# EXELON NUCLEAR
**Nuclear Generation Group**

## OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR -337CA |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 001 |
| AUTHOR: | M. J. Kelly | TYPIST: | mda |
| TITLE: | Lineup Standby Gas Treatment System for Automatic Operation – Alternate Path (Switches Are Out of Position) | | |

APPROVALS:

_____
Signature / Title Date

_____
Signature / Title Date

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Signature / Title Date

_____
Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE ID#: _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____
Signature/Date

| | |
|---|---|
| LMS CODE: | |
| LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2610030101 – PLOR-337CA K/A: 261000 G2.1.29
URO: 4.1 SRO: 4.0

TASK DESCRIPTION: Knowledge of how to conduct system lineups, such as valves, breakers, switches, etc.

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Partial procedure COL 9A.1.A "Standby Gas Treatment System Automatic Operation", Rev. 10. All steps are marked "N/A" except for step:

| | |
|---|---|
| 5 (A fan) | 20 (AO 20469-01) |
| 6 (B fan) | 21 (AO 20469-02) |
| 8 (AO 2507) | 22 (AO 20470-01) |
| 9 (AO 2512) | 23 (AO 20470-02) |
| 10 (AO 2514) | 24 (PO 20465) |
| 11 (AO 2510) | 25 (AO 20466) |
| 16 (AO 00475-01) | |
| 17 (AO 00475-02) | |
| 18 (AO 00476-01) | |
| 19 (AO 00476-02) | |

C. REFERENCES

1. COL 9A.1.A "Standby Gas Treatment System Automatic Operation", Rev. 10.

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Unit 2 Main Control Room related steps of COL 9A.1.A, A "Standby Gas Treatment System Automatic Operation", are complete.

2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to lineup the Unit 2 Main Control Room portion of the Standby Gas Treatment System using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A Unit 2 startup is in progress.

2. Emergent maintenance was performed on various components of the Standby Gas Treatment System (SGTS).

3. Shift Management directs that a lineup verification of the Unit 2 Main Control Room portion of the SGTS be performed.

4. A partial of COL 9A.1.A "Standby Gas Treatment System Automatic Operation" has been reviewed and approved for use.

G. INITIATING CUE

The Control Room Supervisor directs you to perform an Independent Verification (IV) of the Unit 2 Main Control Room portion of the SGTS using the approved partial of COL 9A.1.A "Standby Gas Treatment System Automatic Operation". Do NOT manipulate any components.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| ******NOTE TO EVALUATOR****<br>Hand partial of COL 9A.1.A " Standby Gas Treatment System Automatic Operation" to the Examinee to start this JPM.** | | | |
| 1 | Verify Standby Gas Treatment Fan 'A' (0AV020) control switch is in "AUTO". | P | On panel 20C012 verify Standby Gas Treatment Fan 'A' (0AV020) control switch is in "AUTO" position.<br><br>Initial and date the check off list step. |
| *2 | Verify Standby Gas Treatment Fan 'B' (0BV020) control switch is in "AUTO".<br><br>(Cue: If notified that the Fan 'B' (0BV020) control switch is NOT in "AUTO" position, acknowledge report. If necessary, direct candidate to continue task and report all discrepancies upon completion of task.) | P | On panel 20C012 recognize that the Standby Gas Treatment Fan 'B' (0BV020) control switch is in the "PULL-TO-LOCK" position and NOT in "AUTO" position.<br><br>May report to the Control Room Supervisor that the switch is out of target position now or report all mispositionings after COL is completed.<br><br>Annotate as-found position of switch. |
| 3 | Verify AO-2507 "Drywell Outboard 18" Vent" is in "CLOSED" position. | P | On panel 20C003-3 verify that AO-2507 "Drywell Outboard 18" Vent" is in "CLOSED" position.<br><br>Initial and date the check off list step. |
| 4 | Verify AO-2512 "Torus Outboard 18" Vent" is in "CLOSED" position. | P | On panel 20C003-3 verify that AO-2512 "Torus Outboard 18" Vent" is in "CLOSED" position.<br><br>Initial and date the check off list step. |
| 5 | Verify AO-2514 "Torus Outboard 2" Vent" is in "CLOSED" position. | P | On panel 20C484A verify that AO-2514 "Torus Outboard 2" Vent" is in "CLOSED" position.<br><br>Initial and date the check off list step. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 6 | Verify AO-2510 "Drywell Outboard 2" Vent" is in "CLOSED" position. | P | On panel 20C484B verify that AO-2510 "Drywell Outboard 2" Vent" is in "CLOSED" position.<br><br>Initial and date the check off list step. |
| *7 | Verify AO-00475-01 "Standby Gas Treatment A Filter Inlet" is in "AUTO" position.<br><br>(Cue: If notified that the AO-00475-01 "Standby Gas Treatment A Filter Outlet" is NOT in the "AUTO" position, acknowledge report. If necessary, direct candidate to continue task and report all discrepancies upon completion of task.) | P | On panel 20C012 recognize that AO-00475-01 "Standby Gas Treatment A Filter Inlet" control switch is in the "CLOSE" position and NOT in "AUTO" position.<br><br>May report to the Control Room Supervisor that the switch is out of target position now or report all mispositionings after COL is completed.<br><br>Annotate as-found position of switch. |
| *8 | Verify AO-00475-02 "Standby Gas Treatment A Filter Outlet" is in "AUTO" position.<br><br>(Cue: If notified that the AO-00475-02 "Standby Gas Treatment A Filter Outlet" is NOT in the "AUTO" position, acknowledge report. If necessary, direct candidate to continue task and report all discrepancies upon completion of task.) | P | On panel 20C012 recognize that AO-00475-02 "Standby Gas Treatment A Filter Outlet" control switch is in "CLOSE" and NOT in the "AUTO" position.<br><br>May report to the Control Room Supervisor that the switch is out of target position now or report all mispositionings after COL is completed.<br><br>Annotate as-found position of switch. |
| 9 | Verify AO-00476-01 "Standby Gas Treatment B Filter Inlet" is in "AUTO" position. | P | On panel 20C012 verify that AO-00476-01 "Standby Gas Treatment B Filter Inlet" is in "AUTO" position.<br><br>Initial and date the check off list step. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 10 | Verify AO-00476-02 "Standby Gas Treatment B Filter Outlet" is in "AUTO" position. | P | On panel 20C012 verify that AO-00476-02 "Standby Gas Treatment B Filter Outlet" is in "AUTO" position.<br><br>Initial and date the check off list step. |
| 11 | Verify AO-20469-01 "Standby Gas Treatment D/W Reactor Bldg Equipment Exhaust" is in "CLOSED" position. | P | On panel 20C012 recognize that AO-20469-01 "Standby Gas Treatment D/W Reactor Bldg Equipment Exhaust" is in the "CLOSED" position.<br><br>Initial and date the check off list step |
| 12 | Verify AO-20469-02 "Standby Gas Treatment D/W Reactor Bldg Equipment Exhaust" is in "CLOSED" position. | P | On panel 20C012 recognize that AO-20469-02 "Standby Gas Treatment D/W Reactor Bldg Equipment Exhaust" is in the "CLOSED" position.<br><br>Initial and date the check off list step |
| 13 | Verify AO-20470-01 "Standby Gas Treatment Refuel Floor Exhaust" is in "CLOSED" position. | P | On panel 20C012 recognize that AO-20470-01 "Standby Gas Treatment Refuel Floor Exhaust" is in the "CLOSED" position.<br><br>Initial and date the check off list step |
| 14 | Verify AO-20470-02 "Standby Gas Treatment Refuel Floor Exhaust" is in "CLOSED" position. | P | On panel 20C012 recognize that AO-20470-02 "Standby Gas Treatment Refuel Floor Exhaust" is in the "CLOSED" position.<br><br>Initial and date the check off list step |
| 15 | Verify PO-20465 "Exhaust to Standby Gas Treatment Equipment Cell" is in "CLOSED" position. | P | On panel 20C012 recognize that PO-20465 "Exhaust to Standby Gas Treatment Equipment Cell" is in the "CLOSED" position.<br><br>Initial and date the check off list step |
| 16 | Verify PO-20466 "Exhaust to Standby Gas Treatment Rx Bldg" is in "CLOSED" position. | P | On panel 20C012 recognize that PO-20466 "Exhaust to Standby Gas Treatment Rx Bldg" is in the "CLOSED" position.<br><br>Initial and date the check off list step |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 17 | Inform Control Room Supervision of completion of partial SGTS lineup. | P | Inform Control Room Supervision of completion of partial COL 9A.1.A. A lineup verification of the Unit 2 Main Control Room portion of the SGTS has been performed. |
| 18 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When a lineup verification of the Unit 2 Main Control Room portion of the SGTS has been performed the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. A Unit 2 startup is in progress.

2. Emergent maintenance was performed on various components of the Standby Gas Treatment System (SGTS).

3. Shift Management directs that a lineup verification of the Unit 2 Main Control Room portion of the SGTS be performed.

4. A partial of COL 9A.1.A "Standby Gas Treatment System Automatic Operation" has been reviewed and approved for use.

## INITIATING CUE

The Control Room Supervisor directs you to perform an Independent Verification (IV) of the Unit 2 Main Control Room portion of the SGTS using the approved partial of COL 9A.1.A "Standby Gas Treatment System Automatic Operation". Do NOT manipulate any components.

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR –272C |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 000 |
| AUTHOR: | J. A. Verbillis | TYPIST: | Jav |
| TITLE: | Recognize and Report License Medical Condition Challenge | | |

APPROVALS:

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

APPROVED FOR USE: _____ Signature / Title _____ Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____ (Last First M.I.)

EMPLOYEE ID#: _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____ Signature/Date

| | |
|---|---|
| LMS CODE: | |
| LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2991090301 – PLOR-272C K/A: G2.1.4

URO: 3.3 SRO: 3.8

TASK DESCRIPTION: Admin Process for NRC License and Medical Requirements

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. OP-AA-105-101 "Administrative Process for NRC License and Medical Requirements"

C. REFERENCES

1. OP-AA-105-101 "Administrative Process for NRC License and Medical Requirements" Rev 014

Related Operating Experience:

2. CR 158767 "Failure to Notify Medical Department of Change in Medical Status" (PB Opex – Licensed Operator in MCR with Fractured Wrist)

3. CR 961772 "NRC ADR Agreement Required Corrective Actions" (PB Opex – Licensed Operator failed to report arrest)

D. TASK STANDARD

1. Satisfactory task completion is indicated when the candidate identifies the individual's reporting requirements associated with the stated medical condition.

2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, evaluate the stated conditions and determine what, if any, reports or notifications the individual is responsible to complete. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. An at-home accident results in a fracture of the wrist of your non-dominate hand.

2. You received treatment at the local hospital, and were given a return-to-work directive from the attending Emergency Room physician.

3. You are scheduled to relieve the Unit 2 Reactor Operator in 48 hours.

G. INITIATING CUE

Identify the entities, (if any) (by position or title) whom you are responsible to notify and the required time frame, if applicable, in which they must be notified. Document requirements on cue sheet.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| ******NOTE TO EVALUATOR**** Upon request, candidate may be provided with a copy of OP-AA-105-101 "Administrative Process for NRC License and Medical Requirements."** | | | |
| *1 | Identify that the individual's supervisor is to be notified. | P | Candidate correctly identifies need to notify their supervisor. (Ref 1, Para 3.4 **or** 4.6.1, 4.6.2) |
| *2 | Identify supervision must be notified prior to the relieving the shift | P | Candidate correctly identifies that the notification to supervision must be made prior to relieving the shift. (Ref 1, Para 3.4) |
| *3 | Identify that the Operations Support Manager is to be notified. | P | Candidate correctly identifies need to notify the Operations Support Manager. (Ref 1, Para 3.4 **or** 4.6.1, 4.6.2) |
| *4 | Identify that the Operations Support Manager must be notified prior to the relieving the shift | P | Candidate correctly identifies that the notification to the Operations Support Manager must be made prior to relieving the shift. (Ref 1, Para 3.4) |
| *5 | Identify that Occupational Health Services (OHS) is to be notified. | P | Candidate correctly identifies need to notify OHS – acceptable to refer to this as Site Medical, Medical, Site Nurse or similar. (Ref 1, Para 3.4 **or** 4.6.1, 4.6.5) |
| *6 | Identify that OHS must be notified prior to the relieving the shift | P | Candidate correctly identifies that the notification to OHS must be made prior to relieving the shift. (Ref 1, Para 3.4) |
| 7 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the candidate has turned in the cue sheet, the JPM can be terminated.

## TASK CONDITIONS/PREREQUISITES

1. An at-home accident results in a fracture of the wrist of your non-dominate hand.

2. You received treatment at the local hospital, and were given a return-to-work directive from the attending Emergency Room physician.

3. You are scheduled to relieve the Unit 2 Reactor Operator in 48 hours.

## INITIATING CUE

Identify the entities, (if any) (by position or title) whom you are responsible to notify and the required time frame, if applicable, in which they must be notified. Document requirements on cue sheet.

| Entity | Notification Time |
|---|---|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

# ADMINISTRATIVE PROCESS FOR NRC LICENSE AND MEDICAL REQUIREMENTS

## 1. PURPOSE

1.1. This procedure describes the administrative process for United States Nuclear Regulatory Commission (NRC) licenses, including initial license applications, license renewal, Biennial Medical Examinations, and updates to the NRC to report changes in an individual's license status.

## 2. TERMS AND DEFINITIONS

2.1. **Action Tracking / Action Tracking Item:** Refers to the formal program used by the site to track performance of specific action items and commitments. Examples of formal programs include but are not limited to Passport, PIMS, etc. Within this context, the "owed to" individual is the on-site individual for whom the action or commitment is being completed.

2.2. **"Administrative No Solo"** An administrative restriction placed upon a NRC Licensed Operator by OHS pending further review of a "health status change".

2.3. **"Administrative Hold":** An administrative restriction placed upon a NRC Licensed Operator by OHS restricting the licensee from performing licensed duties pending further evaluation of a "health status change".

2.4. **Annual:** Once per calendar year. For example, an annual test last performed in January 1995, would be due again by December 31, 1996.

2.5. **Applicant:** Person applying for a NRC Reactor Operator, Senior Reactor Operator, or Senior Reactor Operator - Limited license.

2.6. **Biennial Medical Examination:** The medical examination given every 2 years, required by the NRC for all licensed individuals. For purposes of the medical examination, "biennial" is a period of time equal to 730 days and synonymous with the term "two years". Biennial medical examination requirements can extend beyond 730 days if the requirement is met during the anniversary month of the second year. For example, a Biennial Medical Examination last performed on January 10, 1995, would be due again by January 31, 1997. January is seen as the anniversary month, the period of time between the two examinations is longer than 730 days, but the biennial requirement is satisfied. This medical examination is required for **ALL** NRC licensed individuals (active and inactive license status).

2.7. **Certificate of Medical History (CMH):** Health history completed by the applicant. See HR-AA-07-101, Licensed Nuclear Operator Medical Examination - Attachment 2 for a copy of the form.

2.8. **Comprehensive Written Examination:** See Licensed Operator Requal Training Program description for definition.

2.9. **Disability:** Refers to the physical or mental incapacitation of the individual to the extent that performance of assigned duties is impaired. Examples of physical impairment include loss or partial loss of hearing, color perception, manual dexterity, or the need for corrective lenses. Examples of mental impairment include drug addiction, habitual or excessive use of alcohol, or nervous exhaustion.

2.10. **Examining Physician:** The individual designated by the Company to perform NRC license physical. This includes medical doctor, physician assistant, or nurse practitioner.

2.11. **Exelon Medical Advisor:** A licensed physician contracted by OHS to review all NRC physical exams and to medically certify, or disqualify the licensee. There is an Exelon Medical Advisor assigned to each NRC region applicable to Exelon Nuclear (RI and RIII)

2.12. **Facility Licensee:** Means an applicant or a holder of a license for a facility.

2.13. **Facility Operator Report (FOR):** Report completed by an Applicant's or Licensee's supervisor, signed by Station Management, and submitted to Occupational Health Services (OHS) to aid in the medical evaluation process. See HR-AA-07-101, Licensed Nuclear Operator Medical Examination – Attachment 1 for a copy of the form.

2.14. **Licensee:** Person holding an NRC Reactor Operator, Senior Reactor Operator, or Senior Reactor Operator-Limited license.

2.15. **License Coordinator:** Responsible individual on site who tracks NRC license and medical requirements. This is the Operations Training Manager or designee.

2.16. **Medical Information:** All identifiable information regarding employee health, diagnosis, and treatment. This includes copies of all correspondence to / from the NRC concerning follow-up medical examination requests that specify an individual **and** a specific health issue, such as a request for a follow-up exam for a specific reason, etc for an identified individual. This also includes all correspondence to / from OHS and personal health physician as requested by OHS.

2.17. **"Need to Know":** These are personnel necessary to effect accuracy / verification and concurrence of the correspondence to be transmitted to the NRC. This includes OHS, Regulatory Assurance, and the SVP or designated signature authority.

2.18. **"No Solo" Operation:** License restriction that prohibits solo operation in the Main Control Room.

2.19. **NRC Form 396, Certification of Medical Examination by Facility Licensee:** The form certifies that an individual meets certain medical fitness criteria provided in ANSI / ANS 3.4, "Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants."

NOTE: It is recommended that the Licensed Operator Requal (LORT) Group Lead begin preparing an Accelerated Requalification Training Program no later than 18 months from the termination date of the license.

NOTE: The License Re-Application is required to be submitted to the NRC no later than 30 days prior to the expiration of the 2 year period since the termination of the license.

4.3.1. The License Coordinator shall ensure that an Accelerated Requalification Program is initiated.

NOTE: For License re-applications, the medical data in support of NRC Form 396 are good for 6 months from the date of the medical examination.

4.3.2. The Operations Support Manager shall ensure the Applicant's previous medical examination date is within 6 months of the anticipated license date.

1. If the date is **NOT** within 6 months, the License Coordinator shall ensure the Applicant's medical examination is scheduled with OHS and that the Operations Support Manager is informed of scheduled medical examination date.

4.3.3. The License Coordinator should ensure that the following is performed when processing a License re-application following termination:

1. **USE** the following forms for each individual re-applying for a license:

   A. NRC Form 398

   B. **If** a medical examination will be given, then **OBTAIN** from OHS the current, unsigned NRC Form 396, **and FORWARD** to the Facility Licensee's senior management representative on site for signature through Regulatory Assurance.

   C. Ensure the following completed forms are routed to OHS.

      1. CMH

      2. FOR

2. **ROUTE** the NRC Form 398 and the Certificate of Medical History to the Applicant to fill out **and VERIFY** any pre-printed information on the NRC Form 398 is correct. Both forms, as required, should be returned to the License Coordinator, with the CMH sealed in the envelope provided. (Use TQ-JA-150-25 as required)

3. If a medical examination will be given, **ROUTE** the FOR to the applicant's Supervisor to be completed and signed by the Supervisor. The FOR shall then be routed to Station Management and then to OHS.

4.3.4. After the medical examination is complete, OHS will forward completed NRC Form 396, to the License Coordinator.

1. In the event a license restriction other than Corrective Lenses or Hearing Aids is being proposed, the proposed wording of the restriction and the relationship of the restriction to disqualifying condition shall be documented. OHS shall create a letter describing the restriction, the NRC Form 396 block shall be checked and marked "see attached", and any supporting medical evidence shall be attached.

2. The supporting medical evidence shall be controlled on a "Need to Know" basis necessary to support submitting the information to the NRC.

4.3.5. The Licensed Operator Requalification Training Group Lead Instructor shall ensure completion of the Accelerated Requalification Program no later than 45 days prior to the expiration of the 2 year period since the termination of the license.

4.3.6. The License Coordinator shall **ROUTE** the NRC Form 398 to the Applicant to complete, update, or revise as necessary.

1. **INCLUDE** in NRC Form 398, Block 17, "Comments", or in the cover letter sent to the NRC with the NRC Form 398, the following information:

   A. "The Applicant" previously discharged his responsibilities competently and safely and is capable of continuing to do so.

   B. "The Applicant" terminated participation in the facility licensee's requalification program less than 2 years (24 months) before the date of the license application.

   C. "The Applicant" successfully completed an Accelerated Requalification Program pursuant to 10 CFR 55.59(b), "Requalification," and a facility-prepared written examination and operating test, which ensures that he is up-to-date in the licensed operator requalification training program.

   D. "The Applicant" will successfully complete at least 40 hours of shift functions under the direction of an Operator or Senior Operator, as appropriate, and in the position to which he will be assigned (per 10 CFR 55.53(f), "Conditions of licenses") before being assigned to licensed duties.

NOTE In the following statement, 10 CFR 55.31(a)(3) discusses the ILT written and operating examinations, for which a waiver is being requested. 10 CFR 55.31(a)(5) discusses the requisite 5 reactivity manipulations. Since the Operator was previously licensed, the statement certifying successful operation of the controls will suffice.

E. "The Applicant" has completed the requirements of 10 CFR 55.31, "How to apply," with the exception of 10 CFR 55.31(a)(3), (since a waiver is being requested) and 10 CFR 55.31(a)(5), since the Facility Licensee's senior management representative on site is certifying that he successfully operated the controls as a licensed operator.

2. **OBTAIN** a signature from the Licensee and the Training Director when all of the information on the NRC Form 398 has been verified and printed on the NRC Form 398.

3. **OBTAIN** from OHS a current, unsigned NRC Form 396, **and FORWARD** to the Facility Licensee's senior management representative on site for signature through Regulatory Assurance.

NOTE Signed, certified NRC Forms 396 and 398 shall be sent and postmarked for delivery to the NRC **not** less than 30 days before the expiration of the 2 year period since the termination of the license.

4. **SUBMIT** signed and certified NRC Forms 396 and 398 through Regulatory Assurance to the NRC, with a copy of Form 396 sent to OHS.

5. **MAINTAIN** a copy of signed NRC Form 398 in the individual's license file and a copy of signed NRC Form 396 in the individual's medical file.

6. **FILE** a copy of the license in the individual's license file once the operating license is issued **and FORWARD** a copy of the license to OHS for inclusion in the individual's medical file.

7. **ENSURE** the License File or other required Database(s) are updated as necessary.

4.4. Processing Biennial Medical Examinations and Updates

NOTE: **REFER** to Attachment 6 for process flowchart. This flowchart provides a method of tracking progress of individual Licensee Biennial Medical Examinations and updates.

NOTE: It is recommended that the License Coordinator begin preparing the paperwork for the Biennial Medical Examinations approximately 120 days prior to the medical expiration date (2 years from the last medical examination date on NRC Form 396 plus the end of the anniversary month).

NOTE: NRC will normally allow to the end of month of the Biennial Medical Examination due date to complete the required examination. This should be an exception and not the normal practice.

4.4.1. The License Coordinator shall ensure each Licensee's medical examination is scheduled with OHS no later than 30 days prior to the medical examination expiration date and that the Operations Support Manager is informed of scheduled medical examination dates.

4.4.2. The License Coordinator **ENSURES** the following is completed when processing a licensee's Biennial Medical Examination and update:

1. **ROUTE** the CMH to the Licensee with instructions to complete the form and return to the License Coordinator sealed in the envelope provided.

2. **ROUTE** the FOR to the applicant's Supervisor to be complete and signed by the Supervisor prior to the medical examination date. The FOR should then be routed to Station Management. The FOR should then be routed to OHS prior to the medical examination date.

3. **ENSURE** the following completed documents are forwarded to OHS:

   A. FOR

   B. CMH

4.4.3. OHS shall **VERIFY** the completion of each day's **SCHEDULED** medical examinations.

1. OHS shall notify the License Coordinator of any Licensee that failed to report for their scheduled medical exam.

   A. The License Coordinator shall initiate an Issue Report to document the failure to report for a medical exam.

2. **If** a Licensee fails to receive their medical exam as scheduled, **then** it is the responsibility of the License Coordinator to reschedule their exam within the required time period.

3. OHS should notify the License Coordinator if any Licensee scheduled to receive a medical exam on a given day failed to complete the exam.

   A. The License Coordinator shall initiate an Issue Report to document the failure to complete a medical exam

4.4.4. **If** an individual fails to take their scheduled Biennial Medical Examination prior to the medical expiration date, **then** the License Coordinator shall immediately:

1. **NOTIFY** the Operations Support Manager to immediately **REMOVE** that person from license duties until such time as an examination is completed.

2. **INITIATE** an Issue Report.

3. **NOTIFICATION** to the NRC will be required to report the invalid license.

4.4.5. OHS shall **NOTIFY** the Licensee, License Coordinator and Operations Support Manager immediately if it is determined from the Biennial Medical Examination that Licensee is not medically qualified to perform license duties.

1. OHS shall **NOTIFY** the Operations Support Manager to have the individual removed from license duties until the medical qualification is satisfied.

4.4.6. **If** any follow-up medical information is requested of the Licensee by OHS to complete the medical certification, **then DO** the following:

1. OHS shall **NOTIFY** the individual Licensee for any follow-up visits to his / her personal health physician, if needed to complete the medical certification.

2. The Licensee shall **FOLLOW UP** with his/her personal health physician, or OHS, depending on instructions provided **and PROVIDE** that information to OHS by the date specified.

3. OHS shall **NOTIFY** the License Coordinator and Operations Support Manager if the Licensee fails to provide the follow-up medical information to OHS within the specified time period.

4. OHS shall **NOTIFY** the License Coordinator and may place the Licensee on temporary license restriction until the information is provided.

5. OHS shall **NOTIFY** the Operations Support Manager if the decision is made to place the Licensee on temporary restriction.

4.4.7. **If** any NRC Form 396 indicates a restriction change or an information notification, **then** OHS shall **CHECK** the appropriate box on NRC Form 396 and indicate, "See attached documentation".

1. OHS shall provide a letter indicating the change in restriction or condition, **or** will provide a letter detailing "information only" notification.

4.4.8. OHS shall **FORWARD** the completed NRC Forms 396 in a sealed envelope, to the License Coordinator when all are completely certified.

4.4.9. OHS shall **FILE** the unsigned NRC Form 396 in the individual's medical file.

4.4.10. **If** there are any license restriction changes or other identified changes in medical status requiring NRC notification from the previous NRC Form 396, **then** the License Coordinator shall do the following:

1. **INITIATE** Attachment 3 to help track required notifications.
2. **INFORM** the Operations Support Manager.
3. **CREATE** an Action Tracking item owed to the Operations Support Manager to track completion of the required report.
4. **ROUTE** NRC Form 396 to Regulatory Assurance for signature by the Facility Licensee senior management representative on site.
5. **FORWARD** the signed NRC Form 396 and any supporting medical information to the NRC through Regulatory Assurance immediately, under cover letter signed by Facility Licensee senior management representative onsite.
   A. **If** site Regulatory Assurance disagrees with or questions the reportability of medical information provided by OHS, **then REFER** the disagreement / question to the Nuclear OHS Manager and Corporate Licensing for resolution.
6. **CLOSE** the Action Tracking item created above when the required NRC notification has been completed.
7. Regulatory Assurance shall **ROUTE** a signed copy of the NRC Form 396 to OHS to file in the Licensee's medical file.
8. The License Coordinator shall **UPDATE** the Licensee File Database as necessary.
9. The License Coordinator shall **NOTIFY** the DTC of any changes in qualification.
10. The License Coordinator shall **ENSURE** the Qualification Tracking Database is updated.

4.5. Processing Respirator Qualification

4.5.1. Respirator qualification is comprised of three distinct components.

NOTE: Respirator qualification is required annually per OSHA (10CFR29 Part 1910.134) regulations for **ALL** NRC licensed individuals (active and inactive license status).

1. The License Coordinator shall ensure each Licensee's respirator examination is scheduled with OHS no later than 30 days prior to the respirator examination expiration date and that the Operations Support Manager is informed of scheduled medical examination dates. Every other year this is completed as part of the Biennial Medical Examination for NRC licensed individuals.

2. The License Coordinator or designee shall ensure each Licensee's mask fit is scheduled with Radiation Protection no later than 30 days prior to the mask fit expiration date and that the Operations Support Manager is informed of scheduled medical examination dates. This is required annually.

3. The Department Training Coordinator shall schedule appropriate respirator training for **ALL** NRC licensed individuals (active and inactive license status). Normally this is performed as part of annual NGET training.

4.6. Process for Reporting Changes in Health Status

4.6.1. Some examples of changes in health status that could cause a condition / restricted license are:

NOTE: The following list is **not** all-inclusive. **ANY** change in health status shall be reported by the Licensee to OHS so proper evaluation against the ANSI standard of the impact on the individual's NRC license can be performed and any required notifications completed within the 30 day notification window.

NOTE: Whether the Licensee serves on shift or **not**, notifications of any change in health status to the NRC need to be evaluated by OHS against the ANSI standard prior to the next scheduled shift. Usually, if the Licensee has a temporary disability that would preclude them from performing regular duties, the Licensee would be restricted from those duties, and the temporary disability would need to be reviewed per the ANSI standards for possible notification to the NRC. Generally, the NRC notification is only required in the case of a permanent disability but determination needs to be made for every health status change.

NOTE: Personnel who are maintaining an NRC License are required to report the use of prescription or over the counter medications, other than aspirin, aspirin substitute, antibacterial, and birth control to their immediate supervisor and OHS in accordance with SY-AA-102-106.

- High blood pressure and / or medication changes
- Angina or coronary disease (chest pain, heart disease)
- Heart rhythm abnormality
- Stroke or TIA (cerebral vascular accident or transient ischemic attacks)
- Fainting spells, seizures, or epilepsy
- Asthma
- Arthritis (limiting mobility)
- Fracture or joint dislocation
- Diabetes and / or medication changes
- Cirrhosis, hepatitis, or other liver disorders
- Diagnosed psychiatric or psychological condition and medications used in treatment

NOTE: Referral for dependency evaluation as a result of a DUI requires OHS notification.

- Alcoholism, alcohol abuse, alcohol dependency
- Drug dependency
- Changes in vision, including glaucoma, cataracts, or laser eye surgery
- Changes in hearing
- Cancer (even successful surgery)
- Skin condition (limiting ability to work or wear respirator)
- Bleeding from stomach or bowel
- Emphysema or chronic bronchitis
- Surgery or traumatic injury
- Sleep apnea
- Medications and medication changes

NOTE: At any time the OHS identifies the need to inform the NRC of a change or follow-up to a medical condition, OHS will prepare and submit a NRC Form 396 with the appropriate supporting information to the Licensing Coordinator.

4.6.2. Licensee shall **NOTIFY** his / her immediate Supervisor and the Operations Support Manager.

4.6.3. The immediate Supervisor or the Operations Support Manager shall **INITIATE** Attachment 3 when a change in health condition that affects or has the potential to affect license status occurs.

4.6.4. The License Coordinator shall **CREATE** an Action Tracking item, with sub-assignments as appropriate, owed to the Operations Support Manager to track proper reporting of the status change.

4.6.5. Licensee shall **NOTIFY** OHS of the change in health status prior the next scheduled shift.

1. OHS shall **EVALUATE** information provided by the Licensee, and based on the evaluation may place the Licensee's license on "Administrative Hold" pending further evaluation of the condition.

   A. OHS shall **NOTIFY** the Licensee, and the License Coordinator if an individual's license is placed on "Administrative Hold".

   B. OHS shall **NOTIFY** the Operations Support Manager to remove the individual from license duties.

2. Licensee shall **PROVIDE** follow-up information to OHS as requested, by the date specified by OHS.

4.6.6. Changes in license status must be reported to the NRC within 30 days. The License Coordinator shall **NOTIFY** Regulatory Assurance to develop the letter required for NRC notification.

1. **If** site Regulatory Assurance disagrees with or questions the reportability of medical information provided by OHS, **then REFER** the disagreement / question to the Nuclear OHS Manager and Corporate Licensing for resolution.

4.6.7. **When** the required correspondence has been sent to the NRC providing notification of the status change, **then** the Operations Support Manager shall **CLOSE** the Action Tracking item created above.

4.6.8. Regulatory Assurance shall **ROUTE** a signed copy of the NRC Form 396 to OHS to file in the Licensee's medical file.

4.6.9. The License Coordinator will **NOTIFY** the DTC of any changes in qualifications.

4.7. <u>Reporting Changes in License Status (refer to Attachment 4)</u>

4.7.1. Changes in NRC license status can result from any of the following:

- Permanent Licensee disability due to a physical or mental condition
- Permanent reassignment to a position not requiring a license
- Termination of Licensee

- Felony conviction of Licensee
- Significant Fitness for Duty Event
- Changes in health status (refer to Section 4.5)
- Licensee name change due to marriage or divorce

4.7.2. Licensee shall **NOTIFY** his / her immediate Supervisor, the Operations Support Manager **to INITIATE** Attachment 3 when an event that affects or has the potential to affect license status occurs.

4.7.3. License Coordinator shall **CREATE** an Action Tracking item, with sub-assignments as appropriate, owed to the Operations Support Manager to track proper reporting of the status change.

4.7.4. The Operations Support Manager shall assist the Licensee in making the notifications required and shall assist in the determination of reportability.

4.7.5. Changes in license status must be reported to the NRC within 30 days. The License Coordinator shall **NOTIFY** Regulatory Assurance to develop the letter required for NRC notification.

4.7.6. **If** Regulatory Assurance disagrees with or questions the reportability of information provided by the Operations Support Manager and Licensee, **then REFER** the disagreement / question to the Corporate Licensing and Corporate Operations Director for resolution.

4.7.7. The Operations Support Manager shall **CLOSE** the Action Tracking item created above when the required NRC notification has been completed.

4.7.8. License Coordinator shall notify the DTC of any changes in qualification.

4.7.9. License Coordinator shall ensure that the Qualification Tracking Database is updated as necessary.

4.8. Licenses with Operating Conditions Requiring Medical Follow-Up

4.8.1. When a new or amended license with an operating condition requiring medical follow-up is received from the NRC, it is the Licensee's responsibility to ensure compliance with the follow-up requirements.

4.8.2. Licensee shall **NOTIFY** his / her immediate Supervisor, the Operations Support Manager, and OHS of the license condition.

4.8.3. Licensee shall **PROVIDE** required follow-up information to OHS within the time frame specified.

4.8.4. OHS shall **NOTIFY** the License Coordinator when the medical information required by the license condition has been received from the Licensee **and** shall **FORWARD** appropriate information to the License Coordinator for transmittal to the NRC through Regulatory Assurance.

1. The License Coordinator will create an Action Tracking item, with sub-assignments as appropriate, owed to the Operations Support Manager to track completion of required follow-up medical information submitted to the NRC within the timeframe specified by the NRC.

4.8.5. **If** the Licensee fails to meet the requirements on the amended license within the time frame specified, **then** OHS shall immediately **NOTIFY** the Licensee, the Operations Support Manager, and License Coordinator.

4.8.6. **If** it is determined the Licensee is no longer medically fit to perform license duties, **then** OHS shall:

1. **NOTIFY** Licensee of medical disqualification pending receipt of required medical information.

2. Medically disqualify the Licensee

3. **NOTIFY** the Operations Support Manager to immediately remove the individual from license duties.

4. **WORK** with the License Coordinator and Regulatory Assurance to ensure NRC notifications are completed in accordance with Attachment 3.

NOTE: Attachment 5 must be completed annually at each site, but the timing of completion may vary. Typically this is during the first quarter of the year, but that timing may be delayed for site-specific reasons, such as being completed in the quarter following annual exams if the exams are completed early in the year.

4.9. NRC License Maintenance Requirements Tracking

4.9.1. Operations Training, typically the License Coordinator, shall complete Attachment 5, "NRC License Maintenance Requirements Tracking Sheet", annually for each license holder.

- The Operations Training Manager and SOS or Operations Director shall review and approve each completed Attachment 5.
- Each Licensee shall review and sign his / her completed Attachment 5.

4.9.2. A copy of the completed Attachment 5 will be provided to each Licensee and the original Attachment 5 will be placed in each individual's license file.

4.9.3. Results of the annual NRC license maintenance requirements review for all licenses shall be reported out by the SOS / Operations Director and / or Operations Training Manager to the Operations Director and Training Director for their concurrence.

4.10. Periodically (approximately quarterly), the License Coordinator will provide each Shift Manager a listing of licensed personnel on his / her crew that have licenses with "No Solo" restrictions for information and verification of accuracy. Inaccuracies shall be resolved in accordance with Sections 4.4 or 4.5 as appropriate.

5. **DOCUMENTATION** - None

6. **REFERENCES**

6.1. SAF 1.10, 1.36, 1.41, 1.42, 1.43: Exelon Reportability Manual

6.2. 10 CFR 26, Fitness for Duty

6.3. 10 CFR 29, OSHA General Industry Standards

6.4. 10 CFR 55, Operators' Licenses

6.5. 10 CFR 50.74, Notifications of Change in Operator or Senior Operator Status

6.6. NUREG-1021, Operator Licensing Examiner Standards for Power Reactors

6.7. ES-202, Preparing and Reviewing Operating Licensing Applications

6.8. ES-605, License Maintenance, License Renewal Applications, and Requests for Administrative Reviews and Hearings

6.9. NRC Form 398, Personnel Qualifications Statement (License Application)

6.10. NRC Form 396, Certification of Medical Examination by Facility Licensee

6.11. Certificate of Medical History (CMH)

6.12. Facility Operator Report (FOR)

6.13. General Procedures Memorandum Ref. No. 345 Appendix A

6.14. HR-AA-07-101, Licensed Nuclear Operator Medical Examination.

6.15. SY-AA-102-206, Reporting Use of Medication

6.16. TQ-JA-150-25, NRC Form 398 Submittal Checklist

6.17. AR 523435, Root Cause Investigation of Medical Disability of Licensed Individuals Not Reported to NRC.

## 7. ATTACHMENTS

7.1. Attachment 1, License Application Process Flow Chart

7.2. Attachment 2, License Renewal Process Flow Chart

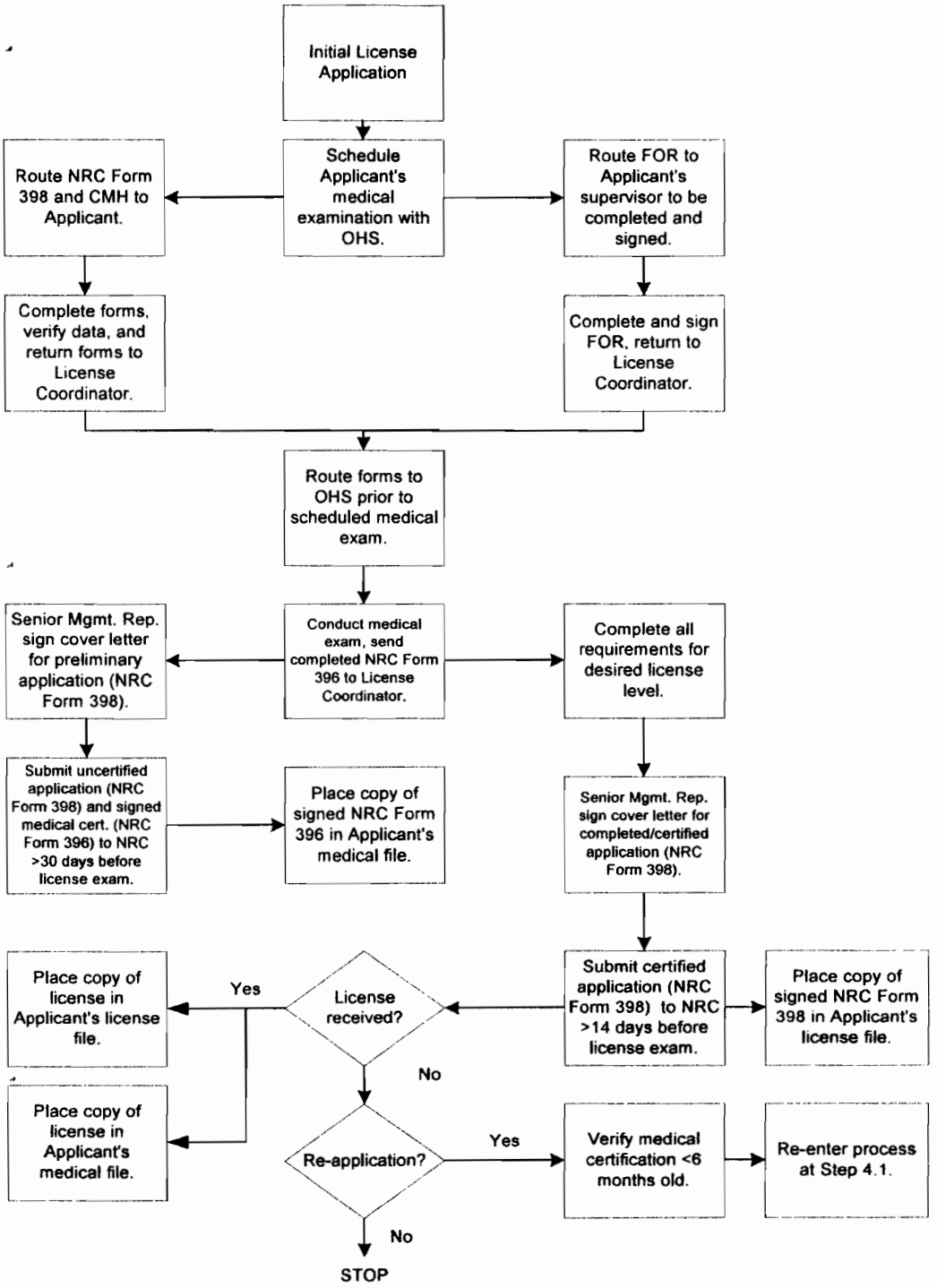
7.3. Attachment 3, Reporting NRC License Status Changes

7.4. Attachment 4, License Status Change Flow Chart

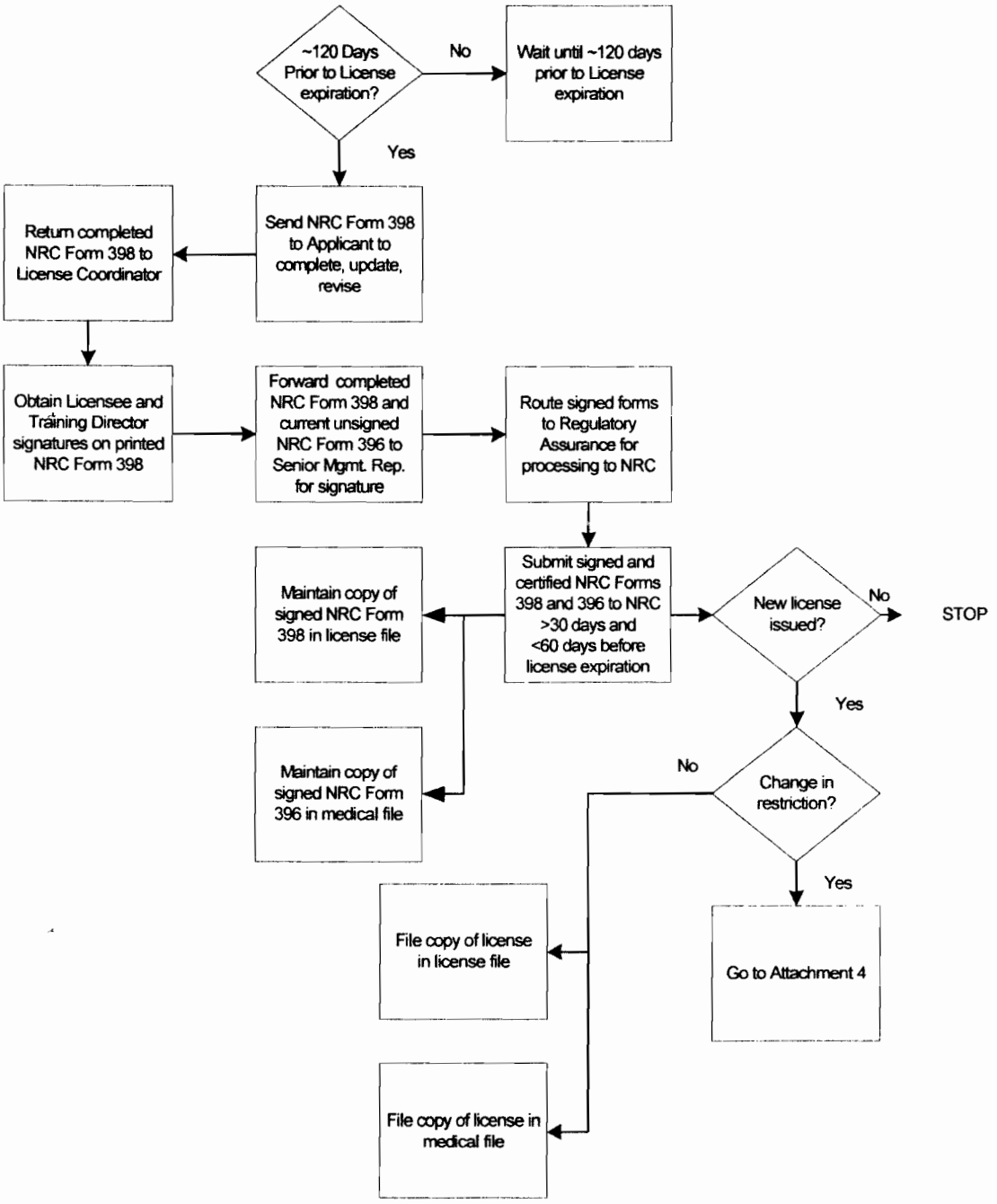
7.5. Attachment 5, NRC License Maintenance Requirements Tracking Sheet

7.6. Attachment 6, Biennial Medical Examination Process Flow Chart

# ATTACHMENT 1
## License Application Process Flow Chart
## Page 1 of 1



# ATTACHMENT 2
## License Renewal Process Flow Chart
## Page 1 of 1



# ATTACHMENT 3
## Reporting NRC License Status Changes
## Page 1 of 3

Changes in health status that affect NRC license restrictions are required to be reported to the NRC within 30 days of learning of the diagnosis. Similarly, the NRC must be notified within 30 days of an event that could affect the status of an NRC license. The following actions should be taken to ensure that timely notification is made.

1. The License holder is made aware of a change that may affect license status.
2. The License holder notifies the appropriate personnel:
   a. Immediate Supervisor
   b. Operations Support Manager
   c. OHS
   d. Regulatory Assurance
3. The immediate Supervisor initiates Attachment 3 and hand delivers it to the License Coordinator
4. The License Coordinator initiates an Action Tracking item owed to the Operations Support Manager and due 28 days from the time the License holder submits documentation that could affect license status.
5. The License Coordinator notifies OSM, OTM, and OHS that a licensed individual has reported a potential change in license status and that an Action Tracking item has been assigned to the OSM for tracking of the issue. The Action Tracking number will be documented in the notification.
6. OHS determines if a permanent or temporary license restriction is required.
7. OHS determines if NRC notification is required, and by what date.
8. If NRC notification is required, or follow-up actions are required, continue below. If not, exit this process.
9. OHS notifies License Coordinator that NRC notification and/or follow-up action is required.
10. License Coordinator issues a new Action Tracking item owed to the OSM to track the NRC notification and/or follow-up action. Due date is based on input from OHS.
11. OHS provides pertinent information to the License Coordinator for delivery to Regulatory Assurance for formal processing of a notification letter.
12. Regulatory Assurance develops NRC notification package and provides the package to the License Coordinator for review and approval routing.
13. License Coordinator coordinates the review and approval of the notification package.
14. Regulatory Assurance issues the notification package to the NRC.
15. OSM completes associated Action Tracking item.

## ATTACHMENT 3
## Reporting NRC License Status Changes
## Page 2 of 3

**IT IS THE RESPONSIBILITY OF THE IMMEDIATE SUPERVISOR OR THE OPERATIONS SUPPORT MANAGER TO INITIATE THIS ATTACHMENT, COMPLETE STEPS 1-5, AND THEN HAND DELIVER IT TO THE LICENSE COORDINATOR**

1. License Holder Name: _____

2. Date potential License status change was identified: _____

3. Description of potential License status change and how it was identified:
   _____

4. Notify the following personnel as appropriate: (N/A those NOT notified and state why notification was NOT required
   - Supervisor: Date or N/A: _____
   - OHS: Date or N/A: _____
   - If Security related, forward information to Security:
     Date or N/A: _____
   - Regulatory Assurance: Date or N/A: _____

5. Attachment 3 delivered to the License Coordinator Date: _____

6. Action Tracking item initiated to track determination of Permanent or Temporary Restriction of Duty. Due date to be the date the potential change in license status was identified plus 21 days.
   Date initiated: _____ Initiated by: _____ Date ATI is due: _____

7. OHS determines if license status is affected.
   - Notification of PERMANENT change required Yes / No
   - Temporary Restriction of Duty required Yes / No

   Date: _____

8. License Coordinator notified by OHS that a PERMANENT change or Temporary Restriction of Duty is required or not.
   Date: _____

**If determined to be a PERMANENT change, NRC notification is required within 30 days.**
**Continue on next page.**

## ATTACHMENT 3
## Reporting NRC License Status Changes
## Page 3 of 3

1. Action Tracking item created by Licensed Coordinator (or designee) to notify NRC of license holder's PERMANENT change in license status.
   - Action Tracking number: _____
   - Action Tracking due date: _____

   (Date PERMANENT change identified plus 30 days. If due date falls on a weekend or holiday, due date is moved to next normal working day)

2. Pertinent information provided by OHS to the License Coordinator for routing to Regulatory Assurance.

   Date: _____

3. License Coordinator performs the following:
   - Notifies Regulatory Assurance of the need to develop NRC notification package
   - Provides pertinent information obtained from the OHS.
   - Peer checks the date that Regulatory Assurance will place on the cover letter for the NRC notification package.

   Date: _____

4. License Coordinator routes NRC notification package for review and approval and returns package to Regulatory Assurance for final approvals.

   Date: _____

5. Regulatory Assurance obtains final approval from the Plant Manager and Site Vice President for the NRC notification package.

   Date: _____

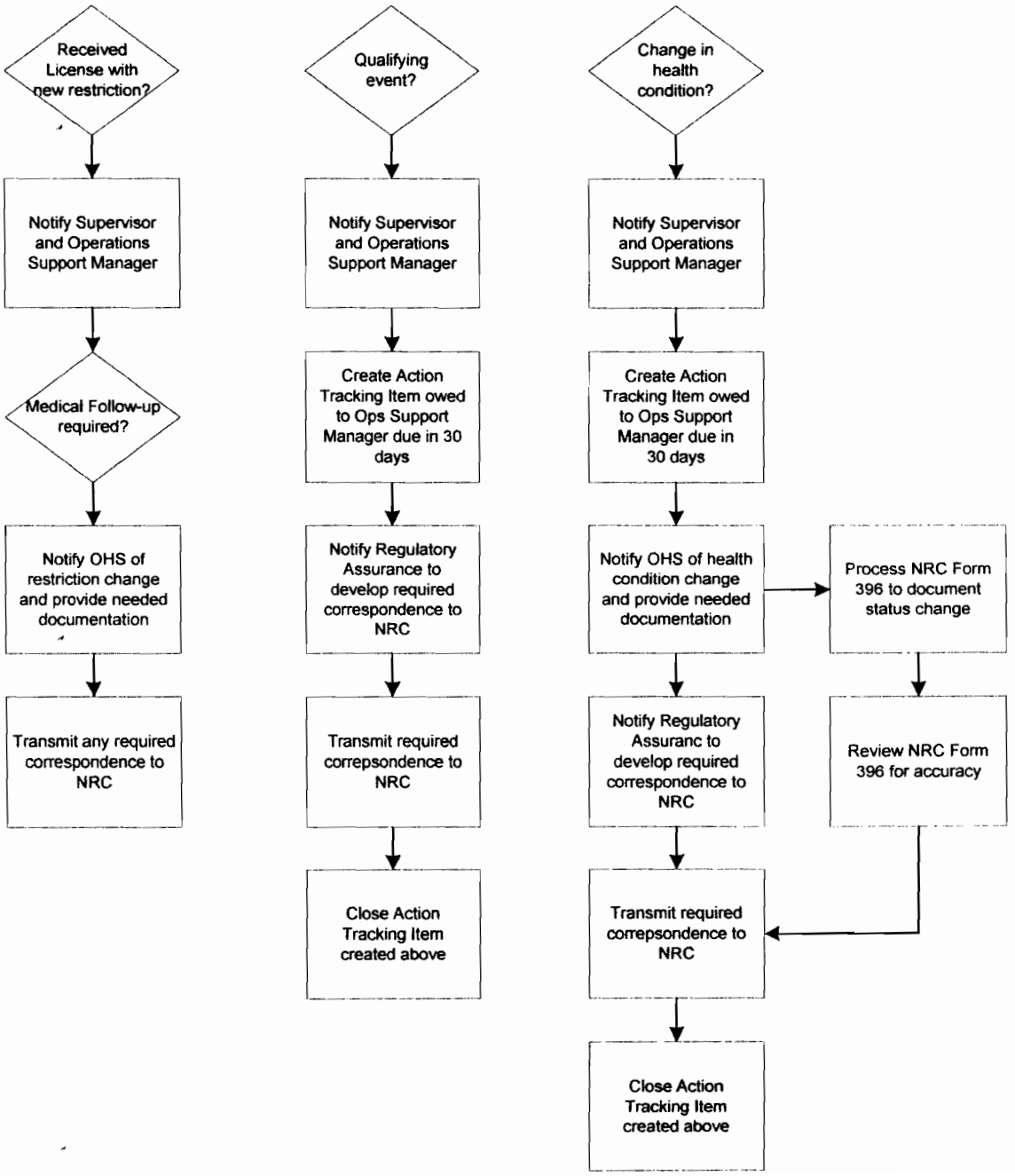
6. Regulatory Assurance issues the NRC notification package to the NRC and notifies OSM of transmittal.

