

# Exelon Nuclear

## Job Performance Measure

### Perform One-Rod-Out Interlock Surveillance

JPM Number: RO Admin 1

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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.

**SIMULATOR SETUP INSTRUCTIONS**

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

<p>NOTE: It is okay to use a similar IC to the IC listed above, provided the IC actually used is verified to be compatible with this and other JPMs that are scheduled to be run concurrently.</p>
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2. Go to RUN.
3. Lock the Mode Switch in REFUEL.
4. Verify the RWM is NOT bypassed.
5. Turn Rod Select Power OFF and ON. (Verifies no rod selected at start of JPM)
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
    - With applicable Mode-5 Prerequisites signed off.
    - With Steps H.4.b and H.11.b marked N/A.
  - QCOP 0207-02 with Prerequisites signed off.
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.  
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#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.  
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JPM Start Time: \_\_\_\_\_

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
H.1	QCOP 0207-02 referenced for bypassing RWM.	Bypass the RWM per QCOP 0207-02.	—	—	—
QCOP 0207-02 F.1	Initials step f. (Performing a Procedure or Test which specifically references bypassing the RWM)	Initial the reason that the RWM is being bypassed.	—	—	—
QCOP 0207-02 F.1.f (1)	Fills in Procedure/Test # as: QCOS 0300-17.	Fill in Procedure/Test number.	—	—	—
QCOP 0207-02 F.1.f (2)	Fills in Step # as: Step H.1.	Fill in Step number.	—	—	—
QCOP 0207-02 F.2.a	Attaches the prepared Equipment Status Tag to the ROD MOVEMENT CONT SWITCH.	Prepare an Equipment Status Tag to Read “Rod Worth Minimizer in Bypass” and attach it to the ROD MOVEMENT CONT SWITCH.	—	—	—
QCOP 0207-02 *F.2.b	●RWM MODE SELECT switch selected to BYPASS ● and the date and time is recorded.	Place the RWM MODE SELECT switch to BYPASS and record the Date and Time.	—	—	—
<b>EVALUATOR NOTE:</b> 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.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*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.	—	—	—
*H.6	•ROD SELECT POWER switch placed in ON.•	Turn ROD SELECT POWER switch to ON.	—	—	—
<b>EVALUATOR NOTE:</b> The ROD OUT BLOCK annunciator will alarm when the rod is selected.					
*H.7	•Select a second Control Rod.•	Selects a peripheral Control Rod on the opposite side of the core.	—	—	—
H.8	Control Rod Withdrawal Block verified (Annunciator 901-5 A-3 ROD OUT BLOCK in alarm).	Verifies or determines that annunciator 901-5 A-3 cannot be reset.	—	—	—
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.	Insert the withdrawn Control Rod to Position 00.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor, inform the examinee that “another NSO will perform step H.12.”</b>				
<b>EVALUATOR NOTE:</b> The candidate should inform you that the task is complete.					
<b>EVALUATOR NOTE:</b> Remove the Equipment Status Tag from the Rod Motion Control Switch at the end of the JPM.					

JPM Stop Time: \_\_\_\_\_  
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**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: RO Admin 1 Revision Number: 00

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. 10, "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.

# Exelon Nuclear

## Job Performance Measure

### Evaluate License Maintenance Requirements

JPM Number: RO Admin 2

Revision Number: 01

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure OP-AA-105-102 Rev: 09  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 RO A.1.b for ILT Certification Exam 03-1 IAW NUREG 1021, Rev. 9.
- Revision 01,** This JPM was revised to incorporate procedure changes to OP-AA-105-102, Rev. 9, and to update format and dates.

### INITIAL CONDITIONS

- Today is March 24<sup>th</sup>, 2011.
- You have been assigned to cover the Unit-2 NSO position for April 4<sup>th</sup>, 2011.
- The Operations department is working a hybrid 8-hour/12-hour schedule.
- Your primary assignment has been as a clearance order writer since the beginning of the 1st quarter 2011, however, during the past quarter you have covered the following shifts:
  - One complete 12-hour day shift as the Unit 2 Assist NSO on January 9th.
  - Five 8-hour afternoon shifts as Unit 1 NSO on February 15<sup>th</sup> through the 19<sup>th</sup>.
  - Split two 12-hour midnight shifts, working six hours as the Unit 2 NSO and the other six hours as a clearance writer during a weekend outage on February 26<sup>th</sup> and 27<sup>th</sup>.
  - Split 8-hour day shifts working four hours as the Unit 1 Assist NSO and the other four hours as a clearance writer on March 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup>.
  - All shifts were logged by the Shift Manager.
- The remainder of the time, you have worked 8-hour shifts on days as a Clearance Order Writer Monday through Friday.

### INITIATING CUE

You are to review the above record of shift coverage for the 1st quarter, and determine your eligibility to assume the shift for April 4<sup>th</sup>, 2011. Give an explanation for your determination.

**Provide examinee with:** a copy of OP-AA-105-102, NRC Active License Maintenance.

Fill in the JPM Start Time when the student acknowledges the Initiating Cue.  
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### Information For Evaluator’s Use:

UNSAT requires written comments on respective step.

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- Denotes critical elements of a critical step.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.  
.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>EVALUATOR NOTE: ONLY full shifts, either 8 or 12 hours <u>with turnovers</u> count towards shift coverage time allowed.</b>					
*OP-AA-105-102	•Reviews requirements to maintain active license.•	Recognizes fact that the minimum number of required hours of shift watch to maintain an active license have NOT been completed.	—	—	—
*OP-AA-105-102	•Reviews requirements to maintain active license.•	Determines he/she is NOT eligible to stand shift on April 4 <sup>th</sup> , 2011 due to not having the minimum number of required shifts.	—	—	—
<b>CUE:</b>	<b>When the candidate has determined that they are presently ineligible to assume the shift, ask them what additional requirements are needed to be able to stand the shift on April 4<sup>th</sup>, 2011.</b>				
*OP-AA-105-102	•Reviews requirements to maintain active license.•	Determines that a minimum of one more complete eight or twelve-hour shift in March is needed to fulfill the requirements to maintain their license active.	—	—	—
<b>EVALUATOR NOTE: When the candidate determines that they cannot assume the shift for April 4<sup>th</sup>, 2011, and has determined the correct amount of time needed to maintain their license active, inform them that the JPM is complete.</b>					

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



**JPM SUMMARY**

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

JPM Title: Evaluate License Maintenance Requirements

JPM Number: RO Admin 2 Revision Number: 01

Task Number and Title: NUREG 1021 Licensing Requirements

K/A Number and Importance: **K/A:** 2.1.4 **Rating:** 3.3/3.8

Suggested Testing Environment: Simulator

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

Reference(s): OP-AA-105-102, Rev. 9

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 5 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

The task is successfully completed when the examinee identifies that the minimum number of required hours of shift watch to maintain an active license have NOT been completed AND the NSO must stand an 8 or 12 hour shift in this quarter to become eligible to work on the date requested.

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

- Today is March 24<sup>th</sup>, 2011.
- You have been assigned to cover the Unit-2 NSO position for April 4<sup>th</sup>, 2011.
- The Operations department is working a hybrid 8-hour/12-hour schedule.
- Your primary assignment has been as a clearance order writer since the beginning of the 1st quarter 2011, however, during the past quarter you have covered the following shifts:
  - One complete 12-hour day shift as the Unit 2 Assist NSO on January 9th.
  - Five 8-hour afternoon shifts as Unit 1 NSO on February 15<sup>th</sup> through the 19<sup>th</sup>.
  - Split two 12-hour midnight shifts, working six hours as the Unit 2 NSO and the other six hours as a clearance writer during a weekend outage on February 26<sup>th</sup> and 27<sup>th</sup>.
  - Split 8-hour day shifts working four hours as the Unit 1 Assist NSO and the other four hours as a clearance writer on March 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 14<sup>th</sup>, and 15<sup>th</sup>.
  - All shifts were logged by the Shift Manager.
- The remainder of the time, you have worked 8-hour shifts on days as a Clearance Order Writer Monday through Friday.

## INITIATING CUE

You are to review the above record of shift coverage for the 1st quarter, and determine your eligibility to assume the shift for April 4<sup>th</sup>, 2011. Give an explanation for your determination.

# Exelon Nuclear

## Job Performance Measure

### Review Quarterly SBLC Pump Flow Rate Test

JPM Number: RO Admin 3

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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.

## SIMULATOR SETUP INSTRUCTIONS

1. **NOTE:** This JPM may be conducted in any appropriate setting; i.e., simulator, classroom, or Control Room.
2. Prepare a copy of QCOS 1100-07, SBLC Pump Flow Rate Test as follows:
  - Sign off Prerequisites for an IST Group B Test / Partial for “A” Pump.
  - Initial complete all steps associated with SBLC Pump “A” IST Group B Test.
  - N/A all steps associated with SBLC Pump “B”.
  - N/A all steps associated with IST Comprehensive and IST-Pre Service Pump Test.
  - Step H.6.f. for SBLC Pump “A”, write in 52 psig and 1300 psig. Sign off the TS PASS and IST PASS blocks.
  - Step H.6.i.(3)., write in 49 gpm.
  - Step H.6.i.(4). Sign initial criteria met and enter 50 (H.6.f.) – 49 (H.6.i.(3)) for 1 gpm on next line.
3. Provide a copy of IST Pump Test Acceptance Criteria Sheet for the SBLC Pump A.
4. This completes the setup for this JPM.

### INITIAL CONDITIONS

- You are the Unit NSO.
- The Admin NSO is performing QCOS 1100-07, SBLC Pump Flow Rate Test, for the “A” pump ONLY.
- The surveillance is completed up to step H.12.

### INITIATING CUE

Complete Step H.12 a.(1) and a.(2) of QCOS 1100-07, SBLC Pump Flow Rate Test.

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

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#### Information For Evaluator’s Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>EVALUATOR NOTE: Step H.12 will require the examinee to review all applicable acceptance criteria and calculations. Acceptance criteria G.3, G.5, and G.7 do NOT apply since the Group B test was performed for SBLC Pump "A" only. The steps listed below are those which correspond to the acceptance criteria.</b>					
G.1	Verify SBLC Pump flow rate > 42 gpm at discharge pressure $\geq$ 1275 psig.	Refers to Step H.6.e. and verifies that SBLC Pump "A" flow of 52 gpm at a discharge pressure of 1300 psig passes TS criteria.	—	—	—
*G.2	•Verify SBLC Pump flow rate within IST Acceptable Range. •	Refers to IST Pump Acceptance Criteria Sheet and determines that SBLC Pump flow of 52 gpm is in the Required Action Range (> 49 gpm). Step H.6.e (IST PASS) is <u>incorrectly</u> signed off.	—	—	—
G.4	Verify stroke <u>open</u> operability of 1-1101-43A, SBLC PMP DISCH CK VLV.	Refers to step H.6.h and determines SBLC Pump flow is > 42 gpm satisfying operability requirement.	—	—	—
*G.7	•Verify stroke <u>closed</u> operability of 1-1101-43B, SBLC PMP DISCH CK VLV. •	Refers to step H.6.i.(4), and identifies SBLC Pump flow of 50 gpm instead of 52 gpm has been entered from step H.6.f. IST flow reduction criteria (< 2 gpm) is <u>NOT</u> met. (Actual flow reduction is 3 gpm).	—	—	—
G.8	Verify 1A SBLC Accumulator 1-1101-7A charge is > 750 psig.	Refers to step H.1.b and notes recorded charge of 850 psig meets acceptance criteria of 750 psig.	—	—	—
<b>EVALUATOR NOTE: The examinee should inform you that step H.12 is <u>NOT</u> met due to SBLC pump flow being in the Required Action Range AND the stroke closed criteria for the 1-1101-43A check valve is also <u>NOT</u> met with a reduction flow of 3 gpm.</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>CUE:</b>	<b>As Unit Supervisor acknowledge report and state that you will “determine the compensatory actions.”</b>				
<b>EVALUATOR NOTE: The examinee should inform you that the task is complete.</b>					

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

**JPM SUMMARY**

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

JPM Title: Review Quarterly SBLC Pump Flow Rate Test

JPM Number: RO Admin 3 Revision Number: 00

Task Number and Title: 1100.051, Determine if SBLC meets IST requirements.

K/A Number and Importance: KA: 2.2.12 **Rating:** 3.7/4.1

Suggested Testing Environment: Simulator or Classroom

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

Reference(s): QCOS 1100-07, SBLC Pump Flow Rate Test, Rev. 33

**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 identifies that the following two performance acceptance criteria for the "A" SBLC Pump are NOT met:

- SBLC Pump flow rate in the IST Acceptable Range.
- Stroke closed operability of the 1-1101-43B, 1B PMP DSCH CK VLV.

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

### **INITIAL CONDITIONS**

- You are the Unit NSO.
- The Admin NSO is performing QCOS 1100-07, SBLC Pump Flow Rate Test, for the “A” pump ONLY.
- The surveillance is completed up to step H.12.

### **INITIATING CUE**

Complete Step H.12 a.(1) and a.(2) of QCOS 1100-07, SBLC Pump Flow Rate Test.

# Exelon Nuclear

## Job Performance Measure

### **Disable NUMAC ARM Channel**

JPM Number: RO Admin 4

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 ILT 09-1 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. Obtain a NUMAC ARM key from the simulator booth.
3. Fail ARM #9 using the command: **imf rm0109 100**
4. Prepare a copy of QCOP 1800-03 with the pre-requisites filled as follows:
  - C.2.a.(1) Write "None" for functional testing required following TMOD installation.
  - C.2.a.(2) Write "None" for functional testing required following TMOD removal
  - C.2.a.(3) Enter "10 days" for Duration.
  - C.2.a.(4) Sign off as Unit Supervisor and write in "current" for date.
5. This completes the setup for this JPM.
6. **SIM OP NOTE:** The NUMAC must be restored after each simulator reset. Perform QCOP 1800-03, step F.3 to take ARM#9 out of bypass and restore it to the NUMAC display screen.

### INITIAL CONDITIONS

- You are the Unit 1 Admin RO.
- Unit 1 is in day 15 of a 35 day refuel outage.
- A chemical decontamination of the RWCU system piping is in progress resulting in elevated radiation levels in the Reactor Building.
- Radiation Protection has established access control into the Reactor Building.
- Annunciator 901-3 A-1, "RX BLDG HI RADIATION" is in constant alarm due to ARM#9 failing upscale.
- Per OP-AA-103-102, Watch-Standing Practices, the Unit Supervisor, has determined this to be a nuisance alarm.

### INITIATING CUE

Disable ARM #9 per QCOP 1800-03, Operation of Area Radiation Monitor 1(2)-1806-1 (NUMAC Monitor) and reset annunciator 901-3 A-1, RX BLDG HI RADIATION.

Provide the examinee with a marked up copy of QCOP 1800-03.

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.
- Denotes critical elements of a critical step.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.2.a	Notify Unit Supervisor that TMOD is about to be installed.	Notifies Unit Supervisor that Unit 1 ARM Channel 9 is about to be bypassed per QCOP 1800-03.	—	—	—
F.2.b	Obtains key for 1-1806-1 NUMAC ARM.	Obtains barrel key for the 1-1806-1 NUMAC ARM from the Work Execution Center.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor, provide the key to the examinee and state: “the WEC SRO has brought the key over.”</b>				
*F.2.c	•Place the NUMAC ARM into INOP mode.•	At the 901-11 panel, inserts key and places the keylock mode switch to the INOP position.	—	—	—
<b>CUE:</b>	<b>Report to the examinee that, “annunciator 901-3 F-1 is in alarm and the Unit NSO has acknowledged it.” (Note: the alarm will be acknowledged by the Simulator Operator.)</b>				
F.2.c.(1) Thru F.2.c.(3)	Verify the following: 1) Annunciator 901-3 F-1, in alarm. 2) Bar Graph screen is displayed. 3) INOP-CAL menu is displayed.	At the 901-3 panel, acknowledges annunciator 901-3 F-1, AREA MONITOR DOWNSCALE.  At the 901-11 panel, verifies the following on the NUMAC ARM: 1) Bar Graph screen is displayed. 2) INOP-CAL is displayed at top right corner.	—	—	—
*F.2.d.	•Navigate to the (ENTER INOP-SET/CHECK DISPLAY/CHECK KEYS/ ETC) menu.•	Depresses ETC softkey until desired menu appears on bottom of screen.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>EVALUATOR NOTE: The next step requires entry of the password, (9688). If this is not entered in 10 seconds, then the NUMAC ARM will return to the Bar Graph display. Step F.2.e and F.2.f, can be performed again if necessary.</b>					
*F.2.e	•Select the INOP-SET mode.●	Depresses ENTER INOP-SET softkey.	—	—	—
*F.2.f	•Enter password.●	Using DATA keypad softkeys enters (9688) and then depresses ENT.	—	—	—
*F.2.g	•Navigate to CHANNEL 09 METER DATA.●	Using CURSOR softkeys, positions inverse video display box to CHANNEL 09 METER DATA.	—	—	—
*F.2.h	•Enter SET PARAMETER function for CHANNEL 09 METER DATA.●	Depresses SET PARAMETER softkey and verifies (SET METER PARAMETERS FOR ARM CHANNEL 09 screen is displayed.	—	—	—
*F.2.i	•Navigate to the USE? column.●	Positions inverse video display to the USE? column by depressing the <u>right</u> CURSOR softkey.	—	—	—
*F.2.j	•Change DESIRED row option to NO.●	Depresses <u>UPWARD</u> CURSOR softkey and verifies a change in DESIRED row from YES to NO.	—	—	—
*F.2.k	•Accept changes to CHANNEL 09 METER DATA.●	Depress ACCEPT softkey and verify <u>both</u> PRESENT and DESIRED columns indicate NO.	—	—	—
*F.2.l	•Exit SET METER PARAMETERS FOR ARM CHANNEL 09 screen.●	Depresses EXIT softkey and verifies: (HELP/SET PARAMETER/EXIT INOP-SET) menu appears on bottom of screen.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.2.m	Navigate to CHANNEL DESIGNATIONS option.	Positions inverse video box to CHANNEL DESIGNATIONS using CURSOR softkeys.	—	—	—
F.2.n	Select SET PARAMETERS function.	Depresses SET PARAMETER softkey and verifies SET CHANNEL DESIGNATIONS screen is displayed.	—	—	—
F.2.o	Navigate to ARM CHANNEL 09.	Positions inverse video box to ARM CHANNEL 09 using <u>right</u> CURSOR softkey.	—	—	—
F.2.p	Change ARM CHANNEL 09 digits to 00.	Changes ARM CHANNEL 09 digits to 00 using left, right, and <u>DOWNWARD</u> CURSOR softkeys.	—	—	—
F.2.q	Accept changes to ARM CHANNEL 09 display.	Depresses ACCEPT softkey and verifies <u>both</u> PRESENT and DESIRED columns indicate 00.	—	—	—
F.2.r	Exit SET CHANNEL DESIGNATIONS screen.	Depresses EXIT softkey and verifies:  (HELP/SET PARAMETER/EXIT INOP-SET) menu appears on bottom of screen.	—	—	—
F.2.s & F.2.t (1), (2)	Exit INOP-SET mode.	<ol style="list-style-type: none"> <li>1) Depresses EXIT INOP-SET softkey and verifies: (EXIT INOP-SET MODE: ARE YOU SURE?) message is displayed.</li> <li>2) Depresses YES softkey.</li> <li>3) Verifies Bar Graph is displayed and ARM Channel 09 is removed.</li> </ol>	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor, inform the examinee that, “another RO will perform steps F.2.v, F.2.w., and F.2.x.”</b>				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.2.y.(1)	•Restore NUMAC ARM to operational status by placing mode switch to OPERATE. •	At panel 901-11, places the NUMAC ARM keylock mode switch to OPERATE.  Verifies the following:  1) OPERATE is displayed at the top right corner of screen.  2) Bar Graph is displayed.	—	—	—
*F.y.(2)	•Select OUTPUT STATUS screen. •	Depresses OUTPUT STATUS softkey to view all upscale and downscale trips.	—	—	—
*F.2.y.(3)	•Reset ARM 09 trip condition. •	Depresses RESET softkey and verifies trip condition clears.	—	—	—
<b>CUE:</b>	<b>Inform the examinee that, “annunciator 901-3 A-1, RX BLDG HI RADIATION has been reset by the Unit NSO. Step F.2.y.(4) is complete.”</b>				
F.2.y.(5)	Exit OUTPUT STATUS screen.	Depresses EXIT softkey and verifies return to Bar Graph display.	—	—	—
F.2.y.(6)	Remove key from NUMAC ARM.	Removes barrel key from NUMAC ARM and returns key to the WEC.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor state that you “will have the key returned to the Work Execution Center (WEC).”</b>				
<b>EVALUATOR NOTE: From Prerequisite step C.2.a.(1), <u>NO</u> functional testing is required, therefore step F.2.z. is N/A.</b>					
<b>EVALUATOR NOTE: The examinee should inform you that the task is complete.</b>					

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

**JPM SUMMARY**

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

JPM Title: Disable NUMAC ARM Channel

JPM Number: RO Admin 4 Revision Number: 00

Task Number and Title:  
**SR-1800-P05** (Freq: LIC=I) Given a reactor plant, disable and re-enable a NUMAC ARM channel to service in accordance with QCOP 1800-03.

K/A Number and Importance: **KA:** 2.3.5 **Rating:** 2.9/2.9

Suggested Testing Environment: Simulator

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

Reference(s):  
OP-AA-103-102, Watch-Standing Practices, Rev. 8  
QCOP 1800-03, Operation of Area Radiation Monitor 1(2)-1806-1 (NUMAC Monitor), Rev. 9

**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 ARM #9 is bypassed, the NUMAC is returned to the Operate mode and the ARM #9 high radiation trip is reset.

Were all the Critical Elements performed satisfactorily?  Yes  No

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

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

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

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

## **INITIAL CONDITIONS**

- You are the Unit 1 Admin RO.
- Unit 1 is in day 15 of a 35 day refuel outage.
- A chemical decontamination of the RWCU system piping is in progress resulting in elevated radiation levels in the Reactor Building.
- Radiation Protection has established access control into the Reactor Building.
- Annunciator 901-3 A-1, “RX BLDG HI RADIATION” is in constant alarm due to ARM#9 failing upscale.
- Per OP-AA-103-102, Watch-Standing Practices, the Unit Supervisor, has determined this to be a nuisance alarm.

## **INITIATING CUE**

Disable ARM #9 per QCOP 1800-03, Operation of Area Radiation Monitor 1(2)-1806-1 (NUMAC Monitor) and reset annunciator 901-3 A-1, RX BLDG HI RADIATION.

# Exelon Nuclear

## Job Performance Measure

### Review a Fire Impairment Permit Requiring Compensatory Actions

JPM Number: SRO Admin 1

Revision Number: 01

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 01,** This is a LORT Bank JPM (AD-SRO-6) that was used on the 2011 ILT NRC License Exam. Updated Fire Permit information.

## 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) One detector, (1-4141-109), that makes a detection system inoperable (ref. QCAP 1500-01 Attachment A) and the detection system in turn makes the suppression system inoperable (ref. QCAP 1500-01 Attachment C).
      - 2) Fill out Section I "Initiator:" of the Fire Protection Permit as follows:
 

Initiator: "IMD Supervisor"	Station: "Quad"	Unit: "01"
Name: "K. Arney"	Phone: "X 2667"	Dept/Co: "IMD/Exelon"
Sch. Start Date: "current"	Bldg: "TB"	EPN#: "1-4141-109"
Sch. End Date: "current + 1"	Elev: "611"	Door #: "N/A"
AR/WR/OOS#: "108111-01"		Det. Zone: "N/A"
		Pent #: "N/A"

Do NOT check the Structural fireproofing OR Wall Penetration boxes.

Impairment Description: "Disconnect and test Turbine Oil Reservoir smoke detector 1-4141-109 per surveillance per surveillance procedure and reconnect."
  - 3) Fill out section II. "FIRE MARSHAL REVIEW" of the Fire Protection Impairment Permit as follows:
    - a. Fire Zone(s): 8.2.7.c / For Barriers: Check the "Functional" box.
    - b. Technical Requirement Manual? Check the "Yes" box.
    - 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 "Yes" 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".
    - i. Sign and date as Fire Marshal for Authorization Block.
3. This completes the setup for this JPM.

**INITIAL CONDITIONS**

- You are the Work Execution Center Senior Reactor Operator.
- An Instrument Maintenance Supervisor has submitted a fire permit to allow testing of smoke detectors in the Unit 1 Turbine Oil Reservoir area. The work will continue into the next shift.

**INITIATING CUE**

Review Fire Protection Impairment Permit 1121. Approve the permit OR explain the reason(s) why you cannot.

**EVALUATOR:** Provide candidate with a copy of fire permit 1121, 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.
- Denotes critical elements of a critical step.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	Obtains Procedures.	Obtains a copy of OP-MW-201-007, QCAP 1500-01, QCOA 4100-11 as necessary.	—	—	—
<b>EVALUATOR: The candidate may perform the following steps in any order.</b>					
	Reviews Fire Permit.	Reviews Fire Permit to determine what is being impaired. Determines that one detector will be disconnected.	—	—	—
Att. A page 3	Determines effect of disconnecting detectors.	Reviews QCAP 1500-01 Att. A page 3 and determines that one detector, if removed, will make the detection system inoperable (all 6 are required).	—	—	—
<p><b>EVALUATOR: If the candidate states he cannot approve the permit because of errors, prompt him to explain all of the errors on the permit for you.</b></p> <p><b>The following errors are built into the permit:</b></p> <p>The Fire Protection Permit was filled out improperly in section II. "FIRE MARSHAL REVIEW" as follows:</p> <ul style="list-style-type: none"> <li>• None is marked in the "Fire Watch Required:" block (<b>should be marked "hourly" with performed by marked as "IMD"</b>).</li> <li>• NO is checked in the box for "Additional Compensatory Measures" (<b>should be marked "YES" and a Description of the additional Compensatory Measures should be included i.e., "backup suppression established or verified."</b>)</li> </ul> <p>The one detector that was chosen to make a detection system inoperable (ref. QCAP 1500-01 Attachment A page 3), and the detection system <i>in turn</i> makes the preaction suppression system inoperable (ref. QCAP 1500-01 Attachment C page 2).</p>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
Att. C page 2	Determines consequence of making the detection system inoperable.	Reviews QCAP 1500-01 Att. C page 2 (or determines info from QCAP 1500-01 Att. A page 3) and determines that making the <i>detection</i> system inoperable makes the <i>suppression</i> system inoperable per step D.2.a.(1)(c).	—	—	—
*D.1.c.(2) *D.2.c.(2)	•Determines hourly fire watch established within one hour. •	Reviews QCAP 1500-01 step D.1.c.(2) and D.2.c.(2) and determines an hourly fire watch must be conducted if this permit is approved.	—	—	—
*D.2.c.(4)	•Determines backup suppression required within one hour. •	Reviews step D.2.c.(4) and determines backup suppression will also be required. (page 65 of 93)	—	—	—
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.	—	—	—
<b>NOTE: The candidate may choose to correct the provided impairment. This is acceptable.</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
	Reviews the permit for accuracy and Notifies the Evaluator of his conclusions.	The candidate reviews the permit for accuracy in accordance with 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" <b>None</b> is marked in the "Fire Watch Performed By:" block ( <b>should be marked "YES" and a Description of the additional Compensatory Measures should be included i.e., "backup suppression required"</b> ).	—	—	—
<b>EVALUATOR: After the candidate explains why he cannot approve the fire permit as written, as the IM Supervisor requesting the permit that you will rewrite the permit and bring it back for approval on the next shift.</b>					
<b>NOTE: The JPM is complete.</b>					

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

**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 1 Revision Number: 01

Task Number and Title:

**4100.016** Complete / review / approve Fire Protection Impairment Permits and Fire Watch Waivers

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. 29 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:**

The task is successfully completed when the examinee identifies that the fire permit requires an hourly fire watch and backup suppression.

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 Work Execution Center Senior Reactor Operator.
- An Instrument Maintenance Supervisor has submitted a fire permit to allow testing of smoke detectors in the Unit 1 Turbine Oil Reservoir area. The work will continue into the next shift.

### **INITIATING CUE**

Review Fire Protection Impairment Permit 1121. Approve the permit OR explain the reason(s) why you cannot.

# Exelon Nuclear

## Job Performance Measure

### Use Procedures Related to Shift Staffing

JPM Number: SRO Admin 2

Revision Number: 01

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 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. 39, Operations Shift Staffing
  - Tech Spec 5.2, Organization
  - OP-AA-112-101, Rev.7, Shift Turnover and Relief
  - SY-AA-102-201, Rev.8, "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.
- Denotes critical elements of a critical step.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.  
.....

•JPM Start Time: \_\_\_\_\_

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*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.	—	—	—
<b>ROLE PLAY:</b>	<b>When requested, as Shift Supervisor provide a list containing the phone numbers of the STA's available to work.</b>				
<b>ROLE PLAY:</b>	<p><b>During the simulated phone calls provide the requested information listed below per SY-AA-102-201, Attachment 1</b></p> <p><b>STA #1</b>  <b>Alcohol consumed in last 5 hrs? NO</b>  <b>Are you Fit For Duty? YES</b>  <b>Will you violate Work Hour Restrictions? NO</b>  <b>Comment: Can report On-Site by 0500</b></p> <p><b>STA #2</b>  <b>Alcohol consumed in last 5 hrs? NO</b>  <b>Are you Fit For Duty? YES</b>  <b>Will you violate Work Hour Restrictions? YES</b>  <b>Comment: Can report On-Site by 0300</b></p> <p><b>STA #3</b>  <b>Alcohol consumed in last 5 hrs? NO</b>  <b>Are you Fit For Duty? YES</b>  <b>Will you violate Work Hour Restrictions? NO</b>  <b>Comment: Can report On-Site by 0330</b></p>				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	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.	—	—	—
<b>ROLE PLAY:</b>	<b>As STA #3, acknowledge the request and state that you will report to work.</b>				

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



**JPM SUMMARY**

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

JPM Title: Use Procedures Related to Shift Staffing

JPM Number: SRO Admin 2 Revision Number: 01

Task Number and Title: (Discussion requirement) SS-S-08 Operations Shift Staffing

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

Ability to use procedures related to shift staffing, such as minimum crew compliment, overtime limitations, etc.

Suggested Testing Environment: Classroom

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

Reference(s): QAP 0300-03 Rev. 39, Operations Shift Staffing

Tech Spec 5.2, Organization

OP-AA-112-101 Rev. 7, Shift Turnover and Relief

SY-AA-102-201 Rev. 8, "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:**

The task is successfully completed when the examinee identifies that the STA position MUST be filled in a time NOT to exceed 2 hours.

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

### Verify Reactor Mode Change Requirements

JPM Number: SRO Admin 3

Revision Number: 03

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 modified from JPM ADM-A.1.1-SRO, Quad Cities NRC Exam March, 2000, IAW ILT NRC Exam 03-01, IAW NUREG 1021, Rev 9.

**Revision 01**, Changed estimated completion time to 18 minutes based on performance data.

**Revision 02**, Modified dates to current year, updated based on procedure revision.

**Revision 03**, Updated to current procedure revision and adjusted dates.

## **SIMULATOR SETUP INSTRUCTIONS**

1. None. This JPM may be completed at any location, provided that the appropriate reference material is available.
2. Ensure the following references are available
  - QCGP 1-1, page 69-70. Do not sign off step F.6.hh.
  - QCGP 1-1 Attachment E completed as follows:
    - Unit 1 Recirculation System Drive Flow Calibration (N/A for Unit 2) is incorrectly marked "N/A" (page 1 of 6)
    - MSIV Closure Monthly Scram Sensor Channel Functional Test is performed on 2/01/2011 (page 5 of 6)
    - All Unit 2 surveillances marked "N/A"

The following dates include the 25% extension.

  - All Unit 1 24 month surveillances dated AFTER 11/30/2009.
  - All 184 day (6 month) surveillances dated AFTER 10/13/2010.
  - All Unit 1 92 day surveillances dated AFTER 2/05/2011, except as noted above
  - The Unit 1 7-day surveillance dated AFTER 05/23/2011, (page 165)
  - All steps NOT marked N/A are initialed and dated 06/01/2011.
  - A Calendar for 2011
3. This completes the setup for this JPM.

