

# Exelon Nuclear

## Job Performance Measure

### Start-Up the RHRSW System With Reduced Pump Capacity

JPM Number: 2014 ILT NRC JPM d

Revision Number: 00

Date: 01/16/14

Developed By: \_\_\_\_\_  
Instructor Date

Validated By: \_\_\_\_\_  
SME or Instructor Date

Reviewed By: \_\_\_\_\_  
Operations Representative Date

Approved By: \_\_\_\_\_  
Training Department Date

## JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

**NOTE:** All steps of this checklist should be performed upon initial validation.  
Prior to JPM usage, revalidate JPM using steps 9 and 13 below.

- \_\_\_\_\_ 1. Task description and number, JPM description and number are identified.
- \_\_\_\_\_ 2. Knowledge and Abilities (K/A) references are included.
- \_\_\_\_\_ 3. Performance location specified. (in-plant, control room, simulator, or other)
- \_\_\_\_\_ 4. Initial setup conditions are identified.
- \_\_\_\_\_ 5. Initiating cue (and terminating cue if required) are properly identified.
- \_\_\_\_\_ 6. Task standards identified and verified by SME review.
- \_\_\_\_\_ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (\*).
- \_\_\_\_\_ 8. If an alternate path is used, the task standard contains criteria for successful completion.
- \_\_\_\_\_ 9. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure QCOP 1000-04 Rev: 22  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 10. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 11. Verify performance time is accurate
- \_\_\_\_\_ 12. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 13. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

SME / Instructor	Date
SME / Instructor	Date
SME / Instructor	Date

## **Revision Record (Summary)**

**Revision 00**, Renamed 2014 ILT NRC JPM d. Restarted numbering accordingly.

### **Previous revisions were:**

**Revision 05**, This JPM is developed IAW guidelines established in NUREG 1021 Rev 8 ES-301 and Appendix C. This JPM meets the criteria of Category B.1 "Control Room Systems," for RO/SRO candidates.

JPM revised to match procedure revision.

**Revision 06**, JPM revised to match procedure revision.

**Revision 07**, JPM revised to reflect procedure, format and KA changes.

**Revision 08**, JPM revised to match procedure.

**Revision 09**, JPM revised to reflect procedure number change, updated formatting and K/A.

**Revision 10**, JPM updated to incorporate procedure.

## SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC any

NOTE: It is okay to use a similar IC to the IC listed above, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.

2. Run the caep file containing the following commands. (contained in caep file “d caep.cae”)
3. Manual Actuation:

### Malfunctions:

SW04, RHR Service Water Pump Reduced Capacity

**(imf sw05d 50 & imf sw05c 50)**

Set triggers 1 and 2 to be true when the RHR HX SW Flow Select Switch is taken to Rev.

**trgset 1 “zdihs110014b(2)”**

**trgset 2 “zdihs110014b(2)”**

Assign delete malfunction SW05D and SW05C to trigger 1 and 2:

**trg 1 “dmf sw05d”**

**trg 2 “dmf sw05c”**

### Remotes:

None

### Overrides:

None

4. When the above steps are completed for this and other JPMs to be run concurrently, then validate the concurrently run JPMs using the JPM Validation Checklist.
5. This completes the setup for this JPM.



JPM D QCOP  
1000-04.pdf



d caep.cae

### INITIAL CONDITIONS

- The next shift will be performing a HPCI surveillance for engineering.
- The RHRSW loops have NOT been drained and no discharge valves have been adjusted.
- An EO has already performed pre-start checks for both RHRSW pumps and everyone is clear of the area.
- This JPM is NOT time critical.

### INITIATING CUE

Start-up the "A" and "B" RHR Service Water Loops in preparation for the HPCI surveillance using the "A" and "C" RHR Service Water pumps per QCOP 1000-04.

**{When candidate acknowledges the cue, provide the candidate with the procedure QCOP 1000-04}**

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.

#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

- \* Denotes critical steps.
- Denotes critical elements of a critical step.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM. Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the candidate acknowledges the initiating cue.

