battery Charger 1B-SA Voltmeter:

a. IF voltage indicates a steady decrease, THEN PERFORM the following:

**Standard:**

Verifies 1B-SA BATTERY CHARGER voltmeter is not steadily decreasing.

<b>Examiners Cue:</b>	<b>Voltage is stable at 134V DC on 1B-SA BATTERY CHARGER voltmeter.</b>
-----------------------	---

**Comment:****Standard:**

N/A's step 4.a (1), (2), (3), and (4)

## PERFORMANCE INFORMATION

**Step 8.3.2 step 4.b**

- √ **Performance Step: 8** After 30 seconds, with Battery Charger 1B-SA Voltmeter stabilized between 132 and 135 VDC, PLACE AC Input Breaker to ON.

**Standard:**

- Verifies 1B-SA BATTERY CHARGER voltmeter stabilizes between 132 and 135 VDC.
- Ensures 30 seconds have passed since placing the DC output breaker ON.
- Places the AC INPUT BREAKER in the ON position.

<b>Examiners Cue:</b>	<ul style="list-style-type: none"><li>• <b>Voltage is stable at 134-V DC on 1B-SA BATTERY CHARGER voltmeter.</b></li><li>• <b>The AC INPUT BREAKER is in the ON position</b></li></ul>
-----------------------	--

**Comment:**

## PERFORMANCE INFORMATION

**Step 8.3.2 step 5**

**Performance Step: 9**      VERIFY proper operation of Battery Charger 1B-SA by observing the

following:

<u>PARAMETER</u>	<u>CONDITION</u>
DC VOLTAGE	132 to 135 VDC
DC AMPERES	0 to 150 Amps
AC POWER ON light	ON
HIGH DC VOLTS light	OFF
LOW DC VOLTS light	OFF
PHASE FAILURE light	OFF

**Standard:**      Locates indication for each listed parameter on 1B-SA BATTERY CHARGER.

<b>Examiners Cue:</b>	<b>As each parameter is located:</b>	
	<u><b>PARAMETER</b></u>	<u><b>CONDITION</b></u>
	<b>DC VOLTAGE</b>	<b>134 VDC</b>
	<b>DC AMPERAGE</b>	<b>15 Amps</b>
	<b>AC POWER ON light</b>	<b>ON</b>
	<b>HIGH DC VOLT light</b>	<b>OFF</b>
	<b>LOW DC VOLT light</b>	<b>OFF</b>
	<b>PHASE FAILURE light</b>	<b>OFF</b>

**Comment:**

**Step 8.3.2 step 6.a**

**Performance Step: 10**    PERFORM a ground test of Battery Charger 1B-SA as follows:  
a. NOTIFY the Control Room that a 125 VDC EMERG BUS A TROUBLE annunciator will alarm.

**Standard:**                Notifies Control Room that a 125-V DC EMERG BUS A TROUBLE annunciator will alarm.

<b>Examiners Cue:</b>	<b>Acknowledge report as the Control Room.</b>
-----------------------	--

**Comment:**

**Step 8.3.2 step 6.b, c**

**Performance Step: 11**    b. DEPRESS the POS Ground Test Pushbutton.  
c. VERIFY a positive deflection exists on the bus ground voltmeter.

**Standard:**                Depresses POS Ground Test Pushbutton and holds while observing each listed indication.

<b>Examiners Cue:</b>	<b>The POS Ground Test pushbutton is depressed.</b> <b>As each indication is pointed out:</b> <ul style="list-style-type: none"><li>•    <b>The Bus Ground Meter indicates + 100-V DC ground.</b></li></ul>
-----------------------	--

**Comment:**

**Step 8.3.2 Note prior to step 6.d**

**Performance Step: 12**    PERFORM a ground test of Battery Charger 1B-SA as follows:  
NOTE: If a ground exists, the White GROUND light will be lit.

**Standard:**                      Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**

**Step 8.3.2 step 6.d, and e**

**Performance Step: 13**    d. VERIFY the White GROUND light is off.  
e. RELEASE the POS Ground Test Pushbutton.

**Standard:**                      Verifies the white ground light is off and releases the POS ground test pushbutton

<b>Examiners Cue:</b>	<ul style="list-style-type: none"><li>• <b>The White Ground Light is extinguished.</b></li><li>• <b>The POS Ground Test Pushbutton is released.</b></li></ul>
-----------------------	---

**Comment:**

**Step 8.3.2 step 6.f, g, h, and i**

**Performance Step: 14**      PERFORM a ground test of Battery Charger 1B (1A)-SA as follows:

- f. DEPRESS the NEG Ground Test Pushbutton.
- g. VERIFY a negative deflection exists on the bus ground voltmeter.
- h. VERIFY the White GROUND light is off.
- i. RELEASE the NEG Ground Test Pushbutton.