### INITIAL CONDITIONS

- Today is June 1st, 2011.
- **You are the Unit 1 Supervisor.** Unit 1 is in Mode 2 at 10% reactor power, starting up following a 30 day Refuel Outage. QCGP 1-1 is in progress. All procedure steps up to, and including F.6.gg. have been completed.

### INITIATING CUE

The Shift Manager has directed you to perform QCGP 1-1 step F.6.hh. to VERIFY MODE 1 surveillance requirements met, and report to the Shift Manager when complete.

If MODE 1 surveillance requirements are not met, report to the Shift Manager, any action(s) required, to meet the requirements.

Provide the candidate with page 69-70 of QCGP 1-1 completed up to step F.6.hh, AND a copy of Attachment E with dates filled in as described in setup.

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

#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.6.hh.	Reviews Attachment E to ensure all Mode 2 to Mode 1 surveillance requirements are met.		—	—	—
<p><b>NOTE: There are TWO ERRORS on Attachment E that the candidate must identify. The ORDER which the candidate identifies the errors will affect the role-play required of the Evaluator.</b></p>					
*ATT E	<ul style="list-style-type: none"> <li>Verifies ALL surveillances applicable to Unit One have been completed.</li> </ul>	On page 1 of 6, recognizes that the Unit 1 Recirculation System Drive Flow Calibration (N/A for Unit 2) is incorrectly marked "N/A".	—	—	—
<b>CUE:</b>	<p><b>Report, as the Operations Predefine Coordinator, that the surveillance was last performed on May 15, 2011. Change the "N/A" to 05/15/11 then initial and date the change, and initial the right column.</b></p>				
*ATT E	<ul style="list-style-type: none"> <li>Verifies ALL applicable surveillances completed within the proper timeframe.</li> </ul>	On page 5 of 6, recognizes that the MSIV Closure Monthly Scram Sensor Channel Functional Test, should have been completed no earlier than Feb 06, 2011.	—	—	—
<b>CUE:</b>	<p><b>Report, as the Operations Predefine Coordinator, that the surveillance was last performed on March 02, 2011. Change the date to 03/02/11, initial and date the change, and initial the right column.</b></p>				
	Candidate reports task complete.		—	—	—

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

**JPM SUMMARY**

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

JPM Title: Verify Reactor Mode Change Requirements

JPM Number: SRO Admin 3 Revision Number: 03

Task Number and Title:  
**SR-0002-P10** (Freq: LIC=I), Given a shutdown reactor plant, perform a reactor plant startup in accordance with QCGP 1-1.

K/A Number and Importance: **K/A:** 2.2.12 **Rating:** 3.7/4.1

Suggested Testing Environment: Simulator

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

Reference(s): QCGP 1-1, Rev. 84, Normal Unit Startup

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 18 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

- Today is June 1st, 2011.
- **You are the Unit 1 Supervisor.** Unit 1 is in Mode 2 at 10% reactor power, starting up following a 30 day Refuel Outage. QCGP 1-1 is in progress. All procedure steps up to, and including F.6.gg. have been completed.

## INITIATING CUE

The Shift Manager has directed you to perform QCGP 1-1 step F.6.hh. to VERIFY MODE 1 surveillance requirements met, and report to the Shift Manager when complete.

If MODE 1 surveillance requirements are not met, report to the Shift Manager, any action(s) required, to meet the requirements.

Exelon Nuclear

Job Performance Measure

**Verify a Liquid Radwaste River Discharge Permit**

JPM Number: SRO Admin 4

Revision Number: 04

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

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

SME/Instructor	Date
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## **Revision Record (Summary)**

**Revision 00**, This JPM is being developed for SRO testing during the Annual License Operator Requal cycle.

**Revision 01**, This JPM revised to reflect changing times.

**Revision 02**, This JPM revised to reflect procedure changes.

**Revision 03**, Changed Shift Supervisor to Field Supervisor and updated JPM to new procedure revision.

**Revision 04**, This JPM revised to reflect procedure changes.

### INITIAL CONDITIONS

You are the Shift Supervisor with the current plant conditions as follows:

- 2 Service Water Pumps operating.
- Unit 1 has 3 Circ Water Pumps operating.
- Unit 2 has 3 Circ Water Pumps operating.
- The River Discharge Tank (RDT) is 94% and needs to be discharged into the river using the river discharge pump.
- The Chemistry Department has sampled the contents of the river discharge tank and forwarded the sample analysis and discharge calculations.
- NO other tanks are being discharged to the river.
- NO other tanks are being pumped to the River Discharge Tank.
- Valve lineup has been completed per Attachment B.
- South Diffuser gate – 100% open.
- Ice melt line – Closed.

### INITIATING CUE

The Shift Manager has asked you, as Shift Supervisor, to independently calculate the maximum River Discharge Tank (RDT) discharge rate per QOP 2000-25. The following information was provided on the envelope:

<p style="text-align: center;"><b>RIVER DISCHARGE TANK</b></p> <p><b>Batch #</b> _____</p> <p><b>Total Percent of 10*EC</b> _____</p> <p>Minimum # Circ Water Pumps = 2</p> <p>Minimum # Service Wtr Pumps = 1</p> <p>Ice Melt Line OPEN or CLOSED? (Circle)</p>
--

**Set Up Instructions:**

On the Chemistry Batch sticker which is part of the Initiating Cue, fill in the following:

Batch #: "7371"

Total Percent of 10\*EC: "63"

Circle "Closed" for the Ice Melt Line.

\*\*\*\*\*

**Provide examinee with:**

A calculator and a copy of QOP 2000-25.

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

.....

**Information For Evaluator's Use:**

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.7.b.	<ul style="list-style-type: none"> <li>●Determines NET DILUTION FLOW by determining the number of circulating water pumps operating x 157,000gpm + number of service water pumps operating x 13,800gpm and subtracting 0 gpm for ice melt line being closed.●</li> </ul>	Determines NET DILUTION FLOW. $2 \text{ circ wtr pmp} \times 157,000 \text{ gpm} = 314,000 \text{ gpm}$ + $1 \text{ service wtr pmps} \times 13,800 \text{ gpm} = 13,800 \text{ gpm} - 0 \text{ gpm}$ (due to ice melt line being closed.) Determines total net dilution flow $327,800 \text{ gpm} - 0 = 327,800 \text{ gpm}$ .	—	—	—
*F.7.c.	<ul style="list-style-type: none"> <li>●Determines effective dilution flow by dividing net dilution flow by 2.●</li> </ul>	Divides NET DILUTION FLOW by 2. Determines effective dilution flow to be $327,800 \text{ gpm} / 2 = 163,900 \text{ gpm}$ .	—	—	—
*F.7.d.	<ul style="list-style-type: none"> <li>●Determines maximum allowable discharge rate by multiplying the effective dilution flow by 10, and dividing by the total percent of 10*EC (from sample analysis).●</li> </ul>	Multiplies NET DILUTION FLOW by 10, and divides by Total % of 10*EC. Determines Max Allowable Discharge Rate to be $(163,900 \times 10) / 63 = 26,016 \text{ gpm}$ .	—	—	—
<b>EVALUATOR NOTE: JPM is complete when calculation is finished by candidate.</b>					

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

.....

**JPM SUMMARY**

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

JPM Title: Verify a Liquid Radwaste River Discharge Permit

JPM Number: SRO Admin 4 Revision Number: 04

Task Number and Title:

**SN-2000-P09** (Freq: LIC=I NF=I) Given Rad Waste systems in a normal lineup, discharge from the River Discharge Tank to the river using the Waste Surge Pump or the River Discharge Pump in accordance with QOP 2000-24 or QOP 2000-25. (Use pictures, rad maps, remote cameras etc.. to discuss actions in high dose areas.)

K/A Number and Importance: **K/A:** 2.3.6 **Rating:** 2.0/3.8

Suggested Testing Environment: Simulator

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

Reference(s): QOP 2000-25, Rev. 43, DISCHARGING TO THE RIVER FROM THE RIVER DISCHARGE TANK USING THE RIVER DISCHARGING PUMP

**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:**

The task is successfully completed when the examinee calculates the maximum River Discharge rate using 1 Service Water and 2 Circ Water Pumps per QOP 2000-25.

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 Supervisor with the current plant conditions as follows:
- 2 Service Water Pumps operating.
- Unit 1 has 3 Circ Water Pumps operating.
- Unit 2 has 3 Circ Water Pumps operating.
- The River Discharge Tank (RDT) is 94% and needs to be discharged into the river using the river discharge pump.
- The Chemistry Department has sampled the contents of the river discharge tank and forwarded the sample analysis and discharge calculations.
- NO other tanks are being discharged to the river.
- NO other tanks are being pumped to the River Discharge Tank.
- Valve lineup has been completed per Attachment B.
- South Diffuser gate – 100% open.
- Ice melt line – Closed.

## INITIATING CUE

The Shift Manager has asked you, as Shift Supervisor, to independently calculate the maximum River Discharge Tank (RDT) discharge rate per QOP 2000-25. The following information was provided on the envelope:

### RIVER DISCHARGE TANK

**Batch #** \_\_\_\_\_

**Total Percent of 10\*EC** \_\_\_\_\_

Minimum # Circ Water Pumps = 2

Minimum # Service Wtr Pumps = 1

Ice Melt Line OPEN or CLOSED? (Circle)

# Exelon Nuclear

## Job Performance Measure

### **Classify a Security Event**

JPM Number: SRO Admin 5

Revision Number: 00

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 ILT 09-1 NRC Exam.

## **SIMULATOR SETUP INSTRUCTIONS**

- 1) Verify the following reference material is available:
  - a) EP-MW-114-100, Rev. 9, MIDWEST REGION OFFSITE NOTIFICATIONS
  - b) EP-AA-1006, Rev. 29, RADIOLOGICAL EMERGENCY PLAN ANNEX FOR QUAD CITIES STATION
  
- 2) Log in at the Unit Supervisors Desk.

### INITIAL CONDITIONS

#### THIS IS A DRILL

Both Units are operating at rated power.

You are the Shift Manager when the following events occur:

- 1) A Fork Truck carrying a load of scaffold has tipped over in the Reactor Building near the half-track. No equipment damage or personnel injuries resulted.
- 2) The Unit Supervisor has received the following authenticated message from the NRC: "A large commercial airliner has been hijacked and is on a flight path for the Quad Cities Nuclear Station. Estimated time of arrival is approximately 20 minutes."
- 3) During the placement of a Clearance Order on the Halon system, an inadvertent actuation occurred in the Main Computer Room located on the 1<sup>st</sup> floor of Service Building.

#### THIS JPM IS TIME CRITICAL.

### INITIATING CUE

Determine the Emergency Action Level (EAL) classification and prepare a NARS form for transmittal.

**Provide examinee with:** Candidate needs to have access to all Emergency Plan procedures as found 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.
- Denotes critical elements of a critical step.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>EVALUATOR: The following step (Classification) must be completed within 15 minutes from the JPM start time.</b>					
*	•Declares an ALERT $\leq$ 15 minutes of JPM start time. •	Recognizes that the conditions for HA1 are met due to validated notification from NRC of an airliner attack threat <b>&lt; 30 minutes</b> from site.	___	___	___
	Refers to EP-MW-114-100 Midwest Region OFFSITE NOTIFICATIONS as necessary to fill out NARS form.	Time ALERT declared. _____ JPM start time. _____ Difference $\leq$ 15 min. _____	___	___	___
<b>EVALUATOR: The following step (NARs completion ) must be completed within 15 minutes from the time of Classification.</b>					
NARS form	Fills out Utility Message Number.	Records Utility Message #1.	___	___	___
NARS form	Fills out State Message Number.	Records <b>N/A</b> for State Message Number.	___	___	___
Block #1	Fills out block #1 information regarding Status.	Checks box <b>[B]</b> Drill/Exercise in block #1.	___	___	___
Block #2	Fills out block #2 information regarding Station.	Checks box <b>[F]</b> Quad Cities in block #2.	___	___	___
*Block #3	•Fills out block #3 information regarding onsite condition. •	Checks box <b>[B]</b> ALERT.	___	___	___
*Block #4	•Fills out block #4 information regarding Accident Classified • & Accident Terminated.	Records Accident Classification as Time= <b>time ALERT declared</b> Date= <b>today's date</b> EAL= <b>HA1</b> Records <b>N/A</b> for Accident Terminated in Time and Date space.	___	___	___

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*Block #5	•Fills out block #5 information regarding Release Status. •	Checks box [A] None.	—	—	—
Block #6	Fills out block #6 information regarding Type of Release.	Checks box [A] NOT APPLICABLE	—	—	—
<b>CUE:</b>	<b>Examinee should access the meteorological data from the “Effluent Release Parameter Screen” at the Unit Supervisors Desk. When the examinee demonstrates which parameters they are recording, state the meteorological conditions as follows:</b> <b>Wind Direction 233 degrees</b> <b>Wind Speed 2.74 m/sec OR 6.09 miles/hr</b>				
Block #7	Fills out block #7 information regarding Wind Direction.	Records <b>233 degrees</b> .	—	—	—
Block #8	Fills out block #8 information regarding Wind Speed.	Checks both boxes and records values for [A] Meters/Sec = <b>2.74</b> and [B] Miles/Hr = <b>6.09</b> .	—	—	—
Block #9	Fills out block #9 information regarding Recommended Actions.	Checks box [A] NONE.	—	—	—
Block #10	Fills out block #10 information regarding Additional Information.	Records <b>NONE</b> .	—	—	—
*NARS form	•Submits NARS form for transmittal ≤ 14 minutes after classification. •	Submits NARS form for transmittal. Record time: _____	—	—	—
<b>CUE:</b>	<b>When candidate submits the NARS form for verification, state that the JPM is complete.</b>				

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

**JPM SUMMARY**

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

JPM Title: Classify a Security Event

JPM Number: SRO-Admin 5

Revision Number: 00

Task Number and Title:

**S-EP-P01** (Freq: LIC=A) (ILT-MP) Given an event, classify the event and activate the Emergency Response organization in accordance with EP-AA-111 and EP-AA-112.

K/A Number and Importance: **K/A:** 2.4.41 **Rating:** 2.9/4.6

Suggested Testing Environment: Simulator

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

Reference(s): EP-MW-114-100, Rev. 10, MIDWEST REGION OFFSITE NOTIFICATIONS  
EP-AA-1006, Rev. 30, RADIOLOGICAL EMERGENCY PLAN ANNEX FOR  
QUAD CITIES STATION

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 15 minutes  
14 minutes

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

**EVALUATION SUMMARY:**

The task is successfully completed when the examinee classifies the event as an ALERT per EAL per HA1 in 15 minutes or less AND completes the NARS form for transmission in 14 minutes or less per EP-MW-114-100.

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

## **INITIAL CONDITIONS**

### **THIS IS A DRILL**

Both Units are operating at rated power.

You are the Shift Manager when the following events occur:

- 1) A Fork Truck carrying a load of scaffold has tipped over in the Reactor Building near the half-track. No equipment damage or personnel injuries resulted.
  
- 2) The Unit Supervisor has received the following authenticated message from the NRC:  
“A large commercial airliner has been hijacked and is on a flight path for the Quad Cities Nuclear Station. Estimated time of arrival is approximately 20 minutes.”
  
- 3) During the placement of a Clearance Order on the Halon system, an inadvertent actuation occurred in the Main Computer Room located on the 1<sup>st</sup> floor of Service Building.

### **THIS JPM IS TIME CRITICAL.**

## **INITIATING CUE**

Determine the Emergency Action Level (EAL) classification and prepare a NARS form for transmittal.

# Exelon Nuclear

## Job Performance Measure

### Locally Start-Up a Diesel Generator With a Failure of the Vent Fan to Start

JPM Number: RO/SRO JPM i

Revision Number: 19

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

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

## **Revision Record (Summary)**

**Revision 10**, This JPM is developed IAW guidelines established in NUREG 1021 Rev 8 ES-301 and Appendix C. This JPM meets the criteria of Category B.2 "In-Plant Systems," for RO/SRO candidates.

JPM revised to match procedure revision.

**Revision 11**, JPM revised to match procedure revision.

**Revision 12**, JPM revised to match procedure revision.

**Revision 13**, JPM revised to match procedure revision.

**Revision 14**, JPM revised to update expected completion time based upon JPM usage.

**Revision 15**, JPM revised to match procedure revision.

**Revision 16**, JPM revised to match procedure revision.

**Revision 17**, JPM revised objective to allow flexibility to perform task on more than one diesel. Added note to instructor to verify the operator dons double hearing protection.

**Revision 18**, JPM revised to match procedure revision.

**Revision 19**, Revised Evaluator cues and notes.

### INITIAL CONDITIONS

- A loss of off-site power has occurred on Unit 1. The U-1(U1/2) Diesel failed to start.
- A fire in the plant has damaged fire detection cabling associated with the U1(U1/2) Diesel Room as indicated by control room alarms.
- A manual start from the Control Room was attempted but was not successful due to a faulty control switch.
- QCOA 6600-01 has been entered and other operators are taking action directed by that procedure.
- U1(U1/2) Diesel Day Tank level is 90% and the storage tank level is 95%.

### INITIATING CUE

The Unit Supervisor directs you to locally start the U-1(U1/2) Diesel Generator in accordance with QCOP 6600-11, to energize Bus 14-1(13-1) and ensure the U1(U1/2) Diesel is operating properly. Report to the US when Diesel Generator is ready to be loaded.

Provide the examinee with a blank copy of QCOP 6600-11.

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

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#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>CUE:</b>	<b>If contacted at any time during execution of this task, report as NSO, that “Annunciator 901-8 G-8, DIESEL GEN 1 RELAY TRIP (901-5 G-5, DIESEL GEN ½ RELAY TRIP), is <u>NOT</u> alarming.</b>				
F.2.	Verify maint. switch in "REMOTE AUTO START" position.	Verifies maint. switch in "up" position. (Engine Mounted Control Panel)	—	—	—
<b>CUE:</b>	<b>Point to the maintenance switch up position and state, “This switch is here.”</b>				
F.3.	Determine status of DG output breaker.	Contacts control room OR dispatches EO to the one of the following: DG 1: Bus 14-1 cubicle 10 DG ½: Bus 13-1 <u>AND</u> Bus 23-1	—	—	—
<b>CUE:</b>	<b>When contacted, as NSO, respond that the “DG output breaker is open” OR as EO, report that the “DG output breaker is open and you will standby to monitor its operation”.</b>				
F.5.	Verify “SPEED DROOP” set to “0”.	At governor, ensures “SPEED DROOP” knob set on “0” (upper left knob).	—	—	—
<b>CUE:</b>	<b>Point to “0” position on the speed droop knob and state, “This knob is here.”</b>				
*F.6.	•Isolate Diesel Generator controls. •	Positions “Transfer switch” to “LOCAL” at the 2251-10 (2212-45) panel.	—	—	—
<b>CUE:</b>	<b>Point to the local position on the transfer switch and state, “This switch is in this position.” Point to annunciator C-1 on the 2251-10(2212-45) panel and state, “This annunciator is alarming.”</b>				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.7.	Notify plant personnel of starting the engine.	Notifies the CR to announce the impending engine start, or uses page to announce it to the plant.	—	—	—
<b>CUE:</b>	<b>As appropriate state, “I understand you are about to start the U1(U1/2) EDG, I will make an announcement.” Or the announcement has been delivered to the plant via the page.</b>				
<b>NOTE: The candidate should indicate that they are wearing double hearing protection.</b>					
*F.8.	•Start the EDG.•	Depresses “DG START” pushbutton. (Engine Mounted Control Panel)	—	—	—
<b>CUE:</b>	<b>State the following to the candidate, “The diesel has started and the EO at the Bus reports that the output breaker has closed.”</b>				
F.9.	Determines DG Room Vent Fan has failed to autostart.	Observes fan red run light on 2251-37 (2212-50) panel is <u>NOT</u> lit  OR flow of air has not changed.	—	—	—
<b>CUE:</b>	<b>As appropriate state, “Red light is out, green light is lit.” OR “Air flow has NOT changed.”</b>				
<b>CUE:</b>	<b>IF the candidate chooses to align the alternate power source to the Vent Fan by placing the VENT FAN SELECTOR SWITCH to ALT, then give the following cues: “The alternate power yellow light is LIT, the Vent Fan red light is OUT and green light is LIT. Air Flow has NOT changed.”</b>				
<b>EVALUATOR NOTE: Per the Initial Conditions, the operator should identify that the Vent Fan is locked out due to cable damage. The Fire Protection Bypass SW may be moved to Bypass per step E.3, OR QCOA 6600-08 (QCOA 6600-06). 4E-1350B sh 3 indicates that the fan will start after the selector switch is taken to “Bypass”.</b>					
<b>EVALUATOR NOTE: Alternate path starts here.</b>					
D.2.b.(1)	Unlock and open Diesel Generator Room Vent fan key locked box.	Diesel Generator Room Vent fan box opened and unlocked.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>CUE:</b>	<p>The examinee may either break the glass or go to the WEC and obtain the key from the Shift Manage Key Cabinet. If the latter is chosen, state “you have the key”.</p> <p>Point to the EDG vent fan key lock box and state, “Box is open” or “the glass is broken” as appropriate.</p>				
*D.2.b.(2) OR * Step E.3.	Start DG Room Vent Fan by: •placing the D.G. 1 (1/2) VENT FAN FIRE PROTECTION BYPASS SWITCH to BYPASS. •	Position the D.G. 1 (1/2) Vent Fan Fire Prot. Bypass switch to Bypass (QCOA 6600-08, D.2.b., QCOA 6600-06, D.2.b., or QCOP 6600-11, E.3.).	—	—	—
<b>CUE:</b>	<p>Point to bypass switch and state, “Switch is in Bypass position and you feel increased air flow.”</p>				
D.2.b.(3)	Close and lock Diesel Generator Room Vent fan box.	Diesel Generator Room Vent Fan box closed and locked.	—	—	—
<b>CUE:</b>	<p>If applicable, state “the EDG vent fan lock box is closed and locked.”</p>				
D.4.	Verify proper operation of associated dampers.	Observes louvers are open.	—	—	—
<b>CUE:</b>	<p>Point to dampers and state, “These are open.”</p>				
F.10.	Verify DGCWP automatically starts.	<p>Verifies DGCWP red run light lit (2251-37/2212-50 panel)</p> <p>OR</p> <p>Verifies pressure on DG HX SW gauges.</p> <p>OR</p> <p>Observes flow meter outside DG room &gt; 900 gpm (FI 1-3941-26/FI ½-3941-27).</p>	—	—	—
<b>CUE:</b>	<p>As appropriate state, “The DGCWP red light is lit” OR point to 50 psig on the Diesel heat exchanger pressure gauge and state, “Pressure is here” OR pointing at 950 gpm on flowmeter, “Gauge indicates here.”</p>				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>CUE:</b>	<b>At the 2251-10 (2212-45) panel, POINT to the following indications when the information is requested by the candidate.</b>				
F.11.	Verify DG Frequency at 60hz.	Checks DG frequency meter.	—	—	—
<b>CUE:</b>	<b>Point to 60HZ on the gauge and state, “Frequency is here.”</b>				
F.12.	Verify DG Voltage at 4160.	Checks DG Voltage meter.	—	—	—
<b>CUE:</b>	<b>Point to 4160 on the gauge and state, “Voltage is here.”</b>				
	Report DG status to CR.	Reports to CR to provide them with the current status of the DG.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor state: Bus 14-1(13-1) is energized and another operator will be dispatched to monitor voltage, frequency, and load.</b>				
<b>EVALUATOR: The candidate should inform you that the task is complete.</b>					

JPM Stop Time: \_\_\_\_\_  
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**JPM SUMMARY**

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

JPM Title: Locally Start-Up a Diesel Generator With a Failure of the Vent Fan to Start

JPM Number: RO/SRO JPM i Revision Number: 19

Task Number and Title:

**SRN-6600-P04** (Freq: LIC=B NF=B) Given a condition where the 1/2 (U1) Emergency DG has failed to auto start, Bus 18 (19) is de-energized, and fire detection cable damage has locked out the 1/2 (U1) DG vent fan, locally start the 1/2 (U1) Emergency DG and energize Bus 13-1(14-1) in accordance with QCOP 6600-11, QCOA 6600-06 (QCOA 6600-08) and QOP 6500-10.

K/A Number and Importance: **K/A:** 264000 A2.08 **Rating:** 3.3/3.7

Suggested Testing Environment: Plant

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

Reference(s): QCOP 6600-11, Rev. 25, DIESEL GENERATOR LOCAL OPERATION  
 QCOA 6600-08, Rev. 10, UNIT 1(2) DIESEL GENERATOR ROOM VENT FAN FAILURE  
 QCOA 6600-06, Rev. 10, ½ DIESEL GENERATOR ROOM VENT FAN FAILURE

**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 locally starts the EDG and takes action to start the DG Vent Fan by placing the D.G. 1 (1/2) Vent Fan Fire Prot. Bypass switch to the Bypass position.

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

## **INITIAL CONDITIONS**

- A loss of off-site power has occurred on Unit 1. The U-1(U1/2) Diesel failed to start.
- A fire in the plant has damaged fire detection cabling associated with the U1(U1/2) Diesel Room as indicated by control room alarms.
- A manual start from the Control Room was attempted but was not successful due to a faulty control switch.
- QCOA 6600-01 has been entered and other operators are taking action directed by that procedure.
- U1(U1/2) Diesel Day Tank level is 90% and the storage tank level is 95%.

## **INITIATING CUE**

The Unit Supervisor directs you to locally start the U-1(U1/2) Diesel Generator in accordance with QCOP 6600-11, to energize Bus 14-1(13-1) and ensure the U1(U1/2) Diesel is operating properly. Report to the US when Diesel Generator is ready to be loaded.

# Exelon Nuclear

## Job Performance Measure

### **Inject Water Into the RPV Using the Condensate System Crosstie**

JPM Number: RO/SRO JPM j

Revision Number: 07

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

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

## **Revision Record (Summary)**

**Revision 00**, This JPM is developed IAW guidelines established in NUREG 1021 Rev 8 ES-301 and Appendix C. This JPM meets the criteria of Category B.2 "In-Plant Systems," for RO/SRO candidates.

JPM revised to match procedure changes.

**Revision 01**, JPM revised to match procedure changes.

**Revision 02**, JPM revised to update estimated times.

**Revision 03**, JPM revised to match procedure changes.

**Revision 04**, JPM revised to update estimated times.

**Revision 05**, JPM revised to update procedure reference.

**Revision 06**, JPM revised to update procedure reference.

**Revision 07**, Revised steps by adding valve names and cues. Also added two critical steps.

### INITIAL CONDITIONS

- Problems have developed on Unit 2(1) which require the Alternate Injection Systems to be lined-up in order to restore reactor water level per QGA 100.
- The Unit 1(2) Condensate pumps are operating normally.
- The Unit 1 and 2 NSOs are aware of the situation and are standing by to monitor parameters in the Control Room.
- There are no Condensate Demin backwashes in progress on either unit.

### INITIATING CUE

The Unit Supervisor has directed you to inject water from the Unit 1(2) Condensate system into the Unit 2(1) reactor using the Condensate system crosstie in accordance with QCOP 3300-12.

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

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#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p><b>EVALUATOR NOTE/CUE: Per OP-AA-103-105, if the candidate elects to manually close the outlet valves, the breakers should first be opened. Given the importance of restoring vessel level it is not considered vital that this is done (however, it should be discussed with the candidate at the conclusion of the walkthroughs). If the candidate does locally open the breakers, cue him that “the outlet valve breaker is open”, after each handle is taken to the trip position.</b></p>					
<p>*F.2.a.(1) or *F.2.a.(2)</p>	<p>•<b>Remotely close</b> all U-2(1) Demin Outlet “E” Valves. • OR •<b>Locally manually close</b> all COND DEMIN DSCH VLVS MO 2(1)-3302A-H. •</p>	<p>At U-2(1) Condensate Demin Panels (2252(1)-11 &amp; 16) depresses “A” through “H” DEMIN OUTLET “E” VALVE close pushbuttons. OR Locates all COND DEMIN VESSEL DSCH VLVS (MO 2(1)-3302A through H), depresses declutch lever and rotates handwheel clockwise.</p>	<p>—</p>	<p>—</p>	<p>—</p>
<p><b>CUE:</b></p>	<p><b>Point to the indicating lights for each and state, “Green light is lit, Red light is out” OR “The handwheel will not rotate any further.” If asked state “threads are visible on the stem.”</b></p>				
<p>F.2.b.</p>	<p>Verify closed 2(1)-3303, COND DEMIN BYPASS VALVE.</p>	<p>At U-2(1) Cond Demin Panel verifies green light lit for MO 2(1)-3303. OR Locally, at MO 2(1)-3303 verifies green light lit. OR Contacts Control Room to verify closed.</p>	<p>—</p>	<p>—</p>	<p>—</p>
<p><b>CUE:</b></p>	<p><b>Point to indicating lights and state, “Red light is out, Green light is lit” or Control Room reports, “U-2(1) Condemin Bypass Valve is closed.”</b></p>				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.2.c.	•Open 1-5599-68 U-1 COND HDR TO ½ BACKWASH HDR SV.●	Locates and rotates the 1-5599-68 vlv handwheel counter-clockwise. (South of U-1 Condensate Demin Precoat Tank)	—	—	—
<b>CUE:</b>	<b>Point to the handwheel and state, “The valve handwheel will not rotate any further.”</b>				
F.2.d.	Verify open MO 2(1)-3205A <u>AND</u> B, RX FW INLT VLV.	Contacts Control Room to verify MO 2(1)-3205A AND B are open.	—	—	—
<b>CUE:</b>	<b>Report as NSO that, “The MO 2(1)-3205A and MO 2(1)-3205B valves are open.”</b>				
F.2.e.	Verify open MO 2(1)-3201A, B, <u>OR</u> C, RFP DISCH VLVs.	Contacts Control Room to verify open: MO 2(1)-3201A OR MO 2(1)-3201B, OR MO 2(1)-3201C	—	—	—
<b>CUE:</b>	<b>Report back as NSO that, “The A &amp; B RFP Discharge valves are open.”</b>				
F.2.f.	Verify Feedwater Regulator valves(s) <u>in manual</u> AND <u>closed</u> : 2(1)-640-19A, 2(1)A FEEDWATER MAN/AUTO CONT STA 2(1)-640-19B, 2(1)B FEEDWATER MAN/AUTO CONT STA 2(1)-640-20, FEEDWATER LO FLOW CONTLR	Contacts Control Room to verify all 3 FWRV’s are in manual and closed.	—	—	—
<b>CUE:</b>	<b>Report back as NSO that, “All Feedwater Regulating Valves are in manual and closed.”</b>				
<b>CUE:</b>	<b>If the examinee determines that they need to obtain an S-Key from the WEC, then state “you have an S-Key.”</b>				

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.2.g.	•Unlock 2-5599-68 U-2 COND HDR TO 1/2 BACKWASH HDR SV. •	Unlocks the 2-5599-68, U-2 COND HDR TO 1/2 BACKWASH HDR SV, (located 20' East of U-1 Cond Demin Control Panel).	—	—	—
<b>CUE:</b>	<b>“The valve is unlocked”</b>				
*F.2.h.	Slowly •open the 2-5599-68 valve. •	Rotates the 2-5599-68 handwheel counterclockwise.	—	—	—
<b>CUE:</b>	<b>Point to the 2-5599-68 handwheel and state, “The valve handwheel will not rotate any further.”</b>				
*F.3.	•Open one Feedwater Regulator Valve. •	Contacts the Control Room and requests performance of QCOP 3300-12 step F.3.	—	—	—
<b>CUE:</b>	<b>After contacting the Control Room, as the NSO report “the low flow feedwater reg valve is open and U-2(1) Reactor water level is rising.”</b>				
<b>EVALUATOR NOTE: The candidate should inform you that the task is complete.</b>					

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

**JPM SUMMARY**

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

JPM Title: Inject Water Into the RPV Using the Condensate System Crosstie

JPM Number: RO/SRO JPM j Revision Number: 07

Task Number and Title:

**SRN-3300-P07** (Freq: LIC=B NF=B) Given a reactor plant in a QGA condition, locally crosstie the unit condensate systems to inject into the RPV in accordance with QCOP 3300-12.

K/A Number and Importance: **K/A:** 295031 EA1.11 **Rating:** 4.1/4.1

Suggested Testing Environment: Plant

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

Reference(s): QCOP 3300-12, Rev. 11, Injection Into the Reactor Using the Condensate System Crosstie

OP-AA-103-105, Rev. 01, Limitorque Motor Operated Valve Operations

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 17 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

The task is successfully completed when the examinee lines up Condensate crosstie in accordance with QCOP 3300-12 to the affected unit and directs the NSO to start injection by opening a Feedwater Regulating Valve.