   Date: _____

7. Operations Support Manager (or designee) documents NRC notification in associated Action Tracking item.

   Date: _____

# ATTACHMENT 4
## License Status Change Flow Chart
## Page 1 of 1



## ATTACHMENT 5
## NRC License Maintenance Requirements Tracking Sheet
## Page 1 of 1

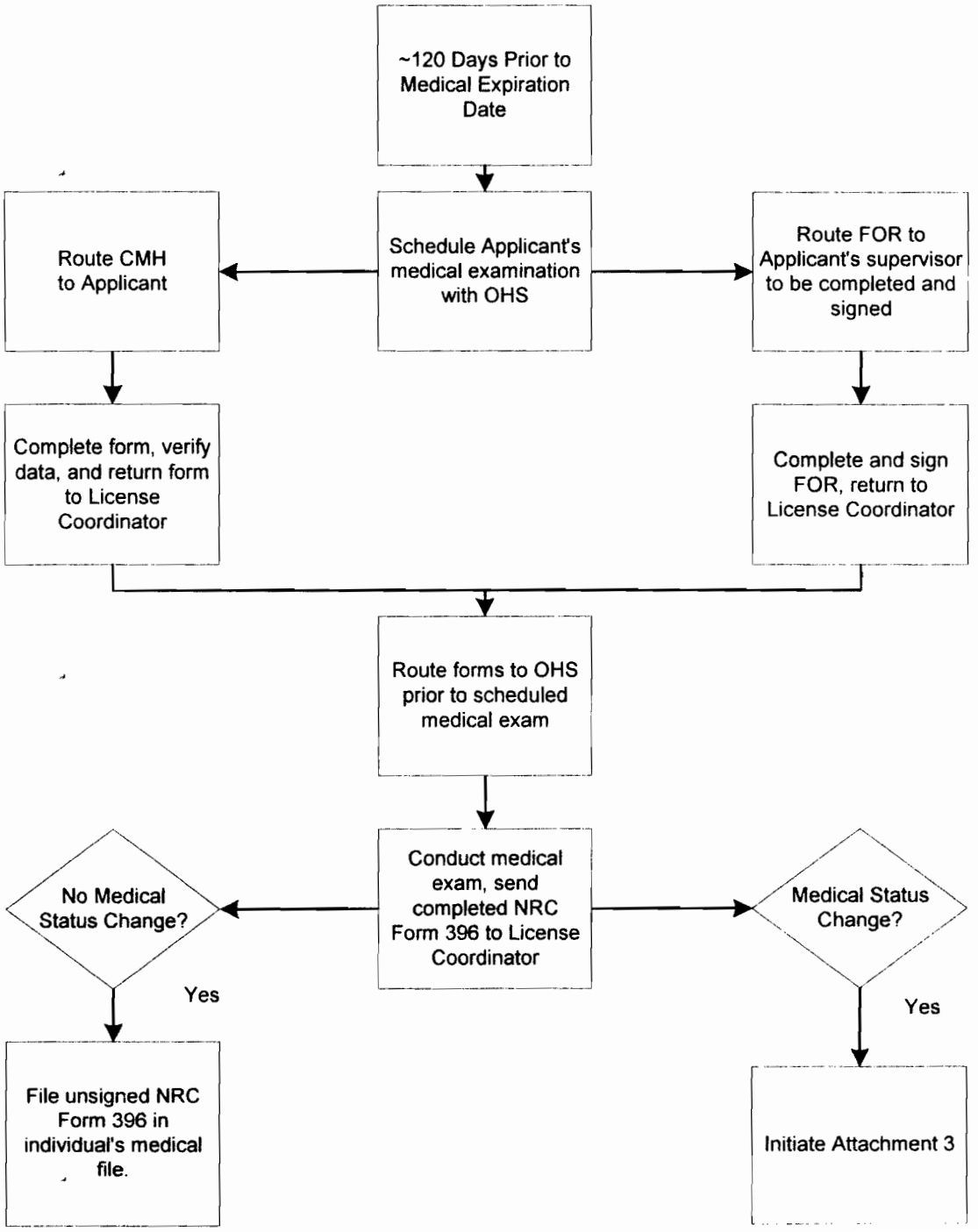
**License Holder:**_____

| NRC REQUIREMENT | Required Frequency | Last Completed | Due Date | Requirement Current Initials/Date |
|---|---|---|---|---|
| Successfully complete a requalification program developed by the Facility Licensee that has been approved by the Commission. This program shall be conducted for a continuous period not to exceed 24 months in duration. (10CFR 55.53, 10CFR55.59) | Less than or equal to 24 months | | | |
| Pass a comprehensive requalification written examination. The written examination will sample the items specified in §§55.41 and 55.43 of this part, to the extent applicable to the facility, the licensee, and any limitation of the license under §55.53(c) of this part. (10CFR55.59) | Every 730 days (or once per requal-ification cycle / program) | | | |
| Pass an annual operating test. The operating test will require the Operator or Senior Operator to demonstrate an understanding of and the ability to perform the actions necessary to accomplish a comprehensive sample of items specified in §55.45(a) (2) through (13) inclusive to the extent applicable to the facility. (10CFR55.59) | Each calendar year | | | |
| Complete a Biennial Medical Examination (10CFR55.53) | Every 730 days (or more if met during anniversary month of second year) | | | |
| NRC License is current | Every 6 Years | | | |
| Completed required Biennial Medical Examination follow-up requirements. | Action Tracking Number | | | |

Reviewed and Approved: _____ _____
**Operations Training Manager** **SOS / Operations Director**

Reviewed: _____
**License Holder**

# ATTACHMENT 6
## Biennial Medical Examination Process Flow Chart
## Page 1 of 1



# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR-274C |
| COURSE: | Licensed Operator Requalification | REV #: | 000 |
| AUTHOR: | C. N. Croasmun | TYPIST: | cnc |
| TITLE: | ISOLATING THE 3B RBCCW HEAT EXCHANGER DUE TO A LEAK | | |

APPROVALS:

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

APPROVED FOR USE: _____ _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ |
| EMPLOYEE ID#: _____ | COMPLETION DATE: _____ |
| COMMENTS: | |

| | | |
|---|---|---|
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2002300401 / PLOR-274C K/A: G2.2.41
RO: 3.5

TASK DESCRIPTION: Ability to obtain and interpret station electrical and mechanical drawings

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. A Full Set of each of the following P & IDs:
   a. M-314 series
   b. M-315 series
   c. M-316 series

C. REFERENCES

1. P&ID M-316 sheet 3, Rev. 52

2. P&ID M-314 sheet 8, Rev. 65

3. P&ID M-315 sheet 4, Rev. 54

4. OP-AA-108-101 "Control of Equipment and System Status"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the isolation points and vent/drain paths for the RBCCW, Service Water, and Emergency Service Water side of the 3B RBCCW heat exchanger have been identified.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, determine the isolation points, vent paths, and drain paths necessary to isolate a tube leak located on the 3B RBCCW heat exchanger.

F. TASK CONDITIONS/PREREQUISITES

A suspected tube leak has been identified on the standby 3B Reactor Building Closed Cooling Water (RBCCW) heat exchanger 3BE018. The Work Control Supervisor will be developing an Abnormal Component Position Sheet for isolation, venting, and draining of the 3B RBCCW heat exchanger.

G. INITIATING CUE

The Control Room Supervisor directs you to identify the components and their required positions to isolate, vent and drain the tube and shell side of the 3B RBCCW heat exchanger. Document your results on the CUE SHEET.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1. | Locate the component that is leaking on P&ID drawings M-316 sheet 3 (RBCCW side) and M-314 sheet 8 (Service Water side).<br><br>(Cue: Provide the candidate(s) with a full set of the M-314, M-315 and M-316 series P & IDs)<br><br>(Cue: If asked, inform candidate(s) that PIMS is down for IT maintenance) | P | Locate 3BE018 on M-316 sheet 3, (Coordinates B-3) and on M-314 sheet 8 (Coordinates F-3). |
| ***** NOTE *****<br><br>**It should be determined by the Examinee that isolation points are selected first and then vents and drains are to be opened. This applies to both the RBCCW and Service Water sides of the heat exchanger.** | | | |
| *2 | Close HV-3-35-34205B "RBCCW HX 3BE018 Inlet Block Valve". | P | Identifies that HV-3-35-34205B "RBCCW HX 3BE018 Inlet Block Valve" must be CLOSED in order to ISOLATE RBCCW to the heat exchanger. |
| *3 | Close HV-3-35-34210B "RBCCW HX 3BE018 Outlet Block Valve". | P | Identifies that HV-3-35-34210B "RBCCW HX 3BE018 Outlet Block Valve" must be CLOSED in order to ISOLATE RBCCW to the heat exchanger. |
| *4 | Open HV-3-35-34206B "RBCCW HX 3BE018 Drain Valve" | P | Identifies that HV-3-35-34206B "RBCCW HX 3BE018 Drain Valve" must be OPENED in order to DRAIN the RBCCW side of the 3B RBCCW heat exchanger. |

| | | | |
|---|---|---|---|
| *5 | Open HV-3-35-34209B "RBCCW HX 3BE018 Lower Vent Valve"<br><br>AND / OR<br><br>Open HV-3-35-34207B "RBCCW HX 3BE018 Upper Vent Valve" | P | Identifies that HV-3-35-34209B "RBCCW HX 3BE018 Lower Vent Valve" must be OPENED in order to VENT the lower section of the 3B RBCCW heat exchanger<br><br>AND / OR<br><br>HV-3-35-34207B "RBCCW HX 3BE018 Upper Vent Valve" must be OPENED in order to VENT the upper section of the 3B RBCCW heat exchanger. |
| *6 | Close HV-3-30-31866B "Service Water Inlet to B RBCCW HX Block Valve". | P | Identifies that HV-3-30-31866B "Service Water Inlet to B RBCCW HX Block Valve" must be CLOSED in order to ISOLATE Service Water to the heat exchanger. |
| *7 | Close HV-3-30-31867B "Service Water Outlet from B RBCCW HX Block Valve". | P | Identifies that HV-3-30-31867B "Service Water Outlet from B RBCCW HX Block Valve" must be CLOSED in order to ISOLATE Service Water to the heat exchanger. |
| *8 | Close HV-3-33-520B "ESW to RBCCW HX 3BE018 Inlet Block Valve". | | Identifies that HV-3-33-520B "ESW to RBCCW HX 3BE018 Inlet Block Valve" must be CLOSED in order to ISOLATE Emergency Service Water to the heat exchanger. |
| *9 | Open HV-3-30-31868B "B RBCCW HX Tube Side Inlet Drain Valve" | P | Identifies that HV-3-30-31868B "B RBCCW HX Tube Side Inlet Drain Valve" must be OPENED in order to DRAIN the Service Water side of the 3B RBCCW heat exchanger. |
| *10 | Open HV-3-30-31869B "B RBCCW HX Tube Side Low Point Drain Valve" | P | Identifies that HV-3-30-31869B "B RBCCW HX Tube Side Low Point Drain Valve" must be OPENED in order to DRAIN the Service Water side of the 3B RBCCW heat exchanger. |
| *11 | Open HV-3-30-70B "B RBCCW HX Tube Side High Point Drain Valve" | P | Identifies that HV-3-30-70B "B RBCCW HX Tube Side High Point Drain Valve" must be OPENED in order to DRAIN the Service Water side of the 3B RBCCW heat exchanger. |

| | | | |
|---|---|---|---|
| *12 | Open HV-3-30-71B "B RBCCW HX Tube Side Vent Valve" | P | Identifies that Open HV-3-30-71B "B RBCCW HX Tube Side Vent Valve" must be OPENED in order to VENT the Service Water side of the 3B RBCCW heat exchanger. |
| 13 | Inform Control Room Supervisor of task completion.<br><br>(Cue: The Control Room Supervisor acknowledges the report.) | P | The operator informs the Control Room Supervisor of task completion. |
| 14 | As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

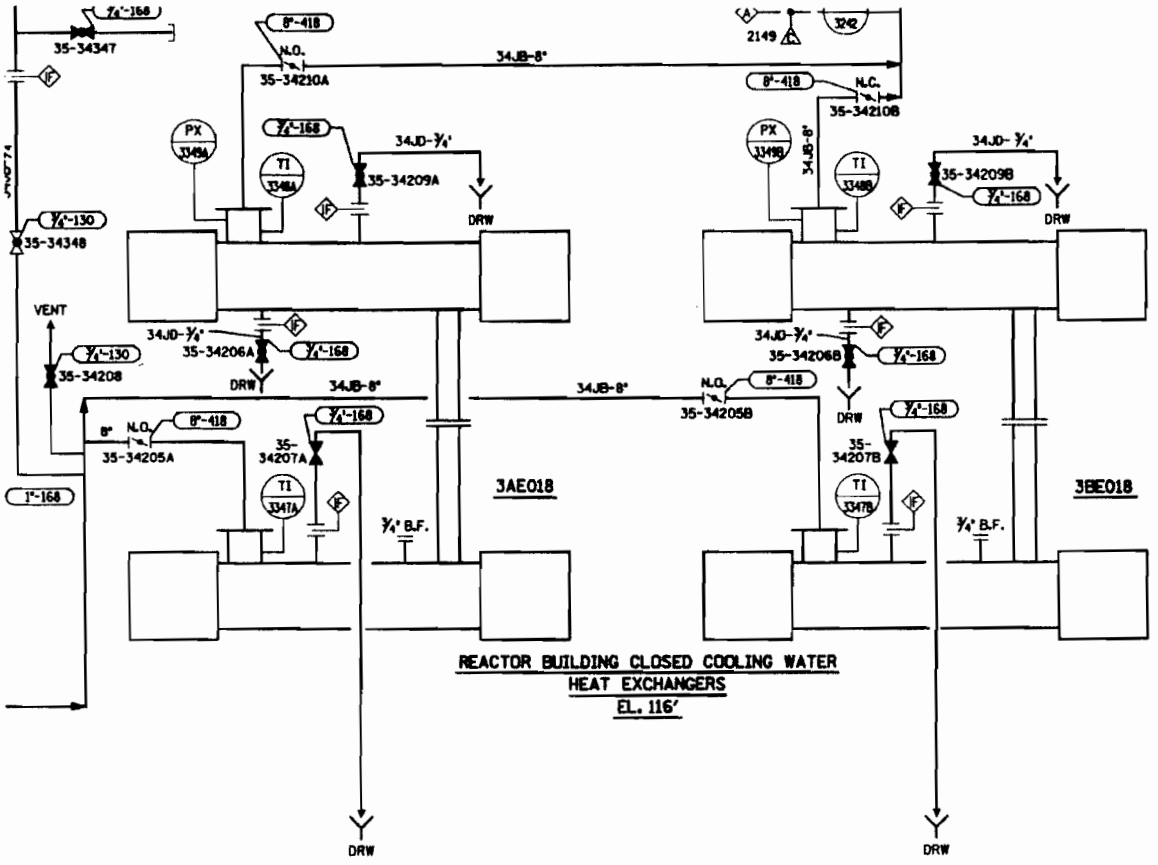
When the RBCCW, Service Water and Emergency Service Water isolation points, vent paths, and drain paths to the 3B RBCCW heat exchanger have been identified, and the Control Room Supervisor informed, the evaluator will terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

**A suspected tube leak has been identified on the standby 3B Reactor Building Closed Cooling Water (RBCCW) heat exchanger 3BE018. The Work Control Supervisor will be developing an Abnormal Component Position Sheet for isolation, venting, and draining of the 3B RBCCW heat exchanger.**

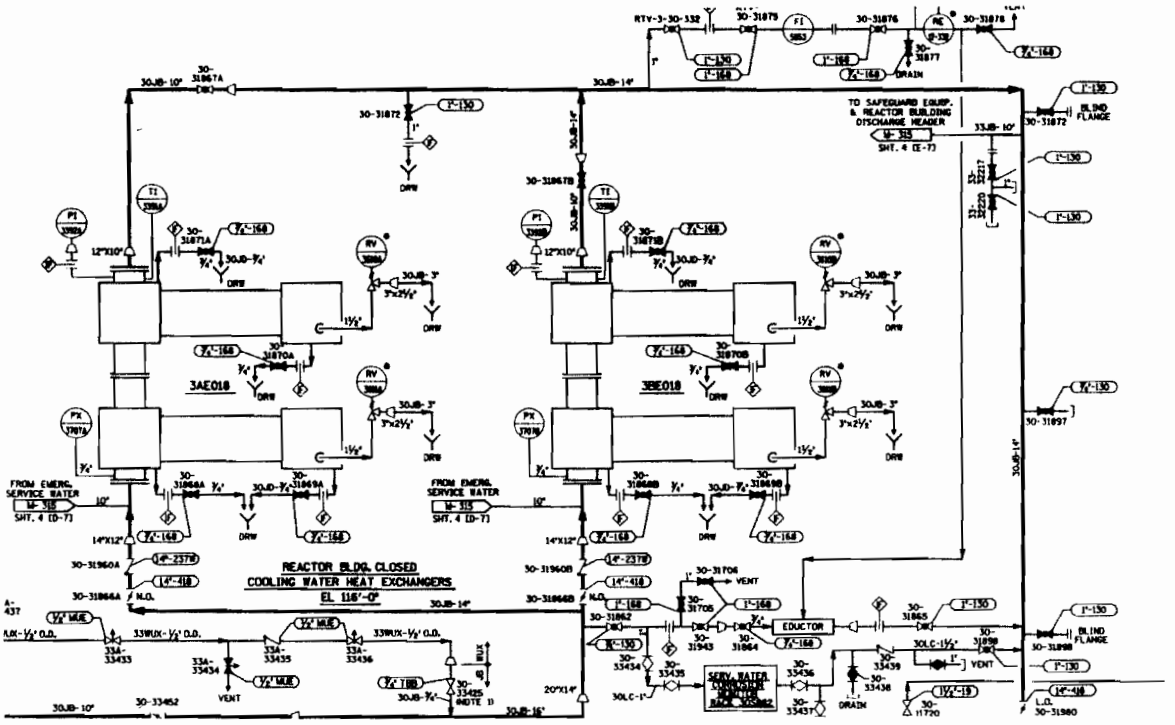
## INITIATING CUE

**The Control Room Supervisor directs you to identify the components and their required positions to isolate, vent and drain the tube and shell side of the 3B RBCCW heat exchanger. Document your results on this CUE SHEET:**




# RBCCW Heat Exchangers

M-316 sheet 3




# Service Water to RBCCW HX

M-314 sheet 8

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR-258C |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 001 |
| AUTHOR: | M. J. Kelly | TYPIST: | jav |
| TITLE: | PRO DUTIES FOR A LIQUID RADWASTE DISCHARGE | | |

APPROVALS:

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

APPROVED FOR USE: _____ Signature / Title _____ Date

EFFECTIVE DATE: _____/_____/_____

| | | |
|---|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ | |
| EMPLOYEE ID#: _____ | COMPLETION DATE: _____ | |
| COMMENTS: | | |
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2730130202 / PLOR-258C K/A: 2.3.11

URO: 3.8 SRO: 4.3

TASK DESCRIPTION: Ability to control radiation releases.

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. AT2 – In progress ST-C-095-805-2, Rev. 13, completed through step 6.12.8.

C. REFERENCES

1. ST-C-095-805-2, Rev. 13, "Liquid Radwaste Discharge".

D. TASK STANDARD

1. Satisfactory task completion is indicated when section 6.13 has been completed in its entirety.

2. Estimated time to complete: 12 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to set-up the plant in preparation for a Liquid Radwaste discharge. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Both units are operating at 100% power.

2. The Floor Drain Sample Tank (FDST) needs to be discharged.

3. Chemistry and Shift Management have completed ST-C-095-805-2, "Liquid Radwaste Discharge" through step 6.12.8.

4. Six Circulating Water Pumps are in operation.

5. The discharge Canal-To-Intake Pond crosstie gate is closed.

6. The PRO review and set-up has not been completed.

G. INITIATING CUE

You are the PRO. Complete section 6.13 of ST-C-095-805-2 "Liquid Radwaste Discharge" in preparation for a liquid radwaste discharge.

## H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Record actual number of operating Circulating Pumps. | P | Verifies six Circulating Pumps are operating from Task Conditions/Prerequisite information, record and initial step 6.13.1. |
| *2 | Set the HI Trip Setpoint. | P | Manually adjust the HI Setpoint Pot setting for RIS-0-17-350 to $\leq$ 3.81, and record and initial step 6.13.2. |
| *3 | Set the HI HI Trip Setpoint. | P | Manually adjust the HI HI Setpoint Pot setting for RIS-0-17-350 to $\leq$ 3.84, and record and initial step 6.13.3. |
| 4 | Mark step 6.13.4 "N/A" | P | Step 6.13.4 is reviewed and marked "N/A". |
| 5 | Review PRO steps. | P | Visually verify all the PRO steps in section 6.13 are complete, and initial step 6.13.5 SAT. |
| 6 | Record your name and initials. | P | Print your name and initials in Section 10.0. |
| 7 | Inform Control Room Supervision of completion of task. | P | Inform Control Room Supervision of completion of section 6.13 of ST-C-095-805-2 "Liquid Radwaste Discharge". |
| 8 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

## I. TERMINATING CUE

When Section 6.13 of ST-C-095-805-2 has been completed, terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. Both units are operating at 100% power.

2. The Floor Drain Sample Tank (FDST) needs to be discharged.

3. Chemistry and Shift Management have completed ST-C-095-805-2, "Liquid Radwaste Discharge" through step 6.12.8.

4. Six Circulating Water Pumps are in operation.

5. The discharge Canal-To-Intake Pond crosstie gate is closed.

6. The PRO review and set-up has not been completed.

## INITIATING CUE

You are the PRO. Complete section 6.13 of ST-C-095-805-2 "Liquid Radwaste Discharge" in preparation for a liquid radwaste discharge.

**ST-C-095-805-2 LIQUID RADWASTE DISCHARGE**

TEST FREQUENCY: Unscheduled (See Section 1.0)
TECH SPEC: 5.5.1 **AND** ODCMS Sections 4.8.B.1.1, 4.8.B.1.2, 4.8.B.1.3, 4.8.B.3.1, 4.8.B.3.2, Table 4.8.B.1. Func. 1 **AND** Func. 4,4.8.B.4.3, 4.8.B.4.4, **AND** 4.8.B.4.5
APPLICABILITY: At all times

1

| TANK To Be DISCHARGED: | SOURCE: *FDST* CSAR No: *176-10* |
|---|---|

Approved By SMgt: **N/A** _____ __/__/__ _____
Printed Name Time Date Initials

2 **INITIAL** one of the following Test Results:

A: All * steps are **SATISFACTORY** _____

B: One **OR** More * steps are **UNSATISFACTORY** [redacted]
Refer to Section 9.0 for Tech Spec LCO's

Performed By: *Chem Tech* *Current* *Today* *C.T.*
(CT) Printed Name Time Date Initials

Reviewed By: / /
(SMgt) Printed Name Time Date Initials

Completed By: / /
(CTR) Printed Name Time Date Initials

UNSAT Notification:
(**N/A IF** SAT) SMgt Discretion: Plant Mgr **OR** Others

Notified By: / /
(**N/A IF** SAT)

3 **IF** other portions of the test did **NOT** function properly, **OR** other discrepancies were noted, **THEN COMPLETE** the following:

**DESCRIBE** discrepancies/actions taken: A/R **OR** ETT #: _____

_____

4 Reviewed/Approved
CHEM Staff: __/__/__
Printed Name Time Date Initials

## 1.0 PURPOSE

This procedure prescribes normal methods to be used for the discharge of planned batch releases of liquid radioactive waste to the discharge canal. Also provided is the mechanism to verify initial conditions, complete required calculations **AND** record specified data associated with radioactive liquid effluents. This procedure satisfies Offsite Dose Calculation Manual (ODCM) surveillance requirements for 4.8.B.1.1, 4.8.B.1.2, 4.8.B.1.3, 4.8.B.3.1, 4.8.B.3.2, Table 4.8.B.1.Func. 1 **AND** Func. 4, 4.8.B.4.3, 4.8.B.4.4, **AND** 4.8.B.4.5. This procedure may be TC'ed. However, a thorough review of the UFSAR (for example, Section 9.2, Liquid Radioactive Waste System) must be completed as part of the TC process. **WHEN** TCing **OR** revising this document, **THEN** ensure that the requirements of the procedure, as described in the UFSAR, are satisfied.

## 2.0 TEST EQUIPMENT

None.

## 3.0 PREREQUISITES

Initial

### 3.1 Document Review

3.1.1 **ENSURE** procedure is current revision. C.T. CT

3.1.2 **OBTAIN** CY-PB-120-401 " Liquid Radioactive Waste" for tank to be released. C.T. CT

### 3.2 Other Prerequisite Activities

3.2.1 **RECORD** the tank to be discharged Source **AND** CSAR No. in Section 1 of this test's cover sheet. C.T. CT

### 3.3 Test Initiation

3.3.1 This test has been initiated in accordance with CY-PB-120-401.

### 3.4 Equipment Configuration

None.

### 3.5 Required Redundant Safety Related Equipment

None.

### 3.6 Approval to Start Test

None.

## 4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS

### 4.1 Plant Impact Statement

4.1.1 This procedure does **NOT** impact plant availability in any manner **AND** may be performed in any Reactor Mode.

### 4.2 Precautions

None.

### 4.3 Limitations

4.3.1 **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** the following alarms shall be clear prior to **AND** during release:

1. Alarm Panel 204 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL"
2. Alarm Panel 304 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL"

4.3.2 **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** a minimum of three circulating water pumps must be in operation during the release of radioactive liquid to the discharge canal.

4.3.3 **IF** the release is terminated for lack of dilution flow, **THEN** it only may be restarted **WHEN** the calculated release conditions are reestablished.

### 4.4 General Instructions

4.4.1 The Chemistry Technician (CT) initiates this test as required by CY-PB-120-401 criteria **AND** performs all CT initialed steps. The CT forwards this test to Shift Supervisor (SMgt) for review **AND** approval; completing all SMgt initialed steps. SMgt **THEN** forwards test to Plant Reactor Operator (PRO). The PRO performs all PRO initial steps **AND** forwards to Radwaste Operator (RWO). The RWO **THEN** performs all RWO initialed steps **AND** forwards this test to SMgt for review of all Operations' responsible steps. The SMgt places this test in the Chemistry bin in the Main Control Room for retrieval **AND** review by Chemistry Technician Reviewer (CTR).

4.0 **PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS** (Continued)

4.4.2 **IF** any procedure step **CANNOT** be completed **OR** produces an unexpected response, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO **OR** SMgt **AND** Chemistry Supervision.

4.4.3 **IF** any Black Box is initialed, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO **OR** SMgt **AND** Chemistry Supervision.

4.4.4 This procedure shall be aborted **WHEN** it is discovered that a Tank is **NOT** going to be released.

4.4.5 **IF** procedure is aborted, **THEN NOTIFY** SMgt **AND WRITE "TEST ABORTED"** in Section 3 of Cover Page.

4.4.6 All persons who initial steps in Sections 3.0, 6.0, **OR** 7.0 are responsible for completing Section 10.0.

4.4.7 All applicable * steps are identified immediately in front of the initials.

5.0 **ACCEPTANCE CRITERIA**

The following conditions must be met:

1. Copy of Gamma Isotopic Analysis Report attached to this procedure.

2. Tank to be released has been processed through one **OR** more of these systems: Waste Collector Filter **AND** Demineralizer, Floor Drain Filter, Fuel Pool Filter Demineralizer, Chemical/Oily Waste Cleanup. (Epicore oil/water emulsion), Laundry Drain Filter **OR** Projected Body Dose for Month is less than 0.12 mRem **AND** Projected Organ Dose for Month is less than 0.40 mRem.

3. RIS-0-17-350 "Rad Waste Effluent" Rad Monitor operable.

4. FR-0-20-441 "RWS Low Purity Waste" Flow Recorder/Monitor operable.

5. FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot **AND** associated Flow Control Valve are operable.

6. Actual No. of Circ Pumps Providing Dilution is greater than **OR** equal to the Required No. of Circ Pumps Providing Dilution.

7. RIS-0-17-350 HI Trip Setpoint is less than **OR** equal to Required HI Trip CPS.

**5.0 ACCEPTANCE CRITERIA** (Continued)

8. RIS-0-17-350 HI HI Trip Setpoint is less than **OR** equal to Required HI HI Trip CPS.

9. Actual Maximum Release Rate GPM is less than **OR** equal to the Required Maximum Release Rate value.

10. Actual % Setting for Discharge is less than **OR** equal to the Required Maximum % Setting for Discharge.

11. Sample retained for Monthly Composite.

12. Every release Start **AND** Stop Time has been recorded on the appropriate data chart.

**6.0 PERFORMANCE STEPS**

Initial
Sat UnSat

**NOTE**

Steps 6.1 and 6.2 may be performed in any order or concurrently.

6.1 **RECORD** chemistry data obtained in the performance of CY-PB-120-401, the tank source **AND** the associated CSAR No. on Data Sheet 1 below. **CM-1**

C.T.
CT

6.2 **RECORD** the tank source **AND** its associated CSAR No. on all other applicable data sheets. **CM-1**

C.T.
CT

6.0 **PERFORMANCE STEPS** (Continued)

Initial
Sat Unsat

**NOTE**

1. **IF** the water placed in 0BT061 is to be considered "Processed", **THEN** an RW-PB-625, Attachment 4, (as directed from RW-PB-591) will be given to Chemistry for attachment to ST-C-095-805-2.
2. **IF** the water placed in 0BT061 is considered "Unprocessed", **THEN** an RW-592, Exhibit 9.1 will be given to Chemistry for attachment to ST-C-095-805-2.
3. **IF** the water placed in 0BT061 is "Post Flush" demineralized water, **THEN** no further documentation will be given to Chemistry for ST-C-095-805-2, since the contents of the tank will be processed by the Laundry Drain Tank filter.
4. Laundry Drain Tank water that is **NOT** processed by the Epicore Water Emulsion System shall be dispositioned in accordance with RW-592, "Transfer of Unprocessed Waste Water to the "B" Laundry Drain Tank". In this case, the Laundry Drain Tank contents will either be considered "Unprocessed" water or will be considered "Processed" by the Laundry Drain Filter, as determined by Chemistry/Radwaste Management.

6.3 **IF** tank to be discharged has **NOT** been processed through a Radwaste system, as specified in ODCMS 3.8.B.4, **THEN CALCULATE AND RECORD** Projected Body Dose **AND** Projected Organ Dose for Month on Data Sheet 1. **OTHERWISE, N/A** the applicable blocks for this step **AND** on Data Sheet 1. (ODCMS 3.8.B.4)

C.T.
CT

6.3.1 **VERIFY** Projected Organ Dose is less than 0.40 mRem.

*N/A ☐
CT

6.3.2 **VERIFY** Projected Body Dose is less than 0.12 mRem.

*N/A ☐
CT

**DATA SHEET 1**

**TANK TO BE DISCHARGED SOURCE:** *FDST* **CSAR No.** *176* - *10*

**REASON FOR DISCHARGE** *Water Inventory Control – high silia*

**RECIRCULATION TIME (minutes)** *45*

| ANALYSIS | ANALYSIS RESULT | LIMIT FOR DISCHARGE | REMARKS |
|---|---|---|---|
| CONDUCTIVITY | *0.91* uS/cm | < 2500 uS/cm [V] | ✓ |
| pH | *NR* | 4.0 - 10.0 [A] | ✓ |
| TEMPERATURE | *24.5* C | AS READ[1] | ✓ |
| TURBIDITY | *0.861* NTU | < 30 NTU [V] | ✓ |
| GAMMA SCAN TOTAL ACTIVITY | *4.85 n 7* μCi/mL | <1 E-4 μCi/mL [F] | ✓ |
| ESTIMATED BODY DOSE | *0* mRem | 0.05 mRem [V] | ✓ |
| ESTIMATED ORGAN DOSE | *0* mRem | 0.15 mRem [V] | ✓ |
| THE FOLLOWING IS REQUIRED FOR RELEASE OF UNPROCESSED TANKS ONLY (ODCM ACCEPTANCE CRITERIA) | | | |
| PROJECTED BODY DOSE FOR MONTH | *N/A* mRem | 0.12 mRem [D] | ✓ |
| PROJECTED ORGAN DOSE FOR MONTH | *N/A* mRem | 0.40 mRem [D] | ✓ |

[F] = **IF** THE ACTIVITY IS LESS THAN OR EQUAL TO 1.0E-3, **THEN** A VARIANCE MAY BE GRANTED, **OTHERWISE IF** THE ACTIVITY IS GREATER THAN 1.0E-3, **THEN** A VARIANCE MAY NOT BE GRANTED UNLESS A PROJECTED DOSE IS CALCULATED, COMPARED TO THE REGULATORY LIMITS, **AND** COMMUNICATED TO THE CONTROL ROOM.

[V] = AN ADMINISTRATIVE LIMIT FOR WHICH A VARIANCE MAY BE OBTAINED FROM CHEMISTRY SUPERVISION **OR** ON-CALL INDIVIDUAL.

[A] = CORRECTION OF pH FOR RELEASES MAY BE MADE BY DILUTION. pH IS NOT REQUIRED AND pH LIMIT DOES **NOT** APPLY **IF** CONDUCTIVITY OF TANK IS LESS THAN 2.5 μS/cm.

[D] = THIS LIMIT APPLIES ONLY TO RELEASES **WHEN** THE SAMPLED TANK'S CONTENTS HAVE **NOT** BEEN PROCESSED THROUGH AT LEAST ONE RADWASTE SUBSYSTEM **OR** EQUIVALENT PER ODCMS BASES B 3.8.
(See CY-PB-120-401)

[1] Required on tanks to be released WHEN the conductivity is greater than OR equal to 2.5 μS/cm

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.4 **VERIFY** tank sample results recorded on Data Sheet 1 are Satisfactory for release to discharge canal per CY-PB-120-401.

C.T.
CT

**NOTE**

1. Variances may **NOT** be granted for any projected dose limit which has been exceeded.
2. **IF** a Variance is Required **AND NOT** granted, **THEN** this test should be aborted.

6.5 **IF** any chemical analysis exceeds its Limit For Discharge, **THEN RECORD** "Variance Required" in remarks section of Data Sheet 1 **AND** obtain approval for Discharge with a "Variance". **OTHERWISE, N/A** this Step. **CM-2**

N/A
CT

6.5.1 **IF** a "Variance" was required for discharge, **THEN CONTACT** Chemistry Supervision **OR** on-call individual for Variance **AND RECORD** Name of Chemistry Supervisor **OR** responsible Staff person granting "Variance(s)" below:

(**IF** a Variance is **NOT** required, **THEN N/A** these spaces for this step.)

N/A
Name _____ Time ___/___/___ Date

N/A
CT

6.6 **ATTACH** a copy of the Gamma Isotopic Analysis Report to this test. (ODCMS 4.8.B.1.1, 4,8.B.1.2, 4.8.B.1.3, Table 4.8.B.1 Func. 1 & 4)

* C.T.
CT

6.0 **PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.7 **VERIFY** a portion of sample (approx 1 Liter) retained for Monthly composite. C.T. CT

**NOTE**

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow setpoints (Section 6.10).

6.8 **OBTAIN** the Background Count Rate for RIS-0-17-350 in counts per second (CPS) from the PRO **AND CALCULATE** RIS-0-17-350 "Rad Waste Effluent" Monitor HI Trip **AND** HI HI Trip Settings using formulas below. (Calculations are in accordance with ODCM.)

6.8.1 **CALCULATE** Monitor Net CPS.

0.532 X $\frac{6}{\text{Well Counter net cpm/mL}}$ = $\frac{3.19}{\text{Monitor Net CPS}}$

C.T. CT

6.8.2 **CALCULATE** Gross CPS

$\frac{50}{\text{RIS-0-17-350 CPS Background Count Rate}}$ + $\frac{3.19}{\text{Monitor Net CPS}}$ = $\frac{53.19}{\text{Gross CPS}}$

C.T. CT

6.8.3 **DETERMINE** log CPS from Gross CPS.

log ($\frac{53.19}{\text{Gross CPS}}$) = $\frac{1.73}{\text{log CPS}}$ C.T. CT

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.8.4 **CALCULATE** Adjusted Log CPS

1.37 X $\frac{\textit{1.73}}{\text{Log CPS}} = \frac{\textit{2.37}}{\text{Adjusted Log CPS}}$

*C.T.*
CT

6.8.5 **CALCULATE** RIS-0-17-350 HI Trip Setpoint **AND RECORD** results as Required RIS-0-17-350 HI Trip Value on Data Sheet 3. (ODCMS 3.8.B.3.C)

1.44 + $\frac{\textit{2.37}}{\text{Adjustment Log CPS}} = \frac{\textit{3.81}}{\text{Hi Trip Setting}}$

*C.T.*
CT

6.8.6 **CALCULATE** RIS-0-17-350 HI HI Trip Setpoint **AND RECORD** results as Required RIS-0-17-350 HI HI Trip Value on Data Sheet 3. (ODCMS 3.8.B.3.C)

1.47 + $\frac{\textit{2.37}}{\text{Adjustment Log CPS}} = \frac{\textit{3.84}}{\text{Hi Hi Trip Setting}}$

*C.T.*
CT

**NOTE**

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow set points (Section 6.10).

6.8.7 **PERFORM** a Worker Verification of calculations made in Section 6.8. Any discrepancies between the results of section 6.8 **AND** the worker verification shall be resolved prior to the release of the affected tank.

*O.T.*
CT

6.0 **PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.9 **CALCULATE** the Maximum Allowed Tank Release Rate as follows: (ODCMS 4.8.B.1.1)

6.9.1 **OBTAIN** position of Discharge Canal-To-Intake crosstie gate from the PRO **AND CIRCLE** the position (OPEN **OR** CLOSED) in Section 1.0 of Data Sheet 2.

C.T.
CT

1. **IF** Crosstie Gate is CLOSED, **THEN PERFORM** the following to complete Data Sheet 2 **AND** Data Sheet 3, **OTHERWISE, N/A** the spaces in this step.

a. **RECORD "N/A"** in spaces of Section 2.0 of Data Sheet 2.

C.T.
CT

b. **OBTAIN** the Actual Number of Circ Pumps Operating from the PRO **AND RECORD** this number in Sections 3.0 **AND** 5.0 of Data Sheet 2 **AND ENTER** "1" for the "Required No. of Circ Pumps Operating" on Data Sheet 3.

C.T.
CT

2. **IF** the Crosstie Gate is OPEN, **THEN PERFORM** the following to complete Data Sheet 2 **AND** Data Sheet 3, **OTHERWISE, N/A** the spaces in this step.

a. **OBTAIN** the River-To-Intake Pond Differential Level Readings from the PRO **AND RECORD** in Section 2.0 of Data Sheet 2.

N/A.
CT

6.0 **PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

b. **OBTAIN** the Actual Number of Circ Pumps Operating from the PRO **AND RECORD** in Section 3.0 of Data Sheet 2. Also **RECORD** "3" for the "Required No. of Circ. Pumps Operating" on Data Sheet 3. (A minimum of three circ pumps must be operating.) N/A CT

c. Using Section 4.0 of Data Sheet 2, **DETERMINE** the No. Of Circ. Pumps Providing Dilution **AND RECORD** this value in Section 5.0. N/A CT

**DATA SHEET 2**
**CALCULATION OF NUMBER OF CIRC PUMPS PROVIDING DILUTION**
**(PRE-RELEASE DATA)**

**TANK TO BE DISCHARGE SOURCE:** *FDST* **CSAR No.** *176* - *10*

| | |
|---|---|
| 1.0 Discharge Canal-To-Intake crosstie gate | **POSITION: OPEN OR CLOSED** (Circle current ~~position~~) |

| | Traveling Screens Outer Screens ΔL | |
|---|---|---|
| **2.0 RIVER-TO-INTAKE POND DIFFERENTIAL LEVEL READINGS** | < At Control Room > | |
| | DLI-2207 @ Console 20C007A *N/A* "$H_2O$ | DLI-3207 @ Console 30C007A *N/A* "$H_2O$ |

| | |
|---|---|
| **3.0 NUMBER OF CIRC PUMPS OPERATING** | *6* |

**4.0** USING THE CHART BELOW DETERMINE THE NUMBER OF PUMPS PROVIDING DILUTION FOR THIS RELEASE. TAKE THE ACTUAL NUMBER OF CIRC PUMPS OPERATING FROM SECTION 3.0 OF THIS DATA SHEET, READ DOWN THE COLUMN TO THE HIGHEST DIFFERENTIAL LEVEL RECORDED IN SECTION 2.0 OF THIS DATA SHEET, MOVE ACROSS THE ROW AND FIND THE NUMBER OF CIRC PUMPS PROVIDING DILUTION. IF EITHER DLI-2207 OR DLI-3207 ARE INOPERABLE, THEN TAKE THE NUMBER OF CIRC PUMPS OPERATING FROM SECTION 3.0 AND SUBTRACT 2.

| | ACTUAL NUMBER OF CIRC PUMPS OPERATING | | | | No. OF CIRC PUMPS PROVIDING DILUTION |
|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | |
| Δ LEVEL " WATER | ---- | ---- | ---- | 0 - 1.8 | 5 |
| | ---- | ---- | 0 - 2.4 | 1.8 - 10 | 4 |
| | ---- | 0 - 2.7 | 2.4 - 10 | ---- | 3 |
| | 0 - 3.1 | 2.7 - 10 | ---- | ---- | 2 |
| | 3.1 - 10 | ---- | ---- | ---- | 1 |

| | |
|---|---|
| **5.0 No. OF CIRC PUMPS PROVIDING DILUTION** | *6* |

6.0 **PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.9.2 **OBTAIN** the Max Discharge Flow (gpm) from the Gamma Isotopic Analysis Report **AND ENTER** for maximum rate to discharge canal on Data Sheet 4.

C.T.
CT

6.10 **CALCULATE** the High **AND** Low Flow Set Points as directed below: (Calculations are in accordance with the ODCM.)

> **NOTE**
>
> **IF** the calculated value is greater than 100%, **THEN RECORD** 100% for the setting values.

6.10.1 **DETERMINE** Maximum Allowable discharge settings as follows **AND RECORD** as "High Flow" **AND** "Low Flow" in applicable spaces on Data Sheet 4. (ODCMS 3.8.B.3c)

1. High Flow Discharge

$$\frac{1.2 \times \text{Max Release Rate } \mathit{300} \text{ GPM}}{3.0} = \frac{\mathit{100}\ \%}{\text{Setting}}$$

C.T.
CT

2. Low Flow Discharge

$$\frac{1.2 \times \text{Max Release Rate } \mathit{300} \text{ GPM}}{0.15} = \frac{\mathit{100}\ \%}{\text{Setting}}$$

C.T.
CT

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

**NOTE**

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow set points (Section 6.10).

6.10.2 **PERFORM** a Worker Verification of calculations made in Section 6.10. Any discrepancies between the results of section 6.10 **AND** the worker verification shall be resolved prior to the release of the affected tanks.

O.T. _____
CT

6.11 **REVIEW** all CT responsible steps in Sections 6.1 through 6.10 for completeness, **RECORD** name **AND** initials in Section 10.0, Participants Record, **SIGN** cover sheet of this test at "Performed By:" **AND FORWARD** this procedure to SMgt.

C.T. _____
CT

6.12 SMgt Review **AND** Signature

6.12.1 **VERIFY** all CT steps to this point have been Initialed **AND** completed Satisfactorily.

S.M. _____
SMgt

6.12.2 **VERIFY**, using an appropriate calculating device, the calculations performed in Section 6.8 **AND** Section 6.10 by the CT are correct **AND** that the correct results have been recorded on Data Sheet 3 **AND** Data Sheet 4.

S.M. _____
SMgt

6.12.3 **VERIFY** that the sample tank named on the cover sheet of this test is intended to be released.

S.M. _____
SMgt

6.12.4 **GRANT** Permission to operate HV-0-20C-144 "Waste Sample PP Disch To Pond" **AND** HV-0-20C-146 "Outer Block Valve for Waste Sample Tank Disch to River". **OTHER** **N/A** this step.

S.M. _____
Mgt

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.12.5 **VERIFY** RIS-0-17-350 "Rad Waste Effluent" Rad Monitor is operable. (ODCMS 3.8.B.3a)

* S.M. ☐
SMgt

6.12.6 **VERIFY** FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot **AND** associated Flow Control Valve are operable (This means that there are **NO** ETTs **OR** A/Rs against this equipment). (ODCMS 3.8.B.3c)

* S.M. ☐
SMgt

6.12.7 **RECORD** name **AND** initials in Section 10.0, Participants Record. S.M. ____
SMgt

6.12.8 **FORWARD** this test to the PRO. S.M. ____
SMgt

| **DATA SHEET 3** | |
|---|---|
| **TANK TO BE DISCHARGED SOURCE:** FDST **CSAR No.** 176-10 | |
| PLANT SYSTEM REQUIRED PARAMETERS FOR LIQUID RADWASTE RELEASE | REQUIRED VALUE |
| Required No. of Circ. Pumps Operating | 1 PUMPS |
| Required RIS-0-17-350 HI Trip Setpoint | 3.81 POT SETTING |
| Required RIS-0-17-350 HI HI Trip Setpoint | 3.84 POT SETTING |

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.13 PRO Review **AND** set-up of Plant in Preparation For Discharge

6.13.1 **RECORD** the Actual No. of Circ. Pumps Operating below **AND VERIFY** the Actual No. of Circ. Pumps Operating is greater than **OR** equal to the required No. of Circ. Pumps as recorded on Data Sheet 3. (ODCMS 4.8.B.1.1)

Actual No. of Circ. Pumps Operating ____

* _____ ☐
PRO

6.13.2 **SET** RIS-0-17-350 HI Trip Setpoint to less than **OR** equal to Required value from Data Sheet 3 **AND RECORD** Actual Setpoint POT value below: (ODCMS 3.8.B.3.c)

Actual HI Trip Pot Setting _____

* _____ ☐
PRO

6.13.3 **SET** RIS-0-17-350 HI HI Trip Setpoint to less than **OR** equal to Required value **AND RECORD** the Actual HI HI Setpoint Pot value below: (ODCMS 3.8.B.3.c)

Actual HI HI Trip Pot Setting _____

* _____ ☐
PRO

6.13.4 **IF** the discharge Canal-To-Intake Pond crosstie gate is OPEN, **THEN VERIFY** the following. **OTHERWISE, N/A** the spaces in this step.

1. Alarm Panel 204 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL" is CLEAR.

_____ _____
PRO

2. Alarm Panel 304 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL" is CLEAR.

_____ _____
PRO

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.13.5 **REVIEW** all PRO steps, to this point, in Section 6.13 for completeness.

_____ _____
PRO

6.13.6 **RECORD** name **AND** initials in Section 10.0, Participants Record, **AND FORWARD** this test to the Radwaste Operator (RWO).

_____ _____
PRO

| **DATA SHEET 4** | |
|---|---|
| **TANK TO BE DISCHARGED SOURCE:** *FDST* **CSAR No.** *176-10* | |
| RADWASTE SYSTEM REQUIRED PARAMETERS PRIOR TO LIQUID RADWASTE RELEASE | REQUIRED VALUE |
| FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot | *100* % |
| FS-0-20-493 "RWS Low Purity Waste" Low Flow Trip Set Pot | *100* % |
| MAXIMUM Release Rate to Discharge Canal | *300* GPM |

6.14 RWO ESTABLISHMENT OF RADWASTE DISCHARGE (At Radwaste Control Room Panel 00C077)

6.14.1 **VERIFY** tank to be discharged, as written in Section 1 of the coversheet, is the same tank intended to be released.

* _____ ☐
RWO

6.14.2 **VERIFY** tank to be discharged has been processed through one **OR** more of these systems: Waste Collector Filter **AND** Demineralizer, Floor Drain Filter, Fuel Pool Filter Demineralizer, **AND** Chemical/Oily Waste Cleanup (EPICORE Oil/Water Emulsion), Laundry Drain Filter **OR** Projected Body Dose **AND** Projected Organ Dose for the Month have been recorded on Data Sheet 1. (ODCMS 3.8.B.4)

* _____ ☐

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

RWO

6.14.3 **SET** FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot to less than **OR** equal to Required Maximum % Setting for High Flow Discharge as found on Data Sheet 4 above, **AND RECORD** the Actual Setting below:

Actual FS-0-20-493 High Flow Trip Set Pot Setting _____

* _____ ☐
RWO

6.14.4 **SET** FS-0-20-493 "RWS Low Purity Waste" Low Flow Trip Set Pot to less than **OR** equal to Required Maximum % Setting for Low Flow Discharge, as found on Data Sheet 4 above, **AND RECORD** the Actual Setting below:

Actual FS-0-20-493 Low Flow Trip Set Pot Setting _____

* _____ ☐
RWO

6.14.5 **RECORD** RR-0-17-337 **OR** RIS-0-17-350 before Discharge CPS below:

_____ CPS

_____ _____
RWO

6.14.6 **COMMENCE** release of the sampled **AND** analyzed tank as follows:

6.14.6.1 If Sampled and analyzed tank was the Floor Drain Sample Tank, perform SO 20A.1.E and perform a concurrent verification that AO-0-20-227, "Floor Drain Sample Pumps Disch Valve to River" is opened in step 4.20. **Otherwise, N/A this step.**

_____ _____
RWO

_____ _____
CV

**6.0 PERFORMANCE STEPS** (Continued)

| | | Initial Sat | Initial UnSat |
|---|---|---|---|
| 6.14.6.2 | If Sampled and analyzed tank was the 'A' Waste Sample Tank, perform SO 20C.7.N and perform a concurrent verification that AO-0-20-142A, "Discharge Valve for 'A' Waste Sample Pump" is opened in step 4.20. **Otherwise, N/A this step.** | RWO<br>CV | |
| 6.14.6.3 | If Sampled and analyzed tank was the 'B' Waste Sample Tank, perform SO 20C.7.N and perform a concurrent verification that AO-0-20-142B, "Discharge Valve for 'B' Waste Sample Pump" in step 4.20. **Otherwise, N/A this step.** | RWO<br>CV | |
| 6.14.6.4 | If Sampled and analyzed tank was 'B' Laundry Drain Tank, perform SO 20B.7.A and perform a concurrent verification that AO-0-20-191, "Laundry Dr Tk Pumps Disch to Laundry Drain Filter" is opened in step 4.3.11. **Otherwise, N/A this step.** | RWO<br>CV | |

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

**NOTE**

1. Portions of the following Section must be completed during the release.

2. **IF** the release is terminated early for lack of dilution flow, **THEN** it may only be restarted **WHEN** the original release conditions are re-established.

