

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:** **CALCULATE RCS REFILL VOLUME (WITHOUT  
VACUUM)**

**JPM NO.:** **A1**

**REVISION:** **1**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** CALCULATE RCS REFILL VOLUME (WITHOUT VACUUM)

**JPM No.:** A1

**Rev. No:** 1

**STP Task:** CRO100000 Perform Vacuum Fill of the RCS per  
0POP03-RC-0100.

**STP Objective:** CRO100000, With the plant in Mode 5, Fill the RCS and Draw a  
Pressurizer Bubble per 0POP03-RC-01000.

**Related  
K/A Reference:** 2.1.25 (3.9) Ability to interpret reference materials, such as graphs, curves,  
tables, etc.

**References:** 0POP03-RC-0100, Rev 34, RCS Vacuum Fill

**Task Normally  
Completed By:** RO

**Location  
of Testing:** N/A

**Time  
Critical Task:** NO

**Validation  
Time:** 10 minutes

**Required Materials (Tools/Equipment):**

- Calculator

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK.**

### **INITIAL CONDITIONS:**

Unit 2 is performing a fill of the RCS per 0POP03-RC-0100, RCS Vacuum Fill, from the RWST. RCS sightglass level is 32' 9". RWST level is 400,000 gallons.

### **INITIATING CUE:**

PART 1: The Unit Supervisor directs you to calculate the required RCS Floodup Volume, WITHOUT VACUUM, to 50% Pressurizer level.

PART 2: AFTER the RCS fill was completed, RWST level was at 354,000 gallons. Determine if the RWST level change was within 200 gallons of the calculated amount for RCS fill.

The RWST level change WAS / was NOT (circle one) within 200 gallons of the calculated amount for RCS fill.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### **COMPLETION CRITERIA:**

*PART 1: Correctly calculates the volume of water needed to refill the RCS to 50% Pressurizer level in accordance with 0POP03-RC-0100, Addendum 3.*

*PART 2: Correctly determines the RWST level change IS within 200 gallons of the calculated amount for RCS fill.*

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **HANDOUTS:**

Student Handout Copy of 0POP03-RC-0100, RCS Vacuum Fill, Addendum 3

### **NOTES:**

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**SAT/UNSAT Performance Step:** 1

Obtain the procedure.

**Standard:**

*Obtains a copy of 0POP03-RC-0100.*

**Comment:**

Provide the Student Handout Copy of 0POP03-RC-0100, Addendum 3.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2

Record current RCS level from RCS level sightglass. (Addendum 3 step 1.1)

**Standard:**

*Records RCS sightglass level as 32' 9".*

**Comment:**

Initial sightglass level is given as an initial condition.

**Cue:**

**Notes:**

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**SAT/UNSAT Performance Step:** 3 (C)

Determine current RCS volume in gallons. (Addendum 3 step 1.2)

**Standard:**

*Determines current RCS volume is 32,636 gallons using Addendum 3 Table - RCS Floodup Volume **Without Vacuum** column for RCS level at 32' 9".*

**Comment:**

Both columns show the same RCS Floodup volume until level is raised up to the Rx Vessel Flange.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4 (C)

Record expected final RCS volume in gallons. (Addendum 3 step 1.3)

**Standard:**

*Records expected final RCS volume as 78,463 gallons using Addendum 3 Table - RCS Floodup Volume **Without Vacuum** column for Pressurizer level at 50%.*

**Comment:**

**Cue:**

**Notes:**

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**SAT/UNSAT Performance Step:** 5 (C)

Calculate Total RCS volume to be added. (Addendum 3 step 1.4)

**Standard:**

*Determines 45,827 gallons are needed to fill the RCS to 50% Pressurizer level by subtracting the Initial RCS Volume (32,636 gal.) from the Final Floodup Volume (78,463 gal.).*

**Comment:**

This is the information required to complete Part 1 of the JPM.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 6 (C)

Determine if final RWST LEVEL is within 200 gallons of the calculated amount for RCS fill.  
(Addendum 3 Section 2.0)

**Standard:**

- 1. Subtracts the final RWST level from the initial RWST level to obtain a result of 46,000 gallons.*
- 2. Determines the RWST level change is within 200 gallons of the calculated amount for RCS fill:*

*The RWST level change WAS / was NOT (circle one) within 200 gallons of the calculated amount for RCS fill.*

**Comment:**

Final RWST level is provided in the PART 2 Initiating Cue.

