Job Performance Measure

Enter Substitute Valve for RWCU Pump Flow

JPM Number: RO Admin 1

Revision Number: 00

Date: 10/13/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 9950-17 Rev: 01
Procedure QCOP 1200-03 Rev: 27
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 an RO Admin JPM for the 2016 ILT NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-21.

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 Actuations:**
   - Remove the “B” RWCU Demin from service by inserting the following command: **irf cu10r out**
   - Throttle the MO 1-1201-133 to maintain the following:
     1) RWCU Pump discharge pressure 100 to 200 psig above reactor pressure
     2) “A” RWCU Demin flow at 230 gpm.

3. **Malfunctions:**
   None

4. **Remotes:**
   CU10R

5. **Overrides:**
   None

6. 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.

7. This completes the setup for this JPM.

INITIAL CONDITIONS

- The “B” RWCU Demin has been isolated per QCOP 1200-03 for a backwash and precoat.
- Local flow indication for both “A” and “B” RWCU pumps are 230 and 240 gpm, respectively.
- The QNE has been notified that a substitute values for RWCU pump flows are to be entered for the Core Thermal Heat Balance.

INITIATING CUE

Enter substitute values for RWCU pump flow in accordance with QCOP 1200-03 step F.3 and QCOP 9950-17.

Provide examinee with: A marked up copy of QCOP 1200-03 and a blank copy of QCOP 9950-17.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: QCOP 9950-17 steps F.2.f –F.2.o., will be performed for each point that requires a substitute value. Per QCOP 1200-03 step F.3.b., the points are: **C121_VOL** **C121_VOL_FILT** **C122_VOL** **C122_VOL_FILT**					
*F.2.d	Select “Database Management”	From the Main Menu: Selects “Database Management”	___	___	___
*F.2.e	Select “Single Point Display-Analog” (SPAD)	From the Database Management Menu: Selects “Single Point Display-Analog” (SPAD)	___	___	___
*F.2.f	Select the “Point Name” area	Selects “Point Name” area	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___
*F.2.g-h	Select the desired Point Name (Point ID)	From the Data Point Selection Screen: Scrolls through “Point Names” field and clicks on desired point to highlight. Then clicks “OK”. OR Enters the desired point in the “Point Search” field, then click “OK”.	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.2.i	Verify desired point is in "Point Name" field	Verifies each point is in the "Point Name" field of SPDD.	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___
*F.2.j	Select "Change Point Attributes"	Clicks on "Change Point Attributes" button at lower portion of display.	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___
*F.2.k	Enter desired value for selected points	When the "Single Point Digital Change Attributes Display" appears, enters the following values in the "New Value" field: "230 gpm" for C121_VOL "230 gpm" for C121_VOL_FILT "240 gpm" for C122_VOL "240 gpm" for C122_VOL_FILT	 ___ ___ ___ ___	 ___ ___ ___ ___	 ___ ___ ___ ___
*F.2.l	Apply the substitute values	For each point: Clicks the "Apply" button <u>twice</u> on the bottom of display and verifies field backround turns grey.	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___
EVALUATOR NOTE: For step F.2.m, the "change description box" cannot be left blank The computer program will not proceed without at least some characters entered.					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.2.m	Enter the reason for the substitute value	Enters procedure number or comment, in "change description box".	___	___	___
F.2.n	Verify correct point and value are entered	Verifies correct point and value appear in pop-up window, then selects "OK" to close window.	___	___	___
*F.2.o	Select "Done" to return to SPAD screen.	Clicks on "Done" and returns to "Single Point Display-Digital" (SPAD) screen.	___	___	___
QCOP 1200-03 F.3.b	Initials completed substitute values in QCOP 1200-03 step F.3.b.(1-4)	Initials QCOP 1200-03 step F.3.b.1 thru F.3.b.4 as each substitute value is entered for the computer points.	___	___	___
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: Enter Substitute Value for RWCU Pump Flow

JPM Number: RO Admin 1 Revision Number: 00

Task Number and Title:

SR-9900-P01 (Freq: LIC=I) Given an operating reactor plant, perform the following process computer operations in accordance with the appropriate QCOP 9950 procedure:
9900.049 Enter a Substitute Value

K/A Number and Importance: **K/A:** 2.1.19 **Rating:** 3.9/3.8

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 9950-17 Rev. 1, Changing Scan Status or Point Attributes of Selected Plant Process Computer Analog and Digital Points

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 15 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: _____

_____

_____

_____

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_____

_____

_____

_____

Evaluator's Name (Print): _____

Evaluator's Signature: _____ **Date**: _____

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

INITIAL CONDITIONS

- The “B” RWCU Demin has been isolated per QCOP 1200-03 for a backwash and precoat.
- Local flow indication for both “A” and “B” RWCU pumps are 230 and 240 gpm, respectively.
- The QNE has been notified that a substitute values for RWCU pump flows are to be entered for the Core Thermal Heat Balance.
-

INITIATING CUE

Enter substitute values for RWCU pump flow in accordance with QCOP 1200-03 step F.3 and QCOP 9950-17.

Job Performance Measure

Verification of SBGTS Lineup

JPM Number: RO Admin 2

Revision Number: 00

Date: 10/06/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 7500-01 Rev: 21
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, Developed for 2016 ILT NRC License Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-21

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 Actuations:**
   - Place the ½ A SBGTS TRAIN MODE SELECTOR SWITCH to: 'A' PRIM.
   - Place the ½ B SBGTS TRAIN MODE SELECTOR SWITCH to: 'B' STDBY.
   - Close the 1-7503 U1 RB INLET DMPR TO SBGTS.
   - Close the 2-7503 U2 RB INLET DMPR TO SBGTS.
   - Verify all SBGTS annunciators are clear.

3. **Malfunctions:**
   None

4. **Remotes:**
   Noned

5. **Overrides:**
   None

6. 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.

7. This completes the setup for this JPM.

INITIAL CONDITIONS

- You are the Unit 1 Admin NSO.
- QCOS 7500-04, Unit 1 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test was completed last shift for the ½ B Standby Gas Train.
- The Unit Supervisor has requested a verification of the standby lineup for the Standby Gas Treatment System (SBGTS).

INITIATING CUE

Verify the SBGTS standby lineup and if necessary report any discrepancies to the Unit Supervisor.

Provide examinee with: A blank copy of QCOP 7500-01, Standby Gas Treatment System (SBGTS) Standby Operation and Start-Up after the examinee obtains it in the simulator.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.1.a	Reports the ½ A SBGTS TRAIN MODE SELECTOR SWITCH is in PRIM.	Recognizes the ½ A SBGTS is improperly selected as PRIM (Primary) instead of STBY (Stand-by).	___	___	___
CUE:	**As Unit Supervisor, acknowledge the report, and direct the examinee to "complete the lineup verification."**				
*F.1.b	Reports the ½ B SBGTS TRAIN MODE SELECTOR SWITCH is in STBDY.	Recognizes the ½ B SBGTS is improperly selected as STBY (Standby) instead of PRIM (Primary).	___	___	___
*F.1.c (1)	Reports the 1-7503 U1 RB INLET DMPR TO SBGTS is mispositioned.	Recognizes the 1-7503 is CLOSED (green light lit) and should be in the OPEN (red light lit) position.	___	___	___
*F.1.c (2)	Reports the 2-7503 U2 RB INLET DMPR TO SBGTS is mispositioned.	Recognizes the 2-7503 is CLOSED (green light lit) and should be in the OPEN (red light lit) position.	___	___	___
F.1.c. (3)	Verifies ½ -7505A INLET DMPR is CLOSED.	Verifies ½ -7505A INLET DMPR is closed. -green light lit. -red light out	___	___	___
F.1.c. (4)	Verifies ½ -7505B INLET DMPR is CLOSED.	Verifies ½ -7505B INLET DMPR is closed. -green light lit. -red light out	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.1.c. (5)	Verifies the ½ -7504A TURB BLDG CLG AIR DMPR is OPEN.	Verifies the ½ -7504A TURB BLDG CLG AIR DMPR is CLOSED. -red light lit -green light out	___	___	___
F.1.c. (6)	Verifies the ½ -7504B TURB BLDG CLG AIR DMPR is OPEN.	Verifies the ½ -7504B TURB BLDG CLG AIR DMPR is CLOSED. -red light lit -green light out	___	___	___
F.1.c. (7)	Verifies ½ -7507A SBGTS FAN DISCH DMPR is CLOSED.	Verifies ½ -7507A is CLOSED. -green light lit -red light out	___	___	___
F.1.c. (8)	Verifies ½ -7507B SBGTS FAN DISCH DMPR is CLOSED.	Verifies ½ -7507B is CLOSED. -green light lit -red light out	___	___	___
F.1.c. (9)	Verifies ½ -7509 XTIE DMPR is OPEN.	Verifies ½ -7509 is OPEN. -red light lit -green light out	___	___	___
F.1.c. (10)	Verifies ½ -7503A SBGTS AIR HTR is OFF.	Verifies ½ -7503A is OFF. -OFF light lit -ON light out	___	___	___
F.1.c. (11)	Verifies ½ -7503B SBGTS AIR HTR is OFF.	Verifies ½ -7503B is OFF. -OFF light lit -ON light out	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.1.c. (12)	Verifies ½ -7506A, 1/2 A SBGTS FAN is OFF.	Verifies ½ -7506A, is OFF. -OFF light lit -ON light out	___	___	___
F.1.c. (13)	Verifies ½ -7506B, 1/2 B SBGTS FAN is OFF.	Verifies ½ -7506B, is OFF. -OFF light lit -ON light out	___	___	___
F.1.c. (14)	Verifies Instrument Air is available to AO ½ -7510A and AO ½ -7510B SBGT OUTLET VLVS.	Dispatches EO to verify Instrument Air is valved into AO ½ -7510A and AO ½ -7510B SBGT valves.	___	___	___
CUE:	**As EO, report: "Instrument Air is valved into AO ½-7510A and AO ½ -7510B Standby Gas Train A and B Outlet Valves."**				
F.1.c. (15)	Verify all applicable SBGTS alarms are cleared.	Verifies all applicable SBGTS annunciators at the 912-5 panel are clear.	___	___	___
CUE:	**As the Unit Supervisor, inform the examinee that: "Another NSO will realign the SBGTS Trains to the correct lineup."**				
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: Verification of SBGTS Lineup

JPM Number: RO Admin 2 Revision Number: 00

Task Number and Title:

SR-7500-P01 (Freq: LIC=B) Given SBGTS in a standby lineup, perform the monthly SBGTS monthly operability test and return SBGTS to a standby line up in accordance with QCOS 7500-05.

K/A Number and Importance: **K/A:** 2.1.31 **Rating:** 4.6/4.3

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 7500-01 Rev. 21, Standby Gas Treatment System (SBGTS) Standby Operation and Start-Up.

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 10 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**: _____

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

INITIAL CONDITIONS

- You are the Unit 1 Admin NSO.
- QCOS 7500-04, Unit 1 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test was completed last shift for the ½ B Standby Gas Train.
- The Unit Supervisor has requested a verification of the standby lineup for the Standby Gas Treatment System (SBGTS).

INITIATING CUE

Verify the SBGTS standby lineup and if necessary report and discrepancies to the Unit Supervisor.

Job Performance Measure

Print Reading Exercise

JPM Number: RO Admin 3

Revision Number: 00

Date: 10/15/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 QOS 5600-01 Rev: 54
Procedure 4E-1466 Sh.3 Rev: AP
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 new for the 2012 ILT NRC Exam.

Revision 01, Reformatted to latest JPM template. Used on 2016 ILT NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Simulator not required for this JPM.

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 Actuations:**

   None

3. **Malfunctions:**

   None

4. **Remotes:**

   None

5. **Overrides:**

   None

6. 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.

7. This completes the setup for this JPM.

INITIAL CONDITIONS

- You are the Clearance Order Writer.
- QOS 5600-01, Turbine Control Valve (TCV) Fast Closure Scram Instrument Channel Functional Test was being performed.
- When #3 TCV went closed during this test, NONE of the expected responses were received:
    - o DEHC did NOT indicate FAST CLOSURE DETECTED.
    - o Expected Annunciator 901-5 A-13, CHANNEL A/B TURB-GEN LOAD MISMATCH EHC LOW PRESS, did NOT alarm.
    - o The Test Box indicating light did NOT illuminate.
    - o The two sets of associated relay contacts did NOT open.

INITIATING CUE

Reference electrical schematics 4E-1464 through 4E-1467.

Identify the following:

1) The RELAY associated with TCV #3 in the TCV Fast Closure RPS logic.
2) The FUSE that would have to be removed to deenergize the relay identified in Part 1.

Provide Examinee with: A blank copy of QOS 5600-01, when/if it is obtained for reference.

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.

SRRS: 3D.100; There are no retention requirements for this section

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTES: **QOS 5600-01 is NOT provided.** **This JPM is performed in the Simulator where the QOS and other necessary reference material can be obtained.** **The relay number can be determined from either the QOS or Schematic Drawing 4E-1466 Sheet 3.** **The fuse number can be determined from 4E-1466 Sheet 3 but not the QOS.** **Do NOT allow the candidate to mark on electrical drawings.**					
*Part 1	Correctly identify the number of the TCV Fast Closure RPS relay associated with TCV #3.	Relay 590-121B identified.	___	___	___
*Part 2	Correctly identify the number of the fuse that would have to be removed to deenergize the relay identified in Part 1.	Fuse 590-725B identified.	___	___	___
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: Print Reading Exercise

JPM Number: RO Admin 3 Revision Number: 01

Task Number and Title:

SRN-EPR-K10 (Freq: LIC=I N=B) Given an Electrical Drawing:

a. Locate a given component

b. Determine the component power supply

K/A Number and Importance: **K/A:** 2.2.41 **Rating:** 3.5/3.9

Suggested Testing Environment: Simulator

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

Reference(s): QOS 5600-01, Rev. 54, Turbine Control Valve Fast Closure Scram Instrument Channel Functional Test

IR1294079, (Dated 11/23/11) "Relay 590-123C did not drop out when pressure switch opened"

4E-1466 Sheet 3, Schematic Drawing RPS CH B Scram and Aux Trip Relays

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**: _____

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

INITIAL CONDITIONS

- You are the Clearance Order Writer.
- QOS 5600-01, Turbine Control Valve (TCV) Fast Closure Scram Instrument Channel Functional Test was being performed.
- When #3 TCV went closed during this test, NONE of the expected responses were received:
    - o DEHC did NOT indicate FAST CLOSURE DETECTED.
    - o Expected Annunciator 901-5 A-13, CHANNEL A/B TURB-GEN LOAD MISMATCH EHC LOW PRESS, did NOT alarm.
    - o The Test Box indicating light did NOT illuminate.
    - o The two sets of associated relay contacts did NOT open.

INITIATING CUE

Reference electrical schematics 4E-1464 through 4E-1467.

Identify the following:

1) The RELAY associated with TCV #3 in the TCV Fast Closure RPS logic.
2) The FUSE that would have to be removed to deenergize the relay identified in Part 1.

Job Performance Measure

ARM Trip Unit Set Point Check

JPM Number: RO Admin 4

Revision Number: 00

Date: 10/04/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 1800-01 Rev: 15
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, Developed for the 2016 ILT NRC Exam as an RO Admin JPM.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-21.

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 Actuations:**

   None

3. **Malfunctions:**

   None

4. **Remotes:**

   None

5. **Overrides:**

   None

6. 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.

7. This completes the setup for this JPM.

INITIAL CONDITIONS

- You are the Admin NSO.
- ARM 20 (1B SJAE AREA), has just been returned to service by Instrument Maintenance department.
- The Post Maintenance Test (PMT) requires an operational check of the upscale and downscale set points.
- The Unit NSO will acknowledge and reset the 901-3 panel alarms.

INITIATING CUE

Perform QCOP 1800-01 step F.1 for ARM 20 (1B SJAE AREA), on the 901-11 panel. Notify the Unit Supervisor when the test is complete.

Provide examinee with: A blank copy of QCOP 1800-01.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.1.a	**Depress** and **hold** TRIP CHECK pushbutton	-Locates ARM 20 on the 901-11 panel. -Depresses and holds the TRIP CHECK pushbutton.	___	___	___
*F.1.b	**Adjust** the PWR SPLY AREA MON until the HIGH lamp is lit.	-Locates the associated PWR SPLY AREA MON -Slowly turns the TRIP CHECK ADJUST knob in the clockwise direction until the HIGH lamp on ARM 20 Trip Unit is lit.	___	___	___
F.1.b. (1)	**Verify** ARM set point label is correct.	Verify alarm set point is adjusted to the set point indicated on the ARM 20 label plate.	___	___	___
F.1.b. (2)	**Verify** high radiation alarm annunciates.	Verifies annunciator 901-3 D-1, TURB BLDG HI RADIATION, is in alarm.	___	___	___
CUE:	**As the Unit NSO, inform the examinee that "annunciator 901-3 D-1, TURB BLDG HI RADIATION, is in alarm."**				
*F.1.c	**Adjust** the PWR SPLY AREA MON until the LOW lamp is lit.	-Locates the associated PWR SPLY AREA MON -Slowly turns the TRIP CHECK ADJUST knob in the counter-clockwise direction until the LOW lamp on ARM 20 Trip Unit is lit.	___	___	___
F.1.c. (1)	**Verify** downscale alarm annunciates.	Verifies annunciator 901-3 F-1, AREA MONITOR DOWNSCALE, is in alarm.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CUE:	**As the Unit NSO, inform the examinee that "annunciator 901-3 F-1, AREA MONITOR DOWNSCALE, is in alarm."**				
*F.1.d	**Reset** ARM Trip Unit	-Release TRIP CHECK pushbutton -Depress RESET pushbutton on ARM 20.	___	___	___
F.1.e	**Verify** ARM Trip Unit resets	-Verify HIGH lamp on ARM 20 Trip Unit is NOT lit -Verify LOW lamp on ARM 20 Trip Unit is NOT lit.	___	___	___
F.1.f	**Verify** 901-3 panel annunciators are clear.	-Verify annunciator 901-3 D-1 resets and clears. -Verify annunciator 901-3 F-1 resets and clears.			
CUE:	**As the Unit NSO, inform the examinee that "annunciators 901-3 D-1, and 901-3 F-1 have reset and cleared."**				
EVALUATOR NOTE: The examinee should inform you 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: ARM Trip Unit Set Point Check

JPM Number: RO Admin 4 Revision Number: 00

Task Number and Title: **SR-1800-P03** (Freq: LIC=I) Given a reactor plant, test the high and low trip levels of an ARM trip/indicating unit in accordance with QCOP 1800-01.

K/A Number and Importance: **K/A:** 2.3.05 **Rating:** 2.9/2.9

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1800-01 Rev. 15, Operation of ARM Indicator/Trip Units

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 10 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 Admin NSO.
- ARM 20 (1B SJAE AREA), has just been returned to service by Instrument Maintenance department.
- The Post Maintenance Test (PMT) requires an operational check of the upscale and downscale set points.
- The Unit NSO will acknowledge and reset the 901-3 panel alarms.

INITIATING CUE

Perform QCOP 1800-01 step F.1 for ARM 20 (1B SJAE AREA), on the 901-11 panel. Notify the Unit Supervisor when the test is complete.

Job Performance Measure

Perform Call Out to Fill Shift Position

JPM Number: 2016.SRO Admin 1

Revision Number: 02

Date: 10/02/15

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 OP-AA-112-101 Rev: 11
Procedure SY-AA-102-201 Rev: 09
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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision 02, Developed for 2016 ILT NRC exam. Updated to new format and procedure changes. Name changed to accurately reflect the content of the JPM.

Previous versions:

Revision 00, This JPM was developed IAW guidelines established in NUREG 1021 Rev. 9 Supplement 1, ES-301 and Appendix C. This JPM meets the criteria of ES-301 D.3 for “Administrative Topics.”

This JPM was developed NEW for the 2009 ILT NRC Exam.

Revision 01, Revised to incorporate procedure changes.

JPM SETUP INSTRUCTIONS

1. This is an Administrative JPM that may be performed in any setting where the necessary procedures and support information can be provided.
2. Verify the following information is available for the Initiating Cue:
   - The current shift schedule
3. Verify the following information is available for JPM performance:
   - QAP 0300-03, Rev. 41, Operations Shift Staffing
   - Tech Spec 5.2, Organization
   - OP-AA-112-101, Rev.11, Shift Turnover and Relief
   - SY-AA-102-201, Rev.9, “Call-Outs for Unscheduled Work”

4. Copy of SY-AA-102-201, Call-Outs For Unscheduled Work.
5. List of phone numbers for STA #1, STA #2, and STA #3.
6. 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.
7. This completes the setup for this JPM.

INITIAL CONDITIONS

- You are the Shift Manager.
- Unit 1 and Unit 2 are at full power.
- The STA's wife is expecting a baby. He has permission from the Operations Director to leave if necessary to join his wife.
- At 0200 the STA departs the site when his wife calls him home because she has gone into labor.
- There are no other STA qualified supervisors on shift.

INITIATING CUE

If required, identify the staffing adjustments that need to be made, the time constraints involved and perform the callout per SY-AA-102-201, Attachment 1.

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:_____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*QAP 0300-03 C.1.d	Determine that the STA position must be staffed for both Units in Mode 1, 2, or 3.	The requirement for STA staff position manning is identified.	___	___	___
*T. S. 5.2.2.b.	Determine that the STA position must be staffed in a time not to exceed 2 hours.	The requirement to fill the STA staff position within 2 hours is identified.	___	___	___
ROLE PLAY:	**When requested, as Shift Supervisor provide a list containing the phone numbers of the STAs available to work AND a blank copy of SY-AA-102-201.**				
ROLE PLAY:	**During the simulated phone calls provide the requested information listed below per SY-AA-102-201, Attachment 1** **STA #1** **Alcohol consumed in last 5 hrs?** ***NO*** **Are you Fit For Duty?** ***YES*** **Will you violate Work Hour Restrictions?** ***NO*** **Comment:** ***Can report On-Site by 0500*** **STA #2** **Alcohol consumed in last 5 hrs?** ***NO*** **Are you Fit For Duty?** ***YES*** **Will you violate Work Hour Restrictions?** ***YES*** **Comment:** ***Can report On-Site by 0300*** **STA #3** **Alcohol consumed in last 5 hrs?** ***NO*** **Are you Fit For Duty?** ***YES*** **Will you violate Work Hour Restrictions?** ***NO*** **Comment:** ***Can report On-Site by 0330***				

STEP	**ELEMENT**	**STANDARD**	**SAT**	**UNSAT**	**Comment Number**
*T.S. 5.2.2.b	Directs STA # 3 to report to work.	The STA position can be vacant for 2 hours per T. S. 5.2.2.b.	___	___	___
ROLE PLAY:	**As STA #3, acknowledge the request and state that you will report to work.**				

JPM Stop Time: _____

JPM SUMMARY

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

JPM Title: Perform Call Out to Fill Shift Position

JPM Number: 2016.SRO Admin 1 Revision Number: 02

Task Number and Title: SS-S-08 Operations Shift Staffing

K/A Number and Importance: **K/A:** 2.1.5 **Rating:** 2.9*/3.9

Suggested Testing Environment: Classroom

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

Reference(s): QAP 0300-03 Rev. 41, Operations Shift Staffing
Tech Spec 5.2, Organization
OP-AA-112-101 Rev. 11, Shift Turnover and Relief
SY-AA-102-201 Rev. 9, "Call-Outs for Unscheduled Work"

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 05 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 Shift Manager.
- Unit 1 and Unit 2 are at full power.
- The STA's wife is expecting a baby. He has permission from the Operations Director to leave if necessary to join his wife.
- At 0200 the STA departs the site when his wife calls him home because she has gone into labor.
- There are no other STA qualified supervisors on shift.

INITIATING CUE

If required, identify the staffing adjustments that need to be made, the time constraints involved and perform the callout per SY-AA-102-201, Attachment 1.

Exelon Nuclear

Job Performance Measure

Review QOS 0005-S01 for Start of Daily Refueling Activities

JPM Number: SRO Admin 2

Revision Number: 01

Date: 10/3/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Supervision	Date

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

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 QOS 0005-S01 Rev: 182
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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision 01, Developed for 2016 ILT NRC exam. Updated from SRO-26-I use don the 2009 ILT NRC exam. Revisions included clarifying Elements and updating to the most recent revision of QOS 0005-S01.

Previous Revisions

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.

This is a new JPM that was developed for the 2009 NRC Initial License exam.

SRRS: 3D.105 There are no retention requirements for this section.

JPM SETUP INSTRUCTIONS

1. This is an Administrative JPM that may be performed in any setting where the necessary procedures and support information can be provided.
2. Verify the following information is available for the Initiating Cue:
   - QOS 0005-S01 properly completed for the week except for following errors:
     - Section 11.c. Channel count rate $\geq$ 3 cps is incorrectly checked
     - Section 51.a.4 is inappropriately checked as completed within 7 days.
     - Section 33 shows SRM Channel 23 at 2 cps on Sunday shift 3.
3. This completes the setup for this JPM.

SRRS: 3D.105 There are no retention requirements for this section.

INITIAL CONDITIONS

- You are the Unit Supervisor on Unit 1 during a refueling outage.
- Today is Shift 3 on Sunday April 3rd.
- Core alterations were suspended for three days during the week for scheduled outage work.
- That work has been completed and the second fuel shuffle can begin.
- The Mode switch is locked in REFUEL.
- All control rods are fully inserted.
- The Refueling cavity is flooded.
- Communications have been established and tested satisfactorily earlier in the shift.
- The following core alteration surveillances were completed satisfactorily:
    - SRM Functional Test QCIS 0700-09; completed 3/30 at 0600 hrs. SRM signal to noise ratios are: SRM 21-15:1, SRM 22-17:1, SRM 23 -14:1, SRM 24 -12:1.
    - IRM Functional Test QCIS 0700-09; completed 4/01 at 1000 hrs
    - SRM/IRM Detector Not Full In Functional Test QCIS 0700-01; completed 4/02 at 1600 hrs
    - Refuel interlocks operable per QCFHP 0500-08; completed 3/26 at 0400 hrs
    - One Rod out Interlock operable per QCOS 0300-17; completed 4/02 at 2300 hrs

INITIATING CUE

Review QOS 0005-S01 Sections, 11, 16, 25, 33, 38, 39, and 51 for Start of Daily Refueling Activities.

Contact the Fuel Handling Supervisor when your review has been completed, and authorize the start of fuel moves OR state why fuel moves cannot be allowed.

(Provide prepared exam copy of QOS 0005-S01 to the examinee when the Initiating Cue is acknowledged.)

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.

SRRS: 3D.105 There are no retention requirements for this section.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
11	Verify SRMs are operable.	Sunday Shift 3 already completed for steps (a) and (b). Step 11.(c), SRM count rates ≥ 3 cps is CHECKED IN ERROR.	___	___	___
16	Ensure Reactor Water Level indications are entered and verify readings are within 12 inches of each other.	Sunday Shift 3 already completed. Both indicators reading >60 inches with Refueling cavity flooded.	___	___	___
25.b.	Verify Rx Coolant Circulation.	Sunday Shift 3 already completed. One loop of shutdown Cooling in service.	___	___	___
33	Checks SRM counts and channel check within 1 decade of each other.	Sunday Shift 3 already completed. All channels are within 1 decade. May recognize that SRM 23 is reading only 2 cps.	___	___	___
38	Ensure Reactor Water Level indications are entered and verify readings are within 12 inches of each other.	Sunday Shift 3 already completed. All 4 indicators reading >60 inches with Refueling cavity flooded.	___	___	___
39	Ensure Reactor Water Level indications are entered and verify readings are within 12 inches of each other.	Sunday Shift 3 already completed. All 4 indicators reading >60 inches with Refueling cavity flooded.	___	___	___
51.a.1	Verify SRM Functional completed within 7 days prior to the start of core alterations.	Sunday Shift 3 checked per turnover information.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
51.a.2	Verify IRM Functional completed within 7 days prior to the start of core alterations.	Sunday Shift 3 checked per turnover information.	___	___	___
51.a.3	Verify SRM/IRM Detector not Full In Functional completed within 7 days prior to the start of core alterations.	Sunday Shift 3 checked per turnover information.	___	___	___
*51.a.4	Verify Refueling Interlock test completed within 7 days prior to the start of core alterations.	Recognizes Sunday Shift 3 is CHECKED IN ERROR. Performance of QCFHP 0500-08 has exceeded 7 days from the given Initial Conditions.	___	___	___
CUE:	**If contacted to perform QCFHP 0500-08, as the Fuel Handling Supervisor, state: "You will brief the crew and start the surveillance".**				
51.a.5	Verify Rx water level > 23 ft above the top of the RPV flange.	Sunday Shift 3 checked per turnover information.	___	___	___
51.a.6	Verify Rx Mode Switch locked in Refuel with any control rod withdrawn.	Sunday Shift 3 marked N/A per turnover information.	___	___	___
51.a.7	Verify One-Rod-Out interlock is operable within 7 days prior to the start of control rod withdrawal.	Sunday Shift 3 checked per turnover information.	___	___	___
51.a.8	Verify Direct Communications have been established.	Sunday Shift 3 checked per turnover information.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*51.a.9	Verify Operable fully-inserted SRM detector reading of ≥3 cps or ≥0.7 cps with a signal to noise ratio [3] 20/1 located in the core quadrant where Core Alterations will be performed.	Recognizes Sunday Shift 3 block is CHECKED IN ERROR. SRM 23 reading was 2 cps and signal to noise ration is < 20/1 per the turnover.	___	___	___
CUE:	**If contacted to investigate and troubleshoot SRM 23, as the Instrument Maintenance Supervisor state you will:** **"Prepare a package and start work as soon as possible".**				
51.a.10	Verify all control rods fully inserted.	Sunday Shift 3 checked per turnover information.	___	___	___
51.a.11	Verify withdrawn control rod accumulator pressures >940 psig once per 7 days.	Sunday Shift 3 marked N/A per turnover information.	___	___	___
EVALUATOR NOTE: The examinee should report to the FHS that: · **"The requirements of QOS 0500-S01 are NOT satisfied and Refueling activities EXCEPT for performance of QCFHP 0500-08 are NOT authorized".** · **"Also, SRM 23 is inoperable, which prevents fuel movement in the associated quadrant of the core.**					
EVALUATOR NOTE: After acknowledging the report, the examinee should inform 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: Review QOS 0005-S01 for Start of Daily Refueling Activities

JPM Number: 2016 SRO Admin 2 Revision Number: 01

Task Number and Title: SRL-805-K20 Given refueling equipment related operability status OR parameter indications, various plant conditions, and a copy of Tech Specs, DETERMINE if the Conduct of Refueling related Tech Spec LCOs have been met.

K/A Number and Importance: **K/A:** 2.1.36 **Rating:** 4.1

Suggested Testing Environment: Simulator

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

Reference(s):
QOS 0005-S01, Rev 182, "Operations Department Weekly Summary of Daily Surveillances"

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**: _____

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

INITIAL CONDITIONS

- You are the Unit Supervisor on Unit 1 during a refueling outage.
- Today is Shift 3 on Sunday April 3rd.
- Core alterations were suspended for three days during the week for scheduled outage work.
- That work has been completed and the second fuel shuffle can begin.
- The Mode switch is locked in REFUEL.
- All control rods are fully inserted.
- The Refueling cavity is flooded.
- Communications have been established and tested satisfactorily earlier in the shift.
- The following core alteration surveillances were completed satisfactorily:
    - SRM Functional Test QCIS 0700-09; completed 3/30 at 0600 hrs. SRM signal to noise ratios are: SRM 21-15:1, SRM 22-17:1, SRM 23 -14:1, SRM 24 -12:1.
    - IRM Functional Test QCIS 0700-09; completed 4/01 at 1000 hrs
    - SRM/IRM Detector Not Full In Functional Test QCIS 0700-01; completed 4/02 at 1600 hrs
    - Refuel interlocks operable per QCFHP 0500-08; completed 3/26 at 0400 hrs
    - One Rod out Interlock operable per QCOS 0300-17; completed 4/02 at 2300 hrs

INITIATING CUE

Review QOS 0005-S01 Sections, 11, 16, 25, 33, 38, 39, and 51 for Start of Daily Refueling Activities.

Contact the Fuel Handling Supervisor when your review has been completed, and authorize the start of fuel moves OR state why fuel moves cannot be allowed.

Job Performance Measure

Review a Fire Impairment Permit Requiring Compensatory Actions

JPM Number: 2016.SRO Admin 3

Revision Number: 00

Date: 10/5/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 OP-MW-201-007 Rev: 07
Procedure QCAP 1500-01 Rev: 34
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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision 00: Developed for 2016 ILT NRC exam. This is a modified Bank JPM. Also revised to the new template and current procedures.

AD-SRO-6 Revsions:

Revision 01, This is a LORT Bank JPM (AD-SRO-6) that was used on the 2011 ILT NRC License Exam. Updated Fire Permit information.

SRRS: 3D.105 There are no retention requirements for this section.

SIMULATOR SETUP INSTRUCTIONS

1. NOTE: This JPM may be conducted in any appropriate setting; i.e., simulator, classroom, Control Room, provided that the following procedures are available to the candidate:
   - OP-MW-201-007, FIRE PROTECTION SYSTEM IMPAIRMENT CONTROL
   - QCAP 1500-01, ADMINISTRATIVE REQUIREMENTS FOR FIRE PROTECTION
2. Verify the following for this JPM setup:
   - A current revision of OP-MW-201-007 Attachment 1 "Fire Protection Impairment Permit" is filled out as follows:

   1) Fill out Section I Initiator:" of the Fire Protection Permit as follows:

Initiator: "IMD Supervisor"	Station: "Quad"	Unit: "00"
Name: "A. Smith"	Phone: "X 2210"	Dept/Co: "IMD/Exelon"
Sch. Start Date: "current"	Bldg: "RX"	EPN#:
Sch. End Date: "current + 1"	Elev: "595"	Door #:
AR/WR/OOS#: "WO 1607822"		Det. Zone: "
		Pent #:

Do NOT check the Structural fireproofing OR Wall Penetration boxes.

Impairment Description: "Perform QCIS 7600-04 Unit 0 Standby Diesel Generator Cardox Fire Protection Functional Test."

