

Exelon Nuclear

Job Performance Measure

Initiate Standby Liquid Control with RWCU Failure to Isolate

JPM Number: 2020 ILT NRC JPM a

Revision Number: 05

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 1100-02 Rev: 13
 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, This JPM is developed IAW guidelines established in NUREG 1021 Rev 9.

Revision 01, JPM revised for procedure revision.

Revision 02, Deleted instruction to run Computer Aided Exercise. Revised JPM to match procedure revision. Major changes account for >5% Reactor power entry to QGA 100 and ATWS rule requiring only one SBLC pump.

Revision 03, This JPM revised to update the format and for procedure revisions.

Revision 04, Revised Initial Conditions to include more detail in QGA 101 actions taken.

Revision 05, Updated for 2020 Initial License Exam and procedure changes.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to any IC at power > 20%

<p>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.</p>
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2. **Manual Actuation:**

Ensure the SBLC key is in the Control switch.

3. **Malfunctions**

Fail RWCU to isolate by failing the Group 3 Division 1 logic; **imf rp10a**

Fail RWCU to isolate by failing the Group 3 Division 2 logic; **imf rp10b**

4. **Remotes:**

NONE

5. **Overrides:**

NONE

6. 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.
7. This completes the setup for this JPM.

INITIAL CONDITIONS

- U-1 has experienced a spurious Group I isolation and Hydraulic ATWS. Reactor power is currently at 20%. The following conditions and QGA 101 actions taken are:
 - o Reactor pressure is stable at 1000 psig controlled with ADS valves.
 - o Mode Switch is in Shutdown.
 - o ARI initiated
 - o Both Recirc pumps were tripped
 - o Control rods are being inserted using Emergency Rod In.
 - o The Unit Supervisor anticipates reaching 110°F in the Torus.
- The SBLC system is in standby lineup.
- The Unit Supervisor has directed SBLC system injected per QGA 101.
- Hard Cards are authorized.

INITIATING CUE

Inject with the Standby Liquid Control System.

Provide examinee with: A copy of QCOP 1100-02 if obtained.

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.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section at the bottom of the page. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

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
	Obtain procedure to be used.	Obtains procedure QCOP 1100-02 or the ATWS portion of the Standby Liquid Control Hard Card.	—	—	—
EVALUATOR NOTE: Only one of the next two critical steps is required to successfully complete the JPM.					
*F.1.a or Hard Card Step 1	Select SYS 1 OR SYS 2 using keylock switch A AND B PUMP SELECT.	•Positions SBLC keylock switch to position SYS 1 OR SYS 2. •	—	—	—
*F.1.b or Hard Card Step 2	Select SYS 1&2 OR SYS 2&1 using keylock switch A AND B PUMP SELECT.	- Verifies Reactor pressure is stable and < 1200 psig. - •Positions SBLC keylock switch to position SYS 1&2 OR SYS 2&1. •	—	—	—
F.3.a or Hard Card Step 3.a	Verify applicable squib A & B continuity.	Verifies A OR B continuity lights out.	—	—	—
F.3.b or Hard Card Step 3.b	Verify Flow light is ON.	Observes Flow light lit.	—	—	—
EVALUATOR NOTE: The examinee may report to the Unit Supervisor that the RWCU system failed to isolate. If this occurs, as Unit Supervisor acknowledge the report. If prompted by examinee for direction, state “Verify auto actions.”					
ALTERNATE PATH STARTS HERE					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*F.3.c. or Hard Card Step 3.c	Isolates RWCU System by closing one of the following valves: MO 1-1201-2 OR MO 1-1201- 5	- ●Closes the following valves with the respective control switches: MO 1-1201-2● OR MO 1-1201-5● MO 1-1201-80 - Verifies both RWCU pumps trip.	—	—	—
F.3.d. or Hard Card Step 3.d	Verify SLBC tank level decreasing.	Verifies SBLC tank level decreasing on LI 1-1140-2.	—	—	—
F.3.e. or Hard Card Step 3.e	Verify SBLC pump discharge pressure > Reactor pressure.	Determines SBLC Pump discharge pressure > Reactor pressure on PI 1-1140-1.	—	—	—
F.3.f. or Hard Card Step 3.f	Verify alarm 901-5 H-6 “STANDBY LIQ SQUIB VLV CIRCUIT FAILURE”, is ON.	Verifies annunciator 901-5 H-6 “STANDBY LIQ SQUIB VALVE CIRCUIT FAIL” is lit.	—	—	—
F.3.g. or Hard Card Step 3.g	Verify neutron flux level decreasing.	Verifies reactor power is lowering on APRM recorders.	—	—	—
EVALUATOR: The candidate should inform you that the task is complete.					

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐ EO ☐ RO ☐ SRO ☐ FS ☐ STA/IA ☐ SRO Cert

JPM Title: Initiate Standby Liquid Control with RWCU Failure to Isolate

JPM Number: 2020 ILT NRC JPM a

Revision Number: 05

Task Standard:

Inject with the SBLC System by placing the SBLC control switch to Sys 1 or Sys 2 then Sys 1&2 or Sys 2&1. Once RWCU isolation failure is identified then the system is isolated by closing either MO 1-1201-2 or the MO 1-1201-5 valve.

Task Number and Title:

SR-1100-P02: (Freq: LIC=A) (ILT-MP) Given a reactor plant with an ATWS, inject boron prior to exceeding 110 degrees torus water temperature OR if core instability is observed in accordance with QGA 101 and QCOP 1100-02. (Important PRA Operator Action - starting SBLC has a RAW of 4.4)

K/A Number and Importance: **K/A:** 211000. A4.06**Rating:** 3.9/3.9

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1100-02 Rev. 13, Injection of Standby Liquid Control

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 5 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:** _____

INITIAL CONDITIONS

- U-1 has experienced a spurious Group I isolation and Hydraulic ATWS. Reactor power is currently at 20%. The following conditions and QGA 101 actions taken are:
 - Reactor pressure is stable at 1000 psig controlled with ADS valves.
 - Mode Switch is in Shutdown.
 - ARI initiated
 - Both Recirc pumps were tripped
 - Control rods are being inserted using Emergency Rod In.
 - The Unit Supervisor anticipates reaching 110°F in the Torus.
- The SBLC system is in standby lineup.
- The Unit Supervisor has directed SBLC system injected per QGA 101.
- Hard Cards are authorized.

INITIATING CUE

Inject with the Standby Liquid Control System.

Exelon Nuclear

Job Performance Measure

Pressurize the Main Steam Lines

JPM Number: 2020 ILT NRC JPM b

Revision Number: 01

Date: 08/05/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 0250-01 Rev: 13
 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, This JPM is developed IAW guidelines established in NUREG 1021 Rev 9 ES-301 and Appendix C. This JPM meets the criteria of Category B.1 "Control Room Systems," for RO/SRO candidates.

Bank JPM LS-009-II Rev. 11 was used as the basis for this JPM, which was revised to reflect procedure and JPM template changes for the 2009 ILT NRC licensing exam.

This JPM was also revised to start at a lower power, and more stable, initial condition to facilitate the performance of the other JPMs in the set.

Revision 01, Incorporate procedure changes.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC 19.

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.

Setup Instructions

2. **Malfunctions:**

- Insert a Group I isolation then remove the malfunction as follows:
 - **imf rp05a**
 - **imf rp05b**
 - **dmf rp05a**
 - **dmf rp05b**
- **Do NOT reset the Group 1 Isolation during QCGP 2-3 actions.**
- Manually Scram the reactor and perform scram actions IAW QCGP 2-3 as necessary to stabilize the plant. (Reset Main Gen 86 Device to avoid nuisance alarms)
- Silence 901-5, 7, and 54 panel alarms
- Monitor RPV Level and Pressure throughout:
 - RPV pressure will rise very slowly at approximately 2 psig / minute.
 - RPV Level should remain at approximately 30 inches with a Feed pump on the LFFRV.
 - If the Feed Pump trips due to swell when the MSIVs are opened, restart the Feed Pump.

3. **Remotes:** NONE

4. **Overrides:** NONE

5. Verify the following control panel lineups:

- The Main Steam Line Drain Valves are CLOSED.
- All Turbine Bypass Valves are CLOSED.
- On the <CONTROL> <RX COOLDOWN> screen, verify REACTOR COOLDOWN is OFF.