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

- Problems have developed on Unit 2(1) which require the Alternate Injection Systems to be lined-up in order to restore reactor water level per QGA 100.
- The Unit 1(2) Condensate pumps are operating normally.
- The Unit 1 and 2 NSOs are aware of the situation and are standing by to monitor parameters in the Control Room.
- There are no Condensate Demin backwashes in progress on either unit.

## INITIATING CUE

The Unit Supervisor has directed you to inject water from the Unit 1(2) Condensate system into the Unit 2(1) reactor using the Condensate system crosstie in accordance with QCOP 3300-12.

# Exelon Nuclear

## Job Performance Measure

### **Aligning Fire Protection Water to SSMP Room Cooler**

JPM Number: RO/SRO JPM k

Revision Number: 06

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate.
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 01**, The reason for this JPM is to demonstrate the ability to terminate one of the twenty most probable Core Damage Sequences.

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.2 "In-Plant Systems," for RO/SRO candidates.

JPM revised to match procedure changes.

**Revision 02**, JPM revised to match procedure changes.

**Revision 03**, JPM verified to match procedure changes.

**Revision 04**, JPM revised to match objective changes.

**Revision 05**, JPM revised to match objective and procedure changes.

**Revision 06**, JPM cues revised.

### INITIAL CONDITIONS

- There is a severe fire in the South end of the Reactor Building 1<sup>st</sup> Floor (RB 1S).
- The US has entered QCARP 0010-01.
- SSMP is injecting into U-1.
- Service Water is no longer available to the SSMP Room Cooler.
- You have a QCARP tool packet containing an S-Key.

### INITIATING CUE

Align Fire Protection Water to SSMP Room Cooler in accordance with QCARP 0010-01 Attachment D and notify the Unit Supervisor when complete.

#### **Provide examinee with:**

Copy of QCARP 0010-01 Attachment D, Rev. 9

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

#### **Information For Evaluator's Use:**

UNSAT requires written comments on respective step.

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

Number any comments in the "Comment Number" column on the following pages. Then annotate that comment in the "Comments" section. The comment section should be used to document: the reason that a step is marked as unsatisfactory, marginal performance relating to management expectations, or problems the examinee had while performing the JPM.

Comments relating to procedural or equipment issues should be entered and tracked using the site's appropriate tracking system.

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

The timeclock starts when the candidate acknowledges the initiating cue.  
.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*Attachment D, Step 1	•Close 1/2-2901-25, SERV WTR TO SAFE SHUTDOWN PMP RM HVAC CLR SV. •	Turns valve handwheel clockwise until valve no longer moves.	—	—	—
<b>CUE:</b>	<b>Point to the valve and state, “The handwheel cannot be turned anymore .”</b>				
*Attachment D, Step 2	•Unlock 1/2-2901-9, FIRE PROTECTION WTR TO SAFE SHUTDOWN PMP RM HVAC CLR SV. •	Unlocks or breaks lock.	—	—	—
*Attachment D, Step 3	•Open 1/2-2901-9. •	Turns valve handwheel counterclockwise until valve no longer moves.	—	—	—
<b>CUE:</b>	<b>Point to the valve and state, “The lock is unlocked and the handwheel cannot be turned anymore.”</b>				
*Attachment D, Step 4	•Close 1/2-2999-9 SERVICE WATER TO SSMP ROOM COOLER BYPASS VALVE. •	Turns valve handwheel clockwise until valve no longer moves.	—	—	—
<b>CUE:</b>	<b>Point to the valve and state, “The handwheel cannot be turned anymore ”</b>				
Attachment D, Step 5	Verify Room Cooler Operation.	Checks Room Cooler operation by verifying discharge air flow and/or motor operation.	—	—	—
<b>CUE:</b>	<b>After proper checks are made for Cooler operation (Proper checks should include that the candidate listens or feels for air flow discharging from the cooler), indicate to the candidate that the ”room is becoming cooler.”</b>				
Attachment D, Step 6	Notify U1 US that the steps are complete.	Uses phone or radio to contact the U-1 US in the Control Room and reports QCARP 0010-1 Attachment D is complete.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>CUE:</b>	<b>When informed, acknowledge as Unit One Unit Supervisor that you understand that “the SSMP Room Cooler is lined up to the fire header.”</b>				

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

**JPM SUMMARY**

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

JPM Title: Aligning Fire Protection Water to SSMP Room Cooler

JPM Number: RO/SRO JPM k Revision Number: 06

Task Number and Title:

**SN-2900-P08** (Freq: LIC=A NF=A) Given Unit 1 in an QCARP condition, transfer SSMP HVAC cooling water supply to the fire header and verify SSMP room cooler operation in accordance with QCARP 0010-01 Attachment D. (Important PRA Operator Action - transferring SSMP cooling water supply to fire header in combination with starting the SSMP has a RAW of 1600)

K/A Number and Importance: **K/A:** 286000 K1.01 **Rating:** 2.7/2.8

Suggested Testing Environment: Plant

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

Reference(s): QCARP 0010-01 Attachment D, Rev. 9

**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:**

The task is successfully completed when the examinee isolates the Service Water supply and aligns the Fire Protection system water supply to the SSMP Room Cooler in accordance with QCARP 0010-01.

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**

- There is a severe fire in the South end of the Reactor Building 1<sup>st</sup> Floor (RB 1S).
- The US has entered QCARP 0010-01.
- SSMP is injecting into U-1.
- Service Water is no longer available to the SSMP Room Cooler.
- You have a QCARP tool packet containing an S-Key.

## **INITIATING CUE**

Align Fire Protection Water to SSMP Room Cooler in accordance with QCARP 0010-01 Attachment D and notify the Unit Supervisor when complete.

# Exelon Nuclear

## Job Performance Measure

### Post Accident Pumping of the DWFDS to the WCT

JPM Number: RO JPM h

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 for the ILT 09-1 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. Place the control switches for the Drywell Floor and Equipment Drain Sumps in PULL-TO-LOCK.
3. Fill the Drywell Equipment Floor Drain Sump by inserting a 50% RBCCW line break for 2 ½ minutes and then deleting it.

**imf pc05 50**

**dmf pc05**

4. Acknowledge annunciators.
5. Verify the following valves are closed:
  - AO 1-2001-3
  - AO 1-2001-4
  - AO 1-2001-15
  - AO 1-2001-16
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. Prepare a copy of QOP 2040-11, completed through step F.5.b., N/A step F.5.c, sign off step F.5.d.(1) and F.5.d.(2).
8. This completes the setup for this JPM.

### INITIAL CONDITIONS

- A manual reactor scram was inserted due to high Drywell pressure resulting from a small break on the “A” Recirc loop.
- QGAs 100 and 200 have been entered.
- RPV water level is at 30 inches and being maintained by the Low Flow Feed Reg Valve (LFFRV).
- The reactor is depressurized.
- Radwaste has been informed and is ready to process the water.
- Chemistry has obtained a Reactor Coolant sample and has concurred with pumping the DWFDS to the Waste Collector Tank per QOP 2040-11.

### INITIATING CUE

Continue actions to pump the Drywell Floor Drain Sump to the Waste Collector Tank per QOP 2040-11, at step F.5, using one pump. Inform the Unit Supervisor when flow to the Waste Collector Tank is established.

**Provide the examinee with a signed copy of QOP 2040-11, through step F.5.b.**  
 .....

#### Information For Evaluator’s Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.  
 .....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.5.d.(3).	<ul style="list-style-type: none"> <li>Establish valve lineup:  <u>Verify closed</u> AO 1-8941-728, DW EQUIP DRN SUMP AND RX BLDG EQUIP DRN TK TO WCT.●</li> </ul>	At the 901-4 panel: Places the AO 1-8941-728 vlv control switch to CLOSE and verifies CLOSED light lit.	—	—	—
*F.5.e	<ul style="list-style-type: none"> <li><u>Open</u> AO 1-2001-3 and AO 1-2001-4.●</li> </ul>	At the 901-4 panel: Places the SUMP ISOL VLVS AO 1-2001-3 AND 4 control switch to OPEN and verifies the OPEN light is lit.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor, inform the examinee that another NSO will log all the information required in step F.5.f.</b>				
*F.5.g	<ul style="list-style-type: none"> <li><u>Start</u> one DWFDS pump(s).●</li> </ul>	At the 901-4 panel: Takes the control switch for the 1-2001-241A or 1-2001-241B sump pump out of PTL and verifies RUN light is lit.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor inform the examinee that another NSO will monitor the transfer and secure the sump pump.</b>				
<b>EVALUATOR NOTE: The examinee should inform you that the task is complete.</b>					

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



**JPM SUMMARY**

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

JPM Title: Post Accident Pumping of the DWFDS to the WCT  
JPM Number: RO JPM h Revision Number: 00

Task Number and Title:  
**SR-2000-P37** (Freq: LIC-I) Given a reactor plant in a post accident condition, pump the DW floor drain sump to the WCT in accordance with QOP 2040-11.

K/A Number and Importance: **KA:** 268000 2.1.30 **Rating:** 4.4/4.0

Suggested Testing Environment: Simulator

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

Reference(s): QOP 2040-11, Post-Accident Sump Pumping Operations, Rev. 6

**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:**

The task is successfully completed when the examinee establishes the valve lineup and begins pumping the Drywell Floor Drain Sump to the Waste Collector Tank in accordance with QOP 2040-11.

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 manual reactor scram was inserted due to high Drywell pressure resulting from a small break on the “A” Recirc loop.
- QGAs 100 and 200 have been entered.
- RPV water level is at 30 inches and being maintained by the Low Flow Feed Reg Valve (LFFRV).
- The reactor is depressurized.
- Radwaste has been informed and is ready to process the water.
- Chemistry has obtained a Reactor Coolant sample and has concurred with pumping the DWFDS to the Waste Collector Tank per QOP 2040-11.

## **INITIATING CUE**

Continue actions to pump the Drywell Floor Drain Sump to the Waste Collector Tank per QOP 2040-11, at step F.5, using one pump. Inform the Unit Supervisor when flow to the Waste Collector Tank is established.

# Exelon Nuclear

## Job Performance Measure

### Initiate Standby Liquid Control With RWCU Failure to Isolate

JPM Number: RO/SRO JPM a

Revision Number: 04

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure QCOP 1100-02 Rev: 12  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. When JPM is initially validated, sign and date JPM cover page. Subsequent validations, sign and date below:

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

## **Revision Record (Summary)**

**Revision 00**, This JPM is developed IAW guidelines established in NUREG 1021 Rev 9.

**Revision 01**, JPM revised for procedure revision.

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

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

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

## SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to any IC at power > 20%
2. **Manual Actuation:**  
Ensure the SBLC key is in the Control switch.
3. **Malfunctions**  
Fail RWCU to isolate by failing the Group 3 Division 1 logic; **imf rp10a**  
Fail RWCU to isolate by failing the Group 3 Division 2 logic; **imf rp10b**
4. **Remotes:**  
NONE
5. **Overrides:**  
NONE
6. When the above steps are completed for this and other JPMs to be run concurrently, then validate the concurrently run JPMs using the JPM Validation Checklist.
7. This completes the setup for this JPM.

### INITIAL CONDITIONS

- U-1 has experienced a Hydraulic ATWS. The following conditions and QGA 101 actions taken are:
  - o Reactor power > 20%.
  - o Mode Switch is in Shutdown.
  - o Both Recirc pumps were tripped
  - o Control rods are being inserted using Emergency Rod In.
  - o The Unit Supervisor anticipates reaching 110°F in the Torus.
- The SBLC system is in standby lineup.
- The Unit Supervisor has directed SBLC system injected per QGA 101.

### INITIATING CUE

Inject with the Standby Liquid Control System.

**Provide the procedure copies after the examinee has obtained them.**

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

.....

#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<u>SAT</u>	<u>UNSAT</u>	<u>Comment Number</u>
	Obtain procedure to be used.	Obtains procedure QCOP 1100-02 or the ATWS portion of the Standby Liquid Control Hard Card.	—	—	—
*F.1. or Hard Card Step 1	•Select system 1 <b>OR</b> 2 using keylock switch A AND B PUMP SELECT. •	Positions SBLC keylock switch SYS 1 <b>OR</b> SYS 2.	—	—	—
F.3.a or Hard Card Step 2.a	Verify applicable squib A & B continuity.	Verifies A <b>OR</b> B continuity lights out.	—	—	—
F.3.b or Hard Card Step 2.b	Verify SBLC Flow light lit.	Observes Flow light lit.	—	—	—
<b>EVALUATOR NOTE: The examinee may report to the Unit Supervisor that the RWCU system failed to isolate. If this occurs, as Unit Supervisor acknowledge the report. If prompted by examinee for direction, state "Verify auto actions."</b>					
<b>EVALUATOR NOTE: Start of alternate path.</b>					
*F.3.c. or Hard Card Step 2.c	Verify RWCU System isolates:  •MO-1-1201-2 vlv closed•  •MO 1-1201- 5 vlv closed•  MO 1-1201-80 vlv closed  Both RWCU pumps tripped	Closes the MO 1-1201-2, MO 1-1201-5, and MO 1-1201-80 vlvs with the respective control switches and verifies both RWCU pumps trip.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.3.d. or Hard Card Step 2.d	Verify SLBC tank level decreasing.	Verifies SBLC tank level decreasing on LI 1-1140-2.	—	—	—
F.3.e. or Hard Card Step 2.e	Verify SBLC pump discharge pressure > Reactor pressure.	Determines SBLC Pump discharge pressure > Reactor pressure on PI 1-1140-1.	—	—	—
F.3.f. or Hard Card Step 2.f	Verify alarm 901-5 H-6 "STANDBY LIQ SQUIB VLV CIRCUIT FAILURE".	Annunciator 901-5 H-6 "STANDBY LIQ SQUIB VALVE CIRCUIT FAIL" is lit.	—	—	—
F.3.g. or Hard Card Step 2.g	Verify neutron flux level decreasing.	Verifies neutron flux level decreasing on APRM recorders.	—	—	—
<b>EVALUATOR: The candidate should inform you that the task is complete.</b>					

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

**JPM SUMMARY**

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

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

JPM Number: RO/SRO JPM a Revision Number: 04

Task Number and Title:

**SR-1100-P02** (Freq: LIC=A) (ILT-MP) Given a reactor plant with an ATWS, inject boron prior to exceeding 110 degrees torus water temperature OR if core instability is observed in accordance with QGA 101 and QCOP 1100-02. (Important PRA Operator Action - starting SBLC terminates 1 of the top 100 most probable Core Damage Sequences and has a RAW of 17.3)

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

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1100-02, Rev. 12

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 4 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

The task is successfully completed when the examinee has established injection into the RPV with one SBLC Pump AND isolated the RWCU system by closing the MO 1-1201-2 and MO 1-1201-5 valves.

Were all the Critical Elements performed satisfactorily?  Yes  No

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

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

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

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

## **INITIAL CONDITIONS**

- U-1 has experienced a Hydraulic ATWS. The following conditions and QGA 101 actions taken are:
  - o Reactor power > 20%.
  - o Mode Switch is in Shutdown.
  - o Both Recirc pumps were tripped
  - o Control rods are being inserted using Emergency Rod In.
  - o The Unit Supervisor anticipates reaching 110°F in the Torus.
- The SBLC system is in standby lineup.
- The Unit Supervisor has directed SBLC system injected per QGA 101.

## **INITIATING CUE**

Inject with the Standby Liquid Control System.



### 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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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)**

~~4~~ **Revision 00**, Developed JPM.

**Revision 01**, Procedure revision required revision.

**Revision 02**, Grammatical corrections.

**Revision 03**, Modified description of Standards column actions.

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### SIMULATOR SETUP INSTRUCTIONS

1. Reset the simulator to IC 19.

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

- ~~3.2.~~ Insert the following: **ior dihs11300rmi default** Malfunction will prevent injection using the RCIC pushbutton.
- ~~4.3.~~ When the above steps are completed for this and other JPMs to be run concurrently, then validate the concurrently run JPMs using the JPM Validation Checklist.
4. This completes the setup for this JPM.

Formatted: Bullets and Numbering

**INITIAL CONDITIONS**

- Unit One is in a LOCA condition.
- Drywell pressure is at 4 psig and holding steady.
- Reactor level is at -40" and slowly lowering.
- All appropriate QGA's have been entered.
- RCIC is in a standby lineup per QCOP 1300-01.

**INITIATING CUE**

Start the Unit One RCIC system for injection using the manual initiation pushbutton. Notify the Unit Supervisor when RCIC is injecting.

**Provide the procedure copies after the examinee has obtained them.**

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

.....

**Information For Evaluator's Use:**

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
Hard Card Step 1 OR QCOP 1300-02, F.4.a	Depress and hold RCIC MAN INITIATION pushbutton for at least 30 sec.	Depress and hold RCIC MAN INITIATION pushbutton for at least 30 sec.	—	—	—
<b>CUE:</b>	<b>IF told RCIC failed to initiate with pushbutton, acknowledge. If asked for direction, respond with “continue with efforts to inject with RCIC”.</b>				
<b>EVALUATOR NOTE: Alternate Path starts here.</b>					
<b>EVALUATOR NOTE: RCIC will fail using the pushbutton. Operator must proceed with manual startup actions on Hard Card or per QCOP 1300-02 step F.5.</b>					
Hard Card Step 1 OR F.5.a	<b>Start</b> TURB VACU PMP.	Places the TURB VACU PMP control switch to “Start” and verifies the “RUN” light is lit.	—	—	—
*Hard Card Step 2 OR F.5.b	• <b>Open</b> MO 1-1301-62, TURB CLG WTR VLV. •	Places the MO 1-1301-62, TURB CLG WTR VLV control switch to “OPEN” and verifies the “OPEN” light is lit.	—	—	—
Hard Card Step 3 OR F.5.c	<b>Verify open</b> MO 1-1301- 48, PMP DISCH VLV.	Verifies the “OPEN” light for the MO 1-1301-48, PMP DISCH VLV is lit.	—	—	—
*Hard Card Step 4 OR F.5.d	• <b>Open</b> MO 1-1301-49, PMP DISCH VLV. •	Places the MO 1-1301-49, PMP DISCH VLV control switch to “OPEN” and verifies the “OPEN” light is lit.	—	—	—
Hard Card Step 5 OR F.5.e	<b>Open</b> MO 1-1301-60, MIN FLOW VLV.	Places the MO 1-1301-60, MIN FLOW VLV control switch to “OPEN” and verifies the “OPEN” light is lit.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*Hard Card Step 6 OR F.5.f	•Open MO 1-1301-61, STM TO TURB VLV. •	Places the MO 1-1301-61, STM TO TURB VLV control switch to "OPEN" and verifies the "OPEN" light is lit. Also verifies: <ul style="list-style-type: none"> <li>• RCIC discharge flow increases to 400 gpm.</li> <li>• MO 1-1301-60, MIN FLOW VLV fully closes.</li> </ul>	—	—	—
7 (Hard Card) or F.5.i	If necessary, <b>adjusts</b> discharge flow in MANUAL <b>OR</b> AUTO mode.	<b>Adjusts</b> flow in MANUAL <b>OR</b> AUTO mode using the manual adjustment lever or the setpoint pushbutton respectively on FIC 1-1340-1, RCIC FLOW CONTROLLER.	—	—	—
<b>CUE:</b>	<b>If candidate reports that RCIC is injecting, acknowledge the report "I understand that RCIC is injecting into the vessel."</b>				
<b>EVALUATOR NOTE: Operator will inform you that the task is complete.</b>					

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

**JPM SUMMARY**

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

JPM Title: Manual Initiation of RCIC

JPM Number: RO/SRO JPM b

Revision Number: 03

Task Number and Title:

**SR-1300-P01** (Freq: LIC=B) (ILT-MP) Given a reactor plant in an accident condition where RCIC fails to autostart and/or fails to start with auto pushbutton, start RCIC for injection in accordance with QCOP 1300-02.

K/A Number and Importance: **K/A:** 217000.A4.04 **Rating:** 3.6/3.6

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1300-02, Rev 27, RCIC SYSTEM MANUAL STARTUP, (INJECTION/PRESSURE CONTROL)

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 5 minutes

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

**EVALUATION SUMMARY:**

The task is successfully completed when the examinee establishes injection into the RPV by manual alignment of the RCIC system.

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 One is in a LOCA condition.
- Drywell pressure is at 4 psig and holding steady.
- Reactor level is at -40" and slowly lowering.
- All appropriate QGA's have been entered.
- RCIC is in a standby lineup per QCOP 1300-01.

### **INITIATING CUE**

Start the Unit One RCIC system for injection using the manual initiation pushbutton. Notify the Unit Supervisor when RCIC is injecting.

# Exelon Nuclear

## Job Performance Measure

### **Adjust Turbine/Generator System Load Set**

JPM Number: RO/SRO JPM c

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 created from Task Training Matrix for the 09-1 ILT NRC Exam.

## 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. On the Speed Load Screen, change the Load Set Setpoint to 70% and verify Turbine Bypass Valve #1 is approximately 20% open.
3. Select the <Status> and <Pressure Control> Screens for the Digital EHC Monitors.
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

- You are the Admin NSO.
- Unit-1 is presently at 74% power with a load increase in progress per QCGP 3-1 step F.3 when annunciator 901-7 G-3, Turbine Bypass Valve Open, alarms.

## INITIATING CUE

Raise the Load Set Setpoint in accordance with QCGP 3-1 Attachment D.

Provide a copy of QCGP 3-1 Attachment D.

.....

### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*Attachment D Step 2.a.	•Navigate to the <Speed-Load> screen. •	Select <Speed-Load> to display the Speed-Load screen.	—	—	—
*Attachment D Step 2.a.(1)	•Select STPT/RAMP. •	In the “Load Set” box: Selects STPT/RAMP.	—	—	—
<b>CUE:</b>	<b>If asked, as Unit Supervisor direct the examinee to “raise the Load Set Setpoint to 85%.”</b>				
<b>CUE:</b>	<b>As Unit Supervisor, If a ramp rate is requested, inform the examinee a ramp rate of 10% is desired.</b>				
*Attachment D Step 2.a.(2)	•Enter a value for SETPOINT <u>and</u> select OK. •  Enter the value for RAMP <u>and</u> select OK.	In the “Load Setpoint and RAMP” box:  a) Enters 85 for Load Set Setpoint  b) Enters 10 for the RAMP value.  c) Selects OK.	—	—	—
<b>EVALUATOR NOTE: If no change is entered for the RAMP value, the default ramp rate is 5%.</b>					
*Attachment D Step 2.a.(3)	•Select OK to confirm setpoint changes. •	In the “Confirm Setpoint” box: Selects OK  AND  In the “Load Set” box:  Verifies <u>both</u> “Load Ref Cmd” and “Load Reference” indicate 85% after approx. 1 minute.	—	—	—
<b>EVALUATOR NOTE: If a value of 85% was entered for Step 2.a.(2), then the next step is NOT required.</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
Attachment D Step 2.a.(4)	Selects RAISE or LOWER to manually bump final auto setpoint.	In the "Load Set" box:  Select RAISE <u>or</u> LOWER until "Load Reference" indicates 85%.	—	—	—

**EVALUATOR NOTE: The candidate 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: Adjust Turbine/Generator System Load Set

JPM Number: RO/SRO JPM c Revision Number: 00

Task Number and Title:

**SR-5600-P15** Perform the following DEHC operations on the Operator Work Station (OWS): Adjust Load Set.

K/A Number and Importance: **KA:** 241000 A4.15 **Rating:** 3.2/3.2

Suggested Testing Environment: Simulator

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

Reference(s): QCGP 3-1, Reactor Power Operations, Rev.63

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

**Testing Method:**  Simulate  Perform

Estimated Time to Complete: 5 minutes **Actual Time Used:** \_\_\_\_\_ minutes

**EVALUATION SUMMARY:**

The task is successfully completed when the examinee adjusts the Turbine Generator Load Set setpoint to approximately 10% above Generator Load.

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.
- Unit-1 is presently at 74% power with a load increase in progress per QCGP 3-1 step F.3 when annunciator 901-7 G-3, Turbine Bypass Valve Open, alarms.

## **INITIATING CUE**

Raise the Load Set Setpoint in accordance with QCGP 3-1 Attachment D.

Exelon Nuclear

Job Performance Measure

**Place Shutdown Cooling In Operation with Spurious Group II**

JPM Number: RO/SRO JPM d

Revision Number: 02

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure QCOP 1000-05 Rev: 43  
 Procedure QCOA 1000-02 Rev: 16  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 ILT NRC exam 03-01 IAW NUREG 1021, rev. 9.

**Revision 01**, This JPM was revised to update format and for procedure revisions. This JPM was also revised to delete the Reactor Recirc Pump Trip and add a spurious Group II.

**Revision 02**, Modified Initial Conditions and role-plays, deleted procedure steps C.1 through C.4 and reformatted steps.

## SIMULATOR SETUP INSTRUCTIONS

- 1) Reset simulator to IC 5, shutdown cooling on service and go to **RUN**.
- 2) Manual Actuations :
  - Shutdown SDC per QCOP 1000-05 step F.5, SDC Lineup for Subsequent Restart.
  - Verify MO 1-1001-16A shows dual position indication.
  - Acknowledge all annunciators.
  - Fill out a copy of QCOP 1000-05. Sign off the prerequisites, all of step F.1 and F.5. except step F.5.c. (N/A). N/A steps F.3 and F.4.
- 3) Run setup CAEP file \_\_\_\_\_ (if available).
- 4) **Malfunctions**

**VERIFY** the following commands are in the Instructor Summary: (enter in expert mode as necessary).

  - a) Trigger 1 is set to cause a spurious Group II 30 seconds after the 1A RHR pump is started.
    - trgset 1 "zdihs110021A(5)"
    - imf rp07a(1 :30)
    - imf rp07b(1 :30)
  - b) PLACE an Equipment Status Tag on the MO 1-1001-16A valve control switch stating: "1-1001-17A RHR HX OUTLET VLV, is throttled 28.5 turns closed from full open".
  - c) PLACE an Equipment Status Tag on the MO 1-1001-18A valve control switch stating: "MO 1-1001-18A, RHR LOOP MIN FLOW VLV, is closed with the breaker open".
- 5) 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.
- 6) This completes the setup for this JPM.

### INITIAL CONDITIONS

- Unit 1 is in Mode 5 and has been shut down for several days.
- Both reactor recirc pumps are running at minimum speed.
- RHR is lined up for a subsequent restart of Shutdown Cooling (SDC) on A loop per QCOP 1000-05 step F.5.
- RHRSW is still in operation.
- Rad Protection has been notified that SDC will be restarted.
- Reactor water temperature is stable at 153 °F in a band of 150 – 160 °F.

### INITIATING CUE

Place the "A" loop of RHR in Shutdown Cooling using the "A" RHR pump per QCOP 1000-05 step F.2

Cool down to a new temperature band of 130 –150 °F slowly, (25-30 degrees F per hour).

Notify the Unit Supervisor when the RPV cooldown has begun.

Provide the candidate with a copy of QCOP 1000-05 marked up IAW the setup instructions.

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

#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	<b>SAT</b>	<b>UNSAT</b>	<b>Comment Number</b>
F.2.a	Verify RHR SW Loop A in operation per QCOP 1000-04.	Verifies "A" RHR SW pump on per QCOP 1000-05 from Initial Conditions.	—	—	—
F.2.b.(1) thru b(4).	Verify <b>closed</b> : MO 1-1001-19A, A RHR LOOP X-TIE TO B RHR LOOP SV. MO 1-1001-7A, A RHR PMP TORUS SUCT VLV. MO 1-1001-7B, B RHR PMP TORUS SUCT VLV. MO 1-1001-29A, LPCI LOOP DOWNSTREAM SV .	Verifies the following valve indications on RHR Loop A: <ul style="list-style-type: none"> <li>• MO 1-1001-19A closed light lit.</li> <li>• MO 1-1001-7A closed light lit.</li> <li>• MO 1-1001-7B closed light lit.</li> <li>• MO 1-1001-29A closed light lit.</li> </ul>	—	—	—
F.2.c.(1) thru c(3).	Verify <b>open</b> : MO 1-1001-43A, RHR PMP SDC SUCT VLV. MO 1-1001-47, SDC SUCT HDR DOWNSTREAM SV. MO 1-1001-50, SDC SUCT HDR UPSTREAM SV.	Verifies the following valve indications on RHR Loop A: <ul style="list-style-type: none"> <li>• MO 1-1001 43A open light lit.</li> <li>• MO 1-1001-47 open light lit.</li> <li>• MO 1-1001-50 open light lit.</li> </ul>	—	—	—
F.2.d.(1) thru d(2).	Verify <b>throttled open</b> : MO 1-1001-28A, A LPCI LOOP UPSTREAM SV. MO 1-1001-16A, RHR HX BYP VLV.	Verifies both open and closed lights are lit for: <ul style="list-style-type: none"> <li>• MO 1-1001-28A</li> <li>• MO 1-1001-16A</li> </ul>	—	—	—
F.2.e.	<b>If</b> Reactor Recirc Pump A is off, <b>THEN close</b> MO 1-202-5A, RECIRC PMP DISCH VLV, <b>OR</b> MO 1-202-4A, RECIRC PMP SUCTION VLV.	Determines 1A Recirc pump is running by observing ASD A Run Status ON light is lit. N/A's step F.2.e.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.2.f.	<b>Verify</b> a slow cooldown rate of 25-30°F per hour is desired and <b>then verify</b> the 1-1001-17A throttled (approx 28.5 turns closed) to maintain a slow cooldown rate.	Determines from Initial Conditions that a slow cooldown rate is desired and verifies 1-1001-17A is throttled closed 28.5 turns as indicated on the Equipment Status Tag.	—	—	—
F.2.f.(1)	<b>Verify</b> Equipment Status Tag on MO 1-1001-16A., RHR HX BYP VLV control switch.	Verifies Equipment Status Tag is placed on the MO 1-1001-16A control switch stating, "1-1001-17A RHR HX OUTLET VLV, is throttled".	—	—	—
F.2.g.	<b>Push</b> RESET FOR GRP 2 ISOL VLV 1-1001-29, pushbutton at panel 901(2)-3.	Depresses the RESET FOR GRP 2 ISOL VLV 1-1001-29, pushbutton for RHR Loop A on the 901-3 Panel.	—	—	—
<b>EVALUATOR NOTE: The next two steps will be done in rapid succession. Placekeeping is not required between steps but should be done at the completion of both.</b>					
*F.2.h.(1)	<b>Initiate opening</b> MO 1-1001-29A, A LPCI LOOP DOWNSTREAM SV.●	Places the MO 1-1001-29A control switch to OPEN.	—	—	—
*F.2.h.(2)	After MO 1-1001-29A opens for approx. 2 seconds, ●start the 1A RHR Pump.●	~2 seconds after placing the MO 1-1001-29A c/s to open, places the A RHR pump CS to START.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<p><b>SIMOP: Approximately 30 seconds after the start of the 1A RHR pump, verify trigger 1 goes true. If not then insert the following commands for a Group II isolation:</b></p> <ul style="list-style-type: none"> <li>• imf rp07a,</li> <li>• imf rp07c</li> </ul> <p><b>Wait approximately 1 minute then delete both malfunctions with the commands:</b></p> <ul style="list-style-type: none"> <li>• dmf rp07a,</li> <li>• dmf rp07b</li> </ul>					
<p><b>Alternate Path Starts Here</b></p>					
E.9	<p>On a Group 2 isolation, the following RHR valves close:</p> <p>MO 1-1001-20 RHR SYS to RW UPSTREAM SV.</p> <p>MO 1-1001-21, RHR SYS TO RW DOWNSTREAM SV.</p> <p>MO 1-1001-47, SDC SUCT HDR DOWNSTREAM SV.</p> <p>MO 1-1001-50, RHR SDC SUCT HDR UPSTREAM SV</p>	<p>Verifies the following valve indications on RHR Loop A:</p> <ul style="list-style-type: none"> <li>• MO 1-1001-20 closed light lit.</li> <li>• MO 1-1001-21 closed light lit.</li> <li>• MO 1-1001-47 closed light lit.</li> <li>• MO 1-1001-50 closed light lit.</li> </ul>	—	—	—
<p><b>EVALUATOR ROLE PLAY: As the Shift Supervisor just calling in from the Aux Electric Room, report that Electrical Maintenance was assisting an EO by placing jumpers in the 901-40 and 901-41 panels for a Clearance Order when they heard a couple of relays change state. You have directed the EMs to remove all jumpers and return to the WEC with the Clearance Order.</b></p>					
<p><b>EVALUATOR ROLE PLAY: As Unit Supervisor, acknowledge the call in from the Aux Electric Room and direct the examinee to place SDC back in service.</b></p>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
<b>EVALUATOR NOTE: Per QCOP 1000-05, Limitations and Actions step E.3, the candidate should refer to QCOA 1000-02, Loss of Shutdown Cooling. Only applicable steps are shown. All others are N/A'd. However the candidate may also accomplish the task by referring <u>directly</u> to QCOP 1000-05 steps F.1.i. through F.1.r.</b>					
D.2.a. thru D.2.d	<b>Verify closed:</b> MO 1-1001-18A, RHR MIN FLOW BYP. MO 1-1001-34A, TORUS TEST OR SPRAY VALVE. MO 1-1001-36A, TORUS H2O TEST VALVE. MO 1-1001-37A, TORUS SPRAY SHUTOFF	Verifies the following valve indications on RHR Loop A: <ul style="list-style-type: none"> <li>• MO 1-1001-18A closed light lit.</li> <li>• MO 1-1001-34A closed light lit.</li> <li>• MO 1-1001-36A closed light lit.</li> <li>• MO 1-1001-37A closed light lit.</li> </ul>	—	—	—
<b>EVALUATOR NOTE: Student may ask if the Shift Manager has been notified, reply that “the Shift Manager has been notified and that another NSO will monitor Reactor Water/Metal temps per step D.5.”</b>					
D.8.c.(1)(a)	Alarm 901-3 E-15, SDC low pressure permissive is clear.	Verifies 901-3 E-15 alarm clear.	—	—	—
D.8.c.(1)(b)	Alarm 901-5 A-8, Group 2 ISOL CH TRIP, in alarm.	Verifies 901-5 A-8 is in alarm.	—	—	—
*D.8.c.(4) (a) <b>OR</b> QCOP 1000-05 *F.1.i.(1) <b>OR</b> *QCAN 901-5 B-5	If a spurious Group 2 Isolation signal has caused a loss of Shutdown Cooling, <b><u>THEN:</u></b> <ul style="list-style-type: none"> <li>•Reset Group II at 901-5 panel. •</li> </ul>	At 901-5 panel, takes Group isolation reset switch to both INBD and OTBD.	—	—	—