**Cue:**

**Notes:**

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**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_



## VERIFICATION OF COMPLETION

**Job Performance Measure:** CALCULATE RCS REFILL VOLUME (WITHOUT VACUUM)

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**            **Sat / Unsat**

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

**Signature**

**Date** \_\_\_\_\_

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

Unit 2 is performing a fill of the RCS per 0POP03-RC-0100, RCS Vacuum Fill, from the RWST. RCS sightglass level is 32' 9". RWST level is 400,000 gallons.

### **INITIATING CUE:**

PART 1: The Unit Supervisor directs you to calculate the required RCS Floodup Volume, WITHOUT VACUUM, to 50% Pressurizer level.

PART 2: AFTER the RCS fill was completed, RWST level was at 354,000 gallons. Determine if the amount of RWST water used for the RCS fill is within 200 gallons of the calculated amount for RCS fill.

The RWST level change WAS / was NOT (circle one) within 200 gallons of the calculated amount for RCS fill.

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:                    DETERMINE REACTOR VESSEL LEVEL**

**JPM NO.:                A2**

**REVISION:             1**

**JOB PERFORMANCE MEASURE WORKSHEET**

**JPM Title:** DETERMINE REACTOR VESSEL LEVEL

**JPM No.:** A2

**Rev. No.:** 1

**STP Task:** 91008, Knowledge of the purpose and principle of operation of the Reactor Vessel Water Level (RVWL) System

**STP Objective:** 91008, Explain the purpose and principle of operation of the Reactor Vessel Water Level (RVWL) System

**Related  
K/A Reference:** 2.1.20 (4.6) Ability to interpret and execute procedure steps

**References:** OPOP02-II-0002, Rev. 13, RVWL Monitoring System

**Task Normally  
Completed By:** RO

**Method  
of Testing:** Performance

**Location  
of Testing:** NTF

**Time  
Critical Task:** NO

**Validation  
Time:** 15 min

**Required Materials  
(Tools/Equipment):** None

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK**

**INITIAL CONDITIONS:**

Unit 1 has experienced a Loss of Offsite Power. The crew has implemented the Emergency Operating Procedures (EOP's) and is currently in 0POP05-EO-ES03, Cooldown with Steam Void in Vessel.

QDPS indication for RVWL Channel 'C' has been lost. QDPS indication is available for RVWL Channel 'A' and Channel 'A' is operable.

An operator has already collected data from local panel readings for Channel 'C'. Channel 'C' data was obtained in accordance with 0POP02-II-0002, RVWL Monitoring System, Section 6.2, RVWL Test Mode.

**INITIATING CUE:**

The Unit Supervisor asks you to determine the RVWL from the data recorded for 'C' RVWL Channel by performing 0POP02-II-0002 Section 7.1, Addendum 1, and Data Sheet 2.

**DO NOT PERFORM PROCEDURE SECTION 7.2 OR THE TECH SPEC  
EVALUATION ON DATA SHEET 2, SECTION 4.0. AN SRO WILL PERFORM THESE  
DURING THE SUPERVISOR REVIEW.**

**JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)**

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*Determines RVWL is as follows:*

- *Upper Head level is 0%*
- *Plenum level is 100%*

**HANDOUTS:**

Student Handout copy of procedure 0POP02-II-0002, RVWL Monitoring System

**NOTES:**

Provide the candidate with the Student Handout copy of 0POP02-II-0002, RVWL Monitoring System.

An Answer KEY is provided for the Evaluator that provides the correct results and the bases of those results.

**JOB PERFORMANCE MEASURE CHECK SHEET*****NOTE:***

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_**SAT/UNSAT Performance Step:****1 (C)**

Performs Section 7.1, Addendum 1 and Data Sheet 2 OPOP02-II-0002, RVWL Monitoring System.

**Standard:**

*Determines the following for Reactor Vessel water level:*

- *Upper Head level is 0%*
- *Plenum level is 100%*

**Comment:**

- Sensors with Delta T's >200 °F should be marked as 'DRY'. Sensors with Delta T's ≤ 200 °F should be marked 'WET'.
- Based on instructions within a NOTE of Addendum 1, the first 'DRY' sensor location is the location of the Reactor Vessel Water level.
- Refer to the KEY for more specific details.