**Standard:**                      Depresses the NEG Ground Test Pushbutton and holds while observing each listed indication.

<b>Examiners Cue:</b>	<ul style="list-style-type: none"> <li>• <b>The NEG Ground Test pushbutton is depressed.</b></li> </ul>
	<b>As each indication is pointed out:</b>
	<ul style="list-style-type: none"> <li>• <b>The Bus Ground Meter indicates - 100-V DC ground.</b></li> </ul>
	<ul style="list-style-type: none"> <li>• <b>The White Ground Light is extinguished.</b></li> </ul>
	<ul style="list-style-type: none"> <li>• <b>The NEG Ground Test Pushbutton is released.</b></li> </ul>

**Comment:**

**Step 8.3.2 Note prior to step 7**

**Performance Step: 15**      Note: Steps 7 and 8 will deenergize the previously operating battery charger.

**Standard:**                      Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**

**Step 8.3.2 step 7.a**

- √ **Performance Step: 16** At Battery Charger 1A-SA, PLACE the following breaker to OFF:  
a. AC Input Breaker

**Standard:** Selects the AC Input Breaker to the **OFF** position.

<b>Examiners Cue:</b>	<b>The AC Input Breaker is in the OFF position.</b>
-----------------------	---

**Comment:**

**Step 8.3.2 step 7.b**

- √ **Performance Step: 17** b. DC Output Breaker

**Standard:** Selects the DC Output Breaker to the **OFF** position.

<b>Examiners Cue:</b>	<b>The DC Output Breaker is in the OFF position.</b>
-----------------------	--

**Comment:**

**Step 8.3.2 step 8**

- √ **Performance Step: 18** PLACE DP-1A-SA-30, Battery Charger 1A-SA, to OFF.

**Standard:** Places DP-1A-SA Circuit 30 in the **OFF** position.

<b>Examiners Cue:</b>	<b>The DP-1A-SA Circuit 30 is in the OFF position.</b>
-----------------------	--

**Comment:**



**Step 8.3.2 Note prior to step 9**

**Performance Step: 19** NOTE: Steadily decreasing voltage is indicative of an internal fault in the battery charger being placed in service. If this is observed, the battery charger should NOT remain on line until the cause is found and corrected. The now off-line charger can be placed back in service until Maintenance has investigated.

**Standard:** Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**

**Step 8.3.2 step 9**

**Performance Step: 20** At Battery Charger 1B-SA, VERIFY the NO CHARGE light is off and voltage is 132 to 135 VDC.

**Standard:** Verifies NO CHARGE light is **OFF**.  
Verifies **voltage 132 to 135V DC**.

<b>Examiners Cue:</b>	<b>The NO CHARGE light is OFF.</b> <b>Voltage is 134 VDC.</b> <b>Evaluation on this JPM is complete.</b>
-----------------------	--

**Comment:**

**STOP TIME:** \_\_\_\_\_

Job Performance Measure No.: 2014 NRC Exam In-Plant JPM i  
OP-156.01, DC Electrical Distribution

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

**BEFORE YOU START THIS JPM****INPLANT JPM SAFETY CONSIDERATIONS:****CAUTION:** EQUIPMENT MAY AUTO START OR MAYBE ENERGIZED**- SIMULATE ONLY - DO NOT OPERATE ANY ACTUAL PLANT EQUIPMENT!!!**

Before entering the performance location of this JPM, ensure you **AND** the examiner have the proper PPE for the area you are going to go to or will travel through to get there.

Avoid contacting any plant equipment.

Follow ALARA practices in the RCA.

Do NOT remove ladders from their storage locations. Simulate obtaining and using a ladder if one would be needed during the actual performance of this task.

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The plant is operating at 100% power</li><li>• 1A-SA BATTERY CHARGER is scheduled for maintenance this shift.</li></ul>
<b>Initiating Cue:</b>	The CRS directs you to shift from 1A-SA BATTERY CHARGER to 1B-SA BATTERY CHARGER in accordance with OP-156.01, DC Electrical Distribution, Section 8.3.