6. Verify that a current revision of QCOP 0250-01 "PRESSURIZING THE MAIN STEAM LINES", with steps C.1-4 signed off and step F.10 N/A ed.

7. This completes the setup for this JPM.

INITIAL CONDITIONS

- You are the Unit 1 ANSO.
- Approximately 10 minutes ago, a spurious Group I isolation occurred during a reactor startup from 30% power.
- Reactor water level has been restored and is now being controlled by Feed/Condensate.
- An extra reactor operator has been controlling pressure between 800 and 1000 psig with relief valves.

INITIATING CUE

Pressurize the Main Steam lines and re-open the MSIV's per QCOP 0250-01.

Notify the Unit Supervisor when the MSIVs are open.

Provide examinee with: A marked up copy of QCOP 0250-01.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

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.

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JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.1.	Place MN STM ISOL RESET to INBD.	●Places MN STM ISOL RESET switch on the 901-5 panel to INBD position.●	—	—	—
*F.2.	Place MN STM ISOL RESET to OUTBD.	●Places MN STM ISOL RESET switch on the 901-5 panel to OUTBD position.●	—	—	—
*F.3	Adjust DEHC Pressure Set 200 psig above reactor pressure or as high as possible.	<p>At the DEHC Operator's Workstation, on the <CONTROL> <PRESSURE CONTROL> screen, adjust DEHC Pressure Set 200 psig above reactor pressure:</p> <p>Select STPT/RAMP</p> <ul style="list-style-type: none"> ●Enter desired value for Set Point and a desired value for Ramp. Select OK to enter values.● ●Select OK to confirm values● or CANCEL to abort changes 	—	—	—
EVALUATOR NOTE: Role play as necessary and state: “Set the Ramp value at 100.”					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.4.	<u>Open</u> Outboard MSIVs	<p>On Panel 901-3, C/S for:</p> <ul style="list-style-type: none"> ●AO 1-203-2A taken to OPEN● Valve indicates OPEN. ●AO 1-203-2B taken to OPEN● Valve indicates OPEN. ●AO 1-203-2C taken to OPEN● Valve indicates OPEN. ●AO 1-203-2D taken to OPEN● Valve indicates OPEN. 	—	—	—
*F.5.	<u>Open</u> Steam Line drain valves.	<p>On Panel 901-3 , C/S for:</p> <ul style="list-style-type: none"> ●MO 1-220-90A taken to OPEN● Valve indicates OPEN ●MO 1-220-90B taken to OPEN● Valve indicates OPEN ●MO 1-220-90C taken to OPEN● Valve indicates OPEN ●MO 1-220-90D taken to OPEN● Valve indicates OPEN 	—	—	—
EVALUATOR NOTE: The Main Turbine Bypass valves will cycle if Turbine Throttle pressure is raised > DEHC Pressure Demand value.					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.6.	<u>Equalize</u> pressure across MSIVs.	On Panel 901-3 , C/S for: ●MO 1-220-1 taken to OPEN;● Valve indicates OPEN. ●MO 1-220-2 taken to OPEN;● Valve indicates OPEN. ●Throttles MO 1-220-3 OPEN while maintaining Turbine Throttle pressure < DEHC Pressure Demand value●	—	—	—
F.7.	<u>Monitor</u> differential pressure across the MSIVs.	Verifies differential pressure Inboard MSIVs is decreasing using: a. Reactor Pressure b. PI 1-3040-10, TURB THROT PRESS (at 901-7 panel)	—	—	—
EVALUATOR NOTE: Steps F.7.a (1), (2), and (3) are applicable <u>only</u> if the “ THROTTLE PRESS MED (XMITTER X) FAILED LOW ” alarm was received. If this alarm is received then steps F.7.a(2) is critical.					
F.7.a	Checks DEHC for Diagnostic Alarms.	DEHC checked for Diagnostic Alarm: “THROTTLE PRESS MED (XMITTER X) FAILED LOW”	—	—	—
F.7.a(1)	Verify each Throttle Pressure Transmitter indicates an increasing trend.	From the <AUX> <XMITTER RESET> SCREEN: Increasing trends on Throttle Pressure Transmitters verified.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.7.a(2)	If necessary, RESET each Throttle Pressure transmitter that indicates FAILED.	From the <AUX> <XMITTER RESET> SCREEN: <ul style="list-style-type: none"> •Selects RESET THROTTLE #X for each failed transmitter. • •Selects OK to confirm each reset. • 	—	—	—
F.7.a(3)	Verify each Throttle Pressure transmitter alarm indicates a NORMAL state and clear alarms.	From the ALARMS screen, verifies each Throttle Pressure alarm indicates a "NORMAL" state and clears all alarms by selecting ACK ALL.	—	—	—
EVALUATOR NOTE/CUE: If the candidate starts to investigate other DEHC alarms still active on the alarm list, as the Unit Supervisor state: "Another NSO will address DEHC alarms not associated with the Throttle Pressure Transmitters."					
EVALUATOR NOTE: Steps F.7.a (4)&(5) are not applicable because all transmitter alarms will reset.					
EVALUATOR NOTE : Step F.8. is not applicable because the differential pressure across the MSIVs will decrease to <200 psig.					
CUE:	If asked, as Unit Supervisor grant permission to open the Inboard MSIVs.				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
EVALUATOR NOTE: The candidate may open <u>two</u> valves simultaneously to avoid a possible Group I isolation on high Main Steam Line flow rates.					
*F.9.	<u>Open</u> the Inboard MSIVs.	<p>Verifies differential pressure across the MSIVs is <200 psid, <u>OR</u> has stopped decreasing and Unit Supervisor has given permission to proceed, <u>THEN</u>, <u>opens</u> Inboard MSIVs:</p> <p>On Panel 901-3, C/S for:</p> <ul style="list-style-type: none"> ●AO 1-203-1A taken to OPEN;● Valve indicates OPEN. ●AO 1-203-1B taken to OPEN;● Valve indicates OPEN. ●AO 1-203-1C taken to OPEN;● Valve indicates OPEN. ●AO 1-203-1D taken to OPEN;● Valve indicates OPEN. 	—	—	—
EVALUATOR NOTE: The candidate should inform the Unit Supervisor that the MSIV's are open.					
CUE:	“Another NSO will complete the remaining procedure steps.”				

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐ EO ☐ RO ☐ SRO ☐ FS ☐ STA/IA ☐ SRO Cert

JPM Title: Pressurize the Main Steam Lines

JPM Number: 2020 ILT NRC JPM b

Revision Number: 02

Task Standard:

Pressurize the main steam lines and open the MSIVs per QCOP 0250-01. Operate MSIV control switches and DEHC control screen to pressurize and open MSIVs.

Task Number and Title:

SR-0250-P01 (Freq: LIC=A) Given a reactor plant at power when an inadvertent Group 1 isolation occurs, determine the cause, reset the Group 1 and re-open the MSIVs in accordance with QCOP 0250-01. (Important PRA Operator Action - reopening MSIVs terminates 1 of top 100 Core Damage Sequences)

K/A Number and Importance: **K/A:** 239001 A4.01**Rating:** 4.2/4.0

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 0250-01, Rev. 13, Pressurizing the Main Steam Lines

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated 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:** _____

INITIAL CONDITIONS

- You are the Unit 1 ANSO.
- Approximately 10 minutes ago, a spurious Group I isolation occurred during a reactor startup from 30% power.
- Reactor water level has been restored and is now being controlled by Feed/Condensate.
- An extra reactor operator has been controlling pressure between 800 and 1000 psig with relief valves.

INITIATING CUE

Pressurize the Main Steam lines and re-open the MSIV's per QCOP 0250-01.

Notify the Unit Supervisor when the MSIVs are open.

Exelon Nuclear

Job Performance Measure

HPCI Startup for Injection with a Subsequent Loss of CCST Suction Path

JPM Number: 2020 ILT NRC JPM_c

Revision Number: 00

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 2300-06 Rev: 36
 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, This JPM was developed as a new Alternate Path JPM.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to any at power or pressure IC.