**Cue: NONE****Notes:**

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**- TERMINATE THE JPM -****JPM STOP TIME** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** DETERMINE REACTOR VESSEL LEVEL

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

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

**Signature:**

\_\_\_\_\_

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



JPM - HANDOUT

**READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

**INITIAL CONDITIONS:**

Unit 1 has experienced a Loss of Offsite Power. The crew has implemented the Emergency Operating Procedures (EOP's) and is currently in 0POP05-EO-ES03, Cooldown with Steam Void in Vessel.

QDPS indication for RVWL Channel 'C' has been lost. QDPS indication is available for RVWL Channel 'A' and Channel 'A' is operable.

An operator has already collected data from local panel readings for Channel 'C'. Channel 'C' data was obtained in accordance with 0POP02-II-0002, RVWL Monitoring System, Section 6.2, RVWL Test Mode.

**INITIATING CUE:**

The Unit Supervisor asks you to determine the RVWL from the data recorded for 'C' RVWL Channel by performing 0POP02-II-0002 Section 7.1, Addendum 1, and Data Sheet 2.

**DO NOT PERFORM PROCEDURE SECTION 7.2 OR THE TECH SPEC EVALUATION ON DATA SHEET 2, SECTION 4.0. AN SRO WILL PERFORM THESE DURING THE SUPERVISOR REVIEW.**

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:**               **VERIFY AN EXCORE QPTR CALCULATION**

**JPM NO.:**           **A3**

**REVISION:**       **1**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** VERIFY AN EXCORE QPTR CALCULATION

**JPM No.:** A3

**Rev. No.:** 1

**STP Task:** 37750, Perform a Quadrant Power Tilt Ratio calculation

**STP Objective:** 37750, Perform a Quadrant Power Tilt Ratio calculation in accordance with 0PSP10-NI-0002.

**Related  
K/A Reference:** 2.1.20 (4.6) Ability to interpret and execute procedure steps.

**References:** T.S. 3/4.2.4 Quadrant Power Tilt Ratio  
0POP09-AN-05M3 (05M3-B-3) PR Lower Det Flux Dev  
Hi/Auto Def  
0PSP10-NI-0002, Rev. 13, Excore QPTR Determination

**Task Normally  
Completed By:** RO

**Method  
of Testing:** Performance

**Location  
of Testing:** Classroom

**Time  
Critical Task:** NO

**Validation  
Time:** 15 minutes

**Required Materials (Tools/Equipment):**  
Calculator

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK**

### **INITIAL CONDITIONS:**

Unit 2 has been at approximately 100% steady state power for several months. One (1) hr. ago Control Rod M12 (Control Bank 'D') dropped fully into the core. The crew has stabilized the plant and preparations are being made to lower Reactor power.

Control Room Annunciator 05M3 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, has alarmed. The Shift Manager has had a QPTR calculation done using the manual method (i.e. without use of the Plant Computer or RO Calculator).

### **INITIATING CUE:**

The Unit Supervisor instructs you to perform the Independent Verification of the QPTR calculation required by Step 5.2.9 of 0PSP10-NI-0002.

You are expected to correct any errors found, including subsequent entries/calculations, AND, once any corrections are made, determine if the Acceptance Criteria is/are met per step 5.3.

Additional information:

- All Excore Nuclear Instrumentation Channels are operable.
- The U2 Plant Curve Book Figure 5.1 is the latest approved version for purposes of this JPM AND there are no errors in the data of Figure 5.1.
- Reactor Power is stable and meets the requirements of 0PSP10-NI-0002 Step 4.3.
- Reactor Power is 99.7% by U1169, average NI power.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### **COMPLETION CRITERIA:**

*The applicant must successfully discover an error on Form 3, correct related information, and determine Acceptance Criteria is NOT met.*

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **HANDOUTS:**

- 0PSP10-NI-0002, Excore QPTR Determination (Student Handout Copy).
- U2 Plant Curve Book Fig. 5.1 (a special copy labeled “EXAM USE ONLY” for use with this JPM).