3. The following Steps may be repeated, as applicable, for each release start **AND** stop time.

4. The RIS-0-17-350 Trip Setpoints recorded on Data Sheet 3 correspond to 125% (HI) **AND** 135% (HI-HI) of the radiation monitor reading expected during the release. Typically, any appreciable change in the radiation monitor readings during the release is unusual **AND** should be reported to SMgt.

6.14.7 **RECORD** each release Start Time, Start Date, Stop Time, Stop Date, Start Tank %, Stop Tank %, the FR-0-20-441 Flow (GPM) reading **AND** the RR-0-17-337 (CPS) **OR** RIS-0-17-350 (CPS) as required in chart below: **(N/A** spaces **NOT** used.) (ODCMS 4.8.B.2.1, 4.8.B.3.1, 4.8.B.3.2)

| | TIME | DATE | TANK LEVEL | FR-0-20-441 | RR-0-17-337 **OR** RIS-0-17-350 |
|---|---|---|---|---|---|
| START | | | % | GPM | CPS |
| STOP | | | % | | |

* _____ RWO

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

| | TIME | DATE | TANK LEVEL | FR-0-20-441 | RR-0-17-337 **OR** RIS-0-17-350 |
|---|---|---|---|---|---|
| START | | | % | GPM | CPS |
| STOP | | | % | | |

* _____ RWO

| | TIME | DATE | TANK LEVEL | FR-0-20-441 | RR-0-17-337 **OR** RIS-0-17-350 |
|---|---|---|---|---|---|
| START | | | % | GPM | CPS |
| STOP | | | % | | |

* _____ RWO

6.14.8 **RECORD** below the actual maximum Release Rate GPM value from FR-0-20-441 observed during the release **AND VERIFY** the actual Release Rate is less than **OR** equal to the value recorded on Data Sheet 4. (ODCMS 3.8.B.3.C)

Actual Maximum Release Rate FR-0-20-441

_____ GPM

* _____ RWO

6.14.9 **IF** this release is **NOT** immediately followed by another discharge, **THEN PERFORM** the following post release steps. **OTHERWISE, N/A** these Steps.

1. **RECORD** RR-0-17-337 recorder CPS Reading BEFORE FLUSH.

   _____ CPS

_____ _____ RWO

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

2. **PERFORM** SO 20C.5.B "Liquid Radwaste Discharge Radiation Monitor Flushing."

RWO

3. **RECORD** RR-0-17-337 recorder CPS Reading after flush.

_____ CPS

RWO

6.14.10 **IF** a Waste Sample Tank was Released, **THEN PERFORM** the following. **OTHERWISE N/A** these Steps:

1. **CLOSE** HV-0-20C-144 "Waste Sample PP DISCH To Pond".

RWO

2. **CLOSE** HV-0-20C-146 "Outer Block Valve For Waste Sample Tank Disch To River".

RWO

6.14.11 **REVIEW** all RWO Steps, to this step, in Section 6.14 for accuracy **AND** completeness.

RWO

6.14.12 **RECORD** name **AND** initials in Section 10.0, Participants Record, **AND FORWARD** this test to SMgt for review.

RWO

6.15 SMgt REVIEW OF OPERATIONS' PERFORMANCE AFTER DISCHARGE

6.15.1 **REVIEW** this test to this point for completeness paying attention to the Steps requiring PRO **AND** RWO data entry **AND** initials.

SMgt

6.15.2 **SIGN** coversheet of this test at "Reviewed By:"

SMgt

6.15.3 **PLACE** this test in the Chemistry bin located in the Main Control Room.

SMgt

**6.0 PERFORMANCE STEPS** (Continued)

Initial
Sat UnSat

6.16 CHEMISTRY TECHNICIAN REVIEWER (CTR) COMPLETE THE TEST.

6.16.1 **VERIFY** sample Retained (approximately 1 Liter) for Monthly Radwaste Composite per ST-C-095-833-2, "P-32, FE-55, SR-89 and SR-90, and Tritium Analysis in Liquid Radwaste". (ODCMS Table 4.8.1)

* _____ ☐
CTR

**NOTE**

AWST or BWST volume is 25488 gallons. FDST volume is 19844 gallons. BLDT volume is 1072 gallons.

6.16.2 **USE** data from this release, as applicable, to update OpenEMS records in the computer.

_____
CTR

6.16.3 **ENSURE** all data for the applicable waste tank has been entered into the Chemistry Data Management System (DMS).

_____
CTR

**7.0 PROCEDURE COMPLETION**

Initial

7.1 Independent Verification

None.

7.2 Records Completion

7.2.1 **REVIEW** all Sections of this test **AND VERIFY** these are complete.

_____
CTR

7.2.2 **VERIFY** copy of the Gamma Isotopic Analysis Report attached to this test.

_____
CTR

7.2.3 **COMPLETE** Section 2 of this test's coversheet by signing at "Completed By:" (**AND** Section 3 **IF** applicable) **AND FORWARD** this test to Chemistry Supervision **OR** Staff for review.

_____
CTR

## 8.0 REFERENCES

### 8.1 Governing

8.1.1 ODCMS 3.8.B.3

8.1.2 ODCMS 3.8.B.4

8.1.3 ODCMS 4.8.B.1.1

8.1.4 ODCMS 4.8.B.1.2

8.1.5 ODCMS 4.8.B.1.3

8.1.6 ODCMS 4.8.B.3.1

8.1.7 ODCMS 4.8.B.3.2

8.1.8 ODCMS Table 4.8.B.1

8.1.9 ODCMS 4.8.B.4.3

8.1.10 ODCMS 4.2.B.4.4

8.1.11 ODCMS 4.8.B.4.5

8.1.12 ODCMS Bases B 3.8

8.1.13 CM-1, Licensed Event Report 2-91-036

8.1.14 CM-2, NRC Inspection Report Doc No. 76070103

### 8.2 Interfacing

8.2.1 PBAPS Offsite Dose Calculation Manual (ODCM)

8.2.2 CY-PB-120-401, Liquid Radioactive Waste

8.2.3 ST-C-095-833-2, P-32, FE-55, SR-89 and 90, and Tritium Analysis in Liquid Radwaste

8.2.4 SO 20A.1.E, Floor Drain Sample Tank Release to the Conowingo Pond

8.2.5 SO 20C.7.N, Waste Sample Tank Release to Conowingo Pond

8.2.6 SO 20B.7.A Laundry Drain Tank Release to Conowingo Pond

8.2.7 RW-PB-591, Transfer of Processed Waste Water to the "B" Laundry Drain Tank

8.2.8 RW-PB-592, Transfer of Unprocessed Waste Water to the "B" Laundry Drain Tank

**8.0 REFERENCES** (Continued)

8.2.9 SO 20C.5.B, Liquid Radwaste Discharge Radiation Monitor Flushing

8.3 Developmental

8.3.1 CH-600, Determination of Gamma Isotopic Activity with the Canberra Gamma Spectrometers

8.3.2 10 CFR 20 Appendix B, Table 2, Column 2

8.3.3 10 CFR 50

8.3.4 LS-AA-104, "Exelon 50.59 Review Process"

8.3.5 NPDES Permit No. PA0009733

8.3.6 UFSAR Section 9.2.4.2.4

8.3.7 UFSAR Section 9.2.4.3

8.3.8 UFSAR Section 9.2.5

8.3.9 UFSAR Section 9.2.7

8.3.10 Prints

E-540-55, Sht.1, Console 20C007A Condensate Enhancement Arrangement

M-370, Shts. 1, 2, & 3, Radwaste Process & Disposal System-Liquid

M-371, Sht 5, Radwaste Process and Disposal-Solid

**9.0 ODCMS LIMITING CONDITIONS FOR OPERATION (LCOs)**

Section 3.8.B

## 10.0 PARTICIPANTS RECORD

| Printed Name | Initials |
|---|---|
| *Chem Tech* | *C.T.* |
| *Other Tech* | *O.T.* |
| *Shift Manager* | *S.M.* |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM | QUALIFICATION MANUAL | OJT MODULE |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR-259C |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 002 |
| AUTHOR: | M. J. Kelly | TYPIST: | jav |
| TITLE: | Review and Evaluate Reactor Coolant Chemistry Limits | | |

APPROVALS:

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

APPROVED FOR USE:

_____ _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE ID#: _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____
Signature/Date

| | |
|---|---|
| LMS CODE: | |
| LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 3443100402 / PLOR-259C K/A: 2.1.34
SRO: 3.5

TASK DESCRIPTION: Knowledge of primary and secondary plant chemistry limits

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. CH-10 "Chemistry Goals"
   - Provide candidate blank copy of procedure
   - Fill out four separate CH-10-1 Chemistry Recommendation Forms using Attachment 2 of this JPM as a reference. One form for reactor water, the other three are for A, B, and C condensate pump discharge.

2. ON-126 "High Condensate Conductivity" (give access to if requested)

3. TRM 3.9, RCS Chemistry (give access to if requested)

C. REFERENCES

1. CH-10, Rev. 16, "Chemistry Goals"

2. ON-126, Rev. 3, "High Condensate Conductivity"

3. TRM 3.9, RCS Chemistry

D. TASK STANDARD

1. Satisfactory task completion is indicated when ON-126 "High Condensate Conductivity" reactor coolant chemistry actions and Technical Requirements Manual (TRM) Action Levels are determined in response to a condenser tube leak.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to determine immediate plant impact and compensatory measures, if any, for identified system chemistry limits using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 has been at 100% power for 160 days.

2. The Hydrogen Water Chemistry System is in service.

3. Chemistry has delivered four CH-10-1 Chemistry Recommendation Forms related to Unit 2 condensate conductivity and Reactor Water chloride concentration.

4. PMS conductivity values match values provided on the CH-10-1 forms.

5. All the samples have been verified.

G. INITIATING CUE

The Shift Manager directs you to determine what immediate plant and/or Technical Specification/TRM/ODCM actions, if any, exist for the above conditions.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| ******NOTE TO EVALUATOR******<br><br>**Provide all four CH-10-1 forms to the Examinee at the start of the JPM.** | | | |
| ******NOTE TO EVALUATOR******<br><br>**The following steps can be performed in any order.** | | | |
| 1 | Review the four CH-10-1 Chemistry Recommendation Forms for Unit 2. | P | Review CH-10-1 Chemistry Recommendation Forms.<br><br>Review CH-10 "Chemistry Goals". |
| 2 | Enter ON-126 "High Condensate Conductivity". | P | Recognize that condensate pump discharge conductivity > 0.4 µS/cm is a symptom for entry into ON-126. |
| *3 | Determine that a plant shutdown per GP-3 "Normal Plant Shutdown" is required. | P | Recognize the chemistry change as a severe conductivity intrusion (condenser tube leak) and ON-126 directs a plant shutdown using GP-3. |
| *4 | Determine that the 2A condenser waterbox needs to be removed from service. | P | Determines that ON-126, step 2.4, directs isolation of the source of the high conductivity. Using the CH-10-1 Chemistry Recommendation Forms the examinee determines that conductivity is high on the discharge of the 2C condensate pump which is tied to the 2A waterbox. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *5 | Verify, immediately, by administrative methods that Reactor Coolant System chloride concentration has not been > 0.2 ppm for > 2 weeks in the last calendar year.<br><br>(Cue: if asked to assist with administrative check of chloride concentration, reply as the Chemistry Manager and report that chloride concentration has been < 0.2 ppm for the last calendar year. | P | Recognize that Reactor Coolant System chloride concentration is > 0.2 ppm (actual is 0.22 ppm) limit in TRM Table 3.9-1, therefore, TRM 3.9.B applies.<br><br>TRM 3.9.B applies. Verify that Reactor Coolant System chloride concentration has not been > 0.2 ppm for > 2 weeks in the last calendar year. |
| 6 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the determination of what immediate plant and/or regulatory actions, if any, exist, the evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. **Unit 2 has been at 100% power for 160 days.**

2. **The Hydrogen Water Chemistry System is in service.**

3. **Chemistry has delivered four CH-10-1 Chemistry Recommendation Forms related to Unit 2 condensate conductivity and reactor water chloride concentration.**

4. **PMS conductivity values match values provided on the CH-10-1 forms.**

5. **All the samples have been verified.**

## INITIATING CUE

**The Shift Manager directs you to determine what immediate plant and/or Technical Specification/TRM/ODCM actions, if any, exist for the above conditions.**

ATTACHMENT CH-10-1

ATTACHMENT CH-10-1

EXAMPLE ONLY
CHEMISTRY RECOMMENDATION (CR)

CR #**3659-08**

FROM: CHEMISTRY
TO: SHIFT SUPERVISOR
SUBJECT: CHEMISTRY RECOMMENDATION

.....

SECTION A ** COMPLETED BY SHIFT CHEMIST **

.....

| DATE/TIME | SYSTEM | PARAMETER | LIMITS | VALUE FOUND |
|---|---|---|---|---|
| **To-da-y / Now** | **Unit 2 Condensate** | **2A Condensate Pump Discharge Conductivity** | **0.4 µS/cm** | **0.065 µS/cm** |

IS THIS CR A FOLLOW-UP TO A VERBAL NOTIFICATION? YES (NO)

IF YES, DATE/TIME AND PERSON NOTIFIED. **N/A**
DATE / TIME

**N/A**
PERSON NOTIFIED

CORRECTIVE ACTION REQUIRED: **Confirm, investigate, and determine corrective actions, if any.**

.....

SECTION B ** COMPLETED BY SHIFT OPERATIONS PERSONNEL **

.....

THE FOLLOWING CORRECTIVE ACTION WAS TAKEN: _____

_____

_____

_____

DATE / TIME CORRECTIVE ACTION TAKEN: _____

_____
SHIFT OPERATOR

VERBALLY NOTIFY CHEMISTRY AFTER CORRECTIVE ACTION IS COMPLETED

PERSON NOTIFIED: _____ DATE/TIME _____

***** RETURN THIS SHEET TO CHEMISTRY *****

.....

CHEMISTRY REVIEW: _____ _____
DATE

ATTACHMENT CH-10-1

EXAMPLE ONLY
CHEMISTRY RECOMMENDATION (CR)

CR #**3660-08**

FROM: CHEMISTRY
TO: SHIFT SUPERVISOR
SUBJECT: CHEMISTRY RECOMMENDATION

.....

SECTION A ** COMPLETED BY SHIFT CHEMIST **

.....

| DATE/TIME | SYSTEM | PARAMETER | LIMITS | VALUE FOUND |
|---|---|---|---|---|
| **To-da-y / Now** | **Unit 2 Condensate** | **2B Condensate Pump Discharge Conductivity** | **0.4 µS/cm** | **0.065 µS/cm** |

IS THIS CR A FOLLOW-UP TO A VERBAL NOTIFICATION? YES (NO)

IF YES, DATE/TIME AND PERSON NOTIFIED. **N/A**
DATE / TIME

**N/A**
PERSON NOTIFIED

CORRECTIVE ACTION REQUIRED: **Confirm, investigate, and determine corrective actions, if any.**

.....

SECTION B ** COMPLETED BY SHIFT OPERATIONS PERSONNEL **

.....

THE FOLLOWING CORRECTIVE ACTION WAS TAKEN: _____

_____

_____

_____

DATE / TIME CORRECTIVE ACTION TAKEN: _____

_____
SHIFT OPERATOR

VERBALLY NOTIFY CHEMISTRY AFTER CORRECTIVE ACTION IS COMPLETED

PERSON NOTIFIED: _____ DATE/TIME _____

***** RETURN THIS SHEET TO CHEMISTRY *****

.....

CHEMISTRY REVIEW: _____ _____
DATE

EXAMPLE ONLY
CHEMISTRY RECOMMENDATION (CR)

CR #**3661-08**

FROM: CHEMISTRY
TO: SHIFT SUPERVISOR
SUBJECT: CHEMISTRY RECOMMENDATION

SECTION A ** COMPLETED BY SHIFT CHEMIST **

| DATE/TIME | SYSTEM | PARAMETER | LIMITS | VALUE FOUND |
|---|---|---|---|---|
| **To-da-y / Now** | **Unit 2 Condensate** | **2C Condensate Pump Discharge Conductivity** | **0.4 µS/cm** | **2.6 µS/cm** |

IS THIS CR A FOLLOW-UP TO A VERBAL NOTIFICATION? YES (NO)

IF YES, DATE/TIME AND PERSON NOTIFIED. **N/A**
DATE / TIME

**N/A**
PERSON NOTIFIED

CORRECTIVE ACTION REQUIRED: **Confirm, investigate, and determine corrective actions, if any.**

SECTION B ** COMPLETED BY SHIFT OPERATIONS PERSONNEL **

THE FOLLOWING CORRECTIVE ACTION WAS TAKEN: _____

DATE / TIME CORRECTIVE ACTION TAKEN: _____

_____
SHIFT OPERATOR

VERBALLY NOTIFY CHEMISTRY AFTER CORRECTIVE ACTION IS COMPLETED

PERSON NOTIFIED: _____ DATE/TIME _____

***** RETURN THIS SHEET TO CHEMISTRY *****

CHEMISTRY REVIEW: _____ _____
DATE

ATTACHMENT CH-10-1
EXAMPLE ONLY
CHEMISTRY RECOMMENDATION (CR)

CR #**3662-08**

FROM: CHEMISTRY
TO: SHIFT SUPERVISOR
SUBJECT: CHEMISTRY RECOMMENDATION

.....

SECTION A ** COMPLETED BY SHIFT CHEMIST **

.....

| DATE/TIME | SYSTEM | PARAMETER | LIMITS | VALUE FOUND |
|---|---|---|---|---|
| **To-da-y / Now** | **Unit 2 Reactor Coolant** | **Chlorides** | **≤ 0.2 ppm** | **0.22 ppm** |
| | | **Conductivity** | **< 1.0 µS/cm** | **0.97 µS/cm** |

IS THIS CR A FOLLOW-UP TO A VERBAL NOTIFICATION? YES (NO)

IF YES, DATE/TIME AND PERSON NOTIFIED. **N/A**
DATE / TIME

**N/A**
PERSON NOTIFIED

CORRECTIVE ACTION REQUIRED: **Confirm, investigate, and determine corrective actions, if any.**

.....

SECTION B ** COMPLETED BY SHIFT OPERATIONS PERSONNEL **

.....

THE FOLLOWING CORRECTIVE ACTION WAS TAKEN: _____

_____

_____

DATE / TIME CORRECTIVE ACTION TAKEN: _____

_____

_____
SHIFT OPERATOR

VERBALLY NOTIFY CHEMISTRY AFTER CORRECTIVE ACTION IS COMPLETED

PERSON NOTIFIED: _____ DATE/TIME _____

***** RETURN THIS SHEET TO CHEMISTRY *****

.....

CHEMISTRY REVIEW: _____ _____
DATE

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | Licensed Operator Training | CODE #: | PLOR-347CA |
| COURSE: | Licensed Operator Requalification | REV #: | 000 |
| AUTHOR: | J. A. Verbillis | TYPIST: | jav |
| TITLE: | Evaluation of High CRD Temperature on Control Rod Scram Time (SRO) | | |

APPROVALS: _____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ |
| EMPLOYEE ID NO. _____ | COMPLETION DATE: _____ |
| COMMENTS: | |

| | | |
|---|---|---|
| Training Review for Completeness: | LMS CODE: | |
| _____ Signature/Date | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2011050402 / PLOR-347CA K/A: G2.1.32
SRO: 4.0

TASK DESCRIPTION: Review AO 3.8 Attachment 1 for High CRD Temperature

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Calculator

2. Unit 3 Tech Spec 3.1.3, 3.1.4 and Bases

3. AT2 – In-progress AO 3.8, with data recorded – Required

4. AT3 - Core Map (NF-PB-721, At 7) – Optional – for classroom setting

C. REFERENCES

1. AO 3.8 Rev 0, "Evaluation of High CRD Temperature on Control Rod Scram Time"

2. Tech Spec 3.1.3, 3.1.4 and Bases

3. Core Map, such as NF-PB-721 At 7

D. TASK STANDARD

1. Satisfactory task completion is indicated when Control Rod 18-55 is declared SLOW or INOPERABLE and AO 3.8 is complete.

2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, complete the Shift Management review of the in-progress AO 3.8 for Control Rod 18-55. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 3 is at 100% power.

2. Eight Control Rods (10-35, 14-43, 14-55, 18-59, 22-35, 30-27, 34-51, 42-43) are currently classified as SLOW.

3. Control Rod 18-55 temperature is 405 °F and cannot be lowered.

4. System Manager has provided the latest Scram Time data for CR 18-55:

   Position 46 – 0.343 Sec
   Position 36 – 0.844 Sec
   Position 26 – 1.396 Sec
   Position 06 – 2.599 Sec

5. AO 3.8 has been completed up through Step 4.7, including Attachment 1.

G. INITIATING CUE

As the Control Room Supervisor, review Attachment 1 of AO 3.8, "Evaluation of High CRD Temperature on Control Rod Scram Time" for Unit 3 Control Rod 18-55 and complete AO 3.8. Identify Technical Specification compliance issues and required actions, if any. (Candidate to document results on back of Cue Sheet) (Hand the candidate the in-progress copy of AO 3.8 with Attachment 1 complete through the Independent Verification.)

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | REVIEW AO 3.8 up to and including step 4.6. | P | AO 3.8, "Evaluation of High CRD Temperature on Control Rod Scram Time" is reviewed. |
| ****** NOTE ******<br>**The Alternate Path portion of this JPM begins with the next step.** | | | |
| 2 | RECOGNIZE that Scram Time for Control Rod 18-55 is unacceptable.<br><br>(CUE: If informed, acknowledge as appropriate.) | P | Scram time for position(s) 46, 36, and/or 26 are recognized to be greater than Tech Spec allowance. |
| *3 | DECLARE Control Rod 18-55 "slow".<br><br>(CUE: If informed, acknowledge as appropriate.) | P | Control Rod 18-55 declared slow. |
| 4 | VERIFY Compliance with Technical Specifications 3.1.3 AND 3.1.4.<br><br>(Cue: N/A) | P | TS 3.1.3 and 3.1.4 reviewed. |
| 5 | RECOGNIZE Non-Compliance with LCO 3.1.4.b.<br><br>(CUE: If informed, acknowledge as appropriate.) | P | LCO 3.1.4.b being exceeded is recognized. (Control Rods 14-55, 18-59 are identified as SLOW in the Initiating Cue; Control Rod 18-55 results in THREE Control Rods occupying "adjacent locations".) |
| 6 | NOTIFY EDM and direct that Engineering IMMEDIATELY verify the accuracy of the temperature corrected control rod scram time calculation.<br><br>(CUE: Inform candidate that Engineering concurs with all calculations and control rod speed data.) | P | EDM is involved as required by procedure. |
| ***** NOTE *****<br>**Either of the alternatives in step 7 are acceptable.** | | | |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *7 | DETERMINE that Tech Spec 3.1.4 Condition A Required Actions will require Unit 3 to be placed in Mode 3 within 12 Hours.<br><br>- OR –<br><br>DECLARE Control Rod 18-55 (OR 18-59 OR 14-55) INOPERABLE, and apply Tech Spec 3.1.3 Condition C Required Actions.<br><br>(CUE: If informed, acknowledge as appropriate.) | P | Action Statement understood.<br><br>-OR –<br><br>Tech Spec 3.1.3 ACTION C Required Actions are identified as an acceptable and in fact preferred alternative. (One of the three adjacent rods must be declared INOPERABLE) |
| 8 | Verify an Issue Report is generated for Control Rod 18-55.<br><br>(Cue: IR generated.) | P | Issue Report generated or task to generate issue has been assigned. |
| 9 | Notify System Manager of status of Control Rod 18-55 AND Tech Spec Required Shutdown.<br><br>(Cue: As System Manager, acknowledge report.) | P | System Manager notified. |
| 10 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When Control Rod 18-55 is declared SLOW or INOPERABLE and AO 3.8 is complete, the evaluator will terminate the exercise.

# TASK CONDITIONS/PREREQUISITES

1. Unit 3 is at 100% power.

2. Eight Control Rods (10-35, 14-43, 14-55, 18-59, 22-35, 30-27, 34-51, 42-43) are currently classified as SLOW.

3. Control Rod 18-55 temperature is 405 °F and cannot be lowered.

4. System Manager has provided the latest Scram Time data for CR 18-55:

   Position 46 – 0.343 Sec
   Position 36 – 0.844 Sec
   Position 26 – 1.396 Sec
   Position 06 – 2.599 Sec

5. AO 3.8 "Evaluation of High CRD Temperature on Control Rod Scram Time" has been completed up through Step 4.7, including Attachment 1.

# INITIATING CUE

As the Control Room Supervisor, review Attachment 1 of AO 3.8, "Evaluation of High CRD Temperature on Control Rod Scram Time" for Unit 3 Control Rod 18-55 and complete AO 3.8. Identify Technical Specification compliance issues and required actions, if any. (Document your results on the back of this cue sheet.)

# Attachment 7 – Full Core Control Rod Map

**PREDICTED VALUES**

POWER MWT _____ STATION / UNIT _____/_____

POWER % _____ PATTERN TITLE _____

FLOW MLB/HR (%) _____ VALID FROM _____THROUGH _____

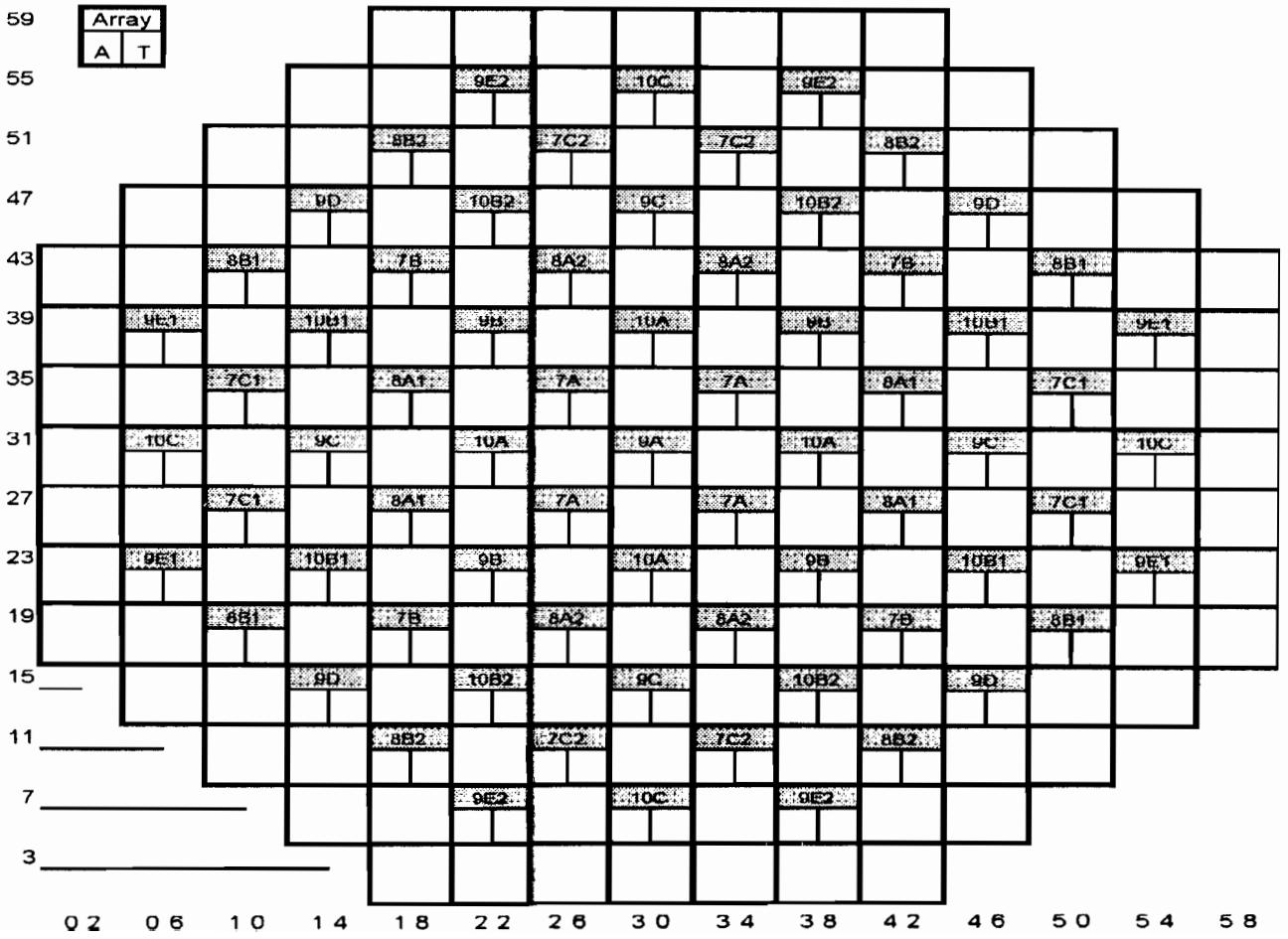
Maximum MFLCPR _____ AT _____ - _____

Maximum MFLPD _____ AT _____ - _____ - _____

Maximum MAPRAT _____ AT _____ - _____ - _____

PREPARED BY_____ APPROVED BY_____

A = Actual Position ● = POSITION 48
T = Target Position



Exelon Nuclear
Peach Bottom Units 2 and 3

# AO 3.8 EVALUATION OF HIGH CRD TEMPERATURE ON CONTROL ROD SCRAM TIME

## 1.0 PURPOSE

This procedure provides the instructions necessary to evaluate the impact of high CRD hydraulic temperature on control rod scram time, as recommended by GE SILs 173 and 173S1, to ensure compliance with Technical Specifications 3.1.3 and 3.1.4.

## 2.0 PREREQUISITES

2.1 CRD hydraulic temperature has reached OR exceeded 350°F.

## 3.0 PRECAUTIONS

3.1 High CRD hydraulic temperature may result in the associated control rod being declared slow in accordance with Technical Specification 3.1.4. Technical Specifications 3.1.3 AND 3.1.4 should be reviewed when this procedure is entered.

## 4.0 PERFORMANCE STEPS

**NOTES**

1. The control rod scram times for Positions 46, 36, 26, and 06 for the associated control rod will be obtained from copies located in the System Status Files of the last performance of either ST-R-003-475-2(3), ST-R-003-485-2(3) or ST-R-003-495-2(3), OR from the control rod scram time database located on computer drive S:\Scram Time\scramtime.mdb.
2. The last performance of ST-R-003-475-2(3), ST-R-003-485-2(3), or ST-R-003-495-2(3) is reviewed first to determine if the associated control rod was included in the scope of testing. If so, the necessary scram times will be obtained from this source since the control rod scram time database may not have been updated to reflect the latest scram time data.
3. IF the associated control rod was NOT included in the scope of testing for the last performance of ST-R-003-475-2(3), ST-R-003-485-2(3), or ST-R-003-495-2(3), THEN the necessary scram times will be obtained from the control rod scram time database.
4. Attachment 1, "Control Rod Scram Time Impact Calculation", will be used to document performance of this procedure.

4.1 IF CRD hydraulic temperature can not be lowered below 350° F, THEN **RECORD** the associated Unit, control rod number

AND CRD hydraulic temperature on Attachment 1 pages 6, 7, 8, and 9.

4.2 **OBTAIN** the control rod scram times for Positions 46, 36, 26, AND 06 for the associated control rod as follows:

1.0 IF the control rod was scram timed in the last performance of ST-R-003-475-2(3), ST-R-003-485-2(3) OR ST-R-003-495-2(3) during the current operating cycle, THEN **RECORD** the control rod scram times documented in the Surveillance Test in the appropriate location in Attachment 1 pages 6, 7, 8, and 9.

N/A

2.0 IF the control rod was NOT timed in the last performance of the Surveillance Tests in the previous step, THEN **OBTAIN** the latest control rod scram times during the current operating cycle from the control rod scram time database located on computer drive S:\Scram Time\scramtime.mdb AND **RECORD** in the appropriate location in Attachment 1 pages 6, 7, 8, and 9.

N/A

3.0 IF the control rod scram time for the current operating cycle could not be obtained by one of the previous steps, THEN **CONTACT** Engineering AND **OBTAIN** the latest control rod scram times during the current operating cycle AND **RECORD** in the appropriate location in Attachment 1 pages 6, 7, 8, and 9.

4.3 **DETERMINE** the Position 46(36, 26, 06) Penalty using Table 1(2, 3, 4) on page 6(7, 8, 9) AND **RECORD** in the appropriate location in Attachment 1.

4.4 **ADD** the Position 46(36, 26, 06) control rod scram time to the Position 46(36, 26, 06) penalty to determine the temperature corrected Position 46(36, 26, 06) control rod scram time AND **RECORD** in the appropriate location in Attachment 1.

4.5 **RECORD** the Maximum Notch 46(36, 26, 06) Scram Time allowed by Tech Spec Table 3.1.4-1 in the appropriate location in Attachment 1.

4.6 **DIRECT** that an Independent Verification be performed for all entries on Attachment 1 AND **DOCUMENT** in the appropriate location in Attachment 1.

4.7 **DIRECT** Reactor Engineering to perform ST-R-003-480-2(3), "Average Scram Time For ODYN/B Minimum Critical Power Ratio (MCPR) requirements," within 72 hours.

Person Contacted: ***R. E. Manager***

Time: ***hh:mm*** Date: ***Today's Date***

4.8 **DETERMINE** if the temperature corrected Position 46(36, 26, 06) control rod scram time is greater than the Maximum Notch 46(36, 26, 06) Scram Time allowed by Tech Spec Table 3.1.4-1.

1.0 IF ALL temperature corrected control rod scram times are less than OR equal to the Maximum Notch Scram Time allowed by Tech Spec Table 3.1.4-1, THEN **GO** to Step 4.11. OTHERWISE, N/A.

2.0 IF ANY temperature corrected control rod scram time is greater than the Maximum Notch Scram Time allowed by Tech Spec Table 3.1.4-1, THEN **GO** to Step 4.9. OTHERWISE, N/A.

4.9 IF ANY temperature corrected control rod scram time is greater than the Maximum Notch Scram Time allowed by Tech Spec Table 3.1.4-1, THEN **DECLARE** the control rod "slow" AND **COMPLY** with Technical Specifications 3.1.3 AND 3.1.4. OTHERWISE, N/A.

4.10 IF ANY control rod scram time is greater than 7 seconds to notch position 06, THEN **DECLARE** the control rod inoperable AND **COMPLY** with Technical Specification 3.1.3. OTHERWISE, N/A.

**CAUTIONS**

1. **In accordance with Technical Specification 3.1.4, specific combinations of "slow" control rods require a plant shutdown. The intent of the following step is to ensure any temperature correction for a control rod that has the POTENTIAL to require a plant shutdown is verified since a plant shutdown either will be, or will not be, performed based on the calculation.**
2. **The following step is not intended to restrain performance of a plant shutdown if required by Technical Specification 3.1.4.**

4.11 REGARDLESS of whether or not the rod was evaluated as slow, IF the control rod is adjacent to another "slow" control rod OR IF 12 other control rods have already been declared

"slow", THEN IMMEDIATELY **NOTIFY** the EDM AND **DIRECT** that Engineering IMMEDIATELY verify the accuracy of the temperature corrected control rod scram time calculation. OTHERWISE, N/A.

4.12 **DOCUMENT** Shift Management review of Attachment 1.

4.13 **INITIATE** an Issue to correct the high CRD temperature condition.

4.14 **NOTIFY** the CRD System Manager that AO 3.8 has been performed AND **FORWARD** Attachment 1 to the System Manager.

5.0 CONTROL STATIONS

5.1 None

6.0 REFERENCES

6.1 GE SIL 173

6.2 GE SIL 173S1, Revision 1

7.0 TECHNICAL SPECIFICATIONS

7.1 3.1.3

7.2 3.1.4

8.0 INTERFACING PROCEDURES

8.1 ARC 2(3)11 G-5, "CRD Hydraulic Hi Temp"

8.2 ST-R-003-475-2(3), "CRD Scram Insertion Timing Following Reactor Scram"

8.3 ST-R-003-485-2(3), "CRD Scram Insertion Timing of Selected Control Rods"

8.4 ST-R-003-495-2(3), "CRD Scram Insertion Timing of Selected Control Rods During Hydro"

Attachment 1: Control Rod Scram Time Impact Calculation — Initial/Date

(Step 4.1) Unit: 3

Associated control rod: 18-55 — URO /Today

Record the CRD Temperature: 405 °F — URO /Today

Position 46 Scram Time Penalty Calculation

(Step 4.2) Position 46 Scram Time: 0.343 sec — URO /Today

(Step 4.3) Position 46 Penalty (from Table 1 below): 0.35 sec — URO /Today

(Step 4.4) Determine the Temperature Corrected Position 46 Control Rod Scram Time by adding the Position 46 Scram Time and Position 46 Penalty: 0.693 sec — URO /Today

(Step 4.5) Maximum Notch Position 46 Scram Time allowed by Tech Spec Table 3.1.4-1: 0.44 sec — URO /Today

**Table 1: GE SIL 173 Position 46 Penalty**

| CRD Temp | Position 46 Penalty |
|---|---|
| ≥ 350° F and < 400° F | 0.07 sec |
| ≥ 400° F | 0.35 sec |

(Step 4.6) Position 46 temperature corrected Control Rod Scram Time Independent Verification performed by: IVR /Today
I.V.

Attachment 1: Control Rod Scram Time Impact Calculation — Initial/Date

(Step 4.1) Unit: 3

Associated control rod: 18-55 — URO /Today

Record the CRD Temperature: 405 °F — URO /Today

Position 36 Scram Time Penalty Calculation

(Step 4.2) Position 36 Scram Time: 0.844 sec — URO /Today

(Step 4.3) Position 36 Penalty (from Table 2 below): 0.60 sec — URO /Today

(Step 4.4) Determine the Temperature Corrected Position 36 Control Rod Scram Time by adding the Position 36 Scram Time and Position 36 Penalty: 1.444 sec — URO /Today

(Step 4.5) Maximum Notch Position 36 Scram Time allowed by Tech Spec Table 3.1.4-1: 1.08 sec — URO /Today

**Table 2: GE SIL 173 Position 36 Penalty**

| CRD Temp | Position 36 Penalty |
|---|---|
| ≥ 350° F and < 400° F | 0.14 sec |
| ≥ 400° F | 0.60 sec |

(Step 4.6) Position 36 temperature corrected Control Rod Scram Time Independent Verification performed by: IVR /Today
I.V.

Attachment 1: Control Rod Scram Time Impact Calculation — Initial/Date

(Step 4.1) Unit: 3

Associated control rod: 18-55 — URO /Today

Position 26 Scram Time Penalty Calculation

(Step 4.2) Position 26 Scram Time: 1.396 sec — URO /Today

(Step 4.3) Position 26 Penalty (from Table 3 below): 0.70 sec — URO /Today

(Step 4.4) Determine the Temperature Corrected Position 26 Control Rod Scram Time by adding the Position 26 Scram Time and Position 26 Penalty: 2.096 sec — URO /Today

(Step 4.5) Maximum Notch Position 26 Scram Time allowed by Tech Spec Table 3.1.4-1: 1.83 sec — URO /Today

**Table 3: GE SIL 173 Position 26 Penalty**

| CRD Temp | Position 26 Penalty |
|---|---|
| $\geq$ 350° F and < 400° F | 0.17 sec |
| $\geq$ 400° F | 0.70 sec |

(Step 4.6) Position 26 temperature corrected Control Rod Scram Time Independent Verification performed by: IVR /Today
I.V.

Attachment 1: Control Rod Scram Time Impact Calculation — Initial/Date

(Step 4.1) Unit: 3

Associated control rod: 18-55 — URO /Today

Record the CRD Temperature: 405 °F — URO /Today

Position 06 Scram Time Penalty Calculation

(Step 4.2) Position 06 Scram Time: 2.599 sec — URO /Today

(Step 4.3) Position 06 Penalty (from Table 4 below): 0.70 sec — URO /Today

(Step 4.4) Determine the Temperature Corrected Position 06 Control Rod Scram Time by adding the Position 06 Scram Time and Position 06 Penalty: 3.299 sec — URO /Today

(Step 4.5) Maximum Notch Position 06 Scram Time allowed by Tech Spec Table 3.1.4-1: 3.35 sec — URO /Today

**Table 4: GE SIL 173 Position 06 Penalty**

| CRD Temp | Position 06 Penalty |
|---|---|
| ≥ 350° F and < 400° F | 0.15 sec |
| ≥ 400° F | 0.70 sec |

(Step 4.6) Position 06 temperature corrected Control Rod Scram Time Independent Verification performed by: IVR /Today
I.V.

(Step 4.12) Shift Management review of Attachment 1 pages 6, 7, 8, and 9 performed by: _____/_____

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR-273C |
| COURSE: | Licensed Operator Requalification | REV #: | 000 |
| AUTHOR: | C. N. Croasmun | TYPIST: | cnc |
| TITLE: | Compensatory Actions for an Inoperable Fire Door | | |

APPROVALS: _____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE ID#: _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

| | | |
|---|---|---|
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 3410170302 / PLOR-273C K/A: G2.2.40
SRO: 4.7

TASK DESCRIPTION: Ability to determine actions required for an Inoperable Fire Door

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. A copy of ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System"

2. Drawing A-486 "Barrier Plan" Elev. 135'

3. Technical Requirements Manual section 3.14

C. REFERENCES

1. ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System"

2. Drawing A-486 "Barrier Plan" Elev. 135'

3. Technical Requirements Manual section 3.14

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Technical Requirements Manual compensatory measures have been identified.

2. Estimated time to complete: 15 minutes Non-Time Critical.

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, determine any actions required to be taken for Fire Door #217 Supervisory Alarm System failing to alarm.

F. TASK CONDITIONS/PREREQUISITES

1. Fire Door supervisory alarm testing is in progress in accordance with ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System".

2. You have just been notified that Fire Door #217 has been fully open for eleven minutes, and has failed to alarm.

3. Previous fire surveillance testing has determined that all smoke detectors on Turbine Building 135' are operable.

G. INITIATING CUE

As the Unit 2 Control Room Supervisor review ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System" and identify any required action(s) for Fire Door #217. Document required action(s) on the cue sheet.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System".<br><br>(Cue: Provide the candidate with a copy of ST-O-037-390-2) | P | ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System" obtained. |
| 2 | Determine Fire Door location. | P | Review ST-O-037-390-2 Data Sheet 1, and determine Fire Door 217 is located on TB2 elevation 135' in the 2A & 2C Battery Room. |
| 3 | Review ST-O-037-390-2 sections 4 and 5. | P | Review ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System" for Precautions, Limitations, General Instructions, and Acceptance Criteria. |
| *4 | Identify Fire Door #217 classification. | P | Review ST-O-037-390-2 section 4 and determine Fire Door #217 is a Safety Related door identified by an * on Data Sheet 1. |
| 5 | Review ST-O-037-390-2 Performance Steps and Corrective actions. | P | Review ST-O-037-390-2 section 6 for Test Requirements and Corrective Actions. |
| *6 | Identify alarm requirements for Fire Door #217. | P | Determine Fire Door #217 is required to alarm in less than or equal to 10 minutes, and is INOPERABLE. |
| 7 | Obtain a copy of the Unit 2 Technical Requirements Manual.<br><br>(Cue: Provide the candidate with a copy of the Unit 2 Technical Requirements Manual.) | P | Obtain a copy of the Unit 2 Technical Requirements Manual and review section 3.14 Fire Protection Systems. |
| *8 | Determine Unit 2 Technical Requirements Manual required action. | P | Review Technical Requirements Manual section 3.14.8 condition A and establish a Fire Watch Patrol within 1 hour and once per hour there after for Unit 2 TB 135' 2A & 2C Battery Room. |

| | | | |
|---|---|---|---|
| 9 | Inform the Evaluator of task completion.<br><br>(Cue: The Control Room Supervisor acknowledges the report.) | P | The operator informs the Evaluator of task completion. |
| 10 | As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the Technical Requirement Manual compensatory actions have been identified, and the evaluator has been informed, the evaluator will terminate the exercise.

# TASK CONDITIONS/PREREQUISITES

1. Fire Door supervisory alarm testing is in progress in accordance with ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System".

2. You have just been notified that Fire Door #217 has been fully open for eleven minutes, and has failed to alarm.

3. Previous fire surveillance testing has determined that all smoke detectors on Turbine Building 135' are operable

# INITIATING CUE

As the Unit 2 Control Room Supervisor review ST-O-037-390-2 "Fire Door Electrical Supervisory Alarm System" and identify any required action(s) for Fire Door #217. Document required action(s) on the cue sheet:

_____

_____

_____

_____

**ST-O-037-390-2 FIRE DOOR ELECTRICAL SUPERVISORY ALARM SYSTEM FUNCTIONAL TEST**

TEST FREQUENCY: Once/92 days
TECH SPEC: TR 3.14.8.4
APPLICABILITY: At All Times

1

**CHECK** why this procedure is being performed:

☐ Schedule ☐ OVF ☐ Retest Due To Unsat Test

☐ Other Reason: _____

Approved by SMgt: _____ _____ __/__/__ _____
Printed Name Time Date Initials

2

**INITIAL** one of the following Test Results:

A: All **R** steps are **SATISFACTORY** _____

B: One or More **R** steps are **UNSATISFACTORY** ☐
Refer to Section 9.0 for Tech Spec LCO's

Performed By: _____ _____ __/__/__ _____
Printed Name Time Date Initials

RO/PRO Informed of Test Completion: _____ _____ __/__/__ _____

SMgt Informed of Test Results: _____ _____ __/__/__ _____

UNSAT Notification: _____
SMgt Discretion: Plant Mgr or Others

Notified By: _____ _____ __/__/__ _____

3

**IF** other portions of the test did **NOT** function properly, **OR** other discrepancies were noted, **THEN COMPLETE** the following:

**DESCRIBE** discrepancies/actions taken: Issue or ETT#: _____

_____

4

Reviewed/Approved Fire Protection Program Manager: _____ _____ __/__/__ _____
Printed Name Time Date Initials

## 1.0 PURPOSE

This test verifies operability of the Fire Door Electrical Supervisory Alarm System once per 92 days (quarterly) in accordance with the Technical Requirements Manual TR 3.14.8.4.

## 2.0 TEST EQUIPMENT

2.1 Digital Watch

## 3.0 PREREQUISITES

Initial

3.1 Test Initiation

3.1.1 **COMPLETE** Section 1 of cover page. _____

3.2 Document Review

3.2.1 **ENSURE** procedure is current revision. _____

3.3 Equipment Configuration

None

3.4 Required Redundant Safety Related Equipment

None

3.5 Other Prerequisite Activities

3.5.1 **CONTACT** Health Physics for RWP requirements prior to entering any Radiologically Controlled Area listed on Data Sheet 1. _____

3.6 Approval to Start Test

3.6.1 **OBTAIN** SAS Attendant Permission to begin. _____

## 4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS

4.1 Plant Impact Statement

4.1.1 This test does **NOT** affect plant availability in any manner **AND** may be performed in any Reactor Mode.

**4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS** (Continued)

4.2 Precautions

None

4.3 Limitations

None

4.4 General Instructions

4.4.1 Communications shall be established between the Secondary Alarm Station (SAS) Attendant (at extension 4277 or 4285) and persons performing door tests in order that the SAS Attendant may be informed and conduct tests as required.

4.4.2 **IF** any procedure step can **NOT** be completed **OR** produces an unexpected response **THEN** stop the test **AND** initiate compensatory measures as required **AND** notify Supervisor, Nuclear Security (SNS) and SMgt.

4.4.3 **IF** any Black Box is initialed **THEN** stop the test **AND** initiate compensatory measures as required **AND** notify the SNS and SMgt.

4.4.4 **IF** procedure is aborted, **THEN NOTIFY** SNS **AND** SMgt **AND** write **"TEST ABORTED"** in Section 3 of Cover Page.

4.4.5 All persons who initial steps in Sections 3.0, 6.0, or 7.0 are responsible for completing Section 10.0.

4.4.6 All applicable * steps are identified immediately in front of the initials.

4.4.7 Fire Doors which are Safety-Related are identified with an * in the initials column on Data Sheet 1 **AND** are subject to the requirements of TR 3.14.8.4

4.4.8 Fire Doors listed on Data Sheet 1 which are **NOT** Safety-Related are provided for convenience of inspection **AND** are **NOT** subject to the requirements of the Technical Requirements Manual.

**5.0 ACCEPTANCE CRITERIA**

Fire doors listed on Data Sheet 1 are tested in accordance with Section 6.0 of this procedure, verified operable, **AND** their respective zone alarms received by SAS.

## 6.0 PERFORMANCE STEPS

### 6.1 Fire Door Supervisory Alarm Functional Test

> **NOTE**
>
> Tests of Fire Doors listed on Data Sheet 1 may be performed in any order **AND** at times appropriate for the purpose of the test.

6.1.1 **SELECT** Fire Door to be tested **AND RECORD** time **AND** date of test on Data Sheet 1.

6.1.2 **PERFORM** test of each door as follows:

1. FULLY **OPEN** door.
2. **HOLD** door open for up to ten minutes until alarm occurs.
3. **VERIFY** door marked with a # sign on Data Sheet 1 alarm immediately.
4. **VERIFY** door zone is in ALARM.
5. **VERIFY** time for doors **NOT** marked with the # sign on Data Sheet 1 is less than or equal to ten minutes.
6. **CLOSE** door **AND VERIFY** SAS alarm zone is RESET.
7. **RECORD** all comments **AND INITIAL** test results either Sat or UnSat on Data Sheet 1.