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. Override the HPCI Manual Initiation Pushbutton to "Default"

- **ior dihs12300hmi default**

Override the MO 1-2301-6, CCST SUCT VLV control switch to CLOSE when the Aux Oil pump control switch is taken to MAN

- **trgset 1 ".not.zdihs12300AOP"**
- **trg 1 "ior dihs123016 close"**

3. Blank copies of QCOP 2300-06.
4. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.
5. This completes the setup for this JPM.

INITIAL CONDITIONS

- A loss of offsite power to both units occurred due to a tornado strike at the site.
- Both units have scrammed and entered QGA 100.
- The Electric plant on both units has been re-energized via the EDGs and SBO Diesel.
- RPV water level is at 20 in and slowly lowering at approximately 1 inch per minute
- RPV pressure is presently at 1000 psig and being controlled with ADS valves.
- Maintenance Teams are assessing damage to the site and taking mitigating actions as necessary.
- The Unit Supervisor has directed use of HPCI for RPV level control.
- HPCI is in the normal standby lineup.
- Hard Cards have been authorized.

INITIATING CUE

Inject with HPCI and control RPV water level between 0 and 48 inches.

Provide the examinee with: A blank copy of QCOP 2300-06 if obtained.

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.

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
EVALUATOR NOTE: The examinee may choose to initiate HPCI by using the initiation pushbutton or to manually line up the system using either the Hard Card or QCOP 2300-06 procedure steps. The CCST suction valve is triggered to close when the Aux Oil pump starts.					
HC.1 or F.4.a.	Verify HPCI Trip Pushbutton is NOT latched	Verifies REMOTE HPCI TURB TRIP pushbutton latch is disabled.	—	—	—
HC.2	Depress and hold HPCI MANUAL INITIATION PUHBUTTON	Depress and hold HPCI MANUAL INITIATION PUHBUTTON for at least 30 seconds.	—	—	—
ROLE PLAY: As the Unit Supervisor, if the examinee reports HPCI did not start with the manual initiation pushbutton, state: “Continue with efforts to establish HPCI injection.”					
F.4.b.	Verify HPCI CCST Suction Valve lineup	Verifies CCST suction lineup: MO 1-2301-6, OPEN light lit MO 1-2301-35, CLOSED light lit MO 1-2301-36, CLOSED light lit	—	—	—
*F.4.d.	Start the Gland Exhauster	●Places the C/S to START● and verifies ON light is lit.	—	—	—
*F.4.e.	Start the Aux Oil Pump	●Places the C/S to MAN● and verifies ON light is lit.	—	—	—
	Reports the HPCI Suction valve is closing.	Reports MO 1-2301-6, CCST SUCT VLV, indicates CLOSED.	—	—	—
ALTERNATE PATH STARTS HERE					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
ROLE PLAY: If dispatched to MCC 1A, as the EO report: “There is an acrid odor from the HPCI 6 valve breaker. There is no fire and the no damage to the bus. I have EM’s with me and they have determined the breaker will have to be re-placed.”					
ROLE PLAY: If necessary, as the Unit Supervisor, direct the examinee to: “Continue with efforts to establish RPV injection with HPCI.”					
NOTE: The actions below are per QCOP 2300-06.					
*F.1.a.	Open the TORUS SUCT VLV	•Places C/S for MO 1-2301-35 to OPEN• and verifies the following: MO 1-2301-35 vlv OPEN light lit MO 1-2301-49 vlv auto-closes	—	—	—
*F.1.b.	Open the TORUS SUCT VLV	•Places C/S for MO 1-2301-36 to OPEN• and verifies OPEN light lit.	—	—	—
F.1.c.	Verify the CCST SUCT VLV closed.	Verifies the MO 1-2301-6 valve CLOSED light is lit.	—	—	—
ROLE PLAY: If the examinee dispatches EOs to fill and vent HPCI per QCOP 2300-15, state: “15 minutes have passed and the EOs have reported back that the HPCI system is filled and vented.”					
HC.3 or F.4.a.	Verify HPCI Trip Pushbutton is NOT latched	Verifies REMOTE HPCI TURB TRIP pushbutton latch is disabled.	—	—	—
EVALUATOR NOTE: The following two steps are critical if the Gland Exhauster and Aux Oil Pump were secured. If not, they are verification steps only.					
HC.4 or F.4.d.	Verify/Start Gland Exhauster	Verifies Gland Exhauster ON light is lit	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
HC.5 or F.4.e.	Verify/Start Aux Oil Pump	Verifies Aux Oil Pump ON light is lit.	—	—	—
*HC.6 or *F.4.f	Close the DRAIN VLVs TO MN CONDSR	Places C/S for AO 1-2301-29 <u>and</u> AO 1-2301-30 DRAIN VLVs TO MN CNDSR to the CLOSE position.	—	—	—
*HC.7 or *F.4.g.	Open the DRAIN TRAP TO DRAIN POT VLV	Places C/S for AO 1-2301-28 DRAIN TRAP TO DRIN POT to the OPEN position.	—	—	—
*HC.8 or *F.4.h.	Open the HPCI TURB STM SPLY VLV	Places C/S for MO 1-2301-3, HPCI TURB STM SPLY VLV to the OPEN position.	—	—	—
HC.9 or F.4.i.	Verify open the MIN FLOW BYP VLV	Verifies OPEN light for MO 1-2301-14, MIN FLOW BYP VLV is lit.	—	—	—
*HC.10 or *F.4.j.	Close DRAIN VLVs TO SUMP	Places C/S for AO 1-2301-64 <u>and</u> AO 1-2301-65 DRAIN VLVs TO SUMP to the CLOSE position.	—	—	—
*HC.11 or *F.4.k.	Open the HPCI TURB STOP VLV.	●Depresses the HPCI TURB TRIP RESET pushbutton● and verifies the HPCI TURB STOP VLV opens. Verifies OPEN light lit.	—	—	—
NOTE: QCOP 2300-06 step F.4.I. directs the actions of step F.5. for Reactor injection.					
HC.12 or F.5.a.	Verify open HPCI PMP DISCH VLV	Verifies the OPEN light for MO 1-2301-9, HPCI PMP DISCH VLV is lit.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*HC.13 or *F.5.b.	Open the HPCI PMP DISCH VLV	Places C/S for MO 1-2301-8, HPCI PMP DISCH VLV to the OPEN position.	—	—	—
*HC.14 or *F.5.c.	Depress and hold BLOCK MOTOR SPEED CHANGER	Depresses and holds BLOCK MOTOR SPEED CHANGER pushbutton until MSC reaches HSS (High Speed Stop).	—	—	—
HC.15 or F.5.d.	Verify HPCI injection into RPV and adjust flow as required	Verifies flow increases to 5600 gpm as indicated on HPCI Flow Controller. Adjust flow in MANUAL or AUTO mode as required.			
F.5.f.	Verify MIN FLOW BYP, closes	Verifies MO 1-2301-14, MIN FLOW BYP valve CLOSED light is lit.	—	—	—
F.5.g.	Stop Aux Oil Pump	Places Aux Oil Pump C/S to AUTO.	—	—	—
F.5.h.	Verify EMERG OIL PUMP off	Verifies OFF light lit at EMERG OIL PUMP C/S.	—	—	—
CUE:	Inform the examinee that another NSO will monitor HPCI Turbine operation and Torus water temperature.				
The examinee should inform you that the task is complete.					

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐ EO ☐ RO ☐ SRO ☐ FS ☐ STA/IA ☐ SRO Cert

JPM Title: HPCI Startup for Injection with a Subsequent Loss of CCST Suction Path

JPM Number: 2020 ILT NRC JPM c Revision Number: 00

Task Standard:

Lineup HPCI for injection in accordance with QCOP 2300-06. With a subsequent failure of the CCST suction path, realign HPCI suction to the Torus and re-establish injection.