### **NOTES:**

- Examiner has a “KEY” of Form 3 of 0PSP10-NI-0002, Excore QPTR Determination. DO NOT give applicant copy of the page marked “KEY”.
- Examiner has an “EXAM USE ONLY” copy of Figure 5.1, Incore-Excore Cross-Calibration Constants. This is to be provided to the applicant at the start of the JPM. The data on this copy may be different from that contained in the current Plant Curve Book. The calculations performed in the “KEY” are based on the data from the “EXAM USE ONLY” copy of Figure 5.1.
- Actual numerical results will vary somewhat due to rounding and possibly using a ‘most conservative’ approach. Because of this, there will be a range of numerical results, however the end result should be the same (i.e. numbers within the possible range should all indicate that Tech Spec QPTR Acceptance Criteria is NOT met).

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**SAT/UNSAT Performance Step:** 1

Obtain the procedure and Plant Curve Book Figure 5.1.

**Standard:**

*Applicant obtains handout copy of 0PSP10-NI-0002, Excore QPTR Determination, and the handout copy of U2 Figure 5.1.*

**Comment:**

The Student Handout Copy of 0PSP10-NI-0002, Excore QPTR Determination includes completed procedure steps and applicable forms.

The “EXAM USE ONLY” copy of U2 Figure 5.1, Incore-Excore Cross-Calibration Constants, may not be the current data in the Unit 2 Plant Curve Book, but contains the data applicable to this JPM. The data on this copy of Figure 5.1 should be used in the QPTR calculation.

**Cue:**

Provide the following to the applicant:

- Student Handout Copy of 0PSP10-NI-0002, Excore QPTR Determination,  
AND
- Student Handout Copy of Figure 5.1 (marked as “EXAM USE ONLY”).

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2 (C)

**Standard:**

*Applicant determines there is an error on the calculation of NI 43 data and recalculates the result.*

**Comment:**

For N43L, the 2 values to be divided one into the other were reversed, therefore a wrong result was obtained. After performing the division correctly, the result should be 1.018.

Refer to KEY to see details of error.

**Cue:**

**Notes:**

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**SAT/UNSAT Performance Step:** 3 (C)

**Standard:**

*Based on the error found for NI 43 data, the applicant corrects subsequent 'error carried forward' results, and determines the Acceptance Criteria is NOT met.*

**Comment:**

Refer to the KEY to see details of the 'error carried forward' data and the final result that is NOT within the Acceptance Criteria of procedure section 6.1.

**Cue:**

**Notes:**

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**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_

### VERIFICATION OF COMPLETION

**Job Performance Measure:** VERIFY AN EXCORE QPTR CALCULATION

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

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

**Signature** \_\_\_\_\_

**Date** \_\_\_\_\_



## **JPM - HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

### **INITIAL CONDITIONS:**

Unit 2 has been at approximately 100% steady state power for several months. One (1) hr. ago Control Rod M12 (Control Bank 'D') dropped fully into the core. The crew has stabilized the plant and preparations are being made to lower Reactor power.

Control Room Annunciator 05M3 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, has alarmed. The Shift Manager has had a QPTR calculation done using the manual method (i.e. without use of the Plant Computer or RO Calculator).

### **INITIATING CUE:**

The Unit Supervisor instructs you to perform the Independent Verification of the QPTR calculation required by Step 5.2.9 of 0PSP10-NI-0002.

You are expected to correct any errors found, including subsequent entries/calculations, AND, once any corrections are made, determine if the Acceptance Criteria is/are met per step 5.3.

Additional information:

- All Excore Nuclear Instrumentation Channels are operable.
- The U2 Plant Curve Book Figure 5.1 is the latest approved version for purposes of this JPM AND there are no errors in the data of Figure 5.1.
- Reactor Power is stable and meets the requirements of 0PSP10-NI-0002 Step 4.3.
- Reactor Power is 99.7% by U1169, average NI power.

**NUCLEAR TRAINING DEPARTMENT**  
**JOB PERFORMANCE MEASURE**

**TITLE:** **STAY TIME DETERMINATION WITH ENTRY REQUIREMENTS**

**JPM NO.:** **A4**

**REVISION:** **1**

**LOCATION:** **CLASSROOM**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** Stay Time Determination with Entry Requirements

**JPM No.:** A4

**Rev. No.:** 1

**Task No.:** 99774, Apply Radiation and Contamination safety procedures.

**STP Objective:** N91817, STATE the 10CFR20 and STP exposure limitations including extensions for the whole body, skin, and extremities for adults and minors.  
N91825, CALCULATE total dose based on dose rate and stay time.