### 6.2 Corrective Action

6.2.1 **IF** any fire door **OR** alarm zone is found inoperable, **THEN INITIATE** a Corrective Action **AND** ETT as necessary. **OTHERWISE, N/A** this step. _____ _____

6.2.2 **IF** any Safety-Related fire door is found inoperable, **THEN INITIATE** compensatory measures in accordance with the Technical Requirements Manual. **OTHERWISE, N/A** this step. _____ _____

## 7.0 PROCEDURE COMPLETION

Initial

7.1 Independent Verification

None

7.2 Records Completion

7.2.1 **VERIFY** all fire doors have been tested **AND** Data Sheet 1 is COMPLETE. _____

7.2.2 **COMPLETE** Section 2 of Cover Page (**AND** Section 3 **IF** applicable). _____

## 8.0 REFERENCES

8.1 Governing

8.1.1 UFSAR (Fire Protection Program, Chapter 7)

8.1.2 Technical Requirements Manual TR 3.14.8.4

8.1.3 10CFR50, Appendix R, Section N.1

8.1.4 Engineering Technical Evaluation A/R 1478378 E-3

8.2 Interfacing

None

8.3 Developmental

8.3.1 Prints:

A-167, Fire Detection and Suppression - Floor Plan at El. 116'-0"

A-484, Barrier Plans, Elev. 91'-6"

A-485, Barrier Plans, Elev. 116'-0"

A-486, Barrier Plans, Elev. 135'-0"

A-487, Barrier Plans, Elev. 165'-0"

A-488, Barrier Plans, Elev. 195'-0"

A-489, Barrier Plans, Elev. 234'-0"

A-490, Barrier Plans, C.W. Pump Structure, Emergency Cooling Tower & Diesel Generator Building

8.3.2 UFSAR Section 10.12

8.3.3 PBAPS Fire Protection Program (FPP)

8.3.4 This procedure supersedes RT-S-037-390-2.

8.3.5 AG-CG-028.1-10, Peach Bottom Atomic Power Station Maintenance Rule Structural Monitoring Program

## 9.0 CORRECTIVE ACTIONS

9.1 Technical Requirements Manual Specification 3.14.8 Fire Barriers.

## 10.0 PARTICIPANTS RECORD

| Printed Name | Initials |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

## DATA SHEET 1
## FIRE DOOR SUPERVISORY ALARM TEST

| DOOR NO. | BARRIER NUMBER PLANT LOCATION | TIME DATE | COMMENTS | INITIAL SAT UNSAT |
|---|---|---|---|---|
| # 2 | RB2-91-3-NE (TORUS ACCESS) C RHR PUMP AREA, 91' 6", R2-7 | TIME:_____ DATE: / / | | * ____ ☐ |
| # 3 | RB2-91-4-SE (TORUS ACCESS) B RHR PUMP AREA, 91' 6", R2-6 | TIME:_____ DATE: / / | | * ____ ☐ |
| 5 | RW2-88-ST-24-W D RHR PUMP AREA, 91' 6", R2-8 | TIME:_____ DATE: / / | | * ____ ☐ |
| 6 | RW2-88-ST-24-E HPCI PUMP ROOM, 91' 6", R2-13 | TIME:_____ DATE: / / | | * ____ ☐ |
| 7 | RW-2-88-8-E U/2 RCIC 91' 6" R2-13 | TIME:_____ DATE: / / | | * ____ ☐ |
| 9 | RB2-91-10-N D CORE SPRAY PUMP ROOM, 91' 6", R2-12 | TIME:_____ DATE: / / | | * ____ ☐ |
| 32 | TBC-91-17-W, OUTSIDE CONDENSATE BACKWASH PUMP ROOM, 91' 6", T2-6 | TIME:_____ DATE: / / | | * ____ ☐ |
| # 38 | RB3-91-39-NE(TORUS ACCESS) C RHR PUMP AREA, 91' 6", R3-7 | TIME:_____ DATE: / / | | * ____ ☐ |
| # 40 | RB3-91-40-SE(TORUS ACCESS) B RHR PUMP AREA, 91' 6", R3-6 | TIME:_____ DATE: / / | | * ____ ☐ |
| 48 | RW3-91-46-N RB3 SUMP ROOM/A CS PUMP ROOM, 91' 6", R3-9 | TIME:_____ DATE: / / | | * ____ ☐ |
| 50 | RW-3-88-48-E U/3 RCIC 91' 6" R3-14 | TIME:_____ DATE: / / | | * ____ ☐ |
| 68 | RW2-116-104-E ABOVE D RHR PUMP, 116', R2-19 | TIME:_____ DATE: / / | | * ____ ☐ |
| 70 | RW2-116-105-S RBCCW ROOM, REAR DOOR TO RHR, 116', T2-44 | TIME:_____ DATE: / / | | * ____ ☐ |
| 75 | RB2-116-107-E B & D CORE SPRAY PUMP TRIANGLE ROOM, 116', R2-21 | TIME:_____ DATE: / / | | * ____ ☐ |
| 79 | RB2-116-ST-18-E A & C CORE SPRAY PUMP TRIANGLE ROOM, 116', R2-20 | TIME:_____ DATE: / / | | * ____ ☐ |

**DATA SHEET 1** (Continued)
**FIRE DOOR SUPERVISORY ALARM TEST**

| DOOR NO. | BARRIER NUMBER PLANT LOCATION | TIME DATE | COMMENTS | INITIAL SAT UNSAT |
|---|---|---|---|---|
| * # 89 | TB2-116-139-S, ROLL-UP DOOR, LUBE OIL TANK AREA, 116', T2-22 | TIME:_____ DATE: / / | | ____ ____ |
| # 91 | TB2-116-ST-01-E, SE STRWLL EMERG EXIT, 116', T2-21 | TIME:_____ DATE: / / | | ____ ____ |
| #108 | TB2-116-ST-03-E, OUTSIDE ENTRANCE TO NE STAIRWELL, 116', T2-155 | TIME:_____ DATE: / / | | ____ ____ |
| #110 | TB2-116-185-E, OUTSIDE ENTRANCE, EQUIP. HATCH AREA, 116',T2-155 | TIME:_____ DATE: / / | | ____ ____ |
| #111 | TB2-116-185-E, OVERHEAD DOOR, EQUIP. HATCH AREA, 116', T2-155 | TIME:_____ DATE: / / | | ____ ____ |
| 134 | TBC-116-126-W RADWASTE BUILDING CORRIDOR, 116', R/W-15 | TIME:_____ DATE: / / | | * ____ ☐ |
| * 144 | RB3-116-ST-23-E NE STAIRWELL, 116' R3-81 | TIME:_____ DATE: / / | | * ____ ☐ |
| 147 | RB3-116-161-E RB3 A & C CORE SPRAY ROOM, 116, R3-20 | TIME:_____ DATE: / / | | * ____ ☐ |
| #176 | TB3-116-ST-05-E TB3 NORTHWEST STAIRWELL EMERG EXIT, 116', T3-21 | TIME:_____ DATE: / / | | ____ ____ |
| 182 | RB-2-115 ACCESS TO DOOR A AND C RHR, Rx BLDG, 116 R2-22 | TIME:_____ DATE: / / | | ____ ____ |
| 184 | RB2-135-ST-26-N Rx BLDG SW GENERAL AREA, 135', R2-22, STAIRWELL | TIME:_____ DATE: / / | | * ____ ☐ |
| 191 | RB2-135-ST-19-E TB2 COND FLTR DEMIN CORRIDOR, 135', R2-81 | TIME:_____ DATE: / / | | * ____ ☐ |
| 197 | RB2-135-213-S, EQUIP ACCESS INNER R/R DOOR, Rx BLDG 135', R2-29 | TIME:_____ DATE: / / | | ____ ____ |
| * 201 | TBC-135-262-S HALLWAY OUTSIDE RADWASTE BLDG, 135', T2-69 (S) | TIME:_____ DATE: / / | | * ____ ☐ |

**DATA SHEET 1** (Continued)
**FIRE DOOR SUPERVISORY ALARM TEST**

| DOOR NO. | BARRIER NUMBER PLANT LOCATION | TIME DATE | COMMENTS | INITIAL SAT UNSAT |
|---|---|---|---|---|
| 216 | TB2-135-217-E E-32 EMERG AUX SWTCHGR RM, 135', T2-170 (INSIDE) | TIME:_____ DATE: / / | | * ____ ☐ |
| 217 | TB2-135-218-E 2A & 2C BATTERY ROOM, 135', T2-70 (INSIDE) | TIME:_____ DATE: / / | | * ____ ☐ |
| 223 | TB2-135-226-E E-42 EMERG AUX SWTCHGR RM, 135', T2-172 (INSIDE) | TIME:_____ DATE: / / | | * ____ ☐ |
| #231 | RWC-135-ST-34-W RADWASTE STAIRWELL EXIT, 135', R/W-37 (W) | TIME:_____ DATE: / / | | ____ ____ |
| #232 | RWC-135-242-W ROLL-UP DOOR, RADWASTE BLDG, 135', R/W-18 (W) | TIME:_____ DATE: / / | | ____ ____ |
| 238 | RB3-135-238-W U/3 MG SET ROOM 135' TO SW STAIRWAY 25. | TIME:_____ DATE: / / | | * ____ ☐ |
| 243 | RB3-135-ST-36-S NW STAIRWELL, Rx BLDG NW GENERAL AREA, 135, R3-23 | TIME:_____ DATE: / / | | * ____ ☐ |
| 247 | RB3-135-251-N RAILROAD DOOR, Rx BLDG NE GENERAL AREA,135', R3-116 | TIME:_____ DATE: / / | | ____ ____ |
| 247P | RB3-135-251-NP, PERS. DOOR IN R/R DOOR, Rx BLDG NE GEN AREA, 135', R3-116 | TIME:_____ DATE: / / | | ____ ____ |
| 254 | RB3-135-ST-22-E SE STAIRWELL, Rx BLDG, 135' R3-56 (ENTRANCE) | TIME:_____ DATE: / / | | * ____ ☐ |
| 256 | TB3-135-266-E 3A & 3C BATTERY ROOM, 135', T3-70 (INSIDE) | TIME:_____ DATE: / / | | * ____ ☐ |
| 258 | TB3-135-265-E E-43 EMERG AUX SWTCHGR RM, 135', T3-172 (INSIDE) | TIME:_____ DATE: / / | | * ____ ☐ |
| 262 | TB3-135-261-E E-33 EMERG AUX SWTCHGR RM, 135', T3-170,(INSIDE) | TIME:_____ DATE: / / | | * ____ ☐ |
| 278 | TB3-135-272-N COND FLTR DEMIN CORRIDOR, 135', T3-69 (N) | TIME:_____ DATE: / / | | * ____ ☐ |
| 293 | RB2-165-ST-26-N SW STAIRWELL, Rx BLDG SW 165', R2-114 (EXIT) | TIME:_____ DATE: / / | | * ____ ☐ |
| 301 | RB2-165-ST-19-E TB2 ACCESS AIRLOCK, NE STAIRWELL,165', R2-116 | TIME:_____ DATE: / / | | * ____ ☐ |

**DATA SHEET 1** (Continued)
**FIRE DOOR SUPERVISORY ALARM TEST**

| DOOR NO. | BARRIER NUMBER PLANT LOCATION | TIME DATE | COMMENTS | INITIAL SAT UNSAT |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 305 | RWC-165-375-W<br>U/2 RECIRC MG SET FAN ROOM, 165', R/W-33 | TIME:_____<br>DATE: / / | | * ____ |
| 307 | RWC-165-377-W<br>RADWASTE CENTRIFUGE GEN AREA-FAN RM, 165', R/W-27 | TIME:_____<br>DATE: / / | | * ____ |
| 312 | RB2-165-ST-19-N<br>NE STAIRWELL, Rx BLDG, 165', R2-116 (EXIT TO R/W) | TIME:_____<br>DATE: / / | | * ____ |
| 343 | RB3-165-ST-22-E<br>SE STAIRWELL, Rx BLDG, 165', R3-117 (ENTRANCE) | TIME:_____<br>DATE: / / | | * ____ |
| 345 | RB3-165-ST-22-S<br>SE STAIRWELL, Rx BLDG, 165', R3-117 (EXIT TO R/W) | TIME:_____<br>DATE: / / | | * ____ |
| 346 | RB3-165-ST-27-S<br>NW STAIRWELL, Rx BLDG NW GEN. AREA, 165, R3-115 | TIME:_____<br>DATE: / / | | * ____ |
| 356 | RWC-165-382-W<br>DOOR TO U/3 MG SET SUPPLY FAN ROOM, 165', R/W-34 | TIME:_____<br>DATE: / / | | * ____ |
| 380 | TB2-181-431-W<br>TB2 BLDG ELEVATOR MACHINE ROOM, 181' T2-175 | TIME:_____<br>DATE: / / | | * ____ |
| 385 | RB2-195-ST-26-N<br>SW STAIRWELL, Rx BLDG, 195' R2-73 (EXIT) | TIME:_____<br>DATE: / / | | * ____ |
| #389 | TB2-195-512-N<br>EXIT TO R/W BLDG ROOF, 195', T2-101 | TIME:_____<br>DATE: / / | | ____ ____ |
| 394 | RB3-195-ST-27-S<br>NW STAIRWELL, Rx BLDG NW 195', R3-115 (EXIT) | TIME:_____<br>DATE: / / | | * ____ |
| 417 | RB3-116-ST-36-W<br>ACCESS DOOR TO B&D RHR ROOMS, 116', R3-29 | TIME:_____<br>DATE: / | | * ____ |
| C-6 | CWC-112-802-S<br>DOOR TO DIESEL FIRE PUMP ROOM, 112', P/H-7 | TIME:_____<br>DATE: / / | | * ____ |
| C-9 | CWC-112-801-N<br>EMERGENCY PUMP STRUCTURE, 112', P/H-8 (INSIDE) | TIME:_____<br>DATE: / / | | * ____ |
| D-6 | DGC-127-819-S<br>E3/E4 DOOR, #4 (D) DIESEL GEN., WEST 127', D/G-10 | TIME:_____<br>DATE: / / | | * ____ |

**DATA SHEET 1** (Continued)
**FIRE DOOR SUPERVISORY ALARM TEST**

| DOOR NO. | BARRIER NUMBER PLANT LOCATION | TIME DATE | COMMENTS | INITIAL SAT UNSAT |
|---|---|---|---|---|
| * D-8 | DGC-127-817-S E1/E2 DOOR, #2 (B) DIESEL GEN., WEST 127', D/G-6 | TIME:_____ DATE: / / | | * ____ ☐ |
| D-16 | DGC-151-811-S, CARDOX RM STAIRS, #1 (A) DIESEL GEN., WEST 151', D/G-14 | TIME:_____ DATE: / / | | * ____ ☐ |
| D-17 | DGC-151-812-S, E1/E2 FAN RMS, #2 (B) DIESEL GEN, WEST 151', D/G-16 | TIME:_____ DATE: / / | | * ____ ☐ |
| D-18 | DGC-151-813-S, E2/E3 FAN RMS, #3 (C) DIESEL GEN, WEST 151', D/G-18 | TIME:_____ DATE: / / | | * ____ ☐ |
| D-19 | DGC-151-814-S, E3/E4 FAN RMS, #4 (D) DIESEL GEN, WEST 151', D/G-20 | TIME:_____ DATE: / / | | * ____ ☐ |
| #R-06 | RCC-135-001-N, EQUIP ACCESS AREA, NW ENTRANCE, 135', R/B-8 | TIME:_____ DATE: / / | | ____ ____ |
| * #R-08 | RCC-135-ST-01-N RECOMBINER BLDG, NE STRWLL ENTRANCE, 135, R/B-8 | TIME:_____ DATE: / / | | ____ ____ |
| #R-22 | RCC-157-003-W RECOMBINER BLDG, WEST ENTRANCE, 157', R/B-11 | TIME:_____ DATE: / / | | ____ ____ |

# Indicates doors which should alarm immediately after door is opened.

**COMMENTS:** _____

_____

_____

_____

* _____

_____

_____

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM | QUALIFICATION MANUAL | OJT MODULE |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR-256C |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 001 |
| AUTHOR: | M. J. Kelly | TYPIST: | Mda |
| TITLE: | REVIEW AND APPROVE PRIMARY CONTAINMENT PURGE/VENT ISOLATION VALVE CUMULATIVE HOUR LOG | | |

APPROVALS: _____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

APPROVED FOR USE: _____ Signature / Title _____ Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____ Last First M.I. | ISSUE DATE: _____ |
| EMPLOYEE ID#: _____ | COMPLETION DATE: _____ |
| COMMENTS: | |

| | | |
|---|---|---|
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2270140201 / PLOR-256C K/A: G2.3.13
SRO: 3.8

TASK DESCRIPTION: Perform Primary Containment Purge/Vent Isolation Valve Cumulative Log.

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Calculator

2. Copy of ST-O-007-560-2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log".

3. A calculation error made on Data Sheet 1 such that "Accumulated Total Time Since Beginning of Calendar Year" is greater than 90 hours, with the procedure completed to indicate total time is less than 90 hours (use Attachment 2 of this JPM for exact values).

C. REFERENCES

1. ST-O-007-560-2, Rev. 2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log".

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Shift Management review has been completed, the calculation error on Data Sheet 1 identified, and the total accumulated time a purge/vent valve is open has been determined to be greater than 90 hours.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to review the Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log" for Unit 2 (ST-O-007-560-2) has been completed.

2. The "Accumulated Total Time Since Beginning of Year" is greater than 80 hours. Shift Management has been notified as required by Step 6.1.6.

G. INITIATING CUE

You are the Work Control Supervisor. Perform the Plant Staff review and approval of ST-O-007-560-2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log".

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | **Cue: Hand the Examinee a completed copy of ST-O-007-560-2," Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log" with Data Sheets 1 and 2 data filled in by hand from Attachment 2 of this JPM.** | | |
| 2 | Review ST-O-007-560-2 for completeness. | P | Verifies all procedure steps, Data Sheet 1, and Data Sheet 2 have been completed satisfactorily. |
| 3 | Verify calculations. | P | Performs all calculations that were done on Data Sheet 1 to verify they are correct and properly recorded. |
| *4 | Recognize calculation errors. | P | Recognizes the following calculation errors on Data Sheet 1:<br>1. Second row of the "Flow Path Open Total Time" column should be 17 Hr, 4 Min versus 5 Hr, 4 Min.<br>2. Fourth row of the "Accumulated Total Time Since Beginning of Calendar Year" column total is incorrect...one additional hour should be added.<br>NOTE: the "critical" part of this step is to recognize the first error and the fact that the accumulated total time has exceeded 90 hours. |
| *5 | Determines the "Accumulated Total Time Since Beginning of Year" is beyond the Acceptance Criteria specified in Step 5.0. | P | Determines the "Accumulated Total Time Since Beginning of Year" is 93 Hr, 22 Min versus 80 Hr, 22 Min. |
| 6 | Notify Shift Management of unsatisfactory test results.<br>(Cue: Acknowledge report.) | P | Reports to Shift Manager and/or Control Room Supervisor that the "Accumulated Total Time Since Beginning of Year" is greater than 90 hours. |
| 7 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the review of ST-O-007-560-2 has been completed, the calculation error on Data Sheet 1 identified, and the total accumulated time a purge/vent valve is open has been determined to be greater than 90 hours, the evaluator will terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. The "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log" for Unit 2 (ST-O-007-560-2) has been completed.

2. The "Accumulated Total Time Since Beginning of Year" is greater than 80 hours. Shift Management has been notified as required by Step 6.1.6.

## INITIATING CUE

You are the Work Control Supervisor. Complete the Plant Staff review and approval of ST-O-007-560-2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log".

## DATA SHEET 1
## 6" AND 18" FLOW PATH TOTAL HOUR LOG

| Any 6" or 18" Flow Path Open OR Req'd Conditions Exist for Timing with Valves Open | | ALL 6" or 18" Flow Paths Closed OR Required Conditions No Longer Exists | | Flow Path Open Total Time (Hours & Minutes) | Accumulated Total Time Since Beginning of Calendar Year (Note 1) | Accumulated Total Time Since Beginning of Calendar Year < 90 hrs |
|---|---|---|---|---|---|---|
| TIME | DATE | TIME | DATE | | Total Fwd: 61 Hr, 28 Min | Initial Sat Unsat |
| 0131 | 12/19/08 | 0411 | 12/19/08 | 2 Hr, 40 Min | 64 Hr, 8 Min | R ____ ☐ |
| 0428 | 12/19/08 | 2132 | 12/19/08 | 5 Hr, 4 Min | 69 Hr, 12 Min | R ____ ☐ |
| 2147 | 12/19/08 | 2319 | 12/19/08 | 1 Hr, 32 Min | 70 Hr, 44 Min | R ____ ☐ |
| 0916 | 12/23/08 | 1706 | 12/23/08 | 7 Hr, 50 Min | 77 Hr, 34 Min | R ____ ☐ |
| 1154 | 12/24/08 | 1442 | 12/24/08 | 2 Hr, 48 Min | 80 Hr, 22 Min | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |
| | | | | | | R ____ ☐ |

NOTE 1: **IF** "Accumulated Total Time Since Beginning of Year" is greater than or equal to 80 hrs, **THEN NOTIFY** SMgt.

**DATA SHEET 2**

| DAY / SHIFT | | DATE | FLOW PATHS USED (See below) | | | | | | | Initial Sat | Initial Unsat |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| MON | D | 12/18/08 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| | N | " | N/A | N/A | √ | √ | √ | √ | N/A | | |
| TUE | D | 12/19/08 | N/A | N/A | N/A | √ | N/A | √ | N/A | | |
| | N | " | N/A | N/A | √ | √ | √ | √ | N/A | | |
| WED | D | 12/20/08 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| | N | " | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| THUR | D | 12/21/08 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| | N | " | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| FRI | D | 12/22/08 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| | N | " | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| SAT | D | 12/23/08 | N/A | √ | N/A | N/A | √ | N/A | N/A | | |
| | N | " | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |
| SUN | D | 12/24/08 | √ | √ | N/A | N/A | √ | √ | N/A | | |
| | N | " | N/A | N/A | N/A | N/A | N/A | N/A | N/A | | |

1. AO-2-07B-2519 and AO-2-07B-2520 OPEN in a Drywell N2 Purge Flowpath
2. AO-2-07B-2519 and AO-2-07B-2521B OPEN in a Torus N2 Purge Flowpath
3. AO-2-07B-2505 and AO-2-07B-2520 OPEN in a Drywell Purge Supply Flowpath
4. AO-2-07B-2521A and AO-2-07B-2521B OPEN in a Torus Purge Supply Flowpath
5. AO-2-07B-2506 and AO-2-07B-2507 OPEN in a Drywell Exhaust Flowpath
6. AO-2-07B-2511 and AO-2-07B-2512 OPEN in a Torus Exhaust Flowpath
7. Abnormal Flowpath.

Description: _____

D = Day Shift - 6:30a - 6:30p
N = Night Shift - 6:30p - 6:30a

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | PLOR-230C |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 002 |
| AUTHOR: | J. T. Hanley | TYPIST: | jth |
| TITLE: | EAL CLASSIFICATION WITH STATE AND LOCAL NOTIFICATIONS (FS1, wind from 0 degrees, airborne release in progress) | | |

APPROVALS:

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

APPROVED FOR USE: _____ Signature / Title _____ Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____ (Last First M.I.)

EMPLOYEE I.D. NO. _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____ Signature/Date

LMS CODE:

LMS ENTRY:

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

| | | |
|---|---|---|
| POSITION TITLE: | Senior Reactor Operator | |
| TASK-JPM DESIGNATOR: | 2007540502 / PLOR-230C | K/A: 2.4.40<br>SRO: 4.5 |
| TASK DESCRIPTION: | Emergency Director | |

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

- None

C. REFERENCES

1. EP-AA-112-100, Rev. 10, "Control Room Operations"
2. EP-AA-111, Rev. 16, "Emergency Classification and Protective Action Recommendations"
3. EP-MA-114-100, Rev. 16, "Mid-Atlantic State/Local Notifications"
4. EP-MA-114-100-F-01, Rev K, "State/Local Notification Form
5. EP-AA-112-100-F-01, Rev. N, "Shift Emergency Director Checklist"
6. EP-AA-1007, Table PBAPS 3-1, Rev. 22, "Emergency Action Level (EAL) Matrix
7. EP-AA-114-F-02, Rev. A, "BWR Release in Progress Determination Guidance"
8. EP-AA-125-1002, Rev 007, "ERO Performance – Performance Indicators Guidance"

D. TASK STANDARD

1. Performance Location: Simulator
2. Satisfactory task completion is indicated when EP-MA-114-100-F-01, "State/Local Event Notification Form" has been completed accurately.

   (NOTE: The criteria for accurate Event Notification form completion was derived from EP-AA-125-1002, Rev. 007, "ERO Performance - Performance Indicators Guidance".)

3. Estimated time to complete: TIME CRITICAL
   - Event Classification: 15 minutes
   - State/Local Notification Form: 13 minutes

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, make the Emergency Classification and complete the State/Local Notifications, if required. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A plant event occurred 15 minutes ago that resulted in damage to the reactor fuel on Unit 2.
2. A Main Steam Line (MSL) HI-HI radiation signal generated a Group I isolation signal.

3. Six of the eight MSIVs closed.

4. The "A" MSL inboard and outboard MSIVs failed to close.

5. A full reactor scram occurred; all rods are in.

6. RPV level and pressure are normal, being maintained with HPCI, RCIC, and SRVs.

7. 2 VENT EXH STACK RAD MONITOR HI-HI B (218 C-4) annunciator is in alarm.

8. Vent Stack release rate has been 4.5 E+6 uCi/sec for the last 15 minutes as read on RI-2979A and B.

9. A sample of the Reactor coolant has an activity of 265 uCi/gm I-131 dose equivalent.

10. A steam leak has just been identified in the Turbine Building.

G. INITIATING CUE

As Emergency Director, make the EAL Classification, if required, and complete EP-MA-114-100-F-01, State/Local Notification Form.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| | *** NOTE **** | | |
| **Record the time using the clock above the Full Core Display. Time = _____** | | | |
| 1 | Obtain a copy of EP-AA-112-100-F-01 and EP-AA-1007. | P | Copies of EP-AA-112-100-F-01 and EP-AA-1007 are obtained. |
| *2 | Determine that the Vent Stack release rate is greater than the ALERT level threshold but less than the SITE AREA EMERGENCY level threshold. | P | Radiological Effluent EAL RA1 is reviewed. Vent Stack release rate is determined to be above the ALERT level (>3.83 E+6 uCi/sec) but less than the SITE AREA EMERGENCY level (<3.36 E+7 uCi/sec). |
| *3 | Determine that the reactor coolant activity level is greater than the UNUSUAL EVENT level but less than the threshold value for a LOSS of FUEL CLAD BARRIER. | P | Abnormal Rad Level EAL RU3 and Fission Product Barrier Matrix is reviewed. Reactor Coolant activity is determined to be above the UNUSUAL EVENT level (> 4.0 uCi/gm) but less than a FUEL CLAD BARRIER LOSS (<300 uCi/gm). |
| *4 | Determine that the failure of the "A" MSL to isolate exceeds the Fission Product Barrier Matrix thresholds resulting in a LOSS of both the REACTOR COOLANT SYSTEM BARRIER and the PRIMARY CONTAINMENT BARRIER. | P | The failure of the "A" MSL to isolate exceeds the Fission Product Barrier Matrix thresholds resulting in a LOSS of both the REACTOR COOLANT SYSTEM BARRIER and the PRIMARY CONTAINMENT BARRIER. |
| *5 | Using the Fission Product Barrier Matrix, identify that these losses constitute a SITE AREA EMERGENCY (SAE) declaration (FS1) | P | A SAE **(FS1)** is declared based on the two losses identified in the Fission Product Barrier Matrix. |
| 6 | Announce the event classification to the facility staff. | S | SAE is announced. |
| | ***** NOTE ****** | | |
| **Record the time using the clock above the Full Core Display. Time = _____** | | | |
| | ***** NOTE ***** | | |
| Inform the examinee that the Public Address Announcement and the ERO Notification required by EP-AA-112-100-F-01, Shift Emergency Director Checklist, are **NOT** required for this JPM. | | | |
| | ***** NOTE ***** | | |
| The following steps are associated with completion of EP-MA-114-100-F-01, "State/Local Event Notification Form." | | | |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *7 | Check the call status. | P | "This is a drill" line is checked in Block #1. |
| *8 | Check the affected station. | P | "Peach Bottom" is checked in Block #2. |
| *9 | Check the event classification. | P | "SITE AREA EMERGENCY" classification is checked in Block #3a. |
| *10 | Check the affected unit. | P | Unit "Two" is checked in Block #3b. |
| *11 | Enter the time and date of the declaration. | P | Declaration time (in 24 hour clock nomenclature) and today's date are entered in Block #3c. The declaration time should match the time the examiner entered in the note before JPM step 1. |
| *12 | Check the applicable change in classification status. | P | "Initial Declaration" is checked in Block #3d. |
| *13 | Enter the EAL number declared AND/OR provide a brief non-technical description of event. | P | EAL# "FS1" is annotated in Block #4a AND a simplified explanation for the event classification is provided in Block #4b. Acronyms, abbreviations or other terms that would not be recognized by state and local response agencies are avoided. The Offsite EAL Reference Manual may be referred to, if necessary. |
| *14 | Check the non-routine radiological release status. | P | "Airborne" non-routine radiological release in progress is checked in Block #5b. EP-AA-114-F-01, "Release in Progress Determination Guidance" may be referenced. |
| *15 | Enter the wind direction "degrees from."<br><br>(Cue: Wind direction is from 0 degrees.) | P | "0" is entered as the wind direction degrees from in Block #6a. |
| *16 | Enter the wind speed.<br>(Cue: Wind speed is 3 mph.) | P | Wind speed is entered as "3" miles per hour in Block #6b. |
| *17 | Check the utility Protective Action Recommendation. | P | 7a, NOT APPLICABLE is checked. |
| *18 | Check the appropriate conclusion. | P | "This is a drill" line is checked in Block #8. |
| 19 | Approve the event notification form. | P | The event notification form is signed in the form's header area by the Emergency Director. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| | *** NOTE *** **WHEN the examinee completes the Event Notification form, THEN record the time using the clock above the Full Core Display. Time = _____ Determine if the elapsed time since the classification exceeds 13 minutes.** | | |
| 20 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When EP-MA-114-100-F-01, "State/Local Event Notification Form" has been completed, the evaluator will terminate the exercise.

# TASK CONDITIONS/PREREQUISITES

1. A plant event occurred 15 minutes ago that resulted in damage to the reactor fuel on Unit 2.

2. A Main Steam Line (MSL) HI-HI radiation signal generated a Group I isolation signal.

3. Six of the eight MSIVs closed.

4. The "A" MSL inboard and outboard MSIVs failed to close.

5. A full reactor scram occurred; all rods are in.

6. RPV level and pressure are normal, being maintained with HPCI, RCIC, and SRVs.

7. 2 VENT EXH STACK RAD MONITOR HI-HI B (218 C-4) annunciator is in alarm.

8. Vent Stack release rate has been 4.5 E+6 uCi/sec for the last 15 minutes as read on RI-2979A and B.

9. A sample of the Reactor coolant has an activity of 265 uCi/gm I-131 dose equivalent.

10. A steam leak has just been identified in the Turbine Building.

# INITIATING CUE

As Emergency Director, make the EAL Classification, if required, and complete EP-MA-114-100-F-01, State/Local Notification Form.

# STATE/LOCAL EVENT NOTIFICATION FORM

**UTILITY MESSAGE NO.** _____

***EMERGENCY DIRECTOR APPROVAL:*** _____

**PERFORM INITIAL ROLL CALL PRIOR TO TRANSMITTING – Refer to Page 3 of Form**

1. CALL STATUS is:

[X] This is a DRILL.

[ ] This is an ACTUAL EVENT.

2. This is _____

for [ ] LIMERICK / [X] PEACH BOTTOM / [ ] TMI

My phone number is _____ The current time is _____.
/Communicator will provide his/her NAME, PHONE NUMBER, and CURRENT TIME (in 24-hour clock) when notification is read./

3.a EMERGENCY CLASSIFICATION

[ ] UNUSUAL EVENT
[ ] ALERT
[X] SITE AREA EMERGENCY
[ ] GENERAL EMERGENCY
[ ] RECOVERY
[ ] TERMINATION

b. AFFECTED UNIT(S) is/are:

[ ] ONE [X] TWO [ ] THREE

c. DECLARED AT:

TIME: _____ *(24-hr clock)*

DATE: ___/___/___

d. THIS REPRESENTS A/AN:

[X] INITIAL DECLARATION
[ ] ESCALATION
[ ] NO CHANGE
[ ] REDUCTION
- IN CLASSIFICATION STATUS

4. a. EMERGENCY ACTION LEVEL (EAL) NO. is: **FS1**

b. A BRIEF NON-TECHNICAL DESCRIPTION OF THE EVENT is as follows:

(Anything similar to the below wording is acceptable. Wording does NOT have to be exact.)

**Loss or potential loss of 2 of 3 fission product barriers.**

5. NON-ROUTINE RADIOLOGICAL RELEASE STATUS is:

[ ] a. NO radiological release in-progress

[X] b. AIRBORNE radiological release in-progress

[ ] c. LIQUID radiological release in-progress

[ ] d. Radiological release TERMINATED

6. METEOROLOGY is:

a. WIND DIRECTION is *FROM*: 0 (degrees)

b. WIND SPEED is: 3 (miles per hour)

ANSWER KEY

# STATE/LOCAL EVENT NOTIFICATION FORM

7. UTILITY PROTECTIVE ACTION RECOMMENDATION: (**a or b**) – No action should be taken until government officials have been notified: by State:

[X] **a. NOT APPLICABLE** *(Unusual Event, Alert, Site Area Emergency, Termination or Recovery only)*

*(Complete the following for Shelter or Evacuation for a General Emergency only for the applicable station):*

[ ] b. The PROTECTIVE ACTION RECOMMENDATION (PAR) from the utility is:

**LGS/PBAPS**

[ ] **SHELTER** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO _____ MILES
**AND**
**SHELTER** THE FOLLOWING SECTORS FROM _____ MILES TO _____ MILES:

| | | | |
|---|---|---|---|
| [ ] N | [ ] E | [ ] S | [ ] W |
| [ ] NNE | [ ] ESE | [ ] SSW | [ ] WNW |
| [ ] NE | [ ] SE | [ ] SW | [ ] NW |
| [ ] ENE | [ ] SSE | [ ] WSW | [ ] NNW |

**AND**
The utility recommends that government officials notify the general public to take potassium iodide (KI) for those sectors where shelter is recommended and advise remainder of the EPZ to monitor EAS Messages.

---

[ ] **EVACUATE** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO 5 MILES
**AND**
**EVACUATE** THE FOLLOWING SECTORS FROM 5 MILES TO 10 MILES:

| | | | |
|---|---|---|---|
| [ ] N | [ ] E | [ ] S | [X] W |
| [ ] NNE | [ ] ESE | [ ] SSW | [X] WNW |
| [ ] NE | [ ] SE | [ ] SW | [X] NW |
| [ ] ENE | [ ] SSE | [ ] WSW | [ ] NNW |

**AND**
The utility recommends that government officials notify the general public to take potassium iodide (KI) for those sectors where evacuation is recommended and advise remainder of the EPZ to monitor EAS Messages.

**TMI**

[ ] **SHELTER** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO _____ MILES
**AND**
The utility recommends that government officials notify the general public to take potassium iodide (KI) for those areas where shelter is recommended and advise remainder of the EPZ to monitor EAS Messages.

---

[ ] **EVACUATE** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO _____ MILES
**AND**
The utility recommends that government officials notify the general public to take potassium iodide (KI) for those areas where evacuation is recommended and advise remainder of the EPZ to monitor EAS Messages.

8. CONCLUSION: [X] This is a DRILL. [ ] This is an ACTUAL EVENT.

ANSWER KEY

- **PERFORM** FINAL ROLL CALL UPON COMPLETION – Refer to Page 3 of Form
- **ASK** if there are any questions regarding message or repeat backs needed
- **READ** "This concludes the notification message"
- **FAX** completed copies of all form pages to the Control Room, TSC and EOF, as applicable.
- **INFORM** the Shift Manager (Shift Emergency Director), TSC Director or EOF Director, as applicable, when notification is completed to required contacts.

# STATE/LOCAL EVENT NOTIFICATION FORM



## "15 Minute Notifications"
## PEACH BOTTOM (CAN 833)

"Notification Line": Dial "833" for conference call. Stay on the line until agencies come on
"3 Digit Extensions". Make these calls from 3-digit lines.
"Commercial # From PBAPS": Make these calls from a 4-digit line. Dial "9-1-Area Code-Number"
"Commercial # From PBABS 3-digit lines": Dial "7-1-9-1-Area Code-Number"

| Initial Roll Call (Time Contacted: 24-hour clock) | | Final Roll Call (√) |
|---|---|---|
| _____ | **Pennsylvania EMA**<br>Ext. 216 or 9-1-800-424-7362 / 9-1-717-651-2001 | ☐ |
| _____ | **Maryland EMA**<br>Ext. 205 or 9-1-410-517-3600 | ☐ |
| _____ | **York County**<br>Ext. 219 or 9-1-717-854-5571 | ☐ |
| _____ | **Harford County**<br>Ext. 214 or 9-1-410-638-3400 / 9-1-410-638-4900 | ☐ |
| _____ | **Cecil County**<br>Ext. 234 or 9-1-410-398-2222 / 9-1-410-392-2010 | ☐ |
| _____ | **Lancaster County**<br>Ext. 217 or 9-1-800-808-5237 / 9-1-717-664-1190 | ☐ |
| _____ | **Chester County**<br>Ext. 218 or 9-1-610-344-5100 | ☐ |
| _____ | **Initial Roll Call Completed** | |

## FOLLOW-UP NOTIFICATIONS * (PEACH BOTTOM ONLY)

**[ ] Maryland Dept. of the Environment**
Emergency ext. 292 or 235
9-1-866-633-4686
Contacted at: _____ (time: 24-hour clock)

**[ ] PA State Police, York Barracks**
Ext. 284 or 9-1-717-428-1011
Contacted at: _____ (time: 24-hour clock)

*** NOT required within 15 minutes of Classification**

## "15 Minute Notifications"
## LIMERICK (CAN 841)

| Initial Roll Call (Time Contacted: 24-hour clock) | | Final Roll Call (√) |
|---|---|---|
| _____ | **Pennsylvania EMA**<br>Ext. 116 or 9-1-800-424-7362 or 9-1-717-651-2001 | ☐ |
| _____ | **Montgomery County**<br>Ext. 117 or 9-1-610-631-6541 | ☐ |
| _____ | **Chester County**<br>Ext. 118 or 9-1-610-344-5100 | ☐ |
| _____ | **Berks County**<br>Ext. 119 or 9-1-610-655-4931 | ☐ |
| _____ | **Initial Roll Call Completed** | |

## "15 Minute Notifications"
## TMI (CAN 44)

"Notification Line": Dial "44" for all-call. If necessary, dial agency extension #'s to notify individual agencies
Commercial # From TMI: Dial "9" and the #
Commercial # From EOF: Dial "9-1-717" and the #
Toll-Free "800" # From TMI or EOF: Dial the #'s exactly as they appear below

| Initial Roll Call (Time Contacted: 24-hour clock) | | Final Roll Call (√) |
|---|---|---|
| _____ | **Pennsylvania EMA**<br>Ext. 315 or 9-1-800-424-7362 or 9-651-2001 | ☐ |
| _____ | **Cumberland County**<br>Ext. 319 or 9-238-9676, 9-243-4121 or 9-532-8878 | ☐ |
| _____ | **Lebanon County**<br>Ext. 321 or 9-272-2025 / -7621 / -2054 | ☐ |
| _____ | **Lancaster County**<br>Ext. 318 or 9-664-1190 / -1200 | ☐ |
| _____ | **York County**<br>Ext. 317 or 9-854-5571, 9-840-2955 or 9-1-800-427-8347 | ☐ |
| _____ | **Dauphin County**<br>Ext. 320 or 9-911 or 9-558-6900 | ☐ |
| _____ | **Initial Roll Call Completed** | |

## FOLLOW-UP NOTIFICATIONS * (TMI)

**[ ] York Haven Power Station**
9-266-3654 or 9-818-3962
Contacted at: _____ (time: 24-hour clock)

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | CR_Sys_a |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 000 |
| AUTHOR: | J. A. Verbillis | TYPIST: | jav |
| TITLE: | HPSW Injection into the Fuel Pool (ALTERNATE PATH: HPSW Pump Overcurrent, Use Other Pump) | | |

APPROVALS:

_____
Signature / Title — Date

_____
Signature / Title — Date

_____
Signature / Title — Date

_____
Signature / Title — Date

APPROVED FOR USE:

_____
Signature / Title — Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE I.D. NO. _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

| | | |
|---|---|---|
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2770390401 / PLOR-376CA K/A: 233000A2.02
RO: 3.1 SRO: 3.3

TASK DESCRIPTION: HPSW Injection into the Fuel Pool

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Keys for MO-174 and MO-176

C. REFERENCES

Procedure AO 32.3-2, Rev. 2, HPSW Injection into the Fuel Pool

D. TASK STANDARD

1. Performance Location: Simulator

2. Satisfactory task completion is indicated when HPSW is injecting into the Fuel Pool via RHR using "B" HPSW pumps.

3. Estimated time to complete: ?? minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to inject HPSW into the Fuel Pool using the 2B HPSW pumps using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Use of AO 32.3-2, "HPSW Injection into the Fuel Pool" has been directed by Shift Manager.

2. All of the 4 KV busses are receiving power from the off-site startup source.

3. Unit 2 is in Mode 3.

4. 2B, D HPSW pumps are available.

5. RHR to FPC 16" Spool Piece is installed.

6. Access is available to:

   - Fuel Pool Service Water Booster Pump Area, Elev. 165', Reactor Bldg.
   - North Isolation Valve Room, Elev. 135', Reactor Bldg.
   - MCC E324-R-B, Elev. 135', Reactor Bldg.

7. Shift Manager has authorized delaying installation of Equipment Status Tags as permitted by Precaution 3.1 of the referenced procedure.

8. Unit 2 Reactor Operator has authorized use of B loop of HPSW for injection into the Fuel Pool.

G. INITIATING CUE

The Control Room Supervisor directs you to inject HPSW into the Fuel Pool using the "B" Loop of HPSW per AO 32.3-2, "HPSW Injection into the Fuel Pool", starting at Step 4.1.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Verify 2BP035 "B RHR Pump" shutdown. | P | B RHR pump 2BP035 green light verified ON at panel 20C003 |
| 2 | Verify 2DP035 "D RHR Pump" shutdown. | P | D RHR pump 2DP035 green light verified ON at panel 20C003 |
| 3 | Verify 2BP042 "B HPSW Pump" shutdown. | P | HPSW pump 2BP042 green light verified ON at panel 20C003-02. |
| 4 | Verify 2DP042 "D HPSW Pump" shutdown. | P | HPSW pump 2DP042 green light verified ON at panel 20C003-02. |
| 5 | Verify MO-2-10-89B, 2B HPSW HX Outlet valve closed. | P | MO-2-10-89B, green light verified ON at panel 20C003. |
| 6 | Verify MO-2-10-89D, 2D HPSW HX Outlet valve closed. | P | MO-2-10-89D, green light verified ON at panel 20C003. |
| 7 | Verify MO-2-10-039B, "Torus Header Valve" closed. | P | MO-2-10-039B, green light verified ON at panel 20C003. |
| 8 | Verify MO-2-10-025B, "LPCI Injection Valve" closed. | P | MO-2-10-025B, green light verified ON at panel 20C003. |
| 9 | Verify MO-2-10-026B, "Containment Spray Valve" closed. | P | MO-2-10-026B, green light verified ON at panel 20C003. |
| | ***** NOTE *****<br>**Procedure requires MO-013B(D) be "verified" closed – since the normal position is OPEN, the candidate is expected to use the definition of the word "verified" as direction to manipulate the valve. A short discussion of this with supervision would be expected, and the Evaluator should role play as required without cuing the candidate.** | | |
| *10 | CLOSE MO-2-10-013B, "B RHR Suction Valve". | P | Key is obtained from SSV key box and inserted into the MO-2-10-13B keylock switch. Key lock switch is taken to the CLOSED position. |
| 11 | Verify MO-2-10-013B, "B RHR Suction Valve" closed. | P | MO-2-10-013B, green light verified ON at panel 20C003. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 12 | Verify MO-2-10-015B, "B RHR Suction Valve" closed. | P | MO-2-10-015B, green light verified ON at panel 20C003. |
| *13 | CLOSE MO-2-10-013D, "D RHR Suction Valve". | P | Key is obtained from SSV key box and inserted into the MO-2-10-13D keylock switch. Key lock switch is taken to the CLOSED position. |
| 14 | Verify MO-2-10-013D, "D RHR Suction Valve" closed. | P | MO-2-10-013D, green light verified ON at panel 20C003. |
| 15 | Verify MO-2-10-015D, "D RHR Suction Valve" closed. | P | MO-2-10-015D, green light verified ON at panel 20C003. |
| 16 | Verify MO-2-32-2344 (10-186) "HPSW Loop Cross Tie" closed. | P | MO-2-32-2344 (10-186), green light verified ON at panel 20C003-03. |
| | ***** NOTE *****<br>**Simulator Operator action is required for the following step.** | | |
| 17 | Direct an Operator to Close or Verify Closed HV-2-10-70B, RHR Pressurizing Line Block Valve To RHR Loop B" | P | Operator dispatched to manipulate valve as directed, candidate does not proceed until report of valve status is received. |
| 18 | Direct an Operator to Unlock and Open HV-2-10-180, "RHR Discharge to Fuel Pool Block Valve" | P | Operator dispatched to manipulate valve as directed, candidate does not proceed until report of valve status is received. |
| 19 | Direct an Equipment Operator to throttle open throttle open EITHER HV-2-19-24457A OR HV-2-19-24457B, "RHR to Fuel Storage Pool Diffuser Block Valve" | P | Operator dispatched to manipulate valve as directed, candidate does not proceed until report of valve status is received. |
| | ***** NOTE *****<br>**Simulator Operator action is required for the following step.** | | |
| 20 | Direct an Equipment Operator to CLOSE E324-R-B (3863), "Emerg Intertie Valve MO-2-10-176" | P | Operator dispatched to manipulate valve as directed, candidate does not proceed until report of valve status is received. |
| 21 | Verify position indication for MO-2-10-176, "HPSW to RHR Emergency Outer Cross-Tie" is ON at Panel 20C003-03. | P | MO-2-10-176, green light verified ON at panel 20C003-03 |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *22 | Open MO-2-10-174, "HPSW/ RHR Inner Cross Tie" valve. | P | Key is obtained from SSV keybox, inserted into MO-2-10-174, keylock switch and placed in the OPEN position at panel 20C003-03. |
| 23 | Verify MO-2-10-174, "HPSW/RHR Inner Cross Tie" valve open. | P | MO-2-10-174, red light verified ON at panel 20C003-03. |
| *24 | Open MO-2-10-176, "HPSW/RHR Outer Cross Tie" valve. | P | Key is obtained from SSV keybox, inserted into MO-2-10-176, keylock switch and placed in the OPEN position at panel 20C003-03. |
| 25 | Verify MO-2-10-176, "HPSW/RHR Outer Cross Tie" valve open. | P | MO-2-10-176, red light verified ON at panel 20C003-03. |
| 26 | Notify Shift Management that the "B" HPSW Loop Pre-injection lineup is complete. | P | Notification made. |
| 27 | Perform GP-15 evacuation of Reactor Bldg. | S | GP-15 evacuation requirement recognized and discussed with Evaluator. |
| ****NOTE****<br><br>**Alternate Path starts with next step.** | | | |
| ****NOTE****<br><br>**Whichever HPSW pump is initially selected for start will exhibit Overcurrent indications. Candidate is expected to respond by tripping the pump. IF candidate fails to take this action, the pump will trip automatically after 60 seconds. Automatic trip will require Simulator Operator action to remove trip function from other HPSW pump.** | | | |
| 28 | Start the "2B" or "2D" HPSW pump. | P | "2B" or "2D" HPSW pump control switch is momentarily placed in the START position at panel 20C003-04. |
| 29 | Identify HPSW pump overcurrent condition. | P | Recognizes ammeter indicates overcurrent condition, acknowledges 225 E-5 or 226 E-3 pump overcurrent alarm. |
| 30 | Secure the running HPSW pump. | P | "2B" or "2D" HPSW pump control switch is momentarily placed in the STOP position at panel 20C003-04. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *31 | Start the "2B" or "2D" HPSW pump. | P | "2B" or "2D" HPSW pump control switch is momentarily placed in the START position at panel 20C003-04. |
| 32 | Verify proper start of the running HPSW pump. | P | HPSW pump red light is ON, pump motor amps are ~70 on ammeter 10A-A2B(D). |
| 33 | Verify fuel pool level is rising by requesting observation of fuel pool level or indirectly by monitoring Fuel Floor and/or Fuel Pool Rad levels. | S | Candidate discusses need to monitor Fuel Pool level for effect of injection either by direct observation or by indirect observation using Rad levels as described in AO 32.3-2 Step 4.3.15. The candidate may discuss requirement to secure pump to control Fuel Pool level as described in Step 4.3.16. |
| 34 | Inform the Control Room Supervisor of task completion. | P | Task completion reported. |
| 35 | As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When either the "2B" or "2D" HPSW pump is injecting into the fuel pool, the Control Room Supervisor should be informed. The candidate should make effort to ascertain effect of HPSW injection per procedure guidance. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. Use of AO 32.3-2, "HPSW Injection into the Fuel Pool" has been directed by Shift Manager.

2. All of the 4 KV busses are receiving power from the off-site startup source.

3. Unit 2 is in Mode 3.

4. 2B, D HPSW pumps are available.

5. RHR to FPC 16" Spool Piece is installed.

6. Access is available to:
   - Fuel Pool Service Water Booster Pump Area, Elev. 165', Reactor Bldg.
   - North Isolation Valve Room, Elev. 135', Reactor Bldg.
   - MCC E324-R-B, Elev. 135', Reactor Bldg.

7. Shift Manager has authorized delaying installation of Equipment Status Tags as permitted by Precaution 3.1 of the referenced procedure.

8. Unit 2 Reactor Operator has authorized use of B loop of HPSW for injection into the Fuel Pool.

## INITIATING CUE

The Control Room Supervisor directs you to inject HPSW into the Fuel Pool using the "B" Loop of HPSW per AO 32.3-2, "HPSW Injection into the Fuel Pool", starting at Step 4.1.

Exelon Nuclear
Peach Bottom Unit 2

# AO 32.3-2 HPSW INJECTION INTO THE FUEL POOL

## 1.0 PURPOSE

This procedure provides the instructions necessary to provide Fuel Pool injection using one or two HPSW pumps via the RHR/HPSW Cross-Tie when an actual or imminent condition exists for uncovering fuel in the Fuel Pool. **CM-1**

## 2.0 PREREQUISITES

2.1 Reactor in MODE 3, 4 OR 5.

2.2 HPSW pump(s) available.

2.3 RHR to FPC 16" Spool Piece installed (165 elev -Normally Installed).

2.4 Access to Fuel Pool Service Water Booster Pump Area, Elev. 165', Reactor Bldg.

2.5 Access to North Isolation Valve Room AND MCC E324-R-B, Elev. 135', Reactor Bldg.

2.6 One MCR operator is required.

2.7 Two Equipment Operators are preferred.

## 3.0 PRECAUTIONS

3.1 An Equipment Status Tag (EST) will be installed on HV-2-19-24457A OR HV-2-19-24457B, "RHR to Fuel Storage Pool Diffuser Block Valve". Depending on the urgency of implementing this procedure, the EST may be installed later AND the appropriate step initialed out of sequence.

3.2 Locked valves shall be manipulated in accordance with OP-AA-108-103, "Locked Equipment Program".

INITIALS

## 4.0 PERFORMANCE STEPS

**NOTES**

1. Since Fuel Floor access may not be possible, maintaining Fuel Pool AND Fuel Floor Rad Levels below the High Radiation Alarm setpoint will ensure the Spent Fuel is submerged.
2. "B" AND "D" HPSW pumps are the preferred pumps for Fuel Pool injection. This allows injection without opening MO-2-32-2344(10-186), "HPSW Loop Cross Tie". However, the "A" AND "C" HPSW pumps may be used if necessary.
3. IF "A" AND "B" HPSW loops are cross-tied, THEN one HPSW loop must be declared inoperable.

### 4.1 "B" HPSW Loop System Pre-Injection Lineup (Preferred)

4.1.1 IF the "B" HPSW loop will be used for Fuel Pool injection, THEN perform Section 4.1 AND N/A Section 4.2. Otherwise, N/A Section 4.1 AND proceed to Section 4.2 to inject with "A" HPSW loop. _____

4.1.2 Verify the following RHR AND HPSW pumps are shutdown at Panel 20C003:

- o 2BP035, "B RHR Pump" _____
- o 2DP035, "D RHR Pump" _____
- o 2BP042, "B HPSW Pump" _____
- o 2DP042, "D HPSW Pump" _____

INITIALS

4.1.3 Verify closed the following valves at Panel 20C003:

- o MO-2-10-089B, "B HPSW Hx Out" _____
- o MO-2-10-089D, "D HPSW Hx Out" _____
- o MO-2-10-039B, "Torus Header Valve" _____
- o MO-2-10-025B "LPCI Injection Valve" _____
- o MO-2-10-026B, "Containment Spray Valve" _____
- o MO-2-10-013B, "B RHR Pump Suction Valve" _____
- o MO-2-10-015B, "B RHR Pump Suction Valve" _____
- o MO-2-10-013D, "D RHR Pump Suction Valve" _____
- o MO-2-10-015D, "D RHR Pump Suction Valve" _____

4.1.4 Verify closed MO-2-32-2344(10-186), "HPSW Loop Cross Tie" at Panel 20C003-03. _____

4.1.5 Direct an Operator to close OR verify closed HV-2-10-70B, "RHR Pressurizing Line Block Valve To RHR Loop B". _____

4.1.6 Unlock AND open HV-2-10-180, "RHR Discharge to Fuel Pool Block Valve" located in North Isolation Valve Room. _____

4.1.7 Direct an Operator to throttle open EITHER HV-2-19-24457A OR HV-2-19-24457B, "RHR to Fuel Storage Pool Diffuser Block Valve" (located on Reactor Bldg. Elev. 165' near Fuel Pool Service Water Booster Pumps). _____

INITIALS

4.1.8 Attach an Equipment Status Tag to the valve opened in Step 4.1.7 stating "HV-2-19-24457A(B) is throttled open in accordance with AO 32.3-2". _____

4.1.9 Direct an Operator to close E324-R-B (3863), "Emerg Intertie Valve MO-2-10-176". _____

4.1.10 Verify position indication for MO-2-10-176, "HPSW to RHR Emergency Outer Cross-Tie" is ON at Panel 20C003-03. _____

4.1.11 Open the following valves using the keylock switches on Panel 20C003:

- o MO-2-10-174, "HPSW to RHR Emergency Inner Cross-Tie" _____
- o MO-2-10-176, "HPSW to RHR Emergency Outer Cross-Tie" _____

4.1.12 Notify Shift Management the "B" HPSW Loop Pre-injection lineup is complete. _____

4.1.13 Perform GP-15, "Local Evacuation" for the Unit 2 Reactor Building due to potential flooding. _____

**NOTE**

The following steps will inject using the "B" OR "D" HPSW Pumps for injection. Before starting a HPSW pump that is being supplied by a Diesel Generator, ensure the load on the associated Diesel Generator is below 2,300 KW. **CM-1**

4.1.14 Start "B" OR "D" HPSW pump. _____

4.1.15 IF Fuel Pool Level cannot be verified, THEN monitor Fuel Floor AND Fuel Pool Radiation levels on Panel 20C010 during HPSW injection. _____

INITIALS

4.1.16 Secure pump(s) as necessary to maintain Fuel Pool level above spent fuel by maintaining radiation Levels below the High radiation alarm setpoints AND minimize the overflow of Fuel Pool inventory to the Reactor Building. _____

4.2 "A" HPSW Loop System Pre-Injection Lineup

**CAUTION**

Shutdown Cooling will be unavailable if using this lineup.