Task Number and Title:

SR-2300-P01: (Freq: LIC=A) (ILT-MP) Given a reactor plant in an accident condition where HPCI fails to auto-start and/or fails to start with auto pushbutton, manually start HPCI for injection in accordance with QCOP 2300-06. (Starting HPCI manually after a failure to auto start is an important Operator action with a RAW of 290 and terminates 20 of the Top 200 Core Damage Sequences)

K/A Number and Importance:

KA: 206000 A2.06**Rating:** 3.5/3.5

Suggested Testing Environment: Simulator

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

Reference(s):

QCOP 2300-06 Rev.35, HPCI System Manual Startup (Injection-Pressure Control)

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 15 minutes**Actual Time Used:** _____ minutes**EVALUATION SUMMARY:**Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ NoThe 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:** _____

INITIAL CONDITIONS

- A loss of offsite power to both units occurred due to a tornado strike at the site.
- Both units have scrambled and entered QGA 100.
- The Electric plant on both units has been re-energized via the EDGs and SBO Diesel.
- RPV water level is at 20 in and slowly lowering at approximately 1 inch per minute
- RPV pressure is presently at 1000 psig and being controlled with ADS valves.
- Maintenance Teams are assessing damage to the site and taking mitigating actions as necessary.
- The Unit Supervisor has directed use of HPCI for RPV level control.
- HPCI is in the normal standby lineup.
- Hard Cards have been authorized.

INITIATING CUE

Inject with HPCI and control RPV water level between 0 and 48 inches.

Exelon Nuclear

Job Performance Measure

Start Torus Cooling

JPM Number: 2020 ILT NRC JPM d

Revision Number: 15

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 through 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 1000-09 Rev: 28
 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 10, JPM revised to reflect procedure revisions.

Revision 11, JPM revised to reflect format changes and updated completion time.

Revision 12, JPM revised to reflect procedure changes.

Revision 13, Deleted setup instruction for running computer-aided exercise. Corrected typographical errors and updated JPM to match procedure revision.

Revision 14, JPM revised to reflect current procedure revision and add new template.

Revision 15, Added cue for field EO dispatched to RHR room. Deleted gauge override commands in setup page.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to any shutdown or at power IC.

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. **Manual Actuation:**

Start the 1A/B and 1C/D RHRSW pumps IAW QCOP 1000-04 (1 pump per loop)

Malfunctions:

NONE

Remotes:

NONE

3. 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.
4. Prepare a copy of QCOP 1000-09 marked up as follows:
 - Step C.1. - initialed
 - Step F.1.a. - N/A
 - Step F.1.b. – N/A
 - Step F.1.c. – initialed
 - Step F.1.d.(1 thru 3) - initialed
5. This completes the setup for this JPM.

INITIAL CONDITIONS

- Unit 1 is operating at 100% power.
- The HPCI Monthly surveillance is planned for this shift requiring startup of Torus cooling.
- The RHR system is in standby in accordance with QCOP 1000-49.
- The 1A and 1C RHR Service Water pumps are running in accordance with QCOP 1000-04.
- An Equipment Operator has been dispatched to perform pre-start checks on the 1A RHR pump.

INITIATING CUE

Start Torus Cooling using the 1A RHR pump in accordance with QCOP 1000-09.

Provide examinee with: A marked up copy of QCOP 1000-09.

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

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

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 examinee 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 examinee acknowledges the initiating cue.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
EVALUATOR NOTE: Steps F.1.c. and F.1.d. are met per Initial Conditions.					
F.1.e.	Verify RHR discharge pressure is > 57 psig.	Determines pressure on PI 1-1040-2A, RHR PMP DISCH PRESS, is > 57 psig.	—	—	—
*F.1.f.	Open MO 1-1001-34A.	<ul style="list-style-type: none"> Positions MO 1-1001-34A, TORUS TEST OR SPRAY VLV c/s to Open and verifies Red light lit. 	—	—	—
CUE:	If contacted, as EO, state: “Pre-start checks are complete on the 1A RHR pump and it is ready for a start. All personnel are out of the room.”				
*F.1.g.	Start 1A RHR pump.	<ul style="list-style-type: none"> Positions 1A RHR pump c/s to Start and verifies Run light lit and pump discharge pressure increase. 	—	—	—
*F.1.h.	Throttle open MO 1-1001-36A.	<ul style="list-style-type: none"> Throttles open MO 1-1001-36A, TORUS H2O TEST VLV to establish 3500 gpm as indicated on FI 1-1040-11A, CNMT SPRAY FLOW and maintains RHR discharge pressure \geq 20 psig less than RHR Service Water discharge pressure. 	—	—	—
F.1.i.	Verify MO 1-1001-18A closes.	Verifies MO 1-1001-18A, RHR MIN FLOW BYP VLV closes, Closed light lit.			
F.1.j.	Consider using two RHR pumps.	Determines two RHR pumps are not required at this time.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE:	If asked state, “Usage of two RHR pumps to maximize cooling effectiveness is not required at this time.”				
F.1.l.	Monitor Torus water temperatures.	Monitors Torus water temperatures on any of the following: a. 1-1640-9, TORUS H2O TEMP. b. Point 9 on 1-1640-200A/B, TORUS H2O TEMP. c. Process computer points C198 or C199, AVG TORUS WATER TEMP A/B.	—	—	—
F.1.m.	Throttle Closed MO 1-1001-16A.	Throttle closed MO 1-1001-16A, RHR HX BYP VLV to establish desired cooldown rate.	—	—	—
CUE: After the candidate throttles the MO 1-1001-16A, state another NSO will monitor the cooldown rate.					
EVALUATOR NOTE: If Examinee should inform you that the task is complete.					

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐EO ☐RO ☐SRO ☐FS ☐STA/IA ☐SRO Cert

JPM Title: Start Torus Cooling

JPM Number: 2020 ILT NRC JPM d.

Revision Number: 15

Task Standard:

Start Torus Cooling using the 1A RHR Pump per QCOP 1000-09. Using the procedure steps perform the valve and pump manipulations to place the RHR system in a Torus Cooling lineup.

Task Number and Title:

SR-1000-P01: (Freq: LIC=A) (ILT-MP) Given a reactor plant either operating or shutdown, start the RHR 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 maximum RAW of 2.18E+4) (recovery of torus cooling after failure terminates 20 of top 100 core damage sequences)

K/A Number and Importance: **K/A:** 219000 A1.08**Rating:** 3.7/3.6

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1000-09, Rev. 28, TORUS COOLING STARTUP AND OPERATION

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 15 minutes**Actual Time Used:** _____ minutes**EVALUATION SUMMARY:**Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ NoThe examinee'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:** _____

INITIAL CONDITIONS

- Unit 1 is operating at 100% power.
- The HPCI Monthly surveillance is planned for this shift requiring startup of Torus cooling.
- The RHR system is in standby in accordance with QCOP 1000-49.
- The 1A and 1C RHR Service Water pumps are running in accordance with QCOP 1000-04.
- An Equipment Operator has been dispatched to perform pre-start checks on the 1A RHR pump.

INITIATING CUE

Start Torus Cooling using the 1A RHR pump in accordance with QCOP 1000-09.

Exelon Nuclear

Job Performance Measure

Shutdown the RCIC System

JPM Number: 2020 ILT NRC JPM e

Revision Number: 13

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 1300-05 Rev: 16
 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 08,** 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 Examinees.
- Revision 09,** JPM revised to match procedure changes.
- Revision 10,** JPM revised to match procedure changes.
- Revision 11,** JPM revised to update critical tasks for current procedure revision.
- Revision 12,** JPM revised to reflect current procedure revision and add new template.
- Revision 13,** Revised to reflect current procedure revision.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the Simulator to any IC with Reactor pressure \geq 920 psig.

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 setup Computer Aided Exercise _____ - ____ (jcae! _____ - ____)

3. Manual Actions:

- Start the A Loop of Torus Cooling in accordance with QCOP 1000-09.

NOTE: Make adjustments to the RCIC system with the Flow Controller in AUTO and allow the system to stabilize before placing the controller in MAN. When resetting after a the JPM is complete, return the system to AUTO and allow it to stabilize, then place the Flow Controller in MAN as required by the setup.

- Place RCIC System on in the pressure control mode, in accordance with QCOP 1300-02, step F.6. Perform step F.6.b. using the following simulator commands:
 - Disengage the 53 valve motor - **irf rc05r disengage**
 - Throttle open the 53 valve 10.1 turns – **irf rc06r 10.1**
 - Perform step F.j.(2) by adjusting the 53 valve as necessary to obtain RCIC pump discharge press. 100 psig > reactor press. — **irf rc06r X**
 - Re-engage the 53 valve motor after conditions are established — **irf rc05r engage**
 - Verify the 53 valve has dual indication. If not, “bump” the control switch to the open position until dual indication is received OR place an EST tag on the RCIC 53 valve stating, “Valve throttled open 10 turns.”
- Place RCIC controller is in MANUAL.