JPM Start Time: \_\_\_\_\_

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>NOTE: The candidate will refer to QCANs 901-3 A-8, B-8, and C-6. These annunciators will alarm due to opening the MO 1-1001-5A(B) and starting the RHRSW pumps. No actions are required as these are consistent with the plant operations performed by the candidate.</b>					
F.1.b.(1)	Verify RHR HX A flow lineup.	Verifies RHR HX A SERVICE WATER FLOW is in either NORMAL FLOW <u>OR</u> REVERSE FLOW lineup.	—	—	—
F.1.b.(2)	Throttle open RHR HX SW DISCH VLV.	Throttles open, MO 1-1001-5A to at least 40% open.	—	—	—
*F.1.b.(3)	●Start the '1A' RHRSW Pump. ●	Places the 1A RHR SW PMP control switch to the START position and verifies the ON light is lit.	—	—	—
*F.1.b.(4)	●Throttle RHR HX SW DISCH VLV to establish flow and discharge pressure. ●	Throttles MO 1-1001-5A as necessary to obtain: HX Discharge pressure < 350 psig Pump flow < 3600 gpm.	—	—	—
F.1.b.(5)	Monitor Service Water effluent release rate.	Verifies no increase in release rate as indicated on the 1-1705-12, PROCESS LIQUID MONITOR.	—	—	—
F.2.b.(1)	Verify RHR HX B flow lineup.	Verifies RHR HX B SERVICE WATER FLOW is in either NORMAL FLOW <u>OR</u> REVERSE FLOW lineup.	—	—	—
F.2.b.(2)	Throttle open RHR HX SW DISCH VLV.	Throttles open, MO 1-1001-5B to at least 40% open.	—	—	—
F.2.b.(3)	Start the '1C' RHRSW Pump.	Places the 1C RHR SW PMP control switch to the START position and verifies the ON light is lit.	—	—	—

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.2.b.(4)	Throttle RHR HX SW DISCH VLV to establish flow and discharge pressure.	Throttles MO 1-1001-5B and reports 'B' RHR HX outlet pressure and flow are low.	—	—	—
CUE:	As EO, call the control room and report that '1C' RHRSW Pump discharge pressure is higher than normal. It is 370 psig on PI 1-1001-77C.				
Alternate Path Starts Here					
<p><b>EVALUATOR NOTE:</b> Examinee should recognize the following conditions associated with the 'B' RHRSW system:</p> <ul style="list-style-type: none"><li>✓ Low RHRSW pump flow</li><li>✓ High pump discharge pressure</li><li>✓ Low RHRSW Hx. outlet pressure</li><li>✓ MO 1-1001-5B throttled open farther than normally required.</li></ul> <p>The examinee may choose to start a second RHRSW pump. The parameters will not significantly change. Per Precaution D.1, the examinee should then reverse flow to flush the Heat Exchanger.</p> <p><b>ROLE PLAY:</b> As US, if asked for guidance, reply that "A" and "B" RHR Service Water Loops are required for the HPCI surveillance.</p> <p><b>ROLE PLAY:</b> As US, if asked, concur with examinee to start a second pump, swap RHRSW pumps, and/or reverse flow.</p> <p><b>ROLE PLAY:</b> If a second pump is started, as EO report a high discharge pressure of 373 psig indicated on PI 1-1001-77D.</p> <p><b>EVALUATOR NOTE:</b> The following steps are listed for reversing Heat Exchanger flow.</p>					
F.3.a.	Verify 'B' Loop RHR pumps are off.	Verifies OFF lights are lit for the 1C and 1D RHR pumps.	—	—	—
*F.3.b.	●Verify RHR Service Water System Loop B off.●	Secures running B loop RHRSW pump(s). May close MO 1-1001-5B.	—	—	—
*F.3.d.	●Reverses flow through RHRSW Heat Exchanger.●	Places 1B RHR HX SW flow select switch to the REV position.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.3.d.(1)(2)	Verify open MO-1-1001-186B and MO-1-1001-187B	Verifies OPEN lights are lit for MO-1-1001-186B and MO-1-1001-187B.	—	—	—
F.3.d.(3)(4)	Verify closed MO-1-1001-4B and MO-1-1001-185B	Verifies CLOSED lights are lit for MO-1-1001-4B and MO-1-1001-185B	—	—	—
<b>SIM OP NOTE: Verify trigger 1 and trigger 2 went true to delete malfunctions for RHRSW pumps (dmf sw05d, dmf sw05c).</b>					
<b>CUE:</b>	<b>The examinee should inform you that the RHRSW Hx flow has been reversed. As US, inform examinee to, “Restart RHRSW flow using the 1C RHRSW pump.”</b>				
F.2.b.(1).	Verify RHR HX B flow lineup.	Verifies RHR HX B SERVICE WATER FLOW is in the REVERSE FLOW lineup.	—	—	—
<b>NOTE: If MO 1-1001-5B was previously closed in step F.3.b, the following step would be critical</b>					
F.2.b.(2)	Throttle open RHR HX SW DISCH VLV.	Throttles open, MO 1-1001-5B to at least 40% open.	—	—	—
*F.2.b.(3)	●Start an RHRSW Pump.●	Places the 1C RHR SW PMP control switch to the START position and verifies the ON light is lit.	—	—	—
*F.2.b.(4)	●Throttle RHR HX SW DISCH VLV to establish flow and discharge pressure.●	Throttles MO 1-1001-5B as necessary to obtain: HX Discharge pressure < 350 psig Pump flow < 3600 gpm.	—	—	—
F.2.b.(5)	Monitor Service Water effluent release rate.	Verifies no increase in release rate as indicated on the 1-1705-12, PROCESS LIQUID MONITOR.	—	—	—
<b>CUE:</b>	<b>If asked, as EO, report an RHRSW Pump discharge pressure of 345 psig as indicated on PI 1-1001-77C/D.</b>				