4.2.1 Verify the following RHR and HPSW pumps are shutdown at Panel 20C003:

- o 2BP035, "B RHR Pump" _____
- o 2DP035, "D RHR Pump" _____
- o 2AP042, "A HPSW Pump" _____
- o 2BP042, "B HPSW Pump" _____
- o 2CP042, "C HPSW Pump" _____
- o 2DP042, "D HPSW Pump" _____

INITIALS

4.2.2 Verify closed the following valves at Panel 20C003:

- o MO-2-10-089A, "A HPSW Hx Out" _____
- o MO-2-10-089C, "C HPSW Hx Out" _____
- o MO-2-10-089B, "B HPSW Hx Out" _____
- o MO-2-10-089D, "D HPSW Hx Out" _____
- o MO-2-10-039B, "Torus Header Valve" _____
- o MO-2-10-025B, "LPCI Injection Valve" _____
- o MO-2-10-026B, "Containment Spray Valve" _____
- o MO-2-10-013B, "B RHR Pump Suction Valve" _____
- o MO-2-10-015B, "B RHR Pump Suction Valve" _____
- o MO-2-10-013D, "D RHR Pump Suction Valve" _____
- o MO-2-10-015D, "D RHR Pump Suction Valve" _____

4.2.3 Open MO-2-32-2344(10-186), "HPSW Loop Cross Tie" using its keylock switch at Panel 20C003-03. _____

4.2.4 Direct an Operator to close OR verify closed HV-2-10-70B, "RHR Pressurizing Line Block Valve To RHR Loop B". _____

4.2.5 Unlock AND open HV-2-10-180, "RHR Discharge to Fuel Pool Block Valve" located in North Isolation Valve Room. _____

INITIALS

4.2.6 Direct an Operator to throttle open EITHER HV-2-19-24457A OR HV-2-19-24457B, "RHR to Fuel Storage Pool Diffuser Block Valve" (located on Reactor Bldg. Elev. 165' near Fuel Pool Service Water Booster Pumps). _____

4.2.7 Attach an Equipment Status Tag to the valve opened in Step 4.2.6 stating "HV-2-19-24457A(B) is throttled open in accordance with AO 32.3-2". _____

4.2.8 Direct an Operator to close E324-R-B (3863), "Emerg Intertie Valve MO-2-10-176". _____

4.2.9 Verify position indication for MO-2-10-176, "HPSW to RHR Emergency Outer Cross-Tie" is ON at Panel 20C003-03. _____

4.2.10 Open the following valves using the keylock switches on Panel 20C003:

- o MO-2-10-174, "HPSW to RHR Emergency Inner Cross-Tie" _____
- o MO-2-10-176, "HPSW to RHR Emergency Outer Cross-Tie" _____

4.2.11 Inform Shift Management the HPSW "A" Loop Pre-injection lineup is complete. _____

4.2.12 Perform GP-15, "Local Evacuation" for the Unit 2 Reactor Building due to potential flooding. _____

**NOTE**

The following steps will inject using the "A" OR "C" HPSW Pump for injection. Before starting a HPSW pump that is to be supplied by a Diesel Generator, ensure the load on the associated Diesel Generator is below 2,300 KW. **CM-1**

4.2.13 Start "A" OR "C" HPSW pump. _____

INITIALS

4.2.14 IF Fuel Pool level cannot be verified, THEN monitor Fuel Floor AND Fuel Pool radiation levels on Panel 20C010 during HPSW injection. _____

4.2.15 Secure pump(s) as necessary to maintain Fuel Pool level above spent fuel by maintaining Radiation levels below the High Radiation alarm setpoints AND minimize the overflow of Fuel Pool inventory to the Reactor Building. _____

4.3 System Restoration

4.3.1 Shutdown the running HPSW Pump(s)aligned for injection. _____

4.3.2 Close OR verify closed MO-2-32-2344(10-186), "HPSW Loop Cross Tie" using its keylock switch at Panel 20C003-03. _____

_____
IV

4.3.3 Open HV-2-10-70B, "RHR Pressurizing Line Block Valve To RHR Loop B". _____

_____
IV

4.3.4 Close OR verify closed the following valves using the keylock switches on Panel 20C003:

- o MO-2-10-174, "HPSW to RHR Emergency Inner Cross-Tie" _____

_____
IV

- o MO-2-10-176, "HPSW to RHR Emergency Outer Cross-Tie" _____

_____
IV

INITIALS

4.3.5 Direct an Operator to close AND lock HV-2-10-180, "RHR Discharge to Fuel Pool Block Valve" located in North Isolation Valve Room. _____

_____
IV

4.3.6 Direct an Operator to close OR verify closed HV-2-19-24457A AND HV-2-19-24457B, "RHR to Fuel Storage Pool Diffuser Block Valve" RB 165 Elv. _____

_____
IV

4.3.7 Remove Equipment Status Tag from HV-2-19-24457A OR HV-2-19-24457B. _____

4.3.8 Director an Operator to open breaker E324-R-B (3863), "Emerg Intertie Valve MO-2-10-176". _____

_____
IV

4.3.9 Notify Shift Management the "B(A)" loop of HPSW (whichever was aligned for Fuel Pool injection) has been restored to normal lineup. _____

5.0 CONTROL STATIONS

5.1 20C003, Reactor And Containment Cooling And Isolation

5.2 20C010, Process Radiation Monitor Board

## 6.0 REFERENCES

6.1 P&ID M-361, Residual Heat Removal

6.2 P&ID M-315, High Pressure Service Water

6.3 CM-1, May 31, 2005 Letter from J.A. Benjamin (Exelon) to NRC on I.C.M. B.5.b compliance (T04584)

6.4 A1754609, MSOPS Scenario 2p (ECR 11-00133)

6.5 OP-AA-108-103, "Locked Equipment Program"

## 7.0 TECHNICAL SPECIFICATIONS

7.1 LCO 3.7.1

## 8.0 INTERFACING PROCEDURES

8.1 GP-15, "Local Evacuation"

# PBAPS ALARM RESPONSE CARD

WINDOW LOCATION

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | X |
| 4 | | | | | |
| 5 | | | | | |

ALARM WORDING

D
HIGH PRESS
SERVICE
WATER PUMP
OVERCURRENT

AUTOMATIC ACTIONS:

1. "D" High Pressure Service Water Pump may trip.

NOTE: This pump will NOT trip if only the Time Overcurrent Relay has energized.

OPERATOR ACTIONS:

1. IF the pump has NOT tripped, THEN check pump indicated amps (120 amps max) at Panel 20C003-02 AND remove the pump from service ASAP in accordance with SO 32.2.A-2, "High Pressure Service Water System Shutdown".
2. IF required by ON, OT, or TRIP procedures, THEN start other HPSW Pump(s) in accordance with SO 32.1.A-2, "High Pressure Service Water System Startup and Normal Operations".
3. Investigate cause of pump overcurrent.
4. Review Tech Specs.

CAUSE:

1. Motor overcurrent relay 150/151 actuated on:
   a. Time Overcurrent (alarm only)
   b. Instantaneous Overcurrent fault condition AND locked rotor (pump trip)

ALARM SETPOINT:

1. Time Overcurrent: Variable (151/TOC)
2. Instantaneous Overcurrent: Fault Condition (151/IOC-A) AND Locked Rotor (151/IOC-B)

ALARM RESET:

MANUAL

ACTUATING DEVICE(S):

Overcurrent Alarm Relay 151X-1804

REFERENCES:

E-238 SO 32.2.A-2
E-185
M-1-S-65
SO 32.1.A-2

ARC NUMBER: 226

20C203D E-3

Rev. 1

# P B A P S  A L A R M  R E S P O N S E  C A R D

**WINDOW LOCATION**

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | X |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |

**ALARM WORDING**

D
HIGH PRESS
SERVICE
WATER PUMP
TRIP

AUTOMATIC ACTIONS:
"D" High Pressure Service Water Pump Trips

OPERATOR ACTIONS:
1. Verify "D" High Pressure Service Water Pump Tripped.
2. Notify Shift Management.
3. Start additional HPSW Pump(s) as required per SO 32.1.A-2.
4. Dispatch an operator to investigate the cause of the pump trip.
5. Review Tech Specs for LCO.

CAUSE:
1. 150/151; Motor Overcurrent Relay
2. 150G; Motor Ground Inst. Overcurrent Relay
3. 186BX-18; E-42 Bus Overcurrent Relay
4. 127X-18; E-42 Bus Undervoltage Relay
5. 186-18; E-42 Bus Differential Relay
6. "D" HPSW CS (152-1804) in "Normal After Start" AND
   152HH Bkr Cell Switch made (Test or Bkr down)
7. Relay 10A-K62B energized due to HPSW Manual Override Switch
   (10A-S19B) in AUTO and 10A-K9B energized.
8. Breaker Prop Reset spring failure.

ALARM SETPOINT:
N/A

ALARM RESET:
Rev. 0

ACTUATING DEVICE(S):
"D" HPSW Pump Control Switch (152-1804) in "NORMAL AFTER START and "D" HPSW Pump circuit breaker open as proven by: 152-1804
b

MANUAL

REFERENCES:
E-238
E-185
E-188
M-1-S-65

ARC NUMBER: 226

20C203D E-2

Rev. 0

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | CR_Sys_b |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #:: | 000 |
| AUTHOR: | M. J. Kelly | TYPIST: | mjk |
| TITLE: | RAISE HPCI FLOW (ALTERNATE PATH - SUCTION VALVES FAIL TO AUTO SWAP ON LOW CST LEVEL) | | |

APPROVALS:

_____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

APPROVED FOR USE:

_____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | | |
|---|---|---|
| NAME: _____<br>Last First M.I.<br><br>EMPLOYEE NO. _____ | ISSUE DATE: _____<br><br>COMPLETION DATE: _____ | |
| COMMENTS: | | |
| Training Review for Completeness:<br><br>_____<br>Signature/Date | LMS CODE:<br><br>LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2060250101 / PLOR-333CA K/A: 206000A2.09
URO: 3.5 SRO: 3.7

TASK DESCRIPTION: Transfer of HPCI Suction From CST To Torus

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

1. Alarm Response Card 221 C-3, Rev. 4, Condensate Storage Tank Level Low-Low

2. Procedure SO 23.7.B-2, Rev. 7, "Transfer of HPCI Pump Suction from CST to Torus" (R)

D. TASK STANDARD

1. Satisfactory task completion is indicated when HPCI flow has been raised to 5000 gpm and pump suction is manually transferred from the CST to the Torus (Torus suction valves open and CST suction valve closed) without adverse effects on RPV injection.

2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to raise HPCI flowrate to 5000 gpm. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. HPCI is injecting into the RPV at 4000 gpm in response to a low RPV level transient.

2. RCIC is isolated.

3. Torus Cooling is in service per RRC 10.1-2, "RHR System Torus Cooling During a Plant Event."

G. INITIATING CUE

The Control Room Supervisor directs you, the Plant Reactor Operator, to raise HPCI flowrate to 5000 gpm.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Raise HPCI Flow Rate to 5000 gpm.<br><br>(Cue: The HPCI Flow Controller is now indicating 5000.) | P | The HPCI Flow Controller knob is adjusted in the clockwise direction to raise the flow rate setting from 4000 gpm to 5000 gpm. |
| 2 | HPCI Flow is verified to rise toward 5000 gpm.<br><br>(Cue: The Flow Indicator is reading 5000 gpm.) | P | FI-2-23-108 is monitored to verify that the actual flow rate rises to 5000 gpm. |
| **NOTE**<br>Approximately 15 seconds after flow has been raised to 4950 gpm,<br>Annunciator 221 C-3 "CONDENSATE STOR TANK LEVEL LOW - LOW"<br>will be received initiating the next part of the JPM. | | | |
| 3 | Recognize the Condensate Storage Tank Low Level Condition alarm.<br><br>(Cue: Report Annunciator 221 C-3 is alarming.) | P | Recognize by reporting annunciator 221 C-3 is alarming indicating a Low CST Level condition. |
| 4 | Obtain a copy of Alarm Response Card 221 C-3. | P | Candidate references ARC 221 C-3, CONDENSATE STOR TANK LEVEL LOW - LOW. |
| 5 | Verify the Low CST Level Condition.<br><br>(Cue: CST level is indicating 5 feet.) | P | Candidate verifies that CST Level is low by referencing LR-2217 on 20C007A or LI-2217 OR LI-8453 on 20C004. (The candidate may also send an EO to verify level on LI-2210.) |
| 6 | Recognize that HPCI failed to automatically swap suction paths on low CST level.<br><br>(Cue: Acknowledge report.) | P | Candidate will recognize by reporting that the HPCI suction path failed to automatically swap. (A RCIC suction swap is not required due to RCIC being isolated.) |

| | | | |
|---|---|---|---|
| 7 | Obtain a copy of procedure SO 23.7.B-2<br>OR<br>Implement auto actions of ARC 221 C-3. | P | A copy of procedure SO 23.7.B-2, "Transfer of HPCI Pump Suction from CST to Torus", is obtained. Steps 4.6 through 4.9,<br><br>OR<br><br>The auto actions of ARC 221 C-3 should be referenced for transient conditions. |
| *8 | Open MO-2-23-057 HPCI Torus Suction valve.<br><br>(Cue: Acknowledge control switch operation.) | P | MO-2-23-057 control switch is momentarily placed in the OPEN position then released at panel 20C004B. |
| *9 | Open MO-2-23-058, HPCI Torus Suction valve.<br><br>(Cue: Acknowledge control switch operation.) | P | MO-2-23-058 control switch is momentarily placed in the OPEN position then released at panel 20C004B. |
| 10 | Verify MO-2-23-057 and MO-2-23-058, HPCI Torus Suction valves are open.<br><br>(Cue: MO-57 and MO-58 red lights are on, green lights are off.) | P | MO-2-23-057 and MO-2-23-058 red lights are verified ON, and green lights OFF at panel 20C004B. |
| 11 | Verify MO-2-23-017 Cond Tank Suction valve automatically closes when MO-2-23-057 and MO-2-23-058 are full open.<br><br>(Cue: MO-17 green light is off, red light is on.) | P | Recognize that MO-2-23-017 failed to close as indicated by the green light verified OFF and red light verified ON at panel 20C004B. |
| *12 | Close MO-2-23-017, Cond Tank Suction valve.<br><br>(Cue: Acknowledge control switch operation.) | P | MO-2-23-017 control switch is momentarily placed in the CLOSE position then released at panel 20C004B. |
| 13 | Verify MO-2-23-017, Cond Tank Suction valve is closed.<br><br>(Cue: MO-17 green light is on, red light is | P | MO-2-23-017 green light is verified ON, and red light OFF at panel 20C004B. |

| | | | |
|---|---|---|---|
| | off.) | | |
| 14 | Check Level Switches responsible for the automatic swap.<br>(Cue: Acknowledge direction.) | P | Direct that LS-2-23-74 and LS-2-23-75 be checked for proper operation due to the failed auto transfer. |
| 15 | Inform Control Room Supervisor of task completion.<br><br>(Cue: Acknowledge report.) | P | Task completion reported. |
| 16 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the HPCI suction has been transferred to the Torus, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. HPCI is injecting into the RPV at 4000 gpm in response to a low RPV level transient.

2. RCIC is isolated.

3. Torus Cooling is in service per RRC 10.1-2, "RHR System Torus Cooling During a Plant Event."

## INITIATING CUE

The Control Room Supervisor directs you, the Plant Reactor Operator, to raise the HPCI flowrate to 5000 gpm.

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM | QUALIFICATION MANUAL | OJT MODULE |
| PROGRAM: | Licensed Operator Training | CODE #: | CR_Sys_c |
| COURSE: | Licensed Operator Requalification | REV #: | 000 |
| AUTHOR: | M. J. Kelly | TYPIST: | jav |
| TITLE: | Reopen The Main Steam Isolation Valves After a GP I Isolation | | |

APPROVALS:

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

APPROVED FOR USE: _____ _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE ID#: _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____
Signature/Date

| | |
|---|---|
| LMS CODE: | |
| LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2000800501 / PLOR-083C K/A: 239001A4.01
RO: 4.2 SRO: 4.0

TASK DESCRIPTION: Reopen the Main Steam Isolation Valves after a GP I Isolation

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

Procedure T-221-2, Rev. 10, "Main Steam Isolation Valve Bypass"

D. TASK STANDARD

1. Satisfactory task completion is indicated when Inboard MSIVs are open.

2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to reopen the MSIVs using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Use of this procedure has been directed by the TRIP procedures.

2. Main Condenser is available.

3. RPV level is known.

4. There is no indication of gross fuel failure.

5. There is no indication of a Main Steam Line break.

6. All T-221 Tool Packages have been obtained.

7. Inboard and Outboard MSIVs are closed.

8. Steps 4.1 thru 4.5 of T-221-2, "Main Steam Isolation Valve Bypass" are complete.

G. INITIATING CUE

- The Control Room Supervisor directs you to perform T-221-2, "Main Steam Isolation Valve Bypass" steps 4.6 through 4.12 in order to reopen the MSIVs.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of procedure T-221-2. | P | A copy of procedure T-221-2 is obtained. |
| *2 | Open AO-2-02-086A "A" Outboard MSIV. | P | AO-2-02-086A control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 3 | Verify AO-2-02-086A "A" Outboard MSIV is open. | P | AO-2-02-086A red light is verified ON at panel 20C003-01. |
| *4 | Open AO-2-02-086B "B" Outboard MSIV. | P | AO-2-02-086B control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 5 | Verify AO-2-02-086B "B" Outboard MSIV is open. | P | AO-2-02-086B red light is verified ON at panel 20C003-01. |
| *6 | Open AO-2-02-086C "C" Outboard MSIV. | P | AO-2-02-086C control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 7 | Verify AO-2-02-086C "C" Outboard MSIV is open. | P | AO-2-02-086C red light is verified ON at panel 20C003-01. |
| *8 | Open AO-2-02-086D "D" Outboard MSIV. | P | AO-2-02-086D control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 9 | Verify AO-2-02-086D "D" Outboard MSIV is open. | P | AO-2-02-086D red light is verified ON at panel 20C003-01. |
| *10 | Open MO-2-02-077, Outboard Main Steam Drain valve. | P | MO-2-02-077 control switch is momentarily placed in the "OPEN" position at panel 20C003-03. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 11 | Verify MO-2-02-077, Outboard Main Steam Drain valve open. | P | MO-2-02-077 red light is verified ON at panel 20C003-03. |
| *12 | Open MO-2-02-074, Inboard Main Steam Drain valve. | P | MO-2-02-074 control switch is momentarily placed in the "OPEN" position at panel 20C003-03. |
| 13 | Verify MO-2-02-074 Inboard Main Steam Drain valve is open. | P | MO-2-02-074 red light is verified ON at panel 20C003-03. |
| 14 | Verify closed MO-2-02-079, Orifice Bypass to Main Cndr valve. | P | MO-2-02-079 green light is verified ON at panel 20C003-03. |
| *15 | Open MO-2-02-078, Downstream Drain valve. | P | MO-2-02-078 control switch is momentarily placed in the "OPEN" position at panel 20C003-03. |
| 16 | Verify MO-2-02-078 Downstream Drain valve is open. | P | MO-2-02-078 red light is verified ON at panel 20C003-03. |
| 17 | Observe pressure differential across the Inboard MSIVs.<br><br>Determine the difference between Reactor pressure on PI-2-06-090A(B)(C) and "Steam Line" pressure on PR-2865 on panel 20C008A. | P | Pressure differential across the Inboard MSIVs is determined using PI-2-06-090A(B)(C) at panel 20C005A, and "Steam Line" PR-2865 at panel 20C008A. |
| 18 | Verify differential pressure across the inboard MSIVs is less than 150 psid. | P | Differential pressure across the inboard MSIVs is verified less than 150 psig on PI-2-06-090A(B)(C) at panel 20C005A, and "Steam Line" PR-2865 at panel 20C008A. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *19 | Open AO-2-02-080A "A" Inboard MSIV. | P | AO-2-02-080A control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 20 | Verify AO-2-02-080A "A" Inboard MSIV is open. | P | AO-2-02-080A red light is verified ON at panel 20C003-01. |
| *21 | Open AO-2-02-080B "B" Inboard MSIV. | P | AO-2-02-080B control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 22 | Verify AO-2-02-080B "B" Inboard MSIV is open. | P | AO-2-02-080B red light is verified ON at panel 20C003-01. |
| *23 | Open AO-2-02-080C "C" Inboard MSIV. | P | AO-2-02-080C control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 24 | Verify AO-2-02-080C "C" Inboard MSIV is open. | P | AO-2-02-080C red light is verified ON at panel 20C003-01. |
| *25 | Open AO-2-02-080D "D" Inboard MSIV. | P | AO-2-02-080D control switch is placed in the "AUTO/OPEN" position at panel 20C003-01. |
| 26 | Verify AO-2-02-080D "D" Inboard MSIV is open. | P | AO-2-02-080D red light is verified ON at panel 20C003-01. |
| 27 | Inform Control Room Supervisor of task completion. | P | Task completion reported. |
| 28 | As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the MSIVs have been reopened, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. Use of this procedure has been directed by the TRIP procedures.

2. Main Condenser is available.

3. RPV level is known.

4. There is no indication of gross fuel failure.

5. There is no indication of a Main Steam Line break.

6. All T-221 Tool Packages have been obtained.

7. Inboard and Outboard MSIVs are closed.

8. Steps 4.1 thru 4.5 of T-221-2, "Main Steam Isolation Valve Bypass" are complete.

## INITIATING CUE

The Control Room Supervisor directs you to perform T-221-2, “Main Steam Isolation Valve Bypass” steps 4.6 through 4.12 in order to reopen the MSIVs.

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM | ☐ QUALIFICATION MANUAL | ☐ OJT MODULE |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | CR_Sys_d |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 000 |
| AUTHOR: | M. J. Kelly | TYPIST: | jav |
| TITLE: | PERFORM CORE SPRAY B PUMP CAPACITY TEST FOR IST (Alternate Path – Minimum Flow Valve Fails to Open) | | |

APPROVALS: _____
Signature / Title Date

_____
Signature / Title Date

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Signature / Title Date

_____
Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ |
| EMPLOYEE ID#: _____ | COMPLETION DATE: _____ |
| COMMENTS: | |

| | | |
|---|---|---|
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2090140101 / PLOR-335CA K/A: 209001A4.04
URO: 2.9 SRO: 2.9

TASK DESCRIPTION: Ability to manually operate and/or monitor Core Spray minimal flow valves in the control room

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. None

C. REFERENCES

1. ST-O-014-212-2, Rev. 2, "Core Spray B Pump Capacity Test for IST"

D. TASK STANDARD

1. Satisfactory task completion is indicated when it is recognized that the Core Spray B Pump has no minimum flow protection, the pump is secured, and Core Spray B loop is returned to a normal standby lineup, as specified in the performance steps of ST-O-014-212-2, Section 6.0.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to perform Core Spray 2B pump capacity test for IST using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The plant is operating at 100% power.

2. An Equipment Operator is standing by in the 2B and 2D Core Spray Pump Rooms.

3. Communications are available between the Control Room, 2B and 2D Core Spray Pump Rooms, B and D Core Spray Pump Triangle Room, and Cable Spreading Room.

4. Core Spray pump 2B oil level is between the minimum and maximum lines on the sightglass.

5. Core Spray pump 2B static pump suction pressure is 6 psig.

6. All data recording will be performed (simulated) by a second operator.

7. 2B Core Spray pump flow (Computer point H056) is displayed on XI-80187E on the C03-04 panel and on TRIP Table left-side computer screen.

G. INITIATING CUE

The Control Room Supervisor directs you to perform Core Spray 2B Pump Capacity Test for IST in accordance with ST-O-014-212-2 (provided).

Provide examinee a copy of ST-O-014-212-2 with the following items completed:

- Section 1 of the cover page
- Procedure section 2.0, "Test Equipment"
- Procedure section 3.0, "Prerequisites"

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Complete step 6.1.1 of ST-O-014-212-2 as "Not Applicable" | P | Places "N/A" at step 6.1.1 of ST-O-014-212-2. |
| 2 | Verify oil level in the 2B Core Spray pump is between the operating range minimum and maximum lines on sightglass. | P | Places initials in "Sat" column of step 6.1.2 of ST-O-014-212-2. |
| 3 | Record static pump suction pressure from PI-2-14-036B "2B Core Spray Pump Suction Pressure". | P | Documents "6 psig" and places initials in "Sat" column of step 6.1.3 of ST-O-014-212-2. |
| 4 | CLOSE MO-2-14-011B "Core Spray Outboard Disch". | P | MO-2-14-011B control switch is momentarily placed in "CLOSE" at Panel 20C003. |
| 5 | VERIFY CLOSED MO-2-14-011B "Core Spray Outboard Disch". | P | Verifies that MO-2-14-011B green light is ON; red light is OFF at Panel 20C003. |
| ****** NOTE: ******<br><br>**If this JPM is being performed in parallel with another JPM, direct candidate <u>NOT</u> to make the plant page announcement prior to starting 2B Core Spray pump.** | | | |
| *6 | START 2BP037 "Core Spray B Pump". | P | "Starting 2B Core Spray pump" is announced on plant page prior to starting Core Spray pump 2B.<br><br>2B Core Spray pump control switch is momentarily placed in the "START" position at Panel 20C003. |
| 7 | VERIFY Core Spray 2B Pump STARTS and is RUNNING by observing motor current on 14A-M1B and discharge pressure on PI-2-14-048B "Core Spray Disch P". | P | 2B Core Spray pump green light is verified OFF, red light is verified ON. Pump motor amps on ammeter 14A-M1B and discharge pressure on PI-2-14-048B are verified rising at Panel 20C003. |
| 8 | VERIFY MO-2-14-005B "Core Spray B Min Flow" automatically OPENS. | P | MO-2-14-005B green light is verified OFF; red light is verified ON at Panel 20C003. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 9 | VERIFY 2DP037 "Core Spray D Pump" is NOT rotating. | P | Directs Equipment Operator to verify Core Spray D Pump is NOT rotating. |
| *10 | OPEN MO-2-14-026B "Core Spray Full Flow Test". | P | MO-2-14-026B control switch is momentarily placed in "OPEN" at Panel 20C003. |
| 11 | VERIFYOPEN MO-2-14-026B "Core Spray Full Flow Test". | P | MO-2-14-026B green light is verified OFF; red light is verified ON at Panel 20C003. |
| 12 | VERIFY MO-2-14-005B "Core Spray B Min Flow" automatically CLOSES. | P | MO-2-14-005B green light is verified ON; red light is verified OFF at Panel 20C003. |
| | ****** NOTE: ******<br><br>**Time-compress by telling the examinee Core Spray B Pump has been running for 5 minutes.**<br><br>**Remind examinee that a second operator has successfully recorded all full flow test data on Data Sheet 1.** | | |
| | ****** NOTE: ******<br><br>**The Alternate Path portion of this JPM begins with the next step.** | | |
| 13 | THROTTLE MO-2-14-026B "Core Spray Full Flow Test" to obtain Rated Flow of 3125 to 3175 gpm as read on computer point H056. | P | MO-2-14-026B control switch is momentarily placed in "CLOSE" at Panel 20C003. Red pushbutton is depressed to stop valve stroke. Attempt made to operate valve control switch and red pushbutton to achieve 3125 to 3175 gpm as read on PMS computer point H056.<br><br>Recognizes that the MO-2-14-026B has ramped close unexpectedly and that the green closed light is ON and that the red open light is verified OFF at Panel 20C003.<br><br>Report to the CRS that the MO-2-14-026B full flow test valve for the 2B Core Spray Pump has failed to properly operate |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 14 | VERIFY MO-2-14-005B "Core Spray B Min Flow" automatically OPENS. | P | Recognizes that the MO-2-14-005B green light is ON; red light is OFF at Panel 20C003. The Min. Flow Valve has not automatically opened.<br><br>Report to the CRS that the minimum flow valve for the 2B Core Spray Pump has failed to properly operate. |

| | | | |
|---|---|---|---|
| | ***** NOTE: *****<br><br>**IF after 2 minutes, a flowpath is not established AND the Core Spray pump has not been secured, THEN the Simulator Operator will TRIP the Core Spray pump, resulting in inability to successfully complete the critical step and the candidate will FAIL this JPM.** | | |
| *15 | SHUTDOWN 2BP037 "Core Spray B Pump".<br><br>MO-2-14-026B "Core Spray Full Flow Test". | P | 2B Core Spray pump control switch is momentarily placed in the "STOP" position at Panel 20C003.<br><br>2B Core Spray pump green light is verified ON, red light is verified OFF. Pump motor amps on ammeter 14A-M1B and discharge pressure on PI-2-14-048B are verified at zero at Panel 20C003.<br><br>OR<br><br>MO-2-14-026B control switch is momentarily placed in "OPEN" at Panel 20C003. Verifies valve is full open. |
| 16 | Inform Control Room Supervisor of task completion. | P | Control Room Supervisor notified MO-2-14-026B malfunction and test being aborted. |
| 17 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

## I. TERMINATING CUE

When it is recognized that the Core Spray B Pump has no minimum flow protection and the pump is secured, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. The plant is operating at 100% power.

2. An Equipment Operator is standing by in the 2B and 2D Core Spray Pump Rooms.

3. Communications are available between the Control Room, 2B and 2D Core Spray Pump Rooms, B and D Core Spray Pump Triangle Room, and Cable Spreading Room.

4. Core Spray pump 2B oil level is between the minimum and maximum lines on the sightglass.

5. Core Spray pump 2B static pump suction pressure is 6 psig.

6. All data recording will be performed (simulated) by a second operator.

7. 2B Core Spray pump flow (Computer point H056) is displayed on XI-80187E on the C03-04 panel and on XI-80190E at the TRIP Table left-side computer screen.

## INITIATING CUE

**The Control Room Supervisor directs you to perform Core Spray 2B pump capacity test for IST in accordance with ST-O-014-212-2 (provided).**

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | CR_Sys_e |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 000 |
| AUTHOR: | M. J. Kelly | TYPIST: | jav |
| TITLE: | PERFORM A GROUP I PCIS ISOLATION RESET (GP-8A) | | |

APPROVALS: _____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

_____ Signature / Title _____ Date

APPROVED FOR USE: _____ Signature / Title _____ Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ |
| EMPLOYEE ID#: _____ | COMPLETION DATE: _____ |
| COMMENTS: | |
| Training Review for Completeness: _____ Signature/Date | LMS CODE: |
| | LMS ENTRY: |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2000490501 / PLOR-024C K/A: 223002A4.03
URO: 3.6 SRO: 3.5

TASK DESCRIPTION: Perform a Group I PCIS Isolation Reset GP-8A)

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

Hand the Examinee a copy of C.O.L. GP-8.A with "As Found Position" column initials already filled in.

C. REFERENCES

1. Procedure GP-8.A, Rev. 10, "PCIS Isolation - Group I"

2. C.O.L. GP-8.A, Rev. 8, "Group I Isolation"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the PCIS Group I Isolation is reset.

2. Estimated time to complete: 8 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to reset the PCIS Group I isolation using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The plant had been at 100% power.

2. A PCIS Group I isolation has occurred and has been verified to be a result of Main Steam tunnel high temperature.

3. The cause of the PCIS Group I isolation has been corrected, and the isolation signal is clear.

4. The plant is in a safe, stable shutdown condition.

5. CAV (Crack Arrest Verification) System is not in operation.

6. GP-8.A, "PCIS Isolation - Group I" steps 3.1 and 3.2 have been completed.

7. There is no indication of fuel damage.

8. There is no evidence of a steam leak.

G. INITIATING CUE

The Control Room Supervisor directs you to reset the PCIS Group I isolation logic per steps 4.1 through 4.4 of GP-8.A, "PCIS Isolation - Group I".

## H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain copies of procedures GP-8A and COL GP-8A. | P | Copies of procedures GP-8A and COL GP-8A are obtained. |
| | **** NOTE****<br>**Provide examinee with the marked up COL GP-8A.** | | |
| *2 | Place switch to "CLOSE" for AO-2-02-080A. | P | AO-2-02-080A control switch placed in the "CLOSE" position at panel 20C003-01. |
| 3 | Initial the AO-2-02-080A box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-080A initialed on COL GP-8A. |
| *4 | Place switch to "CLOSE" for AO-2-02-080B. | P | AO-2-02-080B control switch placed in the "CLOSE" position at panel 20C003-01. |
| 5 | Initial the AO-2-02-080B box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-080B initialed on COL GP-8A. |
| *6 | Place switch to "CLOSE" for AO-2-02-080C. | P | AO-2-02-080C control switch placed in the "CLOSE" position at panel 20C003-01. |
| 7 | Initial the AO-2-02-080C box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-080C initialed on COL GP-8A. |
| *8 | Place switch to "CLOSE" for AO-2-02-080D. | P | AO-2-02-080D control switch placed in the "CLOSE" position at panel 20C003-01. |
| 9 | Initial the AO-2-02-080D box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-080D initialed on COL GP-8A. |
| *10 | Place switch to "CLOSE" for AO-2-02-086A. | P | AO-2-02-086A control switch placed in the "CLOSE" position at panel 20C003-01. |

| | | | |
|---|---|---|---|
| 11 | Initial the AO-2-02-086A box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-086A initialed on COL GP-8A. |
| *12 | Place switch to "CLOSE" for AO-2-02-086B. | P | AO-2-02-086B control switch placed in the "CLOSE" position at panel 20C003-01. |
| 13 | Initial the AO-2-02-086B box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-086B initialed on COL GP-8A. |
| *14 | Place switch to "CLOSE" for AO-2-02-086C. | P | AO-2-02-086C control switch placed in the "CLOSE" position at panel 20C003-01. |
| 15 | Initial the AO-2-02-086C box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-086C initialed on COL GP-8A. |
| *16 | Place switch to "CLOSE" for AO-2-02-086D. | P | AO-2-02-086D control switch placed in the "CLOSE" position at panel 20C003-01. |
| 17 | Initial the AO-2-02-086D box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-086D initialed on COL GP-8A. |
| 18 | Verify switch in "CLOSE" for AO-2-02-039. | P | AO-2-02-039 control switch verified in the "CLOSE" position at panel 20C004A. |
| 19 | N/A or initial the AO-2-02-039 box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-039 N/A'd or initialed on COL GP-8A. |
| 20 | Verify switch in "CLOSE" for AO-2-02-040. | P | AO-2-02-040 control switch verified in the "CLOSE" position at panel 20C004A. |
| 21 | N/A or initial the AO-2-02-040 box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-040 N/A'd or initialed on COL GP-8A. |
| 22 | Verify switch in "CLOSE" for AO-2-02-316. | P | AO-2-02-316 control switch verified in the "CLOSE" position at panel 20C003-03. |

| | | | |
|---|---|---|---|
| 23 | N/A or initial the AO-2-02-316 box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-316 N/A'd or initialed on COL GP-8A. |
| 24 | Verify switch in "CLOSE" for AO-2-02-317. | P | AO-2-02-317 control switch verified in the "CLOSE" position at panel 20C003-04. |
| 25 | N/A or initial the AO-2-02-317 box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-2-02-317 N/A'd or initialed on COL GP-8A. |
| 26 | Verify MO-2-02-074 is CLOSED. | P | MO-2-02-074 green light verified ON at panel 20C003-03. |
| 27 | N/A or initial the MO-2-02-074 box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for MO-2-02-074 N/A'd or initialed on COL GP-8A. |
| 28 | Verify MO-2-02-077 is CLOSED. | P | MO-2-02-077 green light verified ON at panel 20C003-04. |
| 29 | N/A or initial the MO-2-02-077 box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for MO-2-02-077 N/A'd or initialed on COL GP-8A. |
| 30 | Verify switch in "CLOSE" for AO-8098A. | P | AO-8098A control switch verified in the "CLOSE" position at panel 20C003-04. |
| 31 | N/A or initial the AO-8098A box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8098A N/A'd or initialed on COL GP-8A. |
| 32 | Verify switch in "CLOSE" for AO-8098C. | P | AO-8098C control switch verified in the "CLOSE" position at panel 20C003-04. |
| 33 | N/A or initial the AO-8098C box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8098C N/A'd or initialed on COL GP-8A. |
| 34 | Verify switch in "CLOSE" for AO-8099A. | P | AO-8099A control switch verified in the "CLOSE" position at panel 20C003-04. |
| 35 | N/A or initial the AO-8099A box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8099A N/A'd or initialed on COL GP-8A. |

| | | | |
|---|---|---|---|
| 36 | Verify switch in "CLOSE" for AO-8099C. | P | AO-8099C control switch verified in the "CLOSE" position at panel 20C003-04. |
| 37 | N/A or initial the AO-8099C box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8099C N/A'd or initialed on COL GP-8A. |
| 38 | Verify switch in "CLOSE" for AO-8098B | P | AO-8098B control switch verified in the "CLOSE" position at panel 20C003-02. |
| 39 | N/A or initial the AO-8098B box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8098B N/A'd or initialed on COL GP-8A. |
| 40 | Verify switch in "CLOSE" for AO-8098D. | P | AO-8098D control switch verified in the "CLOSE" position at panel 20C003-02. |
| 41 | N/A or initial the AO-8098D box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8098D N/A'd or initialed on COL GP-8A. |
| 42 | Verify switch in "CLOSE" for AO-8099B. | P | AO-8099B control switch verified in the "CLOSE" position at panel 20C003-02. |
| 43 | N/A or initial the AO-8099B box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8099B N/A'd or initialed on COL GP-8A. |
| 44 | Verify switch in "CLOSE" for AO-8099D. | P | AO-8099D control switch verified in the "CLOSE" position at panel 20C003-02. |
| 45 | N/A or initial the AO-8099D box in the "CHECKED BY" column on COL GP-8A. | P | "CHECKED BY" column for AO-8099D N/A'd or initialed on COL GP-8A. |

**** NOTE****

**The C.O.L. steps for AO-2256 "Condenser Offgas to Mechanical Vacuum Pump (MVP)" and the MVP are not required to be performed and can be marked as N/A.**

| | | | |
|---|---|---|---|
| *46 | Place the Inboard PCIS Reset Switch, 16A-S32, in the "GRP I" position. | P | The Inboard PCIS Reset Switch is momentarily placed in the "GRP I" position at panel 20C005A. |
| *47 | Place the Outboard PCIS Reset Switch, 16A-S33, in the "GRP I" position. | P | The Outboard PCIS Reset Switch is momentarily placed in the "GRP I" position at panel 20C005A. |
| 48 | Verify "CHANNEL A and B GROUP I ISOLATION RELAYS NOT RESET" annunciators clear. | P | The "CHANNEL A and B GROUP I ISOLATION RELAYS NOT RESET" annunciators 211 H-1 and 211 J-1 are verified not lit. |
| 49 | Inform Control Room Supervisor of task completion. | P | Task completion reported. |
| 50 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the PCIS Group I isolation is reset, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. The plant had been at 100% power.
2. A PCIS Group I isolation has occurred and has been verified to be a result of Main Steam tunnel high temperature.
3. The cause of the PCIS Group I isolation has been corrected, and the isolation signal is clear.
4. The plant is in a safe, stable shutdown condition.
5. CAV (Crack Arrest Verification) System is <u>not</u> in operation.
6. GP-8.A, "PCIS Isolation - Group I" steps 3.1 and 3.2 have been completed.
7. There is no indication of fuel damage.
8. There is no evidence of a steam leak.

## INITIATING CUE

The Control Room Supervisor directs you to reset the PCIS Group I isolation logic per steps 4.1 through 4.4 of GP-8.A, "PCIS Isolation - Group I".

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| | | | |
|---|---|---|---|
| TYPE: | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| PROGRAM: | LICENSED OPERATOR TRAINING | CODE #: | CR_Sys_f |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 000 |
| AUTHOR: | M. J. Kelly | TYPIST: | jav |
| TITLE: | EXCITING THE MAIN GENERATOR | | |

APPROVALS:

_____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

_____
Signature / Title Date

APPROVED FOR USE:

_____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | | |
|---|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ | |
| Employee ID NO. _____ | COMPLETION DATE: _____ | |
| COMMENTS: | | |
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2370110101 / PLOR-031C K/A: 262001A4.04
RO: 3.6 SRO: 3.7

TASK DESCRIPTION: EXCITING THE MAIN GENERATOR

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

Procedure SO 50.1.A-2 Rev. 16, "Main Generator Synchronizing and Loading" (R)

D. TASK STANDARD

1. Performance Location: Simulator

2. Satisfactory task completion is indicated when the Main Generator is excited, generator terminal voltage is adjusted to 22 KV, and the automatic voltage regulator is in service.

3. Estimated time to complete: 10 minutes (A.5) Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to excite the Main Generator using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Plant startup in progress with reactor power at approximately 18%.

2. All SO 50.1.A-2, "Main Generator Synchronizing and Loading" prerequisites are met.

3. The Power System Director has been notified.

G. INITIATING CUE

The Control Room Supervisor directs you, the Plant Reactor Operator, to excite the Main Generator and place the automatic voltage regulator in service in accordance with steps 4.1 through 4.10 of SO 50.1.A-2, "Main Generator Synchronizing and Loading."

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of SO 50.1.A-2. | P | A copy of SO 50.1.A-2 is obtained. |
| 2 | Verify "GENERATOR INSULATION OVER HEATING" annunciator is clear. | P | "GENERATOR INSULATION OVER HEATING" annunciator is verified clear on alarm panel 206 L-2. |
| 3 | Verify the "Load Selector" pushbutton is selected to REMOTE/AUTO. | P | Load Selector REMOTE/AUTO light is verified ON at panel 20C008A. |
| 4 | Verify "Reg/Transfer" switch 43-0601 in MANUAL. | P | Regulator Transfer switch 43-0601 is verified in the MANUAL position at panel 2OC009. |
| 5 | Verify the Manual DC Volt Regulator 70-0601 set at minimum. | P | Manual DC Voltage Regulator 70-0601 green and amber lights are verified ON at Panel 20C009. |
| 6 | Direct an Equipment Operator to periodically monitor machine gas pressure on PI-4356. | P | Equipment Operator is directed to periodically monitor machine gas pressure on PI-4356. |
| *7 | Close the "Alt Exc Fld Bkr" 41-0601. | P | Alterrex Exciter Field Breaker control switch 41-0601 is momentarily placed in the CLOSE position at panel 2OC009. |
| 8 | Verify Field Volts, Amps and Generator Volts rise and red deexcitation backup light lit. | P | FIELD AMPS and VOLTS and GENERATOR VOLTS are verified to RISE and DEEXCITATION backup red light is verified ON and green light OFF at panel 2OC009. |
| *9 | Adjust GENERATOR output voltage to obtain 21.5 - 22.5 KV using MAN. DC VOLT REGULATOR 70-0601. | P | Manual DC Voltage Regulator 70-0601 is adjusted to obtain a GENERATOR output voltage between 20.9 and 23.1 KV at panel 20C009. |
| 10 | Verify GENERATOR output voltage is between 21.5 - 22.5 KV. | P | GENERATOR output voltage is verified between 21.5 and 22.5 KV on GEN VOLTMETER at panel 20C009. |
| *11 | Adjust the "Auto Voltage Reg Rheostat"(90P) to obtain a "Reg Man/Auto Deviation" voltage of Ø VDC. | P | Auto Voltage Reg Rheostat 90P is adjusted to obtain a reading within 2 volts of Ø on the Reg Man/Auto Deviation meter at panel 20C009. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 12 | Verify "Reg Man/Auto Deviation voltage is Ø VDC. | P | Reg Man/Auto Deviation voltage is verified to be Ø VDC on the Reg Man/Auto Deviation voltmeter at panel 2OC009. |
| 13 | Verify "GEN VOLT REG AUTO TO MAN UNBALANCED" annunciator is clear. | P | "GEN VOLT REG AUTO TO MAN UNBALANCED" annunciator is verified clear on alarm panel 220 C-3. |
| *14 | Place the "Reg/Transfer" switch 43-0601 in "AUTO". | P | Reg/Transfer switch 43-0601 is placed in the AUTO position at panel 20C009. |
| 15 | Verify the "Reg/Transfer" lights indicate auto regulation. | P | Reg/Transfer red light is verified ON and green light verified OFF at panel 20C009. |
| 16 | Verify generator speed control. | P | Candidate operates the Load Selector pushbuttons to Raise freq by 0.5 hz, then Lower freq by 0.5 hz (below initial value) then raise freq to initial value. |
| 17 | Verify generator voltage control. | P | Candidate operates the Auto Voltage Reg Rheostat to Raise voltage by 0.5 KV, then Lower voltage by 0.5 KV (below initial value) then raise voltage to initial value. |
| 18 | Inform the Control Room Supervisor of task completion. | P | Task completion reported. |
| 19 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the Main Generator exciter field breaker is closed, the automatic voltage regulator is in service, and frequency and voltage control is verified, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. **Plant startup in progress with reactor power approximately 18%.**

2. **All SO 50.1.A-2, "Main Generator Synchronization and Loading" prerequisites are met.**

3. **The Power System Director has been notified.**

## INITIATING CUE

**The Control Room Supervisor directs you, the Plant Reactor Operator, to excite the Main Generator and place the automatic voltage regulator in service in accordance with steps 4.1 through 4.10 of SO 50.1.A-2, "Main Generator Synchronization and Loading."**

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM ☐ QUALIFICATION MANUAL ☐ OJT MODULE | | |
| PROGRAM: | Licensed Operator Training | CODE #: | CR_Sys_g |
| COURSE: | Licensed Operator Requalification | REV #:: | 000 |
| AUTHOR: | M. J. Kelly | TYPIST: | Jav |
| TITLE: | Scram Reset | | |

APPROVALS: _____
Signature / Title Date

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Signature / Title Date

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Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ |
| EMPLOYEE ID #: _____ | COMPLETION DATE: _____ |
| COMMENTS: | |

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|---|---|---|
| Training Review for Completeness: _____ Signature/Date | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2120090101 / PLOR-004C K/A: 212000A4.14

RO: 3.8 SRO: 3.8

TASK DESCRIPTION: SCRAM RESET

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

Key for Scram Discharge Volume High Level Bypass Switch.

C. REFERENCES

GP-11.E, Rev. 21, "Reactor Protection System - Scram and ARI Reset"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Reactor Protection System is reset and the Scram Discharge Volume Vent and Drain valves are open.

2. Estimated time to complete: 19 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to reset a scram and begin draining the Scram Discharge Volume using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A Main Turbine trip has caused a reactor scram.

2. Plant conditions have stabilized with RPV level at 23 inches.

3. RPV pressure is being maintained below 1050 psig with Bypass Valves.

4. T-100, "Scram" is complete.

5. All scram valves are open. All SDV Vent and Drain valves are shut.

6. A CRD pump is operating.

7. Both RPS buses are energized.

8. The Reactor Mode switch is in "SHUTDOWN".

9. ARI was NOT initiated.

10. No fuel damage is suspected.

G. INITIATING CUE

The Control Room Supervisor directs you to reset the scram in accordance with GP-11.E, "Reactor Protection System - Scram and ARI Reset" and begin draining the Scram Discharge Volume.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of GP-11.E, "Reactor Protection System - Scram and ARI Reset". | P | A copy of GP-11.E, "Reactor Protection System - Scram and ARI Reset" is obtained. |
| ****** NOTE: ******<br>**Due to initial conditions, the examinee will begin at procedure step 3.6** | | | |
| 2 | Verify scram initiating signal clear or bypassed. | P | "TURBINE STOP VLV. CLOSURE AND CONTROL VLV. FAST CLOSURE SCRAM BYPASS" annunciator is verified lit on alarm panel 210 A-2. |
| *3 | Place Scram Discharge Volume High Water Level Bypass Keylock Switch to "BYPASS". | P | Key is obtained from CRS keybox, inserted into the Scram Discharge Volume High Water Level Bypass Keylock Switch 5A-S8 and placed in the "BYPASS" position at panel 20C005A. |
| 4 | Acknowledge the "SCRAM DISCHARGE VOLUME HI WATER LEVEL SCRAM BYPASS" annunciator. | P | The annunciator "ACKNOWLEDGE" pushbutton is depressed on panel 20C005A. |
| 5 | Prior to resetting a full scram, notify Radiation Protection. | P | Contacts Rad. Protection personnel via radio, phone, or plant page. |
| *6 | Place Scram Reset switch in Group 1 and 4 position then Group 2 and 3 position. | P | Scram Reset switch 5A-S9 is taken to the "GROUP 1 & 4", and then "GROUP 2 & 3" positions at panel 20C005A. |
| 7 | Verify the four scram group white lights are lit on both the RPS cabinets. | P | All scram group white lights verified LIT on panels 20C015 and 20C017. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 8 | Verify:<br>"A CHANNEL AUTO SCRAM" and<br>"B CHANNEL AUTO SCRAM" and<br>"A CHANNEL REACTOR MANUAL SCRAM" and<br>"B CHANNEL REACTOR MANUAL SCRAM"<br>annunciators are clear. | P | "A CHANNEL REACTOR AUTO SCRAM"<br>"B CHANNEL REACTOR AUTO SCRAM"<br>"A CHANNEL REACTOR MANUAL SCRAM"<br>"B CHANNEL REACTOR MANUAL SCRAM"<br>annunciators are verified clear on alarm panels 211 B-1, 211 C-1, 211 D-1 and 211 E-1. |
| 9 | Monitor Scram Air header pressure. | P | Scram air header pressure is verified to be approximately 70 psig on PI-2-3-312 on panel 20C124. |
| 10 | Verify "SCRAM VALVE PILOT AIR HEADER PRESS HI-LOW" annunciator is clear. | P | "SCRAM VALVE PILOT AIR HEADER PRESS HI-LOW" annunciator is verified clear on alarm panel 211 D-2. |
| 11 | Verify blue scram lights are off. | P | All blue scram lights are verified OFF on the Full Core Display. |
| | **** NOTE ****<br>Steps 12 and 13 will take 20-30 minutes to clear. | | |
| 12 | Verify "ACCUMULATOR TROUBLE" lights are clear. | P | All "ACCUMULATOR TROUBLE" lights are verified clear on the Full Core Display. |
| 13 | Verify "CRD ACCUMULATOR LO PRESS HI LEVEL" annunciator is clear. | P | "CRD ACCUMULATOR LO PRESS HI LEVEL" annunciator is verified clear on alarm panel 211 E-2. |
| | **** NOTE ****<br>Step 14 will take approximately 5 minutes to complete. | | |
| 14 | Verify CRD System Cooling Water flow is 55 - 65 gpm. | P | CRD System Cooling Water flow is verified to be 55 - 65 gpm on FI-2-03-306 on panel 20C005A. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 15 | Place the Rod Drift Alarm Reset switch to the "Reset" position. | P | Rod Drift Alarm Reset switch 3A-S7 is momentarily placed to the "RESET" position and then released at panel 20C005A. |
| 16 | Verify the rod drift alarm lights are clear. | P | All of the rod drift alarm lights are verified clear on the Full Core Display. |
| 17 | Verify "ROD DRIFT" annunciator is clear. | P | "ROD DRIFT" annunciator is verified clear on alarm panel 211 D-4. |
| *18 | Place SDV Inboard Vent and Drain Valves Switch, 5A-S14A, in "OPEN". | P | The SDV Inboard Vent and Drain Valve control switch 5A-S14A is momentarily placed in the "OPEN" position and then released at panel 20C005A. |
| 19 | Verify the SDV Inboard Vent and Drain Valves indicate open. | P | SDV Inboard Vent and Drain Valves red lights are verified ON, at panel 20C005A. |
| *20 | Place SDV Outboard Vent and Drain Valves Switch, 5A-S14B, in "OPEN". | P | The SDV Outboard Vent and Drain Valve control switch 5A-S14B is momentarily placed in the "OPEN" position and then released at panel 20C005A. |
| 21 | Verify the SDV Outboard Vent and Drain Valves indicate open. | P | SDV Outboard Vent and Drain Valves red lights are verified ON, at panel 20C005A. |
| 22 | Inform Control Room Supervisor of task completion. | P | Task completion reported. |
| 23 | As an evaluator ensure you have positive control of all exam material provided to the examinee (Task Conditions / Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When the scram is reset and the Scram Discharge Volume Vents and Drains are open, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. A Main Turbine trip has caused a reactor scram.