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.

INITIAL CONDITIONS

- Unit 1 has scrammed due to a spurious Group I isolation.
- Reactor pressure was being controlled with RCIC in the pressure control mode with the controller in MANUAL.
- The MSIVs are being re-opened and RCIC is no longer required for pressure control.
- RCIC has been running for approximately 1 hour.

INITIATING CUE

Shutdown the RCIC system per QCOP 1300-05.

Provide examinee with: A blank copy of QCOP 1300-05.

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

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Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section at the bottom of the page. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

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.

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JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
*F.1.	Trip the RCIC Turbine.	●Depresses TURB TRIP pushbutton.●	—	—	—
F.2.	Verify closed MO 1-1301-61.	Verifies MO 1-1301-61, STM TO TURB VLV closed light is lit.	—	—	—
F.3.	Verify closed MO 1-1301-60.	Verifies MO 1-1301-60, MIN FLOW VLV closed light is lit.	—	—	—
F.4.	Verify RCIC Pump discharge flow decreases.	Verifies RCIC Pump discharge flow decreases to zero on FIC 1-1340-1, RCIC FLOW CONTROLLER.	—	—	—
F.5.	Verify RCIC Turbine speed decreases.	Verifies RCIC Turbine speed decreases to zero on 1-1340-501, RCIC TURB SPEED.	—	—	—
F.6.	Verify closed MO-1-1301-49.	Verifies MO 1-1301-49, PMP DISCH VLV closed light is lit.	—	—	—
NOTE: Step F.7. should be N/A per Limitation and Action step E4., a short run time is defined as ≤ 5 minutes. The initial conditions stated RCIC had been running for approximately 1 hour.					
F.8.	Close MO 1-1301-62.	Places MO 1-1301-62, TURB CLG WTR VLV C/S to close and verifies closed light is lit.	—	—	—
*F.9.	Close MO 1-1301-53.	●Places MO 1-1301-53, CCST TEST BYP C/S to close and holds for 5 sec after close light is lit.●	—	—	—
*F.10	Close MO 1-2301-15.	●Places MO 1-2301-15, (HPCI) TEST TRN VLV C/S to close and verifies close light is lit.●	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.11.	Place RCIC Flow Controller in Auto and set at 400 gpm.	●Depresses Auto PB on FIC 1-1340-1, RCIC FLOW CONTROLLER● and verifies setpoint at 400 gpm.	—	—	—
F.12	Depress Initiation Signal Seal-In and Reset.	Depresses INITIATION SIGNAL SEAL-IN AND RESET PB and verifies 901-4 D-16 is not in alarm.	—	—	—
*F.13.	Reset Turbine trip.	●Depresses TURB RESET PB● and verifies 901-4 D-15 alarm resets.	—	—	—
CUE:	When examinee determines RCIC Turbine Vacuum Pump should run for 30 minutes after turbine shutdown per procedure NOTE on page 3, then inform the examinee that 30 minutes has elapsed.				
F.14	Stop Turbine Vacuum Pump.	Positions the TURB VACU PMP C/S to stop and verifies STOP light is lit.	—	—	—
F.15.	Verify Barometric Condenser Condensate Pump stops.	Verifies BAROMETRIC CNDSR COND PMP stops and STOP light is lit.	—	—	—
F.16.	Verify all RCIC alarms clear.	Depresses 901-4 panel annunciator reset PB to clear all alarms associated with RCIC, as necessary.	—	—	—
CUE:	Inform the examinee, “Another NSO will place RCIC in the standby lineup per QCOP 1300-01”.				
EVALUATOR: The examinee should inform you that the task is complete.					

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐ EO ☐ RO ☐ SRO ☐ FS ☐ STA/IA ☐ SRO Cert

JPM Title: Shutdown the RCIC System

JPM Number: 2020 ILT NRC JPM e

Revision Number: 13

Task Standard: With the RCIC system operating in pressure control mode, shut the system down up to the point of placing in a standby lineup in accordance with QCOP 1300-05.

Task Number and Title:

SR-1300-P03: (Freq: LIC=I) (ILT-MP) Given an operating reactor plant, perform the periodic RCIC pump operability test in accordance with QCOS 1300-01.K/A Number and Importance: **K/A:** 217000. A4.03 **Rating:** 3.4/3.3

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1300-05, Rev.16, RCIC SYSTEM SHUTDOWN

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 12 minutes**Actual Time Used:** _____ minutes**EVALUATION SUMMARY:**Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ NoThe 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:** _____

INITIAL CONDITIONS

- Unit 1 has scrammed due to a spurious Group I isolation.
- Reactor pressure was being controlled with RCIC in the pressure control mode with the controller in MANUAL.
- The MSIVs are being re-opened and RCIC is no longer required for pressure control.
- RCIC has been running for approximately 1 hour.

INITIATING CUE

Shutdown the RCIC system per QCOP 1300-05.

Exelon Nuclear

Job Performance Measure

Synchronize the Main Generator to the Grid

JPM Number: 2020 ILT NRC JPM f

Revision Number: 02

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 QCGP 1-1 Rev: 117
 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, Verify examinee ability to manipulate Main Generator controls and breakers in accordance with plant startup procedure.

Revision 01, - Update JPM to current template

- Update to referenced procedure contents and current revision.

- Used on 2018 ILT NRC Exam.

Revision 02, Updated for procedure revision.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-16.

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 setup Computer Aided Exercise: NONE.

3. Manual Actuations

- Complete QCGP 1-1 steps F.8.a. through step F.8.h.
- Activate Plant Display 11 and 48.
- Select analog trends for G128 & G121 on the plant process computer screens.
- Verify 'A' and B' FRVs in manual and closed.
- Verify Low Flow FRV in auto.

4. Malfunctions:

None.

5. Remotes:

- Verify from sim diagram ED1, unit main disconnects closed (**mrf ed15 close**)

6. Overrides:

Override TR 1-5640-61, point 6, to 270°F using:

ior AOTR1564061F 270

7. Prepare a copy of QCGP 1-1, pages 93-102 signed off through step F.8.h.
8. A blank copy of QCGP 1-1, Attachment H.
9. 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.
10. This completes the setup for this JPM.

INITIAL CONDITIONS

- The Unit is operating at ~16% power, ready for Generator Synchronization.
- A Shift Supervisor and an EO are standing by in the 345KV yard to monitor closure of the output GCB's.
- Plant displays #11 and 48 are activated.
- Operator selected analog trends for G128 and G121 are running.
- QCGP 1-1 is completed through step F.8.h.

INITIATING CUE

Synchronize the Main Generator to the Grid, apply initial load, and restore the 345KV Ring Bus IAW with QCGP 1-1.

Provide Examinee with: A marked up copy of QCGP 1-1, pages 93-102 and Attachment H.

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.