Facility: Harris Nuclear Plant Task No.: 301013H401

Task Title: Isolate the ECCS Accumulators  
After a Control Room Evacuation JPM No.: 2014 NRC Exam  
In-Plant JPM j

K/A Reference: APE068 G2.1.30 RO 4.4 SRO 4.0

Examinee: \_\_\_\_\_ NRC Examiner: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_ Date: \_\_\_\_\_

Method of testing:

Simulated Performance:   X   Actual Performance: \_\_\_\_\_  
Classroom \_\_\_\_\_ Simulator \_\_\_\_\_ Plant   X  

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The control room has been evacuated due to a fire.
- A cooldown is in progress in accordance with AOP-004, REMOTE SHUTDOWN.
- RCS Pressure is 975 PSIG by PI-402.2.

**Initiating Cue:**

You are the RO and have been assigned by the CRS to perform AOP-004, Step 31 – Isolate SI Accumulators.

**Evaluator:**

**At this time provide the student a copy of AOP-004, step 31, pages 37 and 38.**

Task Standard: All accumulators isolated and MOV's de-energized.

Required Materials:

- Standard PPE
- ***Provide the evaluator with a key for ATP Cabinet.***
- ***Discuss with CRS allowing applicants to reset local alarm caused by opening ATP Cabinet door.***

General References: AOP-004, Remote Shutdown, REV 65

Handout: AOP-004, Step 31 (Pgs. 37 and 38)

Time Critical Task: NO

Validation Time: 20 minutes

**SIMULATOR SETUP**

N/A

This is an In-Plant JPM

<b>CRITICAL STEP JUSTIFICATION</b>	
<b>Step 2</b>	Must locate, unlock and turn on power to Accumulator discharge valve breaker in order to change valve position remotely.
<b>Step 3</b>	Must locate, unlock and turn on power to Accumulator discharge valve breaker in order to change valve position remotely.
<b>Step 4</b>	Must locate and shut valves at the Aux Transfer Panel to isolate the Accumulator when required.
<b>Step 5</b>	Must locate and shut valve at the Aux Transfer Panel to isolate the Accumulator when required.

**BEFORE YOU START THIS JPM****INPLANT JPM SAFETY CONSIDERATIONS:****CAUTION:** EQUIPMENT MAY AUTO START OR MAY BE ENERGIZED**- SIMULATE ONLY - DO NOT OPERATE ANY ACTUAL PLANT EQUIPMENT!!!**

Before entering the performance location of this JPM, ensure you **AND** the candidate have the proper PPE for the area you are going to go to or will travel through to get there.

Avoid contacting any plant equipment.

Follow ALARA practices in the RCA.

Do NOT remove ladders from their storage locations. Have the candidate simulate obtaining and using a ladder if one would be needed during the actual performance of this task.

**NOTE:****Add one minute for Take a Minute Core 4 checks.****AOP-004****Performance Step: 1** Obtain locked valve and ATP Cabinet keys.**Standard:** Discusses how to obtain keys (ACP Room Key Locker).**Evaluator Note:**

The Evaluator can elect to have the applicant locate the ACP Room Key Locker or to discuss the key acquisition. The key to the ACP Key Locker is in a "break glass" case.

**Evaluator Cue:**

- Acknowledge discussion and tell applicant to assume that they have the locked valve key.
- Provide ATP Cabinet key.

**Comment:**

After providing ATP Cabinet key to candidate start JPM time.

**START TIME:** \_\_\_\_\_

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>Performance Step 2 or 3 can be performed in any order.</b>
------------------------	---

<b>Evaluator Note:</b>	<b>Accumulators A and C are both powered from bus 1A21-SA</b>
------------------------	---

**AOP-004, Step 31.a**

- √ **Performance Step: 2** WHEN RCS pressure is 900 to 1000 psig, as indicated on PI-402.2, THEN ISOLATE SI accumulators:

*286' RAB / RO with locked valve key*

a. UNLOCK AND TURN ON accumulator discharge valve breakers:

- Accumulator A: 1A21-SA-5C (both breakers)
- Accumulator C: 1A21-SA-3D (both breakers)

**Standard:**

- Locates MCC 1A21-SA breaker 5C, UNLOCKS then places both breakers for Accumulator A in ON position.
- Locates MCC 1A21-SA breaker 3D, UNLOCKS then places both breakers for Accumulator C in ON position.

<b>Evaluator Cue:</b>	<b>Red light is on for each breaker, when breaker is placed to ON position.</b>
-----------------------	---

**Comment:**



## PERFORMANCE INFORMATION

**AOP-004, 31.a (continued)**

- √ **Performance Step: 3** WHEN RCS pressure is 900 to 1000 psig, as indicated on PI-402.2, THEN ISOLATE SI accumulators:

*286' RAB / RO with locked valve key*

a. UNLOCK AND TURN ON accumulator discharge valve breakers:

- Accumulator B: 1B21-SB-5C (both breakers)

**Standard:**

Locates MCC 1B21-SB breaker 5C, UNLOCKS then places both breakers for Accumulator B in ON position.