2. Plant conditions have stabilized with RPV level at 23 inches.

3. RPV pressure is being maintained below 1050 psig with Bypass Valves.

4. T-100, "Scram" is complete.

5. All scram valves are open. All SDV Vent and Drain valves are shut.

6. A CRD pump is operating.

7. Both RPS buses are energized.

8. The Reactor Mode switch is in "SHUTDOWN".

9. ARI was <u>NOT</u> initiated.

10. No fuel damage is suspected.

## INITIATING CUE

The Control Room Supervisor directs you to reset the scram in accordance with GP-11.E, "Reactor Protection System - Scram and ARI Reset" and <u>begin</u> draining the Scram Discharge Volume.

# EXELON NUCLEAR
## Nuclear Generation Group

## OJT/TPE MATERIAL COVERSHEET

| | | | |
|---|---|---|---|
| **TYPE:** | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| **PROGRAM:** | LICENSED OPERATOR TRAINING | **CODE #:** | CR_Sys_h |
| **COURSE:** | LICENSED OPERATOR REQUALIFICATION | **REV #:** | 000 |
| **AUTHOR:** | J. E. McClintock | **TYPIST:** | jav |
| **TITLE:** | VERIFY ISOLATION OF DRYWELL CHILLED WATER AND RBCCW (ALTERNATE PATH - RBCCW IS SUPPLYING DRYWELL CHILLED WATER LOADS) | | |

APPROVALS: _____
Signature / Title Date

_____
Signature / Title Date

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Signature / Title Date

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Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

| | |
|---|---|
| NAME: _____<br>Last First M.I. | ISSUE DATE: _____ |
| Employee ID NO. _____ | COMPLETION DATE: _____ |
| COMMENTS: | |

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| Training Review for Completeness: | LMS CODE: | |
| _____<br>Signature/Date | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2130220401/ PLOR-310CA K/A: 400000 A4.01

RO: 3.1 SRO: 3.0

TASK DESCRIPTION: Verify Isolation of Drywell Chilled Water and RBCCW (Alternate Path - RBCCW is Supplying Drywell Chilled Water Loads)

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

GP-8.B, Rev. 18 "PCIS Isolation - Groups II and III" (R)

D. TASK STANDARD

1. Satisfactory task completion is indicated when all of the following valves are closed:
   - Drywell Chilled Water isolation valves, MO-2200A & B and MO-2201A & B
   - RBCCW isolation valves, MO-2373 and MO-2374.

2. Estimated time to complete: 12 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform step 3.5 of GP-8.B "PCIS Isolation - Groups II and III". I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The Reactor has just been scrammed.

2. The Drywell Chilled Water System has been shutdown due to system leakage.

3. RBCCW is supplying DWCW loads.

4. DWCW return header pressure is 10 psig.

5. Drywell pressure is approximately 17 psig.

G. INITIATING CUE

The Control Room Supervisor directs you to perform step 3.5 of GP-8.B, "PCIS Isolation - Groups II and III".

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of procedure GP-8.B. | P | A copy of procedure GP-8.B is obtained. |
| 2 | Verify MO-20245 AND MO-20246 aligned in the "RX BLDG CLG WATER" position. | P | MO-20245 AND MO-20246 red "RX BLDG CLG WATER" lights are lit. MO-20245 AND MO-20246 red "CHILLED WATER" lights are out at Panel 20C005A. |
| 3 | Calculate Corrected RBCCW Pressure (CRP) by taking indicated RBCCW pressure on PI-2350 - 25 psig. | P | Indicated RBCCW pressure is checked, then 25 psig is subtracted to determine a CRP of approximately 8 psig. |
| **NOTE**<br>Alternate Path starts with next step. | | | |
| 4 | Compare Drywell pressure to Corrected RBCCW Pressure (CRP) to determine which pressure is greater. | P | Corrected RBCCW Pressure (CRP) is determined to be lower than PR-2508 or PR-4805 or PR-8102A(B) at panels 20C003/ 20C004C. |
| *5 | Trip <u>BOTH</u> Recirc pumps. | P | A and B Recirc "DRIVE MOTOR" breaker green lights are verified ON at panel 20C004A. |
| *6 | Close MO-2200A, Drywell Chilled Water Header Supply isolation valve. | P | MO-2200A control switch is momentarily placed in the "CLOSE" position at panel 20C012. |
| 7 | Verify the MO-2200A, Drywell Chilled Water Header Supply valve is closed. | P | MO-2200A green light is verified ON and red light is verified OFF at panel 20C012. |
| *8 | Close MO-2200B, Drywell Chilled Water Header Supply isolation valve. | P | MO-2200B control switch is momentarily placed in the "CLOSE" position at panel 20C012. |
| 9 | Verify the MO-2200B, Drywell Chilled Water Header Supply valve is closed. | P | MO-2200B green light is verified ON and red light is verified OFF at panel 20C012. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *10 | Close MO-2201A, Drywell Chilled Water Header Return isolation valve. | P | MO-2201A control switch is momentarily placed in the "CLOSE" position at panel 20C012. |
| 11 | Verify the MO-2201A, Drywell Chilled Water Header Return valve is closed. | P | MO-2201A green light is verified ON and red light is verified OFF at panel 20C012. |
| *12 | Close MO-2201B, Drywell Chilled Water Header Return isolation valve. | P | MO-2201B control switch is momentarily placed in the "CLOSE" position at panel 20C012. |
| 13 | Verify the MO-2201B, Drywell Chilled Water Header Return valve is closed. | P | MO-2201B green light is verified ON and red light is verified OFF at panel 20C012. |
| *14 | Close MO-2373, RBCCW ISOL valve. | P | MO-2373 control switch is momentarily placed in the "CLOSE" position at panel 20C012. |
| 15 | Verify MO-2373, RBCCW ISOL valve is closed. | P | MO-2373 green light is verified ON and red light is verified OFF at panel 20C012. |
| *16 | Close MO-2374, RBCCW ISOL valve. | P | MO-2374 control switch is momentarily placed in the "CLOSE" position at panel 20C012. |
| 17 | Verify MO-2374, RBCCW ISOL valve is closed. | P | MO-2374 green light is verified ON and red light is verified OFF at panel 20C012. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 18 | Verify all the Drywell cooler fans are tripped. | P | The following Drywell cooler fan green lights are verified ON at panel 20C012:<br><br>2AV026A, 2AV026B<br>2BV026A, 2BV026B<br>2CV026A, 2CV026B<br>2DV026A, 2DV026B<br>2EV026A, 2EV026B<br>2FV026A, 2FV026B<br>2GV026A, 2GV026B |
| 19 | Inform Control Room Supervisor of task completion. | P | Task completion reported. |
| 20 | As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When step 3.5 of GP-8.B has been completed, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. The Reactor has just been scrammed.

2. The Drywell Chilled Water System has been shutdown due to system leakage.

3. RBCCW is supplying DWCW loads.

4. DWCW return header pressure is 10 psig.

5. Drywell pressure is approximately 17 psig.

## INITIATING CUE

The Control Room Supervisor directs you to perform step 3.5 of GP-8.B, "PCIS Isolation - Groups II and III".

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| PROGRAM: | Licensed Operator Requalification | CODE #: | IP_Sys_i |
| COURSE: | Licensed Operator Requalification | REV #: | 000 |
| AUTHOR: | J. A. Verbillis | TYPIST: | mda |
| TITLE: | Defeat Of RCIC Interlocks (Unit 3) | | |

APPROVALS: _____
Signature / Title Date

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Signature / Title Date

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Signature / Title Date

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Signature / Title Date

APPROVED FOR USE: _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE ID NO. _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____
Signature/Date

| | |
|---|---|
| LMS CODE: | |
| LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2005810599/PLOR-157P K/A: 217000 A4.07
URO: 3.9 SRO: 3.8

TASK DESCRIPTION: Defeat Of RCIC Interlocks (Unit 3)

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. T-251 Tool Package

2. EOP Tool Locker Key

C. REFERENCES

T-251-3, Rev. 5, "RPV Pressure Control Using RCIC"

D. TASK STANDARD

1. Performance Location: Plant

2. Satisfactory task completion is indicated when relay contacts have been booted per Step 4.1.1 of T-251-3.

3. Estimated time to complete: 12 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to defeat Unit 3 RCIC interlocks using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 3 scrammed.

2. Use of this procedure has been directed by T-100 procedures.

3. Water is available from the CST and RCIC suction is aligned to the CST.

4. RCIC is available.

G. INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform Step 4.1 of T-251-3, "RPV Pressure Control Using RCIC".

## H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *1 | Obtain the key for the Emergency Operating Procedure Tool Locker. (Cue: When examinee requests EOP Tool Locker key from WECS OR examinee identifies the location of the WECS key box and its associated key then evaluator should provide the EOP Tool Locker key.) | S | Emergency Operating Procedure Tool Locker Key requested from WECS OR examinee identifies the location of the WECS key box and its associated key. |
| *2 | Open Emergency Operating Procedure Tool Locker and obtain T-251 Tool Kit.<br><br>(Cue: Equipment obtained.) | P | Tool Locker located on Radwaste Building El. 165' (near Unit 2 Remote Shutdown Panel) is unlocked, opened and T-251 Tool Kit is located. |
| ******NOTE******<br>**When examinee locates tool kit, report that the tools to perform the procedure have been acquired. Provide the examinee with a copy of the T-200 procedure which corresponds to the tool kit that has been chosen. DO NOT allow equipment to be removed from the locker. Relock the locker before leaving the area.** | | | |
| *3 | Remove front cover from relay 13A-K1 on Cable Spreading Room Panel 30C34 (front).<br><br>(Cue: Cover is removed) | S | The two front cover fasteners are turned COUNTERCLOCKWISE until loose, front cover is then pulled from the face of relay 13A-K1 at panel 30C34 [FRONT] in the Cable Spreading Room. |
| *4 | Boot contact 5-6 on relay 13A-K1.<br><br>(Cue: Boot is installed.) | S | The THIRD FROM THE RIGHT relay contact arm is moved away from its mating contact and a boot from the tool kit is placed over the contact arm. |
| *5 | Boot contact 11-12 on relay 13A-K1.<br><br>(Cue: Boot is installed.) | S | The FAR LEFT relay contact arm is moved away from its mating contact and a boot from the tool kit is placed over the contact arm. |
| 6 | Replace front cover on relay 13A-K1.<br><br>(Cue: Cover is replaced.) | S | Front cover is held in place while turning the two front cover fasteners CLOCKWISE until tight. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| *7 | Remove front cover from relay 23A-K1 on Cable Spreading Room Panel 20C39 (front).<br><br>(Cue: Cover is removed.) | S | The two front cover fasteners are turned COUNTERCLOCKWISE until loose, front cover is then pulled from the face of relay 23A-K1 at panel 30C39 [FRONT] in the Cable Spreading Room. |
| *8 | Boot contact 3-4 on relay 23A-K1.<br><br>(Cue: Boot is installed.) | S | The SECOND FROM THE RIGHT relay contact arm is moved away from its mating contact and a boot from the tool kit is placed over the contact arm. |
| 9 | Replace front cover on relay 23A-K1.<br><br>(Cue: Cover is replaced.) | S | Front cover is held in place while turning the two front cover fasteners CLOCKWISE until tight. |
| *10 | Remove front cover from relay 23A-K4.<br><br>(Cue: Cover is removed.) | S | The two front cover fasteners are turned COUNTERCLOCKWISE until loose, front cover is then pulled from the face of relay 23A-K4 at panel 30C39 [FRONT] in the Cable Spreading Room. |
| *11 | Boot contact 5-6 on relay 23A-K4.<br><br>(Cue: Boot is installed.) | S | The THIRD FROM THE RIGHT relay contact arm is moved away from its mating contact and a boot from the tool kit is placed over the contact arm. |
| 12 | Replace front cover on relay 23A-K4.<br><br>(Cue: Cover is replaced.) | S | Front cover is held in place while turning the two front cover fasteners CLOCKWISE until tight. |
| 13 | Inform Control Room that initiation interlocks for MO-3-13-021, MO-3-13-030 and MO-3-23-024 have been defeated to allow RCIC operation for pressure control.<br><br>(Cue: Control Room acknowledges report.) | S | Task completion reported using telephone or GAI-TRONICS page system.<br><br>NOTE: Hand held radio is NOT to be used in the Cable Spreading Room. |
| 14 | As an evaluator ensure you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When Step 4.1.1 of T-251-3, "RPV Pressure Control Using RCIC" is complete, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

# TASK CONDITIONS/PREREQUISITES

1. A fire has occurred in the 3A and 3C Emergency Battery Room.

2. The ADS valves do NOT currently have a long term pneumatic supply.

# INITIATING CUE

The Control Room Supervisor directs you to perform T-331-3 Attachment 1 to install a bypass around the SV-9130A and SV-9130B valves.

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| X | Peach Bottom | | Limerick | | Common |
|---|---|---|---|---|---|

| | | | |
|---|---|---|---|
| TYPE: | X JPM | ☐ QUALIFICATION MANUAL | ☐ OJT MODULE |
| PROGRAM: | Licensed Operator Training | CODE #: | IP_Sys_j |
| COURSE: | LICENSED OPERATOR REQUALIFICATION | REV #: | 000 |
| AUTHOR: | C. N. Croasmun | TYPIST: | cnc |
| TITLE: | Bypass of SV-9130A and SV-9130B | | |

APPROVALS:

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

_____ _____
Signature / Title Date

APPROVED FOR USE: _____ _____
Signature / Title Date

EFFECTIVE DATE: _____/_____/_____

NAME: _____
Last First M.I.

EMPLOYEE ID NO. _____

ISSUE DATE: _____

COMPLETION DATE: _____

COMMENTS:

Training Review for Completeness:

_____
Signature/Date

| | |
|---|---|
| LMS CODE: | |
| LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: Task# 2008450599 / PLOR-275P K/A: 218000 K4.04
RO: 3.5 SRO: 3.6

TASK DESCRIPTION: Perform EO Actions to Bypass SV-9130A&B, ADS Nitrogen Supply

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Copy of T-331-3 Area 31 Fire Guide Attachment 1

C. REFERENCES

1. T-331-3 Area 31 Fire Guide

D. TASK STANDARD

1. Satisfactory task completion is indicated when a bypass around the SV-9130A & B valves has been installed..

2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to install a bypass around the SV-9130A and SV-9130B valves using the appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A fire has occurred in the 3A and 3C Emergency Battery Room.

2. The ADS valves do NOT currently have a long term pneumatic supply.

G. INITIATING CUE

The Control Room Supervisor directs you to perform T-331-3 Attachment 1 to install a bypass around the SV-9130A and SV-9130B valves.

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of T-331-3 Attachment 1.<br><br>(Cue: Provide the candidate with a copy of T-331-3 Attachment 1.) | S | Copy of Attachment 1 obtained. |
| 2 | Obtain bypass line for SV-9130A.<br><br>(Cue: Bypass line has been removed.) | S | Remove bypass line for SV-9130A from its holder on the wall. |
| 3 | Remove FME plugs.<br><br>(Cue: FME plugs have been removed.) | S | Remove FME plugs from the female Parker fittings on each end of the bypass line. |
| ****** NOTE: ******<br><br>**Next two steps are not sequence dependant.** | | | |
| *4 | Install bypass line.<br><br>(Cue: Bypass line INSTALLED.) | S | INSTALL one end of the bypass line on the Parker fitting downstream of HV-3-16A-33155A ("ADS Backup N2 Sup Test Tap Upstream of SV-3-16A-9130A") by matching the bypass line and test tap color codes. |
| *5 | Install bypass line.<br><br>(Cue: Bypass line INSTALLED.) | S | INSTALL the other end of the bypass line on the Parker fitting downstream of HV-3-16A-33156A ("ADS Backup N2 Sup Test Tap Dwnstrm of SV-3-16A-9130A") by matching the bypass line and test tap color codes. |
| ****** NOTE: ******<br><br>**Next two steps are not sequence dependant.** | | | |
| *6 | Open Test Tap Isolation Valve to bypass nitrogen around SV-9130A.<br><br>(Cue: Test Tap isolation valve OPEN.) | S | OPEN HV-3-16A-33155A "ADS Backup N2 Sup Test Tap Upstream of SV-3-16A-9130A" by rotating the handwheel counter clockwise to the full OPEN position. |
| *7 | Open Test Tap Isolation Valve to bypass nitrogen around SV-9130A.<br><br>(Cue: Test Tap isolation valve OPEN.) | S | OPEN HV-3-16A-33156A "ADS Backup N2 Sup Test Tap Dwnstrm of SV-3-16A-9130A" by rotating the handwheel counter clockwise to the full OPEN position. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 8 | Verify nitrogen supply pressure.<br><br>(Cue: PI-9130 is reading 92 psig.) | S | VERIFY supply pressure is >85 psig on PI-9130, "ADS Backup Nitrogen Supply Press" at RB SW el. 135'. |
| 9 | Notify the Control Room<br><br>(Cue: Control Room notified.) | S | Notify the Main Control Room that SV-9130A "ADS Backup Nitrogen A HDR Supply to Drywell" bypass line is in service. |
| 10 | Obtain bypass line for SV-9130B.<br><br>(Cue: Bypass line has been removed.) | S | Remove bypass line for SV-9130B from its holder on the wall. |
| 11. | Remove FME plugs.<br><br>(Cue: FME plugs have been removed.) | S | Remove FME plugs from the female Parker fittings on each end of the bypass line. |
| ****** NOTE: ******<br><br>**Next two steps are not sequence dependant.** | | | |
| *12 | Install bypass line.<br><br>(Cue: Bypass line INSTALLED.) | S | INSTALL one end of the bypass line on the Parker fitting downstream of HV-3-16A-33155B ("ADS Backup N2 Sup Test Tap Upstream of SV-3-16A-9130B") by matching the bypass line and test tap color codes. |
| *13 | Install bypass line.<br><br>(Cue: Bypass line INSTALLED.) | S | INSTALL the other end of the bypass line on the Parker fitting downstream of HV-3-16A-33156B ("ADS Backup N2 Sup Test Tap Dwnstrm of SV-3-16A-9130B") by matching the bypass line and test tap color codes. |
| ****** NOTE: ******<br><br>**Next two steps are not sequence dependant.** | | | |
| *14 | Open Test Tap Isolation Valve to bypass nitrogen around SV-9130B.<br><br>(Cue: Test Tap isolation valve OPEN.) | S | OPEN HV-3-16A-33155B "ADS Backup N2 Sup Test Tap Upstream of SV-3-16A-9130B" by rotating the handwheel counter clockwise to the full OPEN position. |
| *15 | Open Test Tap Isolation Valve to bypass nitrogen around SV-9130B.<br><br>(Cue: Test Tap isolation valve OPEN.) | S | OPEN HV-3-16A-33156B "ADS Backup N2 Sup Test Tap Dwnstrm of SV-3-16A-9130B" by rotating the handwheel counter clockwise to the full OPEN position. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 16 | Verify nitrogen supply pressure.<br><br>(Cue: PI-9130 is reading 92 psig.) | S | VERIFY supply pressure is >85 psig on PI-9130, "ADS Backup Nitrogen Supply Press" at RB SW el. 135'. |
| 17 | Notify the Control Room<br><br>(Cue: Control Room notified.) | S | Notify the Main Control Room that SV-9130B "ADS Backup Nitrogen A HDR Supply to Drywell" bypass line is in service. |
| 18 | As an evaluator ensure you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures. | P | Positive control established |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When a bypass has been installed around SV-9130A and SV-9130B, the Control Room Supervisor should be informed, the evaluator will terminate the exercise.

# TASK CONDITIONS/PREREQUISITES

1. A fire has occurred in the 3A and 3C Emergency Battery Room.

2. The ADS valves do NOT currently have a long term pneumatic supply.

# INITIATING CUE

The Control Room Supervisor directs you to perform T-331-3 Attachment 1 to install a bypass around the SV-9130A and SV-9130B valves.

Exelon Nuclear
Peach Bottom Unit 3

# T-331-3 AREA 31 FIRE GUIDE

FOR FIRE IN:
Unit 3 3A and 3C Emergency Battery Rm.

## 1.0 PROTECTED EQUIPMENT

### 1.1 PROTECTED INSTRUMENTS

| RPV LEVEL | LOCATION |
|---|---|
| LI-3-02-3-085B | 30C005A |
| LR-3-02-3-110B | 30C003-02 |
| LI-3-02-3-113 | 30C003-04 |

| RPV PRESSURE | LOCATION |
|---|---|
| PI-3-06-090A | 30C005A |
| PI-3-06-090B | 30C005A |
| PR/LR-3-06-096 | 30C005A |
| PR/RR-3-2-3-404B | 30C003-01 |

| CST LEVEL | LOCATION |
|---|---|
| LI-3217 | 30C004C |
| LI-9453 | 30C004C |

| TORUS LEVEL | LOCATION |
|---|---|
| LR/TR-9123B | 30C003-02 |
| LI-9027 | 30C003-03 |

| TORUS TEMP | LOCATION |
|---|---|
| TIS-3-02-71B | 30C124 |
| TRS-3-10-131 | 30C004C |

| DW PRESS | LOCATION |
|---|---|
| PR-9102B | 30C003-02 |
| PR/TR-5805 | 30C003-02 |

| DW TEMP | LOCATION |
|---|---|
| PR/TR-5805 | 30C003-02 |

## 1.2 PROTECTED LEVEL CONTROL SYSTEMS AND INSTRUMENTS

| SYSTEM | INSTRUMENT | INST LOCATION |
|---|---|---|
| HPCI | FI-3-23-108<br>SPI-5505 | 30C004B |

## 1.3 PROTECTED PRESSURE CONTROL SYSTEMS

**NOTE**

Performance of Attachment 1, "Bypass of SV-9130A and SV-9130B" may be required to ensure a long term pneumatic supply to SRVs C and G.

| SRVs |
|---|
| C,G |

## 1.4 TORUS COOLING SYSTEMS AND INSTRUMENTS

| SYSTEM | INSTRUMENT | INST LOCATION |
|---|---|---|
| **RHR B Loop**<br>B and D RHR Pumps | FI-3-10-139B | 30C003-02 |
| **HPSW B Loop**<br>B HPSW Pump<br>D HPSW Pump | FI-3-10-132B<br>PI-3330B<br>PI-3330D | 30C003-02 |

## 1.5 ALTERNATE SHUTDOWN COOLING SYSTEMS AND INSTRUMENTS

**NOTES**

1. The protected method of achieving cold shutdown uses the systems listed below in accordance with AO 10.12-3, "Alternate Shutdown Cooling".
2. If a Service Water pump is not operating, use of Core Spray pumps will require an ESW pump to be placed in service to provide cooling water to the motor oil cooler.

| SYSTEM | INSTRUMENT | INST LOCATION |
|---|---|---|
| **RHR B Loop** B and D RHR Pumps | FI-3-10-139B | 30C003-02 |
| **Core Spray B Loop** B and D Core Spray Pumps | FI-3-14-050B | 30C003-02 |

## 1.6 PROTECTED ELECTRICAL POWER SYSTEMS, ESW AND INSTRUMENTS

| SYSTEM | EQUIPMENT |
|---|---|
| **Emergency D/Gs** | E1 D/G |
| | E2 D/G |
| | E4 D/G |
| **4 KV** | E13 Bus |
| | E23 Bus |
| | E43 Bus |

| SYSTEM | INSTRUMENT | INST LOCATION |
|---|---|---|
| **ESW** A ESW Pump | PI-7465<br>PI-0236A | 00C026B<br>00C026B |

## 2.0 CONTINGENCY ACTIONS

**NOTES**

1. Copies of T-300 Fire Guides are maintained in the fire supply cage (Unit 2 TB 165' by the RB entrance) and Radwaste 135' (Northeast corner of Room 239). Access to the fire supply cage requires a "CAT 143" key, which is available from the WECS key cabinet in the Main Control Room.
2. Security card readers may be impacted by the fire. Master Security keys are available in the Main Control Room and may be issued by the Shift Manager. Security Officer assistance may also be utilized.

2.1 IF a long term pneumatic supply to the ADS Valves is NOT in service,
THEN PERFORM Attachment 1, "Bypass of SV-9130A and SV-9130B".

## 3.0 REFERENCES

3.1 Calculation PF-0016-031, "Fire Area 31 Fire Safe Shutdown Analysis"

3.2 Specification NE-0296, "Specification for Post Fire Safe Shutdown Program Requirements at Peach Bottom Atomic Power Station".

3.3 M-333, Sheet 2, P & I Diagram, Instrument Nitrogen

3.4 This procedure supersedes T-331 (U/3) and T-331 (U/3) Attachment 1

## 4.0 ATTACHMENT

4.1 Attachment 1, "Bypass of SV-9130A and SV-9130B"

**ATTACHMENT 1** (Page 1 of 5)

**BYPASS OF SV-9130A and SV-9130B**

## 1.0 PURPOSE

The purpose of this attachment is to provide instructions to align the Backup Instrument Nitrogen bottles to the ADS valves by installing a bypass line around SV-9130A, "ADS Backup Nitrogen A HDR Supply to Drywell" and SV-9130B, "ADS Backup Nitrogen B HDR Supply to Drywell". These instructions are used in the event that a fire prevents operation of SV-9130A and SV-9130B.

## 2.0 EQUIPMENT REQUIRED

2.1 None

## 3.0 PROCEDURE

3.1 SV-9130A Bypass Line Installation

3.1.1 REMOVE bypass line from its holder on wall.

Initials

3.1.2 REMOVE the FME plugs installed in the female Parker fittings on each end of the bypass line.

Initials

3.1.3 INSTALL bypass line on the Parker fittings downstream of the following valves, matching bypass line and test tap color codes:

- o HV-3-16A-33155A, "ADS Backup $N_2$ Sup Test Tap Upstream of SV-3-16A-9130A"

Initials

- o HV-3-16A-33156A, "ADS Backup $N_2$ Sup Test Tap Dwnstrm of SV-3-16A-9130A"

Initials

**ATTACHMENT 1** (Page 2 of 5)

3.1.4 OPEN the following test tap isolation valves to bypass nitrogen around solenoid valve SV-9130A:

- o HV-3-16A-33155A, "ADS Backup $N_2$ Sup Test Tap Upstream of SV-3-16A-9130A"

_____
Initials

- o HV-3-16A-33156A, "ADS Backup $N_2$ Sup Test Tap Dwnstrm of SV-3-16A-9130A"

_____
Initials

3.1.5 VERIFY supply pressure is above 85 psig on PI-9130, "ADS Backup Nitrogen Supply Press" at RB SW El. 135'.

_____
Initials

3.1.6 NOTIFY Control Room that SV-9130A, "ADS Backup Nitrogen A HDR Supply to Drywell" bypass line is in service.

_____
Initials

**ATTACHMENT 1** (Page 3 of 5)

3.2 SV-9130B Bypass Line Installation

3.2.1 REMOVE bypass line from its holder on wall.

Initials

3.2.2 REMOVE the FME plugs installed in the female Parker fittings on each end of the bypass line.

Initials

3.2.3 INSTALL bypass line on the Parker fittings downstream of the following valves, matching bypass line and test tap color codes:

- o HV-3-16A-33155B, "ADS Backup $N_2$ Sup Test Tap Upstream of SV-3-16A-9130B"

Initials

- o HV-3-16A-33156B, "ADS Backup $N_2$ Sup Test Tap Dwnstrm of SV-3-16A-9130B"

Initials

3.2.4 OPEN the following test tap isolation valves to bypass nitrogen around solenoid valve SV-9130B:

- o HV-3-16A-33155B, "ADS Backup $N_2$ Sup Test Tap Upstream of SV-3-16A-9130B"

Initials

- o HV-3-16A-33156B, "ADS Backup $N_2$ Sup Test Tap Dwnstrm of SV-3-16A-9130B"

Initials

3.2.5 VERIFY supply pressure is above 85 psig on PI-9130, "ADS Backup Nitrogen Supply Press" at RB SW El. 135'.

Initials

3.2.6 NOTIFY Control Room SV-9130B, "ADS Backup Nitrogen B HDR Supply to Drywell" Bypass Line is in service.

Initials

**ATTACHMENT 1** (Page 4 of 5)

## 4.0 RETURN TO NORMAL

4.1 SV-9130A Bypass Line Restoration

4.1.1 CLOSE HV-3-16A-33155A, "ADS Backup $N_2$ Sup Test Tap Upstream of SV-3-16A-9130A".

Performer Initials/Date _____ I.V. Initials/Date _____

4.1.2 CLOSE HV-3-16A-33156A, "ADS Backup $N_2$ Sup Test Tap Downstrm of SV-3-16A-9130A".

Performer Initials/Date _____ I.V. Initials/Date _____

**NOTE**
Bypass line is pressurized.

4.1.3 REMOVE bypass line from the Parker fittings downstream of HV-3-16A-33155A AND HV-3-16A-33156A.

Performer Initials/Date _____ I.V. Initials/Date _____

4.1.4 INSTALL FME plugs in the female Parker fittings on the bypass line.

Performer Initials/Date _____ I.V. Initials/Date _____

4.1.5 ATTACH bypass line to wall holder provided.

Performer Initials/Date _____ I.V. Initials/Date _____

4.1.6 NOTIFY Control Room that bypass line around SV-9130A is removed.

Performer Initials/Date _____

**ATTACHMENT 1** (Page 5 of 5)

4.2 SV-9130B Bypass Line Restoration

4.2.1 CLOSE HV-3-16A-33155B "ADS Backup $N_2$ Sup Test Tap Upstream of SV-3-16A-9130B".

Performer Initials/Date I.V. Initials/Date

4.2.2 CLOSE HV-3-16A-33156B "ADS Backup $N_2$ Sup Test Tap Dwnstrm of SV-3-16A-9130B".

Performer Initials/Date I.V. Initials/Date

**NOTE**
Bypass line is pressurized.

4.2.3 REMOVE bypass line from the Parker fittings downstream of HV-3-16A-33155B AND HV-3-16A-33156B.

Performer Initials/Date I.V. Initials/Date

4.2.4 INSTALL FME plugs in the female Parker fittings on the bypass line.

Performer Initials/Date I.V. Initials/Date

4.2.5 ATTACH bypass line to wall holder provided.

Performer Initials/Date I.V. Initials/Date

4.2.6 NOTIFY Control Room that bypass line around SV-9130B is removed.

Performer Initials/Date

# EXELON NUCLEAR
## Nuclear Generation Group

### OJT/TPE MATERIAL COVERSHEET

| | | | |
|---|---|---|---|
| TYPE: | [X] JPM [ ] QUALIFICATION MANUAL [ ] OJT MODULE | | |
| PROGRAM: | Licensed Operator Training | CODE #: | IP_Sys_i |
| COURSE: | Licensed Operator Requalification | REV #: | 000 |
| AUTHOR: | J. T. Hanley | TYPIST: | jth |
| TITLE: | Diesel Driven Fire Pump Manual Start (Alternate Path – Battery Status Lights Not Lit) | | |

APPROVALS:

| | |
|---|---|
| J. A. Verbillis, Instructor /s/ (Signature / Title) | 1/20/12 (Date) |
| C. P. Breidenbaugh, SMS /s/ (Signature / Title) | 1/25/12 (Date) |
| (Signature / Title) | (Date) |
| (Signature / Title) | (Date) |

APPROVED FOR USE: R. J. Artus for B. A. Hennigan, OTM /s/ (Signature / Title) 2/27/12 (Date)

EFFECTIVE DATE: 2 / 27 / 12

| | |
|---|---|
| NAME: _____ (Last First M.I.) | ISSUE DATE: _____ |
| Employee ID. NO. _____ | COMPLETION DATE: _____ |

COMMENTS:

| | | |
|---|---|---|
| Training Review for Completeness: _____ (Signature/Date) | LMS CODE: | |
| | LMS ENTRY: | |

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2860080101 / PLOR-327PA K/A: 286000A4.06
RO: 3.4 SRO: 3.4

TASK DESCRIPTION: Diesel Driven Fire Pump Manual Start (Alternate Path – Battery Status Lights Not Lit)

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Diesel Driven Fire Pump Room door key (#3702)

C. REFERENCES

1. SO 37B.1.B Rev 6, "Fire Water System Pump Manual Startup"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Diesel Driven Fire Pump battery status circuit has been reset and the Diesel Driven Fire Pump has been started locally in accordance with SO 37B.1.B, "Fire Water System Pump Manual Startup."

2. Estimated time to complete: 8 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to locally start the Diesel Driven Fire Pump using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Fire Water system is lined up for operation in accordance with SO 37.1.A, "Common Plant Fire Water System Lineup for Automatic Operations."

G. INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to locally start the Diesel Driven Fire Pump in accordance with SO 37B.1.B, "Fire Water System Pump Manual Startup."

H. PERFORMANCE CHECKLIST

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 1 | Obtain a copy of procedure SO 37B.1.B. | P | A copy of procedure SO 37B.1.B is obtained. Section 4.1 is referenced. |
| ****** NOTE: ******<br>**The Alternate Path portion of this JPM begins with the next step.** | | | |
| 2 | Verify blue "Battery Connected" lights are lit.<br><br>(Cue: Blue battery status lights are NOT lit.) | S | Determine that Blue "Battery 'A' Connected" and "Battery 'B' Connected" lights are NOT lit. |
| 3 | Notify Shift Management that Battery Connected lights are NOT lit.<br><br>(Cue: Acknowledge report) | P | Notifies Shift Management. |
| 4 | Open the Panel 00C126 door.<br><br>(Cue: Panel door is open.) | S | Panel door handle is turned, and door pulled outward to gain access to the DDFP controls inside Panel 00C126. (Simulation is acceptable since the DDFP controls are visible through a window on the panel door.) |
| *5 | Turn the Diesel Driven Fire Pump Local Control SW HS-0-37D- CS1/12' to "OFF".<br><br>(Cue: Diesel Driven Fire Pump Local Control SW HS-0-37D- CS1/12'switch has been placed in "OFF".) | S | "Diesel Driven Fire Pump Local Control SW HS-0-37D- CS1/12'" switch placed in "OFF" inside Panel 00C126. |
| *6 | Momentarily depress the "RESET" pushbutton.<br><br>(Cue: "RESET" pushbutton has been depressed. ) | S | "RESET" pushbutton momentarily depressed inside Panel 00C126 (right hand side). |
| 7 | Turn the Diesel Driven Fire Pump Local Control SW HS -0-37D-CS1/12' to "AUTO".<br><br>(Cue: Control Selector switch has been placed in "AUTO". The blue "Battery Ready" lights are lit.) | S | Diesel Driven Fire Pump Local Control SW HS -0-37D-CS1/12' switch placed in "AUTO" inside Panel 00C126. |

| STEP NO | STEP | ACT | STANDARD |
|---|---|---|---|
| 8 | Verify the blue "Battery A(B) Connected" lights are lit.<br><br>(Cue: The blue "Battery Ready" lights are lit.) | S | Determine that blue "Battery Ready" lights are lit |
| *9 | Place the Diesel Driven Fire Pump Local control switch HS-0-37D-CS1/12 in the "MANUAL A" or "MANUAL B" position and depress the "START" pushbutton<br><br>(Cue: Control switch manipulation is complete. Cylinder combustion noise is heard, DDFP engine speed rises to 1750 RPM as indicated on skid mounted panel and pump discharge pressure rises to 150 psig on PI-0290 near South wall of the DDFP.) | S | Inside Panel 00C126, Diesel Driven Fire Pump Local control switch HS-0-37D-CS1/12 placed in the "MANUAL A" or "MANUAL B" position and the "START" pushbutton depressed (left hand side) |
| 10 | Place the Diesel Driven Fire Pump Local control switch HS-0-37D-CS1/12 in the "TEST" position<br><br>(Cue: Control Selector switch has been placed in "TEST".) | S | Diesel Driven Fire Pump Local control switch HS-0-37D-CS1/12 placed in the "TEST" position |
| 11 | Close the Panel 00C126 door.<br><br>(Cue: Panel door is closed and relatched.) | S | Panel door is closed and relatched using handle. |
| 12 | Inform Control Room Supervisor of task completion.<br><br>(Cue: Control Room Supervisor acknowledges report.) | P | Task completion reported using hand held radio, telephone or GAI-TRONICS page system. |
| 13 | As an evaluator, ensure you have positive control of all exam material provided to the examinee (Task Conditions / Prerequisites) AND procedures. | P | Positive control established. |

Under "ACT" P - must perform
S - must simulate

I. TERMINATING CUE

When then Diesel Driven Fire Pump battery status circuit has been reset and the Diesel Driven Fire Pump has been locally started, then Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

**Fire Water system is lined up for operation in accordance with SO 37.1.A, "Common Plant Fire Water System Lineup for Automatic Operations."**

## INITIATING CUE

**The Control Room Supervisor directs you, the Equipment Operator, to locally start the Diesel Driven Fire Pump in accordance with SO 37B.1.B, "Fire Water System Pump Manual Startup."**

**Simulation Facility** Peach Bottom **Scenario No.** #1 **Op Test No.** 2013 NRC

**Examiners** _____ **Operators** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

**Scenario Summary**

The scenario begins with the reactor at 100% power.

Following shift turnover, the crew will stroke Main Steam Sample Valves AO-2-02-316 and 317 as part of a surveillance test for primary containment isolation valves. Shortly after stroking the valves, Reactor Building to Torus vacuum breaker isolation valve AO-2502A will fail partially open requiring the crew to declare the valve inoperable per Technical Specifications.

Next, the running Service Water pump will trip on overcurrent, requiring the crew to place the standby pump in service using the system operating procedure. Following this, a drywell pressure instrument will fail upscale without causing the expected half scram. The crew will apply Tech Specs and (with time-compression) insert a half scram IAW GP-25 "Installation of Trips/Isolations to Satisfy Tech Spec/TRM Requirements".

Next the 'A' Condensate pump will trip without the expected Recirc System runback. Power must be manually reduced using recirc flow to prevent a low-level scram.

When conditions have stabilized, #2 Auxiliary Bus will trip on overcurrent, causing a loss of the remaining Condensate pumps. HPCI and RCIC will initiate on low RPV level. The HPCI system flow controller will fail in automatic and must be adjusted in manual to allow the system to inject. The HPCI system will trip shortly after it injects and will not be recoverable. An RPS failure will prevent the automatic and manual scrams, requiring entry into T-101 "RPV Control" and the use of Alternate Rod Insertion (ARI) to shutdown the reactor. A small Reactor coolant leak will occur in the drywell and require the use of containment sprays. The crew should enter T-102 "Primary Containment Control". A containment spray logic failure will complicate the crew's efforts to spray containment. The crew will not be able to spray containment with the initial loop of RHR selected. The other loop of RHR will be available and should be used to spray containment.

The reactor coolant leak inside the drywell will be greater than the capacity of RCIC (the only remaining high-pressure feed source). The crew should enter T-111 "Level Restoration". As level deteriorates, the crew should start available low pressure ECCS pumps and when it is determined that level cannot be restored and maintained above -172 inches, the reactor should be depressurized in accordance with T-112 "Emergency Blowdown". Low pressure ECCS will be available to recover reactor level. The scenario will be terminated when the reactor has been depressurized and reactor level has been recovered and controlled.

**Initial Conditions** IC-118, 100% power

**Turnover** See Attached "Shift Turnover" Sheet

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 1 | See Scenario Guide | N | PRO CRS | Stroke time primary containment isolation valves for surveillance testing |
| 2 | See Scenario Guide | TS | CRS | Reactor Bldg to Torus vacuum breaker isolation valve fails open (Tech Spec) |
| 3 | See Scenario Guide | C | URO CRS | Service Water pump trip / manual start of the standby pump |

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 4 | See Scenario Guide | I<br>TS | PRO<br>CRS | Drywell pressure instrument fails upscale without the expected half scram (Tech Spec) / insert half scram IAW GP-25 |
| 5 | See Scenario Guide | R | URO<br>CRS | Condensate pump trip with recirc runback failure / power reduction |
| 6 | See Scenario Guide | M | ALL | Loss of #2 auxiliary bus / loss of condensate & feedwater / reactor coolant leak inside the drywell |
| 7 | See Scenario Guide | C | PRO<br>CRS | HPCI controller fails in automatic |
| 8 | See Scenario Guide | C | URO<br>CRS | RPS failure requires ARI to scram the reactor |
| 9 | See Scenario Guide | C | ALL | HPCI turbine trip, requiring an emergency blowdown to restore level with low-pressure ECCS |
| 10 | See Scenario Guide | I | PRO<br>CRS | Containment spray logic failure hampers effort to spray the containment, requiring crew to use alternate RHR loop |

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

# SIMULATOR OPERATOR INSTRUCTIONS FOR 2013 NRC SCENARIO #1

## *GENERAL REQUIREMENTS*

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

## *SCENARIO SOURCE HISTORY*

- A previous version was used on the 2009 NRC ILT exam. It was modified (altered) slightly and submitted as a spare scenario for the 2011 NRC ILT exam. It has been modified again for use in the 2013 ILT 11-1 NRC Exam.

## *INITIAL SETUP*

### Initial Conditions

- IC-118, 100% power
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active
- Setup a TRIP Table PMS screen by typing in "NCPCIS" on the GROUP DISPLAY screen to support ST-O-007-420-2 performance in Event 1

### Blocking Tags

- None

### Activate APP "2013_NRC_SCN1" or insert the following:

#### Event Triggers

**TRG E5 ARI_A_DEPRESSED**
**TRG E4 = BAT BUS_2_OVERCURRENT_LOCKOUT**
**TRG E5 = MRF ARI01TO NORMAL**

#### Malfunctions

**IMF SWS01B (E1 0 0)** ('B' Service Water pump trip)
**IMF MCS05A (E3 0 0)** ('A' Condensate pump trip)
**IMF RRS20 (E4 2:00 0) 4 20:00 0** (Recirc loop rupture at 4% severity, 2 minute delay and 20 minute ramp)
**IMF HPC03 (E6 0 0)** (HPCI turbine trips)
**IMF HPC04 (E4 0 0)** (HPCI flow controller fails low in auto)

**Overrides**

**IOR ZLORP15DS26B (none 0 0) ON** (5A-DS26B light at RPS Panel 20C017 to ON)
**IOR ZYP06A521S16 FALSE** (SFCS recirc runback inhibit)
**IOR ZYP12A1S19 (none 0 0) OFF** (Override Switch 10A-17A, prevents containment sprays)
**IOR ZYP12A3S19 (none 0 0) OFF** (Override Switch 10A-17B, prevents containment sprays)
**IOR ANO205LD4 (E2 0 0) ALARM_ON** (RPS INSTRUMENT GROSS FAILURE – 210 D-4)
**IOR ANO205LF1 (E2 0 0) ALARM_ON** (DW HI PRESSURE – 210 F-1)
**IOR ZLOPC03AO2502A_2 (E7 0 0) ON** (AO-2502A red light on)
**IOR ANO203CE3 (E7 0 0) ALARM_ON** (A TORUS VACUUM RELIEF VALVE OPEN – 224 E-3)

**Trip Overrides**

**MRF ARI01TO OVERRIDE** (prevents ARI auto-initiation on 'A' channel)
**MRF RPS03TO OVERRIDE** (prevents RPS B1 trip)
**MRF RPS04TO OVERRIDE** (prevents RPS B2 trip)
**MRF RPS06TO OVERRIDE** (prevents RPS B3 trip)

**Batch Files** (Verify the following Batch File exists – DO NOT ENTER AT THIS TIME)

BAT BUS_2_OVERCURRENT_LOCKOUT
**IMF MAP06D**
**IMF MAP06E**
**IMF MAP06F**
**IOR ANO209LA2 ALARM_ON**
**IOR ANO209LC4 ALARM_OFF**
**IOR ZYP14A3S04 TRIP**
**IOR ZYP14A3S08 TRIP**
**IOR ZYP14A3S37 TRIP**

**Turnover Procedures**

ST-O-007-420-2 "PCIS Normally Closed Valves Operability Test", marked complete up to and including step 6.1.5 (rev 17)

## *SIMULATOR OPERATOR DIRECTIONS*

**EVENT 1** Support crew for stroking of main steam sample valves AO-316 and 317 per ST-O-007-420-2.

**EVENT 2** After stroking of main steam sample valves AO-316 and 317 per ST-O-007-420-2 is complete, initiate **ET7** for split indication on normally closed PCIV AO-2502A, and verify the following:

- **IOR ZLOPC03AO2502A_2 (E7 0 0) ON,** AO-2502A red light on
- **IOR ANO203CE3 (E7 0 0) ALARM_ON,** A TORUS VACUUM RELIEF VALVE OPEN – 224 E-3

When dispatched as the Equipment Operator to the valve to verify ARC 224 E-3 step 3.c, wait 1 minute and report that the valve appears to be closed and that you hear an air leak but cannot tell where it is coming from.

**EVENT 3** After the Tech Spec evaluation is complete, or when directed by the Lead Examiner, initiate **ET1 (IMF SWS01B)** to trip the 'B' Service Water pump.

When requested to check the 'B' Service Water pump breaker, report that it tripped on instantaneous overcurrent.

Support the crew while placing the 'C' Service Water pump in service IAW SO 30.1.A-2, section 4.2. When dispatched as the Equipment Operator for a start of the 'C' Service Water, wait 2 minutes and report steps 4.2.3 and 4.2.4 are complete and the 2C SW Pump is ready for a start.

Support the crew while restoring the Fuel Pool Service Water booster pumps IAW SO 19.1.A-2, section 4.2.

**EVENT 4** When Fuel Pool Service Water is restored, or when directed by the Lead Examiner, initiate **ET2** for the drywell pressure instrument failure, and verify the following:

- **IOR ANO205LF1 ALARM_ON**, DW HI PRESSURE (210 F-1)
- **IOR ANO205LD4 ALARM_ON**, RPS INSTRUMENT GROSS FAILURE (210 D-4)

When requested to check the 2AC065D and 2BC065D instrument racks, report Drywell Pressure Instrument PIS-2-5-12A is upscale high with the gross failure light lit. If directed to reset the gross failure, report that it will NOT reset.

**EVENT 5** After the crew has inserted a half scram on RPS channel A1 and before inserting a PCIS channel trip, or when directed by the Lead Examiner, initiate a trip of the 'A' condensate pump using **ET3 (IMF MCS05A)**.

- Recirc pumps will fail to automatically runback due to a pre-inserted override **(IOR ZYP06A521S16 FALSE)**.

When requested to check the 'A' condensate pump breaker, report that it tripped on instantaneous overcurrent. If dispatched to the 'A' condensate wait 2 minutes and report there is nothing abnormal.

Support the crew as necessary during the power reduction.

## *SIMULATOR OPERATOR DIRECTIONS*

**EVENTS 6 and 7**

When actions for the condensate pump trip are complete, or when directed by the Lead Examiner, initiate **ET4** to cause an overcurrent lockout on #2 aux bus and fail the HPCI flow controller low, and verify the following:

- **Activate BAT BUS_2_OVERCURRENT_LOCKOUT**, Loss of #2 Aux Bus
- **IMF HPC04,** HPCI flow controller fails low in auto

Verify a Recirc loop rupture initiates 5 minutes later at 4% severity on a 20 minute ramp **(IMF RRS20 4 20:00)**.

If asked, report DWCW return header pressure is 28 psig.

Support performance of T-223 "Drywell Cooler Fan Bypass" if requested to perform step 4.6 for placing the fan breakers in SLOW.

**EVENT 8**

RPS fails to scram automatically or manually (manual ARI works) – pre-inserted.

The 'A' ARI channel will fail to automatically initiate. When the URO arms the 'A' ARI channel, verify **ET5 (MRF ARI01TO NORMAL)** initiates to restore the 'A' ARI channel to normal.

When directed to close HV-2-3-56 (per T-246), **MRF T220_2 CLOSE** and report HV-2-3-56 is closed.

**EVENT 9**

30 seconds after HPCI automatically starts and is injecting after operators take manual control, initiate **ET6 (IMF HPC03)** (HPCI turbine trips)

When directed to investigate the HPCI turbine trip, wait 5 minutes and then report unable to determine the cause of the trip.

**EVENT 10**

Pre-inserted instrument failures will prevent the crew from spraying the torus or the drywell.

After the crew attempts to spray the containment (either torus or drywell), delete the override on the OPPOSITE RHR LOOP:

- To delete the override on the 'B' RHR Loop, **DOR ZYP12A3S19**
- To delete the override on the 'A' RHR Loop, **DOR ZYP12A1S19**

**NOTE: Adjust the severity of RRS20 as necessary to control the pace of RPV level trend toward -172 inches. Ensure the crew has time to enter T-111 and inhibit ADS before raising the leak severity. Consider MMF RRS20 to 6% with remaining ramp time when HPCI is tripped. HPCI will likely restore RPV level to 0 inches before RRS20 initiates, even with RCIC OOS.**

**TERMINATION**

The scenario may be terminated after the reactor has been depressurized and reactor level has been recovered and is controlled.

## SHIFT TURNOVER

**PLANT CONDITIONS:**

- Unit 2 is steady at 100% power.

**INOPERABLE EQUIPMENT/LCOs:**

- None

**SCHEDULED EVOLUTIONS:**

- ST-O-007-420-2, "PCIS Normally Closed Valves Operability Test".

**SURVEILLANCES DUE THIS SHIFT:**

- Completion of ST-O-007-420-2 "PCIS Normally Closed Valves Operability Test". The test is done up to and including step 6.1.5 (Rev 17). Continue with step 6.2 (stroking AO-2-02-316 and 317)
- Stopwatch is available
- PMS screen is setup to support ST

**ACTIVE CLEARANCES:**

- None

**GENERAL INFORMATION:**

- Unit 2 is steady at 100% power.