   2) Fill out section II. "FIRE MARSHAL REVIEW" of the Fire Protection Impairment Permit as follows:

   a. Fire Zone(s): 9.3 / For Barriers: Check the "Functional" box.
   b. Technical Requirement Manual? Check the "Yes" box. "QCAP 1500-01"
   c. Mark "None" in the Fire Watch Required: block and "N/A" below.
   d. Check the "NO" box for Additional Compensatory Measures.
   e. Fire Detector Operability Check Required? Check the "NO" box.
   f. NEIL Notification Required? Check the "NO" box.
   g. Fire Marshal Instructions: "Return to operable status in 14 days"
   h. Restoration/Testing Requirements: "Completion of Work Package. PMT per Work Package".
   i. Sign and date as Fire Marshal for Authorization Block.

3. This completes the setup for this JPM.

SRRS: 3D.105 There are no retention requirements for this section.

INITIAL CONDITIONS

- You are the Operations Field Supervisor.
- An Instrument Maintenance Supervisor has submitted a fire permit to allow performance of QCIS 7600-04, “Unit 0 Standby Diesel Generator Cardox Fire Protection Functional Test”.
- The Instrument Maintenance Supervisor has informed you that this surveillance will render the Cardox System inoperable.

INITIATING CUE

Review Fire Protection Impairment Permit 1234. Approve the permit OR explain the reason(s) why you cannot.

Provide examinee with: A copy of fire permit 1234, OP-MW-201-007, Attachment 1.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	Obtains Procedures.	Obtains a copy of QCAP 1500-01.	___	___	___
NOTE: The examinee may perform the following steps in any order.					
Att. J	Determines effect of disabling the Cardox for ½ EDG.	Reviews QCAP 1500-01 Att. J and determines ½ EDG Cardox is a required EFP Cardox system.	___	___	___
CUE: If the examinee states he cannot approve the permit because of errors, prompt him to explain all of the errors on the permit to you. **The following errors are built into the permit:** The Fire Protection Permit was filled out improperly in section II. "FIRE MARSHAL REVIEW" as follows: · None is marked in the "Fire Watch Required:" block **(should be marked "hourly" with performed by marked as "IMD").** · NO is checked in the box for "Additional Compensatory Measures" **(should be marked "YES" and a Description of the additional Compensatory Measures should be included i.e., "backup suppression established or verified.")** The one detector that was chosen to make a detection system inoperable (ref. QCAP 1500-01 Attachment A page 3), and the detection system *in turn* makes the preaction suppression system inoperable (ref. QCAP 1500-01 Attachment C page 2).					
*D.3.c.(2)	Determines hourly fire watch established within one hour.	Reviews QCAP 1500-01 step D.3.c.(2) and determines an hourly fire watch must be conducted if this permit is approved.	___	___	___
*D.3.c.(4)	Determines backup suppression required within one hour.	Reviews step D.3.c.(4) and determines backup suppression will also be required. (page 15 of 93)	___	___	___

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

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STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Attach. 1	Determines that the Fire Watch Performed By field must be filled in “IMD” or other appropriate department.	Recognizes the “N/A” is not correct for this field.	___	___	___
EVALUATOR NOTE: The examinee may choose to correct the provided impairment. This is acceptable.					
	Reviews the permit for accuracy and Notifies the Evaluator of his conclusions.	The examinee reviews the permit for accuracy IAW OP-MW-201-007 “FIRE PROTECTION SYSTEM IMPAIRMENT CONTROL” step 4.4 and determines the fire impairment permit cannot be approved as written because the Fire Protection Permit was filled out improperly in section II. “FIRE MARSHAL REVIEW” **None** is marked in the “Fire Watch Performed By:” block **(should be marked “YES” and a Description of the additional Compensatory Measures should be included i.e., “backup suppression required”).**	___	___	___
CUE: After the examinee explains why he cannot approve the fire permit as written, as the IM Supervisor requesting the permit state that: **“You will rewrite the permit and bring it back for approval on the next shift”.**					
EVALUATOR NOTE: The examinee should inform you that the task is complete.					

JPM Stop Time: _____

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

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JPM SUMMARY

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

JPM Title: Review a Fire Impairment Permit Requiring Compensatory Actions

JPM Number: SRO Admin 3 Revision Number: 00

Task Number and Title: S-4100-K32 (Freq: LIC=B) Given Fire Protection Systems operability status OR key parameter indications, various plant conditions and a copy of QCAP 1500-01, ANALYZE Fire Protection administrative operability requirements and DETERMINE required compensatory actions and reporting requirements, if any.

K/A Number and Importance: **K/A:** 2.1.25 **Rating:** 3.9/4.2

Suggested Testing Environment: Simulator

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

Reference(s): QCAP 1500-01, Administrative Requirements For Fire Protection, Rev. 34
OP-MW-201-007, Fire Protection System Impairment Control, Rev. 7

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 12.5 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: _____

_____

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_____

_____

_____

Evaluator's Name: _____ (Print)

Evaluator's Signature: _____ **Date**: _____

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

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INITIAL CONDITIONS

- You are the Operations Field Supervisor.
- An Instrument Maintenance Supervisor has submitted a fire permit to allow performance of QCIS 7600-04, “Unit 0 Standby Diesel Generator Cardox Fire Protection Functional Test”.
- The Instrument Maintenance Supervisor has informed you that this surveillance will render the Cardox System inoperable.

INITIATING CUE

Review Fire Protection Impairment Permit 1234. Approve the permit OR explain the reason(s) why you cannot.

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

Job Performance Measure

Determine Status of the Service Water Radiation Monitor

JPM Number: 2016 SRO Admin 4

Revision Number: 00

Date: 10/05/2015

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 QCOS 1700-04 Rev: 13
Procedure QCAN 901(2)-3 G-2 Rev: 05
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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision 00, Developed for 2016 ILT NRC exam.

SRRS: 3D.105 There are no retention requirements for this section.

SIMULATOR SETUP INSTRUCTIONS

- This is an Admin JPM. It may be conducted in a variety of settings, provided the needed reference material is available.

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.

This completes the setup for this JPM.

SRRS: 3D.105 There are no retention requirements for this section.

INITIAL CONDITIONS

- You are the Unit 1 Unit Supervisor.
- Main Control Room annunciator 901-3 G-2 is in alarm.
- An EO has been dispatched and has reported MCC 17-1-1 breaker 18 is ON.
- A Chemistry Technician has been dispatched and reports:
  - Low flow confirmed via sight glass FI 1-1741-25.
  - 1-3999-542, SERVICE WATER RADIATION MONITOR INLET ISOLATION VALVE verified OPEN
  - EDUCTOR INLET PRESSURE is 15 psig
  - OUTLET PRESSURE is 3 psig.

INITIATING CUE

Based on the field reports, determine the status of the Service Water Radiation Monitor.

Complete any required paper work and forward to the Shift Manager for review.

(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.

SRRS: 3D.105 There are no retention requirements for this section.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
QCAN 901(2)-3 G-2 1.c	Verify EDUCTOR INLET PRESSURE is 25-35 psig AND OUTLET PRESSURE is 5-10 psig.	Directs actions per QCAN to correct abnormal eductor pressure.	___	___	___
EVALUATOR NOTE: Provide a copy of QCAN 901(2)-3 G-2 when located by the examinee.					
CUE:	**Throttling of the 1-1799-201 and 1-3999-545 has had no effect on pressures. EDUCTOR INLET PRESSURE is 15 psig EDUCTOR OUTLET PRESSURE is 3 psig.**				
*QCAN 901(2)-3 G-2 3	Evaluates operability of the Service Water Radiation Monitor	Determines Service Water Radiation Monitor is INOP. AND Refers to QCOS 1700-04	___	___	___
EVALUATOR NOTE: Provide a copy of QCOS 1700-04 when located by the examinee.					
H.1.a	H.1. Record the following information on Attachment A.	Records the following information on Attachment A: a. Unit Number, date, time, and Issue Report number, if applicable.	___	___	___
CUE:	**"IR will be prepared by the Unit 2 Unit Supervisor."**				
H.1.b	H.1. Record the following information on Attachment A.	Records the following information on Attachment A: b. Instrument being declared inoperable and the date/time of being declared inoperable.	___	___	___

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

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: Current date and time are acceptable.					
H.1.c	H.1. Record the following information on Attachment A.	Records the following information on Attachment A: c. Reason for inoperability.	___	___	___
*H.1.d	Records information on Attachment A.	Records the following information on Attachment A: d. Date and time 30 days from time that instrument was declared inoperable.	___	___	___
*H.2	Notify Chemistry to perform LCO requirements per CY-QC-130-650, and record on Attachment A.	Notifies Chemistry AND Records the date, time, and person contacted	___	___	___
CUE:	**As Chemistry contact A. Smith, acknowledge the report.**				
H.3	Review outage report actions for accuracy.	Forwards the Outage Report to the Shift Manager for review	___	___	___
CUE:	**As the Shift Manager, "I will review the Outage Report."**				

JPM Stop Time: _____

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

JPM SUMMARY

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

JPM Title: Determine Status of the Service Water Radiation Monitor

JPM Number: 2016 SRO Admin 4 Revision Number: 00

Task Number and Title: S-1701-K41 (Freq: LIC=B) Given Process Radiation Monitoring System operability status OR key parameter indications, various plant conditions and a copy of the Offsite Dose Calculation Manual (ODCM), DETERMINE if ODCM operability requirements are met and required actions, if any.

K/A Number and Importance: **K/A:** 272000 K3.01 **Importance:** 3.2/3.8

Suggested Testing Environment: Simulator/Classroom

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

Reference(s): QCAN 901(2)-3 G-2 Rev. 5, QCOS 1700-04 Rev. 13

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 15 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**: _____

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

INITIAL CONDITIONS

- You are the Unit 1 Unit Supervisor.
- Main Control Room annunciator 901-3 G-2 is in alarm.
- An EO has been dispatched and has reported MCC 17-1-1 breaker 18 is ON.
- A Chemistry Technician has been dispatched and reports:
  - Low flow confirmed via sight glass FI 1-1741-25.
  - 1-3999-542, SERVICE WATER RADIATION MONITOR INLET ISOLATION VALVE verified OPEN
  - EDUCTOR INLET PRESSURE is 15 psig
  - OUTLET PRESSURE is 3 psig.

INITIATING CUE

Based on the field reports, determine the status of the Service Water Radiation Monitor.
Complete any required paper work and forward to the Shift Manager for review.

SRRS: 3D.105 There are no retention requirements for this section.

Job Performance Measure

Determine Protective Action Recommendations (PARS)

JPM Number: 2016 SRO Admin 5

Revision Number: 00

Date: 10/05/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 EP-MW-114-100 Rev: 16
Procedure EP-AA-111-F-06 Rev: G
Procedure EP-AA-1006 Add. 3 Rev: 01

_____ 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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision 00: Developed for 2016 NRC ILT Exam. Based on 2012 NRC Exam JPM. This JPM is new as it changes the Initial Conditions and the PARs flow chart was radically changed from the one used in the 2012 JPM.

SRRS: 3D.105 There are no retention requirements for this section.

SIMULATOR SETUP INSTRUCTIONS

Provide examinee with:

1.) Utility Message #1 NARS form completed as follows:

Utility Message 1 State Message N/A

Block #1. Status = Drill/Exercise
Block #2. Station = Quad Cities
Block #3. Onsite Condition = Site Area Emergency
Block #4. Accident Classified: Time = "T_0 -30 minutes"
Date = "today"
EAL# = "FS1"
Block #4. Accident Terminated: Time:=N/A, Date:=N/A
Block #5. Release Status = None
Block #6. Type of Release = N/A
Block #7. Wind Direction = 180 degrees
Block #8. Wind Speed: Meters/Sec = 2.24
Miles/Hr = 5.0
Block #9. Recommended Actions = None
Block #10. Additional Information = None

Verified with [provide signature]

Approved by [provide SM signature]

Block #11 Transmitted By [provide name] Phone Number [309-227-2210]
Time/Date "T_0 -20 minutes/Today"

Block #12 Received By [provide name] Organization =
IEMA, Time/Date: "T_0 -20 minutes/Today"

Initial and Final blocks checked for Quad Cities NARS Code 43

Initial Roll Call complete block on back Time/Date "T_0 -18 minutes/Today"

2.) A marked up Hot EAL Board with the condition for a General Emergency circled.

SRRS: 3D.105 There are no retention requirements for this section.

INITIAL CONDITIONS

- Unit 1 was operating at 100% rated power when a transient occurred that caused an automatic scram.
- The Emergency Plan was activated and a Site Area Emergency (FS1) was classified 30 minutes ago due to high Drywell radiation of 700 R/hr.
- 20 minutes ago Transmission of NARS (**Utility Message #1**) was completed (see attached)
- All plant personnel have been notified of the classification level, reason for the classification, and the TSC and OSC have been activated.
- The TSC is **NOT** at minimum staffing and the TSC has **NOT** assumed Command and Control.
- The Shift Communicator has performed Emergency Response Organization (ERO), Emergency Notification System (ENS), and Emergency Response Data System (ERDS) activation, and the NARS notification.
- The Shift Emergency Director has upgraded the classification to a General Emergency (FG1) based on:
    - Loss of RCS (DW Radiation >100R/hr)
    - Loss of Fuel Clad (DW Radiation >6.65E+02 R/hr)
    - Potential Loss of Containment (DW Radiation >1.55E+03 R/hr)
- There has been **NO** Change in release status, or meteorological data since message #1 was sent
- T_0 is the current time. T_0 is _____ (Use the Simulator Clock)
- **THIS IS AN EXERCISE**
- **THIS JPM IS TIME CRITICAL**

INITIATING CUE

As the Shift Emergency Director, prepare the necessary form(s) that would allow the Shift Communicator to complete the required State and Local notifications.

Provide examinee with:

- A copy of EP-MW-114-100-F01 “Nuclear Accident Reporting System (NARS) Form” Utility Message #1 form completely filled out as a Site Area Emergency
- EP-MW-114-100 “Midwest Region Off-Site Notifications”
- A blank copy of EP-MW-114-100-F01 “Nuclear Accident Reporting System (NARS) Form”
- EP-AA-111-F-06 Rev G, Quad Cities Plant Based PAR Flowchart.

SRRS: 3D.105 There are no retention requirements for this section.

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.

SRRS: 3D.105 There are no retention requirements for this section.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: The following step (NARs completion) must be completed within 15 minutes from the time the examinee acknowledges the initiating cue.					
NARS form	Fills out Utility Message Number.	Records Utility Message #2.	___	___	___
NARS form	Fills out State Message Number.	Records N/A for State Message Number.	___	___	___
Block #1	Fills out block #1 information regarding Status.	Records [B] Drill/Exercise in block #1.	___	___	___
*Block #2	Fills out block #2 information regarding Station.	Records [F] Quad Cities in block #2.	___	___	___
*Block #3	Fills out block #3 information regarding onsite condition.	Records [D] General Emergency.	___	___	___
*Block #4	Fills out block #4 information regarding Accident Classified & Accident Terminated.	Records Accident Classification as Time= Classification time Date= today's date EAL=FG1 Records N/A for Accident Terminated in Time and Date space.	___	___	___
Block #5	Fills out block #5 information regarding Release Status.	Records [A] None.	___	___	___
Block #6	Fills out block #6 information regarding Type of Release.	Records [A] N/A.	___	___	___
CUE:	**If the examinee inquires about the current meteorological conditions, state: "Meteorological conditions have not changed."**				
*Block #7	Fills out block #7 information regarding Wind Direction.	Records 180 degrees.	___	___	___
*Block #8	Fills out block #8 information regarding Wind Speed.	Records [A] Meters/Sec = 2.24 and [B] Miles/Hr = 5.0	___	___	___

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

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	Refers to EP-AA-111-F-06, "Quad Cities PAR Flow Chart", to determine proper PARs.	Obtains and uses EP-AA-111-F-06, **Page 1** "Initial Protective Action Recommendation ONLY" to determine: · Classification is General Emergency? = Yes · Is this the Initial PAR? = Yes · Is there a Loss of Primary Containment? = No · Is there a Hostile Action event in progress? = No · Is the PAR being made from the Control Room = Yes	___	___	___
*Block #9	Fills out block #9 information regarding Recommended Actions.	Utilizes EP-AA-111-F-06, "Quad Cities PAR Flow Chart", and determines PARs of "Evacuate per Table 3 (below)" [D] Illinois sub-areas 1,2 [E] Iowa sub-areas 1,2,3,5 Records the information on the NARS form	___	___	___
Block #10	Fills out block #10 information regarding Additional Information.	Records NONE.	___	___	___
NARS form	Submits NARS form for verification.	Submits NARS form for verification.	___	___	___

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

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CUE:	**When the examinee submits the NARS form for verification, sign the form on the Verified With line, and state: "The verification is complete", and return the form to the examinee.**				
NARS form	Signs on the Approved By line and submits NARS form for transmittal.	Submits NARS form for transmittal	___	___	___
CUE:	**Acting as the Shift Communicator, when the examinee submits the NARS form for transmittal, state:** **"I will transmit it immediately."** **Inform the examinee the task is complete.**				
EVALUATOR NOTE: The examinee must have submitted form filled out for transmittal no later than 15 minutes after classification of the event.					

JPM Stop Time: _____

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

JPM SUMMARY

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

JPM Title: Determine Protective Action Recommendations (PARS)

JPM Number: 2016 SRO Admin 5 Revision Number: 00

Task Number and Title:

S-EP-P02 (Freq: LIC=A) (ILT-MP): Given an event, determine the public Protective Action Recommendation in accordance with EP-AA-111.

K/A Number and Importance: **K/A:** 2.4.44 **Rating:** 4.4

Suggested Testing Environment: Simulator

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

Reference(s): EP-AA-111-F-06 Rev G, QUAD CITIES PLANT BASED PAR FLOWCHART.
EP-AA-1006 Addendum 3, Rev. 1, QUAD CITIES STATION ANEX.
EP-MW-114-100 Rev. 16, MIDWEST REGION OFFSITE NOTIFICATIONS
EP-MW-114-100-F-01, Rev. H, NUCLEAR ACCIDENT REPORTING SYSTEM (NARS) FORM

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 15 Minutes to Notify **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**: _____

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

INITIAL CONDITIONS

- Unit 1 was operating at 100% rated power when a transient occurred that caused an automatic scram.
- The Emergency Plan was activated and a Site Area Emergency (FS1) was classified 30 minutes ago due to high Drywell radiation of 700 R/hr.
- 20 minutes ago Transmission of NARS (**Utility Message #1**) was completed (see attached)
- All plant personnel have been notified of the classification level, reason for the classification, and the TSC and OSC have been activated.
- The TSC is **NOT** at minimum staffing and the TSC has **NOT** assumed Command and Control.
- The Shift Communicator has performed Emergency Response Organization (ERO), Emergency Notification System (ENS), and Emergency Response Data System (ERDS) activation, and the NARS notification.
- The Shift Emergency Director has upgraded the classification to a General Emergency (FG1) based on:
    - Loss of RCS (DW Radiation >100R/hr)
    - Loss of Fuel Clad (DW Radiation >6.65E+02 R/hr)
    - Potential Loss of Containment (DW Radiation >1.55E+03 R/hr)
- There has been **NO** Change in release status, or meteorological data since message #1 was sent.
- T_0 is the current time. T_0 is _____ (Use the Simulator Clock)
- **THIS IS AN EXERCISE**
- **THIS JPM IS TIME CRITICAL**

INITIATING CUE

As the Shift Emergency Director, prepare the necessary form(s) that would allow the Shift Communicator complete the required State and Local notifications.

Exelon Nuclear

Job Performance Measure

Perform One-Rod-Out Interlock Surveillance

JPM Number: 2016 ILT NRC JPM a

Revision Number: 01

Date: 09/29/2015

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 QCOS 0300-17 Rev: 12
Procedure QCOP 0207-02 Rev: 11
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 new for the 2011 ILT NRC Exam.

Revision 01, This JPM was revised for the 2016 ILT NRC Exam. Originally titled JPM LS-078-I. Designated step to “verify ROD OUT BLOCK annunciator does not clear” as critical.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the Simulator to IC 8.
   (Any Shutdown IC in which the Mode Switch can be placed in REFUEL)

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. Go to RUN.
3. Lock the Mode Switch in REFUEL.
4. Verify the RWM is NOT bypassed.
5. Cycle the Rod Select Power Switch to verify no rod is selected. Leave switch in OFF.
6. Verify the REFUEL PERMIT light is ON.
7. Verify ROD OUT BLOCK annunciator (901-5, C-3) is ON.
8. Acknowledge annunciators as necessary.
9. Provide a current revision of the following procedures, signed off as follows:
   - QCOS 0300-17
     - Initial steps D.1 thru D.7, N/A steps D.8-D.9, Initial steps D.10-D.11.
     - Steps H.4.b and H.11.b marked N/A.
   - QCOP 0207-02 with Prerequisite C.1 signed off and C.2 marked N/A.
10. Provide Equipment Status Tag filled out as follows:
    - “Rod Worth Minimizer in Bypass”
11. 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.
12. This completes the setup for this JPM.

INITIAL CONDITIONS

- Preparations are being made to begin refueling operations.
- The Mode Switch is locked in REFUEL.
- All Prerequisites have been completed for QCOS 0300-17, One-Rod-Out Interlock Surveillance.
- The Unit Supervisor has reviewed steps of QCOS 0300-17 and identified the Not-Applicable (N/A) steps.
- All QCOP 0207-02 prerequisites have been completed for bypassing the Rod Worth Minimizer (RWM).
- The Equipment Status Tag has been prepared.

INITIATING CUE

Perform the One-Rod-Out Interlock Surveillance, QCOS 0300-17.

EVALULATOR: Provide the prepared support material:

- QCOS 0300-17
- QCOP 0207-02
- Equipment Status Tag

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
H.1	QCOP 0207-02 referenced for bypassing RWM.	Bypass the RWM per QCOP 0207-02.	___	___	___
QCOP 0207-02 F.1.f	Initial the reason that the RWM is being bypassed.	Initials step F.1. f. (Performing a Procedure or Test which specifically references bypassing the RWM).	___	___	___
QCOP 0207-02 F.1.f (1)/(2)	Fills in Procedure/Test # and Step#.	Fill in Procedure# as "QCOS 0300-17" and Step# as "H.1."	___	___	___
QCOP 0207-02 F.2.a	Attaches the Equipment Status Tag to the ROD MOVEMENT CONT SWITCH.	Attaches the prepared Equipment Status Tag to the ROD MOVEMENT CONT SWITCH on the 901-5 panel.	___	___	___
QCOP 0207-02 *F.2.b	RWM MODE SELECT switch selected to BYPASS.	Places the RWM MODE SELECT switch to BYPASS and records the date and time.	___	___	___
EVALUATOR NOTE: The ROD OUT BLOCK annunciator will clear when a rod is selected.					
*H.2	Select a Control Rod.	Selects a peripheral Control Rod.	___	___	___
H.3	"Rod Out Permit" light is verified ON.	Verify "Rod Out Permit" light is lit on the 901-5 panel.	___	___	___
*H.4.a	Withdraw the selected Control Rod.	Withdraws the selected Control Rod one (1) notch.	___	___	___
*H.5	ROD SELECT POWER switch placed in OFF.	Turn ROD SELECT POWER switch to OFF.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: The ROD OUT BLOCK annunciator will alarm when the Rod Select Power switch is placed to OFF.					
*H.6	ROD SELECT POWER switch placed in ON.	Turn ROD SELECT POWER switch to ON.	___	___	___
*H.7	Select a second Control Rod.	Selects a peripheral Control Rod on the opposite side of the core.	___	___	___
*H.8	Verifies Control Rod withdrawal block can NOT be cleared.	Verifies annunciator 901-5 C-3, "ROD OUT BLOCK" cannot be cleared by depressing the annunciator RESET pushbutton OR the alarm is NOT in reflash.	___	___	___
H.9	ROD SELECT POWER switch placed in OFF.	Turn ROD SELECT POWER switch to OFF.	___	___	___
H.10	ROD SELECT POWER switch placed in ON.	Turn ROD SELECT POWER switch to ON.	___	___	___
H.11.a	Withdrawn Control Rod fully inserted.	Inserts the withdrawn Control Rod to Position 00 using the ROD MOVEMENT CONT switch.	___	___	___
CUE:	**As Unit Supervisor, inform the examinee that:** **"Another NSO will perform step H.12."**				
EVALUATOR NOTE: The examinee should inform you that the task is complete.					
EVALUATOR NOTE: Remove the Equipment Status Tag from the Rod Motion Control Switch at the end of the JPM.					

JPM Stop Time: _____

JPM SUMMARY

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

JPM Title: Perform One-Rod-Out Interlock Surveillance

JPM Number: 2016 ILT NRC JPM a Revision Number: 01

Task Number and Title:

SR-0280-K20, Given a Reactor Manual Control System (RMCS)/ Rod Position Information System (RPIS) operating mode and various plant conditions, EVALUATE the following Reactor Manual Control System (RMCS)/Rod Position Information System (RPIS) indications/responses and DETERMINE if the indication/ response is expected and normal:

c. Movement control Indicating lights, (1) Rod Out Permissive

e. Refuel Permissive

K/A Number and Importance: **KA:** 2.1.44 **Rating:** 3.9/3.8

Suggested Testing Environment: Simulator

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

Reference(s): QCOS 0300-17, Rev. 12, "One-Rod-Out Interlock Surveillance"

QCOP 0207-02, Rev. 11, "Rod Worth Minimizer Bypass Control"

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____ minutes

EVALUATION SUMMARY:

The task is successfully completed when the examinee demonstrates the One-Rod Out Interlock is functional by operating the RMCS and RWM in accordance with QCOS 0300-17.

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

- Preparations are being made to begin refueling operations.
- The Mode Switch is locked in REFUEL.
- All Prerequisites have been completed for QCOS 0300-17, One-Rod-Out Interlock Surveillance.
- The Unit Supervisor has reviewed steps of QCOS 0300-17 and identified the Not-Applicable (N/A) steps.
- All QCOP 0207-02 All Prerequisites have been completed for bypassing the Rod Worth Minimizer (RWM).
- The Equipment Status Tag has been prepared.

INITIATING CUE

Perform the One-Rod-Out Interlock Surveillance, QCOS 0300-17.

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

Exelon Nuclear

Job Performance Measure

Injecting Standby Coolant
(Engineered Safety Feature)

JPM Number: 2016 ILT NRC JPM b

Revision Number: 00

Date: 10/02/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 3200-09 Rev: 17
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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision 00, Developed for the 2016 ILT NRC Exam IAW NUREG 1021 Rev. 10

SRRS: 3D.105 There are no retention requirements for this section.

SIMULATOR SETUP INSTRUCTIONS

1. **RESET** the Simulator to IC-20.

> 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 1A FR ISOL VLV closed light OFF: **ior lohs13206a1 off**
3. **OVERRIDE** both CCST level indications to 2.0 feet:

   ior aoli033403 2

   ior aoli033404 2
4. **OVERRIDE** the HW Level Control Switch to "HAND": **ior dihs13340108 hand**
5. **VERIFY** the HW Level Control Switch in **"AUTO"**.
6. **DIAL** "NORM COND REJ" (AO 1-3303) to **0%**.
7. **DIAL** "EMERG COND REJ" (AO 1-3304) to **0%**.
8. **Place** the 1B Cond Makeup Pump in **PTL**.
9. **VERIFY** at least one Service Water pump is operating.
10. **OVERRIDE** LFFRV "SLOW/FAST OPEN" pushbuttons OFF:

    ior difc10643ios off

    ior difc10643iof off
11. **Prevent** LP ECCS injection:

    imf cs01a (trip 1A CS pump)

    imf cs01b (trip 1B CS pump)

    irf rh22br open (open breaker for RHR 29B vlv)
12. **Trip Latch** the HPCI turbine.
13. **Inhibit** ADS.
14. **Insert** a manual reactor scram, place the Mode Switch to **Shutdown,** and allow RPV water level to stabilize.
15. **Close** the 1A FW REG ISOL valve.
16. **TRIP ALL** RFP's and **verify** discharge valves MO 1-3201A/B/C are **OPEN**.
17. **VERIFY** 1B FW REG ISOL valve is **OPEN**.
18. **PLACE** all three FRV controllers in **MANUAL** and **CLOSE ALL** three FRVs.
19. **VERIFY ONLY** the 1B and 1C Condensate/Condensate Booster pumps are operating. Adjust AO 1-3401 accordingly to maintain pump amps in the green band.

SIMULATOR SETUP INSTRUCTIONS

20. **Verify ONLY** 3 Condensate Demins are on-line.
21. **Set trigger** for 1B FRV lockup when the valve opens with the following commands:

    trgset 1 "fwv1642b.gt.0.02"

    trg 1 "imf fw08b"
22. **Set trigger** to RESET the 1B FRV lockup when the RESET pushbutton is depressed with the following:

    trgset 2 "zdihs10640303b"

    trg 2 "dmf fw08b"
23. **INSERT** a 0.5% break in the 1A Recirc pump discharge pipe: **imf rr11a 0.5**.
24. **Verify** RPV water level lowers to < -142 in.
25. **Open** all 5 ADS valves and leave switches in MAN.
26. **Verify** RPV pressure is < 300 psig. (use ADS valves as necessary)
27. **Hang** OOS tags on:
    a) 1A FW REG ISOL valve
    b) 1A FRV Controller
28. **OPEN SimView** and set variable **cnmliq = 250000**. Verify Hotwell level is approx. 14 in.
29. **Acknowledge** annunciators.
30. Take a snapshot or save to any open IC.
31. 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.
32. This completes the setup for this JPM.

INITIAL CONDITIONS

- Unit 1 was operating at 50% power with the 1A FRV OOS when a large LOCA occurred.
- QGA 100 and QGA 200 actions are ongoing.
- The US has determined that Alternate Injection Systems are needed to restore RPV water level.
- Hotwell makeup sources are currently inadequate for continued use of the Condensate System as an RPV injection source.

INITIATING CUE

Initiate Standby Coolant in accordance with QCOP 3200-09 and maximize injection.

Report to the Unit Supervisor when the Condensate System is injecting.

Provide examinee with: A blank copy of QCOP 3200-09.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.2.a	Verify at least one Service Water Pump operating.	Verifies at least one Service Water Pump is operating by observing indications on the 912-1 panel.	___	___	___
*F.2.b	Open MO 1-3303, COND DEMIN BYPASS VLV.	Places the switch for the MO 1-3303 valve to the OPEN position and verifies: - OPEN light lit - CLOSED light out	___	___	___
*F.2.c	Open MO 1-3901, STNBY COOLNT SPLY VLV.	Places the switch for the MO 1-3901 valve to the OPEN position and verifies: - OPEN light lit - CLOSED light out	___	___	___
*F.2.d	Open MO 1-3902, STNBY COOLNT SPLY VLV.	Places the switch for the MO 1-3902 valve to the OPEN position and verifies: - OPEN light lit - CLOSED light out	___	___	___
F.2.e	Manually control Condenser Hotwell level between 30 inches and 50 inches by operation of MO 1-3901.	Monitors Hotwell level on Recorder 1-3340-6 on the 901-7 panel and reports when Hotwell level is rising.	___	___	___
F.3	Verify <u>two</u> Condensate/Condensate Booster Pumps are operating.	For the 1B and 1C Cond/Cond Booster Pumps, verifies: - ON lights lit - Current indicating	___	___	___
EVALUATOR NOTE: Step F.4 is N/A, RPV pressure is < 300 psig.					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.5	Verify OPEN a RFP Discharge Valve.	Verifies open at least one, MO 1-3201A/B/C, RFP DISCH VLV,s: - OPEN light lit - CLOSED light out	___	___	___
F.6	Verify OPEN a RX FW Inlet Valve.	Verifies at least one MO 1-3205A/B RX FW INLT VLV is open: - OPEN light lit - CLOSED light out	___	___	___
EVALUATOR NOTE: If the examinee performs step F.7 using the LLFRV for injection, the valve will NOT open. Both pushbuttons, OPEN FAST and OPEN SLOW, will NOT function.					
F.8	Verify OPEN the 1B FW Regulator Isolation Valve.	Verifies MO 1-3206B, 1B FW REG ISOL VLV is open: - OPEN light lit - CLOSED light out	___	___	___
F.8.a. (2)	Regulate flow through the 1B Feedwater Regulating Station.	At the 1-640-19B, 1B FEEDWATER MAN/AUTO CONT STA: (1) Depresses the MAN pushbutton (2) Depresses the OPEN SLOW/FAST pushbutton OR (1) At the 1-640-18, RX LVL MASTER CONTLR, verifies setpoint. (2) At the 1-640-19B, depresses the AUTO pushbutton	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: When the 1B FRV begins to open, it will "lock-up" causing: · **Annunciator 901-5 H-8 to alarm** · **The RESET pushbutton, (above the 1B FW MAN/AUTO CONT STA), to backlight.**					
ALTERNATE PATH STARTS HERE					
*B.3 (QCAN 901-5 H-8)	Reset 1B FRV lockup	Depresses the 1B VLV RESET pushbutton and holds for at least 5 seconds and verifies: - Alarm 901-5 H-8 resets - RESET pushbutton backlight goes out	___	___	___
*F.8.a.(2)	Regulate flow through the 1B Feedwater Regulating Station.	At the 1-640-19B, 1B FEEDWATER MAN/AUTO CONT STA: (1) Depresses the MAN pushbutton (2) Depresses the OPEN SLOW/FAST pushbutton OR (1) At the 1-640-18, RX LVL MASTER CONTLR, verifies setpoint (2) At the 1-640-19B, depresses the AUTO pushbutton	___ ___	___ ___	___ ___
CUE:	**As the Unit Supervisor, when the lockup is reset, and the valve opened further state:** **"Another NSO will monitor RPV water level and regulate flow"**				
EVALUATOR NOTE: 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: Injecting Standby Coolant

JPM Number: 2016 ILT NRC JPM b Revision Number: 00

Task Number and Title:

SR-3900-P03 (Freq: LIC=A) (ILT-MP): Given a reactor plant QGA condition requiring the use of Standby Coolant, supply water to the reactor vessel using Standby Coolant as the water source in accordance with QCOP 3200-09.