**Related K/A Reference:** G2.3.4 Radiation Control: Knowledge of radiation exposure limits under normal or emergency conditions. (3.2/3.7)

**References:** OPGP03-ZR-0051, Radiological Access Controls/Standards, Rev 25.

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Classroom

**Time Critical Task:** NO

**Alternate Path JPM:** NO

**Validation Time:** 15 minutes

**Required Materials (Tools/Equipment):** None

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **READ TO PERFORMER:**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

### **INITIAL CONDITIONS:**

Unit 1 is at 100% power. Corrective maintenance is to be performed on the remote operating linkage for CV-0093, Letdown Hx 1A Inlet Isolation Valve, due to binding within the linkage. The valve and linkage are located in the Reactor Coolant Purification Pump Valve Room (Room 049). The dose rate within the vicinity of the valve is 105 mrem/hr.

The individual performing the work is:

- an STP employee
- 40 yrs. old
- has accumulated a Total Effective Dose Equivalent (TEDE) exposure of 1.3 Rem so far this year.

His EPD settings to perform this job will be as follows:

- Total Dose 140 mrem
- Dose Rate Setting 150 mrem/hr.

### **INITIATING CUE:**

1. Determine the MAXIMUM stay time the worker can be at the valve location before he/she would have to leave the Radiological Controlled Area to comply with STP RWP and radiological procedure requirements.
2. Determine the entry requirements for Room 049 based on the dose rate in the vicinity of the valve (105 mrem/hr).

(Assume that the worker's GET002, Radiation Worker Initial Training, is current.)

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### **COMPLETION CRITERIA:**

*Determines that the maximum stay time for the worker is 80 minutes (1 hour and 20 minutes or 1.333 hr.) based on reaching an EPD alarm that would require him/her to leave the area.*

*Determines the entry requirements for a High Radiation Area are met as per JPM Step 2.*

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**HANDOUTS:**

Student Handout Copy of 0PGP03-ZR-0051, Radiological Access Controls/Standards.

**NOTES:**

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**Performance Step:** 1

Obtain reference material for JPM.

**Standard:**

*Examiner provides the applicant the Student Handout Copy of 0PGP03-ZG-0051, Radiological Access Controls/Standards.*

**Comment:**

Provide the applicant the Student Handout Copy of 0PGP03-ZG-0051, Radiological Access Controls/Standards, if not already done.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2 (C)

Determine the worker's maximum stay time up to the point of receiving an EPD dose alarm.

**Standard:**

*Determines that the maximum stay time is 80 minutes (1 hour and 20 minutes)*

**Comment:**

The STP Administrative Action Level (AAL) is 1500 mr so the worker will still be within this limit when the EPD alarms at a dose of 140 mr., therefore the EPD alarm is the most limiting exposure limit for the worker.

If the worker stays to receive the entire 140 mrem dose allowed by the EPD setting, the worker's EPD will alarm and he/she must then leave the area immediately. Given that the dose rate in the vicinity of CV-0093 is 105 mrem/hr, the worker could receive a total of 140 mrem in 80 minutes (1 hour 20 hours) before he/she had to leave the area.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3 (C)

Determines the entry requirements for a High Radiation Area (HRA).

**Standard:**

*Access Control for High Radiation Areas (HRA)*

*Personnel entering high radiation areas SHALL be:*

*(Words to the effect of:)*

- *Assigned to an RWP that permits entry to a HRA.*
- *Assigned an individual monitoring device (TLD).*
- *Issued an Electronic Personal Dosimeter (EPD).*
- *Made knowledgeable of the radiological conditions in the area to be accessed.*
- *Aware of any additional Radiation Protection controls established by the RWP or RP instructions and have an applicable RCA Entry Card.*

**Comment:**

The access control requirements for entry into a High Radiation Area are provided in 0PGP03-ZR-0051, Radiological Access Controls/Standards, procedure step 6.6.

**Cue:**

**Notes:**

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**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_



## VERIFICATION OF COMPLETION

**Job Performance Measure:** Stay Time Determination with Entry Requirements

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

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

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

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

## **JPM - HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

### **INITIAL CONDITIONS:**

Unit 1 is at 100% power. Corrective maintenance is to be performed on the remote operating linkage for CV-0093, Letdown Hx 1A Inlet Isolation Valve, due to binding within the linkage. The valve and linkage are located in the Reactor Coolant Purification Pump Valve Room (Room 049). The dose rate within the vicinity of the valve is 105 mrem/hr.