## CRITICAL TASK LIST

1. **Recognize failure of the Reactor Protection System to scram the reactor and initiate Alternate Rod Insertion (ARI) to insert control rods in accordance with T-101 "RPV Control" and RRC 3B.1-2 "Alternate Rod Insertion During A Plant Event".**

2. **Spray the drywell in accordance with T-204 "Initiation of Containment Sprays Using RHR" when conditions permit, but before drywell temperature exceeds 281 degrees F.**

3. **Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when reactor water level cannot be restored and maintained above -172 inches.**

## Operator Actions

ES-D-2

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 1 **Page:** 1 of 18

**Event Description:** Stroke main steam sample isolation valves AO-2-02-316 and 317 per ST-O-007-420-2

**Cause:** Stroke open and close PCIVs associated with Main Steam Sample System

**Effects:** N/A – Normal evolution

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Directs the PRO to continue with ST-O-007-420-2 "PCIS Normally Closed Valves Operability Test" starting at step 6.2 (Rev 17). |
| | PRO | Performs step 6.2 of ST-O-007-420-2:<br>Strokes open AO-2-02-316 "Main Steam Sample Inboard"<br>Strokes closed and times AO-2-02-316 "Main Steam Sample Inboard"<br>Records time in surveillance test<br>Strokes open AO-2-02-317 "Main Steam Sample Outboard"<br>Strokes closed and times AO-2-02-317 "Main Steam Sample Inboard"<br>Verifies PMS computer points associated with both valves have changed state by verifying historical tabular trend |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 2 **Page:** 2 of 18

**Event Description:** Reactor Building to Torus Vacuum Breaker Isolation Valve AO-2502A has split indication

**Cause:** Deflation of boot seal for AO-2502A

**Effects:** Valve is no longer leak tight and inoperable for primary containment purposes

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Acknowledges and reports alarm 224 E-3 "A TORUS VACUUM RELIEF VALVE OPEN" |
| | | Verifies that AO-2502A is open |
| | CRS | References ARC 224 E-3 |
| | | Direct that an Equipment Operator be dispatched to check instrument air supply, backup nitrogen supply, and valve seal operation for AO-2502A. |
| | | Refer to Tech Spec 3.6.1.5 |
| | | Declare AO-2502A inoperable per Tech Spec 3.6.1.5. Condition A |
| | | Determine that AO 250A must be closed within 72 hours. |

**Event Description:** 'B' Service Water pump trips on overcurrent

**Cause:** Motor winding failure

**Effects:** 1. Alarms:

- 216 H-1 "'B' Service Water Pump Trip"
- 216 H-2 "'B' Service Water Pump OVLD"
- 216 F-1 "Service Water Header Lo Press"
- 216 F-5 "Fuel Pool Service Water To HX Lo Press"

2. Loss of 'B' Service Water pump, requiring manual start of 'C' Service Water pump.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Recognize and report the following alarms and enter corresponding Alarm Response Cards:<br>• 216 H-1 "'B' Service Water Pump Trip"<br>• 216 H-2 "'B' Service Water Pump OVLD"<br>• 216 F-1 "Service Water Header Lo Press"<br>• 216 F-5 "Fuel Pool Service Water To HX Lo Press"<br>Recognize and report trip of the 2B Service Water pump.<br>Recognize and report trip of the 2A and 2B Fuel Pool Service Water (FPSW) booster pumps.<br>Green flag the 2B Service Water pump control switch.<br>Green flag the 2A and 2B FPSW booster pump control switches.<br>Dispatch an Equipment Operator to investigate the Service Water pump and breaker. |
| | CRS | Enter and direct actions of Alarm Response Cards 216 H-1, 216 H-2, 216 F-1 and 216 F-5.<br>Direct placing the 2C Service Water pump in service IAW SO 30.1.A-2 "Unit 2 Service Water System Normal Operations".<br>Request Maintenance assistance to investigate trip of 2B Service Water Pump. |
| | URO | Place the 2C Service Water pump in service IAW SO 30.1.A-2 as follows:<br>• Direct an Equipment Operator to prepare the 2C Service Water pump for start IAW SO 30.1.A-2, steps 4.2.3 and 4.2.4.<br>• Start the 2C Service Water pump by placing the pump control switch in "Run".<br>• Verify Service Water pump discharge pressure psig (both in the Control Room and locally). |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 3 **Page:** 4 of 18

**Event Description:** 'B' Service Water pump trips on overcurrent (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct placing the 2A and 2B Fuel Pool Service Water booster pumps in service IAW SO 19.1.A-2 "Fuel Pool Cooling System Startup and Normal Operations". |
| | URO | Place the 2A and 2B Fuel Pool Service Water booster pumps in service IAW SO 19.1.A-2 as follows:<br>• Direct an Equipment Operator to prepare the 2A and 2B Fuel Pool Service Water booster pumps for start IAW SO 19.1.A-2, step 4.2.5.<br>• Start the 2A Fuel Pool Service Water booster pump by placing the pump control switch in "Run".<br>• Start the 2B Fuel Pool Service Water booster pump by placing the pump control switch in "Run".<br>• Direct an Equipment Operator to adjust differential pressure for the 2A and 2B Fuel Pool Service Water booster pumps IAW SO 19.1.A-2, step 4.2.8. |
| | CRS | Request troubleshooting/technical assistance through the Shift Manager. |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 4 **Page:** 5 of 18

**Event Description:** Drywell pressure instrument fails upscale without the expected half scram

**Cause:** PIS-2-5-12A fails upscale (gross failure)

**Effects:**

1. Alarms:
   - 210 F-1 "Drywell Hi Pressure Trip"
   - 210 D-4 "RPS/PCIS Trip Units in Calibration of Gross Failure"
2. Drywell pressure instrument fails high (gross failure); RPS half scram fails to occur.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize and report the following alarms and enter the corresponding Alarm Response Cards:<br>• 210 F-1 "Drywell Hi Pressure Trip"<br>• 210 D-4 "RPS/PCIS Trip Units in Calibration of Gross Failure"<br>Determine actual drywell pressure is below the scram setpoint.<br>Recognize and report the drywell pressure instrument failure did NOT cause the expected RPS half scram. |
| | CRS | Enter and execute the Alarm Response Cards for 210 F-1 and 210 D-4.<br>Direct an Equipment Operator to check the 2A(B)C065D instrument racks in the Reactor Building to aid in determining the cause of the trip. |
| | CRS | Direct troubleshooting in accordance with the Alarm Response Card for 210 D-4 "RPS/PCIS Trip Units in Calibration of Gross Failure".<br>Declare drywell pressure instrument PIS-2-5-12A inoperable.<br>Review Tech Spec 3.3.1.1 and determine Condition A applies (RPS Function 6 on Table 3.3.1.1-1):<br>• Place associated channel (or trip system) in trip within 12 hours, OR<br>• Be in Mode 3 within the next 12 hours.<br>Review Tech Spec 3.3.6.1 and determine Condition A applies (PCIS Function 2.b on Table 3.3.6.1-1):<br>• Place associated channel (or trip system) in trip within 12 hours, OR<br>• Be in Mode 3 in the next 12 hours and in Mode 4 in the next 36 hours.<br>Review Tech Spec 3.3.6.2 and determine Condition A applies (SCIS Function 2 on Table 3.3.6.2-1):<br>• Place associated channel (or trip system) in trip within 12 hours, OR<br>• Take the compensatory actions for Condition C.<br>Recognize that RPS/PCIS trips must be installed within 12 hours. |

**Event Description:** Drywell pressure instrument fails upscale without the expected half scram (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | | **NOTE: This section is optional at discretion of Lead Examiner. The Lead Examiner may act as the Shift Manager and direct the crew to perform GP-25 to install the RPS/PCIS trips OR the scenario can move on when the crew determines that GP-25 Appendices 1 & 5 apply.** |
| | CRS | Initiate GP-25 Appendices 1 and 5 to install redundant RPS/PCIS trips. |
| | PRO | Install trip on A1 RPS channel as directed by the CRS using GP-25 Appendix 1:<br>• Complete Appendix 1.<br>• Inform URO that a half scram on RPS channel A1 will be inserted.<br>• At Panel 20C015, insert key and place the A1 Test Keylock Switch to the TEST position. |
| | | **NOTE: the next event will be initiated before the crew can perform Appendix 5 of GP-25 (PCIS).** |

**Event Description:** 'A' Condensate pump trip with Recirc runback failure / power reduction

**Cause:** 'A' Condensate pump trips on overcurrent / relay failure in the Recirc runback logic

**Effects:**

1. Alarms:
   - 203 E-1 "A Condensate Pump Overload"
   - 203 E-2 "A Condensate Pump BKR Trip"
2. Recirc automatic runback fails to occur, resulting in lowering reactor level and requiring manual recirc flow reduction to control reactor level.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize and report trip of the 'A' Condensate pump.<br>(May) recognize / report the Recirc pump runback (45%) failed to occur.<br>Recognize and announce entry into the OT-100 "Reactor Low Level":<br>• Recognize the reactor water level drop is caused by a lack of makeup capability, requiring power reduction with Recirc flow.<br>• Reduce power by lowering the 'A' and 'B' Recirc pump speed controllers per GP-9-2 "Fast Reactor Power Reduction" (this must be done in a controlled manner that does not result in level swell and a high level trip of the Reactor Feed pumps).<br>Recognize and announce entry into OT-112, "Unexpected/Unexplained Change in Core Flow".<br><br>NOTE: the crew must respond to this event by lowering power per GP-9 to prevent a low reactor water level scram. IF the crew recognizes that Feedwater flow was above 85% (12 Mlbm/hr) prior to the Condensate pump trip, they should reduce Recirc flow to the runback setpoint of 45%. |
| | CRS | Enter OT-100 "Reactor Low Level": direct the URO to lower power by lowering Recirc flow using GP-9-2 "Fast Reactor Power Reduction".<br>Enter / direct actions of ARC 203 E-2 "A Condensate Pump BKR Trip".<br>Enter / direct actions of OT-112 "Unexpected/Unexplained Change in Core Flow".<br>• Direct insertion of control rods per GP-9-2 "Fast Reactor Power Reduction" to exit Region 2 of Power to Flow map.<br>• Plot conditions on Power to Flow map. Determine that plant is in region 2.<br>• Direct the URO to monitor for THI<br>(May) refer to GP-5 "Power Operations" to determine power must be limited to <80% total feedwater flow with 2 Condensate and 3 Reactor Feedwater pumps.<br>Request Maintenance assistance for investigation of 'A' Condensate Pump and failure of Recirc system to |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 5 **Page:** 8 of 18

**Event Description:** 'A' Condensate pump trip with Recirc runback failure / power reduction (cont'd)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Monitor for Thermal Hydraulic Instabilities (THI).<br>Insert control rods per GP-9-2 "Fast Reactor Power Reduction" to exit Region 2 of Power to Flow map. |
| | PRO | Investigate the cause of the 'A' Condensate pump trip using the applicable Alarm Response Card.<br>• Direct an Equipment Operator to investigate the breaker and pump.<br>• Green flag the 'A' Condensate pump control switch. |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 6 **Page:** 9 of 18

**Event Description:** Loss of #2 auxiliary bus (loss of Condensate and Feedwater)

**Cause:** Failure in the bus work results in an overcurrent condition and a bus lockout / RPS 'B' automatic and manual channel failure

**Effects:**

1. Alarms:
   - 219 A-2 "2 Aux Bus Overcurrent Relays"
   - 219 B-2 "2 Aus Bus Lo Voltage"
2. #2 Auxiliary Bus breakers trip, de-energizing the bus and its loads
3. The immediate impact of loss of #2 Auxiliary Bus is the resultant loss of the remaining Condensate pumps, causing reactor water level to drop rapidly.
4. Full Reactor scram does not occur; manual ARI initiation is required.
5. Reactor level drop is greater because more time is spent under power conditions with no high-pressure injection.

| Time | | Position | Applicant's Actions or Behavior |
|---|---|---|---|
| | | PRO | Recognize and report the loss of #2 Auxiliary Bus. |
| | | CRS | |
| | | URO | Recognize and report Reactor water level is dropping rapidly.<br>Attempt to manually scram the Reactor by placing the Mode Selector Switch in "Shutdown".<br>Attempt to scram 'B' RPS by depressing the manual scram pushbutton.<br>Recognize and report an RPS scram has failed to occur. **(See Event #8)**<br>Report entry into T-101 "RPV Control" for the ATWS condition. |
| | **CT** | CRS | Direct the mode switch be placed in SHUTDOWN if not previously performed by URO.<br>Recognize a failure to scram condition exists; enter and execute T-101 "RPV Control".<br>For RC/Q:<br>• Direct initiation of Alternate Rod Insertion (ARI) **(See Event #8).** |

**Event Description:** Loss of #2 auxiliary bus (loss of Condensate and Feedwater)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Execute T-101 "RPV Control".<br>For RC/L:<br>• Direct restoring reactor level to +5 to +35 inches with HPCI and RCIC.<br>For RC/P:<br>• Direct instrument nitrogen bypassed and restored IAW GP-8E.<br>• Direct reactor pressure stabilized below 1050 psig. |
| | PRO | Perform applicable scram actions:<br>• Transfer 13 KV house loads (#1 bus only).<br>• Trip main turbine at approximately 50 MWe.<br>• Verify main generator lockout.<br>• Verify Group II & III isolations and SGTS initiation.<br>• Verify SDV vent and drain valves are closed.<br>• Verify HWC isolated.<br>• Verify recirc pumps are tripped.<br>• Report PRO scram actions to the CRS<br>• Monitor instrument air header pressure and drywell pressure; report instrument air header pressure is greater than drywell pressure. |
| | PRO | Bypass and restore drywell instrument nitrogen IAW RRC 94.2-2 or GP-8E.<br>• Place AO-2969A control switch to "CLOSE".<br>• Place AO-2969B control switch to "CLOSE".<br>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position.<br>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.<br>• Place AO-2969A control switch to "OPEN".<br>• Place AO-2969B control switch to "OPEN".<br>NOTE: this activity may be coordinated between the URO and the PRO. |
| | URO/PRO | Announce an additional entry condition for T-101 based on Reactor level below -48 inches.<br>Operate HPCI and RCIC to restore reactor level to +5 to +35 inches. |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 6 **Page:** 11 of 18

**Event Description:** Reactor coolant leak inside the drywell

**Cause:** A leak develops on a weld joint on the suction piping of the "B" reactor recirculation pump after it tripped; the leak size propagates over time.

**Effects:**

1. Initial alarms:
   - 210 F-2 "Drywell Hi-Lo Press"
   - 225 A-4 "Drywell Hi-Lo Press"
2. Drywell pressure and temperature will rise at an increasing rate, eventually leading to a high drywell pressure alarm, ECCS automatic start signals, and PCIS isolation signals. Conditions will escalate requiring the use of containment sprays.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Recognize and report alarms 210 F-2 "Drywell Hi-Lo Press" and 225 A-4 "Drywell Hi-Lo Press" and enter corresponding Alarm Response Cards. |
| | CRS | Enter and execute follow-up actions of OT-101 "High Drywell Pressure":<br>• When drywell pressure reaches 2 psig, then enter T-101 "RPV Control" and T-102 "Primary Containment Control" and execute concurrently with OT-101.<br>• Direct additional drywell cooling placed in service. |
| | URO/PRO | Maximize drywell cooling by placing all drywell cooler fans to RUN. |
| | CRS | Enter and execute T-102 "Primary Containment Control" when drywell pressure reaches 2 psig.<br>For PC/P:<br>• Direct torus sprays initiated IAW T-204 "Initiation of Containment Sprays Using RHR".<br>For DW/T:<br>• Direct drywell cooling maximized by performing T-223 "DW Cooler Fan Bypass".<br>For PC/G:<br>• Direct CAD placed in service as time permits.<br>Re-enter T-102 when Torus level reaches 14.9 feet, and when Drywell temperature reaches 145 degrees F.<br>Direct an RPV depressurization to 500-600 psig. |

**Event Description:** Reactor coolant leak inside the drywell (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Monitor T-102 parameters (torus temperature, torus level, drywell pressure, torus pressure, drywell temperature) and provide trends to the CRS as appropriate. |
| | URO | Maximize drywell cooling by performing T-223 "DW Cooler Fan Bypass".<br>Shutdown drywell cooling fans when directed.<br>Depressurize the RPV to 500-600 psig using bypass valves. |
| | PRO | Spray the torus in accordance with T-204 "Initiation of Containment Sprays Using RHR" **(see Event #10)**. |
| **CT** | | Spray the drywell in accordance with T-204 "Initiation of Containment Sprays Using RHR". |
| | URO/PRO | Place CAD in service when directed.<br>Monitor reactor level, and report to the CRS reactor level is continuing to lower. |
| | CRS | When drywell pressure and temperature plot within the safe region of the Drywell Spray Initiation Limit Curve:<br>• Direct drywell cooling fans shut down. |
| **CT** | | • Direct drywell sprays initiated IAW T-204 "Initiation of Containment Sprays Using RHR". |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 7 **Page:** 13 of 18

**Event Description:** HPCI flow controller fails low in automatic

**Cause:** HPCI flow controller internal malfunction while in automatic

**Effects:** HPCI turbine speed will be too low to develop enough system discharge pressure to allow injection into the RPV. Controller must be placed in MANUAL and output raised manually to allow the system to inject.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Recognize that HPCI system automatic response is abnormal and that the system has low discharge pressure and no injection flow. |
| | | Place the HPCI system flow controller in MANUAL. |
| | | Using controller manual output knob, raise HPCI system speed high enough to develop enough discharge pressure to allow system injection into the RPV. |
| | | Report the abnormal HPCI response and actions taken to the CRS. |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 8 **Page:** 14 of 18

**Event Description:** RPS failure requires Alternate Rod Insertion (ARI) to scram the reactor

**Cause:** RPS 'B' automatic and manual channel failure

**Effects:** Full Reactor scram does not occur; manual ARI initiation is required.

| Time | | Position | Applicant's Actions or Behavior |
|---|---|---|---|
| | CT | CRS | Recognize a failure to scram condition exists; enter and execute T-101 "RPV Control".<br>For RC/Q:<br>• Direct initiation of Alternate Rod Insertion (ARI). |
| | CT | URO | Initiate ARI IAW RRC 3B.1-2 "Alternate Rod Insertion During a Plant Event":<br>• Rotate the "A" and "B" ARI pushbutton collars to "Armed".<br>• Depress the "A" and "B" ARI pushbuttons.<br>• Verify the following ARI solenoid valves open:<br>o SV-2-03-141A<br>o SV-2-03-142A<br>o SV-2-03-141B<br>o SV-2-03-142B<br>• Verify and report the scram air header is depressurizing.<br>• Monitor and report when control rods begin to insert.<br>• Verify APRMs are downscale and report to the CRS.<br>• Report the status of reactor level control, reactor pressure control, and control rods. |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 9 **Page:** 15 of 18

**Event Description:** HPCI turbine trip / emergency blowdown

**Cause:** Instrument failure

**Effects:** HPCI will trip while in-service, RPV level lowers requiring emergency blowdown

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize and report alarm 221 B-1 "HPCI Turb Trip" and enter the corresponding Alarm Response Card (as time permits).<br>Dispatch an Equipment Operator to determine the cause of the trip.<br>When report is received from the field, report to the CRS that there is no apparent cause for the HPCI trip. |
| | CRS | Direct SBLC initiation to augment reactor level control.<br>Direct T-246 "Maximize CRD Flow to the Reactor Vessel". |
| | URO/PRO | Initiate SBLC for reactor level control, as directed, using RRC 11.1-2 "SBLC Initiation During a Plant Event".<br>Perform T-246 "Maximize CRD Flow to the Reactor Vessel".<br>• Direct an Equipment Operator to open HV-2-3-129 "CRDHS Bypass Valve for Pump Suction Filter"<br>• Direct an Equipment Operator to check standby CRD Pump for start per step 4.4.<br>• Start the standby CRD Pump.<br>• Direct an Equipment Operator to open discharge valve for the CRD Pump placed in service HV-2-3-36A or B.<br>• While monitoring CRD Pump motor amps, direct an Equipment Operator to throttle open HV-2-3-170 "Inlet Valve to Drive Water Filters"<br>• Direct an Equipment Operator to place the standby drive water filter in service per step 4.8.<br>• Fully open MO-2-3-020 on Panel 20C005A.<br>• Close MO-2-2A-8029A and B on Panel 20C004A.<br>• Verify CRD flow controller FIC-2-3-301 in MANUAL.<br>• While monitoring CRD Pump motor amps, open AO-2-3-19A(B) "Flow Control" using FIC-2-3-301. |

**Event Description:** HPCI turbine trip / emergency blowdown (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | After it is determined reactor level cannot be maintained above –172 inches, exit the RC/L leg of T-101 and enter/execute T-111 "Level Restoration":<br>• Direct ADS inhibited.<br>• Direct Core Spray and LPCI pumps started. |
| CT | | When reactor level drops to –172 inches, enter and execute T-112 "Emergency Blowdown":<br>• Verify torus level is above 7 feet.<br>• Verify reactor pressure is 50 psig above torus pressure.<br>• Direct 5 ADS SRVs opened. |
| | URO/PRO | Inhibit ADS when directed. |
| CT | | Verify start of all available Core Spray and LPCI pumps.<br>When directed, manually open 5 ADS SRVs by placing their control switches in OPEN. |
| | CRS | After T-112 is executed, direct RPV injection maximized with all systems, subsystems, and alternate subsystems.<br>After it is determined reactor level can be maintained above –172 inches, exit T-111 and enter T-101 "RPV Control" at step RC/L-1.<br>Direct reactor level restored to +5 to +35 inches with Core Spray/RHR. |
| | URO/PRO | Maximize injection with all systems, subsystems, and alternate subsystems.<br>Restore and maintain reactor level +5 to +35 inches, as directed. |

**Event Description:** Pressure instrument failure prevents using containment spray on 1 RHR loop

**Cause:** Drywell pressure input to spray logic permissive not functioning

**Effects:** Prevents containment spray using B (A) loop of RHR, resulting in Drywell temperature rising toward 281 degrees F (the A (B) loop of RHR is available).

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | | NOTE: the spray logic failure will effect whichever loop of RHR (B or A) is first selected to spray the containment. The simulator operator will delete the associated override (failure) on the opposite RHR loop to allow spraying the containment with that loop. |
| | PRO | Spray the torus in accordance with T-204 "Initiation of Containment Sprays using RHR":<br>• Verify System 1 and 2 Drywell Pressure Permits Containment Spray annunciators (224 D-3, 225 B-3) are lit.<br>• Place keylock switch 10A-S18 in "MANUAL OVERRIDE".<br>• Momentarily place switch 10A-S17 in "MANUAL".<br>• Open or verify open MO-2-10-39 "Torus Header".<br>• Open or verify open MO-2-10-89 HPSW Hx Outlet".<br>• Start a HPSW pump<br>• Start an RHR pump..<br>• Close or verify closed MO-2-10-34 "Full Flow Test".<br>• Throttle open MO-2-10-38 "Torus Spray" to obtain 1,000 gpm on FI-2-10-136. |
| **CT** | | Recognize and report inability to spray the torus (drywell) with the B (A) loop of RHR. |
| **CT** | CRS | Direct the operator to spray the torus (drywell) with the opposite loop of RHR. |
| **CT** | PRO | As directed, spray the torus (drywell) using the opposite loop of RHR in accordance with T-204 "Initiation of Containment Sprays using RHR" **(refer to steps above for steps to spray the torus).**<br>Spray the drywell per T-204 as follows:<br>• Verify both recirc pumps are tripped<br>• Verify all drywell cooling fans control switches are in OFF<br>• Open MO-2-10-31<br>• Open MO-2-10-26<br>• Monitor torus and drywell pressure<br>• Throttle MO-2-10-26 to adjust drywell spray as needed |

**Op Test No.:** 1 **Scenario No.:** 1 **Event No.:** 10 **Page:** 18 of 18

**Event Description:** Pressure instrument failure prevents using containment spray on 1 RHR loop

**POST SCENARIO EMERGENCY CLASSIFICATION:**

Classification is an Alert IAW EAL MA2 ("Failure to Scram") OR FA1 ("Loss of Reactor Coolant System Barrier").

**TERMINATION CRITERIA:**

The scenario may be terminated when the reactor has been depressurized and reactor level has been recovered and controlled.

**Simulation Facility** Peach Bottom **Scenario No.** #2 **Op Test No.** 2013 NRC

**Examiners** _____ **Operators** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

**Scenario Summary** The scenario begins with the reactor at 100% power. After taking the shift, the crew will perform the Master Trip Solenoid Valve Routine Test.

Next, a turbine stop valve will fail closed, requiring the crew to execute OT-102 "Reactor High Pressure", which will require reducing reactor power to less than or equal to 95% in accordance with GP-5 "Power Operations".

Next, a failure in the controller for the 'A' Recirc M-G set will cause the Recirc pump speed to oscillate. The crew should recognize the changes in core and jet pump flows and "lock up" the 'A' Recirc pump. The crew should verify compliance with Technical Specifications for recirc loop flow differentials.

Next, a spurious HPCI initiation will occur due to a logic system failure. The crew should enter OT-104 "Positive Reactivity Insertion" and shutdown HPCI. This event will cause a steam leak from the HPCI system piping in the HPCI pump room, requiring the crew to enter and execute T-103 "Secondary Containment Control". All attempts to isolate HPCI will be unsuccessful due to logic system and control switch failures. The leak will gradually worsen, requiring a reactor scram and entry into T-101 "RPV Control". While performing scram actions, the PRO should recognize the generator lockout failure following the main turbine trip and manually open the generator output breakers and exciter field breaker. The URO should respond to the 'C' reactor feedpump discharge bypass valve failure by batch feeding through the 'C' reactor feedpump discharge valve.

Conditions will continue to deteriorate in the Reactor Building due to the HPCI steam leak. When the second Reactor Building area (Torus Room) exceeds its T-103 Action Level, the crew should perform a T-112 "Emergency Blowdown". The scenario will end when the RPV is depressurized and RPV level is being maintained with Condensate.

**Initial Conditions** IC-119, 100% power

**Turnover** See Attached "Shift Turnover" Sheet

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 1 | See Scenario Guide | N | PRO CRS | Perform the master trip solenoid valve routine test |
| 2 | See Scenario Guide | R | URO CRS | Turbine stop valve fails closed / power reduction |
| 3 | See Scenario Guide | C TS | URO CRS | 'A' Recirc pump speed oscillations (Tech Spec) / Lock up the 'A' Recirc pump |
| 4 | See Scenario Guide | C TS | PRO CRS | Inadvertent HPCI initiation / shutdown HPCI (Tech Spec) |
| 5 | See Scenario Guide | M | ALL | HPCI steam leak into secondary containment |

| Event No. | Malfunction No. | Event Type* | Event Description |
|---|---|---|---|
| **6** | See Scenario Guide | I PRO CRS | Generator lockout fails to occur following main turbine trip |
| **7** | See Scenario Guide | C URO CRS | 'C' reactor feedpump discharge bypass valve fails to open, complicating post-scram and post-blowdown reactor level control |
| **8** | See Scenario Guide | ALL | Emergency blowdown due to exceeding Reactor Building temperature limits in more than one area |

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

## SIMULATOR OPERATOR INSTRUCTIONS FOR 2013 NRC SCENARIO #2

### *GENERAL REQUIREMENTS*

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

### *SCENARIO SOURCE HISTORY*

- This scenario was altered from one originally developed for the 2011 NRC ILT Exam.

### *INITIAL SETUP*

#### Initial Conditions

- IC-119, 100% power, created from IC-14
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### Blocking Tags

- None

#### Activate APP "2013_NRC_SCN2", or insert the following:

**Event Triggers**

**None**

**Malfunctions**

**IMF MTA03C (E1 0 0)** (Turbine stop valve #3 fails closed)
**IMF HPC02 (E2 0 0)** (HPCI spurious automatic start)
**IMF HPC07 (E3 0 0) 5 20:00 0** (HPCI steam supply line break)
**IMF RFC04A (E4 0 0) 100** (Recirc M-G flow controller 'A' oscillations)

**Overrides**

**IOR ZYP01A2A1S02 (none 0 0) NORMAL** ('C' RFP discharge startup bypass MO-8090)
**IOR ZYP13A1S07 (none 0 0) OPEN** (HPCI steam line isolation valve MO-23-15)
**IOR ZYP13A1S05 (none 0 0) OPEN** (HPCI steam line isolation valve MO-23-16)

**Remote Functions**

None

**Trip Overrides**

**MRF HPO04TO Override** (HPCI isolation override – includes K27, K28, K36, K57 relays)
**MRF MGA01TO Override** (Main Generator 86 lockout relay)

**Batch Files**

None

**Turnover Procedures**

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test" (**provide a consumable copy**)

## ***SIMULATOR OPERATOR DIRECTIONS***

**EVENT 1** Support the crew as necessary for the Master Trip Solenoid Valves Routine Test.

**EVENT 2** When directed by the Lead Examiner, initiate pending events on **ET 1 (IMF MTA03C)** to cause turbine stop valve #3 to fail closed.

If requested as I&C to investigate annunciator 201 H-1 "Feedwater Field Instrument Trouble", acknowledge request.

**EVENT 3** When directed by the Lead Examiner, initiate pending events **ET4 (IMF RFC04A 100)** to cause Recirc M-G flow controller 'A' oscillations.

**EVENT 4** When directed by the Lead Examiner, initiate pending events on **ET 2 (IMF HPC02)** to cause a spurious start of HPCI.

If dispatched as the Equipment Operator to investigate the HPCI start, wait approximately 5 minutes and report no HPCI abnormalities.

**EVENT 5** After the Tech Spec determination has been made, or when directed by the Lead Examiner, initiate pending events on **ET 3 (IMF HPC07 5 20:00 0)** to cause a HPCI steam supply line break.

**Modify the leak severity as necessary to control the scenario pace and ensure a second Reactor Building area exceeds the Action Level for temperature. This will vary based on the crew's action to depressurize the reactor.**

**EVENT 6** Following the GP-4 shutdown and Main Turbine Trip, the Main Generator will not lockout.

**EVENT 7** When the URO attempts to establish reactor level control using MO-8090, the valve will not open.

**EVENT 8** When the second area temperature exceeds the action level, the CRS will direct an emergency blowdown. The CRS may have directed a rapid depressurization with bypass valves prior the second parameter exceeding the action level.

**TERMINATION** The scenario may be terminated when 5 SRVS are open, the reactor is depressurized, and reactor level is under control.

## SHIFT TURNOVER

**PLANT CONDITIONS:**

- Unit 2 is at 100% power.

**INOPERABLE EQUIPMENT/LCOs:**

- None

**SCHEDULED EVOLUTIONS:**

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test" (**provide a consumable copy**)

**SURVEILLANCES DUE THIS SHIFT:**

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test"

**ACTIVE CLEARANCES:**

- None

**GENERAL INFORMATION:**

- None

## CRITICAL TASK LIST

1. **Following a positive reactivity addition, restore Reactor power below 100%.**

2. **When a Primary System is discharging into Secondary Containment through an unisolable leak, scram the Reactor when any parameter (temperature) exceeds a T-103 "Secondary Containment Control" Action Level.**

3. **Perform T-112 "Emergency Blowdown" when the same parameter (temperature) exceeds a T-103 "Secondary Containment Control" Action Level in more than one area and the system breach has not been isolated.**

**OR**

**Perform a rapid depressurization using RC/P-12 when the blowdown limit in T-103 is approached.**

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 1 **Page:** 1 of 12

**Event Description:** Main turbine master trip solenoid valves routine test

**Cause:** N/A

**Effects:** None

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct PRO to perform RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test". |
| | PRO | Perform RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test":<br>• Review RT<br>• Place the Master Trip Test Selector switch to TRIP A<br>• Verify "Test A" lamp is OFF<br>• Release and place Master Trip Test Selector switch to RESET<br>• Verify "Test A" lamp is ON<br>• Place the Master Trip Test Selector switch to TRIP B<br>• Verify "Test B" lamp is OFF<br>• Release and place Master Trip Test Selector switch to RESET<br>• Verify "Test B" lamp is ON<br>• Complete RT paperwork |
| | CRS | Review RT for completeness/satisfactory results. |
| | URO | Monitor plant parameters/assist as directed. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 2 **Page:** 2 of 12

**Event Description:** Turbine stop valve fails closed / Reactor power reduction

**Cause:** An internal fault in the control pac for #3 stop valve causes the stop valve to go closed

**Effects:**
1. Alarms: 201 H-1 "Feedwater Field Instrument Trouble"
   206 A-4 "Main Steam Line Bypass Valve Open"
2. Reactor pressure will rise due to the valve closure; reactor power will rise in response to the rise in reactor pressure, Bypass valve(s) will open.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Recognize and report alarm 201 H-1 "Feedwater Field Instrument Trouble" and enter the corresponding Alarm Response Card. |
| | | Recognize and report alarm 206 A-4 "Main Steam Line Bypass Valve Open" |
| | | Recognize and report main turbine bypass valve open |
| | | Recognize and report the rise in reactor pressure. |
| | | Recognize and report entry into OT-102 "Reactor High Pressure". |
| | | Enter and execute OT-102 "Reactor High Pressure". |
| | | Recognize and report Load Limit light lit on main turbine Panel 20C008A. |
| | | Recognize closure of the #3 Main Turbine Stop Valve. |
| | | Request I&C assistance to respond to alarm 201 H-1 "Feedwater Field Instrument Trouble" |
| | URO/PRO | Recognize and report the rise in reactor power. |
| | | (May) recognize and report entry into OT-104 "Positive Reactivity Insertion". |
| | CRS | Enter and execute OT-102 "Reactor High Pressure". |
| | | (May) enter and execute OT-104 "Positive Reactivity Insertion". |
| | | Exit OT-104 (per step 3.2). |
| | | Recognize OT-102 requirement to reduce reactor thermal power within 2 hours in order to comply with Tech Spec 3.2. |
| | | Enter and execute GP-5 "Power Operation" per OT-102, step 3.5. |

**Event Description:** Turbine stop valve fails closed / Reactor power reduction (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| CT | CRS | Direct the URO to lower reactor power to ≤95% (3338 MWth) per GP-5, step 6.32.<br>Verify operation is within the acceptable region of AO 1E. 4-2 "Planned Removal of the Fifth or Fourth Stage Feedwater Heaters for Service During End of Cycle Coastdown and Return to Normal Shutdown Condition". |
| CT | URO | Lower reactor power using Recirc until reactor power ≤95% (3338 MWth), as directed. |
| | PRO | Recognize and report main turbine bypass valve open<br>Recognize and report Load Limit light extinguished on main turbine Panel 20C008A<br>NOTE: "Main Steam Line Hi Radiation" (218 D-2) may alarm and clear during the power reduction due to Hydrogen Water Chemistry injection. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 3 **Page:** 4 of 12

**Event Description:** 'A' Recirc M-G Flow Controller oscillations

**Cause:** Failure in the 'A' flow controller

**Effects:**
1. Jet pump flow oscillation
2. Total flow oscillations
3. Reactor level oscillations
4. 'A' Recirc parameter changes
5. Reactor power oscillations

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize and report the 'A' Recirc pump (controller) oscillations<br>Recognize and report the oscillations as an entry into OT-112 "Unexpected/Unexplained Change in Core Flow".<br>URO may lockup the 'A' Recirc M-G set without direction at this time. |
| | CRS | Enter and execute OT-112 "Unexpected/Unexplained Change in Core Flow".<br>• Plot conditions on the Power to Flow map<br>• Direct monitoring for THI<br>Direct the URO to Lock-up the 'A' Recirc pump by placing the Scoop Tube switch to "LOCK" at panel 20C004A.<br>Refer to SO 2D.7.B-2 "Recirculation MG Set Scoop Tube Lockup and Reset", especially for transient and scram actions for a locked up Recirc pump.<br>Verify the Jet pump flow mismatch is within:<br>• 10.25 Mlbm/hr IF total core flow < 71.75 Mlbm/hr<br>• 5.125 Mlbm/hr IF total core flow >71.75 Mlbm/hr<br>Direct that reactor power be maintained ≤ 95% based on Event 1.<br>(May) dispatch a licensed operator to manually operate the 'A' Recirc pump using AO 2D.2-2 "Recirculation MG Set Scoop Tube Manual Operation". |
| | URO | "Lock up" the 'A' Recirc MG Set if not already completed.<br>Monitor for THI |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 4 **Page:** 5 of 12

**Event Description:** Inadvertent HPCI initiation

**Cause:** Initiation relay contacts short closed

**Effects:**
1. Alarms:
   - 222 D-5 "HPCI Auxiliary Oil Pump Running"
   - 228 C-5 "HPCI Relays Not Reset"
2. HPCI injection to the reactor; reactor water level and reactor power increase

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Recognize and report HPCI initiation.<br>Verify, using at least two independent indications, misoperation of HPCI and/or adequate core cooling is assured. |
| | URO | Recognize and report entry into OT-104 "Positive Reactivity Insertion" and OT-110 "Reactor High Level".<br>Control feed pump speed / discharge pressure as necessary to maintain reactor water level below +35 inches. |
| | CRS | Enter and execute OT-104 "Positive Reactivity Insertion".<br>• Verify, using at least two independent indications, misoperation of HPCI and/or adequate core cooling is assured.<br>• Direct HPCI short term shutdown in accordance with RRC 23.1-2 "HPCI System Operation during a Plant Event".<br>Enter and execute OT-110 "Reactor High Level".<br>• Direct maintaining reactor water level below +35 inches.<br>Review Tech Spec 3.3.5.1 and determine Condition B applies:<br>• Declare HPCI inoperable within 1 hour.<br>• Place the channel in trip within 24 hours.<br>Review Tech Spec 3.5.1 and determine Condition C applies:<br>• Verify RCIC operability immediately.<br>• Restore HPCI to operable status within 14 days.<br>May reference GP-25 "Installation of Trips/Isolations to Satisfy Tech Spec/TRM Requirements for Inoperable Instrumentation.<br>Request Maintenance and/or I&C assistance in investigating cause of inadvertent HPCI initiation. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 4 **Page:** 6 of 12

**Event Description:** Inadvertent HPCI initiation (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Perform RRC 23.1-2 "HPCI System Operation During a Plant Event", Section E, "HPCI Shutdown With Initiation Signal Present (short-term shutdown):<br>• Place Aux Oil Pump control switch in START.<br>• Place Vacuum Pump control switch in START.<br>• Depress and hold Remote Trip pushbutton.<br>• When turbine speed reaches ~ 0 RPM, place Aux Oil Pump control switch in P-T-L and release the Remote Trip pushbutton. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 5 **Page:** 7 of 12

**Event Description:** HPCI steam leak into Secondary Containment

**Cause:** Unisolable HPCI steam line break in the HPCI room

**Effects:** Secondary containment temperature will increase. First alarm to actuate is 210 J-3 "High Area Temp". This will cause an entry into T-103 "Secondary Containment Control".

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO/URO | Recognize and report the "High Area Temp" alarm (210 J-3) and enter the correspond Alarm Response Card.<br>Recognize and report the Fire Panel alarm (007 D-6 Lower). |
| | PRO | Report the rise in HPCI room temperature (Point #3).<br>Report the temperature alarm as an entry into T-103 "Secondary Containment Control". |
| | CRS | Enter and direct T-103 "Secondary Containment Control".<br>• Monitor and control secondary containment temperatures.<br>• Perform a local evacuation IAW GP-15.<br>• Direct operators to isolate HPCI.<br>• Determine a primary system is discharging into the Reactor Building. |
| | PRO | Monitor secondary containment temperatures on TR-2-13-139.<br>Inform the CRS of the inability to isolate HPCI.<br>Perform a GP-15 local evacuation as directed. |

**Event Description:** HPCI steam leak into Secondary Containment (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| CT | CRS | Direct a GP-4 "Manual Reactor Scram" before HPCI room temperature (Point #3) exceeds the action level of 150 degrees F.<br>Enter and direct T-101 "RPV Control". |
| CT | URO | Perform GP-4 "Manual Reactor Scram" as directed:<br>• Place the mode switch to SHUTDOWN.<br>• Verify control rods are inserting.<br>• Verify APRMs are downscale.<br>• When reactor level begins to recover, then "Emergency Stop" all 3 RFPTs.<br>• Depress "SLOW RAISE" or "FAST RAISE" on the RFPT to remain in service.<br>• Close all RFP discharge valves and open 'C' RFP discharge bypass valve. **(See Event 7)**<br>• Establish and maintain reactor level control with feedwater.<br>• Verify all control rods are inserted.<br>• Verify reactor pressure, trend, and status of EHC.<br>• Notify health physics of changing plant conditions. |
| | PRO | Perform GP-4 "Manual Reactor Scram" as directed:<br>• Transfer 13 KV house loads.<br>• Trip main turbine when less than 50 MWe.<br>• Verify main generator lockout. **(See Event 6)**<br>• Verify Group II and III isolations and SGTS initiation.<br>• Verify scram discharge volume vents and drains are closed.<br>• Verify hydrogen water chemistry is isolated.<br>• Verify both recirc pumps speed have runback to 30%.<br>• Monitor instrument air header pressure and drywell pressure.<br>• When the CRS is ready, report scram actions. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 5 **Page:** 9 of 12

**Event Description:** HPCI steam leak into Secondary Containment (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct the URO to control reactor level between +5" to +35" with feedwater. |
| | | Direct the PRO to bypass and restore instrument nitrogen to the drywell. |
| | URO | Control reactor level between +5" to +35" with feedwater. |
| | PRO | Bypass and restore drywell instrument nitrogen IAW RRC 94.2-2 or GP-8E.<br>• Place AO-2969A control switch to "CLOSE".<br>• Place AO-2969B control switch to "CLOSE".<br>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position.<br>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.<br>• Place AO-2969A control switch to "OPEN".<br>• Place AO-2969B control switch to "OPEN". |
| | CRS | Direct reactor depressurization to 500-600 psig IAW T-101 "RPV Control" |
| | URO/PRO | Perform reactor depressurization to 500-600 psig using the Bypass Valves, as directed. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 6 **Page:** 10 of 12

**Event Description:** Generator lockout fails to occur following Main Turbine trip

**Cause:** Failure in the generator lockout circuit

**Effects:** Main Generator output breakers fail to open

Main Generator exciter field breaker fails to open

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Recognize the failure of the Main Generator lockout while performing PRO scram actions. |
| | | Open the Main Generator output breakers (215 BKR and 225 BKR). |
| | | Open the exciter field breaker (ALT EXC FLD BKR 41-0601). |
| | | Report to the CRS that the Main Generator lockout failed and that you manually opened the Main Generator output breakers and the field breaker. |

## Operator Actions

ES-D-2

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 7 **Page:** 11 of 12

**Event Description:** 'C' reactor feedpump discharge bypass valve fails to open

**Cause:** Failure of the motor operator for MO-8090 ('C' feed pump discharge bypass) to engage and open the valve

**Effects:** Reactor level must be controlled using the RFP discharge valve and not the RFP bypass, complicating post-scram and post blowdown Reactor level control.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize the failure of MO-8090 to open during URO scram actions.<br>Throttle open RFP discharge valve MO-2149A, B or C.<br>Maintain reactor level by controlling RFP discharge valve position and RFP speed (pump discharge pressure).<br><br>NOTE: when RFP's are no longer available (e.g., following emergency depressurization), the RPF discharge valve must be throttled to control Condensate flow to the reactor. |

**Op Test No.:** 1 **Scenario No.:** 2 **Event No.:** 8 **Page:** 12 of 12

**Event Description:** Emergency blowdown due to exceeding Reactor Building temperature limits in more than one area

**Cause:** Steam leak in the Reactor Building continues to degrade Secondary Containment parameters

**Effects:** Reactor depressurization via Bypass Valves and ADS SRVs

| Time | | Position | Applicant's Actions or Behavior |
|---|---|---|---|
| | **CT** | CRS | When a second Reactor Building area temperature approaches the Action Level, direct the URO to perform a rapid depressurization using T-101, RC/P-12. |
| | **CT** | URO | Rapidly depressurize the reactor by opening all Main Turbine bypass valves. |
| | **CT** | CRS | When the same parameter exceeds an action level in more than one area (HPCI Room and Torus Room) and the primary system breach has not been isolated, enter and execute T-112 "Emergency Blowdown":<br>• Verify torus level is above 7 feet.<br>• Verify reactor pressure is 50 psig or more above torus pressure.<br>• Direct 5 ADS SRVs opened. |
| | **CT** | PRO | When directed, open 5 ADS SRVs by placing their control switches in OPEN. |

**POST SCENARIO EMERGENCY CLASSIFICATION:**

- Classification is a Site Area Emergency IAW EAL FS1, Based on a Loss of the Primary Containment Barrier and a Loss of the Reactor Coolant System Barrier.
- Based on the scenario conditions and expected outcome, the CRS should determine that there is a Release in Progress.

**TERMINATION CRITERIA:**

The scenario may be terminated when 5 SRVS are open, the reactor is depressurized, and reactor level is under control.

**Simulation Facility** Peach Bottom **Scenario No.** #3 **Op Test No.** 2013 NRC

**Examiners** _____ **Operators** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

**Scenario Summary**

The scenario begins with the reactor at 100% power. After taking the shift the crew is required to swap operating TBCCW pumps for inspection of a noisy bearing on the 'A' TBCCW pump.

Next, an individual control rod drive scram accumulator will experience low pressure and alarm in the main control room. The crew will initiate corrective action but the accumulator pressure will remain low requiring the crew to declare the control rod slow or inoperable per Technical Specifications.

Shortly after this, the E-4 diesel generator will inadvertently start, requiring the crew to shutdown the E-4 diesel generator and apply Technical Specifications for an inoperable diesel generator.

The crew should then recognize and respond to lowering main condenser vacuum caused by a failure of the in service steam jet air ejector steam supply valve. The crew must enter OT-106 "Condenser Low Vacuum" and reduce reactor power in accordance with GP-9-2 "Fast Power Reduction".

Following the power reduction, a turbine lube oil malfunction will result in a high bearing temperature and vibration condition for the main turbine, requiring the crew to scram the reactor and trip the main turbine. A CRD hydraulic malfunction will result in a low-power ATWS, requiring the crew to execute T-101 "RPV Control" and T-117 "Level/Power Control." In addition, the scram discharge volume (SDV) will fail to completely isolate, requiring the crew to manually isolate the SDV.

When SBLC is initiated the SBLC pump will trip, requiring the URO to place the alternate SBLC pump in service. The second SBLC pump will trip shortly after being placed in service. A failure of the only available EHC pump will cause the turbine bypass valves to close, requiring the crew to utilize HPCI and/or SRVs for reactor pressure control. The crew should perform T-220 "Driving Control Rods During Failure to Scram" to insert control rods. The crew will need to adjust control rod drive water pressure in order to successfully insert the control rods. The scenario may be terminated when the crew has control of RPV power and level using T-240 "Termination and Prevention of Injection into the RPV" and the crew is inserting control rods.

**Initial Conditions** IC-120, 100% power

**Turnover** See Attached "Shift Turnover" Sheet

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 1 | See Scenario Guide | N | PRO<br>CRS | Swap operating TBCCW Pumps |
| 2 | See Scenario Guide | TS | CRS | Individual control rod drive scram accumulator low pressure (Tech Spec) |
| 3 | See Scenario Guide | I<br>TS | PRO<br>CRS | E4 diesel generator spurious start / diesel generator shutdown (Tech Spec) |
| 4 | See Scenario Guide | C | PRO | Failure of Steam Jet Air Ejector steam supply valve / re-open by placing additional valve air supply in service |

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 5 | See Scenario Guide | R | URO CRS | Fast reactor power reduction (w/ recirc) |
| 6 | See Scenario Guide | C | URO CRS | Main turbine high temperature and vibration / reactor scram |
| 7 | See Scenario Guide | M | ALL | ATWS (hydraulic) / turbine bypass valves fail closed |
| 8 | See Scenario Guide | C | URO CRS | Standby liquid control (SBLC) pump trips / start second SBLC pump /second pump trips |
| 9 | See Scenario Guide | C | PRO CRS | Two in-series scram discharge volume (SDV) vent valves fail to automatically isolate |
| 10 | See Scenario Guide | C | URO | Low CRD drive water pressure / adjust to drive control rods |

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

# SIMULATOR OPERATOR INSTRUCTIONS FOR 2013 NRC SCENARIO #3

## *GENERAL REQUIREMENTS*

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

## *SCENARIO SOURCE HISTORY*

- This Scenario originated from the 2007 NRC Initial License Exam. It was significantly modified for the 2009 and 2010 CERT Exams. It has been altered here by replacing Event 1, adding new events 4 and 10, and deleting an event.

## *INITIAL SETUP*

### Initial Conditions

- IC-120, 100% power (created from IC-14)
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

### Blocking Tags

- Apply Information Tag to the 2B EHC Pump control switch
- Apply Information Tag to Annunciator 205 K-3 EHC STANDBY PUMP NOT IN AUTO

### Activate APP "2013_NRC_SCN3" or insert the following:

#### Event Triggers

**TRG E5 REACTOR_MODE_SWITCH_NOT_IN_RUN**
**TRG E6 RPV_LEVEL_LE_-48**
**TRG E7 SBLC_SWITCH_IN_START-A**
**TRG E8 SBLC_SWITCH_IN_START-B**
**TRG E9 SDV_INBD_NOT_IN_AUTO**
**TRG E10 SDV_OUTBD_NOT_IN_AUTO**
**TRG E11 MO_3_20_CLOSE**
**TRG E5 = DMF IPM03**
**TRG E7 = DMF SLC01B**
**TRG E8 = DMF SLC01A**
**TRG E9 = DMF CRH09B**
**TRG E10 = DMF CRH09D**
**TRG E11 = MMF CRH01A (none 0 0) 55**

**Malfunctions**

**IMF CRH09B (none 0 0)** (inboard SDV vent valve fails to isolate)
**IMF CRH09D (none 0 0)** (outboard SDV vent valve fails to isolate)
**IMF IPM03 (none 0 0) 80 0 0** (hydraulic ATWS)
**IMF SLC01A (none 0 0)** (SBLC Pump A trip)
**IMF SLC01B (none 0 0)** (SBLC Pump B trip)
**IMF CAR01 (E3 0 0) 2 0 0** (Main Condenser air in-leakage at 2% severity)
**IMF MTA01B (E4 0 0) 100 10:00 0** (Main Turbine bearing 'B' high temperature)
**IMF MTA02B (E4 0 0) 100 10:00 0** (Main Turbine bearing 'B' high vibration)
**IMF MTA02C (E4 0 0) 100 10:00 0** (Main Turbine bearing 'C' high vibration)
**IMF EHH04A (E6 2:00 0)** (2A EHC pump trip…2 minutes after RPV level ≤ -48 inches)
**IMF EHH02A (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02B (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02C (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02D (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02E (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02F (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02G (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02H (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF EHH02I (E6 4:00 0)** (Bypass valves fail closed 4 minutes after RPV level ≤ -48 inches)
**IMF CRH01A (E8 0 0) 5** (CRD flow control valve fails to 5% open on start of B SBLC pump)

**Overrides**

**IOR ZLOTC08A2BP17_1 (none 0 0) OFF** (Block 2B EHC pump green light)
**IOR ZYP01A6S39 (none 0 0) STOP** (Block 2B EHC pump control switch)
**IOR ZYP04A8S04 (E1 0 2) START** (E-4 DG QUICK START pushbutton)
**IOR ZYP02A6S28 (E8 0 15) OPEN** (MO-2-3-20 strokes open for 15 seconds after B SBLC pump is started)
**IOR ZYP02A6S27 (E8 16 2) THROTTLE** (MO-2-3-20 open stroke is stopped 16 seconds after starting by depressing throttle pushbutton for 2 seconds)

**Trip Overrides**

None

**Turnover Procedures**

None

## ***SIMULATOR OPERATOR DIRECTIONS***

**EVENT 1** Support crew for TBCCW pump swap in accordance with SO 34.6.A-2.

- When directed, report Step 4.1 of SO 34.6.A-2 is complete.
- When directed per Step 4.2.1 of SO 34.6.A-2, report 'B' TBCCW pump discharge pressure is 85 psig.
- When directed per Step 4.4 of SO 34.6.A-2, report 'B' TBCCW pump discharge pressure is 85 psig.

**EVENT 2** After the swap of TBCCW pumps, initiate **ET2 (IMF CRH051423)** to cause a low HCU accumulator alarm condition for control rod 14-23.

When directed to go to the HCU for rod 14-23 per ARC 211 E-2, WAIT 2 minutes and report an unisolable leak on the accumulator and pressure is 900 psig and slowly lowering.

**EVENT 3** After the Tech Spec determination is competed, or when directed by the Lead Examiner, initiate **ET1 (IOR ZYP04A8S04 START)** to cause a spurious start of diesel generator E4.

After the E4 diesel starts, verify override **ZYP04A8S04 is deleted**.

If directed to perform running inspection of E4 EDG, report as the Equipment Operator the E4 diesel is running and everything appears normal.

**EVENTS 4 & 5** After the TS requirements have been determined for the EDG spurious start, or when directed by the Lead Examiner, insert Remote Function **IRF MSS05A 'A' SJAE Steam Isolation Valve AO-2466A CLOSE** to close AO-2466A and initiate a main condenser low vacuum condition.

Support the crew for GP-9, "Fast Power Reduction". Role-play as the Power System Director when called.