<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
EVALUATOR: The examinee should inform you that the task is complete.					

JPM Stop Time: \_\_\_\_\_  
.....

**JPM SUMMARY**

**Operator's Name:** \_\_\_\_\_ **Job Title:** ☐ EO ☐ RO ☐ SRO ☐ FS  
☐ STA/IA ☐ SRO Cert

JPM Title: Start-Up the RHRSW System With Reduced Pump Capacity

JPM Number: 2014 ILT NRC JPM d Revision Number: 00

Task Number and Title:

**SR-1000-P01** (Freq: LIC=A) (ILT-MP) Given a reactor plant, start the RHRSW system and RHR system in torus cooling in accordance with QCOP 1000-4 and QCOP 1000-9 or QCOP 1000-30. (Important PRA Operator Action - starting torus cooling in conjunction with other actions has a RAW of 4320) (recovery of torus cooling after failure terminates 19 of top 100 core damage sequences)

K/A Number and Importance: **K/A:** 219000 A4.05 **Rating:** 3.4/3.4

RHR/LPCI: Torus/Suppression Pool Cooling Mode. Ability to manually operate and/or monitor in the control room: Heat exchanger cooling flow

Suggested Testing Environment: Simulator

Alternate Path: ☒ Yes ☐ No SRO Only: ☐ Yes ☒ No Time Critical: ☐ Yes ☒ No

Reference(s): QCOP 1000-04, Rev. 22, RHR SERVICE WATER SYSTEM OPERATION

**Actual Testing Environment:** ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other

**Testing Method:** ☐ Simulate ☒ Perform

Estimated Time to Complete: 20 minutes

**Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

The operator's performance was evaluated against standards contained within this JPM and has been determined to be: ☐ Satisfactory ☐ Unsatisfactory

**Comments:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Evaluator's Name:** \_\_\_\_\_ (Print)

**Evaluator's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

[If this page is an odd numbered page, a blank page is automatically generated after this page to keep the student cue sheet separate from this page]

SRRS: 3D.105 (when utilized for operator initial or continuing training)

## **INITIAL CONDITIONS**

- The next shift will be performing a HPCI surveillance for engineering.
- The RHRSW loops have NOT been drained and no discharge valves have been adjusted.
- An EO has already performed pre-start checks for both RHRSW pumps and everyone is clear of the area.
- This JPM is NOT time critical.

## **INITIATING CUE**

Start-up the "A" and "B" RHR Service Water Loops in preparation for the HPCI surveillance using the "A" and "C" RHR Service Water pumps per QCOP 1000-04.