K/A Number and Importance: **K/A:** 256000 A2.06 **Rating:** 3.2/3.2

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 3200-09 Rev. 17, EMERGENCY REACTOR VESSEL LEVEL CONTROL USING CONDENSATE/FEEDWATER OR STANDBY COOLANT SUPPLY

QCAN 901(2)-5 H-8 Rev. 7, 1 (2) B FEEDWATER ACTUATOR TROUBLE

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 10 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

- Unit 1 was operating at 50% power with the 1A FRV OOS when a large LOCA occurred.
- QGA 100 and QGA 200 actions are ongoing.
- The US has determined that Alternate Injection Systems are needed to restore RPV water level.
- Hotwell makeup sources are currently inadequate for continued use of the Condensate System as an RPV injection source.

INITIATING CUE

Initiate Standby Coolant in accordance with QCOP 3200-09 and maximize injection.

Report to the Unit Supervisor when the Condensate System is injecting.

Exelon Nuclear

Job Performance Measure

Control Reactor Pressure using the Main Steam Line Drains

JPM Number: 2016 ILT NRC JPM c

Revision Number: 00

Date: 10/02/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 0250-05 Rev: 06
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, Developed for the 2016 ILT NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-17

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 Actuations:**

   Insert a manual reactor scram

   Place the Mode Switch in Shutdown

   Allow RPV level to stabilize at +30 in.

   Close the Inboard and Outboard MSIVs.

   Place the RWCU system in Reject Mode with both pumps on at 80 gpm, (FCV 1-1239 approx. 15% open).

3. **Malfunctions:**

   None

4. **Remotes:**

   None

5. **Overrides:**

   None

6. 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.

7. This completes the setup for this JPM.

INITIAL CONDITIONS

- The Unit has been SCRAMMED due to an Instrument Air leak in the Reactor Building.
- The Unit Supervisor has directed actions of QOA 4700-06, Loss of Instrument Air, and attempts to isolate the leak are still in progress.
- The Unit Supervisor has entered QGA 100 and has directed a cooldown at < 100°F/hr using RCIC and the Main Steam Line Drains.
- An Extra NSO has been assigned to monitor and record the RPV cooldown per QCOS 0201-02.
- This JPM is NOT time critical.

INITIATING CUE

Initiate an RPV cooldown at ≤ 80°F/hr using the Main Steam Line Drains and the Main Turbine Bypass valves per QCOP 0250-05.

Provide examinee with: A copy of QCOP 0250-05, with step C.1 marked N/A and initialed by the Unit Supervisor.

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: _____

STEP	**ELEMENT**	**STANDARD**	**SAT**	**UNSAT**	**Comment Number**
F.1.	Initiate QCOS 0201-02.	Verifies surveillance is in progress per Initial Conditions.	___	___	___
*F.2.a.	**Open** MO 1-220-1, STM DRN ISOL VLV	Places C/S for MO 1-220-1 to the OPEN position and verifies: -Red light lit -Green light out	___	___	___
*F.2.b.	**Open** MO 1-220-2, STM DRN ISOL VLV	Places C/S for MO 1-220-1 to the OPEN position and verifies: -Red light lit -Green light out	___	___	___
*F.2.c.	**Open** MO 1-220-3, OUTSIDE DRN VLV	Places and holds the C/S for MO 1-220-3 to the OPEN position and verifies: -Red light lit -Green light out	___	___	___
*F.2.d	**Open** MO 1-220-90A, STM LINE DRN VLV	Places and holds C/S for MO 1-220-90A in the OPEN position and verifies: -Red light lit -Green light out	___	___	___
*F.2.e	**Open** MO 1-220-90B, STM LINE DRN VLV	Places and holds C/S for MO 1-220-90B in the OPEN position and verifies: -Red light lit -Green light out	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.2.f	**Open** MO 1-220-90C, STM LINE DRN VLV	Places and holds C/S for MO 1-220-90C in the OPEN position and verifies: -Red light lit -Green light out	___	___	___
*F.2.g	**Open** MO 1-220-90D, STM LINE DRN VLV	Places and holds C/S for MO 1-220-90D in the OPEN position and verifies: -Red light lit -Green light out	___	___	___
EVALUATOR NOTE: Step F.3 is marked as N/A as the valve handle has not been connected.					
F.4.a. (1)	Verify BPV Status is ENABLED	At the DEHC Operator Workstation: Navigates to the <CONTROL><BPV JACK> screen and verifies BPV Status is ENABLED.	___	___	___
*F.4.a (2)	Select STPT/RAMP	At the DEHC Operator Workstation on the <CONTROL><BPV JACK> screen, select STPT/RAMP in the “Bypass Valve Manual Opening (JACK) Control Box”.	___	___	___
EVALUATOR NOTE: The values entered for set point and ramp will depend on how many bypass valves are initially desired open and how fast. A value of 11, for set point will open 1 bypass valve.					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.4.a (3)	Enter values for Set Point and Ramp.	Enters values > 0 for Set Point and Ramp and selects “OK”.	___	___	___
*F.4.a (4)	Confirm values for Set Point and Ramp.	Selects “OK” to confirm values.	___	___	___
F.4.a (5)	Adjusts Set Point as necessary to obtain cooldown rate.	On the <CONTROL><BPV JACK> screen, Selects RAISE or LOWER to adjust cooldown rate.			
CUE:	**When a discernable cooldown rate is observed, as the Unit Supervisor, state: “Another NSO will monitor and control the RPV cooldown.”**				
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: Control Reactor Pressure using the Main Steam Line Drains

JPM Number: 2016 ILT NRC JPM c Revision Number: 00

Task Number and Title: SR-0001-P06 (Freq: LIC=B) Given an operating reactor plant when a Group 1 isolation with a failure of relief valves to operate occurs, attempt to stabilize RPV pressure below 1060 psig using Alternate Pressure Control Systems in accordance with QGA 100.

K/A Number and Importance: **K/A:** 239001.A4.02 **Rating:** 3.2/3.2

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 0250-05 Rev. 6, Reactor Pressure Control Using Main Steam Line Drains.

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 15 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**: _____

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

INITIAL CONDITIONS

- The Unit has been SCRAMMED due to an Instrument Air leak in the Reactor Building.
- The Unit Supervisor has directed actions of QOA 4700-06, Loss of Instrument Air, and attempts to isolate the leak are still in progress.
- The Unit Supervisor has entered QGA 100 and has directed a cooldown at < 100°F/hr using RCIC and the Main Steam Line Drains.
- An Extra NSO has been assigned to monitor and record the RPV cooldown per QCOS 0201-02.
- This JPM is NOT time critical.

INITIATING CUE

Initiate an RPV cooldown at $\leq$ 80°F/hr using the Main Steam Line Drains and the Main Turbine Bypass valves per QCOP 0250-05.

Exelon Nuclear

Job Performance Measure

RCIC Manual Initiation (Hard Card) with an Inadvertent Isolation

JPM Number: 2016 ILT NRC JPM d

Revision Number: 03

Date: 09/30/2015

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 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 1300-02 Rev: 31
Procedure QCOA 1300-01 Rev: 18
Procedure QCAN 901-4 B-15 Rev: 12

_____ 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 from Bank JPM B.1.b for ILT Certification Exam 03-1 IAW NUREG 1021 Revision 9 and to update format.

Revision 01, Update for correct procedure revisions.

Revision 02, Update for correct procedure revisions.

Revision 03, Update JPM template and use on 2016 ILT NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC 21 or any other compatible IC. Run CAEP file.
2. **Manual Actuation:**
   - Ensure that the RCIC system is in its normal standby lineup.
3. **Malfunctions / Commands:**
   - **trgset 1 “RCNTB.GT.0.5” (Sets trigger based on 50% RCIC turbine speed)**
   - **trg 1 “imf rc12” (inserts RCIC isolation)**
   - **trgset 2 “an:9014a15” (sets trigger on annunciator 901-4 A-15)**
   - **trg 2 “dmf rc12” (deletes RCIC isolation)**
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

- A loss of feedwater has resulted in a reactor scram and entry into QGA 100.
- The Unit Supervisor has determined that RCIC injection is needed to restore reactor water level and control RPV pressure.
- Hard Card use has been authorized by the Unit Supervisor.
- RCIC is in its normal standby lineup.
- This JPM is NOT time critical

INITIATING CUE

Establish Unit 1 RCIC injection into reactor vessel using the manual initiation pushbutton per the Hard Card.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	Obtain Hardcard.	Obtains Hardcard for RCIC MANUAL STARTUP from the 901-4 panel.	___	___	___
Hardcard Step 1	Initiate RCIC using the manual initiation pushbutton.	Depresses and holds the RCIC MAN INITIATION pushbutton on the 901-4 for at least 30 seconds.	___	___	___
	Verifies the system lines up to inject.	Using indications on the 901-4 panel verifies system valves are lining up for injection.	___	___	___
	Identifies RCIC Isolation and Turbine trip.	Acknowledges 901-4 B-15 alarm and verifies RCIC isolation and turbine trip occur by closure of the following valves: MO 1-1301-16 and MO 1-1301-17 (isolation) MO 1-1301-61 and MO 1-1301-60 (turbine trip).	___	___	___
Alternate Path Starts Here					
CUE:	**If the examinee asks the Unit Supervisor for direction after reporting the RCIC isolation and turbine trip, state, "Continue efforts to establish RCIC injection."**				
901-4 B-15 step B.3.	Determines isolation signal was spurious.	Dispatches EO to the RCIC Room to investigate cause of isolation. Performs QCOA 1300-01.	___	___	___
CUE:	**If dispatched, as EO, report that "a contractor inadvertently bumped DP switch (1-1360-1A) on Instrument rack 2201-58. No other malfunctions or issues are present. There are no indications of steam leaks."** **If dispatched as IM, report that "all DP switches are working properly."**				
INSTRUCTOR NOTE: Examinee may choose to go directly to QCOA 1300-01Step D.8.b.					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
QCOA 1300-1 step D.4.	Depress initiation signal seal in and reset.	Depress RCIC initiation signal seal in and reset.	___	___	___
QCOA 1300-1 step D.8.b.	Dispatches operator to check status of RCIC room.	Dispatches operator to check status of RCIC room.	___	___	___
CUE: **(If not dispatched earlier)**	**AS EO, report, "a contractor inadvertently bumped a DP switch (1-1360-1A) on Instrument rack 2201-58. There is no indication of a steam line break or leak."** **If requested as IM report that, "switches are working properly."**				
QCOA 1300-1 step D.8.d.(1)	Verifies all RCIC isolation and trips are cleared.	Verifies all RCIC trip and isolation signals as listed in steps E.1.(a.-d), and E.2.(a.-c) are cleared.	___	___	___
*QCOA 1300-1 step D.8.d.(2)	**Reset** RCIC Isolation	Depresses STM LINE BRK TRIP RESET pushbutton and verifies 901-4 B-15 alarm clears.	___	___	___
*QCOA 1300-1 step D.8.d.(3)	**Reset** RCIC Turbine Trip	Depresses TURB RESET pushbutton and verifies 901-4 D-15 alarm clears.	___	___	___
QCOA 1300-1 step D.8.d.(4)	**Verify closed** MO 1-1301-61, STM TO TURB VLV.	Verifies MO 1-1301-61, CLOSED light is lit.			
QCOA 1300-1 step D.8.d.(5)	**Open** MO 1-1301-17, STM SPLY ISOL VLV.	Places the MO 1-1300-17 control switch to OPEN and verifies the OPEN light is lit.	___	___	___
*QCOA 1300-1 step D.8.d.(7)	**Open** MO 1-1301-16, STM SPLY ISOL VLV.	Throttles MO 1-1300-16 until fully open and verifies: -OPEN light is lit -CLOSED light is out.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
QCOA 1300-1 step D.9	Obtains QCOP 1300-02 Hard Card to initiate RCIC injection.	Determines RCIC Turbine trip/isolation is reset by absence of any alarms, and that RCIC injection is required. Obtains Hardcard to restart system.	___	___	___
EVALUATOR NOTE: The critical task below is satisfied if the examinee chooses to start RCIC using the Hardcard steps for Manual Pushbutton OR Manual Startup-Level Control. QCOP 1300-02 step F.5 will also provide instruction for a manual startup and satisfy the task.					
*Hardcard step 1	Initiate RCIC for injection into the reactor vessel.	Depresses and holds the RCIC MAN INITIATION pushbutton on the 901-4 for at least 30 seconds.	___	___	___
	Verifies the system lines up to inject.	Using indications on the 901-4 panel and verifies: -valves align for injection -RCIC Flow Controller establishes flow at ~ 400 gpm.	___	___	___
EVALUATOR NOTE: 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: RCIC Manual Initiation (Hard Card) with an Inadvertent Isolation

JPM Number: 2016 ILT NRC JPM d Revision Number: 03

Task Number and Title:

SR-1300-P04 (Freq: LIC=A) Given an operating RCIC system when a spurious RCIC isolation occurs, perform actions to determine the cause and reset the isolation and trip in accordance with QCOA 1300-01 and QCOA 1300-06.

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 1300-02, Rev. 31
QCOA 1300-01, Rev. 18
QCAN 901-4 A-15, Rev. 10
QCAN 901-4 D-15, Rev. 7
QCAN 901-4 B-15, Rev. 12

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 12 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

- A loss of feedwater has resulted in a reactor scram and entry into QGA 100.
- The Unit Supervisor has determined that RCIC injection is needed to restore reactor water level and control RPV pressure.
- Hard Card use has been authorized by the Unit Supervisor.
- RCIC is in its normal standby lineup.
- This JPM is NOT time critical

INITIATING CUE

Establish Unit 1 RCIC injection into reactor vessel using the manual initiation pushbutton per the Hard Card.

Exelon Nuclear

Job Performance Measure

Vent Containment Irrespective of Release Rates with APCV.
(Failure of Torus Valve to Open, Requiring Venting Through the Drywell)

JPM Number: 2016 ILT NRC JPM e

Revision Number: 02

Date: 10/02/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 1600-13 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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

Revision Record (Summary)

Revision 00: Developed for 2016 ILT NRC exam (Class 14-1). This JPM is based on existing JPM LS-053-I-A. This JPM is venting for high Primary Containment pressure, vice high H2 as was the case in LS-053-I-A. The actions are the same for both JPMs. The reasons for venting and desired outcomes are different. Therefore, this is not considered a new JPM. It is a revised Bank JPM.

Revisions to LS-053-I-A

Revision 00, New JPM

Revision 01, JPM revised to reflect procedure revisions.

Revision 02, JPM revised to reflect procedure and K/A revisions.

SIMULATOR SETUP INSTRUCTIONS

1. **RESET** the Simulator to IC 21.

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. **Trip Latch** HPCI.

3. **INSERT** malfunctions to break the D and E Main Steam Relief Valves above the water line. **imf ms16d imf ms16e**

4. **INSERT** a malfunction to erode the D Main Steam Relief Valve seat 15%. **imf ms06d 15** (This will maintain a high DW pressure such that the examinee gets feed back from their actions.)

5. **OVERRIDE** the AO 1-1601-60, "TORUS 18-INCH VENT" closed. **ior dihs1160160 close**

6. **MANUALLY OPEN** the "D" and "E" Main Steam Relief Valves on the 901-3 panel.

7. **PLACE** the RX Mode switch to SHUTDOWN.

8. **Secure** the 1A and 1C RFPs and **close** the Feed Reg Isolation Valves.

9. **Secure** the 1B Condensate Pump.

10. **MONITOR** DW pressure on the 901- 3 panel.

11. **WHEN** DW pressure reaches ~55 psig, **THEN CLOSE** "D" and "E" Main Steam Relief Valves

12. **ALLOW** the DW pressure to stabilize. The DW pressure should remain between 45 and 55 psig.

13. **Silence** the DW/T Vacuum breaker alarms. **bat sv**

14. **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.

15. This completes the setup for this JPM.

INITIAL CONDITIONS

- A transient has occurred on Unit One resulting in high Drywell Pressure
- The US has determined the need to vent the Primary Containment to prevent exceeding the Primary Containment Pressure Limit (PCPL)
- All available Radwaste and Turbine Building Exhaust Fans are operating

INITIATING CUE

Vent the Primary Containment in accordance with QCOP 1600-13 and establish a Primary Containment pressure band of 45 to 50 psig.

It is "OK to exceed release rate limits."

(If the examinee elects to use the procedure instead of the Hard Card, provide a blank copy of QCOP 1600-13 when the procedure is located)

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: _

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: Operator may choose to use procedure or Hard Card. Both are acceptable.					
C.1.	IF QGA or SAMG procedures do NOT state "OK to exceed Release Rate Limits," THEN a vent recommendation has been provided by the Chemistry Department within the last 8 days.	Signs off Prerequisite as N/A per Initial Conditions.			
C.2.	Verify RPS available to operate valves.	Signs off Prerequisite per Initial Conditions.	___	___	___
F.1. (Hard Card 1.a)	Operate fans to provide dilution flow.	Signs off as complete per Initial Conditions.	___	___	___
F.2.a-f. (Hard Card 1.b)	Verify closed primary containment valves.	Verifies CLOSED lights lit for the following valves: AO 1-1601-23 AO 1-1601-24 AO 1-1601-60 AO 1-1601-61 AO 1-1601-62 AO 1-1601-63	___	___	___
F.4.a. (Hard Card 1.c)	Evacuate the Reactor Building **AND** Turbine Building.	Makes announcement to evacuate the Reactor Building **AND** Turbine Building	___	___	___
*F.4.b. (Hard Card 1.d)	Place MASTER VENT MODE SWITCH in APCV position.	Positions “Master Vent Mode Switch” to the APCV position.	___	___	___
F.4.c. (Hard Card 1.e)	Verify closed AO 1-1699-7, VENT TO RX BLDG.	Verifies AO 1-1699-7 closed light lit.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: The following 2 steps will bypass the 2.5 psig Group II isolation signal to allow opening containment vent valves.					
*F.4.d. (Hard Card 1.f)	Override Gp II signal for AO 1-1601-24 valve.	Positions AO 1-1601-24 CIS OVERRIDE switch to OVERRIDE AND holds for 1 second AND Verifies 901-5, E4 alarms	___	___	___
*F.4.e. (Hard Card 1.g)	Override Gp II signal for AO 1-1601-23 AND AO 1-1601-60	SIMULTANEOUSLY positions the AO 1-1601-23 CIS OVERRIDE and the AO 1-1601-60 CIS OVERRIDE switches to OVERRIDE AND holds for 1 second AND Verifies 901-5, E3 and F3 alarm	___	___	___
*F.4.f. (Hard Card 1.h)	Open Vent to Reactor Building Exhaust system valve	Positions AO 1-1601-24 control switch to open. Verifies the OPEN light lit.	___	___	___
ALTERNATE PATH STARTS HERE					
F.4.g (Hard Card 2.a)	Open the AO 1-1601-60.	Positions AO 1-1601-60 control switch to open AND observes the OPEN light is NOT lit.	___	___	___
F.4.h (Hard Card 3.)	Recognizes inability to vent the containment through the Torus, and need to vent the Drywell.	Operator recognizes inability to vent the containment through the Torus, and need to vent the Drywell.	___	___	___
CUE:	**Lo Gas monitors 0-1740-19 and 0-1740-202 Gas Activity Recorders are reading slightly higher.**				
CUE:	**(IF needed) Restate need to vent the containment.** **The operator may dispatch an operator and/or maintenance to investigate. Role play as necessary to investigate the valve failure.**				

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

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.4.h.(1). (Hard Card 3.a)	Verifies the Torus 18-inch Vent valve is closed.	Verifies AO-1601-60 closed light lit.	___	___	___
*F.4.h.(2). (Hard Card 3.b)	Opens AO 1-1601-23 DW 18" vent valve.	Positions AO 1-1601-23 control switch to open. Verifies OPEN light lit	___	___	___
*F.4.h.(3). (Hard Card 3.c)	Control vent flow by cycling AO 1-1699-6 open and closed as required.	Positions AO 1-1699-6 control switch to OPEN Verifies DW pressure lowering	___	___	___
NOTE: Closure of the AO 1-1699-6 valve is not included as a Critical Step.					
F.4.h.(3). (Hard Card 3.c)	Control vent flow by cycling AO 1-1699-6 open and closed as required.	Positions AO 1-1699-6 control switch to CLOSE when DW pressure in the desired band of 45 – 50 psig.	___	___	___
CUE:	**Another NSO will monitor and control Containment venting.**				
EVALUATOR NOTE: 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: Vent Containment Irrespective of Release Rates with APCV. (Failure of Torus Valve to Open, Requiring Venting Through the Drywell)

JPM Number: 2016 ILT NRC JPM e Revision Number: 00

Task Number and Title:

SR-0001-P24 (Freq: LIC=A) Given a reactor plant with rising containment pressure due to a LOCA or steam leak, vent the containment irrespective of off-site radioactivity release rates before torus pressure reaches the Primary Containment Pressure Limit (QGA Figure D) in accordance with QGA 200 and QCOP 1600-13. (Important PRA task. Failure to control containment venting or restore IA for venting results in core damage in 20 of top 100 Core Damage Sequences)

K/A Number and Importance: **K/A:** 295024.EA1.14 **Rating:** 3.4/3.5

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1600-13, Rev. 28, POST ACCIDENT VENTING OF THE PRIMARY CONTAINMENT

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 10 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**: _____

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

INITIAL CONDITIONS

- A transient has occurred on Unit One resulting in high Drywell Pressure
- The US has determined the need to vent the Primary Containment to prevent exceeding the Primary Containment Pressure Limit (PCPL)
- All available Radwaste and Turbine Building Exhaust Fans are operating

INITIATING CUE

Vent the Primary Containment in accordance with QCOP 1600-13 and establish a Primary Containment pressure band of 45 to 50 psig.

It is "OK to exceed release rate limits."

SRRS: 3D.105 There are no retention requirements for this section.

Exelon Nuclear

Job Performance Measure

Install OPRM Jumpers on RPS B

JPM Number: 2016 ILT NRC JPM f

Revision Number: 00

Date: 09/30/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 7000-03 Rev: 01
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

SRRS: 3D.100; There are no retention requirements for this section

Revision Record (Summary)

Revision 00, This is a new JPM written for the 2016 ILT NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-21

NOTE:	This JPM is performed inside the simulator panels and can be done in any IC. The examiners must verify that this JPM is compatible with other JPMs that are scheduled to be run concurrently.

2. **Manual Actuations:**

   None

3. **Malfunctions:**

   None

4. **Remotes:**

   None

5. **Overrides:**

   None

6. **Equipment:**

   Four (4) Switchable Jumpers and Four (4) TCC tags.

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

INITIAL CONDITIONS

- Unit 1 is operating steady state at 80% power.
- The “A” RPS MG set has been returned to service following repairs to the feed breaker.
- The control room has made preparations for re-energizing RPS A from its normal feed.
- Equipment Operators in the Aux Electric Room have requested the control room to perform step C.12 of QCOP 7000-03.
- The Unit Supervisor has authorized installation of the OPRM jumpers on RPS B.
- Short Duration Time Clocks (SDTC) for Tech Spec LCOs 3.3.1.3 Condition A and 3.3.1.3 Condition B have been started.
- An Equipment Status Tag (EST) has been placed on the 901-5 panel stating OPRM trips on “B” RPS are bypassed.
- Continuity checks have been performed on the jumpers.
- This JPM is NOT time critical.

INITIATING CUE

Install jumpers to bypass RPS “B” OPRM trips per QCOP 7000-03 Attachment A.

Provide examinee with: A copy of QCOP 7000-03 signed off through step C.12.g.

Four (4) switchable jumpers with banana type connectors.

Four (4) TCC tags.

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.

SRRS: 3D.100; There are no retention requirements for this section

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Attach A 1.a.	Notify Unit Supervisor of jumper installation	Informs the Unit Supervisor of jumper installation on RPS "B" bypassing OPRM trips. OR Determines completion from Initial Conditions.	___	___	___
CUE:	**As Unit Supervisor, acknowledge and concur with jumper installation.**				
Attach A 1.b.	Verifies Unit Supervisor has entered SDTCs.	Verifies the Unit Supervisor has entered SDTCs for TS LCOs 3.3.1.3 Condition A and B. OR Determines completion from Initial Conditions.	___	___	___
CUE:	**If asked, as Unit Supervisor, state: "Short Duration Time Clocks are started for Tech Spec LCOs 3.3.1.3 Condition A and B."**				
CUE:	**If necessary, as the Unit Supervisor, inform the examinee that "step 1.c of QCOP 7000-03 Attachment A (place EST on the 901-5 panel) has been completed by the Unit NSO."**				
CUE:	**The examinee may ask for verification of jumper placements in the following steps. If so, then state: "There is no one available. The verifications will be done later."**				
Attach A 1.d.(1). (a)	**Verify** Jumper is open.	Verifies jumper switch is in "OPEN" position.	___	___	___

STEP	**ELEMENT**	**STANDARD**	**SAT**	**UNSAT**	**Comment Number**
*Attach A 1.d.(1). (b)	**Install** OPRM 4 jumper leads.	Installs jumper leads between terminals (PS2)TB4-4 and TB1B-4 in the 901-37 panel.	___	___	___
*Attach A 1.d.(1). (c)	**Close** OPRM 4 jumper.	Places the OPRM 4 jumper switch to the “CLOSE” position.	___	___	___
Attach A 1.d.(2). (a)	**Verify** Jumper is open.	Verifies jumper switch is in “OPEN” position.	___	___	___
*Attach A 1.d.(2). (b)	**Install** OPRM 5 jumper leads.	Installs jumper leads between terminals (PS4)TB4-1 and TB2B-1 in the 901-37 panel.	___	___	___
*Attach A 1.d.(2). (c)	**Close** OPRM 5 jumper.	Places the OPRM 5 jumper switch to the “CLOSE” position.	___	___	___
Attach A 1.d.(3). (a)	**Verify** Jumper is open.	Verifies jumper switch is in “OPEN” position.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*Attach A 1.d.(3). (b)	**Install** OPRM 6 jumper leads.	Installs jumper leads between terminals TB4B-1 and TB4B-14 in the 901-37 panel.	___	___	___
*Attach A 1.d.(3). (c)	**Close** OPRM 6 jumper.	Places the OPRM 6 jumper switch to the “CLOSE” position.	___	___	___
Attach A 1.d.(4). (a)	**Verify** Jumper is open.	Verifies jumper switch is in “OPEN” position.	___	___	___
*Attach A 1.d.(4). (b)	**Install** OPRM 8 jumper leads.	Installs jumper leads between terminals TB5B-118 and TB5B-119 in the 901-37 panel.	___	___	___
*Attach A 1.d.(4). (c)	**Close** OPRM 8 jumper.	Places the OPRM 8 jumper switch to the “CLOSE” position.			
CUE:	**As the Unit Supervisor, inform the examinee that “you will have another NSO complete the remaining steps QCOP 7000-03 Attachment A.”**				
EVALUATOR NOTE: The examinee should inform you that the task is complete.					

JPM Stop Time: _____

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

JPM SUMMARY

Operator's Name: _____ **Emp. ID#**: _____

Job Title: ☐ EO ☐ RO ☐ SRO ☐ FS ☐ STA/IA ☐ SRO Cert

JPM Title: Install OPRM Jumpers on RPS B

JPM Number: 2016 ILT NRC JPM f Revision Number: 00

Task Number and Title: **SRN-TMOD-K12** (Freq: LIC=B NF=B) Describe how to install and remove the following: a.) Jumper wires

K/A Number and Importance: **K/A:** 216000.K1.01 **Rating:** 3.9/4.1

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 7000-03 Rev. 01, Unit 1 Reactor Protection MG Sets

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**: _____

INITIAL CONDITIONS

- Unit 1 is operating steady state at 80% power.
- The “A” RPS MG set has been returned to service following repairs to the feed breaker.
- The control room has made preparations for re-energizing RPS A from its normal feed.
- Equipment Operators in the Aux Electric Room have requested the control room to perform step C.12 of QCOP 7000-03.
- The Unit Supervisor has authorized installation of the OPRM jumpers on RPS B.
- Short Duration Time Clocks (SDTC) for Tech Spec LCOs 3.3.1.3 Condition A and 3.3.1.3 Condition B have been started.
- An Equipment Status Tag (EST) has been placed on the 901-5 panel stating OPRM trips on “B” RPS are bypassed.
- Continuity checks have been performed on the jumpers.
- This JPM is NOT time critical.

INITIATING CUE

Install jumpers to bypass RPS “B” OPRM trips per QCOP 7000-03 Attachment A.

Exelon Nuclear

Job Performance Measure

Reverse RHRSW Heat Exchanger Flow

JPM Number: 2016 ILT NRC JPM g

Revision Number: 00

Date: 12/08/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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

SRRS: 3D.100; There are no retention requirements for this section

Revision Record (Summary)

Revision 00, This JPM was developed for the 2016 ILT NRC Exam.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC 21.

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. Verify the 1B RHR HX SW FLOW SELECT switch is in NORM.
3. Start up the 1C and 1D RHRSW pumps per QCOP 1000-04, step F.2.b-c.
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

- The 1C and 1D RHRSW pumps were started earlier this shift at the request of Engineering and the CMO group for performance monitoring.

- Both groups have collected the data and are now requesting the 1B RHRSW Heat Exchanger flow reversed and both RHRSW pumps placed in operation.

INITIATING CUE

Place the 1B RHR Heat Exchanger in REVERSE FLOW and restart the 1C and 1D RHRSW pumps per QCOP 1000-04.

Provide examinee with: A blank copy of 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.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.2.e. (1)	Stop 1C RHR SW PMP	Places the 1C RHR SW PMP c/s to the OFF position and verifies: - Off light lit - RHRSW Hx Outlet pressure lowers	___	___	___
*F.2.e. (1)	Stop 1D RHR SW PMP	Places the 1D RHR SW PMP c/s to the OFF position and verifies: - Off light lit - RHRSW Hx Outlet pressure lowers	___	___	___
*F.2.e. (2)	Close MO 1-1001-5B valve	Places the MO 1-1001-5B c/s to the CLOSE position and verifies: - CLOSED light lit	___	___	___
F.2.e. (3)	Place MO 1-1001-5B c/s to STOP	Places the MO 1-1001-5B c/s to the STOP mid-position.	___	___	___
F.2.e. (4)	Verify closed MO 1-1001-5B valve	Verifies: - CLOSED light lit - Valve position indication at 0%	___	___	___
F.3.a-b	Verify B Loop RHR and RHRSW pumps are OFF	Verifies OFF lights are lit for: - 1C & 1D RHR Pumps - 1C & 1D RHRSW Pumps	___	___	___
EVALUATOR NOTE: Step F.3.c. is N/A					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.3.d	Place 1B RHR Hx in Reverse Flow	Places the 1B RHR HX SW FLOW SELECT switch to the REV position.	___	___	___
F.3.d. (1)-(4)	Verify 1B RHR Hx valve positions for Reverse Flow	Verifies: - MO 1-1001-186B valve OPEN light is lit - MO 1-1001-187B valve OPEN light is lit - MO 1-1001-4B valve CLOSED light is lit - MO 1-1001-185B valve CLOSED light is lit	___ ___ ___ ___	___ ___ ___ ___	___ ___ ___ ___
EVALUATOR NOTE: The examinee should return to step F.2. to restart the 1C and 1D RHRSW pumps. Step F.2.a. is NA.					
CUE:	If an EO is dispatched to the 1D and 1B/C RHRSW Vaults, then after each pump is started, state: **"The pump sounds normal, oil levels are good, and the room cooler is running."**				
F.2.b. (1)	Verify RHR HX B SERVICE WATER FLOW is in REVERSE lineup	Verifies valve position lights for REVERSE Flow are lit. (As indicated on placard above the 1B RHR HX SW FLOW SELECT switch.)	___	___	___
*F.2.b. (2)	Throttle open MO 1-1001-5B, valve.	Places MO 1-1001-5B, RHR HX SW DISCH VLV c/s to OPEN, then places it to STOP when valve position indicates >40% open.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.2.b. (3)	Start the 1C/D RHRSW Pump	Places the 1C/1D RHRSW Pmp c/s to the ON position and verifies: - ON light lit - Rising pressure indicated on PI 1-1040-3B.	___	___	___
*F.2.b. (4)	Throttle MO 1-1001-5B, valve to establish discharge pressure and flow	Throttles MO 1-1001-5B closed until the following conditions are met: - Discharge press is < 350 psig on PI 1-1040-3B - Flow is < 3600 gpm on FI 1-1040-1B	___	___	___
F.2.b. (5)	Verify NO increase on 1-1705-12, PROCESS LIQUID MONITOR	At Panel 901-2, verifies: No count rate (cps) increase indicated on 1-1705-12, PROCESS LIQUID MONITOR, (Channel 2).	___	___	___
EVALUATOR NOTE: The examinee should read the next two steps and then perform them in succession.					
*F.2.c. (1)	Throttle open MO 1-1001-5B valve to establish discharge pressure	Throttles open MO 1-1001-5B to establish a discharge pressure of approx. 140 psig indicated on PI 1-1040-3B.	___	___	___
*F.2.c. (2)	Start the 1C/D RHRSW Pump	Places the 1C/1D RHRSW Pmp c/s to the ON position and verifies: - ON light lit Rising pressure indicated on PI 1-1040-3B.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.2.c (3)	Throttle MO 1-1001-5B, valve to establish discharge pressure and flow	Throttles MO 1-1001-5B closed until the following conditions are met: Discharge press is < 350 psig on PI 1-1040-3B Flow is < 7200 gpm on FI 1-1040-1B			
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: Reverse RHRSW Heat Exchanger Flow

JPM Number: 2016 ILT NRC JPM g Revision Number: 00

Task Number and Title:

SR-1000-P11 (Freq: LIC=I): Given an operating reactor plant with RHRSW operating, reverse RHRSW flow in accordance with QCOP 1000-04.

K/A Number and Importance: **K/A:** 400000.A4.01 **Rating:** 3.1/3.0

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: 15 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**: _____

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

INITIAL CONDITIONS

- The 1C and 1D RHRSW pumps were started earlier this shift at the request of Engineering and the CMO group for performance monitoring.

- Both groups have collected the data and are now requesting the 1B RHRSW Heat Exchanger flow reversed and both RHRSW pumps placed in operation.