**IF** the Lead Examiner requires additional GP-9 power reduction, initiate **ET3 (IMF CAR01 2 0 0)** to cause Main Condenser air in-leakage at 2% severity. (NOTE: With NO power reduction, appox 2 minutes to Cond Lo Vac alarm.) THEN **MMF CAR01 1 1:00 0** to reduce the severity of the condenser in-leakage to 1% severity.

**EVENT 6** After power is reduced, or as directed by the Lead Examiner, initiate **ET4** and verify the following malfunctions:

- **IMF MTA01B 100 10:00**, "Main Turbine Bearing B High Temperature."
- **IMF MTA02B 100 10:00**, "Main Turbine Bearing B High Vibration."
- **IMF MTA02C 100 10:00**, "Main Turbine Bearing C High Vibration."

If directed to investigate the main turbine, wait 5 minutes and when bearing #2 is above 225 degrees F (PMS shortcut "**TGB**"), report there is no oil flow to #2 bearing.

## ***SIMULATOR OPERATOR DIRECTIONS***

**EVENT 7** Pre-inserted malfunction will result in a hydraulic ATWS

When the mode switch is placed in SHUTDOWN (i.e., not in RUN), verify trigger **ET5 (DMF IPM03)** deletes the ATWS malfunction.

When RPV level is lowered to –50 inches, verify trigger **ET6 (IMF EHH04A)** initiates a trip of the 'A' EHC pump 2 minutes later.

When requested to perform T-221, wait 5 minutes then **MRF T221_1 DEFEAT "Remove Low RPV Level/GP1 Isolation"**.

After 5 minutes report to the MCR by phone that T-221 jumpers (step 4.1) have been installed.

When requested as the Equipment Operator to perform T-216 steps 4.1 and 4.2, acknowledge direction but DO NOT COMPLETE THE TASK.

**EVENT 8** Pre-inserted malfunctions will trip the 'A' or 'B' Standby Liquid Control pump; whichever one is placed in service first. When the 'A' or 'B' SLC pump is started, VERIFY the trip malfunction for the other pump is deleted:

- **TRG E7 = DMF SLC01B** (if the 'A' SLC pump was placed in service)
- **TRG E8 = DMF SLC01A** (if the 'B' SLC pump was placed in service)

When the B SLC Pump is started verify the following override initiates:

- **IOR ZYP02A6S28 (E8 0 15) OPEN (opens MO-2-3-20 for 15 seconds after B SLC pump is started to lower CRD drive water pressure)**
- **IOR ZYP02A6S27 (E8 16 2) THROTTLE (stops the open stroke for MO-2-3-20 16 seconds into its open stroke)**
- **IOR CRH01A (E8 0 0) 5** (CRD flow control valve fails to 5% open on start of B SBLC pump)

One minute after the standby SLC pump is started, trip the pump by inserting malfunction **IMF SLC01A or SCL01B** (trip of a or B SLC pump)

**EVENT 9** Two SDV vent valves (AO-032B and AO-035B) fail to automatically isolate on the scram – pre-inserted.

When the crew manually isolates the SDV vent valves, verify the following:

- **TRG E9 = DMF CRH09B**
- **TRG E10 = DMF CRH09D**

## ***SIMULATOR OPERATOR DIRECTIONS***

**EVENT 10** IF the operator strokes closed MO-2-3-20 to raise CRD drive water pressure, verify initiation of **MMF CRH01A (none 0 0) 55** (repositions CRD flow control valve to 55% open

**TERMINATION** The scenario may be terminated when the crew has control of RPV power and level using T-240 "Termination and Prevention of Injection into the RPV" and the crew begins inserting control rods per T-220.

## SHIFT TURNOVER

**PLANT CONDITIONS:**

- Unit 2 is at 100% power

**INOPERABLE EQUIPMENT/LCOs:**

- 2B EHC pump is blocked OOS for micron filter replacement

**SCHEDULED EVOLUTIONS:**

- Swap running TBCCW Pumps per SO 34.6.A-2. Noisy bearing on the 'A' TBCCW pump motor; maintenance to install monitoring instrumentation.

**SURVEILLANCES DUE THIS SHIFT:**

- None

**ACTIVE CLEARANCES:**

- 2B EHC pump

**GENERAL INFORMATION:**

- None

## CRITICAL TASK LIST

1. **Inhibit ADS before an automatic depressurization occurs.**

2. **Before torus temperature exceeds the limits of the Heat Capacity Temperature Limit (HCTL) curve, lower reactor power by performing T-240 "Terminating and Preventing Injection" to lower RPV level until:**

   a. **Reactor power is below 4%, OR**

   b. **RPV level reaches –172 inches, OR**

   c. **All SRVs remain closed and drywell pressure is below 2 psig.**

3. **Initiate a reactor shutdown by inserting control rods in accordance with T-220 "Driving Control Rods During Failure to Scram" and/or shutdown the reactor by initiating Standby Liquid Control before torus temperature exceeds the limits of the Heat Capacity Temperature Limit (HCTL) curve.**

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 1 **Page:** 1 of 13

**Event Description:** Swap TBCCW pumps

**Cause:** Noisy bearing on the 'A' TBCCW pump motor; maintenance to install monitoring instrumentation

**Effects:** N/A

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct the PRO to perform SO 34.6.A-2 "Placing the Standby Turbine Building Closed Cooling Water System Pump in Service." |
| | PRO | Perform SO 34.6.A-2 "Placing the Standby Turbine Building Closed Cooling Water System Pump in Service."<br>• Contact the Equipment Operator to perform SO 34.6.A-2 Step 4.1 to vent the 'B' TBCCW pump and verify it ready for start<br>**NOTE: MCR TBCCW discharge pressure indication reads lower than local indication.**<br>• Start the 'B' TBCCW pump and direct the EO to verify discharge pressure is greater than 70 psig on local pressure indicator.<br>• Stop the 'A' TBCCW pump and place it in AUTO.<br>• Direct the EO to verify discharge pressure of running pump is greater than 70 psig and less than or equal to 87 psig on local pressure indicator.<br>• Inform the CRS and Maintenance the pump swap is complete. |
| | URO | Monitor plant parameters and assist as directed. |

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 2 **Page:** 2 of 13

**Event Description:** Individual control rod drive scram accumulator low pressure

**Cause:** Leaking CRD HCU accumulator

**Effects:**

1. Alarms:
   - 211 E-2 "CRD Accum Lo Pres / Hi Level"
2. Control rod must be declared SLOW or INOPERABLE per Tech Spec.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Acknowledge and report alarm 211 E-2 "CRD Accum Lo Pres / Hi Level"<br>Recognize alarm condition is for control rod 14-23.<br>Reference the corresponding Alarm Response Card. |
| | CRS | Reference Alarm Response Card 211 E-2 "CRD Accum Lo Pres / Hi Level".<br>Direct that an Equipment Operator is dispatched to HCU 14-23. |
| | URO | Dispatch an Equipment Operator to HCU 14-23 |
| | CRS | Upon field report of leaking HCU accumulator, references Tech Spec 3.1.5 for control rod scram accumulators.<br>Recognizes Tech Spec 3.1.5 Condition A applies.<br>Declare control rod 14-23 SLOW or INOPERABLE within 8 hours. |

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 3 **Page:** 3 of 13

**Event Description:** E4 diesel generator spurious start

**Cause:** Spurious automatic start signal

**Effects:**

3. Alarms:
   - 005 F-4 "E4 Diesel Running"
   - 002 A-5 "Emergency Service Water Pump Auto Start"
   - 212 B-2 "Emergency Cooling Water Pump Auto Start"
4. The diesel will continue to run until manually shutdown...it should not be left running for long periods unloaded due to accumulation of oil in the exhaust manifold.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Acknowledge and report alarm 005 F-4 "E4 Diesel Running" and enter corresponding Alarm Response Card.<br>• Red flag the E4 Diesel Generator control Switch by placing the control Switch to "START"<br>Recognize the E4 diesel is running unloaded.<br>Verify diesel automatic response using SO 52B.1.B "Diesel Generator Automatic Start".<br>• Verify an ESW pump started.<br>o Check pump discharge pressure (PI-0236A (B)) "DISCH PRESS" 25 to 64 psig.<br>o Check pump motor current "AMPS" 25 to 35 amps.<br>• Red-flag the ESW pump to remain in service.<br>• Shutdown the remaining ESW pump per ARC-002 A-5.<br>• Direct an Equipment Operator to perform a running inspection of the E-4 diesel generator.<br><br>NOTE: the Lead Examiner, acting as the Shift Manager, may prompt the CRS to remove the E-4 diesel generator from service (do NOT perform a 2-hour load run). |
| | CRS | Per SO 52B.1.B (step 4.7), direct a shutdown of the E-4 diesel generator IAW the applicable steps of section 4.5 of SO 52A.1.B "Diesel Generator Operations".<br>(May) direct placing the E4 diesel in Pull-to-Lock.<br>Request Maintenance and/or I&C assistance in troubleshooting E4 diesel generator spurious start. |

**Event Description:** E4 diesel generator spurious start (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Shutdown the E4 diesel IAW SO 52A.1.B:<br>• Place the E4 diesel generator control switch to "STOP".<br>• Shutdown the running ESW pump in accordance with SO 33.2.A.<br>• Direct the Equipment Operator to continue with the E4 diesel shutdown in accordance with SO 52A.1.B, section 4.5.<br>Place the E4 diesel in Pull-to-Lock, as directed. |
| | CRS | Declare the E-4 diesel inoperable.<br>Review Tech Spec 3.8.1 and determine Condition B applies:<br>• Verify alignment/availability of the Conowingo tie line immediately.<br>• Verify breaker alignment for operable offsite circuits within 1 hour.<br>• Restore the E-4 diesel generator to operable status within 14 days. |

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 4 & 5 **Page:** 5 of 13

**Event Description:** Failure of Steam Jet Air Ejector steam supply valve / fast reactor power reduction

**Cause:** Leak in normal air supply to steam supply valve

**Effects:**
1. Alarms:
   - 201 H-3, "HWC System Trouble"
   - 201 J-3, "HWC System Trip"
   - 204 D-5, "SJAE Disch Hi/Lo Press"
   - PMS Major: Off Gas Flow
2. GP-9 "Fast Power Reduction" required due to degraded main condenser vacuum

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Acknowledge and report alarms:<br>• 201 H-3, "HWC System Trouble"<br>• 201 J-3, "HWC System Trip"<br>• 204 D-5, "SJAE Disch Hi/Lo Press"<br>Recognize and report A SJAE steam supply isolation valve AO-2466A closed on Panel 20C006B.<br>Recognize and report lowering main condenser vacuum. |
| | CREW | Enter and execute OT-106 "Condenser Low Vacuum" |
| | URO | Reduce reactor power in accordance with GP-9-2 "Fast Power Reduction" until vacuum stops lowering.<br>• Lower recirculation flow as required to a value of no lower than 61.5 Mlbs/hr.<br>• Stop power reduction when main condenser vacuum stops lowering and/or begins to improve. |
| | CRS | Recognize that step 3.8 of OT-106 applies to present condition (AO-2466A closed)<br>Directs PRO to perform step 3.8 of OT-106. |
| | PRO | Place control switch "Alt Instr Air AO-2-08A-2466A" to OPEN on Panel 20C007A.<br>Verify AO-2-08A-2466A indicates open at Panel 20C006B.<br>Place PIC-2239A "A Steam Press" in MANUAL on Panel 20C007A.<br>Restore SJAE steam supply pressure to between 115 and 125 psig. |

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 6 **Page:** 6 of 13

**Event Description:** Main turbine high temperature and vibration / reactor scram

**Cause:** Lack of lube oil flow to the #2 main turbine bearing

**Effects:**
1. Initial Alarms:
   - Alarm 205 H-4, "Turbine Bearing Metal Hi Temp"
   - Alarm 205 A-2, "Turbine Vibration / Thrust High"
2. Turbine bearing temperature and vibrations will rise. With no operator action, the main turbine will (eventually) automatically trip.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Recognize and report alarm 205 H-4, "Turbine Bearing Metal Hi Temp" and enter corresponding Alarm Response Card. |
| | | Identify affected bearing on temperature recorder TR-2401. |
| | | Check turbine lube oil temperature on TR-2401, and increase cooling water to lube oil coolers, if necessary. |
| | | Check vibration of the affected bearing on VR-2657. |
| | | Dispatch operator to check for proper oil flow and local temperature at the affected bearing. |
| | CRS | Direct operator actions IAW ARC 205 H-4, "Turbine Bearing Metal Hi Temp" and 205 A-2, "Turbine Vibration/Thrust High". |
| | | Direct the reduction of turbine load IAW GP-9-2, "Fast Power Reduction" (the CRS may go directly to GP-4 "Manual Reactor Scram"). |
| | URO | Perform a GP-9-2 "Fast Power Reduction" as directed. |
| | CRS | When bearing metal temperature increases to 250 degrees F, then direct a manual scram IAW GP-4 "Manual Reactor Scram" then direct the PRO to trip the Main Turbine **(see next event)**. |
| | PRO | When directed by the CRS, or when bearing metal temperatures exceed 250 degrees F, then trip the Main Turbine. |

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 7 **Page:** 7 of 13

**Event Description:** ATWS – hydraulic / turbine bypass valves fail closed

**Cause:** Control rods insert to various positions due to limited Scram Discharge Volume

**Effects:** Requires the crew to take actions to terminate the ATWS, as well as control RPV level/power

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Perform GP-4 "Manual Reactor Scram":<br>• Reduce recirc flow controllers to minimum (20% demand)<br>• Place the mode switch to "SHUTDOWN".<br>• Verify control rods are inserting.<br>• Report APRMs are NOT downscale and that an ATWS is in progress with reactor power > 4% (T-101 entry condition).<br>• Depress manual scram pushbuttons on Panel 20C005A. |
| | PRO | Perform GP-4 "Manual Reactor Scram":<br>• Transfer 13 KV house loads using RRC 53.1-2. |
| | CRS | Enter/direct actions for T-101 "RPV Control":<br>• Verify URO/PRO scram actions.<br>• Direct tripping of the Main Turbine.<br>• Direct RPV pressure stabilized below 1050 psig using BPVs, SRVs and/or HPCI.<br>• Direct drywell instrument nitrogen restored.<br>• Direct actions for the ATWS **(see later in this event).** |

**Event Description:** ATWS – hydraulic / turbine bypass valves fail closed (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Trip the Main Turbine by depressing the "TRIP" pushbutton.<br>Stabilize reactor pressure below 1050 psig as directed using HPCI and/or SRVs.<br>When the isolation occurs (+1 inch RPV level):<br>• Verify Group II & III isolations and SGTS initiation.<br>• Verify HWC isolated.<br>• Bypass and restore drywell instrument nitrogen IAW RRC 94.2-2 or GP-8E.<br>  • Place AO-2969A control switch to "CLOSE".<br>  • Place AO-2969B control switch to "CLOSE".<br>  • Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position.<br>  • Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.<br>  • Place AO-2969A control switch to "OPEN".<br>  • Place AO-2969B control switch to "OPEN".<br>NOTE: this activity may be coordinated between the URO and the PRO. |
| | CRS | Direct T-101, RC/Q ATWS actions:<br>• Initiation of ARI<br>• Trip recirc pumps at least 10 seconds apart |
| **CT** | | • T-220 "Driving Control Rods During Failure To Scram" |
| **CT** | | • Enter T-117 "Level/Power Control"<br>• SLC injection |
| | URO | Perform T-101, RC/Q actions:<br>• Initiate ARI using RRC 3B.1-2, "ARI During a Plant Event"; report the scram air header is depressurized.<br>• Trip Recirc pumps at least 10 seconds apart.<br>• Initiate SLC by starting either SLC pump (see Event #8).<br>• Direct an Equipment Operator to perform T-216 steps 4.1 and 4.2 (install jumpers in Cable Spreading Room and Main Control Room to defeat ARI Initiation Logic and bypass all RPS Auto Scram signals). |
| **CT** | | • Perform T-220 "Driving Control Rods During Failure To Scram" **(see Event #10).** |

**Event Description:** ATWS – hydraulic / turbine bypass valves fail closed (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct T-117 actions: |
| CT | | • Inhibit ADS. |
| | | • T-221 "Main Steam Isolation Valve Bypass". |
| CT | | • T-240 "Termination And Prevention Of Injection Into The RPV" per Attachment 1 Figure 1<br>OR |
| | | • T-240 per Attachment 1 Figure 2 if:<br>o RPV level is > -172" and,<br>o Reactor power is > 4% and,<br>o An SRV is open and Drywell pressure > 2 psig and,<br>o Torus temperature is > 110°F |
| | URO/PRO | Perform T-117 actions: |
| CT | | • Inhibit ADS per RRC 1G.1-2 "ADS Inhibit". |
| | | • Direct 3rd Reactor Operator (via phone or radio) to perform T-221. |
| CT | | • Perform T-240: terminate and prevent injection from all injection sources except RCIC, SLC and CRD; control RPV level below –60 inches and within the specific RPV level band directed by the CRS.<br>o Place HPCI Aux Oil Pump in the "Pull-to-Lock" position.<br>o Press "Emergency Stop" for all reactor feed pumps.<br>o Close reactor feed pump discharge valves MO-2149A, B, C.<br>o Verify closed MO-8090 "C RFP Discharge Bypass". |

**Event Description:** ATWS – hydraulic / turbine bypass valves fail closed (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | When RPV level is below -60 inches, restore injection and maintain RPV level between -60 and -195 inches as follows:<br>• Using Feedwater:<br>o Place LIC-8091 in "MAN" and close the valve.<br>o Open MO-8090 "C RFP Bypass".<br>o Raise RFP speed until discharge pressure is 75-100 psig above RPV pressure.<br>o Control RPV injection by adjusting RFPT speed, OR LIC8091 setting, OR MO-2149C "RFP C Discharge" valve position.<br>• Using HPCI (manual initiation):<br>o Arm and depress the "HPCI Manual Initiation" pushbutton.<br>o Verify MO-2-23-014 "Supply" opens.<br>o Verify the aux oil pump starts.<br>o Verify MO-2-23-019 "To Feed Line" opens.<br>o Verify vacuum pump starts.<br>o Verify AO-2-23-042 and AO-2-23-043 "Drain Isol to Mn Cndr" close.<br>o Adjust HPCI flow controller setpoint to the desired RPV injection rate. |
| | URO/PRO | Recognize loss of only available EHC Pump.<br>Recognize complete loss of EHC System and eventual loss of turbine bypass valves for RPV pressure control. |
| | CRS | Direct RPV pressure control using SRVs and/or HPCI. |
| | URO/PRO | Control RPV pressure using SRVs and/or HPCI to stay below 1050 psig, OR to stay on safe side of T-102 Curve T/L-1 "SRV Tail Pipe Limit", as applicable. |
| | URO/PRO | Place Torus cooling in service using RRC 10.1-2<br>• Open MO-2-10-39A(B)<br>• Open MO-2-32-89A (B, C, or D)<br>• Start a HPSW Pump<br>• Start an RHR Pump<br>• Open MO-2-10-34A(B)<br>• Place additional pumps in service as required<br>• Direct an Equipment Operator to close stay full injection valve(s) for the RHR loop(s) in service |

**Event Description:** Both standby liquid control (SLC) pumps trip

**Cause:** First SLC pump placed into service trips immediately on overcurrent

Second SLC pump trips on overcurrent approximately 1 minute after being placed in service

**Effects:** SLC system will not be available to mitigate the effects of the ATWS. Reactor power must be reduced using T-240, "Termination And Prevention Of Injection Into The RPV" and T-220, "Driving Control Rods During Failure To Scram".

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize the Standby Liquid Control (SLC) pump placed into service has failed to start (pump immediately trips). |
| | | Place the standby SLC pump in service using keylock control switch on the 20C005A panel. |
| | | Recognize that the standby SLC pump also tripped approx. 1 minute after being placed in service. |
| | CRS | Acknowledge SLC pump failure to start. |
| | | Direct placing the backup SLC pump in service, if not already done. |
| | | Acknowledge standby SLC pump trip. |

## Operator Actions

ES-D-2

**Op Test No.:** 1 **Scenario No.:** 3 **Event No.:** 9 **Page:** 12 of 13

**Event Description:** Two in-series scram discharge volume (SDV) vent valves fail to automatically isolate

**Cause:** RPS failure in conjunction with an air header malfunction, which prevents air from venting off two SDV vent valves (common air supply).

**Effects:** A failure of the SDV vent valves is effectively a primary to secondary containment leak. This requires manual isolation of the SDV vent valves.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Recognize and report failure of two SDV vent valves (AO-032B and AO-035B) to automatically isolate.<br>Upon recognizing failure to isolate, the PRO should:<br>• Manually isolate the valves by moving the SDV isolation hand-switches counter-clockwise to the "Close" position.<br>• Verify all vent and drain valves are closed.<br>• Inform the CRS as conditions permit. |
| | CRS | Acknowledge SDV vent valve isolation failure.<br>Direct manual isolation of the SDV vent valves, if not already isolated.<br><br>NOTE: if the PRO scram actions (RRC 94.2-2) are not performed, or are delayed significantly, the SDV vent valve failure will result in T-103 and T-104 entry conditions, complicating this scenario. |

**Event Description:** Low CRD drive water pressure

**Cause:** Blockage in the CRD hydraulic system

**Effects:** Low pressure will prevent control rods from being inserted manually per T-220. The operator must manually adjust (close) drive water pressure control valve MO-2-3-20 in order to insert control rods.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Perform T-220 "Driving Control Rods During Failure To Scram"<br>• Place FC-2-03-301 "CRD Flow Control" in MANUAL and open AO-2-3-19A "CRD Hydraulic System Flow Control" at Panel 20C005A.<br>• Bypass the RWM (needs key inserted below RWM scsreen)<br>• Attempt to insert control rods using the "Emergency In /Notch Override" control switch on Panel 20C005A.<br>Recognize and report that control rods cannot be inserted due to drive water pressure being too low<br>Raise CRD drive pressure by throttling closed MO-2-3-20 "Drive Water Pressure" at Panel 20C005A.<br>Insert control rods using the "Emergency In /Notch Override" control switch on Panel 20C005A |
| | CRS | Acknowledge report that control rods cannot be inserted due to drive water pressure being too low<br>Direct closing of MO-2-3-20 if not already performed. |

**POST SCENARIO EMERGENCY CLASSIFICATION:**

Classification is a Site Area Emergency IAW EAL MS2 (Scram condition >4% power with ARI not successful).

**TERMINATION CRITERIA:**

The scenario may be terminated when the crew has control of RPV power and level using T-240 "Termination and Prevention of Injection into the RPV" and the crew begins inserting control rods using T-220.

**Simulation Facility** Peach Bottom **Scenario No.** #4 **Op Test No.** 2013 NRC

**Examiners** _____ **Operators** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

**Scenario Summary**

The scenario begins with the reactor at approximately 6% power during a reactor startup.

Following shift turnover, the crew is directed to secure drywell purge in preparation for inerting the drywell. Once drywell purge is secured, the 'B' drywell chiller will trip. The crew should place a standby drywell chiller in service in accordance with the system operating procedure. Next, a blown fuse will cause an ARI power supply failure, requiring the crew to initiate repairs and evaluate ARI-RPT operability per Tech Specs.

Following the ARI failure, the crew should continue with the reactor startup by pulling control rods in accordance with the approved startup sequence. During this evolution a control rod will drift out, requiring the crew to execute ON-121 "Drifting Control Rod" and declare the affected control rod inoperable in accordance with Tech Specs. After the Tech Spec determination is made, while still executing ON-121, a second control rod will drift in, requiring the crew to perform an immediate reactor scram and enter T-100 "Scram". A subsequent trip of the 'C' reactor feed pump will complicate RPV level control post-scram.

While T-100 actions are in progress, a leak will develop in the torus, requiring the crew to enter T-103 "Secondary Containment Control" and T-102 "Primary Containment Control". When torus level reaches 12.5 feet, the crew will be directed to enter T-101 "RPV Control" and perform a depressurization.

A failure of the turbine bypass jack will require the crew to use alternate methods to depressurize the reactor in accordance with T-101 "RPV Control". Torus level will continue to lower to the point where the crew will be required to perform T-112 "Emergency Blowdown". The scenario may be terminated when the RPV is depressurized and HPSW is injecting into the torus.

**Initial Conditions** IC-121, 6% power

**Turnover** See Attached "Shift Turnover" Sheet

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 1 | See Scenario Guide | N | PRO<br>CRS | Secure drywell purge |
| 2 | See Scenario Guide | C | PRO<br>CRS | Drywell chiller trip / place standby chiller in service |
| 3 | See Scenario Guide | TS | CRS | ARI power supply failure (Tech Spec) |
| 4 | See Scenario Guide | R | URO<br>CRS | Power ascension with control rods |
| 5 | See Scenario Guide | C<br>TS | URO<br>PRO<br>CRS | Drifting control rod (Tech Spec) |

| Event No. | Malfunction No. | Event Type* | | Event Description |
|---|---|---|---|---|
| 6 | See Scenario Guide | C | ALL | 2nd Drifting control rod, Manual Scram, T-100 |
| 7 | See Scenario Guide | I | URO CRS | 'C' reactor feed pump trip |
| 8 | See Scenario Guide | M | ALL | Torus leak into secondary containment / emergency blowdown |
| 9 | See Scenario Guide | C | PRO CRS | Turbine bypass jack fails, preventing rapid depressurization to the main condenser |

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

# SIMULATOR OPERATOR INSTRUCTIONS FOR 2013 NRC SCENARIO #4

## *GENERAL REQUIREMENTS*

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

## *SCENARIO SOURCE HISTORY*

- This is a modified scenario developed for the 2013 NRC Exam; it originated from the 2009 NRC ILT Exam and was used on the 2010 CERT exam. Modification includes re-sequencing of events, and adding 2nd Drifting Rod as additional MAJOR event.

## *INITIAL SETUP*

### Initial Conditions

- IC-121, ~5% power (created from IC-9)
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active
- Supply ReMA at step 1 of 4 covering startup from all rods in to generator synchronization

### Blocking Tags

- None

### Activate APP "2013_NRC_SCN4" or insert the following:

#### Event Triggers

**TRG E1 ROD_1851_TOGGLE_SCRAM**
**TRG E1 = DMF CRM011851**
**TRG E5 REACTOR_MODE_SWITCH_IN_SHUTDOWN**

#### Malfunctions

**IMF CRM011851 (none 0 0)** (Control rod 18-51 drifts out)
**IMF DCW02B (E2 0 0)** ('B' drywell chiller trips)
**IMF ARIF2B (E3 0 0)** ('B' ARI power supply failure – blown fuse)
**IMF PCS07 (E4 0 0) 100 20:00 0** (torus leak)
**IMF MFS01C (E5 0 0)** ('C' reactor feed pump trip)
**IMF CRH041827 (E12 0 0)** (Control rod 18-27 drifts in)

#### Overrides

**IOR ZYP01A6A1S17 (none 0 0) "NO INCR"** (fails the Bypass Jack RAISE pushbutton)

**Trip Overrides**

None

**Turnover Procedures**

- GP-2 "Normal Plant Start-Up" complete up to and including step 6.2.51
  - Step 6.2.48 – in progress
  - Rod Sequence Sheet is complete up to Group 15 (RWM Array 8), withdrawal Group 16 is in progress, next rod to withdraw is Control Rod 18-35 from pos 12 to 48. Crew should reference for control rod withdrawal requirements
- Control rod withdrawal per SO 62.1.A-2 "Withdrawing/Inserting a Control Rod" and GP-2 Attachment 10.
- SO 6C.1.A-2 "'C' Reactor Feedwater Pump Startup With Vessel Level Control Established Through AO-8091" up to step 4.4
- SO 6C.1.C-2 "Startup of Second or Third Reactor Feedwater Pump" up to step 4.4.9
- SO 7B.4.A-2 "Containment Atmosphere De-Inerting And Purging Via SBGT System" at step 4.19
- SO 1B.1.A-2 "Main Turbine Startup And Normal Operations" at step 4.10
- OP-AB-300-1003 Attachment 1 "Reactivity Maneuver Approval Form" at step 1 of 4 covering startup from all rods in to generator synchronization

## ***SIMULATOR OPERATOR DIRECTIONS***

**EVENT 1** Support the crew as necessary while securing drywell purge.

**EVENT 2** After drywell purge is secure, or at the Lead Examiner's direction, initiate a trip of the 'B' Drywell Chiller using **ET2 (IMF DCW02B)**.

If an Equipment Operator is dispatched to inspect the 2B Drywell Chiller, report the chiller is shutdown and screen diagnostics indicate a severe power phase unbalance.

If an Equipment Operator is dispatched to inspect the 2B Drywell Chiller circuit breaker, report the breaker is tripped on overcurrent.

Support placing the 2C chiller in service using SO 44A.6.A-2 "Placing An Additional Drywell Chiller In Service". The Equipment Operator will be directed to perform steps 4.4 through 4.13 prior to starting the chiller, then verify 4.15 and perform 4.17.

**EVENT 3** After the 2C Drywell Chiller is placed in service, or at the Lead Examiner's direction, initiate an ARI power supply failure using **ET3 (IMF ARIF2B)**.

If/when directed to check the power supplies and fuses for the 'B' ARI logic channel in the Cable Spreading Room, report:

- fuse BB-F12 in Panel 20C019 is blown
- fuse BB-F13 is good
- power supply 20D2406 is on.

When reported that fuse is replaced, remove the ARI power supply failure malfunction using **DMF ARIF2B**

**EVENT 4** Support the crew as necessary during control rod withdrawal.

**EVENT 5** When control rod 18-51 is notched out, malfunction **CRM011851** will activate to cause a control rod drift malfunction on control rod 18-51.

When sent as the Equipment Operator to inspect HCU 18-51, report back by phone or radio that nothing looks abnormal on the HCU.

When the scram toggle switch for control rod 18-51 is placed in the DOWN position at Panel 20C016, verify **ET1 initiates** to delete the control rod drift malfunction **(DMF CRM011851)**.

IF contacted as Reactor Engineering or Nuclear Fuels, DO NOT concur with exit from ON-121, report that rod pattern analysis is in progress.

**EVENT 6** When the crew has reset the Rod Drift alarm, or at the Lead Examiner's direction, activate Trigger E12 to initiate malfunction CRH041827 to cause a control rod drift malfunction on control rod 18-27.

## *SIMULATOR OPERATOR DIRECTIONS*

IF sent as the Equipment Operator to inspect HCU 18-27, report back by phone or radio that the scram outlet valve riser is warm, but so are ALL the others due to the scram condition.

**EVENT 7** When the Mode Switch is placed in SHUTDOWN, verify **ET5** initiates **(IMF MFS01C)** to trip the 'C' reactor feed pump.

Support the crew as necessary for the 'C' reactor feed pump trip.

**EVENT 8** NOTE: TORUS WATER LEVEL OUT OF NORMAL RANGE (226 A-4) will annunciate approximately 2 minutes after the leak malfunction is inserted.

After the scram reports are complete and at the Lead Examiner's direction, initiate a leak in the torus using **ET4 (IMF PCS07 100 20:00 0)**.

If an Equipment Operator is dispatched to determine the source of the torus leak, wait 5 minutes, then report hearing a loud rush of water in the Torus Room and there are several inches of water on the Torus Room floor.

When dispatched to close E324-R-B (3863) per step 4.1 of T-231-2, WAIT 2 minutes and modify remote function **MRF RHR25 CLOSE** (closes feed for MO-176)

**EVENT 9** Role-play as plant staff if asked to investigate why the bypass valves will not open on the manual jack.

**TERMINATION** The scenario may be terminated when the RPV is depressurized and HPSW is injecting into the torus.

## SHIFT TURNOVER

**PLANT CONDITIONS:**

- Unit 2 startup IAW GP-2 "Normal Plant Startup" in progress. Procedure complete up to and including step 6.2.51.
  - 6.2.48 is open (Drywell purge) to support Drywell inspections, which are now complete.
  - Rod Sequence Sheet is complete up to Group 16. Withdrawal Group 16 is in progress, next rod to withdraw is Control Rod 18-35 from pos 12 to 48. Crew should reference GP-2 Attachment 10 for control rod withdrawal requirements.
- Currently in Step 1 of ReMA PB2C19-1.0.

**INOPERABLE EQUIPMENT/LCOs:**

- None

**SCHEDULED EVOLUTIONS:**

- Continue the Reactor startup in accordance with GP-2.
- Secure Drywell purge per step 6.2.48 of GP-2, using SO 7B.4.A-2.
- Commence inerting the containment IAW SO 7B.1.A-2 "Containment Atmosphere Inerting".

**SURVEILLANCES DUE THIS SHIFT:**

- None

**ACTIVE CLEARANCES:**

- None

**GENERAL INFORMATION:**

After turnover the crew will resume power ascension. GP-2 is complete up to and including step 6.2.51. A Reactivity Briefing was already completed and you are ready to begin withdrawing rods at Rod Group 16 (RWM Array 8), Control Rod 18-35.

- Control rod withdrawal per SO 62.1.A-2 "Withdrawing/Inserting a Control Rod"
- Reactor level control is through AO-8091 using SO 6C.1.A-2 (at step 4.4).
- 2A Reactor Feed Pump is in standby per SO 6C.1.C-2 (at step 4.4.9).
- Containment purge is in progress using SO 7B.4.A-2 (at step 4.19).
- Chest warming is in progress using SO 1B.1.A-2 (at step 4.10).

## CRITICAL TASK LIST

1. **Shutdown the reactor by placing the Mode Switch in "SHUTDOWN" OR by depressing the manual scram pushbuttons when the a second rod drift condition is recognized IAW ON-121 "Drifting Control Rod ".**

2. **Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when Torus level cannot be maintained above 10.5 feet.**

3. **Secure HPCI in accordance with RRC 23.1-2 "HPCI System Operation During A Plant Event" OR SO 23.2.A-2 "HPCI System Shutdown" when Torus level cannot be maintained above 9.5 feet.**

   **(NOTE: this CT only applies IF HPCI is in service for injection or pressure control, and IF Torus level lowers below 9.5 feet, which is dependent on when HPSW is placed in service to fill the Torus per T-231.)**

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 1 **Page:** 1 of 14

**Event Description:** Secure drywell purge

**Cause:** N/A

**Effects:** N/A

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct drywell purge secured per step 6.2.48 of GP-2, using SO 7B.4.A-2. |
| | PRO | Secure drywell purge starting at step 4.19 of SO 7B.4.A-2 "Containment Atmosphere De-inerting and Purging Via SBGT System".<br>• Place the standby Drywell Purge Fan to OFF<br>• Stop the running Drywell Purge Fan<br>• Shutdown SBGT using SO 9A.2.B "SBGT System Shutdown Following Manual Start"<br>  o Stop the 'A' SBGT fan by placing its control switch to STOP (spring returns to AUTO)<br>  o Close 'A' filter inlet AO-475-1 by placing its control switch to AUTO<br>  o Close 'A' filter outlet AO-475-2 by placing its control switch to AUTO<br>• Close AO-20459 and AO-20460 on panel 20C012<br>• Direct EO to verify HCS-00522-1 is OPEN on panel 0BC452<br>• Close the following valves using SO 7B.7.A-2:<br>  o AO-2505<br>  o AO-2520<br>  o AO-2506<br>  o AO-2507<br>• Close SBGT valves AO-20469-1 and AO-20469-2 on the 20C012 panel<br><br>NOTE: at the Lead Examiner's direction, step 4.4 of SO 9A.2.B (SBGT Shutdown Following a Manual Start) may be performed by an "extra" operator.<br><br>NOTE: if the crew desires to inert the drywell per GP-2, step 6.2.48.2, inform the CRS that an "extra" operator will be used to perform this task later in the shift. |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 2 **Page:** 2 of 14

**Event Description:** 'B' drywell chiller trip / place standby chiller in service

**Cause:** Spurious chiller motor high temperature

**Effects:**

1. Alarms:
   - 217 D-1 "Drywell Chiller Trouble"
   - 217 J-1 "Drywell Chilled Water Hi-Lo Temp" (approximately 15 minutes after chiller trip, depending on restoration time)
   - 217 J-2 "A Drywell Chiller Discharge Hi Temp" (approximately 5 minutes after chilled trip)
2. 'B' chiller outlet temperature increases; chilled water supply and return, drywell cooler fan outlet and return, drywell equipment drain sump outlet, and recirc pump motor temperatures all increase. Drywell temperature and pressure rise accordingly.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Recognize and report alarm 217 D-1 "Drywell Chiller Trouble" and enter the corresponding Alarm Response Card.<br>Recognize and report alarm 217 J-1 "Drywell Chilled Water Hi-Lo Temp" and enter the corresponding Alarm Response Card, if it alarms.<br>Recognize and report alarm 217 J-2 "A Drywell Chiller Discharge Hi Temp" and enter the corresponding Alarm Response Card. |
| | CRS | Enter and execute ARC 217 D-1" Drywell Chiller Trouble":<br>• Direct placing additional drywell chillers in service IAW SO 44A.6.A-2 "Placing an Additional Drywell Chiller in Service."<br>NOTE: Drywell chillers are NOT in outage operation.<br>• Direct performing SO 44A.7.F-2 "Response to a Drywell Chiller Trouble Alarm."<br>• Request Maintenance assistance to investigate chiller trip. |
| | PRO | Place the control switch for the 'B' drywell chiller in "STOP".<br>Start the standby drywell chiller IAW SO 44A.6.A-2 "Placing an Additional Drywell Chiller in Service."<br>• Direct an Equipment Operator to verify 2C Drywell Chiller is ready for start by performing steps 4.4 through 4.7 of SO 44A.6.A-2.<br>• Place the 'C' drywell chiller in service by placing the chiller control switch in "START".<br>Dispatch an Equipment Operator to perform steps 4.9 and 4.10 of SO 44A.6.A-2.<br>Dispatch an Equipment Operator to perform SO 44.A.7.F-2 "Response to a Drywell Chiller Trouble Alarm." |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 3 **Page:** 3 of 14

**Event Description:** ARI power supply failure

**Cause:** Blown fuse for the 'B' ARI logic power supply

**Effects:**
1. Alarm: 207 E-3 "ARI-RPT System INOP/Loss of Power"
2. Automatic and manual initiation of the 'B' logic channel is disabled.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize and report alarm 207 E-3 "ARI-RPT System INOP/Loss of Power" and enter the corresponding Alarm Response Card.<br>Determine the 'B' logic channel is affected by observing the ARI solenoid valve position (green) indicating lights on Panel 20C005A.<br>Dispatch an Equipment Operator to the Cable Spreading Room to check the 'B' ARI logic power supply and fuses. |
| | CRS | Refer to Tech Spec 3.3.4.1 for ARI-RPT Instrumentation.<br>• Determine Tech Spec 3.3.4.1 is not applicable in Mode 2, but the inoperable channel must be restored to OPERABLE prior to Mode 1.<br>Refer to TRM 3.1 for ARI Instrumentation.<br>• Determine Condition C applies: within 1 hour, restore ARI trip capability.<br>NOTE: the above application of Tech Specs and TRM is based on losing 125 VDC power to the 'B' ARI logic channel, which prevents the ARI function from occurring (both channels must trip for ARI to occur) and prevents the ATWS-RPT function from occurring since both channels must trip for the Recirc MG field breakers to trip (ARI-RPT contacts are in series in the drive motor breaker trip circuit).<br>**NOTE: Lead Examiner will need to report that the fuse has been replaced in order for the startup to continue** |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 4 **Page:** 4 of 14

**Event Description:** Power ascension with control rods

**Cause:** N/A

**Effects:** N/A

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | CRS | Direct the URO to commence rod withdrawal in accordance with the Startup REMA and the Startup Sequence beginning with Rod Group 16, control rod 18-35 |
| | URO | Commence rod withdrawal beginning with Rod Group 16, control rod 18-35.<br>Withdraw control rods by selecting the rod on the matrix and then using the Single Notch / Continuous Withdrawal switch to withdraw control rods.<br>Monitor nuclear instrumentation and reactor power during control rod withdrawal.<br>Performs a control rod coupling check when control rod is full out (48). |
| | PRO | Monitor balance of plant conditions during rod withdrawal. |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 5 **Page:** 5 of 14

**Event Description:** Control rod drifts out

**Cause:** Leaking directional control valve on HCU

**Effects:** Uncontrolled reactivity change

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Acknowledge annunciator 211 (D-4) ROD DRIFT and inform CRS of alarm condition and that control rod 18-51 is drifting out. |
| | CRS | Enter ON-121 "Drifting Control Rod".<br>Direct an Equipment Operator to inspect HCU 18-51.<br>Request Shift Manager to notify Reactor Engineering. |
| | URO | Per ON-121 "Drifting Control Rod":<br>• Select control rod 18-51 on the select matrix.<br>• Monitor changes in reactor power, level, pressure.<br>• Insert control rod 18-51 to full in position using the Emergency-In control switch and HOLD at the full in position for 30 seconds (perform this step for a total of 5 times since the control rod will continue to drift).<br>NOTE: at the Lead Examiner's direction, the crew can continue with ON-121, step 2.9 (individual rod scram) after 2 attempts at step 2.8.<br>• Insert control rod 18-51 to full in position using the Emergency-In control switch and HOLD at the full in position prior to the individual rod scram.<br>• After the individual rod scram for control rod 18-51 has been performed, release the Emergency-In control switch.<br>• Reset the ROD DRIFT alarm when control rod 18-51 is no longer drifting. |
| | PRO | Direct an Equipment Operator to inspect HCU 18-51.<br>Perform an individual scram of control rod 18-51 by placing its associated scram toggle switch in the DOWN position on panel 20C016.<br>After 15 seconds, return the toggle switch to the UP position. |
| | CRS | Refer to Tech Spec 3.1.3 for one inoperable control rod.<br>• Determine Condition C applies: fully insert the control rod within 3 hours and disarm the rod drive mechanism within 4 hours. |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 6 **Page:** 6 of 14

**Event Description:** 2nd Control rod drifts in / Manual Scram

**Cause:** Leaking Scram Outlet valve on HCU

**Effects:** Uncontrolled reactivity change, potential for core damage due to unanalyzed rod pattern.

| Time | | Position | Applicant's Actions or Behavior |
|---|---|---|---|
| | | URO/PRO | Acknowledge annunciator 211 (D-4) ROD DRIFT and inform CRS of alarm condition and that control rod 18-27 is drifting in. |
| | **CT** | CRS | Direct the Reactor Operator to place the Mode Switch in Shutdown (acceptable to direct the RO to depress the manual scram pushbuttons). |
| | | | Direct PRO to perform Scram Actions. |
| | | | Enter and execute T-100 |
| | **CT** | URO | Per ON-121 "Drifting Control Rod" and RRC- 94.1-2 "Unit Reactor Operator Scram Actions" : |

- Place the mode switch to SHUTDOWN.
- Verify control rods are inserting.
- Verify APRMs are downscale.
- Establish and maintain RPV level control with feedwater.
- Verify all control rods are inserted.
- Verify RPV pressure, trend, and status of EHC.
- Notify health physics of changing plant conditions.

PRO Per RRC 94.2-2, PRO Scram Actions:

- Verify Group II and III isolations and SGTS initiation (if RPV level < 1 inch)
- Verify scram discharge volume vents and drains are closed.
- Verify hydrogen water chemistry is isolated.
- Verify both recirc pumps speed have runback to 30%.
- Monitor instrument air header pressure and drywell pressure.
- When the CRS is ready, report scram actions.

**Event Description:** 2nd Control rod drifts in / Manual Scram (Continued)

**Cause:** Leaking Scram Outlet valve on HCU

**Effects:** Uncontrolled reactivity change, potential for core damage due to unanalyzed rod pattern.

CRS Direct RPV level restored and maintained between +5 and +35 inches.
Direct restoration of drywell instrument nitrogen IAW GP-8.E "Primary Containment Isolation Bypass" (if RPV level < 1 inch).

URO Control RPV level between +5" to +35" with feedwater.

PRO Bypass and restore drywell instrument nitrogen IAW RRC 94.2-2 or GP-8E (if RPV level < 1 inch).

- Place AO-2969A control switch to "CLOSE".
- Place AO-2969B control switch to "CLOSE".
- Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position.
- Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.
- Place AO-2969A control switch to "OPEN".
- Place AO-2969B control switch to "OPEN".

NOTE: this activity may be coordinated between the URO and the PRO.

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 7 **Page:** 8 of 14

**Event Description:** 'C' reactor feed pump trip

**Cause:** Pressure switch fails, causing low suction pressure trip

**Effects:**

1. Alarms:
   - 201 J-4 "C RFPT Trip"
   - 210 H-2 "Reactor Hi-Lo Water Level" (depending on when pump trip is discovered)
2. 'C' reactor feed pump trips, causing RPV water level to lower.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO | Recognize and report alarm 201 J-4 "C RFPT Trip" and enter the corresponding Alarm Response Card (as applicable).<br>• Perform the following actions to control RPV level:<br>o Raise the speed of the 'A' RFP using the M/A station or MSC to raise RFP discharge pressure approximately 150 psig above Reactor pressure.<br>o Throttle open the 'A' RFP discharge valve to establish Feed flow to the RPV.<br>o Adjust RFP speed and/or RFP discharge valve position to control RPV water level. |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 8 **Page:** 9 of 14

**Event Description:** Torus leak into secondary containment / emergency Blowdown

**Cause:** Rupture in the torus shell

**Effects:**

1. Alarms:
   - 224 E-5 "Torus Room Flood"
   - 226 A-4 "Torus Level Out Of Normal Range"
2. Torus level lowers and will eventually equalize with the torus room at approximately 7 feet.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Recognize and report alarm 226 A-4 "Torus Level Out Of Normal Range" and enter the corresponding Alarm Response Card.<br>Direct an Equipment Operator to determine the source of the leak. |
| | CRS | Enter and execute T-102 "Primary Containment Control".<br>• Direct torus level restored using T-233 "CST Makeup to the Torus Via HPCI Minimum Flow Line".<br>• Direct torus level restored using T-231 "HPSW Injection Into the Torus".<br>(May) enter and execute ON-110 "Loss of Primary Containment". |
| | PRO | Perform T-233 "CST Makeup to the Torus Via HPCI Minimum Flow Line" as directed.<br>• Verify HPCI suction MO-23-017 OPEN.<br>• Open HPCI minimum flow MO-23-025. |

**Event Description:** Torus leak into secondary containment / emergency blowdown (continued)

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | PRO | Perform T-231 "HPSW Injection Into the Torus" as directed.<br>• Direct an Equipment Operator to close E324-R-B (3863) "Emer Intertie Valve MO-2-10-176".<br>• Verify closed MO-10-154B "Outboard Discharge".<br>• Verify 2B and 2D RHR pumps are shutdown.<br>• Verify 2B and 2D HPSW pumps are shutdown.<br>• Verify closed MO-10-089B "B HPSW Hx Out".<br>• Verify closed MO-10-089D "D HPSW Hx Out".<br>• Verify closed MO-32-2344 (10-186) "HPSW Loop Cross Tie".<br>• OPEN MO-10-174 "HPSW/RHR Em Inner Cross Tie".<br>• OPEN MO-10-176 "HPSW/RHR Em Outer Cross Tie".<br>• OPEN MO-10-039B "Torus Hdr".<br>• Start a HPSW pump.<br>• Throttle MO-10-034B "Full Flow Test" to maintain HPSW flow below 5,300 gpm.<br>• Start a second HPSW pump in the same loop, if needed.<br>• Throttle MO-10-034B "Full Flow Test" to maintain HPSW flow below 10,600 gpm. |
| | PRO | Recognize and report alarm 224 E-5 "Torus Room Flood" and enter the corresponding Alarm Response Card. |
| | CRS | Enter and execute T-103 "Secondary Containment Control".<br>Direct an evacuation of the torus room in accordance with GP-15 "Local Evacuation" (make request to Shift Manager). |
| | URO/PRO | Recognize and report that torus level is approaching 12.5 feet. |
| | CRS | When torus level cannot be maintained above 12.5 feet, enter and execute T-101 "RPV Control" |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 8 **Page:** 11 of 14

**Event Description:** Torus leak into secondary containment / emergency blowdown (continued)

| Time | | Position | Applicant's Actions or Behavior |
|---|---|---|---|
| | **CT** | CRS | Direct RPV depressurization using bypass valves IAW T-101 "RPV Control", as required by T-102, step T/L-6 **(see Event #9)**. |
| | | | **NOTE: the following RWCU system response steps are only applicable if RWCU stays in service** |
| | | URO/PRO | Recognize and report the "Clean-up Filter Demin System Trouble Alarm" (215 C-3) |
| | | URO/PRO | Recognize and report cavitation of the RWCU pump. |
| | | CRS | Direct the URO/PRO to secure the RWCU pump. |
| | | URO/PRO | Secure the RWCU pump by placing the control switch to stop. |
| | | URO/PRO | Recognize and report that torus level is approaching 10.5 feet. |
| | **CT** | CRS | When torus level cannot be maintained above 10.5 feet, direct an emergency blowdown.<br>Enter and execute T-112 "Emergency Blowdown".<br>• Verify torus level is above 7 feet.<br>• Verify reactor pressure is 50 psig above torus pressure.<br>• Direct 5 ADS SRVs opened. |
| | **CT** | PRO | Perform an emergency blowdown by opening 5 ADS SRVs.<br>Report 5 ADS SRVs are open. |

**Event Description:** Torus leak into secondary containment / emergency blowdown (continued)

| Time | | Position | Applicant's Actions or Behavior |
|---|---|---|---|
| | | CRS | Direct RPV level maintained between +5 and +35 inches using Condensate. |
| | | URO | Maintain RPV level between +5 and +35 inches using Condensate. |
| | | CRS | When torus level drops below 10.5 feet, if any RHR pumps are running, direct all operating RHR pumps secured. |
| | | URO/PRO | As directed, secure all operating RHR pumps by placing their control switches in "STOP".<br>Recognize and report that torus level is approaching 9.5 feet. |
| | **CT** | CRS | When Torus level cannot be maintained above 9.5 feet, direct HPCI secured (if running). |
| | **CT** | URO/PRO | Secure HPCI when Torus level cannot be maintained above 9.5 feet, as directed, using RRC 23.1-2:<br>• Verify Aux Oil Pump control switch in "START".<br>• Place Vac Pump control switch in "START".<br>• Depress and hold "Remote Trip" pushbutton.<br>• When turbine speed reaches approximately 0 RPM, place Aux Oil Pump control switch in "PULL-TO-LOCK".<br>• Release the "Remote Trip" pushbutton.<br>NOTE: if HPCI was not in service, the crew should still place the Aux Oil Pump control switch in "PULL-TO-LOCK". |

**Op Test No.:** 1 **Scenario No.:** 4 **Event No.:** 9 **Page:** 13 of 14

**Event Description:** Turbine bypass valve jack fails to open bypass valves

**Cause:** Instrument malfunction in the EHC logic card

**Effects:** Reactor depressurization cannot be performed using the bypass jack.

| Time | Position | Applicant's Actions or Behavior |
|---|---|---|
| | URO/PRO | Determine and report the bypass jack has no effect on opening the main turbine bypass valves. |
| | CRS | Direct the URO to lower the pressure regulator setpoint in an effort to depressurize the reactor. |
| | URO/PRO | Lower the pressure regulator setpoint as directed by the CRS. |
| | URO/PRO | Recognize and report that RPV pressure is continuing to drop. (Evaluator note; the low decay heat load will cause RPV pressure to continue to drop. The operators should recognize this and take actions to control RPV depressurization.) |
| | CRS | Direct the RO to control the RPV depressurization rate by removing steam users. |
| | URO/PRO | Remove the following steam users by:<br>• Isolating steam to the RFPs not in-service.<br>• Verifying the Main Steam line drains are closed.<br>• Closing the Main Turbine and RFPT drains.<br>• If depressurization continues closing the MSIVs. |
| | CRS | If the MSIVs are closed for RPV pressure control, direct RPV depressurization using HPCI in CST-to-CST mode, SRVs, or other methods per T-101. |
| | URO/PRO | Depressurize the RPV using SRVs, HPCI in CST-to-CST mode, or other methods, as directed. |

**POST SCENARIO EMERGENCY CLASSIFICATION:**

Classification is an Alert IAW EAL FA1 ("Loss of Reactor Coolant System Barrier – Emergency Blowdown Required").

**TERMINATION CRITERIA:**

The scenario may be terminated when the RPV is depressurized and HPSW is injecting into the torus.