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*D.8.c.(4) (b). <b>OR</b> QCOP 1000-05 *F.1.i.(2). / *F.2.g	Depress <u>both</u> RESET FOR GRP ISOL VLV 1-1001-29A/B pushbuttons:  •Reset 1-1001-29A isolation. • Reset 1-1001-29B isolation.	Depresses both RESET FOR GRP ISOL VLV 1-1001-29A/B pushbuttons.	—	—	—
D.8.c.(4)(c)	Restart Shutdown Cooling per QCOP 1000-05.	Refers to QCOP 1000-05 to restart Shutdown Cooling.	—	—	—
<b>EVALUATOR CUE: Inform the examinee that QCOP 1000-05, Shutdown Cooling Operations, prerequisites are met.</b>					
<b><u>Time Compression:</u> Procedural steps have been verified through step F.1.i.</b>					
<b>EVALUATOR NOTE: If the examinee selects step F.2 of QCOP 1000-05 to restart SDC, then the Time Compression above is not necessary and the MO 1-1001-28A will not be closed since it remains throttled open after the Group II.</b>					
*F.1.j. / *F.2.c.(2)	•Open MO 1-1001-47, SDC HDR DOWNSTREAM SV. •	Places C/S for MO 1-1001-47 to OPEN and verifies valve open light is lit.	—	—	—
*F.1.k. / *F.2.c.(3)	•Open MO 1-1001-50, SDC HDR UPSTREAM SV. •	Places C/S for MO 1-1001-50 to OPEN and verifies valve open light is lit.	—	—	—
F.1.l. / F.2.d.(2)	Verify open MO 1-1001-16A, A RHR HX BYP VLV.	Verifies MO 1-1001-16A valve open light is lit.	—	—	—
F.1.m.	If desired, close MO 1-1001-28A, A LPCI LOOP UPSTREAM SV.	Places the C/S for MO 1-1001-28A to CLOSE and holds until valve closed light is lit and open light is out.	—	—	—
*F.1.n. / *F.2.h.(2)	•Open MO 1-1001-29A, A LPCI LOOP DOWNSTREAM SV. •	Places C/S for MO 1-1001-29A to OPEN and verifies valve opens light is lit.	—	—	—
<b>EVALUATOR NOTE: Step F.1.o. is N/A'd. Steps F.1.p.(1), (2), and (3) are all Condition Met (CM).</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.1.q.(1) & (2) / *F.2.h.(2)	If necessary, •Throttle open MO 1-1001-28A for ~2 seconds. • •Start the 1A RHR pump. •	Places the C/S for MO 1-1001-28A to OPEN for ~2 seconds and then takes the C/S for the 1A RHR pump to START.	—	—	—
*F.1.r.	•Throttle open MO 1-1001-28A to maintain $\geq 2500$ gpm flow. •	Moves C/S for MO 1-1001-28A to adjust flow to $\geq 2500$ gpm.	—	—	—
<b>EVALUATOR NOTE: The candidate should inform you that “the RPV cooldown has begun.”</b>					
<b>CUE:</b>	<b>Inform candidate that “another NSO will monitor and adjust RPV cooldown rate, water temperature and level as needed.”</b>				
<b>EVALUATOR NOTE: The candidate should inform you that the task is complete.</b>					

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

**JPM SUMMARY**

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

JPM Title: Place Shutdown Cooling In Operation with Spurious Group II

JPM Number: RO/SRO JPM d Revision Number: 02

Task Number and Title:

**SR-1000-P07** (Freq: LIC=B) (ILT - Must Perform or Must Supervise) Given a shutdown reactor plant, start RHR in shutdown cooling mode in accordance with QCOP 1000-5. (Important PRA task. Starting SDC has a Risk Achievement Worth (RAW) of 2.35)

K/A Number and Importance: **K/A:** 205000.A2.06 **Rating:** 3.4 / 3.5

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1000-05, Rev. 43, Shutdown Cooling Start-Up and Operation  
QCOA 1000-02, Rev. 16, Loss of Shutdown Cooling

**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:**

The task is successfully completed when the examinee has reset a spurious Group II isolation and re-established the RHR system in the Shutdown Cooling Mode.

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 in Mode 5 and has been shut down for several days.
- Both reactor recirc pumps are running at minimum speed.
- RHR is lined up for a subsequent restart of Shutdown Cooling (SDC) on A loop per QCOP 1000-05 step F.5.
- RHRSW is still in operation.
- Rad Protection has been notified that SDC will be restarted.
- Reactor water temperature is stable at 153 °F in a band of 150 – 160 °F.

## **INITIATING CUE**

Place the "A" loop of RHR in Shutdown Cooling using the "A" RHR pump per QCOP 1000-05 step F.2

Cool down to a new temperature band of 130 – 150 °F slowly, (25-30 degrees F per hour).

Notify the Unit Supervisor when the RPV cooldown has begun.

# Exelon Nuclear

## Job Performance Measure

### **Energize 480 VAC Bus 15 With a Failure of the Normal Feed**

JPM Number: RO/SRO JPM e

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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.

**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:

- 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 20 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.
- 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 with the following steps signed of as complete, N/A , or in progress (circled), up step D.29.

## 4. When the above steps are completed for this and other JPMs to be run concurrently then validate, if not previously validated, the concurrently run JPMs using the JPM Validation Checklist.

## 5. This completes the setup for this JPM.

### INITIAL CONDITIONS

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

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

**Provide the examinee with a copy of QCOA 6100-03.**

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**Information For Evaluator's Use:**

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
QCOA 6100-03 Step 29 a.	Close Bus 15 Main Feed breaker.	<ul style="list-style-type: none"> <li>Places the Bus 15 control switch to NAT to clear the Auto Trip.</li> <li>Places the Bus 15 control switch to NAC to close the breaker.</li> </ul>	—	—	—
<b>CUE:</b>	<b>If the examinee reports the trip of the Bus 15 Main Feed breaker and asks for direction, as Unit Supervisor acknowledge the report and state: “Continue efforts to energize Bus 15.”</b>				
<b>CUE:</b>	<b>If an EO is dispatched to investigate the Bus 15 Main Feed breaker, then report back as the EO from as appropriate from either Bus 13 cubicle 1, “BUS 13 TO XFORMER 15 FEED BKR”</b> <b>OR</b> <b>Bus 15 cubicle 2B, “BUS 13 TO Transformer 15”</b> <b>“EM’s 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.”</b>				
QCOA 6100-03 *Step 29 c.	•Close Bus 17 Main Feed Breaker. •	<ul style="list-style-type: none"> <li>Places the Bus 17 control switch to NAT to clear the Auto Trip lights.</li> <li>Places the Bus 17 control switch to NAC and verifies breaker CLOSED and Bus 17 LIVE lights are lit.</li> </ul>	—	—	—
<b>Alternate Path Starts Here</b>					
<b>EVALUATOR NOTE: The task may be accomplished by using the QOA 6700-01 Hard Card <u>OR</u> QOP 6700-02. The step below is critical if Bus 17 was NOT energized using QCOA 6100-03.</b>					

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
Hard Card Step 1 OR QOP 6700-02 Step F.1.d.(1).	<u>Verify closed</u> the Bus 17 Main Feed Breaker.	<ul style="list-style-type: none"> <li>If necessary, places the Bus 17 control switch to NAC.</li> <li>Verifies breaker CLOSED and Bus 17 LIVE lights are lit.</li> </ul>	—	—	—
Hard Card Step 2.a OR QOP 6700-02 Step F.1.d.(2)	<u>Verify open</u> Bus 15 Main Feed Breaker.	Verifies Bus 15 breaker OPEN and AUTO TRIP lights are lit. OR Places Bus 15 control switch to NAT and verifies Breaker OPEN lights are lit.	—	—	—
Hard Card Step 2.c OR QOP 6700-02 Step F.1.d.(3)	<u>Verify open</u> Bus 15 to Bus 16 Tie-Breaker.	Verifies Bus 15 to Bus 16 tie-breaker OPEN light is lit.	—	—	—
*Hard Card Step 2.d OR QOP 6700-02 Step F.1.d.(4)	• <u>Close</u> Bus 15 to Bus 17 Tie-Breaker. •	Places Bus 15 to Bus 17 tie-breaker control switch to NAC and verifies CLOSED light and BUS 15 LIVE lights are lit.	—	—	—

**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: Energize 480 VAC Bus 15 With a Failure of the Normal Feed  
JPM Number: RO/SRO JPM e Revision Number: 00  
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: **KA:** 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, Loss of Offsite Power, Rev. 26  
QOA 6700-01, Attachment B, Crosstie Busses 15,16, and 17, Rev. 11  
QOP 6700-02, 480 Bus Volt Tie Circuit Breakers, Rev. 30

**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:**

The task is successfully completed when the examinee energizes Bus 15 and Bus 17 using the Bus 15 to 17 Tie Breaker.

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 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 taken per QCOA 6100-03, Loss of Offsite Power actions up to step D.29 have been completed.
- Hard Cards are authorized.
- The Unit Supervisor has directed you to assume 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

### **Bypass “A” Channel of the Reactor Mode Switch to Shutdown Scram**

JPM Number: RO/SRO JPM f

Revision Number: 00

Date: 04/04/2011

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 8 and 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
 Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 09-1 ILT NRC Exam.

### **SIMULATOR SETUP INSTRUCTIONS**

1. Reset the simulator to any IC.
2. Obtain a switchable jumper with banana type connectors.
3. Provide a copy of QCOP 0500-07 with the prerequisites signed.
4. Fill out an EST per QCOP 0500-07, step F.2.
5. This completes the setup for this JPM.

### INITIAL CONDITIONS

- A Reactor shutdown is in progress per QCGP 2-1.
- All control rods have been inserted to position 00.
- NO half scrams are present on either RPS channel.
- NO half scram testing is in progress.
- The Reactor Mode Switch is ready to be placed to the Shutdown position per QCGP 2-1 step F.12.I.

### INITIATING CUE

Bypass the RPS Channel A Reactor Mode Switch to Shutdown scram per QCOP 0500-07. Notify the Unit Supervisor when the task is complete.

Provide the examinee with a copy of QCOP 0500-07, a completed Equipment Status Tag (EST), and a switchable jumper with banana type connectors. (Note: Verify the switch is in the OPEN position.)

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#### Information For Evaluator's Use:

UNSAT requires written comments on respective step.

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

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

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

The timeclock starts when the candidate acknowledges the initiating cue.

.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
F.1	Notify US of TMOD installation.	Informs Unit Supervisor of installation of jumper per QCOP 0500-07.	—	—	—
<b>CUE:</b>	<b>As Unit Supervisor, acknowledge installation of TMOD.</b>				
F.2	Place EST on Reactor Mode Switch.	Verifies EST states: “Reactor Mode Switch to Shutdown Scram is bypassed for “A” channel per QCOP 0500-07.”  <u>AND</u> Places EST on the Reactor Mode Switch.	—	—	—
<b>CUE:</b>	<b>After the examinee verifies the EST, as Unit Supervisor state: “another NSO will place the EST on the Reactor Mode Switch.” (Note: Do NOT allow actual placement of the EST as it may cue other examinees in the simulator.)</b>				
*F.3	•Install the switchable jumper.•	Verifies the switch is in the OPEN position At the 901-15 panel, Terminal Board “C”: <ul style="list-style-type: none"><li>Places the jumper between terminals C-54 and C-55.</li></ul>	—	—	—
*F.3.a	•Turn ON switchable jumper.•	Places the jumper toggle switch to the ON position.	—	—	—
F.4	Notify Unit Supervisor of jumper placement.	Notifies Unit Supervisor jumper is placed per QCOP 0500-07.			
<b>CUE</b>	<b>As Unit Supervisor, acknowledge jumper placement and inform the examinee that “another NSO will perform the remaining steps of the procedure.”</b>				

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

**JPM SUMMARY**

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

JPM Title: Bypass "A" Channel of the Reactor Mode Switch to Shutdown Scram

JPM Number: RO/SRO JPM f Revision Number: 00

Task Number and Title:

**SRN-TMOD-P3** Install/Remove Jumper From Correct Terminals

K/A Number and Importance: **KA:** 212000 2.1.23 **Rating:** 4.3/4.4

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 0500-07, Rev. 10

**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:**

The task is successfully completed when the examinee properly installs the switchable jumper in the 901-15 panel and places the toggle switch to the ON position.

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 Reactor shutdown is in progress per QCGP 2-1.

All control rods have been inserted to position 00.

NO half scrams are present on either RPS channel.

NO half scram testing is in progress.

The Reactor Mode Switch is ready to be placed to the Shutdown position per QCGP 2-1 step F.12.I.

## **INITIATING CUE**

Bypass the RPS Channel A Reactor Mode Switch to Shutdown scram per QCOP 0500-07.

Notify the Unit Supervisor when the task is complete.

# Exelon Nuclear

## Job Performance Measure

### Shutdown Torus Cooling

JPM Number: RO/SRO JPM g

Revision Number: 12

Date: 04/04/2011

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 8 through 12 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. Verify the procedure(s) referenced by this JPM reflects the current revision:  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_  
     Procedure \_\_\_\_\_ Rev: \_\_\_\_\_
- \_\_\_\_\_ 9. Verify cues both verbal and visual are free of conflict.
- \_\_\_\_\_ 10. Verify performance time is accurate
- \_\_\_\_\_ 11. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- \_\_\_\_\_ 12. 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 09**, This JPM is being revised to reflect procedures changes and new format.

**Revision 10**, This JPM is being revised to reflect procedure changes.

**Revision 11**, This JPM was revised to reflect procedure changes.

**Revision 12**, This JPM was revised to reflect procedure changes.

**SIMULATOR SETUP INSTRUCTIONS**

1. Reset the simulator to IC 21 (rst 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. Run the setup Computer Aided Exercise \_\_\_\_-\_\_ (jcae! \_\_\_\_-\_\_)

3. **Manual Actuation:**

Start one RHRSW pump per loop per QCOP 1000-04.

Start-up Torus Cooling on the B Loop of RHR with the 1C RHR pump IAW QCOP 1000-09.  
Fully close the MO 1-1001-16B, Heat Exchanger Bypass valve.

Prepare a copy of QCOP 1000-09 with the Prerequisites and step F.2 signed off.

**Malfunctions:**

NONE

**Remotes:**

NONE

**Overrides:**

NONE

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

### INITIAL CONDITIONS

- The Unit is operating at approximately 75% power.
- The Periodic HPCI surveillance requiring Torus cooling has been completed.
- The RHR system is in Torus Cooling with one RHR pump running IAW QCOP 1000-09.
- Two RHR Service Water pumps are running (one per loop) IAW QCOP 1000-04.

### INITIATING CUE

Shutdown Torus Cooling per QCOP 1000-09.

**Provide examinee with:** Copy of QCOP 1000-09.

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.
- Denotes critical elements of a critical step.

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

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

The timeclock starts when the candidate acknowledges the initiating cue.  
.....

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

<u>STEP</u>	<u>ELEMENT</u>	<u>STANDARD</u>	SAT	UNSAT	Comment Number
*F.5/6.a	●Throttle closed MO 1-1001-36B.●	Positions and holds the MO 1-1001-36B CS to CLOSED.	—	—	—
*F.5/6.b	●Stop running RHR pump and fully close MO 1-1001-36B.●	When RHR pump discharge pressure increases to within 25 psig of RHR SW pressure, positions 1C RHR pump CS to STOP (OFF light lit), <b>AND</b> positions MO 1-1001-36B CS to CLOSE. (CLOSED light lit).	—	—	—
F.5/6.c.	Close MO 1-1001-34B.	Positions MO 1-1001-34B CS to CLOSE. – CLOSED light lit.	—	—	—
F.5/6.d.	Open MO 1-1001-16B.	Positions MO 1-1001-16B CS to OPEN. – OPEN light lit.	—	—	—
*F.5./6.e.	●OPEN MO 1-1001-18B.●	Position MO 1-1001-18B CS to open. – OPEN light lit.	—	—	—
<b>CUE:</b>	<b>Inform the candidate that you will have another operator secure RHR SW and verify RHR Loop A/B is in standby lineup per QCOP 1000-02.</b>				
<b>EVALUATOR: The candidate should inform you that the task is complete.</b>					

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

.....

**JPM SUMMARY**

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

JPM Title: Shutdown Torus Cooling

JPM Number: RO/SRO JPM g

Revision Number: 12

Task Number and Title:

**SR-1000-P39** (Freq: LIC=I) Given a reactor plant with RHR torus cooling in operation, stop the RHRSW system and RHR system in accordance with QCOP 1000-04 and QCOP 1000-09 or QCOP 1000-30.

K/A Number and Importance: **K/A:** 219000 A4.01 **Rating:** 3.8/3.7

Suggested Testing Environment: Simulator

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

Reference(s): QCOP 1000-09, Rev. 22, TORUS COOLING STARTUP AND OPERATION

**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:**

The task is successfully completed when the examinee properly secures the running RHR pump and restores the associated RHR Loop valves to the standby lineup in accordance with QCOP 1000-09.

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**

- The Unit is operating at 75% power.
- The Periodic HPCI surveillance requiring Torus cooling has been completed.
- The RHR system is in Torus Cooling with one RHR pump running IAW QCOP 1000-09.
- Two RHR Service Water pumps are running (one per loop) IAW QCOP 1000-04.

## **INITIATING CUE**

Shutdown Torus Cooling per QCOP 1000-09.

Exelon Nuclear

2011 ILT NRC Exam Scenario

Scenario Number:

**NRC Scenario 1**

Revision Number: 00

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

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

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

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

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

Facility: Quad Cities Scenario No.: 2011 **NRC Scenario 1** Op-Test No.: ILT 09-1  
 Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions:

The plant is operating at 9% power with a startup in progress. The Mode Switch is in RUN. APRM 4 is out of service and bypassed for repair. 1C RFP is out of service.

Turnover: Continue the Reactor startup per QCGP 1-1.

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Establish the Drywell Inerting lineup per QCOP 1600-20
2	None	ATC R	Withdraw control rods to achieve 2-4 Turbine Bypass Valves open
3	RD02R2627	ATC C	Stuck rod / raise CRD Drive Pressure
4	NM08 RP02B&D	ATC I	APRM 5 fails inoperable, but RPS fails to trip <b>TS</b>
5	RC11 RC13	BOP C	RCIC Leak w/o auto isolation. Crew performs QCOA 0201 and QGA 300 to manually isolate the leak. <b>TS</b>
6	RR11A	Crew M	LOCA, restore RPV Water level and respond to elevated containment pressure and temperature
7	FW04B ED03A	Crew M	Loss of Feedwater (Degradation of 1B RFP and loss of 1A RFP due to loss of Bus 11). Use HPCI to restore and maintain RPV water level.

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

ES-301-4 Quantitative attributes:  
 Total Malfunctions (5-8): **5**  
 Malfunction(s) after EOP (1-2): **E7**  
 Abnormal Events (2-4): **E3, 4, 5**  
 Major Transient(s) /E-Plan entry (1-2): **E6**  
 EOPs (1-2): **QGA 100 / 200** and 300  
 EOP Contingencies (0-2): **None**  
 Critical Tasks (2-3): **3**

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

**SUMMARY:**

- Initial Conditions:
  - The plant is operating at 9% power just after the Mode Switch was taken to RUN.
  - APRM 4 is out of service and bypassed for repair.
  - The 1C Feed Pump is Out-of Service.
- Event 1: The BOP establishes the Drywell Inerting lineup per QCOP 1600-20.
- Event 2: The crew resumes control rod withdrawal to achieve 2 to 4 Turbine Bypass Valves opened per QCGP 1-1 Step F.6.kk.
- Event 3: During rod withdrawal, one rod will not move from position 00. When the ATC raises CRD drive water pressure, the rod can be withdrawn normally. Drive water pressure should then be returned to normal.
- Event 4: APRM 5 will fail INOPERABLE but a ½ Scram will not occur due to a problem in the APRM Trip Unit. The ATC must manually insert a B RPS ½ Scram because it is an Automatic Action that failed to occur. The SRO must address Tech Specs 3.3.1.1, RPS Instrumentation, for a second APRM inoperable on RPS Channel B and address TRM 3.3.a for Rod Block Instrumentation.
- Event 5: A steam leak in the RCIC Room results in RCIC Steam Line high DP and High area Temperature alarms, but RCIC fails to isolate as designed. A report from the Reactor Building confirms a steam leak. The BOP will manually isolate the RCIC Steam Lines and the Crew will perform the QCOA 0201-05, Primary System Leaks (Slow Leaks) Outside Primary Containment, and QGA 300. The SRO will address Technical Specifications for inoperable RCIC and inoperable PCIV valves/instrumentation.
- Event 6: A LOCA inside the Drywell results in a reactor scram and entry into QGA 100 and 200. The crew restores RPV Water Level and controls Drywell Pressure and Temperature with Containment Sprays.
- Event 7: A loss of Bus 11 deenergizes the 1A RFP. The 1B RFP degrades and cannot maintain RPV Level. Manual initiation of HPCI is necessary for high-pressure injection to restore RPV water Level.
- Approximate Run Time: 1.5 Hours

**CRITICAL TASKS:**

**Critical Task #1:** Given a reactor plant with a reactor building area radiation alarm or temperature alarm, isolate all discharges into the area.

**Critical Task #2:** Given a shutdown reactor with a LOCA in progress, restore and maintain RPV water level with available high pressure systems IAW with QGA 100.

**Critical task #3:** 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)

## EXERCISE PERFORMANCE OBJECTIVES

SR-1600-P01	Given a reactor plant during a startup, inert the primary containment using the electric vaporizers and the reactor building ventilation system in accordance with QCOP 1600-20.
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- 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 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-0001-P40	Given a reactor plant with a reactor building area radiation alarm, temperature alarm, differential pressure at or above 0 inches, or area water level above 1 inch, attempt to isolate all discharges into an area except systems needed for fire fighting or other QGA actions in accordance with QCOA 201-5 and QGA 300.
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-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-1000-P02	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-1000-P04	Given a reactor plant with rising containment pressures 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 when torus pressure exceeds 5 psig in accordance with QGA 200 and QCOP 1000-30. (Important PRA Operator Action - starting containment sprays has a RAW value of 82.5)
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.

1. Reset to IC-14 (Approximately 9% power).
2. Go to **RUN**.
3. Transfer the Mode Switch to RUN per QCGP 1-1 Step F.6.ii.
  - a. Place all IRM/APRM Recorders to APRM.
  - b. Place all IRM/RBM Recorders to RBM.
  - c. Withdraw IRM detectors.
  - d. Verify all APRM/RBM Recorders on LOW Speed.
4. Mark up the Control Rod Move Sheet to reflect all rods withdrawn up to Step 10, Rod J-9 at position 12.
5. Bypass APRM 4 and hang an Equipment Status Tag; APRM 4 is inoperable.
6. Place the Voltage Regulator in MANUAL
7. Select the 1A RFP for STANDBY
8. **AFTER EACH RESET:** At the 901-3 panel, verify Group 2 parameters are displayed on the 1-1602-7 recorder.

(The following commands to be utilized for this scenario are contained in the CAEP file:

2011 NRC Scenario 1.cae)

9. Insert Commands for setup:
  - **imf rd02r2627 0** (Control Rod G-7 stuck at position 0)
  - **trgset 3 "rdpdrivedelta > 340"** (Set trigger 1 as CRD drive Pressure > 340#)
  - **trg 3 "dmf rd02r2627"** (Delete stuck rod on Trigger 1)
  - **ior dihs13201rfpc1 ptl** (Override C RFP from Bus 11 in PTL)
  - **ior dihs13201rfpc2 ptl** (Override C RFP from Bus 12 in PTL)
  - **imf rp02b** (Auto Scram Failure on RPS Channel B1)
  - **imf rp02d** (Auto Scram Failure on RPS Channel B2)
  - **imf rc13** (RCIC Group 4 failure to auto isolate)
  - **trgset 7 "pcpdwg .ge. 2.5"** (Set Trigger 7 as Drywell Pressure > 2.5 psig)
  - **imf fw04b(7) 90 5:** (On Trigger 7, 1B RFP degrades to 90% severity on a 5 min ramp)
  - **imf ed03a(7 2:)** (On Trigger 7, Loss of Bus 11 with a 2 minute delay)
  - **imf hp11** (HPCI failure to Auto Initiate)
  - **irf pc02r close** (Stops flow from N2 Vaporizer until Inerting lineup is established)
  - **ior dihs15708a trip** (1A DW/ Torus Purge Fan handswitch in trip/off)
  - **irf hv01r ro** (Fail open damper on 1A DW/ Torus Purge Fan)
  - **trgset 29 "zdihs10590300(1) .eq. 1"** (Set Trigger 29 as Mode Switch to Shutdown)
  - **trgset 30 "zdihs10590300(1) .eq. 1"** (Set Trigger 30 as Mode Switch to Shutdown)
  - **trg 29 "dmf rp02b"** (Deletes B RPS Auto Scram failure malfunction on Trigger 29)
  - **trg 30 "dmf rp02d"** (Deletes B RPS Auto Scram failure malfunction on Trigger 30)

(Continued)

10. Verify the following commands for scenario performance:
  - **mrf pc02r open** (Initiate flow from the N2 Vaporizer when directed)
  - **ior aofr187408 100 1:** (Overrides Nitrogen Flow recorder to full scale over 1 minute)
  - **ior dihs10700ap5md 3** (APRM 5 Mode switch overridden to Zero, position 3 )
  - **imf rc11 50** (Steam Leak in RCIC room at 50% severity)
  - **irf sw10r run** (Start the U-1 EDG CWP as requested)
  - **imf rc10a 0** (Bind RCIC Steam Supply Valve 1-1301-16 closed, prevents auto re-open)
  - **imf rc10b 0** (Bind RCIC Steam Supply Valve 1-1301-17 closed, prevents auto re-open)
  - **ior lohs11301161 off** (On 901-4, override 1-1301-16 Green Light Off as requested)
  - **ior loli11301161 off** (On 901-3, override 1-1301-16 Green Light Off as requested)
  - **ior lohs11301171 off** (On 901-4, override 1-1301-17 Green Light Off as requested)
  - **ior loli11301171 off** (On 901-3, override 1-1301-17 Green Light Off as requested)
  - **imf rr11a 0.5 20:** (Recirc Suction Line break in the Drywell to 0.5% severity over 20 min)
  
11. Complete the following Lineup for Drywell Inerting:
  - On Panel 901-4, AO 1-4723 RES SPLY, hang an Equip Status Tag stating that Inst Air is valved in as a backup to Drywell Pneumatic System.
  - CLOSE
    - AO 1-1601-21 DW PRG VLV
    - AO 1-1601-22 DW OR TORUS PRG VLV
    - AO 1-1601-23 DW VENT VLV
    - AO 1-1601-24 VENT TO RX BLDG EXH SYS
  - Set PIC 1-1640-11 Containment Pressure to 20% open.
  - Verify 1B Drywell/Torus Purge Fan is OFF.
  - Take the 1A Drywell/Torus Purge Fan Handswitch to OFF.
    - Hang an Equipment Status Tag on the 1A Drywell/Torus Purge Fan.
  
12. Take the following components Out of Service:
  - 1C Reactor Feed Pump, (Bus 11 and Bus 12 in PTL with Out of Service tags)
  
13. Provide a “ Reactor Startup” REMA.
  
14. Provide a current revision of the following procedures, signed off as specified:
  - QCOP 1600-20, signed off up to step F.9.
  - QCGP 1-1, signed off up to step F.6.kk.
  - QCOP 5600-04, signed off up to Step F.4.d.
  
15. Need to have blank EST available for use during the scenario.
  
16. Ensure procedures are erased and put away including QGAs.
  
17. Advance recorders.
  
18. Clean marked up meter/recorder faces and hard cards.
  
19. Remove any flags placed by the previous crew.
  
20. Clear the Digital Feedwater and Recirc OWS alarms.

**Annunciator Procedures**

- 901-3 A-16, PRI CNMT HIGH PRESSURE, Rev. 12
- 901-3 H-2, AREA HI TEMP STEAM LEAK DETECTION, Rev. 6
- 901-4 A-15 RCIC STEAM LINE HI DP, Rev. 9
- 901-5 B-11 CHANNEL A/B NEUTRON MONITOR, Rev. 10
- 901-5 C-3 ROD OUT BLOCK, Rev. 11
- 901-5 C-6 APRM DOWNSCALE, Rev. 5
- 901-5 D-13 CHANNEL 4-6 APRM HI HI OR INOP, Rev. 9
- 901-8 A-1 4KV MAIN FEED BREAKER TRIP, Rev. 4
- 901-8 E-1 4KV BUS 11 & 12 LOW VOLTAGE, Rev. 4
- 901-8 F-3 4KV BUS OVRCUR TRIP, Rev. 5

QCGP 1-1, Normal Unit Startup, Rev. 84

QCGP 4-1, Control Rod Movements and Control Rod Sequence, Rev. 36

QCGP 2-3, Reactor Scram, Rev. 72

QGA 100, RPV Control, Rev. 9

QGA 200, Primary Containment Control, Rev. 9

QGA 300, Secondary Containment Control, Rev. 11

QCOA 0201-01, Increasing Drywell Pressure, Rev. 23

QCOA 0201-05, Primary System Leaks (Slow Leaks) Outside Primary Containment, Rev. 8

QCOP 1600-20, Nitrogen Inerting of Primary Containment Using the Vaporizer(s) and  
Reactor Building Ventilation System. Rev. 28

QCOA 0300-02, Inability to Drive a Control Rod: Control Rod Stuck, Rev. 17

QCOA 0700-03, Loss of Neutron Flux Indication. Rev. 8

QCOA 1000-04, LPCI Automatic Initiation, Rev. 15

QCOP 1000-30, Post-Accident RHR Operation, Rev. 26

QCOP 2300-06, HPCI System Manual Startup, Rev. 29

QCOP 5600-04, Main Turbine Warming, Rev. 19

**CREW TURNOVER****1.) Plant Conditions:**

- a.) Unit 1 is at 9% 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.) APRM 4 is inoperable and bypassed for repair. Return expected in 24 hours.
- b.) 1C Reactor Feed Pump is out of service due to a pump casing leak.