INITIATING CUE

Place the 1B RHR Heat Exchanger in REVERSE FLOW and restart the 1C and 1D RHRSW pumps per QCOP 1000-04.

Exelon Nuclear

Job Performance Measure

Energize 480 Bus 15 With a Failure of the Normal Feed

JPM Number: 2016 ILT NRC JPM h

Revision Number: 03

Date: 12/17/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 QOP 6700-02 Rev: 38
Procedure QCOA 6100-03 Rev: 41
Procedure QOA 6700-01 Rev: 18

_____ 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, New JPM developed for ILT 09-1 NRC Exam.

Revision 01, JPM revised for procedure changes.

Revision 02, JPM revised for procedure changes.

Revision 03, Taken from JPM Bank (LS-082-I-A) and used on 2016 ILT NRC Exam. Revised JPM number, updated template, and Evaluator notes.

SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC-18

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. Take the following actions:
   - Start the 2A Service Water Pump.
   - Prevent reclosure of the Bus 15 Main Feed Breaker: **imf ed06a**
   - Trip T-12 using the command: **imf ed02**
   - Insert a manual reactor scram and place the Mode Switch in Shutdown.
   - Verify the U-1 and U1/2 EDG are supplying the ECCS Busses.
   - Restore RPS A and B from the normal feeds: **irf rp28r reset, irf rp29r reset**
   - Backfeed Bus 13 and Bus 14.
   - Allow the simulator to stabilize, i.e. RPV water level approx. 0 inches (use SSMP if necessary), and RPV pressure stable at < 1060 psig.
   - Perform the following steps of QCOA 6100-03, D.3, D.15, D.18, D.23, D.24, and D.28.
   - Start the 1/2 Instrument Air Compressor.
   - Start the 2A Service Air Compressor.
   - Acknowledge annunciators initially and throughout the JPM.
   - Snap the setup to IC-0 or any other available IC.

3. Prepare a copy of QCOA 6100-03 signed off as complete, N/A, or in progress (circled), as appropriate up to step D.29.
4. One blank copy of QOP 6700-02.
5. 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.
6. This completes the setup for this JPM.

INITIAL CONDITIONS

- A loss of offsite power has occurred on Unit 1.
- The Unit Supervisor has entered QGA 100 and directed actions to control RPV water level and pressure.
- Actions have been completed per QCOA 6100-03, Loss of Offsite Power up to step D.29.
- Hard Cards are authorized.
- The Unit Supervisor has directed you to resume Electric Plant restoration activities.

INITIATING CUE

Re-energize Bus 15 and Bus 17 from their Normal Feeds per QCOA 6100-03, step D.29.

Do NOT energize Bus 16 due to a Bus fault.

Notify the Unit Supervisor when Bus 15 and Bus 17 are energized.

Provide examinee with: A marked up copy of QCOA 6100-03.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
QCOA 6100-03 Step 29.a OR QOA 6700-01 Hard Card Step 1	Close Bus 15 Main Feed Breaker	Places Bus 15 c/s to the NAT position to clear the AUTO TRIP. THEN Places Bus 15 c/s to the NAC position.	___	___	___
CUE:	**The Bus 15 Main Feed Breaker will not close. If the examinee reports this and asks for direction, as the Unit Supervisor state:** **"Continue efforts to energize Bus 15"**				
CUE:	**If an EO is dispatched to investigate the Bus 15 Main Feed Breaker, then report back as appropriate from either:** **Bus 13 cubicle 1, "BUS 13 TO XFORMER 15 FEED BKR** **OR** **Bus 15 cubicle 2B, "BUS 13 TO TRANSFORMER 15"** **"EMs are here and they have identified a problem with the closing spring and are unable to charge it. There are no other problems preventing Bus 15 from being energized,"**				
* QCOA 6100-03 Step 29.c OR * QOA 6700-01 Hard Card Step 1	Close Bus 17 Main Feed Breaker	Places Bus 17 c/s to the NAT position to clear the AUTO TRIP. THEN Places the Bus 17 c/s to the NAC position and verifies: - CLOSED light lit - OPEN light out - Bus 17 LIVE light lit	___	___	___
ALTERNATE PATH STARTS HERE					
EVALUATOR NOTE: The task may be accomplished by using the Hard Card (QOA 6700-01) OR QOP 6700-02. If necessary, provide a copy of QOP 6700-02 when located.					

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
QOA 6700-01 Hard Card Step 1 OR QOP 6700-02 Step F.1.d.(1)	Verify closed the Bus 17 Main Feed breaker.	Verifies the Bus 17 Main Feed Breaker indications: - CLOSED light lit - OPEN light out - Bus 17 LIVE light lit	___	___	___
QOA 6700-01 Hard Card Step 2.a OR QOP 6700-02 Step F.1.d.(2)	Verify open Bus 15 Main Feed Breaker.	Verifies Bus 15 Main Feed Breaker OPEN and AUTO TRIP lights are lit OR Places Bus 15 c/s to NAT and verifies breaker OPEN light is lit.	___	___	___
QOA 6700-01 Hard Card Step 2.c OR QOP 6700-02 Step F.1.d.(3)	Verify open Bus 15 to Bus 16 Tie-Breaker.	Verifies Bus 15 to Bus 16 Tie-Breaker indications: - OPEN light lit - CLOSED light out	___	___	___
* QOA 6700-01 Hard Card Step 2.d OR * QOP 6700-02 Step F.1.d.(4)	Close Bus 15 to Bus 17 Tie-Breaker.	Places Bus 15 to Bus 17 Tie-Breaker c/s to NAC and verifies: - CLOSED light lit - OPEN light out - Bus 15 LIVE light lit	___	___	___
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: Energize 480 VAC Bus 15 With a Failure of the Normal Feed

JPM Number: 2016 ILT NRC JPM h Revision Number: 03

Task Number and Title:

SR-6500-P04 (Freq: LIC=B): Given a loss of normal power to an emergency bus (13-1 or 14-1) with a failure of the associated emergency diesel to start, supply power to the emergency bus using the crosstie from Unit 2 and restore 480vac busses in accordance with QOA 6500-03, QCOP 6500-08, QOA 6700-04 and QOA 6700-01. (Determine expected bus loading currents in accordance with QCOP 6500-28) (SOER 83-6 r4)

K/A Number and Importance: **K/A:** 262001 A4.01 **Rating:** 3.4/3.7

Suggested Testing Environment: Simulator

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

Reference(s): QCOA 6100-03 Rev.41, LOSS OF OFFSITE POWER
QOA 6700-01 Rev.18, 480V BUS 15, 16 OR 17 (25, 26 OR 27) FAILURE
QOP 6700-02, Rev.38, 480 VOLT BUS TIE CIRCUIT BREAKERS

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

Testing Method: ☐ Simulate ☒ Perform

Estimated Time to Complete: 10 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**: _____

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

INITIAL CONDITIONS

- A loss of offsite power has occurred on Unit 1.
- The Unit Supervisor has entered QGA 100 and directed actions to control RPV water level and pressure.
- Actions have been completed per QCOA 6100-03, Loss of Offsite Power up to step D.29.
- Hard Cards are authorized.
- The Unit Supervisor has directed you to resume Electric Plant restoration activities.

INITIATING CUE

Re-energize Bus 15 and Bus 17 from their Normal Feeds per QCOA 6100-03, step D.29.

Do NOT energize Bus 16 due to a Bus fault.

Notify the Unit Supervisor when Bus 15 and Bus 17 are energized.

Exelon Nuclear

Job Performance Measure

Flex 125 VDC Battery Crosstie

JPM Number: 2016 ILT NRC JPM i

Revision Number: 00

Date: 01/21/2016

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 0050-15 Rev: 01
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, New JPM developed for the 2016 ILT NRC Exam.

INITIAL CONDITIONS

- An Extended Loss of AC Power (ELAP) event was declared several hours ago by the Shift Manager.
- The Unit 2 125 VDC Battery Bus voltage is reading 105 VDC as indicated on the 902-8 panel.
- Several delays have been encountered in deployment of the FLEX Generator.
- The Unit Supervisor has determined the 125 VDC Alternate Battery is required to restore system voltage.
- You have been issued a Fire Lock Key.
- 100 ft. of cable fitted with red and black connectors on each end, has been staged at the Junction Box in the Battery Charger Room.
- This JPM is NOT time critical.

INITIATING CUE

Connect the Unit 2 125 VDC Alternate Battery to 125 VDC System per QCOP 0050-15, step F.4.

Provide examinee with a marked up copy of QCOP 0050-15.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.4.a	Verify OPEN: Breaker 12 on 125 VDC Distribution Panel 2A-2.	At 125 VDC Distribution Panel 2A-2, verifies breaker 12 is in the OFF position.	___	___	___
CUE:	Point to the position indicated by the examinee and state: **"The breaker is here."**				
*F.4.b	Connect the FLEX 125 VDC Battery crosstie cables to JB 2-0030-JB200.	· Obtains the pre-staged FLEX connecting cable beside the Junction Box. · Opens JB 2-0030-JB200 (adjacent to 125 VDC Dist. Pnl. 2A-2). · Attaches connectors, "red to red" and "black to black."	___	___	___
CUE:	Point to the connection points indicated by the examinee and state: **"The cable is attached."**				
*F.4.c	Connect the FLEX 125 VDC Battery crosstie cables to the Unit-2 Alternate 125 VDC Battery.	· Runs FLEX cables from the Junction Box to the 125 VDC Alternate Battery post connectors. · Attaches cable and battery post connectors, "red to red" and "black to black."	___	___	___
CUE:	Point to the connection points indicated by the examinee and state: **"The cable is attached."**				
*F.4.d	Unlock fused disconnect at 125 VDC Battery Bus #2 Cub. C04.	Using Fire Key, unlocks (or breaks) and removes lock on fused disconnect at 125 VDC Battery Bus #2 Cub, C04.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CUE:	**"The lock is removed."**				
*F.4.e	OPEN disconnect at 125 VDC Battery Bus #2 Cub. C04.	At 125 VDC Battery Bus #2 Cub. C04: Depresses lever and repositions disconnect downward to the "OFF" position.	___	___	___
CUE:	Point to the position indicated by the examinee and state: **"The disconnect is here."**				
*F.4.f	CLOSE Breaker 12 on 125 VDC Distribution Panel 2A-2.	At 125 VDC Distribution Panel 2A-2, places breaker 12 to the "ON" position.	___	___	___
CUE:	Point to the position indicated by the examinee and state: **"The breaker is here."**				
F.4.g	Verify local voltage	In the Unit 2 125 VDC Battery Charger Room: Places the voltmeter select switch to either Bus 2A, 2A-1, or 2A-2 and reads indicated voltage.	___	___	___
CUE:	If the voltmeter is selected to Bus 2A, 2A-1, or 2A-2, point to 130 Volts and state: **"Meter indication is here."** If the voltmeter is selected to Batt Bus, point to 105 Volts and state: **"Meter indication is here."**				
F.4.h	Notify Main Control Room	Contacts Control Room and informs Unit Supervisor that QCOP 0050-15 step F.4.a.thru h is complete.	___	___	___
EVALUATOR NOTE: The examinee should inform you 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: Flex 125 VDC Battery Crosstie

JPM Number: 2016 ILT NRC JPM i Revision Number: 00

Task Number and Title:

SRN-FLEX.2-P02 (Freq: LIC=I N=I): Given a reactor plant in an ELAP (Extended Loss of AC Power) Event and 125 VDC battery voltage is expected to drop to < 105 VDC,or 250 VDC battery voltage is expected to drop to <210 VDC swap to the Alternate 125 or Non-Emergency 250 VDC Battery in accordance with QCOP 0050-15 "FLEX 125/250 VDC Operation".

K/A Number and Importance: **K/A:** 295004. AA1.01 **Rating:** 3.3/3.4

Suggested Testing Environment: In-Plant

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

Reference(s): QCOP 0050-15 Rev. 1, FLEX 125/250 VDC OPERATION

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

Testing Method: ☒ Simulate ☐ Perform

Estimated Time to Complete: 15 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

- An Extended Loss of AC Power (ELAP) event was declared several hours ago by the Shift Manager.
- The Unit 2 125 VDC Battery Bus voltage is reading 105 VDC as indicated on the 902-8 panel.
- Several delays have been encountered in deployment of the FLEX Generator.
- The Unit Supervisor has determined the 125 VDC Alternate Battery is required to restore system voltage.
- You have been issued a Fire Lock Key.
- 100 ft. of cable fitted with red and black connectors on each end, has been staged at the Junction Box in the Battery Charger Room.
- This JPM is NOT time critical.

INITIATING CUE

Connect the Unit-2 125 VDC Alternate Battery to 125 VDC System per QCOP 0050-15, step F.4.

Exelon Nuclear

Job Performance Measure

Start the Control Room B Train HVAC with a Failure of the FCV

JPM Number: 2016 ILT NRC JPM j

Revision Number: 00

Date: 11/30/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 5750-09 Rev: 56
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 for the 2016 ILT NRC test. It is a Safety Function 9, Alternate Path in- plant JPM.

INITIAL CONDITIONS

- Units 1 and 2 are operating at rated power.
- The Control Room HVAC B Train is to be placed in operation to support maintenance activities on the A Train.
- Control Room Train A HVAC is currently in operation.
- The 1A RHRSW pump has been started per QCOP 1000-04.
- An EO has verified the valve positions for step F.3.e.(2a-c) of QCOP 5750-09.
- Mechanical Maintenance is in standby to determine if refrigerant needs to be added.
- The US has directed you to locally start the B AHU. Do NOT run the Air Filtration Unit (AFU).
- This JPM is NOT time critical.

INITIATING CUE

Place the Control Room B Train HVAC in operation per QCOP 5750-09 step F.3. Contact Mechanical Maintenance when ready for the refrigerant check.

Provide the examinee with a marked-up copy of QCOP 5750-09.

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: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.3.a. (1)	Verify: AIR HANDLING UNIT "B" in AUTO.	At Panel ½-9400-105: Verifies the B Train AHU control switch is in the AUTO position.	___	___	___
CUE:	**Point to the position indicated by the examinee and state:** **"The switch is positioned here."**				
F.3.a. (2)	Verify: A/C UNIT "B" COMPRESSOR in AUTO.	At Panel ½-9400-105: Verifies the A/C UNIT "B" COMPRESSOR control switch is in the AUTO position.	___	___	___
CUE:	**Point to the position indicated by the examinee and state:** **"The switch is positioned here."**				
F.3.b.	Verify: STOP/RESET-STANDBY-AUTO switch in STANDBY.	At Panel ½-9400-102: Verifies the STOP/RESET-STANDBY-AUTO control switch is in the STANDBY position.	___	___	___
CUE:	**Point to the position indicated by the examinee and state:** **"The switch is positioned here."**				
EVALUATOR NOTE: Steps F.3.c. and F.3.d. are N/A per the Initial Conditions.					
F.3.e. (1)	Verify RCU is NOT operating.	Verifies the RCU is NOT operating.	___	___	___
*F.3.e (1)(a)	Place A/C UNIT "B" COOLING WATER SUPPLY SELECTOR switch in EMERG.	At Panel ½-9400-105: Places the A/C UNIT "B" COOLING WATER SUPPLY SELECTOR switch in the EMERG position.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: Per the "Initial Conditions", the valves in step F.3.e.(2)(a) through F.3.e.(2)(c) have been verified to be in the correct positions. If the examinee dispatches an EO to verify valve positions, then role play accordingly.					
F.3.e.(2)(a-c)	Verify OPEN: 1-5799-385, CR HVAC TRAIN B RCU RHRSW SPLY FR PMPS 1-1001-65A & 65B OUTBD SV Verify CLOSED: 1-5799-384, CR HVAC TRAIN B RCU RHRSW SPLY FR PMPS 1-1001-65C & 65D OUTBD SV Verify CLOSED: 1-5799-406, CR HVAC TRAIN B RCU RHRSW SPLY FR PMPS 1-1001-65C & 65D INBD SV	Determines from "Initial Conditions." OR Dispatches an EO to the CRD Pump Level (TB 572' elev) to verify the valves.	___ ___ ___	___ ___ ___	___ ___ ___
CUE:	**If dispatched/contacted, as EO, report:** "**The 1-5799-385 valve is OPEN.** **The 1-5799-384 and 1-5799-406 valves are CLOSED."**				
EVALUATOR NOTE: Steps F.3.e.(2)(d) and F.3.e.(3) are N/A.					
F.3.e.(4)	Verify RHRSW system is operating.	Determines from "Initial Conditions." OR Contacts the Control Room.	___	___	___
CUE:	**If contacted, as the NSO, state:** **"The 1A RHRSW Pump has been started and is operating in accordance with QCOP 1000-04."**				

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.3.e. f-g	Place the Control Room HVAC in "Recirc Mode." AND Shut down Control Room A Train HVAC.	Contacts the NSO to complete step F.3.f & g of QCOP 5750-09 by: Placing the CONTROL ROOM HVAC ISOL SWITCH in the ISOLATE position at the 912-5 panel. AND Shut down Control Room A Train HVAC per step F.2.	___ ___	___ ___	___ ___
CUE:	**As the NSO, state: "Step F.3.f & g of QCOP 5750-09 are complete. The Control Room HVAC system was placed on ISOLATE and the A Train HVAC has been shut down per step F.2."**				
CUE:	**If the examinee verifies damper positions at the ½-9400-105 panel, then state:** **"The green lights are lit for the following dampers:** **AO ½-5741-324A & B,** **AO ½-5741-325A & B,** **AO ½-5741-327A & B,** **AO ½-5741-331"**				
EVALUATOR NOTE: Step F.3.h is N/A per "Initial Conditions."					
*F.3.i	Start AIR HANDLING UNIT B.	At Panel ½-9400-105: Places control switch, (HS ½-5741-316B), to the START position and releases.	___	___	___
CUE:	**Point to the red light above the B Train HVAC control switch and state:** **"This light is lit and you hear the Air Handling Unit running."**				
CUE:	**If the examinee verifies damper positions at the ½-9400-105 panel, then state:** **"The red lights are lit for the ½-5741-330A & B and ½-5741-331 dampers."**				

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.3.j	Reset oil pressure trips and allow RCU to cycle on Control Room temperature.	At Panel ½-9400-102: Place the STOP/RESET-STANDBY-AUTO switch to the STOP/RESET position, then to the AUTO position.	___	___	___
F.3.k	Verify RCU compressor is running.	Verifies Compressor running by Checking oil pressure & temperature or running sound.	___	___	___
CUE:	**"You hear the compressor running."** **If compressor oil pressure is checked at PI 1/2-5795-336, point to 105 psig and state: "The Indicator is here."**				
F.3.l	Verify RCU compressor oil level.	Verifies oil is visible in sightglass located on the side of the RCU compressor.	___	___	___
CUE:	**Point to the middle of the sightglass and state: "Oil level is here."**				
ALTERNATE PATH STARTS HERE					
F.3.m	Verify adequate RCU compressor discharge pressure	At the RCU compressor: Determines PI ½-5795-335, COMPRESSOR DISCHARGE PRESSURE is NOT within 100 psig to 280 psig range.	___	___	___
CUE:	**At PI ½-5795-335, point to the 50 psig mark and state:** **"Pressure indication is here."**				
F.3.m. (1)(a)	Verify PIC ½-5795-333, CR HVAV TRAIN "B" RCU SERV WTR SPLY FCV, is in AUTO.	At Panel ½-9400-105: Verifies AUTO pushbutton back light is lit on PIC ½-5795-333.	___	___	___
CUE:	**When asked about the status of the AUTO pushbutton on PIC ½-5795-333, state:** **"The green light below the AUTO pushbutton is lit"**				

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*F.3. m.(1) (b)	Close ½-5799-378, CR HVAC TRAIN B RCU SERV WTR SPLY FCV MANUAL ISOL VLV.	Locates ½-5799-378 valve outside of B HVAC room and turns valve handwheel clockwise until it will not turn further.	___	___	___
CUE:	**After the examinee has made several turns in the clockwise direction, state:** **"The valve will not turn any further"**				
EVALUATOR NOTE: Only ONE of the next two steps will be successful in controlling RCU compressor discharge pressure.					
*F.3. m.(1) (b)•	Adjust ½-5799-381, CR HVAC TRAIN B RCU SERV WTR SPLY BYP VLV.	Partially throttles open the ½-5799-381 valve by turning the handwheel counterclockwise direction. UNTIL Discharge pressure at PI ½-5795-335 is within 100 psig to 280 psig range.	___	___	___
CUE:	**After the first manipulation, when PI ½-5795-335 is checked, point to 250 psig and state:** **"Pressure indication is here."**				
CUE:	**If the examinee attempts to control the RCU compressor discharge pressure by unlocking and throttling the 0- 5799-1073, CR HVAC TRAIN B RCU SERV WTR OUTLET VALVE, state:** **"The valve will NOT turn"**				
F.3.n	Contact Mechanical Maintenance for refrigerant check.	Calls Control Room or Mechanical Maintenance and informs them that Control Room B Train HVAC is running and requires a refrigerant check.	___	___	___

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CUE:	**Acknowledge the call and state:** **"Maintenance personnel are in route to perform the refrigerant check on B Train HVAC."**				
CUE:	**"Another operator will assist Mechanical Maintenance and perform steps F.3.o and F.3.p."**				
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: Start Control Room B Train HVAC with a Failure of the FCV

JPM Number: 2016 ILT NRC JPM j Revision Number: 00

Task Number and Title:

SR-5750-P05 (Freq: LIC=I) Given an operating reactor plant with the 'A' and 'B' train control room ventilation systems shutdown, start the 'B' train HVAC, RCU and the AFU in accordance with QCOP 5750-09.

K/A Number and Importance: **K/A:** 290003 G.2.1.20 **Rating:** 4.6/4.6

Suggested Testing Environment: Plant

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

Reference(s): QCOP 5750-09 Rev. 56 Control Room Ventilation System

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

Testing Method: ☒ Simulate ☐ Perform

Estimated Time to Complete: 15 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

- Units 1 and 2 are operating at rated power.
- The Control Room HVAC B Train is to be placed in operation to support maintenance activities on the A Train.
- Control Room Train A HVAC is currently in operation.
- The 1A RHRSW pump has been started per QCOP 1000-04.
- An EO has verified the valve positions for step F.3.e.(2a-c) of QCOP 5750-09.
- Mechanical Maintenance is in standby to determine if refrigerant needs to be added.
- The US has directed you to locally start the B AHU. Do NOT run the Air Filtration Unit (AFU).
- This JPM is NOT time critical.

INITIATING CUE

Place the Control Room B Train HVAC in operation per QCOP 5750-09 step F.3. Contact Mechanical Maintenance when ready for the refrigerant check.

Exelon Nuclear

Job Performance Measure

Locally Start Up the 1/2 A Fire Diesel

JPM Number: 2016 ILT NRC JPM k

Revision Number: 00

Date: 09/29/2015

Developed By:	Instructor	Date
Validated By:	SME or Instructor	Date
Reviewed By:	Operations Representative	Date
Approved By:	Training Department	Date

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

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 4100-03 Rev: 20
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

SRRS: 3D.105 There are no retention requirements for this section.

Revision Record (Summary)

ILT 2016 NRC Examination Revision 00, Revised to new format.

ILT 2009 NRC Examination 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.

This JPM was based on bank JPM LP-002-II, Rev. 18.

JPM revised to match procedure revision and update to latest JPM template.

SRRS: 3D.105 There are no retention requirements for this section.

INITIAL CONDITIONS

- You are an extra operator.
- Both Diesel Fire pumps are in a standby condition per QCOP 4100-03, Section F.1.a.
- The Fire Marshall has requested that the ½ A Diesel Fire Pump be started locally for observation.
- There are no AUTO start signals present.
- You have been issued a fire protection key.
- This JPM is NOT time critical.

INITIATING CUE

Locally start-up the 1/2 A Diesel Fire Pump in the Test Mode, establish proper pressure, and verify proper operation per QCOP 4100-03.

Contact the Fire Marshall when the 1/2A Fire Diesel is running.

Provide the examinee: A copy of QCOP 4100-03 with Prerequisite C.1 and Step F.1.a-b signed off.

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.

SRRS: 3D.105 There are no retention requirements for this section.

JPM Start Time: _____

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.1.b.	Verify closed MO 1/2-3906.	Contacts CR to verify MO 1/2-3906 valve is closed.	___	___	___
CUE:	**As the Control Room Operator, state, "The MO 1/2-3906 valve is closed."**				
F.1.c.(1)	Open the 1/2A Diesel Fire PMP MIN FLOW VLV.	Unlocks the 1-4199-6 valve and rotates handwheel counter-clockwise.	___	___	___
CUE:	**"You cannot rotate the handwheel any further."**				
*F.1.d.(2)	Start the 1/2 A Diesel Fire Pump by placing control switch to TEST.	Positions 1/2 A Diesel Fire Pump control switch to TEST.	___	___	___
CUE:	**"The diesel is running."**				
F.1.d.(3)	Verifies engine cooling water outlet flow to the intake flume funnel	Checks the intake flume funnel for cooling water flow.	___	___	___
CUE:	**"There is flow into the funnel."**				
*F.1.d.(4)(a)	Throttles the 1/2A DIESEL FIRE PMP MIN FLOW VLV to attain proper discharge press.	Rotates 1-4199-6 valve hand wheel clockwise to establish 140 to 145 psig disch. press on PI 1/2-4141-2A.	___	___	___
CUE:	**When asked, point to 140 psig on PI 1/2-4141-2A and state, "the pressure is here" after the valve is throttled.** **If asked before the valve is throttled, point to 100 psig.**				

STEP	ELEMENT	STANDARD	SAT	UNSAT	Comment Number
F.1.d.(5)	Verify normal parameters.	Verifies oil press. ³ 40 psig and engine temp. is < 200°F.	___	___	___
CUE:	**When prompted, point to the value for each gauge and state, "the pressure is here."** **Oil pressure is 60 psig,** **Water temp. is 180° F.**				
CUE:	**The examinee informs the Fire Marshal that the 1/2A Fire Diesel is operating properly.**				
CUE:	**The Fire Marshall informs you that maintenance personnel want to walk down the system prior to placing the system in a shutdown lineup and it will be approximately 1 hour before you can place the system in a shutdown condition.**				
EVALUATOR NOTE: 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: Locally Start Up The 1/2 A Fire Diesel

JPM Number: 2016 ILT NRC JPM k Revision Number: 00

Task Number and Title:

SRN-4100-P05 (Freq: LIC=B NF=B) Given an operating reactor plant with a loss of service water and a failure of a diesel fire pump to start, locally start the diesel fire pump in accordance with QCOP 4100-03.

K/A Number and Importance: **K/A:** 286000.2.1.30 **Rating:** 4.4/4.0

Fire system; Ability to locate and operate components, including local controls

Suggested Testing Environment: Plant

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

Reference(s): QCOP 4100-03 Rev. 20, DIESEL FIRE PUMP OPERATION

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

Testing Method: ☒ Simulate ☐ Perform

Estimated Time to Complete: 10.5 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**: _____

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

INITIAL CONDITIONS

- You are an extra operator.
- Both Diesel Fire pumps are in a standby condition per QCOP 4100-03, Section F.1.a.
- The Fire Marshall has requested that the ½ A Diesel Fire Pump be started locally for observation.
- There are no AUTO start signals present.
- You have been issued a fire protection key.
- This JPM is NOT time critical.

INITIATING CUE

Locally start-up the 1/2 A Diesel Fire Pump in the Test Mode, establish proper pressure, and verify proper operation per QCOP 4100-03.

Contact the Fire Marshall when the 1/2A Fire Diesel is running.

SRRS: 3D.105 There are no retention requirements for this section.

Exelon Nuclear

2016 ILT NRC Exam Scenario

Scenario Number:

NRC Scenario 1

Revision Number: 00

Date: 10/15/2015

Developed By: _____ _____
Instructor **Date**

Validated By: _____ _____
SME or Instructor **Date**

Reviewed By: _____ _____
Operations Representative **Date**

Approved By: _____ _____
Training Department **Date**

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Quad Cities Scenario No.: **2016 NRC Scenario 1** Op-Test No.: ILT 14-1
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
The plant is operating at 75% power.
RCIC steam line is isolated.

Turnover: Return RCIC to the standby lineup.

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Re-pressurize the RCIC Steam Lines
2	SW07B	BOP C	The 1B RBCCW Pump degrades (QCOP 3700-02)
3	FW06B	ATC I	Feedwater Flow Transmitter Failure
4	PC04G	SRO	Drywell-Torus Vacuum Breaker fails open **TS**
5	RR01A	ATC R	1A Recirc Pump Trip / Emergency Power Reductions (QCOA 0202-04) **TS**
6	RR11A	CREW M	LOCA- Recirc Loop A Discharge Pipe Break TAF-Blowdown (QGA 100/200/500-1)
7	ED03B/ED04B	ATC C	Loss of Reactor Feed Pumps
8	DG04A	BOP C	U-1 EDG fails to auto start
9	HP01/RC01	CREW C	HPCI Startup and Trip / RCIC Trip

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:
Total Malfunctions (5-8): 8
Malfunction(s) after EOP (1-2): **E7, 8, & 9**
Abnormal Events (2-4): **E2, 3, 4, & 5**
Major Transient(s) /E-Plan entry (1-2): **E6**
EOPs (1-2): **QGA 100 & 200**
EOP Contingencies (0-2): **QGA 100/500-1**
Critical Tasks (2-3): **3**

ES-301-5 Quantitative attributes:
BOP Normal: **E1**
ATC Reactivity (1 per set): **E5**
BOP I/C (4 per set): **E2 & 8**
ATC I/C (4 per set): **E3 & 7**
SRO-I I/C (4 per set inc 2 as ATC): **E2, 3, 5, 7, 8, 9**
SRO Tech Spec (2 per set): **E4 & 5**
ALL Major Transients (2 per set) **E6**

SUMMARY:

- Initial Conditions:
  - The plant is operating at 75% power to support load following per Generation Dispatch.
  - RCIC has been returned to service and is to be placed in its normal standby lineup.
- Event 1: The BOP performs QCOP 1300 step F.3 to return RCIC to its standby lineup.
- Event 2: The Unit 1 EO on rounds calls the Control Room and reports the 1B RBCCW pump motor is running hot and very noisy. The BOP reports RBCCW discharge pressure lowering and directs the EO to lineup the ½C RBCCW pump to Unit 1 per QCOP 3700-02. The ½C RBCCW pump is started and the 1B RBCCW pump is secured.
- Event 3: The 1B RFP flow transmitter fails downscale causing a minor level transient. The ATC swaps to 1-element control stabilizing RPV water level. Instrument Maintenance will investigate and report the RFP must be secured to replace the transmitter. The SRO will direct the BOP to start up the 1C RFP and secure the 1B RFP in preparation for a clearance order to repair the transmitter.
- Event 4: The BOP acknowledges and reports annunciators 901-3 C-13 and 901-3 G-11. A short time later, the control room receives a call that a new engineer on a system walkdown inadvertently bumped a test pushbutton on the 2251-24 panel. An EO is dispatched and reports the 1601-33B Drywell to Torus Vacuum Breaker indicates open. Attempts by the EO to close the vacuum breaker are unsuccessful. The Unit Supervisor enters TS 3.6.1.1 Condition A, Primary Containment inoperable, TS 3.6.1.8 Condition C, one Vacuum breaker not closed, and TS 3.6.2.5 Condition A, Drywell to Torus differential pressure $\leq$ 1.0 psid.
- Event 5: The 1A Recirc Pump will trip causing the crew to enter QCOA 0202-04. The crew will insert CRAM rods to stay within MELLLA and outside of Instability Region II. The Unit Supervisor will enter TS 3.4.1 Condition C, Single Loop operation outside of the LCO requirements.
- Event 6: 1A Recirc Pump Discharge Pipe break. The crew will take actions for rising Drywell pressure in accordance with QCOA 0201-01. A manual scram will be inserted on high Drywell pressure. The crew will take actions in accordance with QGA 100 and QGA 200. With the loss of high pressure injection systems, RPV level will lower to -142" (TAF). The crew will enter QGA 500-1 and execute a blowdown. RPV level will be restored with Low Pressure ECCS systems.
- Event 7: Shortly after the scram, the T-12 reserve feed beaker to Bus 11 will fail to close, leaving Bus 11 de-energized. Simultaneously, Bus 12 will trip on an overcurrent resulting in a loss of all Reactor Feed pumps.
- Event 8: The Unit 1 EDG will fail to auto start on 2.5 psig Drywell pressure. The BOP will manually start the EDG.
- Event 9: The crew will attempt to start RCIC for RPV level control, however, the Trip Throttle valve will trip and not reset. HPCI will initially inject and restore RPV water level but will trip after several minutes. The crew will be unable to re-establish HPCI injection and RPV level will lower to TAF.
- Approximate Run Time: 1.5 Hours

CRITICAL TASKS:

Critical Task #1: When Torus pressure exceeds 5 psig, INITIATE drywell sprays while in the safe region of the drywell spray initiation limit (DSIL). (BWROG PC-5.1 INIT DW SPRAY)

Critical Task #2: Given the plant with the inability to maintain level above –59 inches, INHIBIT ADS, to prevent an uncontrolled depressurization IAW QGA 100. (Important PSA task / Inhibiting ADS terminates 5 of top 200 Core Damage Sequences)

Critical task #3: Given the plant with an inability to maintain RPV water level above -142 inches with an injection source lined-up and running, initiate an emergency depressurization before RPV water level drops to -190 inches in accordance with QGA 100 and QGA 500-1. (Important PRA Operator Action - emergency depressurization terminates 19 of top 100 Core Damage Sequences)

EXERCISE PERFORMANCE OBJECTIVES

SR-1300-P05	(Freq: LIC=I) Given a reactor plant being started up, warmup the RCIC lines and align the system for standby in accordance with QCOP 1300-01.
SR-3700-K26	(Freq: LIC=B) EVALUATE given key RBCCW parameter indications and/or responses depicting a system specific abnormality/failure and DETERMINE a course of action to correct or mitigate the following abnormal condition(s): c. Low RBCCW pressure
SR-0600-K26	(Freq: LIC=B) EVALUATE given key Feedwater Level Control System parameter indications and/or responses depicting a system specific abnormality/failure and DETERMINE a course of action to correct or mitigate the following abnormal condition(s): a. Feedflow sensor fails high/low
SR-1601-K20	Given various plant conditions, EVALUATE the following Containment Systems indications/ responses and DETERMINE if the indication/ response is expected and normal. b. Drywell/torus differential pressure c. Torus to Drywell vacuum breaker position
SR-0202-P04	Given an operating reactor plant with a loss of one recirculation pump, take actions to determine the cause, stabilize plant parameters, and to exit the Instability Region in accordance with QCOA0202-04.
SR-0203-P07	(Freq: LIC=B) Given a reactor plant in a QGA condition, inhibit ADS in accordance with QGA 100 or QGA 101. (Important PSA task / Inhibiting ADS terminates 5 of top 200 Core Damage Sequences)
SR-0001-P01	(Freq: LIC=A) Given the plant with a loss of normal feedwater resulting in the inability to restore RPV water level above 0 inches, inject with Alternate Injection Systems (QGA Detail E) to attempt to hold RPV water level above -142 inches in accordance with QGA 100. (SOER 86-1 r8)
SR-0001-P02	(Freq: LIC=A) Given the plant with an inability to maintain RPV water level above -142 inches with an injection source lined-up and running, initiate an emergency depressurization before RPV water level drops to -190 inches in accordance with QGA 100 and QGA 500-1. (Important PRA Operator Action - emergency depressurization terminates 19 of top 100 Core Damage Sequences)

EXERCISE PERFORMANCE OBJECTIVES

SR-0001-P03	(Freq: LIC=A) Given a shutdown reactor plant with an emergency depressurization in progress due to an inability to maintain RPV water level above -142 inches, attempt to control RPV level above -142 inches using available injection systems or establish/maintain adequate core cooling using alternate methods in accordance with QGA 500-1 and QGA 100.
SR-0001-P26	(Freq: LIC=B) Given a reactor plant with rising drywell temperature due to a LOCA or steam leak and RHR is not needed for core cooling, verify parameters are in the safe region of the Drywell Spray Initiation Limit (QGA Figure K), verify tripped or trip recirc pumps and drywell coolers, and attempt to initiate drywell sprays before drywell temperature reaches 280 degrees in accordance with QGA 200.
SR-0001-P45	(Freq: LIC=A) Given a reactor plant in a QGA condition, verify the proper actuation of containment isolations and ECCS and emergency DG starts in accordance with QGA 100 or QGA 101.