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
*F.8.i.(1)	Turn on CKT BKR 6-7 SYNCHRONIZING switch.	●Inserts the SYNCH key and places the CKT BKR 6-7 SYNCHRONIZING switch to the "ON" position.●	—	—	—
F.8.i. (2) & (3)	Verify SYNCHROSCOPE dial is rotating.	Observes SYNCHROSCOPE dial is rotating and INCOMING VOLT and RUNNING VOLT meters are indicating.	—	—	—
*F.8.i.(4)	Adjust INCOMING VOLTS.	Using the VOLT REG AUTO STPT ADJ (VARS) switch: ●Adjusts INCOMING VOLTS to slightly higher than RUNNING VOLTS● as indicated when the Synch Scope is at twelve o'clock.	—	—	—
*F.8.i.(5)	Adjust Generator speed.	●Adjust GOVERNOR <u>OR</u> DEHC LOAD SET to establish a slow clockwise (FAST) rotation on the SYNCHROSCOPE of approximately 60 seconds per cycle.●	—	—	—
F.8.i.(6)(a)	Determine initial Generator load.	Obtains Main Turbine First Stage Bowl temperature from TR 1-5640-61 (pt.6) and determines an initial load of 40-50 MWe.	—	—	—
F.8.i.(7)	Notifies Generation Dispatch.	Notifies Generation Dispatch that the Main Generator is about to be synchronized and load will be increased to the initial load of 40 to 50 MWe.	—	—	—
CUE:	As Unit Supervisor, reply, "Generation Dispatch has been notified that the Main Generator is about to be synchronized and initial load applied."				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.8.i.(8)	Close CKT BKR 6-7	●Places CKT BKR 6-7 control switch to CLOSE when synchroscope is one degree before twelve o'clock.●	—	—	—
F.8.i.(8)(a)	Verify automatic MWE increase.	Verifies 40-50 MWE increase at the 901-8 or 901-5 panels.	—	—	—
EVALUATOR NOTE: The following step will be performed if necessary.					
F.8.i.(8)(b)	Applies initial load.	Selects RAISE on DEHC LOAD SET OR turns Main Generator GOVERNOR to INCR direction to attain initial load of 40-50 MWE.	—	—	—
F.8.i.(9)	Adjust Main Generator Reactive Load.	Adjust VOLT REG AUTO STPT ADJ (VARs) to apply 20-40 MVARs as indicated on the MEGAVAR meter at the 901-8 panel.	—	—	—
CUE:	If asked, as Unit Supervisor, direct the examinee to “pickup bypass load and maintain 1st stage shell heatup rate < 150°F/hr.”				
F.8.i.(10)	Pickup Bypass load and maintain 1 st stage shell heatup rate <150 F/HR.	One of the following is performed to raise load set 10% above %RX power: a) Select RAISE on DEHC Load Set. b) On DEHC Load Set, select STPT/RAMP and enter values. c) Main Generator GOVERNOR taken to INCR.	—	—	—
F.8.i.(11)	Turn OFF CKT BKR 6-7 SYNCHRONIZING switch.	Turns the CKT BKR 6-7 SYNCHRONIZING switch to the OFF position and removes the SYNCH key.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.8.i.(12)	Turn ON CKT BKR 7-8 SYNCHRONIZING switch.	●Inserts the SYNCH key and places the CKT BKR 7-8 SYNCHRONIZATING switch to the “ON” position.●	—	—	—
F.8.i.(12)(a)	Verify SYNCHROSCOPE stopped at twelve o'clock.	Verifies SYNCHROSCOPE is stopped at twelve o'clock on the 901-8 panel.	—	—	—
F.8.i.(12)(b)	Verify voltages are equal.	Verifies INCOMING and RUNNING voltages are equal on the 901-8 panel.	—	—	—
*F.8.i.(12)(c)	Close CKT BKR 7-8.	●Places CKT BKR 7-8 control switch to CLOSE● and verifies red lights are lit.	—	—	—
F.8.i.(12)(d)	Turn OFF CKT BKR 7-8 SYNCHRONIZING switch	Turns CKT BKR 7-8 SYNCHRONIZING switch to the OFF position and removes the SYNCH key.	—	—	—
CUE:	As the Unit Supervisor inform the examinee that: “another NSO will complete the remaining steps”.				
EVALUATOR NOTE: The examinee should inform you the task is complete.					

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐ EO ☐ RO ☐ SRO ☐ FS ☐ STA/IA ☐ SRO Cert

JPM Title: Synchronize the Main Generator

JPM Number: 2018 ILT NRC JPM f

Revision Number: 02

Task Standard: Synchronize the Main Generator to the grid using the procedure steps listed in QCGP 1-1.

Task Number and Title:

SR-0002-P01: (Freq: LIC=B) Given a reactor plant during a startup, perform a reactor startup consisting of the following tasks in accordance with QCGP 1-1:

- a. Criticality and establish a heatup
- b. Transfer mode switch to run
- c. Turbine roll and synchronization

K/A Number and Importance: **K/A:** 262001.A4.04**Rating:** 3.6/3.7

Suggested Testing Environment: Simulator

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

Reference(s): QCGP 1-1, Rev. 116, Normal Unit 1 Startup

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 20 minutes**Actual Time Used:** _____ minutes**EVALUATION SUMMARY:**Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ NoThe 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:** _____

INITIAL CONDITIONS

- The Unit is operating at ~16% power, ready for Generator Synchronization.
- A Shift Supervisor and an EO are standing by in the 345KV yard to monitor closure of the output GCB's.
- Plant displays #11 and 48 are activated.
- Operator selected analog trends for G128 and G121 are running.
- QCGP 1-1 is completed through step F.8.h.

INITIATING CUE

Synchronize the Main Generator to the Grid, apply initial load, and restore the 345KV Ring Bus IAW with QCGP 1-1.

Exelon Nuclear

Job Performance Measure

Manual Scram Functional Test with Channel B Failure

JPM Number: 2020 ILT NRC JPM g

Revision Number: 05

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 through 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 QCOS 0500-02 Rev: 27
 Procedure QCOA 0500-01 Rev: 008
 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, This JPM is developed IAW guidelines established in NUREG 1021 Rev 9 ES-301 and Appendix C. This JPM meets the criteria of Category B.1 "Control Room Systems," for RO/SRO examinee.

This JPM modified an existing JPM into an Alternate Path JPM. LS-004-I Rev. 12 "Complete a Manual Scram Functional Test" was the basis.

Note: Revision 01 change reason was not annotated.

Revision 02, Modified setup for better clarity when used as part of a group of JPMs. Corrected objective to limit performance to licensed operators.

Revision 03, JPM revised to match new template.

Revision 04, JPM revised to reflect current procedure revision and add new template.

Revision 05, JPM revised to reflect procedure changes.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to any IC.

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 following setup;
(This set of commands overrides ON the Ch B RPS Group 2&3 lights on both 901-5 and 901-17. When either RPS Test Switch on 901-17 is placed in TRIP, all four lights will go OFF. This set of commands represents a failure of the 590-109D relay to change state during the test.)
3. Verify the following Overrides are active:
 - **ior LOIL10590500D ON**
 - **ior LOIL10590500M ON**
 - **ior LOIL10590500F ON**
 - **ior LOIL10590500P ON**
4. Verify the following commands for JPM performance:
 - **trgset 17 “zdihs10590302b.or.zdihs10590302d”**
 - **trgset 18 “zdihs10590302b.or.zdihs10590302d”**
 - **trgset 19 “zdihs10590302b.or.zdihs10590302d”**
 - **trgset 20 “zdihs10590302b.or.zdihs10590302d”**
 - **trg 17 “dor LOIL10590500D”**
 - **trg 18 “dor LOIL10590500M”**
 - **trg 19 “dor LOIL10590500F”**
 - **trg 20 “dor LOIL10590500P”**
5. Verify current revisions of the following procedures are available:
 - Prepare a copy of QCOS 0500-02, MANUAL SCRAM INSTRUMENTATION FUNCTIONAL TEST with the following signed off:
Prerequisites D.1, D.2, D.3, and procedure steps H.1.a, H.1.b, H.2.a, H.2.b.
 - QCOA 0500-01, PARTIAL SCRAM ACTUATION (Blank)
6. Provide the Evaluator with a 2235 key for the RPS Channel Test keylock switches.
7. 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.
8. This completes the setup for this JPM.

INITIAL CONDITIONS

- You are the Unit 1 NSO.
- The Unit Supervisor has ordered a manual scram functional test be performed this shift.
- Both RPS buses are on their normal power supply.
- Thermography was completed last shift on the scram solenoid pilot valves.
- The EMs have completed voltage checks at 901-15 and 901-17 panels and signed off the appropriate steps of QCOS 0500-02.

INITIATING CUE

Perform a Manual Scram Functional Test in accordance with QCOS 0500-02.

Inform the Unit Supervisor when the test is complete.

Provide examinee with: A marked up copy of QCOS 0500-02

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

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

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 examinee 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 examinee acknowledges the initiating cue.