<b>Evaluator Cue:</b>	<b>Red light is on, when breaker is placed to ON position.</b>
-----------------------	--

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<p><b>Performance Step 4 or 5 can be performed in any order.</b></p> <p><b>Opening the ATP door in performance Step 4 or 5, <u>actuates an alarm in the control room.</u></b></p> <p><b>Accumulators A and C discharge valve controls are located in the same Aux Transfer Panel</b></p>
------------------------	--

**AOP-004, Step 31.b**

- √ **Performance Step: 4** SHUT SI accumulator discharge valves at the Auxiliary Transfer Panels listed:  
*Cable Vault A / RO with ATP cabinet key*
- 1SI-246, Accumulator A Discharge (at ATP A)
- Cable Vault A / RO with ATP cabinet key*
- 1SI-248, Accumulator C Discharge (at ATP A)
- Standard:**
- Locates and opens ATP "A" and places 1SI-246 control switch in the SHUT position.
  - Locates and opens ATP "A" and places 1SI-248 control switch in the SHUT position.

<b>Evaluator Cue:</b>	<b>Provide feedback on valve position. (Single Green light lit)</b>
-----------------------	---

**Comment:****AOP-004, Step 31.b (continued)**

- √ **Performance Step: 5** SHUT SI accumulator discharge valves at the Auxiliary Transfer Panels listed:  
*Cable Vault B / RO with ATP cabinet key*
- 1SI-247, Accumulator B Discharge (at ATP B)
- Standard:**
- Locates and opens ATP "B" and places 1SI-247 control switch in the SHUT position.

<b>Evaluator Cue:</b>	<b>Provide feedback on valve position. (Single Green light lit)</b>
-----------------------	---

**Comment:**

## PERFORMANCE INFORMATION

<b>Evaluator Note:</b>	<b>Performance Step 6 or 7 can be performed in any order.</b>
------------------------	---

**AOP-004, Step 31.c****Performance Step: 6***286' RAB / RO with locked valve key*

TURN OFF AND LOCK accumulator discharge valve breakers:

- Accumulator A: 1A21-SA-5C (both breakers)
- Accumulator C: 1A21-SA-3D (both breakers)

**Standard:**

- Returns to 1A21-SA-5C, places both breakers to OFF position then LOCKs both breakers for Accumulator A.
- Returns to 1A21-SA-3D, places both breakers to OFF position then LOCKs both breakers for Accumulator C.

<b>Evaluator Cue:</b>	<b>Provide feedback on breaker position.</b> <b>Lights will now indicate that the valves are SHUT, however operating the breakers will have no effect on the lights.</b>
-----------------------	---

**Comment:**

## PERFORMANCE INFORMATION

**AOP-004, Step 31.c (continued)**

**Performance Step: 7**      *286' RAB / RO with locked valve key*

TURN OFF AND LOCK accumulator discharge valve breakers:

- Accumulator B: 1B21-SB-5C (both breakers)

**Standard:** Returns to 1B21-SB-5C, places both breakers to OFF position then LOCKs both breakers for Accumulator B.

<b>Evaluator Cue:</b>	<p><b>Provide feedback on breaker position.</b></p> <p><b>Lights will now indicate that the valves are SHUT, however operating the breakers will have no effect on the lights.</b></p> <p><b>When all SI Accumulator Discharge Valves are de-energized: Evaluation on this JPM is complete.</b></p>
-----------------------	---

**Comment:**

**STOP TIME:** \_\_\_\_\_

Job Performance Measure No.: 2014 NRC Exam In-Plant JPM j  
Isolate the ECCS Accumulators After a Control Room  
Evacuation  
In Accordance With AOP-004, Remote Shutdown

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

**BEFORE YOU START THIS JPM****INPLANT JPM SAFETY CONSIDERATIONS:****CAUTION:** EQUIPMENT MAY AUTO START OR MAYBE ENERGIZED**- SIMULATE ONLY - DO NOT OPERATE ANY ACTUAL PLANT EQUIPMENT!!!**

Before entering the performance location of this JPM, ensure you **AND** the examiner have the proper PPE for the area you are going to go to or will travel through to get there.

Avoid contacting any plant equipment,

Follow ALARA practices in the RCA.

Do NOT remove ladders from their storage locations. Simulate obtaining and using a ladder if one would be needed during the actual performance of this task.