Simulator Setup:

1. Reset to IC-20 (75% power).
2. Go to **RUN.**
3. Verify the following RWM Sequence is loaded: 4**PHESD (or current shut down sequence)**

   (The following commands to be utilized for this scenario are contained in the CAEP file: 2016 NRC Scenario 1.cae)
4. Insert Commands for setup:
   - **trgset 1 "pcpdwg.gt.1.5"** (sets trigger 1 true when Drywell pressure is greater than 1.5 psig)
   - **trg 1 "dmf pc04g"** (Drywell-Torus Vacuum Breaker failure deleted on trigger 1)
   - **trgset 2 "tcvsv3 .le. 0.1"** (sets trigger true when main turbine stop valve #3 is closed)
   - **trg 2 "imf ed03b"** (trips Bus 12 on overcurrent)
   - **trgset 3 "rcntb.gt.0.5"** (sets trigger 3 true when the RCIC turbine speed is > 50%)
   - **trg 3 "imf rc01"** (trips the RCIC turbine Trip Throttle Valve)
   - **imf ed04b** (prevents Bus 11 to automatically transfer upon loss of normal power source)
   - **imf dg04a** (prevents an auto start for the Unit 1 EDG)

5. Verify the following commands for scenario performance**:**
   - **imf sw07b 30 3:** (degrade the 1B RBCCW pump 30% over 3 minutes)
   - **imf fw06b 0 40** (fails the 1B RFP flow transmitter downscale over 40 seconds)
   - **imf pc04g 20** (fails the 1-1601-33B Drywell-Torus Vacuum Breaker 20% open)
   - **mmf pc04g 100** (modifies D/T Vacuum Breaker position to 100% open)
   - **mmf pc04g 20** (modifies D/T Vacuum Breaker position to 20% open)
   - **imf rr01a** (trips the 1A Recirc pump)
   - **imf rr11a .1 5:** (Inserts a .1% break over 5 minutes in the 1A Recirc Pump discharge piping)
   - **bat sv** (silences 901-3 G-11 and C-13 alarms)
   - **imf hp01** (trips the HPCI turbine)
   - **mmf rr11a .5** (modifies 1A Recirc piping break to .5%)

6. Install "Protected System" placards and/or rings on the following equipment:
   - HPCI
   - T-12

7. Provide a "Load Drop" REMA.
8. Provide a marked up copy of QCOP 1300-01, RCIC System Preparation for Standby Operation.
9. Place the Zinc Injection placard on 1A RFP.

LIST OF POTENTIAL PROCEDURES

Annunciator Procedures

- 901(2)-3, A-9, HPCI TURBINE TRIPPED, Rev. 5
- 901(2)-3, A-16, PRI CNMT HIGH PRESSURE, Rev. 15
- 901(2)-3, C-13, TORUS VACUUM BKR VALVES OPEN DIV I, Rev. 12
- 901(2)-3, G-11, TORUS VACUUM BKR VALVES OPEN DIV II Rev. 10
- 901(2)-3, G-15, REACTOR VESSEL LOW LOW LEVEL, Rev. 17
- 901(2)-4 B-2, RECIRC DRIVE A TRIP, Rev. 10
- 901(2)-5 E-8, RX VESSEL HIGH LEVEL, Rev. 9
- 901(2)-5 F-8, RX VESSEL LOW LEVEL, Rev. 10
- 901(2)-8 F-3, 4KV BUS OVRCUR TRIP, Rev. 6

QCOP 0300-16, Addition of Water to Reactor Vessel Using CRD Hydraulic System, Rev. 8

QOP 3200-04, Reactor Feed Pump Changeover, Rev. 50

QCOP 3700-02, RBCCW System Startup and Operation, Rev. 29

QCGP 2-3, Reactor Scram, Rev. 84

QCGP 3-1, Reactor Power Operations, Rev. 79

QCOA 0201-01, Increasing Drywell Pressure, Rev. 27

QCOA 0202-04, Reactor Recirc Pump Trip—Single Pump, Rev. 45

QGA 100, RPV Control, Rev. 10

QGA 200, Primary Containment Control, Rev. 10

QGA 500-1, RPV Blowdown, Rev. 14

CREW TURNOVER

1.) Plant Conditions:

a.) Unit 1 is currently at 75% Power due to a load drop last shift for load following.

b.) Unit 2 is at 100% Power.

c.) Technical Specification limitations:

Day 3/14, TS 3.5.3 Condition A, RCIC inoperable.

d.) On Line Risk is YELLOW.

e.) Fire Risk is Blue.

f.) Protected Equipment:

(1) RBCCW
(2) Fuel Pool Cooling
(3) Transformer 12
(4) HPCI
(5) HPCI Room Cooler
(6) U-1 EDG Cooling Water Pump

2.) Significant problems/abnormalities:

a.) RCIC was returned to service last shift as repairs to the steam line drain pot level switch have been completed.

3.) Evolutions/maintenance for the oncoming shift:

a) Perform QCOP 1300-01 step F.3, RCIC System Preparation For Standby Operation and re-pressurize the RCIC steam line.

b.) Continue holding load per QCGP 3-1.

Quad Cities 2016 NRC Scenario No.1 Event No. 1 Page 1 of 2

Event Description: Re-pressurize the RCIC Steam Lines.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs and supervises QCOP 1300-01, step F.3.
	BOP	Verifies RCIC Barometric Condenser Condensate and Vacuum Pump control switches are in AUTO.
	BOP	Depresses INITIATION SIGNAL SEAL-IN AND RESET pushbutton.
	BOP	Verifies MO 1-1301-61, STM TO TURB VLV is closed.
	BOP	Depresses the STM LINE BRK TRIP RESET pushbutton.
	BOP	Depresses TURB RESET pushbutton.
	BOP	Verifies AO 1-1301-12 and AO 1-1301-13, COND PMP ISO VLVs are closed.
	BOP	Verifies TURB SPEED TEST switch is in NORMAL.
	BOP	Verifies TURB SPEED TEST PWR switch is in OFF.
	BOP	Verifies AO 1-1301-34 and AO 1-1301-35, STM LINE DRAIN ISOL VLVs are open.
	BOP	Verifies AO 1-1301-32, COND DRN VLV is closed.
	BOP	Contacts EO to verify RCIC room is cleared of personnel OR makes a plant announcement to evacuate the RCIC room.
	BOP	Opens MO 1-1301-17, STM SPLY ISOL VLV.
	BOP	Warms RCIC steam line:
		· Slowly cracks open MO 1-1301-16, STM SPLY ISOL VLV. · Monitors PI 1-1340-6, TURB INLT PRESS, for increase in pressure. · Verifies annunciator 901-4 F-16, RCIC TURBINE INLET STM DRN HIGH LEVEL, is NOT in alarm. · When RCIC steam line pressure stops increasing AND 901-4 F-16 is cleared, fully opens MO 1-1301-16.
	BOP	Verifies GOVERNOR VLV is open.
	BOP	Verifies TRIP THROTTLE VLV is open.

Quad Cities 2016 NRC Scenario No.1 Event No. 1 Page 2 of 2

Event Description: Re-pressurize the RCIC Steam Lines

Time	Position	Applicant's Actions or Behavior
	BOP	Verifies RCIC FLOW CONTROLLER is in AUTO.
	BOP	Verifies RCIC FLOW CONTROLLER flow rate is set as 400 gpm
	BOP	Verifies all RCIC annunciators on the 901-4 panel are cleared.
	SRO	Exits TS LCO 3.5.3 Condition A.
	ATC	Monitors reactor power, pressure, and water level.
End of Event 1		

Quad Cities 2016 NRC Scenario No. 2 Event No. 2 Page 1 of 2

Event Description: 1B RBCCW pump degrades.

Time	Position	Applicant's Actions or Behavior
SIM OP: Degrade the 1 B RBCCW pump 30% ramped over 3 minutes using malfunction SW07B: **imf sw07b 30 3:**		
Key Parameter Response: Degrading RBCCW Discharge Header pressure as indicated on PI 1-3740-4 at the 912-1 panel. Expected Annunciator(s): None		
SIM OP ROLE PLAY: As the U-1 EO on rounds, call in and report: **"The 1B RBCCW pump is sounding very noisy, the motor is hot to touch and the discharge pressure is 40 psig."**		
	BOP	Reports RBCCW Discharge Header pressure on PI 1-3740-4 at the 912-1 panel is low in the green band.
	SRO	Directs BOP to place the 1/2C RBCCW Pump into operation.
	BOP	Directs the EO to lineup the 1/2C RBCCW Pump to Unit 1 per QCOP 3700-02 step F.4.
SIM OP ROLE PLAY: As the EO**,** wait 3 minutes, then call in and report: **"The 1/2C RBCCW pump is lined up to Unit 1 per the Hard Card, QCOP 3700-02 Attachment B."**		
	BOP	Starts the 1/2C RBCCW Pump, then secures the 1B RBCCW Pump.
	BOP	Directs the EO to close the 1-3799-59, 1B RBCCW PMP DSCH VLV and the 1-3799-61, 1B RBCCW PMP SUCT VLV per QCOP 3700-02 Attachment A, step 2.
SIM OP ROLE PLAY: As the EO, wait 3 minutes, then report back: **"The 1B RBCCW Pump suction and discharge valves are closed. QCOP 3700-02 Attachment A, step 2 is complete."**		

Quad Cities 2016 NRC Scenario No. 2 Event No. 2 Page 2 of 2

Event Description: 1B RBCCW pump degrades

Time	Position	Applicant's Actions or Behavior
	BOP	Reports 1/2C RBCCW pump is running, the 1B RBCCW pump is secured, and RBCCW Discharge Header pressure is approx. 53 psig.
	ATC	Monitors Recirc pump seal cooling water temperatures at TR 1-262-19A/B., PUMP TEMPERATURE, point 2.
	ATC	Monitors Drywell pressure and temperature.
End of Event 2		

Quad Cities 2016 NRC Scenario No.1 Event No. 3 Page 1 of 3

Event Description: 1B RFP Feedwater Flow Transmitter Fails Downscale

Time	Position	Applicant's Actions or Behavior
SIM OP: Fail the 1B RFP flow transmitter downscale ramped over 40 seconds using malfunction FW06B: **imf fw06b 0 40**		
Key Parameter Response: RPV water level transient Expected Annunciator(s): 901-5 E-8 Automatic Actions: None		
	ATC	Reports 901-5 E-8, RX VESSEL HIGH LEVEL, alarm and refers to annunciator procedure.
	ATC	Reports the 1B Reactor Feed Pump flow transmitter is failing downscale.
	ATC	Transfers to 1-element control by selecting "SINGLE" on the 1-640-18, Rx Level Master Controller.
	ATC	Reports RPV water level is stable and controlled at 30 inches.
	SRO	Determines Core Thermal Power calculation is low due to failed feed flow transmitter and contacts a QNE.
	SRO	Contacts Instrument Maintenance to investigate the 1B FW Flow Transmitter.
SIM OP ROLE PLAY: If dispatched, as the IM Supervisor, wait 2 minutes, then report the following: **"The 1B RFP will have to be shutdown to replace the flow transmitter."**		
SIM OP ROLE PLAY: If contacted, as the SOS, state: **"Generation Dispatch will be requesting a load increase to full power in the next 24 hours. Proceed with the 1B RFP shutdown so that repairs can be started this shift."**		
SIM OP ROLE PLAY: If contacted, as the QNE, state: **"A substitute value for the 1B RFP flow will need to be entered in the Heat Balance if it is not secured. I can do this remotely if the pump is to remain on line."**		
	SRO	Directs BOP to start the 1C RFP and secure the 1B RFP per QOP 3200-04.

Quad Cities 2016 NRC Scenario No.1 Event No. 3 Page 2 of 3

Event Description: 1B RFP Feedwater Flow Transmitter Fails Downscale

Time	Position	Applicant's Actions or Behavior
	BOP	Dispatches an EO to the 1A Condensate/Condensate Booster Pump and the1C Reactor Feed Pump for pre-start checks.
SIM OP ROLE PLAY: As the EO dispatched to the 1A Cond/Cond Booster Pump, wait 2 minutes, then call back and report: **"Steps F.3.a.(1) thru (14) and F.4.a. are complete. The 1A Cond/Cond Booster Pump is lined up and ready for a start."**		
	BOP	Places the COND PMP SELECTOR switch to OFF.
	BOP	Starts the 1A Cond/Cond Booster Pump and verifies: · Condensate pump discharge press: 140 psig · Condensate Booster pump suction press: 80 psig · Condensate Booster pump discharge press: 220 psig · RFP suction press: 200 psig
	BOP	Verifies on the 1B RFP Aux Oil Pump: · Control switch has a red target. · Yellow AUTO TRIP light is lit.
	BOP	Places the RFP SELECTOR switch to OFF.
SIM OP ROLE PLAY: As the EO dispatched to the 1C RFP, report the following when contacted: **"Steps F.14.(a.) thru (m.) is complete. The 1C RFP is lined up and ready for a start."**		
	BOP	Closes MO 1-3201C, 1C RFP DISCH VLV.
	BOP	Opens AO 1-3201C, 1C RFP RECIRC VLV.
	BOP	Starts the 1C RFP.
	BOP	Verifies the 1C RFP Auxiliary Oil Pump trips.
	BOP	Opens MO 1-3201C, RFP DISCH VLV.
	BOP	When RFP flow stabilizes, places AO 1-3201C, RFP RECIRC VLV to AUTO.

Quad Cities 2016 NRC Scenario No.1 Event No. 3 Page 3 of 3

Event Description: 1B RFP Feedwater Flow Transmitter Fails Downscale

Time	Position	Applicant's Actions or Behavior
	BOP	Verifies AO 1-3201C closes.
SIM OP ROLE PLAY: When contacted for steps F.24.a,b,d,e, and f., as the EO, wait 2 minutes and report: **"RFP bearing oil temp is 120°F, speed changer oil press is 8 psig, oil flow from bearing is visible, no seal leaks, and the RFP seals have been vented."**		
	BOP	Opens AO 1-3201B, RFP RECIRC VLV.
	BOP	Closes MO 1-3201B, RFP DISCH VLV.
	BOP	Stops the 1B RFP.
	BOP	Opens MO 1-3201B, RFP DISCH VLV and places AO 1-3201B control switch to AUTO.
	BOP	Verifies AO 1-3201B closes.
	BOP	Verifies Feed and Condensate parameters are normal.
	BOP	Places the RFP SELECTOR SWITCH to STANDBY for the 1B RFP.
	BOP	Verifies the 1B RFP Auxiliary Oil Pump is running.
SIM OP ROLE PLAY: When contacted, to verify RFP warming line valves are open, (step F.29a.), as EO, wait 30 sec., then report: **"The 1-3299-40, and 1-3299-116 downstream and upstream warming line valves for the 1A and 1B RFPs are open."**		
	BOP	Stops the 1A Cond/Cond Booster Pump.
	BOP	Places the COND PP SELECTOR switch to STANDBY for the 1A Cond/Cond Booster Pump.
	BOP	Verifies correct number of Condensate Demins are in operation.
	BOP	Checks Flow Control Line to verify thermal limits are NOT exceeded.
End of Event 3		

Quad Cities 2016 NRC Scenario No. 1 Event No. 4 Page 1 of 2

Event Description: Drywell-Torus Vacuum Breaker Fails Open

Time	Position	Applicant's Actions or Behavior
SIM OP: Fail the 1-1601-33B Drywell Torus Vacuum Breaker 20% open using malfunction PC04G: **imf pc04g 20**		
Key Parameter Response: Drywell and Torus pressure equalize. Expected Annunciator(s): 901-3 C-13, 901-3 G-11 Automatic Actions: None		
	BOP	Reports "Division I and Division II Torus Vacuum Breaker Open" annunciators are In alarm.
	BOP	Determines the 1-1601-33B Drywell to Torus Vacuum Breaker is open from the SER.
	BOP	Refers to QCAN 901-3 C-13 and QCAN 901-3 G-11.
	BOP	Reports Drywell and Torus pressures starting to equalize.
	BOP	Dispatches an EO to the 2251-24 panel to verify open and/or dual indication for the 1-1601-33B vacuum breaker
SIM OP ROLE PLAY: As a System Engineer on a plant walkdown**,** 1 minute after the alarm, call into the control and report that you **"inadvertently bumped a pushbutton on the 2251-24 panel."**		
SIM OP ROLE PLAY: As EO, wait 1 minute after dispatch then call in from the 2251-24 panel and report: **"The 1-1601-33B Drywell-Torus Vacuum breaker shows dual indication on both Division I and Division II."**		
	BOP	Obtains Unit Supervisor concurrence, then directs the EO to cycle the 1-1601-33B Vacuum breaker by depressing the test pushbutton.
SIM OP ROLE PLAY: If directed by the BOP, cycle the 1-1601-33B by inserting the following commands: **mmf pc04g 100** wait 3 seconds then insert **mmf pc04g 20** As the EO, report back that: **"Position indication went to "OPEN" then back to "INTERMEDIATE."**		

Quad Cities 2016 NRC Scenario No.1 Event No. 4 Page 2 of 2

Event Description: Drywell-Torus Vacuum Breaker Fails Open

Time	Position	Applicant's Actions or Behavior
	BOP	Contacts Instrument Maintenance to investigate.
	BOP	Reports Drywell to Torus differential pressure is < 1.0 psid.
	SRO	Enters the following Technical Specification LCOs: TS 3.6.1.1, Condition A, Primary Containment inoperable. (1 hour) TS 3.6.1.8, Condition C, One Suppression Chamber-to-Drywell Vacuum Breaker not closed. (4 hours) TS 3.6.2.5 Condition A, Drywell to Suppression Chamber differential pressure not within limit. (24 hours)
	ATC	Continuously monitors RPV power, pressure, and water level.
End of Event 4		

Quad Cities 2016 NRC Scenario No. 1 Event No. 5 Page 1 of 2

Event Description: 1A Recirc Pump Trip

Time	Position	Applicant's Actions or Behavior
SIM OP: Trip the 1A Recirc Pump using malfunction RR01A: **imf rr01a**		
Key Parameter Response: RWL initially oscillates between 36 and 26 inches, Rx power drops to approx. 54%, Rx. pressure lowers to approx. 960 psig. Expected Annunciator(s): 901-4 A-1, 901-4 A-3, 901-4 A-5, 901-4 B-2, 901-5 E-8, 901-5 F-8 Automatic Actions: None		
	ATC	Reports the 1A Recirc Pump has tripped and refers to annunciator procedures.
	SRO	Sets scram criteria at: Trip of 2nd Recirc pump OR Indication of core instabilities.
	SRO	Directs action of QCOA 0202-04, Reactor Recirc Pump Trip—Single Pump.
	ATC	Monitors for oscillations in SRM period or LPRM/APRM levels.
	ATC	Places the RWM in Power Reduction Mode and depresses Array Mode to latch all CRAM rods.
	ATC	Inserts CRAM rods as needed to lower FCL and to avoid /exit Instability Regions I and II.
	ATC/BOP	Verifies speed on operating Recirc Pump is < 78% and maintains pump motor current < 770 amps as indicated on 1-202-730B, PMP CUR.
	ATC/BOP	Closes MO 1-202-5A, PMP DISCH VLV, then re-opens it after 5 minutes.
	ATC/BOP	Verifies operating loop flow is < 49 Mlb/hr.
	ATC/BOP	Monitor for 50°F differential temperature between Recirc Loops.
	BOP	Monitors RPV bottom head temperature.
	ATC/BOP	Dispatch EO to Bus 11 and 1A ASD to investigate.
SIM OP ROLE PLAY: If dispatched, as EO, wait 3 minutes then report from Bus 11: **"The breaker has tripped on overcurrent. I've contacted EM's to assist."**		

Quad Cities 2016 NRC Scenario No. 1 Event No. 5 Page 2 of 2

Event Description: 1A Recirc Pump Trip

Time	Position	Applicant's Actions or Behavior
	SRO	Notifies QNE and Generation Dispatch of tripped Recirc Pump.
	BOP	Contacts Chemistry department and informs then of load drop of > 30%.
	SRO	Enters TS 3.4.1 Condition C and contacts Instrument Maintenance to apply APRM/RBM set point changes for single loop operation. **TS**

SIM OP ROLE PLAY: If contacted, as the QNE, after being briefed on the 1A Recirc Pump trip inform the caller that you:

"Will implement the Single Loop Thermal Limits in Powerplex and review the control rod pattern for any adjustments that may be necessary."

SIM OP ROLE PLAY: If contacted, as Chemistry Technician state that you :

"Will start taking reactor coolant samples and analyzing for I-131 equivalent."

SIM OP ROLE PLAY: If contacted, as Generation Dispatch, acknowledge the down power due to the Recirc Pump trip.

SIM OP ROLE PLAY: If contacted, as Instrument Maintenance Supervisor, when contacted to apply APRM/RBM single loop set points state that:

"You will brief a crew on QCIPM 0756-06 and have them report to the control room to adjust the APRM/RBM set points."

End of Event 5

Quad Cities 2016 NRC Scenario No. 1 Event No. 6/7/8/9 Page 1 of 5

Event Description: LOCA—Recirc Loop A Discharge Pipe Break

Time	Position	Applicant's Actions or Behavior
SIM OP: Insert a .1% break in the A Recirc Loop Discharge piping ramped over 5 minutes using malfunction RR11A: **imf rr11a .1 5:**		
Key Parameter Response: Drywell and Torus pressure/temperature rises, RPV water level lowers when injection sources are lost, RPV pressure lowers Expected Annunciator(s): 901-3 A-16, 901-3 G-15, 901-4 A-17, 901-4 B-17, 901-5 D-11, 901-5 B-10/B-15 Automatic Actions: Rx. scram, ECCS auto starts, ECCS load shedding		
	BOP	Acknowledges 901-3 A-16, PRI CMNT HIGH PRESSURE, alarm and reports rising Drywell pressure.
	SRO	Enters and directs actions of QCOA 0201-01. Sets scram criteria on high Drywell pressure.
	BOP	Attempts to locate and isolate leak. Checks Recirc pump seals, RBCCW alarms, PIC1-1640-11, CONTAINMENT PRESS for normal operation.
SIM OP NOTE: Verify trigger 1 goes true when Drywell pressure reaches 1.5 psig. If not, set it true with the following command: **trg! 1**		
	BOP	Starts all available Drywell cooling.
	BOP	Notifies Radiation Protection of elevated Containment pressure and evacuates the Reactor Building.
	SRO	Directs a manual reactor scram.
	ATC	Depresses both RX SCRAM CH A and CH B Pushbuttons. Places the Reactor Mode Switch to SHUTDOWN.
	ATC	Reports all rods in, RPV water level < 0 inches and recovering, RPV pressure < 1060 psig and controlled with Main Turbine Bypass Valves.
	SRO	Enters QGA 100 on low RPV water level. Re-enters QGA 100 and enters QGA 200 on high Drywell pressure.
	ATC	Carries out QCGP 2-3, Reactor Scram, actions.
	ATC/BOP	Verify auto actions for 0 in. RPV water level (Group III) and 2.5 psig Drywell pressure (Group II).

Quad Cities	2016 NRC Scenario No. 1	Event No. 6/7/8/9	Page 2 of 5

Event Description: LOCA—Recirc Loop A Discharge Pipe Break

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Reports Bus 11 and Bus 12 are NOT energized from Transformer 12. (**Event 7)**
	ATC/BOP	Acknowledges 901-8 F-3, 4KV BUS OVRCUR TRIP, alarm and dispatches an EO to Busses 11 and 12 to investigate. (**Event 7)**
SIM OP ROLE PLAY: If dispatched, wait 5 minutes, then as the EO report: **"Bus 12 has an overcurrent target up and the Reserve Feed Breaker T-12 to Bus 11 did not close. I've contacted Electrical Maintenance to assist."**		
	BOP	Reports the U-1 EDG did NOT auto start, then manually starts the U-1 EDG by placing the control switch to START and verifies the following: · U-1 EDG Cooling Water Pump starts · Voltage 3952 to 4368 · Frequency 58.8 to 61.2 Hz. **(Event 8)**
	SRO	Directs RPV water level band of 0 to +48 inches using Preferred Systems: HPCI/RCIC/SSMP.
	ATC/BOP	Reports the RCIC Trip Throttle Valve has tripped and dispatches an EO to investigate**. (Event 9)**
SIM OP ROLE PLAY: Wait 5 minutes then report back as the EO from the RCIC Room: **"The RCIC Trip Throttle Valve linkage is damaged and cannot be reset."**		
	ATC/BOP	Starts HPCI and/or SSMP for injection and controls RPV water level within 0 to +48 in. band.
	SRO	Directs an RPV cooldown at < 100°F/hr using main turbine bypass valves.
	SRO	Directs actions of QGA 200, Primary Containment Control.
	SRO	Directs BOP to spray the Torus when Torus pressure exceeds 2.5 psig.
	BOP	Starts Torus sprays and monitors containment response.
	BOP	Reports Torus pressure 5 psig and rising. Verifies Torus level below 17 ft.

Quad Cities 2016 NRC Scenario No. 1 Event No. 6/7/8/9 Page 3 of 5

Event Description: LOCA—Recirc Loop A Discharge Pipe Break

Time	Position	Applicant's Actions or Behavior
	SRO	Checks the DSIL curve and verifies both Recirc pumps are tripped and Drywell Coolers are secured.
CT1	SRO	Directs BOP to initiate Drywell Sprays.
CT1	BOP	Starts Drywell Sprays and reports containment temperature and pressure are lowering.
	BOP	Secures Drywell or Torus sprays before the respective volume reaches 0 psig.
	SRO	Directs BOP to initiate Torus Cooling and monitor Torus temperature.
	BOP	Starts Torus Cooling on one or both loops and monitors Torus temperature.
	BOP	Reports containment Hydrogen level at 0%.
SIM OP NOTE: When RPV water level is stabilized and Drywell sprays have been initiated, then trip the HPCI turbine using malfunction HP01 and modify the 1A Recirc Discharge Pipe break to .5%: **imf hp01** **mmf rr11a .5**		
	BOP	Reports HPCI turbine has tripped and dispatches an EO to the HPCI room. **(Event 9)**
SIM OP ROLE PLAY: If dispatched to the HPCI room, wait 5 minutes, then as the EO call back and report : **"The HPCI turbine is not running, the Stop valve is closed, and the Emergency Oil pump is running. I'll call Mechanical and Electrical Maintenance for assistance."**		
	BOP	Reports RPV water level lowering.
	SRO	Directs second CRD pump started for injection per QCOP 0300-16.
SIM OP ROLE PLAY: If dispatched to valve in the 2nd set of CRD suction filters, wait 2 minutes, then as EO report: **"The 2nd set of CRD filters are valved in."**		
	BOP	Starts second CRD pump.
	BOP	Reports RPV water level 0 inches and lowering.
	SRO	Directs Alternate Systems for injection.

Quad Cities 2016 NRC Scenario No.1 Event No. 6/7/8/9 Page 4 of 5

Event Description: LOCA—Recirc Loop A Discharge Pipe Break

Time	Position	Applicant's Actions or Behavior
	SRO	Directs ATC to inject with SBLC system.
	ATC	Starts both SBLC pumps and reports system injection.
CT2	SRO	Directs BOP to inhibit ADS.
CT2	BOP	Inhibits ADS.
	BOP	Reports RPV water level at -59 in. and lowering.
	BOP/ATC	Reports Group I isolation on RPV low-low level.
	SRO	Transitions to Alternate Level Control Leg of QGA 100 and verifies at least 2 Injection Subsystems (Detail F) are available.
	BOP	Reports all Low Pressure ECCS Subsystems and Safe Shutdown Makeup Pump are available.
	BOP	Bypasses 2/3 Core Height interlock after receiving permission from the Unit Supervisor.
	BOP	Reports RPV water level at -142 inches.
	SRO	Verifies all Injection Subsystems are lined up with pumps running.
	SRO	Transitions to QGA 500-1 before RPV water level drops to -190 inches.
	SRO	Verifies all rods are in.
	SRO	Verifies Drywell pressure < 2.5 psig.
	SRO	Directs BOP to maximize injection to the RPV.
	BOP	Secures Containment Sprays and Torus Cooling.
	SRO	Verifies Torus level is above 5 ft.
CT3	SRO	Directs all 5 ADS Valves opened and switches left in Manual.
CT3	BOP	Opens all 5 ADS Valves and leaves switches in the MAN position.
	BOP	Confirms and reports all 5 ADS valves are open by acoustic monitor indication on the 901-21 panel.
	BOP	Monitors RPV pressure and reports at 325 psig.

Quad Cities	2016 NRC Scenario No.1	Event No. 6/7/8/9	Page 5 of 5
Event Description: LOCA—Recirc Loop A Discharge Pipe Break			
	BOP	Verifies all ECCS Subsystems inject at RPV pressure < 325 psig.	
	ATC	Monitors and reports RPV water level rising.	
	ATC	Reports RPV water level above -142 in. (TAF) and rising.	
	SRO	Directs BOP/ATC to establish RPV water level band of 0 to +48 in.	
	SRO	Directs BOP to secure/operate ECCS systems as necessary to restore and maintain RPV water level in band.	
	ATC/BOP	Report RPV water level above 0 inches and controlling in 0 to 48 in. band.	
SIMOP NOTE: When Blowdown has been performed and RPV water level restored in band, with concurrence of the Lead Examiner, place the simulator in **FREEZE.**			
End of Scenario.			

Exelon Nuclear

2016 ILT NRC Exam Scenario

Scenario Number:

NRC Scenario 2

Revision Number: 00

Date: 10/12/15

Developed By: _____ _____
Instructor Date

Validated By: _____ _____
SME or Instructor Date

Reviewed By: _____ _____
Operations Representative Date

Approved By: _____ _____
Training Department Date

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Quad Cities Scenario No.: **2016 NRC Scenario 2** Op-Test No.: ILT 14-1
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
The plant is operating at 50% power. Power was lowered due to Load Following for Grid Stability. Work on the Nelson-345KV Junction is completed. The Unit is returning to full power. 1B Service Water Pump and 1A Stator Cooling Water pump are out of service for repair.

Turnover:
Reverse Main condenser flow and raise power to 100% per ReMA instructions.