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*H.1.c.	Depress Channel A manual scram pushbutton.	●Depresses RX SCRAM CH A pushbutton on the 901-5 panel.●	—	—	—
H.1.d.	Verify red light on Channel A manual scram pushbutton is lit.	Verifies red backlight on Rx SCRAM CH A pushbutton is lit.	—	—	—
H.1.e.	Verify Channel A Scram Solenoid Group lights out.	Verifies all four RPS A scram solenoid lights are not lit on 901-5 panel.	—	—	—
H.1.f.	Verify Channel A Manual Scram alarm.	Verifies annunciator 901-5 A-10, CHANNEL A MANUAL SCRAM, is in alarm.	—	—	—
*H.1.g.	Reset half scram and verify all 8 lights lit for Channel A and B.	●Positions RPS SCRAM RESET switch first to position 2 and 3 then to position 1 and 4.● - Verifies all 8 scram solenoid group light are lit for RPS Channel A and B.	—	—	—
H.1.h.	Reset Channel A Manual Scram alarm.	Depresses reset pushbutton and First Hit pushbutton, AND verifies Annunciator 901-5 A-10 is reset.	—	—	—
H.1.i.	Verify Computer points W536 and W537 are reset.	Verifies computer points W536 and W537 are reset on the PPC.	—	—	—
CUE:	If the examinee questions performing the B scram test immediately (instead of the preferred 24 hour wait period), report that 24 hours have elapsed. Thermography and the voltage checks for step H.2 have been performed.				
*H.2.c.	Depress the Channel B manual scram pushbutton.	●Depresses RX SCRAM CH B pushbutton on the 901-5 panel.●	—	—	—
H.2.d.	Verify red light on Channel B manual scram pushbutton is lit.	Verifies red backlight on Rx SCRAM CH B pushbutton is lit.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
H.2.c.	Verify Channel B Scram Solenoid Group lights out.	Observes RPS B solenoid lights on 901-5 panel: Group 1 and 4 lights are OUT. Group 2 and 3 lights are LIT.	—	—	—
ALTERNATE PATH BEGINS HERE					
CUE: Role Play Unit Supervisor as necessary. If the examinee asks for guidance, direct him/her to “Continue efforts to insert a B Channel half scram.”					
F.4.	Notify Unit Supervisor of partial half scram on RPS B.	Notifies Unit Supervisor.	—	—	—
NOTE: The remaining actions are from QCOA 0500-01 “Partial Scram Actuation”.					
CUE:	When requested, provide the 2235 key for the RPS test switches.				
*D.3.	Obtain key for RPS Test Switches and place Protection System Subchannel B1 Test switch to TRIP, then NORMAL. Place Protection System Subchannel B2 Test switch to TRIP, then NORMAL.	At the 901-17 panel: ●Places PROTECTION SYS SUBCHANNEL B1 TEST switch (1-590-302B) to TRIP, then NORMAL.● ●Places PROTECTION SYS SUBCHANNEL B2 TEST switch (1-590-302D) to TRIP, then NORMAL.●	—	—	—

NOTE: The critical task of step D.3. is met when ONE of the B Subchannel Test switches (1-590-302B or 1-590-302D) is taken to the TRIP position. This action will de-energize both Group 2 and Group 3 solenoids. However, the procedure directs the switches for ALL affected channels (B and D) be taken to TRIP.

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
D.4.	Verify all four Channel B Scram Solenoid Group lights are out. (The remaining substeps of Step D.4. are not applicable when all 4 lights are out)	Verifies all four Channel B Scram Solenoid Group lights are out at the 901-5 panel.	—	—	—
D.5.	Notify Shift Manager.	Notifies Shift Manager.			
CUE	As Unit Supervisor, direct the examinee to “terminate the surveillance and do NOT reset the half scram on RPS Channel B. Electrical Maintenance will be contacted to investigate.”				
EVALUATOR: The examinee should inform you that the task is complete.					

JPM Stop Time: _____

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JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐EO ☐RO ☐SRO ☐FS ☐STA/IA ☐SRO Cert

JPM Title: Manual Scram Functional Test with Channel B Failure

JPM Number: 2020 ILT NRC JPM g

Revision Number: 05

Task Standard:

Perform the manual scram functional test in QCOS 0500-02. Depress the manual scram button on each channel respectively, perform the verification and restoration lineups. Enter QCOA 0500-01 in the event of a partial scram and take action using the RPS Test Switch to trip the subchannel.

Task Number and Title:

SR-0500-P01: (Freq: LIC=I) Given an operating reactor plant, perform the manual scram functional test in accordance with QCOS 0500-02.

K/A Number and Importance: **K/A:** 212000 A4.02**Rating:** 3.6/3.7

Suggested Testing Environment: Simulator

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

Reference(s):

QCOS 0500-02, Rev. 27, MANUAL SCRAM INSTRUMENTATION FUNCTIONAL TEST.

QCOA 0500-01, Rev. 008, PARTIAL SCRAM ACTUATION.

4E-1466 Sheet 2, 4E-1467 Sheet 2.

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 15 minutes**Actual Time Used:** _____ minutes**EVALUATION SUMMARY:**Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

The examinee'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:** _____

INITIAL CONDITIONS

- You are the Unit 1 NSO.
- The Unit Supervisor has ordered a manual scram functional test be performed this shift.
- Both RPS buses are on their normal power supply.
- Thermography was completed last shift on the scram solenoid pilot valves.
- The EMs have completed voltage checks at 901-15 and 901-17 panels and signed off the appropriate steps of QCOS 0500-02.

INITIATING CUE

Perform a Manual Scram Functional Test in accordance with QCOS 0500-02.

Inform the Unit Supervisor when the test is complete.

Exelon Nuclear

Job Performance Measure

**Venting Primary Containment through the SBGTS
with a Failure of MCC 19-4**

JPM Number: 2020 ILT NRC JPM h

Revision Number: 00

Date: 08/08/2019

Developed By: _____
Instructor Date

Validated By: _____
SME or Instructor Date

Reviewed By: _____
Operations Representative 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 through 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 1600-02 Rev: 16
 Procedure QCOP 7500-01 Rev: 22
 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, This is a NEW JPM developed for RO/SRO candidates taking the 2020 NRC License Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-7.

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 setup caep file.

3. **Manual Actuation:**

Perform steps D.1 thru D.4 of QCOA 3700-06

Allow the plant to stabilize.

Trip the Main Turbine

Perform QCGP 2-3, Attachment A steps 1 thru 8, 11a.

Verify the SBGT system is in normal standby lineup.

SNAP 0 PRIOR TO INDUCING CONTAINMENT LEAK

Malfunctions:

Raise Drywell pressure as follows:

- Insert a small Recirc leak – **imf rr10a .1**
- Modify the leak when Drywell pressure is ~ 2.2 psig – **set ypxmrr10a=.000185**

Trip MCC 19-4 30 seconds after the c/s for AO 1-1601-61, Torus 2-in Vent Vlv is taken to OPEN.

- **trgset 1 “zdihs1160161(2)”**
- **imf ed08p (1 :30)**

Remotes: NONE

Overrides: NONE

4. Prepare a copy of QCOP 1600-02 as follows: steps C.1 & C.2 – N/A, C.3 – signed
5. Blank copies of QCOP 7500-01.
6. 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.
7. This completes the setup for this JPM.

INITIAL CONDITIONS

- Unit 1 is in Mode 3.
- A Unit 1 reactor startup was in progress when an RBCCW leak occurred in the Drywell.
- All applicable steps of QCOA 3700-06, RBCCW Line Break Inside Containment are completed.
- QCGP 2-3 is in progress.
- The SBGT system is in the normal standby lineup.
- No painting has been done in the SBGTS communication zones.
- Drywell pressure is approximately 2.2 psig.
- Chemistry has recommended a vent path from the Torus through the SBGTS due to a 10% rise in Drywell CAM activity.
- Rad Protection has been notified of the pending SBGT start.
- An EO is stationed at the 1/2B SBGTS Train.

INITIATING CUE

Vent the Torus per QCOP 1600-02 using the 1/2B Standby Gas Treatment System train.

Provide examinee with: A marked up copy of QCOP 1600-02.

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

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Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes critical steps.

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 examinee 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 examinee acknowledges the initiating cue.

.....