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The control room has been evacuated due to a fire</li><li>• A cooldown is in progress in accordance with AOP-004, REMOTE SHUTDOWN</li><li>• RCS Pressure is 975 PSIG by PI-402.2</li></ul>
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<b>Initiating Cue:</b>	You are the RO and have been assigned by the CRS to perform AOP-004, Step 31 – Isolate SI Accumulators.
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Facility:	Harris Nuclear Plant	Task No.:	061012H104
Task Title:	<u>Reset the Turbine-Driven AFW Pump Mechanical Overspeed</u>	JPM No.:	2014 NRC Exam In-Plant JPM k
K/A Reference:	061 A2.04 RO 3.4 SRO 3.8		
Examinee:	_____	NRC Examiner:	_____
Facility Evaluator:	_____	Date:	_____
<u>Method of testing:</u>			
Simulated Performance:	<u>  X  </u>	Actual Performance:	_____
Classroom	_____	Simulator	_____
		Plant	<u>  X  </u>

**READ TO THE EXAMINEE**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**Initial Conditions:**

- The plant was manually tripped from 100% power due to a loss of the 'A' MFW pump.
- The Turbine-driven AFW pump is needed for plant cooldown but the pump tripped on overspeed.
- The cause of the overspeed trip has been identified and corrected.
- Main Steam isolation valves 1MS-70 and 1MS-72 are shut.

**Initiating Cue:**

- The CRS has directed you to reset the Turbine-driven AFW pump mechanical overspeed trip linkage in accordance with OP-137, Auxiliary Feedwater System, Section 8.4.
- **Assume that the Mechanical Overspeed Trip Linkage is currently in the tripped position.**
- The Trip and Throttle Valve will be reopened from the Control Room.
- All Initial Conditions are met.

**Evaluator:**

**At this time provide the student with a copy of OP-137, Section 8.4**  
**Initial conditions are MET.**

**NOTE: Expect that the entry and exit from the RCA will add time to complete this JPM.**

Appendix C	Job Performance Measure Worksheet	Form ES-C-1
Task Standard:	The Turbine-driven AFW pump turbine trip and throttle valve is latched.	
Required Materials:	Standard PPE	
General References:	OP-137, Auxiliary Feedwater System, Rev. 37	
Handout:	OP-137, Section 8.4, Rev. 37 OR OP-137, Attachment 6 (locally mounted on wall as an operator aid)	
Time Critical Task:	No	
Validation Time:	10 minutes	



**SIMULATOR SETUP**

N/A

This is an In-Plant JPM

<b>CRITICAL STEP JUSTIFICATION</b>	
<b>Step 7</b>	If the connecting rod is not properly positioned and locked in place the overspeed reset cannot be accomplished.
<b>Step 8</b>	If the tappet nut is not held down properly and in the correct sequence the overspeed trip cannot be reset.

**BEFORE YOU START THIS JPM****INPLANT JPM SAFETY CONSIDERATIONS:****CAUTION:** EQUIPMENT MAY AUTO START OR MAY BE ENERGIZED**- SIMULATE ONLY - DO NOT OPERATE ANY ACTUAL PLANT EQUIPMENT!!!**

Before entering the performance location of this JPM, ensure you **AND** the candidate have the proper PPE for the area you are going to go to or will travel through to get there.

Avoid contacting any plant equipment.

Follow ALARA practices in the RCA.

Do NOT remove ladders from their storage locations. Have the candidate simulate obtaining and using a ladder if one would be needed during the actual performance of this task.

**NOTE:****Add one minute for Take a Minute Core 4 checks.****START TIME:** \_\_\_\_\_**Reviews OP-137, Section 8.4 prior to task performance****Performance Step: 1**

Reviews Section 8.4.1 reads and initials step 1

**NOTE:** Loss of B-SB DC Power is not considered “normal operation” in the following initial condition. If B-SB DC Power has been lost and cannot be restored then the following initial condition does not apply.

**Standard:**

Placekeeps the note (initials, checks or circle/slash) and initials blanks for steps 1 and 2 of Initial Conditions.

**Comment:**

**OP-137 Section 8.4.2 NOTES prior to step 1**

**Performance Step: 2** NOTE: Attachment 6 diagram may be used as a reference for nomenclature.  
NOTE: If any of the following information is changed, Attachment 6 and local pump information should also be changed.