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Reverse Main Condenser flow
2	None	ATC R	Raise power after Load Following
3	RD02R2255	ATC C	Recoverable Stuck Rod / Raise CRD Drive Pressure (QCOA 0300-02)
4	RM05B	SRO	"B" Drywell Rad Monitor Upscale Failure **TS**
5	NM10A	ATC I	RBM Channel 7 fails high **TS**
6	dihs15401 close	BOP C	SJAE suction valves fail shut. BOP recovers them by QOA 901-7 A-14 actions.
7	TU02A	BOP C	Main Turbine high vibration (Leading to Turbine Trip)
8	RD 13A (Hydraulic ATWS)	Crew M	ATWS. No rod motion. The Crew will take actions per QGA 101 to control reactor power, level and pressure.
9	RP10A(B)	ATC C	The Group III (RWCU) fails to actuate. The ATC will manually isolate RWCU.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:
Total Malfunctions (5-8): **6**
Malfunction(s) after EOP (1-2): **E9**
Abnormal Events (2-4): **E3, 5, 6, & 7**
Major Transient(s) /E-Plan entry (1-2):**E8**
EOPs (1-2): **QGA 100 and 101**
EOP Contingencies (0-2): **1**
Critical Tasks (2-3): **4**

ES-301-5 Quantitative attributes:
BOP Normal: **E1**
ATC Reactivity (1 per set): **E2**
BOP I/C (4 per set): **E6 & 7**
ATC I/C (4 per set): **E3, 5 & 9**
SRO-I I/C (4 per set inc 2 as ATC): **E3, 5, 6, 7, 9**
SRO Tech Spec (2 per set): **E4 & 5**
ALL Major Transients (2 per set) **E8**

SUMMARY:

- Initial conditions:
  - The plant is operating at 58% power. Power was lowered due to Load Following for Grid Stability. There was work done on the Nelson-345KV Junction. All work was completed. The Unit is returning to full power. 1B Service Water Pump and 1A Stator Cooling Water pump are out of service for repair.
- Event 1: When Engineering is ready, the BOP operator reverses Main Condenser Flow.
- Event 2: Raise power with control rods and recirculation flow to 100% power.
- Event 3: Recoverable Stuck Rod / Raise CRD Drive Pressure. The ATC and SRO respond per QCOA 0300-02. The control rod is freed after raising drive water pressure per the procedure.
- Event 4: "B" Drywell Rad Monitor Upscale Failure (TS). The BOP and SRO respond per QCAN 901-56 A-1 and Technical Specifications 3.3.3.1 Condition A and 3.3.6.1 Condition A.
- Event 5: RBM Channel 7 fails high. The ATC and SRO Respond per QCAN 901-5 A-7 to bypass the faulty RBM after the SRO references Technical Specification 3.3.2.1 Condition G.
- Event 6: The on-line SJAE suction valves fail shut due to an intermittent failure. The failure is revealed by annunciator 901-7 A-14 and valve position indication. The BOP will be able to recover the SJAEs by carrying out the QCAN actions and re-opening the valves to maintain Main Condenser vacuum.
- Event 7: The BOP responds to Main Turbine high vibration per QCAN 901-7 D-2 and QCOS 5600-01. The BOP has several actions to complete in an attempt to mitigate the effects of the high vibrations. The vibrations will continue to raise until the crew scrams the reactor and trips the Main Turbine.
- Event 8: When the ATC inserts a manual scram no control rods will insert. The crew will recognize they are in a hydraulic ATWS and enter QGA 100, "RPV Control" and then they will rapidly transition to QGA 101 "RPV Control (ATWS)". The crew will attempt to insert control rods per QCOP 0300-28, but they will have little success beyond driving individual driving rods. The SRO will enter the Level/Power Control section of QGA 101 and lower reactor level to control reactor power.
- Event 9: After entry into QGA 101, the Group III (RWCU) will fail to actuate when SBLC is started. The ATC will manually isolate RWCU.
- Approximate Run Time: 1.5 Hours

CRITICAL TASKS:

Critical task #1: With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting boron (prior to exceeding 110°F torus temperature) and/or inserting control rods, to prevent exceeding primary containment design limits. (BWROG RPV-6.1 ATWS PWR/LVL S/D REACTOR)

Critical task #2: With a reactor scram required and the reactor not shutdown, and conditions for ADS blowdown are met, INHIBIT ADS to prevent an uncontrolled RPV depressurization, to prevent causing a significant power excursion. (BWR RPV-6.2 ATWS PWR/LVL INHIBIT ADS)

Critical task #3: During an ATWS with conditions met to perform power/level control, TERMINATE AND PREVENT INJECTION, with the exception of boron, CRD and RCIC into the RPV until conditions are met to re-establish injection. (BWROG RPV-6.3 PWR/LVL TERM/PREVENT)

Critical task #4: When conditions are met to re-establish injection, use available injection systems to MAINTAIN RPV water level above the Minimum Steam Cooling RPV Water Level (-190"). (BWROG RPV-6.4 ATWS PWR/LVL RESTORE RPV LVL)

EXERCISE PERFORMANCE OBJECTIVES

Objective	Objective Description
SR-0001-P11	Given a reactor plant with an ATWS, take action to reduce heat input into the containment in accordance with QGA 101. (SOER 83-8 r11) (ATWS is a key event in 1 of the 100 most probable PRA Core Damage Sequences)
SR-0001-P13	Given a reactor plant with an ATWS and conditions are met to re-establish RPV injection during power/level control, use Preferred ATWS Systems (QGA Detail G) to attempt to maintain RPV water level between -190 inches and the level to where it was lowered in accordance with QGA 101.
SR-0001-P45	Given a reactor plant in a QGA condition, verify the proper actuation of containment isolations and ECCS and emergency DG starts in accordance with QGA 100 or QGA 101.
SR-0002-P03	Given a reactor plant at power with a reactor scram, place the plant into a stable condition in accordance with QCGP 2-3.
SR-0002-P04	Given a reactor plant at power, perform a power change discernible on neutron monitors using control rods in accordance with QCOP 0280-01, QCGP 3-1 and QCGP 4-1.
SR-0203-P07	Given a reactor plant in a QGA condition, inhibit ADS in accordance with QGA 100 or QGA 101. (Important PSA task / Inhibiting ADS terminates 5 of top 200 Core Damage Sequences)
SR-0300-P05	Given a reactor plant during a startup with a stuck control rod, restore the ability to drive the control rod or declare the rod inoperable in accordance with QCOA 0300-02.
SR-0302-K26	EVALUATE given key Control Rod Drive parameter indications and/or responses depicting a system specific abnormality/failure and DETERMINE a course of action to correct or mitigate the following abnormal condition(s): c. Stuck Rod
SR-0700-P10	Given an operating reactor plant with control rod moves occurring to adjust FCL, operate and monitor the RBM in accordance with QCOP 0700-05.
SR-1100-P02	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 terminates 1 of the top 100 most probable Core Damage Sequences and has a RAW of 17.3)
SR-1603-K32	Given Primary Containment Isolation (PCI) System operability status OR key parameter indications, various plant conditions and a copy of Tech Specs, DETERMINE Tech Spec compliance and required actions, if any.
SR-3300-P09	Given a reactor plant at power with a loss of condenser vacuum, take action to attempt to locate and correct the cause for lowering vacuum in accordance with QOA 3300-02 and/or QOA 5450-05. (PRA Initiating Event %TC - Loss of Vacuum accounts for 4.2% of total CDF and initiates 4 of the top 100 Core Damage Sequences)

EXERCISE PERFORMANCE OBJECTIVES

Objective	Objective Description
SR-4400-P02	Given an operating reactor plant, reverse main condenser circ water flow in accordance with QCOP 4400-09.
SR-5600-K20	Given a Main Turbine and Auxiliary Systems operating mode and various plant conditions, EVALUATE the following Main Turbine and Auxiliary Systems indications/responses and DETERMINE if the indication/ response is expected and normal. d. Turbine eccentricity, vibrations and bearing metal temperatures

Simulator setup:

1. Reset to IC-19 (Approximately 50% power).
2. Go to **RUN.**
3. Verify the following RWM Sequence is loaded: 4PHESU
    a. Mark up the Control Rod Move Sheet to reflect rod step 30 two rods withdrawn to target out

5. Verify the North SJAE suction valves are open

(Commands to be utilized during this scenario are contained in the CAEP file:
2016 NRC Scenario 2.cae)

5. Insert Commands for setup:

imf rd02r2255 00 stick control rod 38-31 at position 00
trgset 1 'rdpdrivedelta .ge. 340' Set trigger 1 true when CRD pressure exceeds 340psid
trg 1 'dmf rd02r2255' Delete stuck rod on trigger 1
imf rd13a 100 Hydraulic ATWS
imf rd13b 100 Hydraulic ATWS

Group III Failures
imf rp10A Group III failure
imf rp10B Group III failure

6. Verify the following commands for scenario performance:

SJAE suction valve closure
trgset 14 'zloil15402asjae(1).and.zloil15401asjae(1)' triggers for SJAE closure
trg 14 'dor dihs15401' Delete override on SJAE Control Switch
ior dihs15401 close Close SJAE suction with override

Malfunctions
imf nm10a 100 RBM 7 Fails Upscale
imf rm05a 100 5: A Drywell Rad Monitor Upscale Failure, with a five minute ramp
imf tu02d 50 15: Main Turbine High Vibrations
imf tu02c 30 15: Main Turbine High Vibrations
imf tu02e 30 15: Main Turbine High Vibrations
In plant support activities
irf rd04r closed Close the CRD 25 Valve
irf qg09r 1 Bypass isolations per QCOP 0250-02
irf qg08r 1 Bypass all reactor scrams
irf qg14r 1 Pull the ARI fuses in the 2201-70A and 2201-70B panels in Aux Electric Room

7. Take the following equipment OOS (hang OOS Card):
   - 1A SCW Pump
   - 1B SW Pump

8. Complete the following Control Panel setup items:
   - Verify Main Condenser Circ Water Flow is South (**North** SJAE suctions open)
   - Verify the LOCA TRIP ENABLED labels are above the 1A and 1C Circ Water Pumps.
   - Display the Power/Flow Map on Monitor 3.
   - Clear all SBO Panel alarms.

9. Provide a current revision of the following procedures, signed off as specified:
   - QCOP 4400-09 (no steps signed off)
   - QCGP 3-1 marked off through step F.3.d.

10. Provide scenario 2 REMA
    - Withdraw rods to 95% FCL
    - Raise core flow to 98 Mlbm/hr
    - Withdraw rods to 100% FCL

11. Perform the applicable steps of TQ-QC-201-0113 “Simulator Exam Security Actions Checklist”.

12. Ensure (1) orange ring is available to provide equipment status.

13. Ensure 2 EST’s are available to provide equipment status.

LIST OF POTENTIAL PROCEDURES

Annunciator Procedures

- 901(2)-5 A-7, RBM HIGH OR INOP, Rev. 5
- 901(2)-5 C-3, ROD OUT BLOCK, Rev. 11
- 901(2)-5 C-6 APRM DOWNSCALE, Rev. 5
- 900-56 A-1 DRYWELL HIGH RAD CONC, Rev. 11
- 900-7 A-14, AIR EJECTOR NORTH SUCTION VALVES CLOSED, Rev. 10
- 901(2)-7 D-2 UNIT 1 TURBINE GENERATOR BEARING HIGH VIBRATION, Rev. 6

QCGP 1-1, Normal Unit 1 Startup, Rev. 104

QCGP 2-3, Reactor Scram, Rev. 84

QCGP 4-1, Control Rod Movements And Control Rod Sequence, Rev. 46

QCOA 0300-02, Inability to Drive A Control Rod: Control Rod Stuck, Rev. 21

QCOA 0700-03, Loss of Neutron Flux Indication. Rev. 9

QCOA 5600-01, Main Turbine High Vibration, Rev. 16

QCOP 1000-30, Post-Accident RHR Operation, Rev. 31

QCOP 300-28, Alternate Control Rod Insertion Rev. 31

QCOP 4400-09, Circulating Water System Flow Reversal, Rev. 28

QCOP1100-02, Injection of Standby Liquid Control, Rev. 12

QCOS 1600-06, ECCS AND Primary Containment Isolation Trip Instruments Outage Report, Rev. 21

QGA 100, RPV Control, Rev. 10

QGA 101, RPV Control (ATWS), Rev. 14

QOP 0700-05, Rod Block Monitor, Rev. 16

CREW TURNOVER

- **Plant Conditions:**

a.) Unit 1 is at 50% power.
Power was lowered due to Load Following for Grid Stability. There was work done on the Nelson-345KV Junction. All work was completed. The Unit is returning to full power.

b.) Unit 2 is at 100% power.

c.) Technical Specification limitations:

(1) Unit 1: None

(2) Unit 2: None

d.) On Line Risk is GREEN.

.

2.) Significant problems/abnormalities:

a.) 1A Stator Cooling Water pump is OOS for replacement. 1B Stator Cooling Water pump is protected.
b.) 1B SW pump is OOS for packing replacement. The expected duration is less than 48 hours.

3.) Evolutions/maintenance for the oncoming shift:

a.) Engineering is doing an evaluation on Circ Water and wants to monitor some parameters during Condenser Flow Reversal. When they report that they are ready, reverse Main Condenser Flow per QCOP 4400-09. Backpressure is not expected to exceed 6" Hg. All involved personnel have been briefed on the evolution.
b.) Raise reactor power to 100% with rods and recirc.
i. Withdraw rods to 95% FCL
ii. Raise core flow to 98 Mlbm/hr
iii. Withdraw rods to 100% FCL

Quad Cities	Scenario No.: 2	Event No.: 1	Page 1 of 1
Event Description: Reverse Main Condenser Flow from South to North			

Time	Position	Applicant's Actions or Behavior
SIMOP ROLE PLAY: Contact the Unit Supervisor as the EO standing by with Engineering (phone 2300): **"Engineering is ready to monitor Circ Water, Condenser Flow Reversal may proceed."**		
	SRO	Directs Main Condenser flow reversal per QCOP 4400-09.
SIMOP ROLE PLAY: As necessary, provide the appropriate acknowledgements as the Equipment Operator stationed at MCC 16-3 or Engineering personnel.		
	BOP	Establish communications with the Equipment Operator stationed at MCC 16-3.
	BOP	(Continuous) Monitors Condenser Backpressure and Condensate Temperatures.
	BOP	Verifies OFFGAS FLOW TO MAIN CHIMNEY on FR-1-5440-7 (901-54 panel) is >15 scfm.
	BOP	Verifies Annunciator 901-7 C-1, "COND FLOW REV VLVS ON LOCAL CONT," is NOT in alarm.
	BOP	Opens South SJAE Suction valves using the Test switch on the 901-7 panel by placing the switch to the "SOU" position.
	BOP	Places the Circulating Water Flow Selector switch to the "NORTH" position when the South SJAE valves are fully open.
	BOP	Verifies the following: · SJAE Suction valves change over · Condenser differential pressure has reversed and vacuum is stable
	ATC	Monitors reactor and RPV parameters.
End of Event 1		

Quad Cities	Scenario No.: 2	Event No.: 2	Page 1 of 1
Event Description: Raise Reactor power with control rods			

Time	Position	Applicant's Actions or Behavior
SIMOP ROLE PLAY: If the crew does not promptly begin the task, call the control room as the Shift Manager and prompt them to begin.		
LEAD EVALUATOR ROLE PLAY: If the crew decides to verify they are within the thermal limits, role play as the QNE and state: **"Thermal limits have been verified."** Role Play as the Qualified Verifier (QV) as necessary.		
	SRO	Directly supervises control rod moves and reactor recirculation adjustments. Directs the RO to begin to raise power to 100%..
	ATC	(CONTINUOUS) Monitors reactor parameters.
	ATC	Selects an in-sequence control rod.
	ATC	On the RWM verifies proper rod is selected, it's current position and bounds.
	ATC	Communicates to the QV. "Ready to Withdraw Rod P-8 from position 00 to position 48 using continuous withdrawal."
	QV/BOP	Replies: "Rod P-8 is selected. Understand withdrawing Rod P-8 from position 00 to position 48 using continuous withdrawal."
	ATC	Replies: "That is correct".
	ATC	Verifies control rod and moves it to the desired position.
	ATC/BOP	Place keeps rod moves in the rod movement book.
	ATC	Repeats above steps as necessary for the next control rods
	BOP	Monitors balance of plant parameters.
End of Event 2		

Quad Cities	Scenario No.: 2	Event No.: 3	Page 1 of 1
Event Description: Recoverable Stuck Rod / Raise CRD Drive Pressure			

Time	Position	Applicant's Actions or Behavior
EVALUATOR NOTE: Control Rod F-14 will not move from position with normal drive water pressure; CRD Drive Pressure indication is on 901-5, 1-340-4. Expected Annunciator(s): None Automatic Actions: None		
	ATC	Reports CR F-14 will not move.
	SRO	Directs RO to perform the actions of QCOA 0300-02.
	ATC	Verifies no Rod Block exists.
	ATC	Verifies no RWM select block exists.
	ATC	Verifies the proper control rod is selected.
	ATC	Raises CRD drive water pressure in 50 psig increments by throttling closed on the 1-302-8 valve.
SIMOP NOTE: When CRD drive water pressure is greater than 340 psid, verify Event **Trigger 1** goes true to delete malfunction **dmf rd02255.**		
	ATC	Attempts to withdraw Control Rod F-14 and identifies normal control rod movement.
	ATC	Continues normal control rod withdrawal.
	ATC	Restores drive water pressure to normal.
	QV/BOP	Provides peer check as required.
	BOP	Monitors balance of plant parameters.
LEAD EVALUATOR NOTE: If the crew does not continue to raise power, prompt the crew. This is necessary for moving to the next event.		
End of Event 3		

Quad Cities	Scenario No.: 2	Event No.: 4	Page 1 of 1
Event Description: RBM Channel 7 fails high			

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When rod F-14, has been withdrawn to position 48, initiate the RBM Upscale malfunction. (Malfunction expert command: **imf nm10a 100**)		
Key Parameter Response: Rod Out Permissive light is OFF; RBM CH 7 indicates upscale Expected Annunciator(s): 901-05 A-7 RBM HIGH OR INOP 901-05 C-3 ROD OUT BLOCK Automatic Actions: Rod Block		
	ATC	Responds to unexpected annunciators and informs the Unit Supervisor.
	ATC	Determines RBM channel 7 is UPSCALE.
	ATC	Verifies that a ROD BLOCK is in effect.
	BOP	May verify RBM 7 is upscale at the 901-37 panel meter.
	ATC	Verifies the correct rod was being withdrawn.
	ATC	May depress the PUSH SETUP button.
	ATC	May attempt to re-null the RBM by selecting an edge rod and then re-selecting the desired rod.
	SRO	Contacts Instrument Maintenance to investigate the upscale failure of RBM 7.
SIMOP ROLE PLAY: As Instrument Maintenance, inform the Unit Supervisor you will: "**Start a work package to troubleshoot and replace components as needed. It will take approx. 2 hours to complete the package and 1 shift to complete the work."**		
	SRO	Directs RBM 7 bypassed per QOP 0700-05.
	ATC	Bypasses RBM 7 by placing the RBM BYPASS joystick to the CH 7 position and logs the time.
	SRO	Enters TS 3.3.2.1 Control Rod Block Instrumentation, Condition A for one rod block monitor inoperable.
EVALUATOR NOTE: The crew may return to Event 3 to continue the reactivity manipulation.		
End of Event 4		

Quad Cities	Scenario No.: 2	Event No.: 5	Page 1 of 1
Event Description: Drywell Rad Monitor Failure			

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the Lead examiner, start the Drywell Rad Monitor Failure event (expert command: **imf rm05a 100 5:**)		
Key Parameter Response: 1-2419A Drywell Radiation Monitor indicating full upscale Expected Annunciators: 901-5 A-8, GROUP 2 ISOL CH TRIP 901-55 A-1, DRYWELL HIGH HIGH RAD CONC Automatic Action: ½ Group 2 Isolation		
	BOP	Acknowledges annunciator 901-55 A-1, DRYWELL HIGH HIGH RAD CONC and reports the 1-2419A Drywell radiation monitor is indicating full upscale.
	ATC	Acknowledges annunciator 901-5 A-8, GROUP 2 ISOL CH TRIP and refers to annunciator procedure.
	SRO	Confirms the 1-2419B Drywell radiation monitor is indicating normally (approximately 3-4 R/hr).
EVALUATOR ROLE PLAY: If the BOP goes to confirm the PCI Relays have dropped out: CUE the following on Panel 901-15 · **Relay 595-104A dropped out** · **Relay 595-104C dropped out**		
	BOP	Informs RP of the failed Drywell radiation monitor.
SIMOP ROLE PLAY: As RP, inform the Control Room that you will: **"Implement compensatory actions for the Drywell Radiation Monitor."** As IMD, if informed of the failed DW radiation monitor, state you will: **"Start a work package."**		
	SRO	Enters the following Technical Specifications for an inoperable Drywell Radiation monitor: · PCI 3.3.6.1, Condition A, Place the Channel in Trip Within 24 Hours · PAM 3.3.3.1, Condition A, Restore Required Channel to Operable Status Within 30 Days
End of Event 5		

Quad Cities	Scenario No.: 2	Event No.: 6	Page 1 of 1
Event Description: SJAE Suction Valve Closure			

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the Lead Examiner, insert override to cause the SJAE suction valves to shut with the following command (The command is on page 3 of the CAEP file): **ior dihs15401 close**		
Key Parameter Response: SJAE suction valves close Expected Annunciator(s): 901-7 B-14, AIR EJECTOR SOUTH SUCTION VAVLES CLOSED Automatic Actions: None		
	BOP	Announces Air Ejector suction valve alarm 901-7 B-14
	SRO	Directs BOP to perform actions of QCAN 901-7 B-14
	SRO	Sets scram criteria for high condenser backpressure
	BOP	Verifies SJAE valves closed
	BOP	Verifies Circ Water Flow from South
	BOP	Attempts to open SJAE suction valves by placing SJAE SUCT VLV C/S on Panel 901-7 to OPEN.
	BOP	Reports SJAE suction valves are open
End of Event 6		

Quad Cities	Scenario No.: 2	Event No.: 7	Page 1 of 1
Event Description: Main Turbine High Vibration			

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the Lead Examiner, insert malfunctions to cause high Main Turbine vibrations on 3 bearings: **imf tu02d 50 15:** **imf tu02c 30 15:** **imf tu02e 30 15:**		
Key Parameter Response: Main Turbine vibrations began to rise Expected Annunciator(s): 901-7 D-2, UNIT 1 TURBINE GENERATOR BEARING HIGH VIBRATION Automatic Actions: None		
	BOP	May notice Main Turbine vibrations rising
	BOP	Announces alarm 901-7 D-2 and reports bearing 4 is at 7 mils
	SRO	Directs BOP to perform actions of QCAN 901-7 D-2.
	SRO	Sets scram criteria for high Main Turbine vibrations of 10 mils
	BOP	Verifies high vibration is valid by observing bearings 3 and 5 also have high vibrations
	BOP	Refers to QCOA 5600-01
	BOP	Reports when bearing 4 reaches 10 mils
	ATC	Inserts manual scram
	BOP	Trips the Main Turbine
Lead Evaluator Note: ATWS actions are contained in Events 8 and 9.		
End of Event 7		

Quad Cities	Scenario No.: 2	Event No.: 8	Page 1 of 3
Event Description: ATWS			

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: Be prepared to verify the Group III isolation failed.		
	ATC	Reports control rods did NOT insert
	SRO	Enters QGA 100, transitions to QGA 101
	ATC	Places the Mode Switch in SHUTDOWN
	ATC	Arms and depresses ARI
	SRO	Directs BOP to inhibit ADS
CT2	BOP	Inhibits ADS
	SRO	Directs BOP to place both Core Spray pumps in PTL
	BOP	Places both Core Spray pumps in PTL
	SRO	Directs actions for Power Leg of QGA 101
	SRO	Directs control rod insertion per QCOP 0300-28
	ATC	May dispatch EO to close the 1-301-25, U-1 CRD CHARGING WTR SV if control rods cannot be inserted
SIMOP ROLE PLAY: If requested as EO, close the 1-301-25 valve using: **irf rd04r close**		
CT1	ATC	Inserts all CRAM rods to position 00
CT1	ATC	Continues to insert control rods spiraling outward from center of core
	SRO	Directs actions of QGA 101 Level Control Leg
	SRO	Directs verification of auto actions and isolations for 0 inches RPV water level
	BOP	Verifies auto actions and isolations for 0 inches RPV water level
	SRO	Directs isolations bypassed per QCOP 0250-02
SIM OP ROLE PLAY: If requested, bypass isolations per QCOP 0250-02: **irf qg09r 1** Wait 1 minute and report completion		

Quad Cities	Scenario No.: 2	Event No.: 8	Page 2 of 3
Event Description: ATWS			

Time	Position	Applicant's Actions or Behavior
	BOP	Contacts EO to bypass RPV low water level MSIV and high offgas radiation isolations per QCOP 0250-02
	ATC	Directs operator to bypass all reactor scrams per QCOP 0300-28
SIMOP ROLE PLAY: If requested, wait approx. 2 minutes and bypass all reactor scrams using the following command, then report back: **irf qg08r 1**		
	ATC	(If RPV Water Level drops below -59 inches) Dispatches EO to de-energize ARI by removing fuses in 2201-70A and 2201-70B panels per QCOP 0300-28
SIMOP ROLE PLAY: If requested as EO, wait 2 minutes, then pull the ARI fuses in the 2201-70A and 2201-70B panels in Aux Electric Room using the command below and report back: **irf qg14r 1**		
	ATC	Directs personnel to individually scram control rods from the 901-16 panel
SIMOP ROLE PLAY: Attempt to individually scram 4 control rods (one from each bank), then contact the ATC operator and report: **"Control rods will NOT insert from the 901-16 panel."**		
LEAD EVALUATOR NOTE: The ATC will inject SBLC as part of the "Immediate Operator Actions" following the failure of the manual scram. The SRO will also back up this action by directing actions per QGA 101.		
CT1	SRO	Directs SBLC Injection prior to exceeding 110°F Torus Water Temperature
CT1	ATC	Initiates SBLC Injection as directed (See Event 9)
	SRO	Verifies reactor power >5% and RPV water level > -35"
CT3	SRO	Directs all injection except Boron, CRD, and RCIC terminated and RPV water level lowered to at least –35". (Terminate and prevent from 901-3 and 901-5)
CT3	BOP	Performs Terminate and Prevent Injection from Panel 901-3
	BOP	Places HPCI in Trip-Latch

Quad Cities	Scenario No.: 2	Event No.: 8	Page 3 of 3
Event Description: ATWS			

Time	Position	Applicant's Actions or Behavior
	BOP	Verifies RHR Discharge Pressure < Reactor Pressure or places RHR Pumps in Pull-To-Lock
CT3	ATC	Performs Terminate and Prevent Injection from Panel 901-5 · Places A and B Feed Reg Valve Controllers in MANUAL and reduces output to 0 (zero) · Places the Low Flow Feed Reg Valve Controller in MANUAL and reduces output to 0 (zero)
	ATC	Closes A and B Feed Reg Valve Isolations, MO-1-3206-A/B.
	ATC/BOP	Reports level when Rx power < 5%, RPV water level at TAF or ADS valves are closed with DW pressure < 2.5 psig.
CT4	SRO	Directs RPV water level maintained between –190" and the level to which it was lowered
CT4	ATC/BOP	(CONTINUOUS) Maintains level in the directed band with Preferred Injection systems
End of Event 8		

Quad Cities	Scenario No.: 2	Event No.: 9	Page 1 of 1
Event Description: Group III (RWCU) Isolation Failure			

Time	Position	Applicant's Actions or Behavior
	ATC	Reports SBLC tank level and selects a SBLC pump for injection by placing the control switch to SYS 1 or SYS 2
	ATC	Verifies and reports the following:
	ATC	Squib A/B light is off
	ATC	Flow Light is on
	ATC	RWCU System failed to isolate
CT1	ATC	Manually isolates the RWCU system by closing the MO 1-1201-2 and MO 1-1201-5. (May also close the 1-1201-80, but it is not required.)
	ATC	SBLC Tank level lowering
	ATC	Pump discharge pressure slightly high than reactor pressure
	ATC	Annunciator 901-5 H-6 SBLC Squib valve circuit failure is on
	ATC	Neutron flux is decreasing
	ATC	Monitors SBLC Tank level for 16% decrease (in approximately 21 minutes)
	BOP	Performs other operator actions of QGA 101
End of Event 9		
SIMOP: When available injection systems are maintaining RPV water level above the Minimum Steam Cooling RPV Water Level (-190"). and/or at the discretion of the Lead Examiner, place the simulator in **FREEZE.**		

(Final)

Exelon Nuclear

2016 ILT NRC Exam Scenario

Scenario Number:

NRC Scenario 3

Revision Number: 00

Date: 12/18/15

Developed By:	_____	_____
	Instructor	Date
Validated By:	_____	_____
	SME or Instructor	Date
Reviewed By:	_____	_____
	Operations Representative	Date
Approved By:	_____	_____
	Training Department	Date

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Quad Cities Scenario No.: **2016 NRC Scenario 3** Op-Test No.: ILT 14-1
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
The plant is operating at 100% power. Maintaining full power. 1B Service Water Pump and 1A Stator Cooling Water pump are out of service for repair.

Turnover:
Swap running EHC pumps for upcoming maintenance.

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Swap running EHC pumps per QCOP 5650-01 Step F.4
2	SW02A (degraded)	BOP C	1A Service Water pump degrades resulting in swapping to standby pump per QCAN 912-1 B-3.
3	None (cued)	BOP C	1C RFP bearing failure requiring shutdown of the 1C RFP
4	None	ATC R	Emergency power reduction, per QCGP 3-1 step F.1, to secure 1C RFP
5	NM08A	ATC I	APRM channel 1 fails "As Is" during Emergency Power reduction **TS**
6	zdihs11300rm(1)	BOP C	RCIC spurious start and subsequent manual trip from MCR **TS**
7	HP12 HP13 CR01 CR02	CREW M	Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.
8	NM03A-D NM07A-H	ATC I	SRMs and IRMs fail to automatically insert. The ATC will manually insert them per QCGP 2-3 and QCOP 0700-01 guidance

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:
Total Malfunctions (5-8): **6**
Malfunction(s) after EOP (1-2): **E8**
Abnormal Events (2-4): **E2, 3, 5, & 6**
Major Transient(s) /E-Plan entry (1-2):**E7**
EOPs (1-2): **QGA 100, 300, and 500-1**
EOP Contingencies (0-2): **1**
Critical Tasks (2-3): **2**

ES-301-5 Quantitative attributes:
BOP Normal: **E1**
ATC Reactivity (1 per set): **E4**
BOP I/C (4 per set): **E2, 3, & 6**
ATC I/C (4 per set): **E5 & 8**
SRO-I I/C (4 per set inc 2 as ATC): **E2,3,5,6,8**
SRO Tech Spec (2 per set): **E5 & 6**
ALL Major Transients (2 per set) **E7**

SUMMARY:

- Initial conditions:
  - Unit 1 is at 100% power holding load
  - 1B Service Water Pump and 1A Stator Cooling Water pump are out of service for repair.
- Event 1: The BOP swaps running EHC pumps per QCOP 5650-01 step F.4 from 1A EHC running to 1B EHC pump.
- Event 2: 1A Service Water pump degrades resulting in swapping to a standby pump per QCAN 912-1 B-3.
- Event 3: EO on Rounds reports the 1C RFP is very noisy and appears to have a rapidly degrading outboard pump bearing. The EO and FS are concerned the 1C RFP will fail catastrophically. The BOP will shutdown the 1C RFP per QCOP 3200-05
- Event 4: Emergency power reduction to secure 1C RFP. The ATC will make an Emergency Power Reduction per QCGP 3-1 Step F.1. The ATC will lower power with recirc and rods to $\leq$ 2511 MWth (~85%).
- Event 5: APRM channel 1 fails “As Is” during Emergency Power reduction. The ATC will determine APRM channel 1 has failed at ~ 100 power. The SRO will review TS and determine one APRM inoperable is a Tracking Only LCO. The ATC will bypass APRM 1 when directed by the SRO per QCOP 0700-04 Step F.3
- Event 6: RCIC will spuriously start. The BOP will verify no initiation signal exists and the BOP will trip RCIC per QCOP 1300-05 Step F. The SRO will determine RCIC is inoperable and enter the TS LCO.
- Event 7: A fuel failure leads to scram on high off gas radiation. When the reactor scrams, the fuel failure will worsen and HPCI will develop a steam leak. The combination of the fuel failure and steam leak will cause the crew to enter QGA 300, Secondary Containment Control and subsequently QGA 500-1, RPV Blowdown.
- Event 8: After the scram the SRMs and IRMs will fail to automatically insert. The failure will be revealed when the ATC carries out the actions of QCGP 2-3 Attachment 1.The ATC will manually insert them per QCGP 2-3, QCOP 0700-01, and QCOP 0700-02 guidance.
- Approximate Run Time: 1.5 Hours

CRITICAL TASKS:

Critical Task #1: The Crew will take action to isolate the RPV and reduce the release of radioactivity by manually closing the MSIV's, Main Steam drains and/or verifying the Offgas System is isolated as required.

Critical task #2: Given an operating reactor plant with a primary system discharging into the reactor building and the discharge cannot be isolated, INITIATE an emergency depressurization when two or more areas exceed the maximum safe operating levels of the same parameter (radiation, temperature, or water level).

EXERCISE PERFORMANCE OBJECTIVES

Objective	Objective Description
SR-0001-P42	Given a reactor plant with a primary system discharging into the reactor building and the discharge cannot be isolated, verify/initiate an emergency depressurization when two or more areas exceed the maximum safe operating levels of the same parameter (radiation, temperature, or water levels) in accordance with QGA 300 and QGA 500-1.
SR-0001-P45	Given a reactor plant in a QGA condition, verify the proper actuation of containment isolations and ECCS and emergency DG starts in accordance with QGA 100 or QGA 101.
SR-0002-P03	Given a reactor plant at power with a reactor scram, place the plant into a stable condition in accordance with QCGP 2-3.
SR-0002-P04	Given a reactor plant at power, perform a power change discernible on neutron monitors using control rods in accordance with QCOP 0280-01, QCGP 3-1 and QCGP 4-1.
SR-0202-P34	Given U1 reactor plant in operation with the reactor recirc system in dual loop operation, take actions to perform a manual speed runback from the 901-4 panel using the 10% manual runback pushbutton IAW QCOP 0202-03
SR-0700-P01	Given a reactor plant during a reactor startup or shutdown, operate the SRM and IRM subsystems in accordance with QCGP 1-1 or QCGP 2-1 and QCOP 0700-01 and QCOP 0700-02.
SR-0700-P07	Given an operating reactor plant with an APRM failure, take actions to bypass the failed APRM and meet TS requirements in accordance with QCOP 0700-04 and QCAP 0230-19. (SOER 90-3 r1)
SR-1300-K26	EVALUATE given key RCIC System parameter indications and/or responses depicting a system specific abnormality/failure and DETERMINE a course of action to correct or mitigate the following abnormal condition(s): a. Inadvertent auto start b. Failure to auto start c. Backleakage past discharge check
SR-1700-P03	Given a reactor plant at power and a fuel clad failure or high activity in off-gas, take action to reduce the release in accordance with QCOA 1700-05 or QCOA 1700-04.
SR-3200-P02	Given a reactor plant during a startup, start the first reactor feed pump in accordance with QOP 3200-02.