**3.) Evolutions/maintenance for the oncoming shift:**

- a.) Resume QCOP 1600-20. The EO just opened the breaker for the 1A DW/TORUS PURGE FAN per Step F.6.d and verified that Nitrogen Vaporizer valves in the 1/2 DG Room are closed per Step F.8. Establish inerting of the Drywell.
- b.) Continue Reactor startup per QCGP 1-1. Currently withdrawing Control Rods to achieve 2-4 Bypass valves open per Step F.6.kk.

Quad Cities	Scenario No.: 1	Event No.: 1	Page 1 of 1
Event Description: Establish the Drywell Inerting lineup per QCOP 1600-20			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP ROLE PLAY:</b> Equipment Operators supporting Containment Inerting as necessary.			
	SRO	Directs and supervises the initiation of Drywell inerting	
	ATC	Monitors Panel 901-5 parameters during Startup	
	BOP	Verifies AO 1-1699-7 VENT TO RX BLDG is OPEN	
	BOP	Opens AO 1-1601-24 VENT TO RX BLDG EXH SYS	
	BOP	Opens AO 1-1601-23 DW VENT VLV	
	BOP	Opens AO 1-1601-21 DW PRG VLV	
	BOP	Opens AO 1-1601-55 N2 PRG VAP VLV	
	BOP	Directs the EO to perform step F.11 at the Bulk Nitrogen Storage Tank Skid	
<b>SIMOP ROLE PLAY:</b> EO as necessary to acknowledge this directive. Wait 5 minutes and then establish N2 Vaporizer flow by opening the 1-8799-85 Cold Valve: <b>irf pc02r open</b> And by providing indication of nitrogen flow: <b>ior aofr187408 100 1:</b>			
<b>End of Event 1</b>			

Quad Cities	Scenario No.: 1	Event No.: 2	Page 1 of 1
Event Description: Withdraw control rods to achieve 2-4 Turbine Bypass Valves open.			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> If the crew does not promptly begin the task, call the control room as the Shift Manager and ask them to begin.			
<b>Lead Examiner Role Play:</b> Qualified Nuclear Engineer (QNE) as necessary			
	SRO	Directly supervises control rod moves and directs the RO to raise power per the REMA	
	BOP	Monitors balance of plant parameters	
	ATC	(CONTINUOUS) Monitors reactor parameters	
	ATC	Begins power increase with control rods	
	ATC	Selects an in-sequence control rod	
<b>EVALUATOR NOTE:</b> Per QCGP 4-1 D.3, continuous rod withdrawal is approved.			
	ATC	On the RWM verifies proper rod selected, its current position and bounds	
	ATC	Communicates to the QV "Control Rod XX-YY is selected. Withdrawing from position 00 to position 12". (continuously or by notching)	
	QV	Replies, "Understand Control Rod XX-YY is selected. You are moving it from position 00 to position 12." (Continuously or by notching)	
	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 to achieve 2-4 Turbine Bypass Valves open	
<b>EVALUATOR NOTE:</b> When the second rod will not move from position 00 with normal drive pressure, perform Event 3 and then return to this event.			
	BOP	Monitors balance of plant parameters and adjust EHC Load Set	
<b>EVALUATOR NOTE:</b> When the Lead Evaluator is satisfied with the reactivity manipulation, proceed to Event 4.			
<b>End of Event 2</b>			

Quad Cities		Scenario No.: 1	Event No.: 3	Page 1 of 1
Event Description: Stuck rod / raise CRD Drive Pressure				
Time	Position	Applicant's Actions or Behavior		
Key Parameter Response: Control Rod G-7 will not move from position 00; CRD Drive Pressure indication on 901-5, 1-340-4				
Expected Annunciator(s): None				
Automatic Actions: None				
	ATC	Reports CR G-7 will not move.		
	SRO	Directs RO to perform the actions of QCOA 0300-02		
	ATC	Verifies no CR 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		
<b>SIMOP:</b> When CRD drive water pressure is >340 psid , verify Event <b>Trigger 3</b> goes active to delete malfunction <b>dmf rd02r2627</b> .				
	ATC	Attempts to withdraw CR G-7		
	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		
<b>End of Event 3</b>				

Quad Cities	Scenario No.: 1	Event No.: 4	Page 1 of 1
Event Description: APRM 5 becomes inoperable			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> When directed by the Lead Examiner, fail APRM 5 INOPERABLE by overriding the mode switch to the Zero (3) position: <b>ior dihs10700ap5md 3</b>			
Key Parameter Response: APRM 5 recorder and meter indicate DN SCL / INOP lights lit on 901-5 and 37			
Expected Annunciator(s): 901-5 C-3 ROD OUT BLOCK 901-5 C-6 APRM DOWNSCALE 901-5 H-1 OPRM TROUBLE/INOP 901-5 D-13 CHANNEL 4-6 APRM HI HI OR INOP			
Automatic Actions: Rod Block (½ Scram on RPS Channel B disabled)			
	ATC	Acknowledges annunciators and reports APRM 5 indicates downscale /inoperable	
	ATC	Manually inserts a ½ scram in RPS B	
	SRO	Refers to QCOA 0700-03 and directs crew to hold Reactor power constant	
	BOP	May verify APRM 6 indicates Inop at the 901-37 panel	
	SRO	Enters TS 3.3.1.1 Condition A, for 2 APRMs inoperable on RPS Ch B. Verifies minimum number of APRM's (4) per TRM 3.3.a are operable	
	CREW	Contacts Instrument Maintenance to troubleshoot APRM 5	
<b>SIMOP ROLE PLAY:</b> Instrument Maintenance as necessary: They report a faulty circuit card.			
<b>Time Compression:</b> If needed, the Lead Evaluator may inform the crew that "11 hours have past and there is no change in APRM 6 status."			
<b>End of Event 4</b>			

Quad Cities		Scenario No.: 1 Event No.: 5	Page 1 of 2
Event Description: RCIC Leak without auto isolation			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP:</b> When the BOP is near Panel 901-4 and when directed by the Lead Examiner Insert Malfunction: <b>imf rc11 50</b></p> <p>Key Parameter Response: RCIC Room Area Temperatures 901-21</p> <p>Expected Annunciator(s):            901-4 A-15 RCIC STEAM LINE HI DP (in approximately 20 seconds)            901-3 H-2, AREA HI TEMP STEAM LEAK DETECTION (in approximately 25 seconds)            901-3 C3, CORE SPRAY PUMP AREA HI TEMP (in approximately 35 seconds)</p> <p>Automatic Actions: None (Group 5 auto isolation is disabled)</p>			
	BOP	Responds to annunciator and informs the US	
	BOP	Verifies Automatic action occurred / recognizes that the Group V isolation failed to occur	
<b>CT1</b>	BOP	Isolates RCIC by closing the MO 1-1301-16 and MO 1-1301-17 valves	
	SRO	Directs BOP to perform the actions of the QCAN	
	BOP	Checks Panel 901-21 and determines leak in RCIC	
	SRO	Enters QGA 300	
<b>CT1</b>	SRO	Directs/verifies closing of RCIC 1-1301-16 and 1-1301-17 valves	
	SRO	Directs ATC/BOP to dispatch an EO to start the U1 EDG CWP and check basement water levels	
<p><b>SIMOP:</b> When directed, wait until the RCIC steam lines have been isolated, then start the U1 EDG CWP; <b>irf sw10r run</b> and then report that the pump is running. Also report no water in Reactor Bldg Basement.</p>			
<p><b>SIMOP ROLE-PLAY:</b> If dispatched to investigate, wait 2 minute and then report that there is a steam leak in the RCIC Room near the Turbine. The Room has been evacuated.</p>			
<b>Event 5 Continued</b>			

Quad Cities		Scenario No.: 1 Event No.: 5	Page 2 of 2
Event Description: RCIC Leak without auto isolation			
Time	Position	Applicant's Actions or Behavior	
	SRO	Directs BOP to take the actions of QCOA 0201-05	
	BOP	Evacuates the reactor building basement and notifies RP	
	BOP	Trips hydrogen water chemistry system	
<b>SIMOP:</b> When the RCIC steam lines have been isolated, then insert the following malfunctions to bind the 16 & 17 valves closed: <b>imf rc10a 0</b> and <b>imf rc10b 0</b>			
	BOP	Verifies RCIC room temperature is lowering	
	SRO	Refers to TS 3.5.3 Condition A, identifies RCIC inoperable, (14 day LCO). Refers to TS 3.6.1.3 Condition B, identifies 2 PCIVs inoperable, (1 hour LCO) Refers to TS 3.3.6.1 Condition B, (function 4a), identifies Auto Isolation capability was not operable, (1 hour LCO).	
	SRO	Directs NSO to dispatch an EO to open the MO 1-1301-16 and MO 1-1301-17 valve breakers.	
<b>SIMOP:</b> If dispatched to deenergize 16 & 17 valves, wait 3 minutes and then insert the following overrides: <b>ior lohs11301161 off</b> and <b>ior loil11301161 off</b> ; then <b>ior lohs11301171 off</b> and <b>ior loil11301171 off</b> Then report that the RCIC 16 and 17 valves are deenergized			
	ATC	Provides requested peer checks and monitors Panel 901-5 parameters	
<b>End of Event 5</b>			

Quad Cities	Scenario No.: 1	Event No.: 6	Page 1 of 5
Event Description: LOCA in the Drywell, Initial Actions			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> When directed by the Lead Examiner, initiate a large line break at 0.5% severity on a 20 minute ramp: <b>imf rr11a 0.5 20:</b>			
Key Parameter Response: Rising Drywell Pressure			
Expected Annunciator(s): 901-3 A-14, TORUS HIGH/LOW LEVEL (Resetting) 901-3 A-13, DW LOW PRESS CNMT SPRAY INHIBITED (Resetting) 901-3 A-16, PRI CNMT HIGH PRESSURE			
Automatic Actions: Reactor Scram, Initiation of SBT, HPCI, LPCI, Core Spray, Emergency Diesel Generators. Isolation of Group 2 valves, Reactor Bldg and Control room Ventilation.			
	BOP	Responds to the resetting of annunciators 901-3 A-14 TORUS HIGH/LOW LEVEL and 901-3 A-13 DW LOW PRESS CNMT SPRAY INHIBITED	
	BOP	Identifies rising Drywell Pressure (Containment air purge in progress)	
	CREW	Responds to 901-3 A-16, PRI CNMT HI PRESS	
	SRO	Enters and directs actions of QCOA 0201-01	
	CREW	Monitors and reports Drywell Pressure and trend	
	CREW	Investigates the cause	
	SRO	May set scram criteria of 2.0 psig DW pressure	
	ATC/BOP	Monitors drywell pressure for scram criteria	
	CREW	Notifies Radiation Protection of elevated drywell pressure	
	CREW	Makes announcement to evacuate the Reactor Building	
	ATC/BOP	Monitors leak rate	
	BOP	May start the seventh DW cooler	
	SRO	May briefs crew on expected auto actions at 2.5 psig DW pressure	
	ATC	When directed, manually scrams the reactor	
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 1	Event No.: 6	Page 2 of 5
Event Description: LOCA in the Drywell, QCGP 2-3 actions			
Time	Position	Applicant's Actions or Behavior	
	SRO	May direct a manual scram prior to exceeding 2.5 psig in Drywell	
	ATC	(If directed) Depresses both RX SCRAM CH A and CH B Pushbuttons	
	SRO	Directs ATC to Perform QCGP 2-3	
	ATC	Places RX MODE switch to SHUTDOWN position	
	ATC	Verifies the SDV vent and drain valves are closed	
	ATC	Verifies all Control Rods are fully inserted	
	ATC	Makes scram report including entry into QGA 100 if 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	
	ATC	(CONTINUOUS) Monitors RPV water level and pressure	
	ATC	Verifies automatic insertion of SRMs AND IRMs	
<b>EVALUATOR NOTE:</b> The remaining steps from QCGP 2-3 may not be taken due to the pace of the scenario because Bus 11 trips 2 minutes after the Drywell exceeds 2.5 psig.			
	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 (alarm 901-8 H-9) tripped	
	ATC	Verifies all 4 KV buses powered from T-12	
	ATC	Verifies both Recirc Pumps running at minimum speed in Manual (may be tripped due to DW pressure)	
	ATC	Starts the Control Room AFU Booster Fan within 40 minutes	
	ATC	Dispatches EO to reset the Generator 86 Relays	
<b>SIMOP ROLE PLAY:</b> As necessary, the EO dispatched to reset 86 Relays			
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 1	Event No.: 6	Page 3 of 5
Event Description: Steam leak in Drywell / QGA 100 and 200 Actions			
Time	Position	Applicant's Actions or Behavior	
	SRO	Enters QGA 100, RPV Control on 2.5 psig DW pressure	
	SRO	Enters QGA 200, Primary Containment Control, on 2.5 psig DW pressure	
	BOP	Monitors and reports Primary Containment parameters and trends	
	ATC/BOP	Reports Core Spray and RHR auto started	
	BOP	Recognizes and reports that HPCI did not auto start	
	ATC/BOP	Verifies Diesels auto started	
	BOP	As directed, verifies 1A and 1B CAMs operating	
	SRO	May direct actions to start all available drywell cooling	
	ATC/BOP	As directed, restores RBCCW and DW coolers per QCOP 5750-19	
		Verifies Bus 18 and 19 voltage >450 volts	
		Takes the U1 DIV I DW CLR/RBCCW/FPC TRIP BYPASS switch to BYPASS position	
		Takes the U1 DIV II DW CLR/RBCCW/FPC TRIP BYPASS switch to BYPASS position	
		Checks Drywell temperature is less than 260 °F	
		Starts 1A and 1B RBCCW pump	
		Starts drywell coolers one at a time	
		Starts Drywell Booster Fan	
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 1	Event No.: 6	Page 4 of 5
Event Description: Steam leak in Drywell / QGA 100 and 200 Actions			
Time	Position	Applicant's Actions or Behavior	
	SRO	Verifies Torus level <27 ft.	
	SRO	Before Torus Pressure reaches 5 psig, directs BOP to place Torus Sprays on IAW QCOP 1000-30	
	BOP	Maintains the following during Post-Accident RHR Operation: <ul style="list-style-type: none"> <li>• RHR Service Water Pressure 15-20 psig &gt; RHR Pressure</li> <li>• RHR Service Water flow &lt;3600 gpm/pump</li> <li>• RHR Pressure 100-250 psig</li> </ul>	
	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 RHR Service Water	
		Opens MO 1-1001-5A/B to approximately 40%	
		Starts A/B RHR SW Pump	
		Throttles MO 1-1001-5A/B as necessary	
		Throttles MO 1-1001-16A/B as necessary	
	BOP	As directed, initiates <u>Torus Sprays</u> per QCOP 1000-30	
		Opens MO 1-1001-34A/B	
		Opens MO 1-1001-37A/B	
	BOP	Opens/Throttles MO 1-1001-36A/B as necessary to maintain RHR Discharge Pressure	
	SRO	Directs BOP to secure Torus Sprays before Torus Pressure drops to 0 psig	
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 1	Event No.: 6	Page 5 of 5
Event Description: Steam leak in Drywell / QGA 100 and 200 Actions			
Time	Position	Applicant's Actions or Behavior	
	BOP	Reports Torus pressure >5 psig.	
	SRO	Verifies Torus level <17 ft.	
	SRO	Verifies inside DW Spray Limit Curve	
	SRO	Verifies Recirc pumps and DW Coolers are tripped	
<b>CT3</b>	SRO	Directs BOP to start DW Sprays	
<b>CT3</b>	BOP	As directed, initiates <u>Drywell Sprays</u> per QCOP 1000-30	
		Opens MO 1-1001-23A/B	
		Opens MO 1-1001-26A/B	
		Opens MO 1-1001-34A/B	
		Throttles MO 1-1001-36A/B as necessary to maintain RHR Discharge Pressure	
	SRO	Directs BOP to <u>secure DW Sprays</u> before DW Pressure drops to 0 psig	
	BOP	Before DW Pressure drops to 0 psig, secures DW Sprays	
		Closes MO 1-1001-23A/B	
		Closes MO 1-1001-26A/B	
		Throttles MO 1-1001-36A/B as necessary to maintain RHR Discharge Pressure	
	SRO	If Torus water temperature cannot be held <95°F, directs start of all available Torus Cooling	
	BOP	As directed, initiates <u>Torus Cooling</u> per QCOP 1000-30	
		Opens MO 1-1001-34A/B	
		Opens/Throttles MO 1-1001-36A/B as necessary to maintain RHR Discharge Pressure	
<b>End of Event 6</b>			

Quad Cities		Scenario No.: 1	Event No.: 7	Page 1 of 2
Event Description: Loss of Feedwater, HPCI Autostart failure				
Time	Position	Applicant's Actions or Behavior		
<b>SIMOP:</b> When Drywell pressure exceeds 2.5 psig, verify the following malfunctions begin to time down/ramp in: <b>imf ed03a(5 2:)</b> and <b>imf fw04b(5) 90 5:</b>				
Key Parameter Response: Low Voltage on Bus 11, RPV Water level lowering				
Expected Annunciator(s): 901-8 A-1 4KV MAIN FEED BREAKER TRIP 901-8 E-1 4KV BUS 11 & 12 LOW VOLTAGE 901-8 F-3 4KV BUS OVR CUR TRIP				
Automatic Actions: Bus 11 deenergizes				
	BOP	Responds to annunciators and reports the loss of Bus 11 to the Unit Supervisor		
	BOP	Dispatch an operator to determine the cause of the trip		
<b>SIMOP ROLE PLAY:</b> As the operator dispatched to investigate Bus 11: wait 3 minutes and then report that Bus 11 has an overcurrent condition and that EMD has been contacted.				
<b>EVALUATOR NOTE:</b> QCOA 6500-01 for loss of Bus 11 is applicable, but there are no further operator actions to be taken.				
	SRO	Directs RPV level be maintained 0 to +48" with preferred injection systems		
	ATC	Attempts to maintain RPV level 0 to +48" with preferred injection systems		
	ATC/SRO	Recognize that the 1B RFP is not maintaining RPV Water Level		
	ATC/BOP	May dispatch an operator to investigate 1B RFP		
<b>SIMOP ROLE PLAY:</b> If dispatched to investigate the 1B RFP, wait 2 minutes and then report that the pump is very noisy and suggest that it be secured.				
<b>Event 7 continued</b>				

Quad Cities		Scenario No.: 1	Event No.: 7	Page 2 of 2
Event Description: Loss of Feedwater				
Time	Position	Applicant's Actions or Behavior		
<b>SIMOP ROLE PLAY:</b> If dispatched to investigate the failure of HPCI to autostart, wait 5 minutes and then report back that "you see no apparent problem with the HPCI Turbine and Auxiliaries that would prevent its operation".				
CT2	ATC/BOP	Manually initiate HPCI for injection into the RPV per QCOP 2300-06		
		Verify REMOTE HPCI TURB TRIP is not Trip-Latched		
		Depresses and holds HPCI MANUAL INITIATION pushbutton for at least 30 seconds		
	ATC/BOP	Adjusts HPCI Flow as necessary to Maintain RPV Water level		
	ATC/BOP	May start SSMP per QCOP 2900-02		
		Verify Pump suction pressure is available		
		OPEN MOV 1-2901-7, Throttled Test Valve		
		Start the SSMP		
		Verify increasing Pump Discharge Pressure		
		Place the FCV in AUTO		
		Slowly increase flow controller setpoint to 400 gpm		
		OPEN MOV 1-2901-8, U1 Reactor Supply Valve		
		CLOSE MOV 1-2901-7, Throttled Test Valve		
		Directs and Equipment Operator to close the Service Water to SSMP Room Cooler Bypass, 1/2-2999-9		
<b>SIMOP ROLE PLAY:</b> As Equipment Operator dispatched to close 1/2-2999-9. After 5 minutes, report that 1/2-2999-9 is CLOSED.				
<b>SIMOP:</b> When RPV Water Level is being Maintained and at the discretion of the Lead Examiner, Place the simulator in <b>FREEZE</b> .				

Exelon Nuclear

2011 ILT NRC Exam Scenario

Scenario Number:

**NRC Scenario 2**

Revision Number: 00

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

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

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

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

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

Facility: Quad Cities Scenario No.: 2011 **NRC Scenario 2** Op-Test No.: ILT 09-1  
 Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions:

The plant is operating at 100% power.  
 HPCI maintenance complete. Working to restore and test, then exit 14-Day LCO and ATR.  
 Drywell Spray Valve 23A is inoperable, Day 2 of a 7-Day LCO.

Turnover: Restore HPCI to its standby lineup. Post Maintenance Surveillance later in shift.

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Re-pressurize HPCI Steam Lines and restore HPCI to standby lineup
2	ANO9121G12	SRO TS	Toxic Gas Monitor Inoperability. <b>TS</b> (Optional for Surrogate)
3	AIFC103401B RD03R	ATC C	CRD FCV Fails High causing a control rod to drift IN.
4	AIPIC1874011	BOP C	Drywell N2 controller failure
5	None	SRO TS	Torus Water Level PAM Instrument Inoperability <b>TS</b> (Optional for Surrogate)
6	DIHS156041A LOHS156041A4	BOP C	Gland Exhauster trip/start standby
7	MC08 MC15R	ATC R	Emergency Power Reduction on Loss of Main Condenser vacuum (Recoverable)
8	RP02 RP03	ATC C	Drywell pressure starts to rise slowly. Manual and auto Scram logics fail. ARI Initiation is necessary
9	MS04C	Crew M	LOCA; A Steam line leak in the Drywell results in a reactor scram and entry into QGA 100 and 200
10	DIHS11001S17B	Crew M	Div 2 Drywell Spray valves fail to open, Emergency Depressurization per QGA 500-1 when PSP exceeded

\* (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): **E10**  
 Abnormal Events (2-4): **E3, 4, 7**  
 Major Transient(s) /E-Plan entry (1-2): **E9**  
 EOPs (1-2): **QGA 200/ 100**  
 EOP Contingencies (0-2): **E10**  
 Critical Tasks (2-3): **2**

ES-301-5 Quantitative attributes:  
 BOP Normal: **E1**  
 ATC Reactivity (1 per set): **E7**  
 BOP I/C (4 per set): **E4 & 6**  
 ATC I/C (4 per set): **E3 & 8**  
 SRO-I I/C (4 per set inc 2 as ATC): **E3, 4, 6, 8**  
 SRO Tech Spec (2 per set): **E2 & 5**  
 ALL Major Transients (2 per set) **E9**

**SUMMARY:**

- Initial Conditions:
  - The plant is operating at 100% power.
  - HPCI maintenance complete. Restore HPCI to its standby lineup.
  - Drywell Spray Valve MO 1-1001-23A is inoperable, on Day 2 of a 7-Day TLCO.
- Event 1: The BOP re-pressurizes the HPCI Steam Lines and restores HPCI to its standby lineup per QCOP 2300-01 Step F.5.
- Event 2: (Optional for Surrogate) The BOP responds to Annunciator 912-1 G-12 CONTROL ROOM STANDBY HVAC SYS. MAJOR TRBL and determines that the Toxic Gas Monitor is inoperable. The SRO refers to Technical Requirements Manual TLCO 3.3.e, Cond A and QCOS 5750-06. If the signal from the faulty monitor is inhibited within 40 minutes, TS 3.7.4 Condition A for inoperable CREV system will not apply.
- Event 3: The CRD Flow Controller Auto output will fail upscale, which raises Drive Pressure and Cooling Flow. This causes a single control rod to drift INWARD to position 12. The ATC must fully insert the rod per the QCAN and QCOA for Rod Drift. The ATC may also restore CRD parameters to normal by taking the controller to MANUAL per the QCOA for a failed CRD Flow Control valve.
- Event 4: Drywell N2 controller fails, causing the makeup valve to open fully. The BOP can take manual control of the valve and close it to stabilize Drywell pressure. Without operator action, Drywell pressure will continue to rise and eventually exceed the Drywell High Pressure alarm setpoint.
- Event 5: (Optional for Surrogate) The IMD Supervisor calls the US to report that an unqualified replacement part was recently used for the Torus Level Transmitter for Control Room Narrow Range indications. The SRO will address Technical Specifications for an inoperable Post Accident Monitoring (PAM) instrument.
- Event 6: The running Gland Seal Exhauster will trip. The BOP will start the standby Exhauster and adjust Gland Exhaust pressure.
- Event 7: An air leak will result in lowering Main Condenser Vacuum. The crew performs QOA 3300-02 and Emergency Power Reduction. Prompt action by Equipment Operators to re-fill a loop seal line will stabilize Main Condenser Vacuum.
- Event 8: Drywell Pressure starts to rise when a LOCA is initiated. The Manual Scram Pushbuttons, the Mode Switch to SHUTDOWN, and Drywell Pressure >2.5 psig will fail to trip RPS. The ATC must perform Alternate Rod Insertion procedures, most likely ARI initiation, to successfully insert all control rods. QCGP 2-3 actions for the Scram Discharge Volume, SRMs and IRMs will be different with the failure of RPS to trip.
- Event 9: A LOCA inside the Drywell results in a reactor scram and entry into QGA 100 and 200. The crew restores RPV Water Level and attempts to control Drywell Pressure and Temperature with Containment Sprays.
- Event 10: When Division 2 Containment Spray valves cannot be opened, the crew must Blowdown in order to avoid exceeding Pressure Suppression Pressure (PSP).

**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.

**Critical task #2:** When Drywell temperature CANNOT be maintained < 280 F OR Torus pressure CANNOT be maintained < the Pressure Suppression Pressure Limit, (PSP), INITIATE an Emergency Depressurization.

## EXERCISE PERFORMANCE OBJECTIVES

SR-2300-P04	Given a reactor plant being started up, warmup the HPCI lines and align the system for standby in accordance with QCOP 2300-01.
SR-0300-P24	Given a reactor plant at power with a mispositioned control rod, restore the rod to the correct position or insert to 00 in accordance with QCOA 0300-4 or QCOA 0300-11.
SR-5600-P04	Given a reactor plant during a startup, start the main turbine gland steam seal system in accordance with QOP 5600-01.
SR-1600-P03	Given a reactor plant during a startup, start the drywell and torus differential pressure control system in accordance with QCOP 1600-21.
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.
SR-0002-P05	Given a reactor plant at power, perform a power change discernible on neutron monitors using Recirc flow in accordance with QCOP 0202-03 and QCGP 3-1
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-0001-P11	Given a reactor plant with an ATWS, take action to reduce heat input into the containment 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-1000-P05	Given a reactor plant in an accident condition where RHR-LPCI mode has started automatically, determine if LPCI has responded correctly to a valid initiation and throttle flow to restore RPV water level in accordance QCOA 1000-04.
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-1000-P02	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-1000-P04	Given a reactor plant with rising containment pressures 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 when torus pressure exceeds 5 psig in accordance with QGA 200 and QCOP 1000-30. (Important PRA Operator Action - starting containment sprays has a RAW value of 82.5)
SR-0001-P23	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 280 degrees in accordance with QGA 200 and QGA 500-1.

1. Reset to IC-21.
2. Go to **RUN**.
3. Close the HPCI Steam supply Valves, **MO 1-2301-4 & 5**. (Lines depressurize in 3.5 minutes)

(The following commands to be utilized for this scenario are contained in the CAEP file:  
2011 NRC Scenario 2.cae)

4. Insert Commands for setup:

- **ior dihs11001s17b off** (Division 2 Containment Spray Permissive overridden off)
- **irf rh19ar open** (Containment Spray 23A Breaker open)
- **irf rh20ar open** (Containment Spray 26A Breaker open)
- **imf ser0986(6) on** (On Trigger 6, Gland Exhauster Trip 901-7 E-12 ON)
- **ior dihs156041a(6) trip** (On Trigger 6, 1A Gland Exhauster handswitch to TRIP)
- **ior lohs156041a4(6) on** (On Trigger 6, 1A Gland Exhauster Amber Trip light ON)
- **trgset 4 "zdihs103023a(2) .eq. 1"** (When the A CRD Pump is taken to STOP)
- **trg 4 "dmf rd03r4223"** (Rod Drift Malfunction deleted on Trigger 4)
- **imf rp02a** (RPS Channel A1 Auto scram failure)
- **imf rp02b** (RPS Channel B1 Auto scram failure)
- **imf rp02c** (RPS Channel A2 Auto scram failure)
- **imf rp02d** (RPS Channel B2 Auto scram failure)
- **imf rp03a** (RPS Channel A Manual scram failure)
- **imf rp03b** (RPS Channel B Manual scram failure)
- **trgset 8 "rrpdome .lt. 875"** (When Reactor Pressure lowers to <875 psig)
- **imf rp05a(8)** (On Event Trigger 8, a spurious Group 1 Isolation)
- **imf rp05b(8)** (On Event Trigger 8, a spurious Group 1 Isolation)

5. Verify the following commands for scenario performance:

- **imf ano9121g12 on** (912-1 G-12 Annunciator for Toxic Gas Monitor inop)
- **imf ano9121h12 on** (912-1 H-12 Annunciator for Toxic Gas Monitor inop)
- **dmf ano9121g12** (Deletes 912-1 G-12 Annunciator)
- **dmf ano9121h12** (Deletes 912-1 H-12 Annunciator)
- **ior aifc103401b 100** (CRD Flow Controller Overridden to 100% in Auto)
- **imf rd03r4223** (Rod L-6 Drifts IN)
- **dmf rd03r4223** (Deletes Rod Drift Malfunction)
- **ior aipic1874011a 100 2:** (DW Pressure controller fails upscale on a 2 minute ramp)
- **trg! 6** (Trigger 6 used to initiate Event 6 Gland Exhauster Trip)
- **imf mc08 100 25:** (Condenser Air Leak at 100 severity on a 25 minute ramp)
- **dmf mc08** (Deletes Condenser Air Leak, simulates filled loop seals)
- **imf ms04c 0.5 10:** (Main Steam break in Drywell at 0.5% severity over 10 min)
- **mmf ms04c 4** (Modify Main Steam break inside Drywell to 4%)
- **irf rh19br open** (As requested, open the breaker to Div 2 DW Spray 23B)
- **irf rh20br open** (As requested, open the breaker to Div 2 DW Spray 26B)
- **irf rh23br open** (As requested, open the breaker for MO 1-1001-34B vlv)
- **irf rh24br open** (As requested, open the breaker for MO 1-1001-36B vlv)

(Continued)

6. Install out of Service tags on:
  - A Loop Drywell Spray Valves
7. Install "Protected System" placards and/or rings on the following equipment:
  - SSMP *sign*
  - RCIC *sign*
  - ADS *sign*
  - A&B Core Spray *4 rings per Loop*
  - A&B LPCI *6 rings per Loop*
  - T-12 *4 rings*
8. Provide a "Holding Load" REMA.
9. Provide a current revision of the following procedures, signed off as specified:
  - QCOP 2300-01, signed off up to Step F.5.u.
10. Need to have blank EST available for use during the scenario.
11. Ensure procedures are erased and put away including QGAs.
12. Advance recorders.
13. Clean marked up meter/recorder faces and hard cards.
14. Remove any flags placed by the previous crew.