**Standard:** Operator reads and placekeeps any note or caution (initials, checks or circle/slash)

**Comment:**

**OP-137 Section 8.4.2 step 1**

**Performance Step: 3** Verify the following valves are shut:

- 1MS-70 SA, MAIN STEAM B TO AUX FW TURBINE
- 1MS-72 SB, MAIN STEAM C TO AUX FW TURBINE

**Standard:** Status provided in Initial Conditions.

<b>Evaluator's Cue:</b>	<b>If asked: 1MS-70 and 1MS-72 are shut (as provided on cue sheet)</b>
-------------------------	--

**Comment:**

**OP-137 Section 8.4.2 step 2.a**

**Performance Step: 4**     **IF** DP-1B-SB 125V DC Power is available,  
**THEN PERFORM** the following steps:  
CHECK the local red indicating lamp for TURBINE OVERSPEED  
TRIP is ON

**Standard:**                Verifies that the red lamp is lit for the TURBINE OVERSPEED  
TRIP on the local control panel.

<b>Evaluator's Cue:</b>	(Lamp is located on Aux Feedwater Control Panel 1X-SAB)  <b>The red TURBINE OVERSPEED TRIP lamp is lit.</b>
-------------------------	---

**Comment:**

**OP-137 Section 8.4.2 step 2.b**

**Performance Step: 5**     VERIFY the flat side of the tappet nut is aligned toward the  
tappet lever.

**Standard:**                Verifies flat side of the tappet nut aligned toward the tappet lever.

<b>Evaluator's Cue:</b>	<b>The flat side of tappet nut is aligned toward the tappet lever.</b>
-------------------------	--

**Comment:**

**OP-137 Section 8.4.2 NOTES prior to step 2.c**

**Performance Step: 6** NOTE: The next two Steps must be coordinated to ensure proper reset of the Trip and Throttle valve.  
NOTE: If the local red indicating lamp for TURBINE OVERSPEED TRIP does not extinguish, it is an indication that one of the limit switches did not reset, and further investigation may be warranted.

**Standard:** Placekeeps the note (initials, checks or circle/slash)

**Comment:**

**OP-137 Section 8.4.2 step 2.c**

✓ **Performance Step: 7** PULL the connecting rod toward the Trip and Throttle valve until the rod locks in place AND the local red indicating lamp for TURBINE OVERSPEED TRIP is OFF.

**Standard:** Locates connecting rod and pulls it toward the trip/throttle valve. Verifies rod locked in place AND the local red indicating lamp for TURBINE OVERSPEED TRIP is OFF.

<b>Evaluator's Cue:</b>	<b>The connecting rod is locked in place and the red indicating lamp for TURBINE OVERSPEED TRIP is OFF.</b> (Light is located on Aux Feedwater Control Panel 1X-SAB)
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**Comment:**

**OP-137 Section 8.4.2 step 2.d**

- ✓ **Performance Step: 8** PRESS DOWN AND HOLD the tappet nut in the fully seated position while releasing the connecting rod.

**Standard:** Presses down and holds the tappet nut in the fully seated position until the connecting rod is released.

<b>Evaluator's Cue:</b>	<b>The tappet remains fully seated and the connecting rod is locked in place.</b>
-------------------------	---

**Comment:**

**OP-137 Section 8.4.2 step 2.e**

- Performance Step: 9** VERIFY the Trip and Throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB.

**Standard:** Verifies trip/throttle valve operator is shut by observing indicating lights on local panel 1X-SAB.

<b>Evaluator's Cue:</b>	<b>The green shut light is ON and the red open light is OFF. (If necessary: Valve stem indication is at the shut position.)</b>
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**Comment:**

**OP-137 Section 8.4.2 step 2.f**

**Performance Step: 10**    VERIFY the flat side of the tappet nut is against the tappet lever and fully seated.

**Standard:**                Verifies flat side of the tappet nut against the tappet lever and fully seated.

<b>Evaluator's Cue:</b>	<b>The flat side of tappet nut is against the tappet lever and fully seated.</b>
-------------------------	--

**Comment:**

**OP-137 Section 8.4.2 step 2.g**

**Performance Step: 11**    VERIFY the latch lever is being held up by the trip hook.

**Standard:**                Verifies latch lever is being held up by the trip hook.

<b>Evaluator's Cue:</b>	<b>The latch is being held up by the trip hook.</b>
-------------------------	---

**Comment:**

**OP-137 Section 8.4.2 step 2.h**

**Performance Step: 12**    VERIFY the TURBINE OVERSPEED TRIP light is extinguished on the AFW Control Panel 1X-SAB

**Standard:**                Verifies TURBINE OVERSPEED TRIP light status on Panel 1X-SAB.

<b>Evaluator's Cue:</b>	<b>The TURBINE OVERSPEED TRIP light is extinguished.</b>
-------------------------	--

**Comment:**

**OP-137 Section 8.4.2 step 2.i**

**Performance Step: 13** Notify the Control Room that the mechanical overspeed linkage is reset and inform them they can now open the Trip and Throttle valve.