EXERCISE PERFORMANCE OBJECTIVES

Objective	Objective Description
SR-3900-P02	Given a reactor plant at power when a loss of service water occurs, take action to scram and control RPV parameters in accordance with QCOA 3900-01, 3700-01 and 3800-03. (PRA Initiating Event %TSW, Loss of Service Water, accounts for 20.3% of total CDF and initiates 14 of the top 100 Core Damage Sequences) (Loss of SW / SW ruptures accounts for 43.6% of total CDF and initiates 32 of the top 100 Core Damage Sequences including the top 4)
SR-5650-K21	Given a Main Turbine Control - EHC Hydraulic System operating mode and various plant conditions, PREDICT how Main Turbine/EHC systems and plant parameters will respond to manipulation of the following Main Turbine Control - EHC Hydraulic System local/remote controls: a. EHC pump control switches b. EHC pump test start pushbutton c. EHC filter pump control switch d. Main turbine supervisory trip cutout switch e. Hydraulic Fluid Conditioning Skid controls f. EHC heater/fan controls

Simulator setup:

1. Reset to IC-21 (Approximately 100% power).
2. Go to **RUN**
3. Verify 1A EHC pump is on
4. Verify the following RWM Sequence is loaded: 4PHESD
    a. Mark up the Control Rod Move Sheet to reflect all rods withdrawn up to Step 17.

(Commands to be utilized during this scenario are contained in the CAEP file: 2016 NRC Scenario 3.cae)

5. Insert Commands for setup:

Set up for SRM IRM manual insertion following the scram using the batch files.

> **Ensure the path to the thumb drive matches the CAEP. For instance, if the thumb drive shows up in "D" drive the path is as shown. However, if the thumb drive shows up in the "E" drive, the correct syntax is bat e:\srmirm and the CAEP must be modified. The same goes for the batch file that removes the SRM and IRM malfunctions. This is necessary to comply with NRC Examination Security.**

bat d:\srmirm Prevents the SRMs and IRMs from driving into the core
trgset 5 'zdihs10700din' Sets a trigger to allow the SRMs and IRMs to drive into the core manually
trg 5 'bat d:\delsrmirm' Allows the SRMs and IRMs to drive into the core manually
trgset 9 'rcntb.gt.0.5' Remove RCIC initiation signal
trg 9 'dor dihs11300rmi' Remove RCIC initiation signal
imf nm08a 80 Fail APRM 1 As Is
imf sw01B Prevent 1B SW pump from starting
imf hp12a 45 Bind the HPCI steam isolation valves
imf hp12b 45 Bind the HPCI steam isolation valves
trgset 1 'tcvsv3.le.0.1' Trigger 1 goes true when TCV 3 goes closed
imf hp13(1 5:00)35 15: HPCI steam leak with five minute time delay and a 15 minute ramp
imf cr02(1) 2 30: Gross Fuel Failure at 2% Severity, 30 minute ramp, on trigger 1
imf og04 Fail Offgas Isolation
Set up complete

Commands to execute during the scenario

imf sw02a 100 7:00 Degrade 1A SW pump to 100% over 7 minutes
ior dihs11300rmi init Spurious initiation of RCIC
imf cr01 100 10: Fuel failure
imf fw01C If directed Contingency to trip 1C RFP
irf sw10r run Start the U1 DGCWP, if needed
bat fireout Acknowledge the fire alarms
imf rm0115 60 15: If needed, Torus Area ARM to >Max Safe in 15 minutes
bat d:\delsrmirm Allows driving in the SRM/IRM

6. Take the following equipment OOS (hang INFO Card):
   - 1B SW Pump
   - 1A SCW Pump

7. Complete the following Control Panel setup items:
   - Verify the LOCA TRIP ENABLED labels are above the 1A and 1C Circ Water Pumps.
   - Display the Power/Flow Map on Monitor 3.
   - Clear all SBO Panel alarms.

8. Provide a current revision of the following procedures, signed off as specified:
   - QCOP 5650-01 (no steps signed off)
   - QCGP 3-1 , marked up to the point of holding load at 100% power

9. Provide scenario 3 REMA for Holding Load.

10. Perform the applicable steps of TQ-QC-201-0113 “Simulator Exam Security Actions Checklist”

11. Ensure (1) orange ring is available to provide equipment status.

12. Ensure 2 EST’s are available to provide equipment status.

LIST OF POTENTIAL PROCEDURES

Annunciator Procedures

- 901(2)-3 A-1 RX BLDG HI RADIATION, Rev. 6
- 901(2)-3 C-2 OFFGAS HIGH HIGH RADIATION, Rev. 9
- 901(2)-3 D-2 OFFGAS HI RADIATION, Rev. 16
- 901(2)-3 F-12 HPCI PUMP AREA HI TEMP, Rev. 7
- 900-3 H-2 AREA HI TEMP STEAM LEAK DETECTION, Rev. 9
- 901(2)-4 D-16, RCIC SYSTEM INITIATED, Rev. 9
- 901(2)-5 A-6, APRM UPSCALE/HIGH, Rev. 8
- 901(2)-5 C-3, ROD OUT BLOCK, Rev. 11
- 901(2)-5 H-1, OPRM TROUBLE/INOP, Rev. 3
- 900-55/56 A-1, DRYWELL HIGH RAD CONC, Rev. 11
- 912-1 B-3 SERVICE WATER SYSTEM LOW PRESSURE, Rev. 6

QCGP 2-3, Reactor Scram, Rev. 84
QCGP 3-1, Reactor Power Operations, Rev. 79
QCGP 4-1, Control Rod Movements and Control Rod Sequence, Rev. 46
QCOA 0201-05, Primary system Leaks Outside Primary Containment, Rev. 11
QCOA 0700-03, Loss of Neutron Flux Indication. Rev. 9
QCOA 1300-02 RCIC Automatic Initiation, Rev. 17
QCOA 1700-04, Abnormal Offgas Radiation, Rev. 20
QCOA 1700-05, Abnormal Main Steam Line Radiation, Rev. 19
QCOA 1800-01, Area High Radiation, Rev. 7
QCOP 0700-01, Source Range Monitor (SRM) Operation, Rev. 16
QCOP 0700-02, Intermediate Range Monitor (IRM) Operation, Rev. 20
QCOP 1000-30, Post-Accident RHR Operation, Rev. 31
QCOP 3200-05, Reactor Feedpump Shutdown, Rev. 37
QCOP 5650-01, Unit 1 EHC System Operation, Rev. 32
QGA 100, RPV Control, Rev. 10
QGA 200, Primary Containment Control, Rev. 10
QGA 300, Secondary Containment Control, Rev. 13
QGA 500-1, RPV Blowdown, Rev. 14

CREW TURNOVER

1. Plant Conditions:

a.) Unit 1 is at 100% power holding load

b.) Unit 2 is at 100% power.

c.) Technical Specification limitations:

(1) Unit 1: None

(2) Unit 2: None

d.) On Line Risk is GREEN.

.

2.) Significant problems/abnormalities:

a.) 1A Stator Cooling Water pump is OOS for replacement. 1B Stator Cooling Water pump is protected.
b.) 1B SW pump is OOS for packing replacement. The expected duration is less than 48 hours.

3.) Evolutions/maintenance for the oncoming shift:

a.) Swap EHC pumps for maintenance on the 1A EHC pump

Quad Cities	Scenario No.: 3	Event No.: 1	Page 1 of 1
Event Description: Swap EHC pumps from 1A in operation to 1B in operation			

Time	Position	Applicant's Actions or Behavior
	SRO	Directs EHC pump swap per QCOP 5650-01 Step F.4
SIMOP ROLE PLAY: As the Equipment Operator stationed at Unit 1 EHC skid ,when asked about the status of the 1B EHC pump before it is started, report: **"The 1B EHC pump pre-start checks are complete. All personnel are clear."**		
	BOP	Starts standby 1B EHC OIL PMP
	BOP	Stops off going 1A EHC OILPMP
	BOP	Verifies EHC pump discharge pressure is between 1500 and 1700 psig as indicated on PI 1-5650-12, EHC OIL PRESS
SIMOP ROLE PLAY: As the Equipment Operator stationed at Unit 1 EHC skid ,when asked about the status of the 1B EHC pump after it is started, report: **"The 1B EHC pump discharge pressure is 1580 psig, no leaks, and it sounds normal."**		
	ATC	(CONTINUOUS) Monitors reactor and RPV parameters.
End of Event 1		

Quad Cities	Scenario No.: 3	Event No.: 2	Page 1 of 1

Event Description: Degraded Service Water (SW) Pressure resulting in starting a standby SW pump

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the Lead Evaluator, degrade the 1A SW pump 100% ramped over 7 minutes using malfunction SW02: **imf sw02a 100 7:00** There is a seven minute ramp to ensure the examinees have time to start a standby pump and preclude taking actions for a total loss of SW. Consideration could be given to starting this malfunction quickly after the EHC pump swap to prevent scenario dead time.		
Key Parameter Response: Service Water header pressure lowers as indicated on PI ½-3940-18, SW PMP SPLY PRESS on the 912-1 panel. Low pressure annunciator received at 80 psig. Expected Annunciator(s): 912-1 B-3, SERVICE WATER LOW PRESSURE Automatic Actions: None		
	ATC	(CONTINUOUS) Monitors reactor parameters.
	BOP	Reports annunciator 912-1 B-3, SERVICE WATER LOW PRESSURE
	SRO	Directs BOP to restore SW pressure
	BOP	Confirms SW pressure ≤ 80 psig on PI ½-3940-18, SW PMP SPLY PRESS
	BOP	Verifies MO ½-3906, FIRE PROT SW SPLY VLV shut
Evaluator Note: The BOP may elect to start the ½ SW pump (from either Unit) or the 2A SW pump to restore SW pressure.		
	BOP	Starts standby SW pump
	BOP	Confirms SW pressure returns to normal band on PI ½-3940-18, SW PMP SPLY PRESS
SIMOP ROLE PLAY: As the Equipment Operator sent to the SW pumps, wait 2 minutes and report as appropriate: **"The 1A SW pump is vibrating and it is noisy."** **"The (which ever pump they started) is operating normally."** **"(When the 1A SW pump is secured) The 1A SW pump is no longer running."**		
End of Event 2		

Quad Cities	Scenario No.: 3	Event No.: 3	Page 1 of 1

Event Description: 1C RFP bearing degradation requiring the pump to come off line.

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the lead evaluator, call in as the Unit 1 EO and report: **"The outboard pump bearing on the 1C RFP is making a lot of noise. I am concerned the pump will fail catastrophically. The FS is here also and concurs."**		
Key Parameter Response: None Expected Annunciator(s): None Automatic Actions: None		
Evaluator Note: An Emergency Power Reduction will occur before the 1C RFP is secured. The Emergency Power Reduction is Event 4 in the scenario guide.		
	SRO	Directs securing 1C RFP per QCOP 3200-05
	BOP	Places RFP SELECTOR switch to OFF.
	BOP	Verifies Auxiliary Oil Pump control switch for RFP to be shut down: (1) Has a red target. (2) Yellow AUTO TRIP light is lit. .
	BOP/ATC	Verifies Reactor water level is stable
	BOP	Places control switch for RFP to be shut down to STOP
	BOP	Verifies Auxiliary Oil Pump starts as RFP coasts down.
	BOP/ATC	Verifies Reactor water level remains stable.
	BOP	Verifies RFP current on running pump is< 1115 amps.
	BOP	Verifies RFP discharge header pressure has stabilized.
Evaluator Note: Securing a Condensate Pump is not integral to rest of the scenario. The following actions have no affect on the rest of the scenario and may be skipped if desired.		
	BOP	Verifies RFP suction pressure is> 250 psig.
	BOP	Places control switch for COND PMP to be shut down to STOP.
	BOP	IF a Condensate/Condensate Booster pump is to be placed in standby, THEN, selects that pump for standby using COND PMP SELECTOR switch
End of Event 3		

Quad Cities	Scenario No.: 3	Event No.: 4	Page 1 of 1
Event Description: Emergency Power Reduction			

Time	Position	Applicant's Actions or Behavior
	SRO	Directs Emergency Power Reduction to ≤ 2511 MWth (~85%) per QCGP 3-1
	ATC	Reduces Recirc flow by depressing the MANUAL RUNBACK pushbutton (PB) as desired, up to a maximum of three times within a 5 second period. -OR- Lowering flow using the Master/Individual Controllers.
	ATC	Verifies the MANUAL Pushbutton is lit at both LOOP A and B SPEED CONTROLLER.
	ATC	Verifies the Speed Demand at both LOOP A and B SPEED CONTROLLERs decreases 10% for each time the MANUAL RUNBACK Pushbutton is depressed.
	ATC	Verifies the Recirc Pump Speed at both LOOP A and B SPEED CONTROLLERs decrease at approximately 2.5% per second
	ATC	Drives CRAM rods to lower FCL
	ATC	Selects POWER REDUCTION from any menu on the RWM.
	ATC	Depresses ARRAY MODE to latch all CRAM Rods
	ATC	Selects the first CRAM Rod in sequence.
	SRO	Refers to QCOA 0400-02 to determine target power level
	ATC	Continuously inserts CRAM Rod(s) in sequence to position 00 as needed to lower FCL AND/OR avoid/exit ICA Region I/II as indicated in QCOA 0400-02
EVALUATOR NOTE: The crew may return to Event 3 to continue securing Feed and Condensate pumps.		
End of Event 4		

Quad Cities	Scenario No.: 3	Event No.: 5	Page 1 of 1
Event Description: APRM 1 Failure			

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: Verify APRM 1 displays a constant 100% power.		
Key Parameter Response: APRM 1 reads 100% power following the Emergency Power Reduction Expected Annunciator(s): 901-5 A-6, APRM UPSCALE/HIGH 901-5 C-3, ROD OUT BLOCK 901-5 H-1, OPRM TROUBLE/INOP Automatic Action: Rod Withdrawal block		
	ATC	Verifies rod out block and other annunciators
	ATC	Reports APRM 1 is reading ~ 100%
	SRO	Refers to QCOA 0700-03.
	SRO	Determines APRM 1 is INOP
SIMOP ROLE PLAY: If contacted, as IMD and/or other support personnel, report: "I will come to the Control Room in a few minutes to take a look at the APRM."		
	SRO	Refer to TS and TRM.
	SRO	Verifies minimum number of operable channels is met per T S 3.3.1.1 for RPS trip functions and TRM Section 3.3.a for Rod Block functions.
	SRO	Directs bypassing APRM 1 per QCOP 0700-04
	ATC	Positions APRM BYPASS joystick to bypass APRM Channel 1
	ATC	Verifies white BYPASS light comes ON for that APRM
End of Event 5		

Quad Cities	Scenario No.: 3	Event No.: 6	Page 1 of 1

Event Description: RCIC Spurious start.

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the Lead Evaluator cause a spurious start of RCIC by overriding the initiation pushbutton: **ior dihs11300rmi init**		
Key Parameter Response: RCIC valves reposition and the Flow controller ramps up to a steady 400 gpm. Expected Annunciator(s): 901-4 D-16, RCIC SYSTEM INITIATED Automatic Action: RCIC starts up and injects.		
	BOP	Reports annunciator 901-1 D-16 and refers to QCAN
	BOP	Verifies AUTOMATIC ACTIONS occur..
	BOP	Performs QCOA 1300-02 Immediate Operator Actions: Trip RCIC turbine by performing one or more of the following, listed in preferred order: a. Depress the Remote RCIC Turb Trip pushbutton. b. Lower flow controller setpoint to zero. c. Isolate steam supply: (1) Close MO 1-1301-17, STM SPLY ISOL VLV. (2) Close MO 1-1301-16, STM SPLY ISOL VLV.
	ATC	Monitors FCL, LPRMs and APRMs for reactivity addition.
	SRO	Determines applicable Technical Specifications: · TS 3.5.3, RCIC System, Condition A
SIMOP ROLE PLAY: If requested as as IMD (other Maintenance), state: **"I will be up shortly to discuss the RCIC issues."**		
End of Event 6		

Quad Cities Scenario No.: 3 Event No.: 7-8 Page 1 of 5

Event Description: Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.

Time	Position	Applicant's Actions or Behavior
SIMOP NOTE: When directed by the Lead Evaluator, cause a Fuel failure by inserting malfunction CR01: **imf cr01 100 10:**		
Key Parameter Response: Rising Rad levels for Offgas, MSL, Drywell, Reactor & Turb Bldg Expected Annunciator(s): (in » 1.5 min) 901-3 D-2 OFFGAS HI RADIATION (in » 4 min) 901-55/56 A-1, DRYWELL HIGH RAD CONC (in » 5 min) 901-5 A-8 & D-8, GROUP 2 & CONTROL ROOM VENT ISOLATED (in » 14 min) 901-3 C-2, OFFGAS HIGH HIGH RADIATION Automatic Actions: Group 2 Isol, CR Vent Isol, Offgas Isolation 15-Min timer Starts		
	BOP	Responds to Annunciator OFF GAS HI RADIATION
	SRO	Enters and directs actions of QCOA 1700-04 and QCOA 1700-05
	SRO	Directs reactor power be held constant
	BOP	Reports Off Gas radiation levels are steadily rising as indicated on the A & B SJAE Rad monitors (901-10) and Recorder (901-02)
	BOP	Monitors Main Steam Line Radiation monitors and reports to US
	BOP	Monitors Area Radiation Monitors at the 901-11 panel and reports to US
	SRO/BOP	Evacuates any areas of high radiation and refers to QCOA 1800-01 as needed
	SRO/BOP	Notifies Chemistry and the QNE of abnormal Off Gas activity
	SRO/BOP	Directs Chemistry to draw Reactor Coolant and Recombiner outlet samples within 4 hours
	SRO/BOP	Checks for indications of high coolant conductivity
	SRO/BOP	Checks Chimney Gas Monitors for trends
SIMOP ROLE PLAY: Acknowledge directives as necessary if notified as Rad Protection and Chemistry personnel.		
	SRO/BOP	Notifies Rad Protection to perform surveys
	SRO/BOP	Notifies Chemistry to monitor CAMS
	BOP	Responds to Annunciator DRYWELL HIGH RAD CONC and notifies the Unit Supervisor
	SRO/BOP	(Continuous) Monitor Drywell Radiation Levels
	BOP	Confirms rising rad levels on RIS 1-2419 A& B at Panel 901-55 & 56
Event 7 continued		

Quad Cities	Scenario No.: 3	Event No.: 7-8	Page 1 of 5

Event Description: Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.

Time	Position	Applicant's Actions or Behavior
	BOP	Monitors Containment H_2 and O_2 levels per QCOP 2400-01
	SRO/BOP	Notifies Radiation Protection
	ATC	Responds to Annunciator GROUP 2 ISOL CH TRIP and CONTROL ROOM VENT ISOLATED and informs the Unit Supervisor
	SRO	May direct verification of Group 2 and CR Vent isolation
	ATC/BOP	As directed, verifies the Group 2 and CR Vent isolations
	BOP	Responds to Annunciator OFF GAS HIGH HIGH RADIATION
	BOP	Verifies Offgas 15-Minute Timer has started (at 901-10)
	SRO	When Offgas activity cannot be reduced < the Offgas HI HI Rad Alarm, directs actions to shutdown the reactor and isolate the release
	ATC	Manually scrams the reactor (See Page 3 of this event)
CT 1	SRO	Directs closing of AO 1-5406 Offgas Discharge to Stack
CT 1	BOP	Closes AO 1-5406
	BOP	As directed, verifies that AO 1-5408A and AO 1-5408B close
CT 1	BOP	Manually initiates a Group 1 Isolation / Closes MSIVs and MSIV Drain valves
	SRO	Directs actions QCGP 2-3
	ATC	Places RX MODE switch to SHUTDOWN position
	ATC	Verifies the SDV vent and drain valves are closed
	ATC	Verifies that all Control Rods have fully inserted
	ATC	Makes scram report including entry into QGA 100 on RPV Water Level < 0 inches
	ATC	Attempts to maintain RPV level 0 to +48" with preferred injection systems: · Verifies DFWLC in Single Element · May isolate Feed Water Reg Valve(s) · May place Low Flow Feed Reg Valve in Service · May secure unnecessary Feed and Condensate Pumps
Event 7 continued		

Quad Cities	Scenario No.: 3	Event No.: 7-8	Page 1 of 5

Event Description: Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.

Time	Position	Applicant's Actions or Behavior
	ATC	(CONTINUOUS) Monitors RPV water level and pressure
EVALUATOR NOTE: The SRMs and IRMs will not automatically insert. **This is Event 8.** **SIM OP NOTE:** Pay close attention to when the ATC depresses the DRIVE IN pushbutton for the SRM/IRM. This can be done by visual observation via camera, or by monitoring the event triggers. When Event Trigger 5 goes TRUE (turns RED) the button has been depressed. When the button is depressed run batch file **d:\delsrmirm** from the CAEP. **(Expert: bat d:\delsrmirm)**		
	ATC	Manually inserts SRMs AND IRMs by depressing the SRM/IRM DETECTOR POSITION display switch and then the DRIVE IN switch.
	ATC	Verifies both Recirc Pumps running at minimum speed in Manual
	ATC	Reports when all rods are fully inserted
	SRO	Enters and directs actions of QGA 100
	SRO	Directs ATC/BOP to verify 0" isolations and auto-starts
	ATC/BOP	Stabilize RPV Pressure < 1060 psig with Relief Valves
	ATC/BOP	Verifies Group 2 and 3 Isolations, RB vent isolation and SBGT start
	ATC	Verifies Main Turbine trips, all SV's, CV's, ISV's, IV's and extraction steam check valves close
	ATC	Verifies Main Generator Output Breakers tripped after 30 seconds and places control switches in PTL
	ATC	Verifies Main Generator Field and Exciter Field Breakers
	ATC	Verifies all 4 KV buses powered from T-12
	ATC	Verifies both Recirc Pumps running at minimum speed in Manual
	ATC	Starts the Control Room AFU Booster Fan within 40 minutes
	ATC	Dispatches EO to reset the Generator 86 Relays
SIMOP NOTE: When the Main Turbine trips, verify trigger 1 goes true inserting the HPCI steam leak and gross fuel failure using malfunction CR02: **imf hp13(1) 100 30:** (100% Severity on a 30 minute ramp) **imf cr02(1) 2 30:** (Gross Fuel Failure at 2% Severity, 30 minute ramp)		

Quad Cities	Scenario No.: 3	Event No.: 7-8	Page 1 of 5

Event Description: Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.

Time	Position	Applicant's Actions or Behavior
Key Parameter Response: Increasing Radiation levels and Temperature in the HPCI Room Expected Annunciator(s): 901-3 A-1, RX BLDG HI RADIATION (in approximately 1.5 minutes) 901-3 H-2, AREA HI TEMP STM LEAK DETECT (in approximately 2.5 minutes) Automatic Actions: None (Malfunctions for HPCI Steam Supply Valve binding)		
	BOP	Responds to annunciators and informs the Unit Supervisor
Event 7 continued		
	BOP	Responds to a Annunciator RX BLDG HI RADIATION and informs the Unit Supervisor
	SRO	Enters and directs applicable actions of QGA 300
	BOP	Monitors Area Radiation levels from the 901-2 and 901-10 panels and reports QGA 300 Entry Conditions
EVALUATOR NOTE: The HPCI Room ARM exceeds its Max Safe Value approximately 4 minutes after the turbine trip. The Torus Area ARM will also be approaching its Max Normal (Alarm) value.		
SIMOP NOTE: If the fire alarm sounds, silence the alarm with the command: **bat fireout** Cue the Evaluator to role play as the Unit 2 Operator and inform the BOP that the alarm is from the Unit 1 HPCI room, (high temoerature).		
	BOP	Reports HPCI Room Radiation levels are > Max Normal and increasing
	BOP/ATC	Monitors Reactor Bldg Temperatures at Panel 901-21 (TR 1-1290)
SIMOP ROLE PLAY: When requested to investigate breakers for HPCI 4 & 5, wait 2 minutes and as EO report: **"The thermals are tripped."** If asked to reset them, reply: **"They will NOT reset"**		
	BOP/ATC	Recognizes and reports when the HPCI Room exceeds its Max Safe value of 155°F
	BOP	Reports HPCI Room Radiation levels are > Max Safe value of 3000 mr
	SRO	Re-enters and directs applicable actions of QGA 100
	BOP	Attempts to isolate HPCI Steam Lines

Quad Cities	Scenario No.: 3	Event No.: 7-8	Page 1 of 5

Event Description: Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.

Time	Position	Applicant's Actions or Behavior
	BOP	Directs EO to investigate breakers for HPCI 4 & 5 valves
	BOP	Directs EO with Rad Prot. support to investigate source of leak
Event 7 continued		
SIMOP ROLE-PLAY: As EO, report: **"The HPCI room is filled with steam and entry is impossible. "**		
	ATC/BOP	Dispatches EO to start the U-1 EDG cooling water pump and monitor RB Basement water levels
SIMOP ROLE PLAY: If dispatched as EO, wait 2 minutes and start the Unit 1 EDG CWP: **mrf sw10r run**		
	SRO/BOP	Announces evacuation of Unit 1 Reactor Bldg. over plant page
SIMOP NOTE: Verify the Torus Area ARM exceeds its Max Safe Value (3000 mr/hr) approximately 11 minutes after the Mode Switch is taken to Shutdown. If necessary, use the following malfunction to ramp the ARM: **rm0115 60 15:**		
Key Parameter Response: Increasing Radiation levels in the Torus Area on ARM 15 Expected Annunciator(s): 901-3 A-1, RX BLDG HI RADIATION (Re-Alarming) Automatic Actions: None		
	BOP	Monitors Reactor Bldg ARMs on Panel 901-11
	BOP	Recognizes and reports that ARM 15 TORUS AREA is trending higher
	BOP	Recognizes and reports when the second area, the Torus Area, has exceeded its Max Safe Radiation level (3000 MR)
	SRO	When 2 areas (HPCI Room and Torus Area) exceed Max Safe radiation levels, enter and direct QGA 500-1
	SRO	Verifies all rods in
	BOP	Reports Drywell pressure < 2.5 psig and Torus level above 5 ft.
CT 2	SRO	Orders all 5 ADS valves opened and leave switches in Manual

Quad Cities	Scenario No.: 3	Event No.: 7-8	Page 1 of 5

Event Description: Fuel failure and HPCI steam line break. Crew enters QGA 300 and transitions to QGA 500-1 when two areas exceed Max Safe radiation levels.

Time	Position	Applicant's Actions or Behavior
CT2	BOP	Opens all 5 ADS valves and leaves all switches in the "MAN" position
Event 7 continued		
	BOP	Verifies ADS valve positions at the 901-21 panel
	ATC/BOP	Starts cooldown to cold shutdown per QCOP 1000-05
	ATC	Monitors and controls RPV water level
SIMOP NOTE: When the RPV is depressurized per QGA 500-1 guidance, the ATC has driven in the SRMs and IRMs, and/or at the discretion of the Lead Examiner, place the simulator in **FREEZE.**		

FINAL

Exelon Nuclear

2016 NRC Exam Scenario

Scenario Number:

NRC Scenario 4

Revision Number: 00

Date: 11/02/2015

Developed By: _____ _____
Instructor **Date**

Validated By: _____ _____
SME or Instructor **Date**

Reviewed By: _____ _____
Operations Representative **Date**

Approved By: _____ _____
Training Department **Date**

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Quad Cities Scenario No.: **2016 NRC Scenario 4** Op-Test No. ILT 14-1
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
The plant is currently at 75% power and holding load per Generation Dispatch.
Turnover: Perform the Core Spray Monthly surveillance for the 1B Core Spray pump, and QCOS 1600-04, Weekly Primary Containment Oxygen Concentration from the 901-56 panel.

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Perform Core Spray Monthly Surveillance (1B Core Spray pump)
2	DIHS124AS6B	BOP C	Failure of 1B CAM to start for surveillance. **TS**
3	FW17C DIHS13302	ATC C	1C Condensate Pump trip w/failure of standby pump to auto-start.
4	None	SRO	SSMP Room Cooler inoperable. **TS**
5	DIHS156041A LOHS156041A	BOP C	1A Gland Exhauster trip.
6	MC08	ATC R	Loss of Main Condenser vacuum / Emergency Power Reduction
7	RP02 RP03	ATC C	Electric ATWS (ARI inserts control rods) QGA 101.
8	MS04B	CREW M	Main Steam Line break inside the Drywell. QGA 100 and QGA 200.
9	DIHS11001S17B RH19AR	CREW C	Failure of Drywell Sprays (S-17B and RHR 23A valve). Blowdown QGA 500-1

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

ES-301-4 Quantitative attributes:
Total Malfunctions (5-8): **7**
Malfunction(s) after EOP (1-2): **E8 & 9**
Abnormal Events (2-4): **E2, 3, 5, 6**
Major Transient(s) /E-Plan entry (1-2): **E8**
EOPs (1-2): **QGA 100, 200**
EOP Contingencies (0-2): **QGA 500-1**
Critical Tasks (2-3): **2**

ES-301-5 Quantitative attributes:
BOP Normal: **E1**
ATC Reactivity (1 per set): **E6**
BOP I/C (4 per set): **E2 & 5**
ATC I/C (4 per set): **E3 & 7**
SRO-I I/C (4 per set inc 2 as ATC): **E2,3,5,7**
SRO Tech Spec (2 per set): **E2 & 4**
ALL Major Transients (2 per set) **E8**

SUMMARY:

- Initial Conditions:
  - The plant is operating at 75%.
- Event 1: The BOP performs QCOS 1400-04, Core Spray Pump Operability Test for the 1B Core Spray Pump.
- Event 2: The BOP is directed to perform QCOS 1600-04, Weekly Primary Containment Oxygen Test, however, the 1B CAM (901-56 panel) will fail to start. The SRO will enter TLCO 3.3.b. Condition A, for one inoperable channel (Table 3.3.b-1 function 5&6).
- Event 3: The 1C Condensate/Condensate Booster Pump will trip due to a motor short causing an overcurrent condition sensed at the breaker. The standby pump (1A) will fail to autostart requiring a manual start by the ATC operator. EO's will be dispatched to the breaker and running pumps. The EO will report an overcurrent target up at Bus 14 cubicle 8 and EM's will be notified to investigate.
- Event 4: The BOP will dispatch an EO to the SSMP Room in response to the 912-8 A-8, "Safe Shutdown System Trouble" alarm. The EO will report that the "Compressor Trip" light is lit on the Room Cooler. The EO will attempt a reset as directed by the BOP, however, it will be unsuccessful. The SRO will declare the SSMP inoperable due to an inoperable room cooler and enter TS 3.7.9 and a 14 Day Safe Shutdown Analysis Administrative Technical Requirement, (SSA ATR) for both Units.
- Event 5: The running Gland Seal Exhauster will trip. The BOP will start the standby Exhauster and adjust Gland Exhaust pressure.
- Event 6: An air leak will result in lowering Main Condenser vacuum. The crew performs QOA 3300-02 and Emergency Power Reduction. All efforts to mitigate the loss of Main Condenser vacuum will be unsuccessful and a manual scram will be inserted as backpressure approaches 7.5 in Hg.
- Event 7: Control rods do not insert due to an Electric ATWS. The SRO will transition to QGA 101 and manual initiation of the ARI system will insert all control rods. The SRO will exit QGA 101 and re-enter QGA 100.
- Event 8: A leak in the B Main Steam Line inside the Drywell will develop resulting in a QGA 200 entry. The crew will attempt to spray the Drywell, however, Div I DW sprays are not available because the RHR 23A valve breaker will trip and not reset. DIV II DW sprays will also not be available due to an S17 switch problem. The crew will enter QGA 500-1, RPV Blowdown in order to avoid exceeding the Pressure Suppression Pressure (PSP) limit.

Approximate Run Time: 1.5 Hours

CRITICAL TASKS:

Critical Task #1: With a reactor scram required and the reactor not shutdown, TAKE ACTION TO REDUCE POWER by injecting boron (prior to exceeding 110°F Torus temperature) and/or inserting control rods, to prevent exceeding primary containment design limits. (BWROG RPV-6.1 ATWS PWR/LVL S/D REACTOR)

Critical Task #2: When DW temperature CANNOT be maintained <280 F OR Torus pressure CANNOT be maintained LESS THAN the Pressure Suppression Limit (PSP), INITATE an Emergency Depressurization.

SR-1400-K20	(Freq: LIC=B) Given a system operating mode and various plant conditions, EVALUATE the following system indications and DETERMINE if the indications are expected and normal: a. Core Spray (1) Pump run/trip status (2) Valve position (3) Pump suction and discharge pressures
SR-2400-K32	(Freq: LIC=B) Given CAM operability status OR key parameter indications, various plant conditions and a copy of Tech Specs, DETERMINE Tech Spec compliance and required actions, if any.
SR-2400-K21	SR-2400-K21 (Freq: LIC=B) Given a CAM operating mode and various plant conditions, PREDICT how CAM / plant parameters will respond to manipulation of the following CAM local/remote controls: b. H2-O2 Mon Inlet Valve Selector Switch c. CAM Power Control Switch
SR-3200-K22	(Freq: LIC=B) Given a Condensate/Feedwater System operating mode and various plant conditions, PREDICT how key Condensate/Feedwater System/ plant parameters will respond to the following Condensate/Feedwater System component or controller failures: a. Condensate/condensate booster pump trip
SR-2900-K32	(Freq: LIC=B) Given SSMP System operability status OR key parameter indications, various plant conditions and a copy of Tech Specs, DETERMINE Tech Spec compliance and required actions, if any.
SR-5600-K22	(Freq: LIC=B) Given a Main Turbine and Auxiliary Systems operating mode and various plant conditions, PREDICT how system/plant parameters will respond to the following Main Turbine and Auxiliary Systems component or controller failures: f. Gland Steam Exhauster trip
SR-3300-P09	(Freq: LIC=B) Given a reactor plant at power with a loss of condenser vacuum, take action to attempt to locate and correct the cause for lowering vacuum in accordance with QOA 3300-02 and/or QOA 5450-05. (PRA Initiating Event %TC - Loss of Vacuum accounts for 7.65% of total CDF and initiates 4 of the top 100 Core Damage Sequences)
SR-0002-P03	(Freq: LIC=A) Given a reactor plant at power with a reactor scram, place the plant into a stable condition in accordance with QCGP 2-3.
SR-1000-P02	(Freq: LIC=A) Given a reactor plant in an accident condition (QGA), operate torus sprays in accordance with QCOP 1000-30 and appropriate QGA. (Important PRA Operator Action - starting containment sprays has a RAW value of 82.5)

SR-0001-P11	(Freq: LIC=B) Given a reactor plant with an ATWS, take action to reduce heat input into the containment in accordance with QGA 101. (SOER 83-8 r11) (ATWS is a key event in 1 of the 100 most probable PRA Core Damage Sequences)
SR-0001-P26	(Freq: LIC=B) Given a reactor plant with rising drywell temperature due to a LOCA or steam leak and RHR is not needed for core cooling, verify parameters are in the safe region of the Drywell Spray Initiation Limit (QGA Figure K), verify tripped or trip recirc pumps and drywell coolers, and attempt to initiate drywell sprays before drywell temperature reaches 338 degrees in accordance with QGA 200.
SR-0001-P23	(Freq: LIC=A) Given a reactor plant with rising containment pressure and temperature due to a LOCA or steam leak, initiate an emergency depressurization when torus pressure cannot be maintained below the Pressure Suppression Pressure (QGA Figure L) or when drywell temperature cannot be restored and held below 338 degrees in accordance with QGA 200 and QGA 500-1. (Important PRA Operator Action - emergency depressurization terminates 19 of top 100 Core Damage Sequences)
SR-0001-P45	(Freq: LIC=A) Given a reactor plant in a QGA condition, verify the proper actuation of containment isolations and ECCS and emergency DG starts in accordance with QGA 100 or QGA 101.