Annunciator Procedures

- 901-3 A-16 PRIMARY CONTAINMENT HIGH PRESSURE, Rev. 12
- 901-3 D-2 OFF GAS HI RADIATION, Rev. 12
- 901-3 G-4 DRYWELL HIGH PRESSURE, Rev. 8
- 901-5 D-11 PRIMARY CNMT HIGH PRESS, Rev. 11
- 901-5 A-3 ROD DRIFT, Rev. 7
- 901-7 E-12 GLAND STEAM EXH MOTOR TRIP, Rev. 3
- 912-1 G-12 CONTROL ROOM STANDBY HVAC SYS. MAJOR TRBLE, Rev. 2
- 912-1 H-12 CONTROL ROOM STANDBY HVAC SYS. MINOR TRBLE, Rev. 2

QCGP 2-3, Reactor Scram, Rev. 72

QCGP 3-1, Reactor Power Operations, Rev. 63

QGA 100, RPV Control, Rev. 9

QGA 200, Primary Containment Control, Rev. 9

QGA 500-1, RPV Blowdown, Rev. 13

QCOA 0201-01, Increasing Drywell Pressure, Rev. 23

QCOA 0300-4, Mispositioned Control Rod, Rev. 16

QCOA 0300-6, Control Rod Drive Flow Control Valve Failure, Rev. 6

QCOA 0300-11, Control Rod Drift, Rev. 22

QCOA 3300-02, Loss of Condenser Vacuum, Rev. 37

QCOA 5400-04, Loss of Steam Pressure or Off-Gas Flow, Rev. 7

QOA 5750-T01, Control Room Standby HVAC System Local Panel 1-9400-105 Annunciator Procedures, Rev. 23

QCOP 2300-01, HPCI Preparation for Standby Operation, Rev. 58

QCOS 1600-05, Post Accident Monitoring Instrumentation Outage Report, Rev. 18

QCOS 5750-06, Toxic Gas Monitoring Channel/System Inoperable Outage Report, Rev. 19

**CREW TURNOVER****1.) Plant Conditions:**

- a.) Unit 1 is at 100% Power.
- b.) Unit 2 is at 100% Power.
- c.) Technical Specification limitations:
  - (1) Unit 1:
    1. HPCI is in Day 2 of a 14-day LCO and 14 Day ATR during pump casing leak repair. Tech spec 3.5.1 Condition G.
      - a. Repairs are complete and HPCI is being returned to its Standby lineup.
      - b. The next step is to re-pressurize the HPCI Steam Lines.
      - c. Post Maintenance testing is being planned for later in the shift.
    2. Drywell Spray Valve MO 1-1001-23A is inoperable resulting in a 7 Day LCO per TLCO 3.6.a Condition A. On Day 2 of 7.
      - a. OOS due to binding that occurred during QCOS 1000-09, RHR Power Operate Valve Test.
      - b. As a power operated PCIV, it has been closed and deactivated per TS 3.6.1.3 Condition A.
      - c. TS 3.3.3.1 PAM Instrumentation for PCIV Position indication has also been satisfied by the closed/deactivated valves per Table 3.3.3.1-1 Note (a).
  - (2) Unit 2: None
- d.) On Line Risk is YELLOW (due to HPCI & 1 loop of DW Spray unavailable)

**2.) Significant problems/abnormalities:**

- a.) Protected Systems:
  - SSMP
  - ADS
  - RCIC
  - A&B Core Spray
  - A&B LPCI
  - T12

**3.) Evolutions/maintenance for the oncoming shift:**

- a.) Re-pressurize the HPCI Steam Lines and restore HPCI to its standby lineup per QCOP 2300-01 Step F.5.u.
  - The discharge piping was filled and vented per step F.2 and F.3. on the previous shift.
- b.) Continue normal Full Power Operation.

Quad Cities	Scenario No.: 2	Event No.: 1	Page 1 of 1
Event Description: Restore HPCI to standby lineup per QCOP 2300-01 Step F.5.			
Time	Position	Applicant's Actions or Behavior	
	SRO	Directs and supervises QCOP 2300-01, starting at Step F.5.u	
	ATC	Provides requested peer checks and monitors Panel 901-5 parameters	
	BOP	Re-pressurizes HPCI Steam Lines per QCOP 2300-01 Step F.5.u	
		Opens MO 1-2301-5, STM SPLY ISO VLV	
		Slowly throttles open MO 1-2301-4, STM ISOI VLV	
		Monitors PI 1-2340-4 HPCI TURB INLET PRESS for a slow increase in pressure	
		Fully open MO 1-2301-4 when Turbine Inlet Pressure stops increasing and Annunciator 901-3 B-11 is clear	
	BOP	Verifies HPCI TURB STOP VLV is closed	
	BOP	Presses the HPCI TURB TRIP RESET pushbutton	
	BOP	Verifies REMOTE HPCI TURB TRIP is not Trip-Latched	
	BOP	Places the TURNING GEAR MOTOR in AUTO	
	BOP	Places the HPCI FLOW CONTROLLER in AUTO	
	BOP	Places the HPCI FLOW CONTROLLER flowrate setpoint at 5600 gpm	
	BOP	Verifies all HPCI annunciators cleared	
<b>SIMOP ROLE-PLAY:</b> As the supporting EO as necessary			
	BOP	Dispatches an EO for the following:	
		Listen for motor and gear noise at the MSC and MGU motors	
		Verify the HPCI Water Tight Door is closed	
		Verify the Fill and Vent Valves are closed per Steps F.7 and F.8	
<b>EVALUATOR NOTE:</b> Proceed to Event 2			
<b>End of Event 1</b>			

Quad Cities	Scenario No.: 2	Event No.: 2	Page 1 of 2
Event Description: Inop Toxic Gas Monitor (Optional for Surrogate)			
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>	
<b>SIMOP:</b> When directed by the Lead Examiner, fail the Toxic Gas Monitor: <b>imf ano9121g12 on</b> and <b>imf ano9121h12 on</b>			
Key Parameter Response: Reports from the field Expected Annunciator: 912-1 G-12 CONTROL ROOM STANDBY HVAC SYS. MAJOR TRBLE 912-1 H-12 CONTROL ROOM STANDBY HVAC SYS. MINOR TRBLE Automatic Actions: None			
	BOP	Responds to annunciator and informs the Unit Supervisor	
	BOP	Dispatches EO to "B" Control Room HVAC to determine which annunciator is illuminated on local panel 1/2-9400-105	
<b>SIMOP ROLE-PLAY:</b> As EO dispatched, wait 2 minutes then: <ul style="list-style-type: none"> <li>• Report that annunciators ½-9400-105 A-7, TOXIC GAS CONCENTRATION HIGH, and A-15 TOXIC GAS ANALYZER TROUBLE, are in alarm.</li> <li>• The AU 0-9400-122B monitor indicates 100 ppm and the fail light is lit. The other 3 monitors, AU 0-9400-121A,B and AU 0-9400-122A indicate 0 ppm.</li> </ul> If asked, <ul style="list-style-type: none"> <li>• Report the following Control Room HVAC dampers indicate CLOSED at the ½-9400-105 panel: AO ½-5741-324A, AO ½-5741-324B, AO ½-5741-325A, AO ½-5741-325B,AO ½-5741-327A, AO ½-5741-327B, AO ½-5741-331.</li> <li>• If asked, the Control Room Ventilation system is in Recirc mode.</li> </ul>			
	BOP	May contact Radiation Protection to sample the "A" Train outside air intake for ammonia	
<b>SIMOP ROLE PLAY:</b> If dispatched as Radiation Protection, wait 5 minutes and report NH <sub>3</sub> concentration is 0 ppm			
	BOP	Contact Instrument Maintenance to investigate the Control Room HVAC Toxic Gas Analyzer	
<b>SIMOP ROLE PLAY:</b> As IM Supervisor contacted, report the 0-9400-122B NH <sub>3</sub> XMTR has failed and you will start a work package			
	BOP	Refer to QOA 5750-T01, Control Room Standby HVAC System, local panel ½-9400-105 annunciator procedures	
	ATC	Monitors Panel 901-5 parameters	
<b>Event 2 Continued</b>			

Quad Cities	Scenario No.: 2	Event No.: 2	Page 2 of 2
Event Description: Inop Toxic Gas Monitor			
Time	Position	Applicant's Actions or Behavior	
	SRO	Refers to Technical Requirements Manual TLCO 3.3.e, Cond B; restore the inoperable channel within 30 days	
	SRO	References QCOS 5750-06, Toxic Gas Monitoring Channel/System Inoperable Outage Report	
	SRO	If the Inhibit switch is NOT taken to INHIBIT within 40 minutes, the US enters TS 3.7.4 Condition A for inoperable CREV system	
	SRO	Records Date and Time of Toxic Gas Monitor inoperability	
	SRO/BOP	Direct EO to place SW 0-9400-122B, NH <sub>3</sub> XMTR 125B INHIBIT SWITCH, to the INHIBIT position per QCOS 5750-06, step H.1.a.	
<b>SIMOP ROLE PLAY:</b> When directed to the Inhibit Switch in INHIBIT, Acknowledge the directive as necessary and then clear the control room Annunciators: <b>dmf ano9121g12</b> and <b>dmf ano9121h12</b>			
<b>SIMOP ROLE PLAY:</b> As the EO, acknowledge further directive and report completion as necessary.			
	BOP	Direct EO to place the Control Room Isolation Reset switch at Panel ½-9400-105 to the RESET position, then release	
	BOP	May direct the EO to place an EST on the 0-9400-122B switch stating, "Toxic Gas Monitoring channel is inoperable."	
	BOP	May direct the EO to verify the CR4X relay is deenergized at Panel 1-9400-105	
<b>End of Event 2</b>			

Quad Cities	Scenario No.: 2	Event No.: 3	Page 1 of 2
Event Description: CRD FCV Fails High with Rod Drift IN			
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>	
<p><b>SIMOP:</b> When directed by the Lead Examiner, initiate the CRD FCV Controller Upscale and Rod Drift event: <b>ior aifc103401b 100</b> and <b>imf rd03r4223</b></p> <p><b>ATTENTION:</b> Monitor the actions of the ATC and the position of control rod L-6. Delete the rod drift malfunction: <b>dmf rd03r4223</b> when:</p> <ul style="list-style-type: none"> <li>• When L-6 is at position 12 (in approximately 3 minutes) OR</li> <li>• The ATC takes the CRC Flow Controller to manual</li> </ul> <p>Note:</p> <ul style="list-style-type: none"> <li>• Tripping the running CRD Pump activates Event Trigger 4 which also deletes rd03r4223</li> </ul>			
<p>Key Parameter Response: Rod position changing on the full-core display; red DRIFT light for rod L-6; Elevated CRD Flow Controller output, Drive Pressure, and Cooling Flow.</p> <p>Expected Annunciator(s): 901-5 A-3, ROD DRIFT</p> <p>Automatic Actions: None</p>			
<p><b>EVALUATOR NOTE:</b> If the ATC focuses on QCOA 0300-04 actions for a Rod Drift, the rod will be fully inserted. If the ATC promptly diagnoses the FCV Controller failure and takes actions from QCOA 0300-06, the controller will be placed in Manual.</p>			
	ATC	Responds to annunciator and informs the Unit Supervisor.	
	ATC	Identifies one control rod, L-6, drifting IN and informs the Unit Supervisor.	
	ATC	Monitor RWM Primary Display Screen for magenta colored rods	
	ATC	Fully inserts the Control Rod to position 00. (QCAN 901-5 A-3 Step 4 or QCOA 0300-11 Immediate Action for a rod that continues to drift without latching)	
	ATC/SRO	Refers QCOA 0300-11, Control Rod Drift.	
	ATC/SRO	Notifies Shift Manager and Qualified Nuclear Engineer of control rod L-6 drifting in.	
	ATC	Demands an OD-20	
	ATC	Verifies Blue Scram Light is NOT on for Rod L-6	
	ATC	Checks pressure on DPI 1-340-5 CLG WTR PRESS	
	ATC	Checks pressure on DPI 1-340-4 DRIVE WTR PRESS	
<b>Event 3 Continued</b>			

Quad Cities	Scenario No.: 2	Event No.: 3	Page 2 of 2
Event Description: CRD FCV Fails High w Rod Drift IN			
Time	Position	Applicant's Actions or Behavior	
	ATC	May dispatch an EO to check rod L-6 discharge line	
<b>SIMOP ROLE PLAY:</b> If dispatched to check rod L-6 discharge line, wait 2 minutes and then report that the discharge line is NOT hot.			
	ATC	May dispatch an EO close the 113 valve on rod L-6	
<b>SIMOP ROLE PLAY:</b> As EO, if dispatched to close the 113 valve on HCU 42-23, (control rod L-6), wait 2 minutes and report that "the 1-305-113, CRD CHARGE WTR VLV on HCU 42-23 is closed."			
	ATC	Identifies a failed CRD Flow Control Valve and enters QCOA 0300-06	
	ATC	Places FIC 1-340-1 in MANUAL and adjust flow to 60 gpm	
	ATC	Verifies control of the FCV by adjusting flow in MANUAL between 40-60 gpm	
	SRO	May reference Tech Spec 3.1.6 for Rod Pattern Control (TS is not applicable In Mode 1 >10% RTP)	
	ATC/SRO	When the drifting Control Rod latches at a position 00, exit QCOA 0300-11 and enter QCOA 0300-04, Mispositioned Control Rod	
	ATC/SRO	Stops all control rod movement and Recirc Flow changes	
	ATC/SRO	(When >10% RTP) Contact a QNE for guidance on returning control rod to the proper position	
<b>SIMOP ROLE PLAY:</b> As the QNE, state that a Special Maneuver Rod Move Sheet will be provided shortly.			
	BOP	Monitors Balance of Plant parameters	
<b>End of Event 3</b>			

Quad Cities	Scenario No.: 2	Event No.: 4	Page 1 of 1
Event Description: Drywell N2 controller failure			
Time	Position	Applicant's Actions or Behavior	
<p><b>NOTE:</b> It takes 8 minutes from the time of initiation until the 901-3 A-16 alarms.</p> <p><b>SIMOP:</b> When directed by the lead examiner, fail the 1-1640-11 controller using the following command: <b>ior aipic1874011a 100 2:</b></p>			
<p>Key Parameter Response: Containment Pressure Controller Position at 100%</p> <p>Expected Annunciator(s): 901-3 A-16 PRI CNMT HIGH PRESSURE</p> <p>Automatic Actions: None</p>			
	BOP	May identify that Drywell pressure is rising and report to the Unit supervisor	
	BOP	Announces rising drywell pressure and/or alarm 901-3 A-16 at 1.55 psig. if/when it alarms	
	SRO	Directs BOP to perform actions of QCAN 901-3 A-16 and/or QCOA 0201-01, Increasing Drywell Pressure	
	SRO	May set scram criteria of ~2.0 psig	
	CREW	May notify Rad Protection of high containment pressure.	
	SRO	<u>IF</u> Drywell pressure reaches 1.5 psig enters TS 3.6.1.4 Condition A. 1 hour to reduce drywell pressure to ≤1.5 psig.	
	BOP	May start last Drywell Cooler fan IAW QCOA 0201-01	
	BOP	Reports drywell pressure controller has failed	
	BOP	May takes manual control of the drywell pressure controller and close it	
	BOP	Close the MO 1-1601-57 valve, N <sub>2</sub> Makeup Vlv.	
	BOP	Contacts IMD to investigate controller failure	
	SRO	<u>IF</u> drywell pressure exceeded 1.5 psig considers venting the drywell.	
	ATC	Monitors DW pressure as BOP investigates and prepares for reactor scram	
<p><b>SIMOP:</b> Drywell venting is not part of the scenario. Do not wait until it is done to move on.</p>			
<p><b>End of Event 4</b></p>			

Quad Cities	Scenario No.: 2	Event No.: 5	Page 1 of 1
Event Description: Torus Level PAM Instrument Failure (Optional for Surrogate)			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP ROLE PLAY:</b> When directed by the lead examiner, as IMD Supervisor, notify the Unit Supervisor that a vendor has reported the following:</p> <p>“A recently installed replacement part in the instrument loop for LI 1-1640-10A, TORUS LVL, is <u>un-qualified</u>. The indication probably reads correctly now but its performance cannot be assured during an accident.”</p> <p>If asked about its affect on other indicators/recorders, state that “the LI 1-1640-10A is the ONLY indicator affected.”</p>			
	SRO	Refers to QCOS 1600-05 and Technical Specifications 3.3.3.1 for Post Accident Monitoring requirements	
	SRO	Determines that TS 3.3.3.1 Condition A applies; 30 days to restore the PAM instrument to operable	
	ATC	Monitors Panel 901-5 controls and indications	
	BOP	Monitors Balance of Plant parameters	
<b>End of Event 5</b>			

Quad Cities		Scenario No.: 2 Event No.: 6	Page 1 of 1
Event Description: Gland Exhauster trip/start standby			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP:</b> When directed by the Lead Examiner, trip the running Gland Exhauster: <b>trg! 6</b> Verify the following commands go active: <b>imf ser901-7e12(6) on, ior dihs156041a(6) trip, and ior lohs156041a4(6) on</b></p>			
<p>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</p> <p>Expected Annunciator(s): 901-7 E-12 GLAND STEAM EXH MOTOR TRIP</p> <p>Automatic Actions: None</p>			
	BOP	Responds to annunciator and informs the Unit Supervisor	
	BOP	Identifies and reports the loss of 1A Gland Steam Exhauster	
	SRO	Directs BOP to perform the actions of the QCAN	
	SRO/BOP	Dispatches an EO and or EMD to the tripped breaker	
<p><b>SIMOP ROLE PLAY:</b> As the EO, wait 3 minutes after being dispatched and call back to report there is no obvious problem at the breaker and you have contacted EMD to investigate.</p>			
	BOP	Starts the 1B Gland Steam Exhauster	
	BOP	Throttles the MO 1-5405B to obtain 10" – 20" of vacuum as indicated on the 1-5140-70	
	BOP	Throttles closed MO 1-5405A, (holds control switch for 25 sec after full closed indication is received).	
	ATC	Monitors Panel 901-5 parameters	
<p><b>SIMOP ROLE PLAY:</b> If summoned to the control room as EMD, tell the crew the problem appears to be with the control switch and it should be left as is until further troubleshooting can be done.</p>			
<b>End of Event 6</b>			

Quad Cities		Scenario No.: 2	Event No.: 7	Page 1 of 2
Event Description: Emergency Power Reduction on Loss of Main Condenser Vacuum				
Time	Position	Applicant's Actions or Behavior		
<b>SIMOP:</b> When directed by the Lead Examiner, initiate a loss of vacuum: <b>imf mc08 100 25:</b>				
Key Parameter Response: Main Condenser backpressure rising on PR 1-5640-79; Generator Mwe lowering				
Expected Annunciator(s): 901-3 D-2 OFF GAS HI RADIATION 901-7 H-3 CONDENSER LO VACUUM 24 IN HG (in 8.5 minutes with no operator action) 901-5 F-5 CONDENSER VACUUM LO (in 9 minutes with no operator action)				
Automatic Actions: (If alarms not addressed) Reactor Scram and Turbine trip				
	BOP	Respond to annunciator 901-3 D-2 and informs the Unit Supervisor		
	SRO	Directs that reactor power be held constant until the cause of the high radiation is determined		
<b>EVALUATOR NOTE:</b> QCAN 901-3 D-2 lists Condenser Air in-leakage as a probable cause for this alarm. The next 3 actions may not be performed if the crew recognizes those indications				
	BOP	Monitor SJAE and Main Steam Line radiation levels		
	BOP	Monitor Area Radiation Monitors		
	BOP/SRO	Notify Chemistry and Qualified Nuclear Engineer of abnormal Offgas activity		
	CREW	Monitors Condenser Backpressure and informs the US that backpressure is rising		
	BOP/SRO	Dispatches Equipment Operators and/or Field Supervisor to investigate		
<b>SIMOP ROLE PLAY:</b> In-plant operators as necessary to acknowledge directives.				
	BOP/SRO	Enter QCOA 3300-02, Loss of Condenser Vacuum		
	SRO	Initiates Emergency Power Reduction by reducing total core flow or inserting CRAM rods. (See next Page)		
	ATC	Reduces Reactor Recirculation flow using the Master Controller or Individual Controllers as necessary to attempt to maintain Main Condenser backpressure $\leq 5$ in Hg.		
	ATC	(For FCL >59.4%) Does not reduce core flow to the point of entry into Instability Region 2 or below 53 Mlb/hr.		
<b>Event 7 Continued</b>				

Quad Cities	Scenario No.: 2	Event No.: 7	Page 2 of 2
Event Description: Emergency Power Reduction of Loss of Main Condenser Vacuum			
Time	Position	Applicant's Actions or Behavior	
	ATC	If MANUAL RUNBACK pushbuttons are used to reduce Reactor Recirculation flow:	
		Depress buttons no more than 3 times within a 5 second period	
		Verify MANUAL pushbutton is lit on both A and B Speed Controllers	
		Verify speed demand on both A and B Controllers decreases by 10% for each time the pushbutton was depressed	
	ATC	May insert CRAM rods to maintain FCL within the MELLLA boundary.	
	SRO	May set scram criteria of 7.0 in./Hg Main Condenser backpressure	
<p><b>SIMOP ROLE PLAY:</b> When Emergency Power Reduction has been performed to the satisfaction of the Lead Examiner, <u>AND</u> If an EO has been dispatched then delete the in-leakage malfunction: <b>dmf mc08</b></p> <p style="text-align: center;"><u>AND</u></p> <p>As EO report that "the Main Condenser Loop Seals have been re-filled."</p>			
	BOP	Confirms that Condenser Backpressure is returning to normal	
	SRO	Directs the suspension of Emergency Power Reduction	
	ATC	Holds Recirc Flow as directed	
<b>End of Event 7</b>			

Quad Cities	Scenario No.: 2	Event No.: 8	Page 1 of 2
Event Description: Drywell Pressure rising, Manual Scram/ Alternate Rod Insertion			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> When directed by the Lead Examiner, insert a Main Steam Line break inside the containment: <b>imf ms04C 0.5 10:</b> (0.5% severity ramped over 10 minutes)			
Key Parameter Response: Drywell Pressure Rising; RPS Scram Solenoid Group Lights do not extinguish and control rods do not insert			
Expected Annunciator(s): 901-3 A-16 PRIMARY CONTAINMENT HIGH PRESSURE (1.5 psig alarm In $\approx$ 1 minute) 901-3 G-4 DRYWELL HIGH PRESSURE (In $\approx$ 2.5 minutes) 901-5 D-11 PRIMARY CNMT HIGH PRESS (In $\approx$ 2.5 minutes)			
Automatic Actions: (Not a complete list) Group 2 Isolation, CR and RB Vents isolate, ECCS systems initiate, EDGs start (Auto Scram disabled)			
	BOP	Respond to 901-3 A-16 and inform the US	
	BOP	Confirms rising Drywell Pressure	
	CREW	Determine the rate of Drywell Pressure rise	
	BOP/SRO	Enters and performs QCOA 0201-01	
	BOP/SRO	Notify Radiation Protection	
<b>SIMOP ROLE PLAY:</b> Radiation Protection personnel as necessary			
	BOP	May start additional Drywell Cooler Fans	
	SRO	May set Scram Criteria of 2 psig	
	ATC	As directed attempts to manually scram reactor or recognizes that the Auto Scram at 2.5 psig Drywell Pressure did not occur	
	ATC	Recognizes that Manual/Auto Scram signals did not trip RPS	
	ATC	Announces Reactor Scram and no rod movement	
	ATC	Takes the Reactor Mode Switch to SHUTDOWN	
	ATC	Recognizes that Mode Switch to SHUTDOWN did not trip RPS	
<b>CT1</b>	ATC	Arms and depresses ARI buttons	
	ATC	May verify Scram Valve Air Supply Pressure Lowering, Annunciator 901-5 A-1 alarming	
	ATC	Verify Control Rods inserting	
	ATC	Adjusts both Recirc Pumps to minimum speed	
<b>Event 8 Continued</b>			

Quad Cities	Scenario No.: 2	Event No.: 8	Page 2 of 2
Event Description: Drywell Pressure rising, Manual Scram/ Alternate Rod Insertion			
Time	Position	Applicant's Actions or Behavior	
	ATC	Verifies all Control Rods are fully inserted	
	ATC	Makes scram report including entry into QGA 100 on RPV Water Level < 0 inches	
	ATC	Identifies that the SDV vent and drain valves are NOT closed and closes them with the pushbuttons on Panel 901-5	
	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	
	ATC	(CONTINUOUS) Monitors RPV water level and pressure	
	ATC	Recognizes that automatic insertion of SRMs and IRMs did NOT occur and manually inserts them	
	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 (alarm 901-8 H-9) tripped	
	ATC	Verifies all 4 KV buses powered from T-12	
	ATC	Verifies both Recirc Pumps running at minimum speed in Manual (may be tripped due to DW pressure)	
	ATC	Starts the Control Room AFU Booster Fan within 40 minutes	
	ATC	Dispatches EO to reset the Generator 86 Relays	
<b>SIMOP ROLE PLAY:</b> As EO, acknowledge the directive to reset 86 Relays as necessary.			
<b>End of Event 8</b>			

Quad Cities	Scenario No.: 2	Event No.: 9	Page 1 of 3
Event Description: Steam leak in Drywell / QGA 100 and 200 Actions			
Time	Position	Applicant's Actions or Behavior	
	SRO	Enters QGA 100, RPV Control and QGA 200, Primary Containment Control, on 2.5 psig DW pressure	
	SRO	Directs ATC/BOP to verify 0 "and 2.5 psig isolations and auto-starts	
	ATC/BOP	Stabilize RPV Pressure < 1060 psig with the Turbine Bypass Valves	
	ATC/BOP	Verifies Group 2 and 3 Isolations, RB vent isolation and SBGT start	
	BOP	Monitors and reports Primary Containment parameters and trends	
	ATC/BOP	Reports ECCS auto started	
	ATC/BOP	Controls HPCI injection manually or trip latches HPCI after SRO concurrence	
	ATC/BOP	Verifies Diesels auto started	
	BOP	As directed, verifies 1A and 1B CAMs operating	
	SRO	May direct actions to start all available drywell cooling	
	ATC/BOP	As directed, restores RBCCW and DW coolers per QCOP 5750-19	
		Verifies Bus 18 and 19 voltage >450 volts	
		Takes the U1 DIV I DW CLR/RBCCW/FPC TRIP BYPASS switch to BYPASS position	
		Takes the U1 DIV II DW CLR/RBCCW/FPC TRIP BYPASS switch to BYPASS position	
		Checks Drywell temperature is less than 260 °F	
		Starts 1A and 1B RBCCW pump	
		Starts drywell coolers one at a time	
		Starts Drywell Booster Fan	
<b>Event 9 Continued</b>			

Quad Cities	Scenario No.: 2	Event No.: 9	Page 2 of 3
Event Description: Steam leak in Drywell / QGA 100 and 200 Actions			
Time	Position	Applicant's Actions or Behavior	
	SRO	Verifies Torus level <27 ft.	
	SRO	Before Torus Pressure reaches 5 psig, directs BOP to place Torus Sprays on IAW QCOP 1000-30	
	BOP	Maintains the following during Post-Accident RHR Operation: <ul style="list-style-type: none"> <li>• RHR Service Water Pressure 15-20 psig &gt; RHR Pressure</li> <li>• RHR Service Water flow &lt;3600 gpm/pump</li> <li>• RHR Pressure 100-250 psig</li> </ul>	
	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 RHR Service Water	
		Opens MO 1-1001-5A/B to approximately 40%	
		Starts A/B RHR SW Pump	
		Throttles MO 1-1001-5A/B as necessary	
		Throttles MO 1-1001-16A/B as necessary	
	BOP	As directed, initiates <u>Torus Sprays</u> per QCOP 1000-30	
		Opens MO 1-1001-34A	
		Opens MO 1-1001-37A	
	BOP	Opens/Throttles MO 1-1001-36A as necessary to maintain RHR Discharge Pressure	
	BOP	Recognizes and reports that the B Loop Torus Sprays will not open	
	SRO	Directs BOP to secure Torus Sprays before Torus Pressure drops to 0 psig	
<b>Event 9 Continued</b>			

Quad Cities	Scenario No.: 2	Event No.: 9	Page 3 of 3
Event Description: Steam leak in Drywell / QGA 100 and 200 Actions			
Time	Position	Applicant's Actions or Behavior	
	SRO	If Torus water temperature cannot be held <95°F, directs start of all available Torus Cooling	
	BOP	As directed, initiates <u>Torus Cooling</u> per QCOP 1000-30	
		Opens MO 1-1001-34A/B	
		Opens/Throttles MO 1-1001-36A/B as necessary to maintain RHR Discharge Pressure	
<b>SIMOP:</b> If PSP Blowdown conditions will not be met and when directed by Lead Examiner, modify the leak to 4%. <b>mmf ms04C 4</b>			
	BOP	Reports Torus pressure >5 psig.	
	SRO	Verifies Torus level <17 ft.	
	SRO	Verifies inside DW Spray Limit Curve	
	SRO	Verifies Recirc pumps and DW Coolers are tripped	
	SRO	Directs BOP to start DW Sprays	
	BOP	As directed, attempts to initiate <u>Drywell Sprays</u> per QCOP 1000-30	
		Attempts to open MO 1-1001-23B	
		Attempts to open MO 1-1001-26B	
	BOP	Recognizes and reports that the B Loop Drywell Sprays will not open	
	SRO/BOP	Directs EO investigate 23B & 26B valve breaker and locally open the Containment spray valve(s)	
<b>SIMOP ROLE PLAY:</b> If requested to locally operate the B Drywell Spray valves, <b>wait 2 minutes</b> and then open the breakers for MO 1-1001-23B and 26B: <b>irf rh19br open</b> and <b>irf rh20br open</b> <b>Wait an additional 5 minutes</b> and report that MO 1-1001-23B and 26B cannot be opened.			
<b>SIMOP ROLE PLAY:</b> If dispatched to manually open the MO 1-1001-34B and 36B valves, wait 5 minutes then open the breakers using: <b>irf rh23br open</b> and <b>irf rh24br open</b> respectively. <b>DO NOT OPEN THE VALVES.</b> Report back as necessary that they are "stuck" OR "the declutch lever is broken and you are getting maintenance to assist."			
<b>End of Event 9</b>			

Quad Cities	Scenario No.: 2	Event No.: 10	Page 1 of 1
Event Description: Emergency Depressurization when PSP exceeded			
Time	Position	Applicant's Actions or Behavior	
	SRO	Enters QGA 500-1 to blowdown the vessel when it is determined drywell temperature cannot be restored below 280°F or torus pressure cannot be maintained within PSP limits	
	Crew	Recognizes that the MSIVs have closed and may begin investigation	
<b>CT2</b>	SRO	Directs actions of QGA 500-1	
	ATC/BOP	Prevent injection from Core Spray and LPCI not needed for Core Cooling by diverting LPCI flow to Torus cooling and/or placing pumps in PTL	
	ATC	Maintains Rx water level with Feed/Condensate	
	SRO	Verifies torus level > 5 feet	
<b>CT2</b>	ATC/BOP	Opens all ADS valves, leaves switches in MAN IAW QCOP 0203-01, Manual Relief Valve Actuation, using hard card	
	BOP	Verifies all ADS valves open by acoustic monitor indication on the 901-21 panel	
	ATC	Trips RFPs due to level exceeding +48 inches	
	ATC/BOP	Monitors level instrument watching for indications of saturation and informs SRO	
<b>SIMOP:</b> When Blowdown has been performed and/or at the discretion of the Lead Examiner, Place the simulator in <b>FREEZE</b> .			

Exelon Nuclear

2011 ILT NRC Exam Scenario

Scenario Number:

**NRC Scenario 3**

Revision Number: 00

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

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

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

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

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

Facility: Quad Cities Scenario No.: 2011 **NRC Scenario 3** Op-Test No.: ILT 09-1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_

Initial Conditions:

The plant is operating at 100% power.  
 Drywell Spray Valve 23A is inoperable.  
 FWLC Transmitter LT 1-646A is out of service for repair.

Turnover: Perform Core Spray Monthly Test.