**Standard:** Simulates notifying the Control Room.

<b>Evaluator's Cue:</b>	<b>Acknowledge report.</b>  <b>END OF JPM</b>
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**Comment:**

**STOP TIME:** \_\_\_\_\_



Job Performance Measure No.: 2014 NRC Exam In-Plant JPM kReset the Turbine-Driven AFW Pump Mechanical Overspeed  
OP-137, Auxiliary Feedwater System

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## JPM CUE SHEET

**BEFORE YOU START THIS JPM****INPLANT JPM SAFETY CONSIDERATIONS:****CAUTION:** EQUIPMENT MAY AUTO START OR MAYBE ENERGIZED**- SIMULATE ONLY - DO NOT OPERATE ANY ACTUAL PLANT EQUIPMENT!!!**

Before entering the performance location of this JPM, ensure you **AND** the examiner have the proper PPE for the area you are going to go to or will travel through to get there.

Avoid contacting any plant equipment.

Follow ALARA practices in the RCA.

Do NOT remove ladders from their storage locations. Simulate obtaining and using a ladder if one would be needed during the actual performance of this task.

<b>Initial Conditions:</b>	<ul style="list-style-type: none"><li>• The plant was manually tripped from 100% power due to a loss of the 'A' MFW pump.</li><li>• The Turbine-driven AFW pump is needed for plant cooldown but the pump tripped on overspeed.</li><li>• The cause of the overspeed trip has been identified and corrected.</li><li>• Main Steam isolation valves 1MS-70 and 1MS-72 are shut.</li></ul>
<b>Initiating Cue:</b>	<ul style="list-style-type: none"><li>• The CRS has directed you to reset the Turbine-driven AFW pump mechanical overspeed trip linkage in accordance with OP-137, Auxiliary Feedwater System, Section 8.4.</li><li>• <b>Assume that the Mechanical Overspeed Trip Linkage is currently in the tripped position.</b></li><li>• The Trip and Throttle Valve will be reopened from the Control Room.</li><li>• All Initial Conditions are met..</li></ul>

## JPM CUE SHEET

## REFERENCE USE

## 8.4. Resetting the Turbine-Driven AFW Pump Mechanical Over Speed Trip Linkage

## 8.4.1. Initial Conditions

1. Mechanical Over speed Trip Linkage in the tripped position. \_\_\_\_\_

**NOTE:** Loss of B-SB DC Power is not considered "normal operation" in the following initial condition. If B-SB DC Power has been lost and cannot be restored then the following initial condition does not apply.

2. During normal operations, the cause of any over speed trip of the turbine-driven AFW pump has been investigated and corrected prior to resuming the operation of the pump. \_\_\_\_\_

## 8.4.2. Procedural Steps

**NOTE:** Attachment 6 diagram may be used as a reference for nomenclature.

**NOTE:** If any of the following information is changed, Attachment 6 and local pump information should also be changed.

1. **VERIFY** the following valves are shut:
  - 1MS-70 SA, MAIN STEAM B TO AUX FW TURBINE \_\_\_\_\_
  - 1MS-72 SB, MAIN STEAM C TO AUX FW TURBINE \_\_\_\_\_
2. **IF** DP-1B-SB 125V DC Power is available,  
**THEN PERFORM** the following steps:
  - a. **CHECK** the local red indicating lamp for TURBINE OVERSPEED TRIP is ON. \_\_\_\_\_
  - b. **VERIFY** the flat side of the tappet nut is aligned toward the tappet lever. \_\_\_\_\_

## JPM CUE SHEET

## REFERENCE USE

## 8.4.2 Procedural Steps (continued)

**NOTE:** The next two Steps must be coordinated to ensure proper reset of the Trip and Throttle valve.

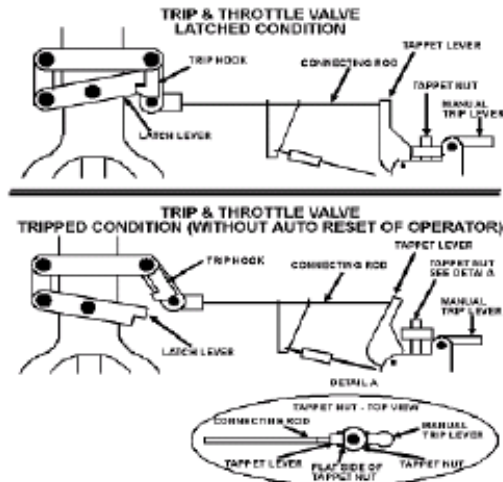
**NOTE:** If the local red indicating lamp for TURBINE OVERSPEED TRIP does not extinguish, it is an indication that one of the limit switches did not reset, and further investigation may be warranted.