JPM Start Time: _____

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.1.a.(1)	Verify <u>closed</u> , AO 1-1601-60 Vlv	At 901-3 panel: Verifies CLOSED light is lit at the C/S and/or Drywell mimic for AO 1-1601-60 vlv.	—	—	—
F.1.a.(2)	Verify <u>closed</u> , AO 1-1601-61 Vlv	At 901-3 panel: Verifies CLOSED light is lit at the C/S and/or Drywell mimic for AO 1-1601-61 vlv.	—	—	—
F.1.a.(3)	Verify <u>closed</u> , AO 1-1601-62 Vlv	At 901-3 panel: Verifies CLOSED light is lit at the C/S and/or Drywell mimic for AO 1-1601-62 vlv.	—	—	—
F.1.a.(4)	Verify <u>closed</u> , AO 1-1601-63 Vlv	At 901-3 panel: Verifies CLOSED light is lit at the C/S and/or Drywell mimic for AO 1-1601-63 vlv.	—	—	—
F.1.a.(5)	Verify <u>closed</u> , AO 1-1601-23 Vlv	At 901-3 panel: Verifies CLOSED light is lit at the C/S and/or Drywell mimic AO 1-1601-23 vlv.	—	—	—
F.1.a.(6)	Verify <u>closed</u> , AO 1-1601-24 Vlv	At 901-3 panel: Verifies CLOSED light is lit at the C/S and/or Drywell mimic for AO 1-1601-24 vlv.	—	—	—
EVALUATOR NOTE: Provide the examinee with a copy of QCOP 7500-01, when obtained. The Initial Conditions state that Standby Gas is in the normal standby lineup. Step F.1 can be signed off as “condition met”, however some of the examinees may re-perform the verification of the standby lineup. Only the steps of the system startup are listed.					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.2.a.	Verify <u>open</u> the U1 & U2 RB INLET DMPR TO SBGTS	At 912-5 panel: Verifies OPEN lights are lit for 1-7503 and 2-7503.	—	—	—
F.2.b.	Start the 1/2B SBGTS train	At 912-5 panel: Places the 1/2B SBGTS Train Mode Selector Switch to START.	—	—	—
F.2.c.(1)	Verify <u>closed</u> the TURB BLDG CLG AIR DMPR	At 912-5 panel: Verifies CLOSED light is lit for the 1/2-7504B.	—	—	—
F.2.c.(2)	Verify <u>open</u> the INLET DAMPR	At 912-5 panel: Verifies OPEN light is lit for the 1/2-7505B.	—	—	—
F.2.c.(3)	Verify the SBGTS AIR HTR is <u>ON</u>	At 912-5 panel: Verifies ON light is lit for the 1/2-7503B.	—	—	—
F.2.c.(4)	Verify the SBGTS FAN is <u>ON</u>	At 912-5 panel: Verifies ON light is lit for the 1/2-7506B.	—	—	—
F.2.c.(5)	Verify <u>open</u> the SBGTS FAN DISCH DMPR	At 912-5 panel: Verifies OPEN light is lit for the 1/2-7507B.	—	—	—
F.2.c.(6)	Verify SBGTS flow	At 912-5 panel: Verifies flow is between 3600 to 4400 scfm as indicated on 1/2-7540-13B, 1/2B SBGTS FLOW.	—	—	—
F.2.d.	Notify Radiation Protection that SBGTS is started.	Notifies Radiation Protection that the 1/2B-SBGTS is started.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
CUE:	As Radiation Protection, acknowledge the notification of the startup of the 1/2B SBGTS train.				
EVALUATOR NOTE: The following steps are from QCOP 1600-02.					
*F.1.c.(1)	<u>Open</u> the AO 1-1601-63 Vlv	At 901-3 panel: ●Places the c/s for AO 1-1601-63 vlv to OPEN● and verifies the OPEN light is lit.	—	—	—
*F.1.c.(2)	<u>Open</u> the AO 1-1601-61 Vlv	At 901-3 panel: ●Places the c/s for AO 1-1601-61 vlv to OPEN● and verifies the OPEN light is lit.	—	—	—
EVALUATOR NOTE: Step F.1.d will not be required as Drywell pressure will lower.					
F.1.e.	Verify stack gas activity is within limits.	Verifies annunciator 912-1 F-3, STACK GAS HI RADIATION, is not in alarm.	—	—	—
F.1.f.	Monitor Torus pressure	At panel 901-3: Monitors Torus pressure as indicated on PI 1-1602-1, TORUS PRESS.	—	—	—
F.1.g.	Monitor Drywell pressure	At panel 901-3: Monitors Drywell pressure as indicated on PI 1-1640-11, CONTAINMENT PRESSURE	—	—	—
EVALUATOR NOTE: MCC 19-4 will trip 30 seconds after the c/s for the AO 1-1601-61 valve is taken to open.					
CUE:	After MCC 19-4 trips, call in as the EO stationed at the 1/2B SBGT and report: “The ½ B SBGT Fan has stopped running.”				
ALTERNATE PATH STARTS HERE					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	Reports loss of MCC 19-4	Observes and reports the following due to loss of MCC 19-4: <ul style="list-style-type: none"> - 1D Drywell Cooler Fan trip - Loss of all 1/2B SBGTS dampers, heater and fan - 0 scfm is indicated on 1/2-7540-13B, 1/2B SBGTS FLOW. 	—	—	—
CUE:	As the Unit Supervisor, inform the examinee that an EO has reported: “Contractors moving a cart with scaffold have inadvertently bumped the feed breaker for MCC 19-4. Electrical Maintenance has been dispatched to inspect the breaker.”				
CUE:	If necessary, as the Unit Supervisor, direct the examinee to “Continue efforts to establish Torus venting. Another NSO will take actions for the loss of MCC 19-4.”				
EVALUATOR NOTE: The examinee should start the 1/2A SBGTS train per QCOP 7500-01.					
F.2.a.	Verify <u>open</u> the U2 RB INLET DMPR TO SBGTS	At 912-5 panel: Verifies OPEN light is lit for the 2-7503 damper.	—	—	—
*F.2.b.	Start the 1/2A SBGTS train	At 912-5 panel: ●Places the 1/2A SBGTS Train Mode Selector Switch to START● and observes flow on the 1/2-7540-13A, 1/2A SBGTS FLOW meter.	—	—	—
CUE:	As Unit Supervisor, inform the examinee that: “Another NSO will complete the remaining steps of QCOP 7500-01 and monitor containment pressure.”				
EVALUATOR NOTE: The examinee should inform you that the task is complete.					

JPM Stop Time: _____

JPM SUMMARY**Operator's Name:** _____ **Emp. ID#:** _____**Job Title:** ☐EO ☐RO ☐SRO ☐FS ☐STA/IA ☐SRO Cert

JPM Title: Venting Primary Containment through the SBGTS with a Failure of MCC 19-4

JPM Number: 2020 ILT NRC JPM h

Rev: 00

Task Standard:

Using QCOP 1600-02, vent the torus using the 1/2B SBGTS train. Using the procedure steps perform the setup lineup for venting. When the failure of MCC 19-4 is recognized then recover by starting the 1/2A SBGTS train.

Task Number and Title:

7500.009: Transfer to the STBY SBGTS (affected train to OFF, standby train to START)K/A Number and Importance: **K/A:** 261000 A2.07**Rating:** 2.7/2.8

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1600-02, Rev. 16, Torus Pressure Relief through SBGT

QCOP 7500-01, Rev. 22, Standby Gas Treatment System (SBGTS) Standby
Operation and Start-Up

Actual Testing Environment: ☒ Simulator ☐ Control Room ☐ In-Plant ☐ Other**Testing Method:** ☐ Simulate ☒ PerformEstimated Time to Complete: 20 minutes**Actual Time Used:** _____ minutes**EVALUATION SUMMARY:**Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No

The examinee'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:** _____

INITIAL CONDITIONS

- Unit 1 is in Mode 3.
- A Unit 1 reactor startup was in progress when an RBCCW leak occurred in the Drywell.
- All applicable steps of QCOA 3700-06, RBCCW Line Break Inside Containment are completed.
- QCGP 2-3 is in progress.
- The SBGT system is in the normal standby lineup.
- No painting has been done in the SBGTS communication zones.
- Drywell pressure is approximately 2.2 psig.
- Chemistry has recommended a vent path from the Torus through the SBGTS due to a 10% rise in Drywell CAM activity.
- Rad Protection has been notified of the pending SBGT start.
- An EO is stationed at the 1/2B SBGTS Train.

INITIATING CUE

Vent the Torus per QCOP 1600-02 using the 1/2B Standby Gas Treatment System train.