Event No.	Malf. No.	Event Type*	Event Description
1	CS06	BOP C	Core Spray Monthly with Min Flow Valve failure <b>TS</b>
2	DIHS13401A DIHS13403	ATC R	Emergency Power Reductions for loss of FW Heating
3	DIHS10202320 AOFC102622	ATC C	Runback Pushbutton and Master Recirc Controller Failure during downpower requires manual operation of individual Recirc Controllers
4	SER0698	SRO TS	Target Rock Relief bellows failure <b>TS</b>
5	RR15A RR15B	ATC C	A 2 <sup>nd</sup> FWLC Transmitter fails which shifts Reg valves to manual operation during power operation and QGA 100 and 300 actions.
6	CR01 HP12 & 13	Crew M	Fuel failure due to loss of FW Heating begins. QCOA 1700-4 will require the crew to close the MSIVs. An unisolable leak in the HPCI room requires the crew to enter QGA 300 and 100.
7	CR02	Crew M	When the Torus Area also exceeds Max Safe Temperature or Radiation, the crew will Emergency Depressurize per 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): **E6**  
 Abnormal Events (2-4): **E1, 3 & 5**  
 Major Transient(s) /E-Plan entry (1-2): **E6**  
 EOPs (1-2): **QGA 300, QGA 100**  
 EOP Contingencies (0-2): **E7**  
 Critical Tasks (2-3): **3**

ES-301-5 Quantitative attributes:  
 BOP Normal: **None**  
 ATC Reactivity (1 per set): **E2**  
 BOP I/C (4 per set): **E1**  
 ATC I/C (4 per set): **E3 & 5**  
 SRO-I I/C (4 per set inc 2 as ATC): **E1, 3 & 5**  
 SRO Tech Spec (2 per set): **E1 & 4**  
 ALL Major Transients (2 per set) **E6**

**SUMMARY:**

- Initial Conditions:
  - The plant is operating at 100 power.
  - Drywell Spray Valve 23A is inoperable.
- Event 1: The BOP performs QCOS 1400-01, Quarterly Core Spray System Flow Rate Test (“A” Pump only). When the Minimum Flow valve fails to auto close, the BOP will stop the Core Spray Pump and secure the system. The SRO will address Tech Specs for one Core Spray System inoperable, 3.5.1 Condition B.
- Event 2: The 1A Feedwater Heater level switch fails, resulting in the isolation of a Feedwater Heater String. The Crew responds per QCOA 3500-01, “Feedwater Temperature Reduction with the Main Turbine Online”. The crew performs QCOA 0400-01, “Reactivity Addition”, by performing an Emergency Power Reduction. When the level switch is restored, the reactivity addition is terminated after closure of the LP Heater String Bypass Valve.
- Event 3: During Emergency Power Reduction, neither the Runback Pushbutton nor the Master Recirc Controller will respond. The ATC must diagnose this problem and take manual control of individual Recirc Controllers.
- Event 4: The Bellows Failure annunciator will alarm for the Target Rock Relief Valve, which makes the Safety Function of this valve inoperable. The SRO will address Tech Specs for one or more Safety valves inoperable, 3.4.3 Condition C.
- Event 5: When a second FWLC transmitter fails, the reg valves shift to manual. The ATC must control level manually during power operations, a scram, and QGA 100 and 300 performance.
- Event 6: Due to the loss of FW Heating, a fuel element failure begins. The crew will respond to High Offgas radiation per QCOA 1700-04. When SJAE Rad levels cannot be maintained < High-High alarm, the crew will isolate Offgas, Scram, and close the MSIVs/Drains. A leak in the HPCI room then begins that requires the crew to enter QGA 300. The crew will attempt to isolate the leak, but the leak cannot be isolated.
- Event 7: When the Torus Area also exceeds Max Safe Radiation level, the crew will Emergency Depressurize the RPV.
- Approximate Run Time: 1.5 Hours

**CRITICAL TASKS:**

**Critical Task #1:** Given an operating reactor plant and a loss of Feedwater heating, perform actions to control reactor power and reclose the MO 1-3403, LP HTR STRING BYP VLV, to terminate the reactivity addition.

**Critical Task #2:** 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 verifying the Offgas System is isolated as required.

**Critical task #3:** 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

SR-1400-P05	Given a reactor plant with a core spray loop in a standby lineup, perform the Quarterly Core Spray Pump Flow Rate Test and return the core spray loop to standby in accordance with QCOS 1400-01.
SR-3500-P02	Given an operating reactor plant when an 'A' heater high level (loss of FW heating) occurs, perform actions to control reactor power and reclose LP heater bypass valve in accordance with QCOA 3500-01 and QCOA 0400-01.
SR-0002-P05	Given a reactor plant at power, perform a power change discernible on neutron monitors using recirc flow in accordance with QCOP 0202-03 and QCGP 3-1.
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-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-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.

1. Reset to IC-21. (100% power)
2. Go to **RUN**.
3. Place the 1-LC-0646 Level Transmitter in Calibrate from the DFWLC OWS:
  - From the FWLC Screen, select FWLC MEASURING POINTS (D2)
  - Select 1-LC-0646-A
  - Select ACTIVATE

(The following commands to be utilized for this scenario are contained in the CAEP file:  
2011 NRC Scenario 3.cae)

4. Insert Commands for setup:
  - **ior dihs10202320(1) default** (Recirc Manual Runback Pushbutton inoperable)
  - **ior difc10262221 off** (Recirc Master Controller LOWER overridden off)
  - **imf cs06a** (A Core Spray Min Flow MO 1-1402-38A Fails to auto close)
  - **ior dihs1140238a norm** (Min Flow MO 1-1402-38A handswitch overridden in NORM)
  - **trgset 1 "zdihs114011a(2) .eq. 1"** (When the 1A Core Spray Pump is taken to STOP)
  - **trg 1 "dor dihs1140238a"** (Deletes Min Flow MO 1-1402-38A handswitch override)
  - **imf rr15a 0** (FWLC Transmitter failure LT 1-646A)
  - **imf og04** (Offgas AO 1-5406 failure to Auto Isolate)
  - **trgset 7 "zdihs10590300(1) .eq. 1"** (When Mode Switch is taken to Shutdown)
  - **imf cr02(7) 2 30:** (On Trigger 7, Gross Fuel Failure at 2% Severity, 30 minute ramp)
  - **imf hp13(7) 100 30:** (On Trigger 7, HPCI Steam Leak to 100 Severity, 30 min ramp)
  - **imf hp12a 100** (HPCI Steam Supply Isol MO 1-2301-4 binding)
  - **imf hp12b 100** (HPCI Steam Supply Isol MO 1-2301-5 binding)
  - **irf rh19ar open** (Containment Spray 23A Breaker open)
  - **irf rh20ar open** (Containment Spray 26A Breaker open)
5. Verify the following commands for scenario performance:
  - **imf ser1405 on** (Annunciator 901-6 G-1 Heater 1A1 High Level overridden ON)
  - **ior dihs13401a close** (LP Heater Line 1 Isol Valve MO-1-3401A override closed)
  - **ior dihs13403 open** (LP Heater bypass MO-1-3403 override open)
  - **dor dihs13401a** (Deletes LP Heater Line 1 Isol Valve MO-1-3401A override)
  - **dor dihs13403** (Deletes LP Heater bypass MO-1-3403 override)
  - **dmf ser1405** (Deletes Annunciator 901-6 G-1 override)
  - **imf ser1405 off** (Annunciator 901-6 G-1 Heater 1A1 High Level overridden OFF)
  - **imf ser0698 on** (Annunciator 901-3 F-18 Target Rock Bellow Failure alarm)
  - **imf rr15b 100** (2<sup>nd</sup> FWLC Transmitter failure LT 1-646B, Shifts Reg Valves to Manual)
  - **imf cr01 100 10:** (Fuel element Failure at 100% severity on a 10 minute ramp)
  - **mrf sw10r run** (Locally start the U1 EDG CWP as requested)
  - **imf cr02 2 30:** (As needed, Gross fuel failure to 2% severity on a 30 min ramp)
  - **bat fireout** (Silences Fire Alarm from HPCI Room High Temp)
  - **imf rm0115 60 15:** (As needed, Torus Area ARM to >Max Safe in 15 minutes)
  - **ior dihs1140238a norm:** (As needed, override MO 1-1402-38A handswitch to NORM)
  - **imf cs05a:** (As needed, fail the automatic opening function of MO 1-1402-38A)
  - **ior lohs1140238A1 off:** (As needed, override CLOSED light off for MO 1-1402-38A )
  - **ior lohs1140238A2 off:** (As needed, override OPEN light off for MO 1-1402-38A)

6. Hang Equipment Out of Service Tags on Drywell Spray valves 23A and 26A.
7. Hang Information Tag on RPV Water Level Indicator LI 1-0640-29A on Panel 901-5.

**Simulator Setup:**

8. Provide a "Load Holding" REMA.
9. Provide a current revision of the following procedures, signed off as specified:
  - QCOS 1400-01, Quarterly Core Spray System Flow Rate Test ("A" Pump only)
  - Short Duration Time Clock documentation for Core Spray test
  - IST Data Sheet for the 1A Core Spray Pump
10. Need to have blank EST available for use during the scenario.
11. Ensure procedures are erased and put away including QGAs.
12. Advance recorders.
13. Clean marked up meter/recorder faces and hard cards.
14. Remove any flags placed by the previous crew.

Annunciator Procedures

- 901-3 A-1 RX BLDG HI RADIATION, Rev. 4
- 901-3 C-2 OFFGAS HIGH HIGH RADIATION, Rev. 7
- 901-3 D-2 OFFGAS HI RADIATION, Rev. 12
- 901-3 H-2 AREA HI TEMP STEAM LEAK DETECTION, Rev. 6
- 901-3 F-12 HPCI PUMP AREA HI TEMP, Rev. 7
- 901-4 F-18 TARGET ROCK VALVE 3A BELLOWS FAILURE, Rev. 7
- 901-5 A-6 APRM UPSCALE/HIGH, Rev. 8
- 901-5 D-7 LPRM HIGH, Rev. 8
- 901-5 F-8 RX VESSEL LOW LEVEL, Rev. 10
- 901-6 E-10 FW LEVEL CONT SYSTEM TROUBLE, Rev. 3
- 901-6 G-1 HEATER 1A1 HIGH LEVEL, Rev. 3
- 901-55/56 A-1, DRYWELL HIGH RAD CONC, Rev. 10

QCGP 2-3, Reactor Scram, Rev. 72

QCGP 3-1, Reactor Power Operations, Rev. 63

QGA 100, RPV Control, Rev. 9

QGA 300, Secondary Containment Control, Rev. 11

QGA 500-1, RPV Blowdown, Rev. 13

QCOA 0201-05, Primary system Leaks Outside Primary Containment, Rev. 8

QCOA 1700-04, Abnormal Offgas Radiation, Rev. 16

QCOA 1800-01, Area High Radiation, Rev. 6

QCOA 3500-01, Manual/Automatic Feedwater Heater Level Control, Rev. 10

QCOA 0400-01, Reactivity Addition, Rev. 21

QCOA 0600-12, Feedwater Level Control System Trouble, Rev. 8

QCOS 1400-01, Quarterly Core Spray System Flow Rate Test, Rev. 39

**CREW TURNOVER****1.) Plant Conditions:**

- a.) Unit 1 is at 100% Power.
- b.) Unit 2 is at 100% Power.
- c.) Technical Specification limitations:
  - (1) Unit 1:
    - 1. Drywell Spray Valve MO 1-1001-23A is inoperable resulting in a 7 Day LCO per TLCO 3.6.a Condition A. On Day 2 of 7.
      - a. OOS due to binding that occurred during QCOS 1000-09, RHR Power Operate Valve Test.
      - b. As a power operated PCIV, it has been closed and deactivated per TS 3.6.1.3 Condition A.
      - c. TS 3.3.3.1 PAM Instrumentation for PCIV Position indication has also been satisfied by the closed/deactivated valves per Table 3.3.3.1-1 Note (a).
  - (2) Unit 2: None
- d.) On Line Risk is GREEN.

**2.) Significant problems/abnormalities:**

- a.) The FWLC Transmitter LT 1-646A is out of service for repair.

**3.) Evolutions/maintenance for the oncoming shift:**

- a.) Perform QCOS 1400-01, Quarterly Core Spray System Flow Rate Test (Group B Test for 1A Core Spray pump).

Quad Cities	Scenario No.: 3	Event No.: 1	Page 1 of 2
Event Description: Core Spray Monthly			
Time	Position	Applicant's Actions or Behavior	
Key Parameter Response: A Core Spray Min Flow MO 1-1402-38A Fails to auto close Expected Annunciator(s): None Automatic Actions: None			
	SRO	Authorizes performance of QCOS 1400-01 for the 1A Core Spray Pump (Flow rate portion of test only)	
<b>EVALUATOR NOTE:</b> The US may log entry into TS 3.5.1 prior to the start of the surveillance in lieu of the required entry at step H.1.h of the procedure.			
	BOP	Contacts the EO to determine ESS Keep Fill pressure from PI 1-1468 located in the 1B Core Spray Room	
<b>SIM OP ROLE PLAY:</b> As the EO dispatched to the 1B Core Spray Room, call back and report the ESS Keep Fill pressure is 70 psig as indicated on PI 1-1468			
	BOP	Announces start of 1A Core Spray Pump over the plant paging system	
	BOP	Starts the 1A Core Spray pump	
	BOP	Verifies the MO 1-1402-38A, CS PMP MIN FLOW VLV, opens	
	BOP	Records a Core Spray Pump Discharge Pressure	
	BOP	Contacts EO to inspect the 1A Core Spray pump and valves for leaks	
<b>SIM OP ROLE PLAY:</b> As EO, call back after 1 minute and report "no leaks found on the 1A Core Spray pump and valves thus far. Will monitor the system during the test run."			
	BOP	Notifies US and logs entry time of 1A Core Spray pump inoperability when the MO 1-1402-4A, CS BYP AND TEST VLV is opened	
	SRO	Enters a Short Duration Time Clock (SDTC) for T.S 3.5.1 Condition B for one Core Spray subsystem inoperable; a 7-Day LCO	
<b>Event 1 Continued</b>			

Quad Cities	Scenario No.: 3	Event No.: 1	Page 2 of 2
Event Description: Core Spray Monthly			
Time	Position	Applicant's Actions or Behavior	
SIMOP: The Malfunction for Min Flow valve auto closure and an override for the Min Flow handswitch are inserted at Setup. When the 1A Core Spray Pump is taken to STOP, verify the handswitch override is deleted. <b>trg 1 "dor dihs1140238a"</b>			
	BOP	Throttles open the MO 1-1402-4A valve to establish approx. 260 psig on PI 1-1450-1A, CS HEADER PRESS	
	BOP	Identifies that the MO 1-1402- 38A valve fails to automatically close.	
	BOP	(Per Step F.6) Closes MO 1-1402-4A	
	BOP	Stops the 1A Core Spray pump	
	BOP	Manually closes MO 1-1402- 38A, and reports that the valve is closed.	
	BOP	Informs the Unit Supervisor	
	SRO	Exits the SDTC and enters the 7-Day LCO for T.S 3.5.1 Condition B, and a 4 hour ACTION for T.S. 3.6.1.3 Condition C, (to close and deactivate the MO 1-1402-38A valve).	
<p><b>SIMOP ROLE PLAY:</b> If dispatched to open the CS Min Flow Vlv breaker, wait 4 minutes, then simulate opening the MO 1-1402-38A valve breaker by inserting the following commands:</p> <p><b>ior dihs1140238a norm</b>  <b>imf cs05a</b>  <b>ior lohs1140238A2 off</b>  <b>ior lohs1140238A1 off</b></p> <p>As EO report back that "the breaker for MO 1-1402-38A, Core Spray Min Flow Vlv. at MCC 18-1A-1 is open."</p>			
	ATC	Monitors Reactor and Reactor Pressure Vessel indications	
<b>End of Event 1</b>			

Quad Cities	Scenario No.: 3	Event No.: 2	Page 1 of 2
Event Description: Loss of FW Heating			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP:</b> When directed by the Lead Examiner, insert the following commands to simulate a failure of the 1A1 Heater level switch (1-3541-32A):  <b>imf ser1405 on, ior dihs13401a close, and ior dihs13403 open</b></p>			
<p>Key Parameter Response: Reactor Power rising,            Expected Annunciator(s):            901-6 G-1, HEATER 1A1 HIGH LEVEL            901-6 E-4, HEATER 1D1 EMERG DRAIN VALVE OPEN            901-6 E-5, HEATER 1D3 EMERG DRAIN VALVE OPEN            910-6 F4, HEATER 1D2 EMERG DRAIN VALVE OPEN            (Possible) 901-5 A-6 APRM UPSCALE/HIGH            (Possible) 901-5 D-7 LPRM HIGH</p>			
Automatic Actions: Heater string isolated and bypassed; Emergency Drain valve opens			
	ATC/BOP	Acknowledges annunciator 901-6 G-1, HEATER 1A1 HIGH LEVEL and informs the Unit Supervisor	
	BOP	Verifies the Auto Actions:	
		Verifies FCV 1-3101A, 1A1 Emergency Drain Vlv, opens	
		Verifies MO 1-3401A, Line 1 Htr Inlet Isol Vlv, closed	
		Verifies MO 1-3402A, Line 1 Htr Outlt Isol Vlv, closed	
		Verifies MO 1-3403, LP Htr String Byp Vlv, open	
	BOP	Monitors 1A1 Flash Tank level and reports level is low and dispatches an EO to investigate	
<p><b>SIM OP ROLE PLAY:</b> As EO dispatched to the 1A1 Flash Tank Level Controller, (LIC 1-3541-9A) wait 3 minutes and report that "level is downscale and you have contacted Electrical Maintenance to assist in troubleshooting".</p>			
	ATC/BOP	May report increasing Condensate Demin D/P as indicated on the DPR 1-3340-1, Cond Demin DP, at the 901-6 panel	
	SRO	Enters and directs actions of QCOA 3500-01 and QCOA 0400-01 and sets scram criteria of reactor power $\geq$ 105%, or any indication of Core Instabilities	
<b>Event 2 Continued</b>			

Quad Cities	Scenario No.: 3	Event No.: 2	Page 2 of 2
Event Description: Loss of FW Heating			
Time	Position	Applicant's Actions or Behavior	
CT1	SRO	Directs power reduction continued until total Feedwater flow is $\leq$ 7.6 Mlb/hr.	
CT1	ATC	Initiates Emergency Power Reduction by lowering individual Recirc pump speeds (See Event 3)	
CT1	ATC	Continues Emergency Power Reduction by inserting CRAM rods as necessary to maintain Flow Control Line $\leq$ 100%	
<b>EVALUATOR NOTE:</b> During rapid power reductions, annunciator 901-3 A-2, Main Stm Line Hi Radiation may alarm due to a momentary spike. The operator should verify that MSL radiation monitor readings return to normal after reactor power stabilizes or the annunciator clears.			
	CREW	Monitors and maintains Flow Control Line (FCL) < 100%	
	ATC	Monitors for indications of core instabilities	
	ATC/BOP	Monitors D Heater Outlet temperature and Reactor power per QCOA 3500-01, Attachment A, and scrams the reactor if operating below the curve	
<b>SIMOP:</b> When Feedwater flow is $\leq$ 8.5 Mlb/hr, insert the following commands: <b>dor dihs13401a dor dihs13403 dmf ser1405 imf ser1405 off</b>			
<b>SIMOP ROLE PLAY:</b> Call in as the EM Supervisor and report "while removing the cover to inspect the 1A1 Heater Level Switch, the switch repositioned. It appears the switch had stuck. A work package will be prepared to clean or replace the switch."			
	ATC	Reports total Feedwater flow	
	ATC/BOP	Reports when annunciator 901-6 G-1 has cleared	
	SRO	Directs closure of MO 1-3403, LP Htr String Byp Vlv, to terminate the reactivity addition	
	BOP	Closes the MO 1-3403, LP Htr String Byp Vlv	
	BOP	May secure one Reactor Feed pump and one Condensate/Condensate Booster pump per QCOP 3200-05	
<b>End of Events 2 &amp; 3, continue at Event 4</b>			

Quad Cities	Scenario No.: 3	Event No.: 3	Page 1 of 1
Event Description: Runback Pushbutton and Master Recirc Controller Failure			
Time	Position	Applicant's Actions or Behavior	
Key Parameter Response: Recirc Pump speed and Reactor power does not lower using the Runback pushbutton or the master controller			
Expected Annunciator(s): None			
Automatic Actions: None			
	SRO	Monitors performance of Emergency Power Reduction	
	ATC	Initiates Emergency Power Reduction by lowering Recirc pump speeds	
	ATC	May attempt to reduce Recirc Pump speeds by depressing the Runback Pushbutton	
	ATC	Recognizes that Recirc Pump speed / Recirc Loop Flow is not lowering	
	ATC	May attempt to reduce Recirc Pump speeds by depressing LOWER on the Recirc Master Controller	
	ATC	Recognizes that Recirc Pump speed / Recirc Loop Flow is not lowering	
	ATC	Takes the individual Recirc Speed controllers to MANUAL and reduces Recirc Loop Flow as directed	
	ATC	Verifies that Recirc Pump speed / Recirc Loop Flow is lowering	
	BOP	Continues attempts to restore Feedwater Heating	
	BOP	Monitors Balance of Plant parameters	
	BOP	May provide peer checks as requested	
<b>End of Event 3</b>			

Quad Cities		Scenario No.: 3	Event No.: 4	Page 1 of 1
Event Description: Target Rock Relief bellows failure				
Time	Position	Applicant's Actions or Behavior		
<b>SIMOP:</b> When directed by the Lead Examiner Insert Malfunction: <b>imf ser0698 on</b>				
Key Parameter Response: Annunciator only, no change to Drywell parameters				
Expected Annunciator(s): 901-4 F-18 TARGET ROCK VALVE 3A BELLOWS FAILURE				
Automatic Actions: None				
	BOP	Responds to Annunciator and informs the Unit Supervisor		
	BOP	Verifies that the 3A SRV has not lifted		
		Verifies the 3A SRV indicates closed on the Acoustic Monitor		
		Verifies Point 9 not increasing on TR 1-260-20 (Panel 901-21)		
	BOP	Monitor for increased leakage into the Primary Containment		
		Monitor Drywell Air Temperatures		
		Monitor Drywell Pressure		
	SRO	Identify that the bellows leak makes the Target Rock inoperable as a Safety valve		
	SRO	Enters Tech Spec 3.4.3 Condition C for one or more Safety Valves inoperable; be in mode 3 in 12 hours and in Mode 4 in 36 hours (Note: TS 3.4.3 Condition A applies only to the relief function of the Target Rock valve and TS 3.5.1 applies only to the ADS function of the Target Rock Valve and are therefore not applicable)		
	ATC	Monitors Reactor and Reactor Pressure Vessel indications		
<b>End of Event 4</b>				

Quad Cities		Scenario No.:3	Event No.: 5	Page 1 of 1
Event Description: Loss of 2 <sup>nd</sup> FWLC Transmitter				
Time	Position	Applicant's Actions or Behavior		
<b>SIMOP:</b> When directed by the Lead Examiner Insert Malfunction: <b>imf rr15b 100</b>				
Key Parameter Response: RPV water Level indicator 1-0640-29B reading Upscale				
Expected Annunciator(s): 901-5 F-8 RX VESSEL LOW LEVEL 901-6 E-10 FW LEVEL CONT SYSTEM TROUBLE				
Automatic Actions: Main and Low Flow Feed Reg Valves shift to Manual				
	ATC	Responds to annunciators and informs the Unit Supervisor		
	ATC	Confirms RPV water level by alternate indications		
	ATC	Recognizes all Feed Reg Valves in manual and takes manual control		
	SRO	May set scram criteria of <11 inches or > 44 inches		
	ATC	Recognizes and reports LI 1-0640 29B is upscale		
	ATC	Diagnoses the RPV water Level indication deviation from average at the probable cause of the FWLC transfer to MANUAL		
	SRO	Enters and directs actions of QCOA 0600-12		
	ATC	At the FWLCS OWS review the alarm list for major and minor events		
	ATC/SRO	Contact IMD and /or System Engineering for assistance with loss of RPV Level transmitter		
<b>SIMOP ROLE PLAY:</b> Plant Support personnel as necessary to begin investigation.				
	ATC	Controls RPV water level in manual throughout remaining events		
	BOP	Continue to monitor Balance of Plant parameters		
<b>End of Event 5</b>				

Quad Cities	Scenario No.: 3	Event No.: 6	Page 1 of 5
Event Description: Fuel Failure and QGA 300			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP:</b> When directed by the Lead examiner insert the following malfunctions: Fuel element failure malfunction cr01 at 100% severity on a 10 minute Ramp: <b>imf cr01 100 10:</b> If, after 10 minutes, the crew has not scrammed the reactor, insert the Gross Fuel failure Malfunction: <b>imf cr02 2 30:</b></p>			
<p>Key Parameter Response: Rising Rad levels for Offgas, MSL, Drywell, Reactor &amp; Turb Bldg</p> <p>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 &amp; D-8, GROUP 2 &amp; CONTROL ROOM VENT ISOLATED (in ≈ 14 min) 901-3 C-2, OFFGAS HIGH HIGH RADIATION</p> <p>Automatic Actions: Group 2 Isol, CR Vent Isol, Offgas Isolation 15-Min timer Starts</p>			
	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	
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 3	Event No.: 6	Page 2 of 5
Event Description: Fuel Failure and QGA 300			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP ROLE PLAY:</b> 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	
	BOP	Monitors Containment H <sub>2</sub> and O <sub>2</sub> 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)	
<b>CT 2</b>	SRO	Directs closing of AO 1-5406 Offgas Discharge to Stack	
<b>CT 2</b>	BOP	Closes AO 1-5406	
	BOP	As directed, verifies that AO 1-5408A and AO 1-5408B close	
<b>CT 2</b>	BOP	Manually initiates a Group 1 Isolation / Closes MSIVs and MSIV Drain valves	
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 3	Event No.: 6	Page 3 of 5
Event Description: Fuel Failure and QGA 300/ QCGP 2-3 & QGA 100 Actions			
Time	Position	Applicant's Actions or Behavior	
	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	
	ATC	(CONTINUOUS) Monitors RPV water level and pressure	
	ATC	Verifies automatic insertion of SRMs AND IRMs	
	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	
<b>Event 6 Continued</b>			

Quad Cities	Scenario No.: 3	Event No.: 6	Page 4 of 5
Event Description: Fuel Failure and QGA 300			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP:</b> When the Reactor Mode Switch is taken to Shutdown, verify that the leak begins in the HPCI Room: <b>imf hp13(7) 100 30:</b> (100% Severity on a 30 minute ramp) and the Gross Fuel Failure begins: <b>imf cr02(7) 2 30:</b> (On Trigger 7, Gross Fuel Failure at 2% Severity, 30 minute ramp)</p>			
<p>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)</p>			
	BOP	Responds to annunciators and informs the Unit Supervisor	
	BOP	Responds to a Annunciator RX BLDG HI RADIATION and informs the Unit Supervisor	
	BOP	Monitors Area Radiation levels from the 901-2 and 901-10 panels and reports QGA 300 Entry Conditions	
<p><b>EVALUATOR NOTE:</b> The HPCI Room ARM exceeds its Max Safe Value approximately 4 minutes after the Mode Switch to Shutdown. The Torus Area ARM will be approaching its Max Normal (Alarm) value at that time</p>			
<p><b>SIMOP:</b> When the fire alarm sounds, silence the alarm with the command: <b>bat fireout</b> Role Play as the Unit 2 Operator: the alarm is from the Unit 1 HPCI room.</p>			
	BOP	Reports HPCI Room Radiation levels are > Max Normal and increasing	
	BOP/ATC	Monitors Reactor Bldg Temperatures at Panel 901-21 (TR 1-1290)	
<p><b>SIMOP ROLE-PLAY:</b> When requested to investigate breakers for HPCI 4 &amp; 5, wait 2 minutes and as EO report "the thermals are tripped." If asked to reset them, reply that "they keep tripping."</p>			
<b>Event 6 Continued</b>			

Quad Cities		Scenario No.: 3	Event No.: 6	Page 5 of 5
Event Description: Fuel Failure and QGA 300				
Time	Position	Applicant's Actions or Behavior		
	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	Enters and directs applicable actions of QGA 300		
	SRO	Re-enters and directs applicable actions of QGA 100		
	BOP	Attempts to isolate HPCI Steam Lines		
	BOP	Directs EO to investigate breakers for HPCI 4 & 5 valves		
	BOP	Directs EO with Rad Prot. support to investigate source of leak		
<b>SIMOP ROLE-PLAY:</b> 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		
<b>SIMOP:</b> If dispatched as EO, wait 2 minutes and start the Unit 1 EDG CWP: <b>mrf sw10r run</b> Report that "the U1 EDG CWP is running and that there is no water in the RB Basement, however, you were unable to enter the HPCI Room because it was full of steam."				
	SRO/BOP	Announces evacuation of Unit 1 Reactor Bldg. over plant page		
	BOP	Restarts Reactor Bldg. vents if not running		
<b>End of Event 6</b>				

Quad Cities	Scenario No.: 3	Event No.: 7	Page 1 of 1
Event Description: QGA 300 Blowdown			
Time	Position	Applicant's Actions or Behavior	
<p><b>SIMOP:</b> Verify that the Torus Area ARM reading exceeds its Max Safe Value in approximately 11 minutes after the Mode Switch to Shutdown. If necessary use the following malfunction: <b>rm0115 60 15:</b></p>			
<p>Key Parameter Response: Increasing Radiation levels in the Torus Area on ARM 15</p> <p>Expected Annunciator(s): 901-3 A-1, RX BLDG HI RADIATION (Re-Alarming)</p> <p>Automatic Actions: None</p>			
	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.	
<b>CT 3</b>	SRO	Orders all 5 ADS valves opened and leave switches in Manual	
<p><b>Evaluator Note:</b> If the Unit Supervisor elects to NOT use the 3A Relief valve, (i.e., only 4 ADS valves opened), then Emergency Depressurization Systems per QGA 500-1, Detail O must be ordered.</p>			
	BOP	Opens all 5 ADS valves and leaves all switches in the "MAN" position	
	ATC/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	
<p><b>SIMOP:</b> When Blowdown has been performed and at the discretion of the Lead Examiner, Place the simulator in <b>FREEZE</b>.</p>			

Exelon Nuclear

2011 ILT NRC Exam Scenario

Scenario Number:

**NRC Scenario 4**

Revision Number: 00

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

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

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

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

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

Facility: Quad Cities Scenario No.: 2011 **NRC Scenario 4** Op-Test No.: ILT 09-1

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_

Initial Conditions:

The plant is operating at 75% power.  
 The 1A EHC Pump is out of Service.  
 1B Service Water Pump is out of service.  
 Drywell Spray Valve 23A is inoperable.

Turnover: Swap Condensate pumps

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Start the 1A Condensate pump and secure the 1B Condensate pump
2	ED01C	BOP C	Switchyard Breaker 4-6 Trip and restoration
3	SW02A	BOP C	Service Water Pump degradation
4	SER0382 RR06A RR07A	ATC C	1A Recirc High Vibration Alarm, Seal Leak, Shutdown and isolate Recirc Pump <b>TS</b>
5	None	ATC R	Insert Cram Rods for loss of 1A Recirc Pump
6	RR03A RD13A	Crew M	1B Recirc Pump trips /Manual scram. After RPS has been tripped, approximately 1/2 of the control rods remain withdrawn. (Hydraulic ATWS)
7	TC05B	Crew M	QGA 101 Level/Power Control. Turbine Bypass valves become unavailable, requiring manual RPV Pressure control with Relief Valves
8	DIHS11130301	ATC C	Malfunction after Major: Failure of 1 <sup>st</sup> SBLC Pump to start

\* (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): **E7&8**  
 Abnormal Events (2-4): **E2, 3, & 4**  
 Major Transient(s) /E-Plan entry (1-2): **E6**  
 EOPs (1-2): **QGA 100**  
 EOP Contingencies (0-2): **E7**  
 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 & 3**  
 ATC I/C (4 per set): **E4 & 8**  
 SRO-I I/C (4 per set inc 2 as ATC): **E2,3,4,&8**  
 SRO Tech Spec (2 per set): **E4**  
 ALL Major Transients (2 per set) **E6**

**SUMMARY:**

- Initial Conditions:
  - The plant is operating at 75% power.
  - The 1A EHC Pump is out of service.
  - The 1B Service Water pump is out of service.
  - Drywell Spray Valve 23A is inoperable.
- Event 1: The BOP starts the 1A Condensate pump and secures the 1B Condensate pump.
- Event 2: GCB 4-6 is inadvertently tripped open during a Switchyard breaker inspection. The problem is resolved and the US directs the BOP to reclose GCB 4-6 per QCOP 6400-08.
- Event 3: The 1A Service Water Pump capacity will degrade to the point that the low-pressure alarm is received in the Control Room. Reports from the Equipment Operator confirm a problem with the pump. The BOP should start the 1/2 or the 2A Service Water Pump and secure the 1A pump.
- Event 4: 1A Recirc Pump Seals fail due to pump vibration. Drywell pressure begins to rise. The ATC must shutdown the Pump and isolate it. The SRO must address Technical Specifications for Single Loop Operation.
- Event 5: ATC inserts control rods (CRAM rods) to exit exclusion region.
- Event 6: The 1B Recirc Pump trips. When the second Recirc pump trips, the ATC must manually scram the reactor. Only 1/2 of the withdrawn control rods insert. The crew performs the actions of QGA 100 and 101 for a Hydraulic ATWS.
- Event 7: The crew terminates and prevents injection per QGA 101 (Level/Power Control). During this period, the running EHC pump trips which closes the Turbine Bypass valves. The crew must manually control RPV Pressure with Relief Valves.
- Event 8: When SBLC is initiated for the ATWS, the 1<sup>st</sup> pump selected will fail to start. The ATC will recognize this malfunction and start the other SBLC Pump.
- Scenario ends when actions are being taken to shutdown the reactor and RPV water level is being controlled in the specified band.
- 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:** During at 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.