- c. **PULL** the connecting rod toward the Trip and Throttle valve until the rod locks in place **AND** the local red indicating lamp for TURBINE OVERSPEED TRIP is OFF. \_\_\_\_\_
- d. **PRESS DOWN AND HOLD** the tappet nut in the fully seated position while releasing the connecting rod. \_\_\_\_\_
- e. **VERIFY** the Trip and Throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB. \_\_\_\_\_
- f. **VERIFY** the flat side of the tappet nut is against the tappet lever and fully seated. \_\_\_\_\_
- g. **VERIFY** the latch lever is being held up by the trip hook. \_\_\_\_\_
- h. **VERIFY** the TURBINE OVERSPEED TRIP light is extinguished on the AFW Control Panel 1X-SAB. \_\_\_\_\_
- i. **OPEN** the Trip and Throttle valve from the MCB. \_\_\_\_\_
- 3. **IF** DP-1B-SB 125V DC Power is NOT available, **THEN PERFORM** the following steps:
  - a. **ENGAGE** the TDAFW Trip and Throttle Valve manual operator. \_\_\_\_\_
  - b. **ROTATE** the hand-wheel in the SHUT direction until the Latch Lever is in the normal position (angled up). \_\_\_\_\_
  - c. **VERIFY** the flat side of the tappet nut is aligned toward the tappet lever. \_\_\_\_\_

## JPM CUE SHEET

## REFERENCE USE

**Attachment 6 - Resetting the TDAFW Pump Mechanical Overspeed Trip Linkage**  
**Sheet 1 of 2**

DP-1B-SB 125V DC Power Available

1. Verify shut 1MS-70 and 1MS-72.
2. Check the local red indicating lamp for TURBINE OVERSPEED TRIP is ON.
3. Verify the flat side of the tappet nut is aligned towards the tappet lever.

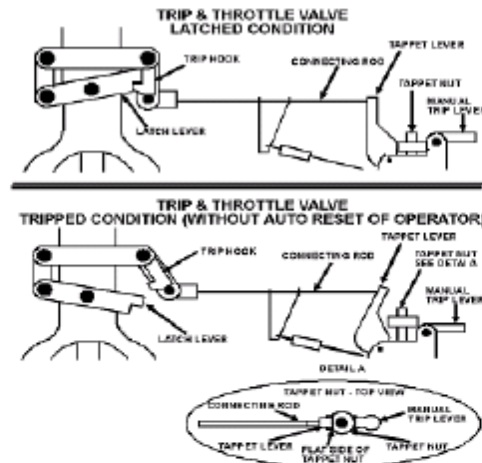
**NOTE:** The next two Steps must be coordinated to ensure proper reset of the Trip and Throttle Valve.

**NOTE:** If the local red indicating lamp for TURBINE OVERSPEED TRIP does not extinguish, it is an indication that one of the limit switches did not reset, and further investigation may be warranted.

4. Pull the connecting rod toward the Trip and Throttle valve until the rod locks in place and the local red indicating lamp for TURBINE OVERSPEED TRIP is OFF
5. Press down and hold the tappet nut in the fully seated position while releasing the connecting rod.
6. Verify the Trip and Throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB.
7. Verify the flat side of the tappet nut is against the tappet lever and fully seated.
8. Verify the latch lever is being held up by the trip hook.
9. Verify the TURBINE OVERSPEED TRIP light is extinguished on the Aux Feedwater Control Panel 1X-SAB.
10. Open the Trip and Throttle Valve from the MCB.

## JPM CUE SHEET

## REFERENCE USE

Attachment 6 - Resetting the TDAFW Pump Mechanical Overspeed Trip Linkage  
Sheet 2 of 2DP-1B-SB 125V DC Power NOT Available

1. Verify shut 1MS-70 and 1MS-72.
2. Engage the TDAFW Trip & Throttle Valve manual operator.
3. Rotate the hand-wheel in the SHUT direction until the Latch Lever is in the normal position (angled up).
4. Verify the flat side of the tappet nut is aligned towards the tappet lever.

**NOTE:** The next two Steps must be coordinated to ensure proper reset of the Trip and Throttle Valve.

5. Pull the connecting rod toward the Trip and Throttle valve until the rod locks in place.
6. Press down and hold the tappet nut in the fully seated position while releasing the connecting rod.
7. Verify the flat side of the tappet nut is against the tappet lever and fully seated.
8. Verify the latch lever is being held up by the trip hook.

**NOTE:** The information in this Attachment is the same information provided in Section 8.4 and a local operator aid.