Simulator Setup:

1. Reset to IC-20 (Approximately 75% power).
2. Go to **RUN.**
3. Verify the following RWM Sequence is loaded:4 **PHESD (or current shut down sequence)**
4. Verify the 1A CAM (901-55) is selected to Torus and the 1B CAM (901-56) is selected to Drywell.

(The following commands to be utilized for this scenario are contained in the CAEP file: 2016 NRC Scenario 4.cae)

5. Insert Commands for setup:
   - **ior dihs11001s17b off** (override the B Loop S-17 switch to OFF)
   - **ior dihs124as6b off** (override the 1B CAM power switch to OFF on the 901-56 panel)
   - **ior dihs13302 p2a_off** (override the Condensate Pump Selector Switch to OFF)
   - **ior lohs13302a4 on** (override the 1A Condensate Pump Standby light ON**)**
   - **trgset 1 "zdihs13302a(5)"** (Set trigger 1 true when the 1A Condensate Pump control switch is taken to Start)
   - **trgset 2 "zdihs13302a(5)"** (Set trigger 2 true when the 1A Condensate Pump control switch is taken to Start)
   - **trg 2 "dor dihs13302"** (Delete the override on the Condensate Pump Selector Switch when trigger 1 goes true)
   - **trg 1 "dor lohs13302a4"** (Delete the override on the 1A Condensate Pump Standby light when trigger 1 goes true)
   - **ior dihs156041a (3) trip** (On trigger 3, override the1A Gland Exhauster handswitch to TRIP)
   - **ior lohs156041a4 (3) on** (On trigger 3, override the 1A Gland Exhauster Amber Trip light ON)
   - **imf ser0986(3) on** (On trigger 3, set annunciator 912-7 E-12 in alarm)
   - **trgset 5 "zdihs1100123a(2)"** (Set trigger 5 true when the RHR 23A valve control switch is taken to OPEN)
   - **trg 5 "irf rh19ar open"** (On trigger 5, open the breaker for the RHR 23A valve**)**
   - **imf rp03a** (Manual Scram Circuit Failure Channel A)
   - **imf rp03b** (Manual Scram Circuit Failure Channel B)
   - **imf rp02a** (Auto Scram Circuit Failure Channel A1)
   - **imf rp02b** (Auto Scram Circuit Failure Channel B1)
   - **imf rp02c** (Auto Scram Circuit Failure Channel A2)
   - **imf rp02d** (Auto Scram Circuit Failure Channel B2)

6. Verify the following commands for scenario performance**:**
   - **irf pc11r ackn** (reset alarms at 901-64A panel in Cable Spreading Room for A CAM)
   - **imf fw17c** (trip the 1C Condensate/Condensate Booster Pump)
   - **imf ano9128a8 on** (override alarm 912-8 A-8, Safe Shutdown System Trouble, on)
   - **trg! 3** (trip the 1A Gland Seal Steam Exhauster using trigger 3)
   - **imf mc08 100 25:** (Set Main Condenser air in-leakage to 100% ramped over 25 minutes)

- **irf cu13r 0 :30** (Close the 1A RWCU Demin FCV 1-1279-15A ramped over 30 seconds)
- **irf cu9r out** (Isolate the 1A RWCU Demin)
- **irf cu14r 0 :30** (Close the 1B RWCU Demin FCV 1-1279-15B ramped over 30 seconds)
- **irf cu10r out** (Isolate the 1B RWCU Demin)
- **imf ms04b 0.5 10:** (B Main Steam Line break in Drywell at 0.5% severity over 10 min)

7. Take the following components Out of Service:
   - None

8. Provide a current revision of the following procedures, signed off as specified:
   - Provide a copy of QCOS 1400 -04 marked up as a partial surveillance to test the 1B Core Spray Pump and a stopwatch.
   - Provide a SDTC for the 1B Core Spray Pump inoperable.
   - Provide a copy of QCOS 1600-04 with both the Weekly Containment O_2 Concentration and the Monthly Channel Check required. Marked up to start at step H.2.

9. Provide a Load Drop REMA signed off to be at 75% power.

10. Perform the applicable “Post Simulator Exam Security Actions” of TQ-QC-201-0113 “Simulator Exam Security Actions Checklist.

LIST OF POTENTIAL PROCEDURES

Annunciator Procedures

- 901(2)-3 A-4, CORE SPRAY PUMP RUNNING, Rev. 4
- 901(2)-3 A-14, TORUS HIGH/LOW LEVEL, Rev. 9
- 901(2)-3 A-16, PRI CNMT HIGH PRESSURE, Rev. 16
- 901(2)-3 D-2, OFF GAS HI RADIATION, Rev.15
- 901(2)-5 D-11, PRIMARY CNMT HIGH PRESS, Rev. 12
- 901(2)-5 D-10/15, RPS CHANNEL A/ B REACTOR SCRAM, Rev. 6
- 901(2)-5 A-10/15, RPS CHANNEL A/B MANUAL SCRAM, Rev. 6
- 901(2)-5 F-5, CONDENSER VACUUM LO, Rev. 8
- 901(2)-6 A-6, COND PUMP DISCHARGE LOW PRESSURE, Rev. 9
- 901(2)-6 F-5, CONDENSATE BOOSTER PUMP AUTO TRIP, Rev. 10
- 900-7 E-12, GLAND STM EXH MOTOR TRIP, Rev. 3
- 901(2)-7 H-3, CONDENSER LO VACUUM 24 IN. HG, Rev. 9
- 912-8 A-8, SAFE SHUTDOWN SYSTEM TROUBLE, Rev. 5
- 900-54 C-7, NORMAL PROCESS FLOW HI/LO, Rev. 3
- 900-55 B-5, H/2 & O/2 MON SYSTEM CMN FAIL, Rev. 4

QCGP 2-3, REACTOR SCRAM, Rev. 84
QCGP 3-1, REACTOR POWER OPERATIONS, Rev. 79
QGA 100, RPV CONTROL, Rev. 10
QGA 200, PRIMARY CONTAINMENT CONTROL, Rev. 10
QGA 500-1, RPV BLOWDOWN, Rev. 14
QCOA 0201-01, INCREASING DRYWELL PRESSURE, Rev. 27
QCOA 3300-01, LOSS OF CONDENSATE PUMP, Rev. 22
QOA 3300-02, LOSS OF CONDENSER VACUUM, Rev. 40
QCOP 1000-30, POST-ACCIDENT RHR OPERATION, Rev. 31
QCOP 2900-01, SAFE SHUTDOWN MAKEUP PUMP SYSTEM PREPARATION FOR STANDBY OPERATION, Rev. 36
QOP 5600-01, GLAND STEAM STSTEM, Rev. 22
QCOP 5750-19, DRYWELL COOLER OPERATION, Rev. 10
QCOS 1400-04, CORE SPRAY PUMP OPERABILITY TEST, Rev. 16
QCOS 1600-04, WEEKLY PRIMARY CONTAINMENT OXYGEN CONCENTRATION, Rev. 31
QCAP 0200-10, EMERGENCY OPERATING PROCEDURE (QGA) EXECUTION STANDARDS, Rev. 49
QCAP 1500-02, ADMINISTRATIVE TECHNICAL REQUIREMENTS FOR NON-FUNCTIONAL SAFE SHUTDOWN EQUIPMENT, Rev. 32

CREW TURNOVER

1.) Plant Conditions:

a.) Unit 1 is at 75% Power, holding load for Generation Dispatch.

b.) Unit 2 is at 100% Power.

c.) Technical Specification limitations:

(1) Unit 1: None

(2) Unit 2: None

d.) On Line Risk is GREEN.

e.) Fire Risk is GREEN.

f.) Protected Equipment:

(1) RBCCW
(2) Fuel Pool Cooling

2.) Significant problems/abnormalities:

None.

3.) Evolutions/maintenance for the oncoming shift:

a.) Perform QCOS 1400-04, Core Spray Pump Operability Test for the 1B Core Spray Pump.

b.) After the Core Spray monthly is complete, then perform QCOS 1600-04, Weekly Primary Containment Oxygen Test using the 1B CAM (901-56 panel) system. The critical due date for this surveillance is today.

Quad Cities 2016 NRC Scenario No. 4 Event No. 1 Page 1 of 1

Event Description: Perform QCOS 1400-04 for the 1B Core Spray Pump

Time	Position	Applicant's Actions or Behavior
	SRO	Directs the BOP to perform QCOS 1400-04, Core Spray Pump Operability Test for the 1B Core Spray Pump.
	BOP	Starts the 1B Core Spray Pump and verifies the MO 1-1402-38B, CS Min Flow valve opens.
	BOP	Notifies the SRO of entry time for B Core Spray loop inoperability.
	SRO	Enters a Short Duration Time Clock for 1B Core Spray Pump inoperable. (TS LCO 3.5.1 Condition B)
	BOP	Throttles open MO 1-1402-4B, CS BYP AND TEST VLV to establish flow rate of $\geq$ 4500 gpm at $\geq$ 216 psig.
	BOP	Contacts the EO at the pump to report pump suction pressure on PI 1-1402-40B.
SIMOP ROLE PLAY: When contacted**,** as EO report: **"The 1B Core Spray pump suction pressure is 4 psig as indicated on PI 1-1402-40B."**		
	BOP	Verifies pump suction pressure is $\geq$ 3 psig and records pump discharge pressure and flow rate.
	BOP	Closes and times MO 1-1402-4B.
	BOP	Verifies MO 1-1402-38B opens as system flow decreases.
	BOP	Stops the 1B Core Spray Pump.
	BOP	Closes MO 1-1402-38B valve.
	BOP	Notifies the SRO to exit the LCO for B Core Spray loop inoperable.
	BOP	Performs standby lineup verification for B loop Core Spray valves.
	BOP	Signs off surveillance as satisfactory and returns it to the SRO for approval signature.
	ATC	Continuously monitors RPV power, pressure, and water level.
End of Event 1		

Quad Cities 2016 NRC Scenario No. 4 Event No. 2 Page 1 of 1

Event Description: Failure of 1B CAM (901-56 panel) to start for surveillance.

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to perform QCOS 1600-04, Weekly Primary Containment Oxygen Concentration.
	BOP	Records position of the H2 % O2 MON INLET VLV SELECT switch for each CAM.
	BOP	Momentarily places the 1B CAM PWR CONT switch to ON at the 901-56 panel and reports the B CAM did NOT start and the sample valves did NOT open.
	SRO/BOP	Contacts Instrument Maintenance and requests assistance.
SIM OP ROLE PLAY: If contacted, as IM Supervisor, acknowledge the report and then state that you: **"Will prepare a troubleshooting package, brief the Techs and then report to the control room."**		
	SRO	Enters TLCO 3.3.b, Post Accident Monitoring (PAM) Instrumentation, Condition A, for one required channel inoperable. (Table T3.3.b-1 Function 5 & 6). **TS**
	BOP	Momentarily places the 1A CAM PWR CONT switch to ON at the 901-55 panel and acknowledges alarms.
	BOP	Places the H2 & O2 MON INLT SELECT switch for the A Train to the DW position and verifies the sample valves swap from Torus to Drywell.
	BOP	Dispatches an EO to the Cable Spreading Room to locally reset the 901-55 B-5 alarm.
SIM OP ROLE PLAY: If dispatched to the 901-64A/B panels in the Cable Spreading Room, as EO reset the alarms for the A CAM (901-55 panel) using the following command: **irf pc11r ackn**		
	ATC	Continuously monitors RPV power, pressure, and water level.
End of Event 2		

Quad Cities 2016 NRC Scenario No. 4 Event No. 3 Page 1 of 2

Event Description: 1C Condensate/Condensate Booster Pump trip with failure of Standby Pump to auto-start.

Time	Position	Applicant's Actions or Behavior
SIMOP: At the Lead Evaluator's direction, trip the 1C Condensate/Condensate Booster Pump using malfunction FW17C: **imf fw17c**		
Key Parameter Response: 1C Condensate/Condensate Booster Pump trips with failure of Standby Pump to auto-start. Expected Annunciator(s): 901-6 A-6, COND PUMP DISCHARGE LOW PRESSURE 901-6 F-5, CONDENSATE BOOSTER PUMP AUTO TRIP Automatic Actions: None (Standby Pump auto-start is defeated)		
	BOP	Reports 1C Condensate/Condensate Booster Pump has tripped and the Standby Pump has failed to autostart.
	BOP	Manually starts the 1A Condensate/Condensate Booster Pump.
	ATC	Reports RPV water level is +30 inches and stable.
	BOP	Refers to QCAN 901-6 F-6 and verifies: PI 1-3340-48, COND PMP DISCH HDR PRESS, indicates > 104 psig. 1-3240-73, RFP SUCT HDR PRESS, indicates > 145 psig.
	US	Directs actions of QCOA 3300-01, Loss of Condensate Pump.
	BOP	Notifies Generation Dispatch of plant status.
SIM OP ROLE PLAY: If contacted, as Generation Dispatch, acknowledge the report of the tripped pump.		
	BOP	Places the COND PMP SELECTOR switch to the OFF position.
	ATC/BOP	Verifies proper operation of the Feed Water Reg Valves.
	BOP	Verifies Bus 14 current and voltage are in normal range.
	BOP	Dispatches EO to Bus 14 to check for any red targets on the breaker compartment or the Bus Auxiliary compartment.
Event 3 Continued		

Quad Cities	2016 NRC Scenario No. 4	Event No. 3	Page 2 of 2

Event Description: 1C Condensate/Condensate Booster Pump trip with failure of Standby Pump to auto-start.

Time	Position	Applicant's Actions or Behavior
	BOP	Dispatches EO to check operation of running Condensate/Condensate Booster Pumps and to perform step D.12 of QCOA 3300-01: · Secure Hydrogen injection on the 1C Cond/Cond Booster Pump · Valve in Hydrogen injection on the 1A Cond/Cond Booster Pump
SIM OP ROLE PLAY: As the EO dispatched to Bus 14, wait 1 minute, then report: **"There is an overcurrent target up on Bus 14 cubicle 8, for the 1C Cond/Cond Booster Pump. No other targets are up on any of the compartments."**		
SIM OP ROLE PLAY: As the EO dispatched to the Condensate Pumps, wait 2 minutes, then report: **"The 1A, 1B, and 1D Condensate Pumps are operating normally. Step D.12 of QCOA 3300-01 is complete. Hydrogen injection is valved into the 1A Condensate pump and secured on the 1C Condensate pump."**		
End of Event 3		

Quad Cities 2016 NRC Scenario No. 4 Event No. 4 Page 1 of 1

Event Description: SSMP Room Cooler inoperable.

Time	Position	Applicant's Actions or Behavior
SIMOP ROLE PLAY: When directed by the Lead Examiner, actuate annunciator 912-8 A-8 using the following command: **imf ano9128a8 on**		
Key Parameter Response: None. Expected Annunciator(s): 912-8 A-8, SAFE SHUTDOWN SYSTEM TROUBLE Automatic Actions: None.		
	BOP	Reports annunciator 912-8 A-8, Safe Shutdown System Trouble is in alarm and refers to annunciator procedure.
	BOP	Dispatches an EO to the Safe Shutdown Makeup Pump Room to investigate.
SIM OP ROLE PLAY: As the EO, wait 1 minute, then report back that: **"The COMPRESSOR TRIP INDICATING LIGHT is lit on the side of the SSMP Room Cooler."**		
	BOP	Reports condition to the SRO and directs the EO to attempt a reset per QCOP 2900-01 step F.17.
SIM OP ROLE PLAY: As the EO, wait 4 minutes, then call back and report that you have: **"Performed QCOP 2900-01 step F.17 and the COMPRESSOR TRIP INDICATING LIGHT will NOT reset. The light is still lit and the compressor is NOT running."**		
	BOP	Reports to the SRO that the SSMP Room Cooler compressor is tripped and will not reset.
	BOP	Contacts Mechanical Maintenance for assistance.
	ATC	Continuously monitors RPV power, pressure, and water level.
	SRO	Declares SSMP inoperable due to an inoperable Room Cooler. Enters the following administrative actions for Units 1 and 2: TS 3.7.9, Condition A, SSMP inoperable. 14 Day ATR, SSMP unavailable.
SIM OP ROLE PLAY: If contacted, as Maintenance Supervisor, state that you will: **"Prepare a troubleshooting package and dispatch a crew to investigate the SSMP Room Cooler Compressor."**		
End of Event 4		

Quad Cities 2016 NRC Scenario No. 4 Event No. 5 Page 1 of 2

Event Description: 1A Gland Steam Exhauster Trip

Time	Position	Applicant's Actions or Behavior
SIM OP: When directed by the Lead Examiner, trip the 1A Gland Exhauster by manually initiating trigger 3 **trg! 3** Verify the following commands go active: **imf ser0986 (3) on** **ior dihs156041a (3) trip** **ior lohs156041a4 (3) on**		
Key Parameter Response: 1A Exhauster Amber Trip light on and Red Running light off: Lowering Vacuum on Gland Seal Exhaust Vacuum indication, 1-5140-70 Expected Annunciator(s): 901-7 E-12, GLAND STM EXH MOTOR TRIP Automatic Actions: MO 1-5400-E1, A CNDSR EXH ISOL VLV E1 closes when the GSE Motor breaker trips.		
	BOP	Acknowledges annunciator 901-7 E-12, and reports the 1A Gland Steam Exhauster has tripped.
	SRO	Directs BOP to perform the actions of QCAN 901-7 E-12.
	BOP	Starts the 1B Gland Steam Exhauster.
	BOP	Throttles open MO 1-5405B, B CNDSR EXH DISCH VLV D-2.
	BOP	On the tripped Gland Steam Exhauster, throttles closed MO 1-5405A, A CNDSR EXH DISCH VLV D-1.
	BOP	On the tripped Gland Steam Exhauster, verifies MO 1-5400-E1, A CNDSR EXH ISOL VLV E1 automatically closes.
	BOP	Refers to QOP 5600-01, step F.2
	BOP	Verifies NO valid level alarms on Gland Condenser Hotwell or Shell.
	ATC	Continuously monitors RPV power, pressure, and RPV water level.
Event 5 Continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 5 Page 2 of 2

Event Description: 1A Gland Steam Exhauster Trip

Time	Position	Applicant's Actions or Behavior
	BOP	Throttles the MO 1-5405B to obtain 10 inches to 15 inches of vacuum as indicated on the 1-5140-70, GLAND SEAL EXH VACU.
	BOP	Verifies GLAND SEAL SPLY PRESS is between 2.5 and 5.0 psig.
	BOP	Dispatches an EO to MCC 15-1 to investigate the tripped breaker.
SIM OP ROLE PLAY: As the EO, wait 2 minutes after being dispatched to MCC 15-1 and call back to report: **"The breaker for the Gland Steam Exhauster Motor at MCC 15-1 cubicle B2 is tripped. There is no obvious problem at the breaker and you have contacted EMD to investigate."**		
End of Event 5		

Quad Cities 2016 NRC Scenario No. 4 Event No. 6 Page 1 of 2

Event Description: Loss of Main Condenser vacuum (Emergency Power Reduction)

Time	Position	Applicant's Actions or Behavior
SIM OP: When directed by the Lead Examiner, initiate a 100% loss of Main Condenser vacuum ramped over 25 minutes using malfunction MC08: **imf mc08 100 25:**		
Key Parameter Response: Main Condenser backpressure rising on PR 1-5640-79; Generator MW(e) lowering, Off gas flow to Main Chimney rising on FI 1-5440-7. Expected Annunciator(s): 901-3 D-2, OFF GAS HI RADIATION 901-7 H-3, CONDENSER LO VACUUM 24 IN HG 901-5 F-5, CONDENSER VACUUM LO 901-54 C-7, NORMAL PROCESS FLOW HI/LO Automatic Actions: Reactor Scram and Turbine trip		
	BOP	Acknowledges 901-3 D-2 alarm and refers to the QCAN.
	SRO	Directs that reactor power be held constant until the cause of the high radiation is determined.
	BOP	Monitors SJAE and Main Steam Line radiation levels.
	ATC/BOP	Report Off Gas Flow as indicated on FI 1-5440-7, OFF GAS FLOW TO MN CHIMNEY, is rising.
	ATC/BOP	Report Main Condenser backpressure rising.
	SRO	Enters and directs actions of QOA 3300-02, Loss of Condenser Vacuum.
	SRO	Directs an Emergency Power Reduction to control Condenser backpressure < 6 in. Hg.
	ATC	Reduces Recirc Pump speed(s) using the Master/Individual Controllers OR the Manual Runback pushbuttons.
	ATC	Inserts CRAM rods to maintain FCL within the MELLLA boundary.
	BOP	Dispatches EO's to verify Condenser vacuum breaker water seal is intact and loop seal are full.
	SRO	Sets scram criteria at 7.5 in Hg.
	BOP	Verifies Off-Gas and SJAE suction valves are open.
	BOP	Verifies Circulating Water System is operating normally.
	BOP	Verifies Main Condenser Hotwell level is normal.
Event 6 Continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 6 Page 2 of 2

Event Description: Loss of Main Condenser vacuum (Emergency Power Reduction)

Time	Position	Applicant's Actions or Behavior
	BOP	Acknowledges and reports annunciator 901-7 H-3, CONDENSER LO VACUUM 24 IN. HG, is in alarm.
	BOP	Notifies Chemistry that Condenser vacuum has been lost and to align Unit 1 Reactor Building Sample Panel drains per CY-QC-110-608.
	SRO	Directs ATC to insert a manual reactor scram on loss of Main Condenser vacuum.
	ATC	Inserts a manual reactor scram by depressing both RX SCRAM pushbuttons AND placing the RX MODE SELECT switch to SHUTDOWN.
End of Event 6		

Quad Cities 2016 NRC Scenario No. 4 Event No. 7 Page 1 of 3

Event Description: Electric ATWS (Manual ARI inserts rods)

Time	Position	Applicant's Actions or Behavior
Key Parameter Response: No control rod movement when manual scram is inserted. All 8 RPS SCRAM SOLENOID GROUP indicating lights on 901-5 panel remain lit. Expected Annunciator(s): 901-5 C-5, ATWS CHANNEL A OR B MANUAL PB ARMED (when ARI system is initiated) 901-5 A-1, SCRAM VALVE AIR SUPPLY LOW PRESSURE (when ARI system is initiated) 901-5 A-10/15, CHANNEL A/B MANUAL SCRAM Automatic Actions: None		
	ATC	Reports control rods did NOT insert
	SRO	Enters QGA 100, RPV Control and transitions to QGA 101 on failure to scram when above 5% power.
CT1	ATC	Arms and depresses ARI pushbuttons.
	ATC	Injects SBLC by placing the SBLC PUMP SELECT to either SYS 1 or SYS 2. (if control rod motion has not been observed yet)
	ATC	Runs both Recirc Pump speeds to minimum (32%).
	SRO	Directs BOP to inhibit ADS.
	BOP	Inhibits ADS by placing AUTO BLOWDOWN INHIBIT switch to INHIBIT.
	SRO	Directs Core Spray Pumps placed in P-T-L.
	BOP	Places both Core Spray Pump control switches in P-T-L.
	ATC	Reports ALL control rods are inserted.
	SRO	Directs ATC to terminate Boron injection.
	ATC	Places SBLC switch to OFF. (if system was injecting)
	SRO	Directs BOP to return AUTO BLOWDOWN INHIBIT switch to the NORMAL position and take Core Spray pump control switches out of P-T-L.
	BOP	Places AUTO BLOWDOWN INHIBIT switch to the NORMAL and takes both Core Spray pump control switches out of P-T-L.
	SRO	Exits QGA 101 and re-enters QGA 100.
	SRO	Directs ATC to enter and perform actions per QCGP 2-3, Reactor Scram.
Event 7 continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 7 Page 2 of 3

Event Description: Electric ATWS (Manual ARI inserts rods)

Time	Position	Applicant's Actions or Behavior
	ATC	Performs post scram actions per QCGP 2-3, Attachment A.
	SRO	Directs ATC/BOP to verify auto actions/isolations for 0 inches RPV water level.
	ATC/BOP	Report all Group II and Group III isolations are verified
	SRO	Directs ATC to control RPV water level in a band of 0 to +48 in. with the Condensate and Feedwater system.
	ATC	Controls RPV water level in 0 to +48 in. band using the Condensate/Feed System.
	BOP	Starts up RWCU system in reject mode per QCOP 1200-07 Attach. A (Hard Card)
		· Verifies RBCCW system is in operation at the 912-1 panel. · Resets Group III isolation with the ISOL VLV RESET switch at the 901-5 panel. · Opens MO 1-1201-2, PMP SUCT VLV. · Opens MO 1-1201-5, RECIRC PMP SUCT ISOL VLV. · Cracks open MO 1-1201-80, RETURN ISOL VLV. · Starts 1A/B RWCU pump throttling open MO 1-1201-80 valve as necessary to clear alarm 901-4 H-12, RWCU SYSTEM PUMPS LOW FLOW. · Throttles MO 1-1201-80 to establish pump discharge pressure 100 to 200 psig > Reactor pressure. · Opens MO 1-1201-78, CU REJECT TO CONDENSER SV. · Throttles open FCV 1-1239, U-1 CU REJECT FCV by adjusting FC 1-1290-31, REJECT FLOW CONTROLLER. · Removes Filter Demins from operation per QCOP 1200-03.
	BOP	Dispatches EO to the RWCU Demin Panel 2201-61.
Event 7 continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 7 Page 2 of 3

Event Description: Electric ATWS (Manual ARI inserts rods)

Time	Position	Applicant's Actions or Behavior
SIM OP ROLE PLAY: If dispatched as EO to isolate the RWCU Demins, wait 2 minutes, then call back and remove the 1A and 1B Demins respectively, using the commands below. Note: (the BOP will throttle open MO 1-1201-133, DEMIN BYPASS VLV as each one is taken off line.) **irf cu13r 0 :30** **irf cu09r out** **irf cu14r 0 :30** **irf cu10r out**		
	SRO	Directs the BOP to initiate an RPV cooldown using ADS valves at < 100°F/hr.
	ATC/BOP	Initiate an RPV cooldown using ADS valves.
End of Event 7		

Quad Cities 2016 NRC Scenario No. 4 Event No. 8-9 Page 1 of 5

Event Description: Main Steam Line break inside the Drywell / Blowdown

Time	Position	Applicant's Actions or Behavior
SIM OP: When the plant is stabilized and at the direction of the Lead Examiner, insert a .5% break in the B Main Steam Line ramped over 10 minutes using malfunction MS04B: **imf ms04b .5 10:**		
Key Parameter Response: Drywell /Torus pressure and temperature rising Expected Annunciator(s): (Not a complete list) 901-3 A-16 PRIMARY CONTAINMENT HIGH PRESSURE 901-5 D-11 PRIMARY CNMT HIGH PRESS Automatic Actions: Group 2 Isolation, CR and RB Vents isolate, SBGTS starts, ECCS systems initiate, EDGs start, LOCA Load Shed, LPCI Loop Select		
	BOP	Acknowledges and reports annunciator 901-3 A-16, PRI CNMT HIGH PRESSURE, is in alarm.
	BOP	Monitors and reports rising Drywell pressure.
	SRO	Directs BOP to take actions per QCOA 0201-01.
	BOP	Makes an announcement to evacuate the Reactor Building.
	BOP	Notifies Radiation Protection of elevated drywell pressure and directs them to control access to the Reactor Building.
	ATC/BOP	Investigate cause of increasing Drywell pressure.
	BOP	Reports Drywell pressure at 2.5 psig and rising.
	SRO	Enters QGA 100 and 200 on 2.5 psig Drywell pressure.
	SRO	Directs ATC/BOP to verify auto actions for 2.5 psig Drywell pressure.
	SRO	Verifies HPCI is not needed for core cooling and directs ATC/BOP to trip-latch HPCI.
	ATC/BOP	Places HPCI turbine Trip pushbutton in trip-latch.
	ATC/BOP	Verify isolations and actuations per QCAP 0200-10 Attach. O.
	SRO	Directs BOP to restart RBCCW and Drywell Coolers.
	BOP	Restarts RBCCW and Drywell Coolers per QCOP 5750-19, Hard Card.
Event 8-9 continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 8-9 Page 2 of 5

Event Description: Main Steam line break inside Drywell / Blowdown

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to initiate and maximize Torus Cooling.
	BOP	Maintains the following during Post-Accident RHR Operation: · RHR Service Water Pressure 15-20 psig > RHR Pressure · RHR Service Water flow <3600 gpm/pump · RHR Discharge Pressure 100-200 psig
	BOP	Prepares RHR for Operation.
		Verifies RHR Pumps running.
		Places LOOP A/B CONTAINMENT COOLING PERMISSIVE Switch 17 to ON.
		Places LOOP A/B RHR SW START PERMISSIVE Switch 19 to MANUAL OVERRIDE.
	BOP	Starts an RHR Service Water on both loops.
		Opens MO 1-1001-5A/B to approximately 40%.
		Starts A/C RHR SW Pumps.
		Throttles MO 1-1001-5A/B as necessary.
		Closes MO 1-1001-16A/B valves.
	BOP	Starts 2nd RHR Service Water pump on both loops.
		Opens MO 1-1001-5A/B to achieve approximately 140 psig RHR Service Water pressure.
		Starts B/D RHR SW Pumps.
		Throttles MO 1-1001-5A/B as necessary to maintain flow <7200 gpm and discharge pressure <350 psig.

Event 8-9 continued

Quad Cities 2016 NRC Scenario No. 4 Event No. 8-9 Page 3 of 5

Event Description: Main Steam line break inside Drywell / Blowdown

Time	Position	Applicant's Actions or Behavior
	BOP	Opens MO 1-1001-34A.
	BOP	Throttles open MO-1-1001-36A and maintains RHR discharge pressure in a 100-250 psig band.
	BOP	Attempts to open MO 1-1001-34B and reports the valve will NOT open. Determines a possible problem with the S-17B switch (RHR Loop B CONTAINMENT Clg permissive) and contacts EM for assistance.
SIM OP ROLE PLAY: If directed as EMD or IMD to troubleshoot LOOP B CONTAINMENT COOLING PERMISSIVE Switch 17, inform the operator you will locate your supervisor, start a troubleshooting package, and then report to the control room (No EMD or IMD personnel will enter the simulator).		
	SRO	Verifies Torus level <27 ft.
	SRO	Before Torus Pressure reaches 5 psig, directs BOP to start Torus Sprays.
	BOP	As directed, initiates Torus Sprays on A Loop.
		Opens MO 1-1001-34A.
		Opens MO 1-1001-37A and reports Torus Sprays initiated.
	BOP	Throttles MO 1-1001-36A as necessary to maintain RHR Discharge Pressure.
	SRO	Directs BOP to secure Torus Sprays before Torus Pressure drops to 0 psig.
	BOP	Reports Torus pressure >5 psig.
	SRO	Verifies Torus level <17 ft.
	SRO	Verifies containment parameters (DW temperature and pressure) are within the DW Spray Initiation Limit Curve.
	SRO	Verifies Recirc pumps are tripped and directs Drywell coolers tripped if restarted.
	BOP	Trips drywell coolers. (if required)
Event 8-9 Continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 8-9 Page 4 of 5

Event Description: Main Steam line break inside Drywell / Blowdown

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to initiate DW Sprays.
	BOP	Reports the RHR 23A valve breaker tripped and dispatches an EO to MCC 18-1B.
SIM OP ROLE PLAY: As EO dispatched to investigate the RHR 23A valve breaker, wait 4 minutes, then report back: **"The RHR 23A valve breaker is tripped and will not reset."**		
	BOP	Dispatches EOs to manually open the RHR 23A valve.
SIMOP ROLE PLAY: If asked for status of opening the DW spray valves state that you are: **"Having trouble moving the handwheel and have requested assistance from Mechanical Maintenance."**		
	SRO	May direct actions to start all available drywell cooling.
	ATC/BOP	Restarts DW coolers if directed.
CT2	SRO	Enters and directs actions of QGA 500-1 to blowdown the vessel when it is determined Drywell temperature cannot be restored below 280ºF or Torus pressure cannot be maintained within PSP limits.
	ATC/BOP	Prevents injection from Core Spray and LPCI not needed for Core Cooling by diverting LPCI flow to Torus cooling and/or placing pumps in PTL.
	SRO	Verifies Torus level > 5 feet.
CT2	BOP	Opens all 5 ADS valves and leaves switches in MAN.
	BOP	Verifies all ADS valves open by acoustic monitor indication on the 901-21 panel.
Event 8-9 continued		

Quad Cities 2016 NRC Scenario No. 4 Event No. 8-9 Page 5 of 5 Event Description: Main Steam line break inside Drywell / Blowdown		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	Verifies or trips RFPs due to level exceeding +48 inches from swell.
	ATC/BOP	Monitors RPV water level instruments for indications of saturation.
SIM OP NOTE: When RPV pressure is a or below 100 psig, RPV water level is stabilized, and at the direction of the Lead Evaluator, freeze the Simulator.		
End of Scenario		