**Critical task #3:** 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 (-166").

## EXERCISE PERFORMANCE OBJECTIVES

SR-3300-P01	Given a reactor plant during a startup, start the condensate system in accordance with QCOP 3300-02.
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.
SN-6400-P40	Given an open 345kv circuit breaker, locally remove the circuit breaker from service and / or return the circuit breaker to service in accordance with QOP 6400-03 or QOP 6400-06.
SR-0202-P03	Given an operating reactor plant with reactor recirculation pump vibrations resulting in a recirc pump seal leak, trip the recirc pump and isolate the leak in accordance with QCOA 0202-06, and QCOA 0202-04.
SR-0202-P19	Given an operating reactor plant following a loss of single reactor recirculation pump, take action to establish conditions for operating single loop for greater than 24 hours in accordance with QCOP 0202-07 and QCOS 0202-09.
SR-0002-P05	Given a reactor plant at power, perform a power change discernible on neutron monitors using recirc flow in accordance with QCOP 0202-03 and QCGP 3-1.
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.
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-0001-P11	Given a reactor plant with an ATWS, take action to reduce heat input into the containment in accordance with QGA 101. (ATWS is a key event in 1 of the 100 most probable PRA Core Damage Sequences)
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-0001-P17	Given a reactor plant with an ATWS where emergency depressurization is required using QGA 500-1 or QGA 500-4, terminate and prevent RPV injection except for boron, CRD and RCIC, prior to initiating depressurization in accordance with QGA 101 and QGA 500-1 or QGA 500-4.
SR-0001-P19	Given a reactor plant with an ATWS following an emergency depressurization, slowly raise and control RPV injection with Preferred ATWS Systems.

1. Reset to IC-20 (75% power).
2. Go to **RUN**.
3. Take the following equipment out of service:
  - Start the 1B EHC pump, take the 1A EHC Pump to PTL and hang an OOS INFO card on 1A EHC pump.
  - Take the 1B Service Water Pump to PTL and place an INFO card.
  - Place INFO cards on the MO 1-1001-23A and MO 1-1001-26A control switches.

(The following commands to be utilized for this scenario are contained in the CAEP file: 2011 NRC Scenario 4.cae)

4. Insert Commands for setup:
  - **imf rd13a 100** (SDV North Hydraulic lock)
  - **trgset 8 "zdihs10590300(1) .eq. 1"** (When Mode Switch is taken to Shutdown)
  - **imf tc05b(8 5:)** (5 minutes after Trigger 8, 1B EHC pump trips)
  - **ior dihs11130301 off** (SBLC selector switch off 1<sup>st</sup> pump failure)
  - **irf rh19ar open** (Containment Spray 23A Breaker open)
  - **irf rh20ar open** (Containment Spray 26A Breaker open)
  - **ior dihs13901b ptl** (Override B Service Water Pump in PTL)

5. Verify the following commands for scenario performance:

- **imf ed01c** (Swyd Breaker 4-6 trip)
- **dmf ed01c** (Delete Swyd Breaker 4-6 trip)
- **imf sw02a 34 1:** (1A SWP capacity degrades to 34% severity on a 1 min ramp)
- **imf rr06a 100 10:** (1A Recirc Inboard Seal Leak)
- **imf rr07a 100 20:** 1A Recirc Outboard Seal Leak)
- **imf ser0382 on** (1A Recirc Pump High Vibration annunciator)
- **imf rr03b** (1B Recirc Pump Seizure/Trip)
- **dor dihs11130301** (Deletes SBLC switch override, allows 2<sup>nd</sup> pump to start)
- **irf rd04r close** (As requested, close the CRD 1-301-25 valve)
- **irf qg09r 1** (As requested, install MSIV Lo-Lo Level Isolation bypass jumpers)
- **irf qg08r 1** (As requested, install jumpers to bypass all scrams)
- **irf qg14r 1** (As requested, pull ARI fuses) ~~bat torus level fail~~

6. Provide a "Holding Load" REMA.

7. Provide a current revision of the following procedures, signed off as specified:

- QOP 3300-11 signed off up to Step F.12, with steps marked N/A for steps other than those necessary to start 1A and secure 1B condensate pumps.

8. Provide the Lead Examiner with:

- Switching Orders to re-close Switchyard Breaker 4-6

9. Need to have blank EST available for use during the scenario.

10. Ensure procedures are erased and put away including QGAs.

11. Advance recorders.

12. Clean marked up meter/recorder faces and hard cards.

13. Remove any flags placed by the previous crew.

Annunciator Procedures

- 901-3 A-16 PRI CNMT HIGH PRESSURE, Rev. 12
- 901-4 C-3 RECIRC PUMP A HIGH VIBRATION, Rev. 6
- 901-4 B-6 RECIRC DRIVE B TRIP, Rev. 6
- 901-5 A-1 SCRAM VALVE AIR SUPPLY LOW PRESSURE, Rev. 7
- 901-5 A-10(15) CHANNEL A(B) MANUAL SCRAM. Rev. 6
- 901-5 A-14 CHANNEL A/B DISCH VOLUME HIGH LEVEL, Rev. 9
- 912-1 B-3 SERVICE WATER LOW PRESSURE, Rev. 6
- 912-2 C-3 345KV CKT BKR TRIP, Rev. 7

QCGP 2-3, Reactor Scram, Rev. 72

QCGP 3-1, Reactor Power Operations, Rev. 63

QGA 100, RPV Control, Rev. 9

QGA 101, RPV Control (ATWS) Rev. 13

QGA 200, Primary Containment Control, Rev. 9

QCOA 0201-01, Increasing Drywell Pressure, Rev. 23

QCOA 0202-04, Reactor Recirc Pump Trip – Single Pump, Rev. 33

QCOA 0202-05, Reactor Recirc Pump Trip – Both Pumps, Rev. 17

QCOA 0202-06, Recirculation Pump Seal Failure, Rev. 22

QCOP 0201-16, Terminate and Prevent RPV Injection, Rev. 5

QCOP 0300-28, Alternate Control Rod Insertion, Rev. 29

QCOP 0203-01, Reactor Pressure Control Using Manual Relief Valve Actuation, Rev. 13

QCOP 1100-02, Injection of Standby Liquid Control, Rev. 12

QCOP 6400-08, Operating 345KV Circuit Breakers, Rev. 16

QOP 3300-11, Condensate/Condensate Booster Pump Change Over. Rev. 23

**CREW TURNOVER****1.) Plant Conditions:**

- a.) Unit 1 is at 73% Power.
- b.) Unit 2 is at 100% Power.
- c.) Technical Specification limitations:
  - (1) Unit 1:
    - 1. Drywell Spray Valve MO 1-1001-23A is inoperable resulting in a 7 Day LCO per TLCO 3.6.a Condition A. On Day 2 of 7.
      - a. OOS due to binding that occurred during QCOS 1000-09, RHR Power Operate Valve Test.
      - b. As a power operated PCIV, it has been closed and deactivated per TS 3.6.1.3 Condition A.
    - 2. TS 3.3.3.1 PAM Instrumentation for PCIV Position indication has also been satisfied by the closed/deactivated valves per Table 3.3.3.1-1 Note (a).
  - (2) Unit 2: None
- d.) On Line Risk is GREEN.

**2.) Significant problems/abnormalities:**

- a.) 1A EHC pump is OOS for motor bearing replacement.
- b.) The 1B Condensate Pump has an inboard seal leak. Scheduled to be removed from service late this shift.
- c.) The 1B Service water Pump is out of service for repair of cracked terminal leads.
- d.) MO 1-1001-23A is OOS for a valve stem replacement. MO 1-1001-26A valve is OOS as a boundary.

**3.) Evolutions/maintenance for the oncoming shift:**

- Currently holding load for upcoming 1B Condensate Pump repairs.
- Start the 1A Condensate Pump and secure the 1B Condensate pump per QOP 3300-11.
  - Local actions have been completed in preparation, up to Step F.12.

Quad Cities		Scenario No.: 4	Event No.: 1	Page 1 of 1
Event Description: Start the 1A Condensate pump and secure the 1B Condensate pump.				
Time	Position	Applicant's Actions or Behavior		
	SRO	Directs and supervises the Condensate Pump changeover		
<b>SIMOP ROLE PLAY:</b> As the EO, support the Condensate Pump changeover as necessary.				
	BOP	Places the selector switch for Condensate/Condensate Booster Pumps to OFF		
	BOP	Starts the 1A Condensate/Condensate Booster Pump		
	BOP	Verifies Reactor Feed Pump suction pressure >200 psig		
	BOP	Verifies Condensate/Condensate Booster Pump Motor Currents < 245 Amps		
	BOP	Directs the EO to verify the 1A Condensate/Condensate Booster Pump bearings are at the proper oil level		
<b>SIMOP ROLE PLAY:</b> As the EO, report that the 1A Condensate/Condensate Booster Pump bearings are at the proper oil level.				
	BOP	Directs the EO to verify the 1A Condensate/Condensate Booster Pump bearings has no major seal leaks		
<b>SIMOP ROLE PLAY:</b> As the EO, report that the 1A Condensate/Condensate Booster Pump has no major seal leaks.				
	BOP	Stops the 1B Condensate/Condensate Booster Pump		
	BOP	Verifies RPV water level is stable		
	BOP	Verifies the 1A Condensate/Condensate Booster Pump Motor Currents are between 160 and 245 Amps		
	BOP	May place the selector switch to select the 1B Condensate/Condensate Booster Pump for standby operation		
	BOP	Directs the EO to close and lock the Hydrogen addition valve (1-2799-31B) on the 1B Pump and Open and lock Hydrogen addition valve (1-2799-31A) on the 1A Pump		
	ATC	Monitors RPV water level and Panel 901-5 indications		
<b>SIMOP ROLE PLAY:</b> As the EO, report that 1-2799-31B is CLOSED and locked and 1-2799-31A is OPEN and locked.				
<b>End of Event 1</b>				

Quad Cities	Scenario No.: 4	Event No.: 2	Page 1 of 1
Event Description: Switchyard Breaker 4-6 Trip and restoration			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> When directed by the Lead Examiner, trip Swyd Bkr 4-6 using the command <b>imf ed01c</b> , then delete the Swyd Bkr 4-6 trip to allow re-close using <b>dmf ed01c</b>			
Key Parameter Response: At Panel 912-2, CKT BKR 4-6 Red light off, Green/Open Light on Expected Annunciator(s): 912-2 C-3, 345KV CKT BKR TRIP Automatic Actions: None			
	BOP	Responds to annunciator and informs the Unit Supervisor	
		Determines which breaker tripped, 4-6, and informs the US	
		Places CKT BKR 4-6 in Pull-To-Lock	
		Dispatches an operator to the Relay House	
		Notifies the Shift Manager and Transmission Dispatcher	
<b>SIM OP ROLE PLAY:</b> As OAD, call into the Control Room and report you inadvertently bumped the control cabinet for GCB 4-6 while staging equipment for an upcoming modification. You have inspected the cabinet and found no damage. You suggest contacting Transmission and re-closing CB 4-6.			
	SRO	Contacts Transmission Operations for permission and Switching Orders to re-close GCB 4-6	
<b>LEAD EVALUATOR NOTE:</b> Provide a copy of the Switching Orders after the SRO requests them from Transmission.			
	SRO	Directs re-closure of GCB 4-6 per QCOP 6400-08	
	BOP	Directs EO in the Relay House to inspect GCB 4-6 and surrounding area prior to closure of the circuit breaker	
<b>SIMOP ROLE PLAY:</b> As EO, call back after approximately 2 minutes, and report area is cleared of all personnel and no safety hazards exist. If directed or asked to complete QCOP 6400-08 steps F.2a.-c., wait 1 minute and report those steps as complete.			
	BOP	Turns on the 345KV Synchronization Switch with the key and verifies synchroscope is at 12 o'clock and incoming and running voltages are equal	
	BOP	Closes GCB 4-6 with the control switch at the 912-2 panel and verifies <u>both</u> RED lights are energized	
	BOP	Turns off 345KV breaker synchronization switch and removes key	
	BOP	Verifies re-closure cutout toggle switch is in the UP (ON) position	
	ATC	Monitors Panel 901-5 parameters	
<b>End of Event 2</b>			

Quad Cities	Scenario No.: 1	Event No.: 3	Page 1 of 1
Event Description: Service Water Pump Degradation			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> When directed by the Lead Examiner Insert Malfunction: <b>imf sw02a 34 1:</b>			
Key Parameter Response: Service Water Pressures on Panel 912-1; 1/2 –3940-4 & 18			
Expected Annunciator(s): 912-1 B-3 SERVICE WATER LOW PRESSURE			
Automatic Actions: None (Note: The normal standby pump, 1B, is out of Service)			
	BOP	Responds to annunciator and informs the Unit Supervisor	
	BOP	Identifies and reports that Service Water pressure is at the alarm point but steady	
	SRO	Supervises actions of the QCAN	
	BOP	Dispatches an EO to investigate	
<b>SIMOP ROLE PLAY:</b> As the EO dispatched to the Crib House: Report that that “the 1A Service Water Pump is very noisy and feels warmer than normal.”			
If asked, report that the 1A SW pump discharge pressure is 75 psig. Report all other running SW pump discharge pressures at 115 psig.			
	BOP	Monitors Service Water pressure on PI 1/2-3940-18	
	BOP	Recognizes that the 1B pump will not start at 75 psig as header pressure lowers	
	SRO	May direct starting the ½ or 2A SWP	
	BOP	Verifies closed the FIRE PROT SW SPLY VLV, MO-1/2-3906	
	BOP	Starts standby Service Water Pumps to restore normal system pressure	
	BOP	Secures the 1A SWP	
	ATC	Monitors Panel 901-5 indications	
<b>End of Event 3</b>			

Quad Cities	Scenario No.: 4	Event No.: 4	Page 1 of 2
Event Description: 1A Recirc Pump High Vibration, Seal Leak, Shutdown and isolate Recirc Pump			
Time	Position	Applicant's Actions or Behavior	
<b>SIMOP:</b> When directed by the Lead Examiner, begin the loss of the 1A Recirc Pump by inserting the following commands: <b>imf rr06a 100 10: imf rr07a 100 20: imf ser0382 on</b>			
Key Parameter Response: Pressures equalizing on A Recirc Pump Inboard and Outboard seals, PI 1-262-17A & C			
Expected Annunciator(s): 901-4 C-3 RECIRC PUMP A HIGH VIBRATION 901-3 A-16 PRI CNMT HIGH PRESSURE (Possible in approximately 3 minutes)			
Automatic Actions: None			
	ATC	Responds to annunciator and informs the Unit Supervisor	
	ATC	Attempt to reset the vibration monitor by depressing PMP VIB MONITOR RESET pushbutton	
	ATC	Verify both Recirc Pumps running at less than 78% speed	
	ATC	Review the performance of both Recirc Pumps and note any abnormalities	
	ATC	Instruct the Vibration Engineer to immediately begin evaluating Recirc pump vibration data	
<b>SIMOP ROLE PLAY:</b> Vibration Engineer as necessary when directed to evaluate vibration data			
	ATC	Identify and reports that the pressures are equalizing on A Recirc Pump Inboard and Outboard seals	
	BOP	Reports the Primary Containment pressure trend to the Unit Supervisor	
	BOP	If necessary, responds to Annunciator 901-3 A-16	
	BOP	Monitors Balance of Plant parameters and peer checks as necessary	
	SRO	May enter and direct actions from QCOA 0201-1 including actions to isolate the leak	
<b>Event 4 Continued</b>			

Quad Cities	Scenario No.: 4	Event No.: 4	Page 2 of 2
Event Description: 1A Recirc Pump High Vibration, Seal Leak, Shutdown and isolate Recirc Pump			
Time	Position	Applicant's Actions or Behavior	
	SRO	Enters and directs actions of QCOA 0202-06	
	ATC	May insert in-sequence control rods	
	SRO	Directs ATC to trip and isolate the A Recirc Pump	
	ATC	Trips the A Recirc Pump using either the ASD INPUT breaker control switch or the EMERGENCY STOP pushbutton	
	ATC	Closes the 1-0202-4A, A Recirc suction valve	
	ATC	Closes the 1-0202-5A, A Recirc discharge valve	
	ATC	Directs an EO to isolate seal injection to A Recirc Pump	
<b>SIMOP ROLE PLAY:</b> EO as necessary when directed to isolate seal injection to A Recirc pump. Wait 5 minutes and then report that seal injection to A Recirc pump is isolated.			
	ATC/BOP	Verify A Recirc Pump seals depressurize	
	SRO	Enters and directs actions of QCOA 0202-04 for single Loop Operations	
	SRO	Refers to TS 3.4.1 and determines Condition C is appropriate. 24 hours to satisfy the requirements of the LCO	
	SRO	IF DW pressure rises above 1.5 psig, SRO refers to TS 3.6.1.4 and determines Condition A applies. 1 hour to restore DW pressure to $\leq 1.5$ psig.	
<b>End of Event 4</b>			

Quad Cities	Scenario No.: 4	Event No.: 5	Page 1 of 1
Event Description: Insert Control Rods for loss of 1A Recirc Pump			
Time	Position	Applicant's Actions or Behavior	
<b>EVALUATOR NOTE:</b> Depending on how many control rods were inserted previously additional rods may not need be inserted.			
	ATC	Monitors for indications of thermal hydraulic instabilities on SRM period or LPRM levels	
	SRO	Enters and directs actions of QCOA 0202-04 for single Loop Operations	
	SRO	Directs actions to lower the Flow Control Line as necessary to avoid Instability Regions 1 or 2	
	ATC	If necessary, bypasses RWM IAW QCOA 0400-02	
	ATC	Continuously inserts control rods until Reactor operation is outside of Instability Region II	
	SRO	Supervises control rod insertion	
	BOP	Monitors Balance of Plant parameters	
<b>End of Event 5</b>			

Quad Cities		Scenario No.: 4 Event No.: 6	Page 1 of 2
Event Description: 1B Recirc Pump Trip /Manual Scram/Hydraulic ATWS			
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>	
<b>SIMOP:</b> Focus the Simulator Camera on the SBLC control switch in preparation for Event 8			
<b>SIMOP:</b> When directed by the Lead Examiner trip the B Recirc Pump: <b>imf rr03b</b>			
Key Parameter Response: On B Recirc Loop, lowering flows on Pump, Jet Pumps, and Loop Expected Annunciator(s): 901-4 B-6 RECIRC DRIVE B TRIP 901-4 A-1 RRCS MAJOR FAILURE 901-4 A-7 RECIRC PUMP B LOW DP Automatic Actions: Reactor power lowers			
	ATC/BOP	Responds to annunciators and informs the Unit Supervisor	
	ATC	Recognizes the loss of both Recirc Pumps	
	ATC	Depresses the Manual Scram Pushbuttons per QCOA 0202-05 Immediate Operator Actions	
	SRO	Enters and directs actions of QCOA 0202-05	
	ATC/BOP	Closes the B Recirc Pump Discharge Valve, MO 1-0202-5B and reopens after five minutes	
Key Parameter Response: All 8 RPS Scram Solenoid Lights are off; On Full Core Display, North Control Rods do not indicate Full-In; reactor power remains > 5% Expected Annunciator(s): 901-5 A-1 SCRAM VALVE AIR SUPPLY LOW PRESSURE 901-5 A-10(15) CHANNEL A(B) MANUAL SCRAM 901-5 A-14 CHANNEL A/B DISCH VOLUME HIGH LEVEL Automatic Actions: None			
	ATC	Reports control rods did <u>NOT</u> insert	
	SRO	Enters QGA 100, transitions to QGA 101	
	ATC	Arms and depresses ARI	
<b>Event 6 Continued</b>			

Quad Cities		Scenario No.: 4 Event No.: 6	Page 2 of 2
Event Description: 1B Recirc Pump Trip /Manual Scram/Hydraulic ATWS			
Time	Position	Applicant's Actions or Behavior	
	SRO	Directs BOP to inhibit ADS	
	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	Dispatches EO to close the 1-301-25, U-1 CRD CHARGING WTR SV.	
<b>SIM OP ROLE PLAY:</b> If requested as EO, close the 1-301-25 valve using: <b>irf rd04r close</b>			
	ATC	Inserts all CRAM rods to position 00	
	ATC	Continues to insert control rods spiraling outward from center of core	
	SRO	Directs actions of QGA 101 Level Control Leg	
	BOP	Verifies auto actions and isolations for 0 inches RPV water level	
	SRO	Directs isolations bypassed per QCOP 0250-02	
	BOP	Contacts EO/SS to bypass RPV low water level MSIV and high offgas radiation isolations per QCOP 0250-02	
<b>SIM OP:</b> If requested, bypass isolations per QCOP 0250-02: <b>irf qg09r 1</b> Wait 1 minute and report completion			
	ATC	Directs operator to bypass all reactor scrams per QCOP 0300-28	
<b>SIM OP ROLE PLAY:</b> If requested, wait approx. 2 minutes and bypass all reactor scrams using: <b>irf qg08r 1</b> Then report completion.			
<b>End of Event 6</b>			

Quad Cities	Scenario No.: 4	Event No.: 7	Page 1 of 2
Event Description: QGA 101 Level/Power Control			
Time	Position	Applicant's Actions or Behavior	
	ATC	Resets reactor scram.	
	ATC	Dispatches EO to de-energize ARI by removing fuses in 2201-70A and 2201-70B panels per QCOP 0300-28	
<b>SIM OP ROLE PLAY:</b> If requested as EO, pull the ARI fuses in the 2201-70A and 2201-70B panels in Aux Electric Room using: <b>irf qg14r 1</b>			
	ATC	Verifies scram is reset and inserts another manual scram	
	ATC	Verifies NO control rod movement and resets reactor scram	
	ATC	Directs personnel to individually scram control rods from the 901-16 panel	
<b>SIM OP ROLE PLAY:</b> Attempt to individually scram 3 control rods, then contact the ATC operator and report, "Control rods will not insert from the 901-16 panel."			
	SRO	Verifies reactor power >5% and RPV water level > -35"	
	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)	
	BOP	Performs Terminate and Prevent Injection from Panel 901-3	
		Places HPCI in Trip-Latch	
		Verifies RHR Discharge Pressure < Reactor Pressure or places RHR Pumps in Pull-To-Lock	
	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)	
		Closes A and B Feed Reg Valve isolations, MO-1-3206-A/B	
	SRO	Determines further level reduction needed at -35" RPV water level	
	ATC/BOP	Reports level when Rx power < 5%, RPV water level at TAF or ADS valves are closed with DW pressure < 2.5 psig.	
<b>Event 7 Continued</b>			

Quad Cities	Scenario No.: 4	Event No.: 7	Page 2 of 2
Event Description: QGA 101 Level/Power Control			
Time	Position	Applicant's Actions or Behavior	
	SRO	Directs RPV water level maintained between -166" and the level to which it was lowered	
	ATC/BOP	(CONTINUOUS) Maintains level between -166" and level lowered to with Preferred Injection systems	
<b>EVALUATOR NOTE:</b> Depending on how long the scenario continues, the Hot Shutdown Boron Weight may not be injected. If it is not, the following two steps will not be performed.			
	SRO	When Hot Shutdown Boron Weight has been injected (SBLC tank lowers by 16% in approximately 21 minutes), directs RPV water level restoration to the band of 0-48 inches	
	ATC	Restores RPV water level to the band of 0-48 inches	
	SRO	Directs actions for Pressure Leg of QGA 101	
	CREW	(CONTINUOUS) Monitor RPV pressure	
	CREW	Determines RPV pressure rising out of the established range	
	BOP/ATC	May report that the Turbine Bypass valves have closed and ADS valves cycled to control RPV pressure	
	BOP/ATC	Diagnoses the loss of Turbine Bypass Valves due to the (only available) EHC Pump tripping	
	SRO	Directs BOP to lower RPV pressure to 940 psig using ADS valves	
	SRO	Establishes a RPV Pressure control band and directs BOP to control RPV pressure in that ban using ADS valves (typically 800-1000 psig)	
	BOP	Opens ADS valves to lower RPV pressure to $\leq$ 940 psig.	
	BOP	(CONTINUOUS) Opens ADS valves to maintain the established pressure band	
	BOP	(CONTINUOUS) Monitor and reports Torus Water Temperature	
	BOP	Informs the Unit Supervisor if Torus Water Temperature exceeds 95°F EOP Entry Condition	
	SRO	Enters and directs actions of QGA 200 as necessary	
	BOP	Places RHR in the Torus Cooling Mode as directed	
<b>End of Event 7</b>			

Quad Cities		Scenario No.: 4	Event No.: 8	Page 1 of 1
Event Description: Failure 1 <sup>st</sup> SBLC Pump to start				
Time	Position	Applicant's Actions or Behavior		
<b>SIMOP:</b> Delete the override for the SBLC switch when the ATC operator selects the 2 <sup>nd</sup> SBLC pump for injection. <b>dor dihs11130301</b>				
	SRO	Directs SBLC Injection prior to exceeding 95°F Torus Water Temperature		
	ATC	Reports SBLC tank level and selects a SBLC pump for injection by placing the control switch to SYS 1 <u>or</u> SYS 2		
	ATC	Reports the SBLC pump has failed to inject, and selects the other SBLC pump		
	ATC	Verifies and reports the 2 <sup>nd</sup> SBLC pump is injecting		
		Squib B light is off		
		Flow Light is on		
		RWCU System isolated		
		SBLC Tank level lowering		
		Pump discharge pressure slightly high than reactor pressure		
		Annunciator 901-5 H-6 SBLC Squib valve circuit failure is on		
		Neutron flux is decreasing		
	ATC	Monitors SBLC Tank level for 16% decrease (in ≈21 minutes)		
	BOP	Performs other operator actions of QGA 101		
<b>SIMOP:</b> When RPV water level is being restored and/or at the discretion of the Lead Examiner, place the simulator in <b>FREEZE</b> .				

# Quad Cities 2011 Exam – JPM Review Comments

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A. GENERIC COMMENT – JPMs do not have Task Completion Standard.

B. ADMIN JPMS

1. SRO Admin 1 – Review a Fire Impairment Permit Requiring Compensatory Actions
  - a. Steps to determine consequences should be critical. Can't determine fire watch and backup suppression requirements unless impacts are first determined.
2. SRO Admin 2 – Use Procedures Related to Shift Staffing
  - a. The "Initiating Cue" directs the applicant to identify the staffing adjustments that need to be made and the time constraints involved, but the JPM continues with conducting call-out.
  - b. Suggest that a call-out list be provided so that applicant can conduct the call-out with the examiner roll playing the individuals being called.
3. SRO Admin 3 – Verify Reactor Mode Change Requirements
  - b. Shouldn't the INITIAL/DATE column of Attachment E be left blank if the applicant is to perform step QCGP 1-1 step F.6.hh.
4. SRO Admin 4 – Verify a Liquid Radwaste River Discharge Permit
  - a. What is the test of SRO level knowledge in this JPM. It is simply a calculation and does not require specific SRO knowledge or ability.
5. SRO Admin 5 – Classify a Security Event
  - a. Initial Conditions should be set up in a timeline – otherwise events look like a collection of random events.
  - b. Meteorological conditions should be earned and not provided as part of "Initial Conditions."
  - c. Delete "highest" from "Initiating Cue"
  - d. 2<sup>nd</sup> Evaluator Note – completion time should be less than 15 minutes, allowing for time to pass NARS form to a communicator and time necessary to establish communication with county/state (completion of roll call).
6. RO Admin 1 – Perform One-Rod-Out Interlock Surveillance
  - a. This is not an administrative JPM, since there are manipulation of system components.
  - b. Steps H.8-11 should be critical.
7. RO Admin 2 – Evaluate License Maintenance Requirements
  - a. Change "Initiating Cue" to: "You are to review the above record of shift coverage for the 1st quarter, and determine your eligibility to assume shift for April 4th, 2011. Give an explanation for your determination.
  - b. Is there a fatigue rule component not evaluated here; specifically February 21 thru 25 at 8 hours per day, followed by Feb 26 and 27 at twelve hours a day, then Feb 28 thru March 4 at 8 hours a day.

8. RO Admin 3 – Review Quarterly SBLC Pump Flow Rate Test
  - a. Delete last two sentences of “Initial Conditions”
  - b. Procedure mark up of section G is incorrect; step G.6 is marked “N/A” instead of step G.7
  - c. JPM should probably include steps H.13 thru H.15 also.
9. RO Admin 4 – Disable a NUMAC ARM Channel
  - a. This looks more like a “systems” JPM rather than an “Admin” JPM
  - b. Delete “...and directed you to bypass it.” from the next to the last Initial Condition
  - c. Delete the last Initial Condition (JPM is NOT time critical).
  - d. Change initiating cue to “Disable ARM...” Instead of “Bypass ARM...”

#### C. CONTROL ROOM SYSTEMS JPMS

1. CRS a – Initiate Standby Liquid Control With RWCU Failure to Isolate
  - a. This probably won't get by Pete
2. CRS b – Manual Initiation of RCIC
  - a. Delete fourth bullet of Initial Conditions (The Unit Sup ...)
3. CRS c – Adjust Turbine/Generator System Load Set
  - a. Suggest setting up a scenario that requires the operator to respond to an abnormal condition rather than an administrative limit (for example a bypass valve is open because the operator failed to adjust the load limit to maintain the 10% margin).
4. CRS d – Place Shutdown Cooling In Operation with Spurious Group II
  - a. Include WHY SDC was secured in the initial conditions
  - b. Move the new temperature control band to the Initiating Cue
  - c. Is NSO expected to implement QCOA 1000-02 without direction from US?
5. CRS e – Energize 480 VAC Bus 15 With a Failure of the Normal Feed
  - a. Move next to last Initial Condition to the Initiating Cue
  - b. May want to include a reason for not reenergizing Bus 16.
6. CRS f – Bypass “A” Channel of the Reactor Mode Switch to Shutdown Scram
  - a. Is this a normal procedure for Reactor Shutdown? If not explain why the procedure is to be performed in the Initial Conditions.
7. CRS h – Post Accident Pumping of the DWFDS to the WCT
  - a. Revise so that applicant enters the procedure at step F.5.d; provide marked up procedure.
    - 1) Step “C.1” is performed as part of JPM CRS d
    - 2) Add steps/cues to trigger and stop pump
  - b. Alternatively move cues from “Initial Conditions” to appropriate steps.

#### D. IN-PLANT JPMs

1. IP 'i' – Locally Start-Up a Diesel Generator With a Failure of the Vent Fan to Start
  - a. Delete “Initial Condition” stating “The Unit Supervisor (US) has directed ...”
  - b. Delete “Initial Conditions” with EO and revise “Initiating Cue” to include words stating that an EO is available to work with you.
  - c. “Initial Condition” statements associated with Annunciators, DG Status, and Fuel Oil levels should be moved and listed as “Evaluator Notes” to be earned by the applicant.
  - d. Revise Locked Box re-closure cue to address “break glass” scenario
2. IP 'j' – Inject Water Into the RPV Using the Condensate System Crosstie
  - a. Delete “Initial Condition” stating “The Unit Supervisor has directed ...”
  - b. “Initial Condition” statements associated with Condensate Status and ‘S-key’ status should be moved and listed as “Evaluator Notes” to be earned by the applicant.
3. IP 'k' – Aligning Fire Protection Water to SSMP Room Cooler
  - a. Initial Condition” statement associated with ‘S-key’ status should be moved and listed as “Evaluator Notes” to be earned by the applicant.

# Quad Cities 2011 Exam – Scenario Review Comments

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1. Scenario 1
  - a. Event 1 – Other than valve positions there does not seem to be much system feedback for evaluation applicant response.
2. Scenario 2
  - a. Event 3 – SIMOP direct to remove rod drift malfunction if ATC takes CRD FCV to Manual; should be taken to Manual AND repositioned to normal flow.
  - b. Event 3 – If the ATC takes no action before L-6 reaches position 12 OR if FCV is taken to MAN and the malfunction is removed, the rod will latch and rod insertion is no longer required.
3. Scenario 3
  - a. What makes reclosing the FW Heater bypass valve a “critical task.” This should be an analyzed transient.
4. Scenario 4
  - a. Event 1 – Minimal activity for evaluation purposes
  - b. General Comment – seems to be a set of very simple malfunctions with minimum response required until the Major Transient (ATWS with loss of Bypass Valves)