The individual performing the work is:

- an STP employee
- 40 yrs. old
- has accumulated a Total Effective Dose Equivalent (TEDE) exposure of 1.3 Rem so far this year.

His EPD settings to perform this job will be as follows:

- Total Dose                      140 mrem
- Dose Rate Setting            150 mrem/hr.

### **INITIATING CUE:**

1. Determine the MAXIMUM stay time the worker can be at the valve location before he/she would have to leave the Radiological Controlled Area to comply with STP RWP and radiological procedure requirements.
2. Determine the entry requirements for Room 049 based on the dose rate in the vicinity of the valve (105 mrem/hr).

(Assume that the worker's GET002, Radiation Worker Initial Training, is current.)

### **RECORD YOUR DATA HERE:**

1. Maximum stay time: \_\_\_\_\_
2. Entry Requirements:

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:                      REVIEW A SHUTDOWN MARGIN CALCULATION**

**JPM NO.:                      A5**

**REVISION:                      1**

**THIS JPM REQUIRES THAT A UNIT 2, CYCLE 15 NDR BE AVAILABLE FOR EACH  
SRO APPLICANT TAKING THIS TEST AT THE SAME TIME.**

**JPM Title:** REVIEW A SHUTDOWN MARGIN CALCULATION

**JPM No.:** A5

**Rev. No:** 1

**STP Task:** 76950 Perform a Shutdown Margin Verification

**STP Objective:** 76950 Perform a Shutdown Margin Verification in accordance with  
0PSP10-ZG-0003

**Related K/A Reference:** G2.1.20, Ability to interpret and execute procedure steps. (4.6/4.6)

**References:** Unit 2 Plant Curve Book.  
Nuclear Design Report, Unit 2, Cycle 15.  
0PSP10-ZG-0005, Shutdown Margin Verification Modes 1 & 2, Rev. 5

**Task Normally Completed By:** SRO

**Method of Testing:** Actual Performance

**Location of Testing:** Classroom

**Time Critical Task:** NO

**Alternate Path JPM:** NO

**Validation Time:** 25 minutes

**Required Materials (Tools/Equipment):**

- Calculator
- Unit 2 Cycle 15 NDR

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK.**

### **INITIAL CONDITIONS:**

Unit 2 is operating at 100% power. During performance of 0PSP03-RS-0001, Monthly Control Rod Operability, all three (3) Control Rods in Control Bank 'D', Group 2, failed to move outward after being inserted. I&C has determined that all three (3) Control Rods are being affected by Rod Control logic problems. Further testing has determined that Control Rods D12 and M4 are known to be trippable, but Control Rod H8 has been determined to be untrippable (mechanically stuck).

Plant parameters are stabilized and on program where applicable. Reactor power is 100% by U1169.

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, using the MANUAL method, to verify compliance with Technical Specifications.

### **INITIATING CUE:**

You are a shift SRO. The Shift Manager has asked you to perform a second review of the test data per step 5.7.12 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2.

**For the purposes of this JPM, use the following instructions:**

- 1. RCCA positions given on 0PSP10-ZG-0005, Form 2, are correct for use in this JPM.**
- 2. RCS boron is given as 100 ppm. For data tables that do not have 100 ppm listed, you can either use 0 ppm or interpolate between 0 ppm and 500 ppm to get a value for 100 ppm.**
- 3. Core Burnup is given as 19000 MWD/MTU. Consider this to be End of Life (EOL) and ALWAYS use EOL values.**
- 4. You are to use table data where possible, instead of curve data, to minimize interpolation errors from reading the curve data.**
- 5. 0PSP10-ZG-0005 provides for use of 'most-conservative values', however, DO NOT use 'most-conservative' values; use EOL values to get the most representative result.**

**WHEN YOU'VE COMPLETED YOUR REVIEW, PRESENT YOUR RESULTS TO THE EXAMINER.**

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*Determines the SDM calculation is in error. SDM requirements ARE met and a TS entry does NOT have to be made.*

**HANDOUTS:**

Provide the following to the applicant at the start of the JPM:

- Student Handout copy of 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2. This handout copy has information filled in to match conditions given in the ‘Initial Conditions’.
- Student Handout copy of Unit 2 Plant Curve Book for Cycle 15, Figure 5.4 (this is a special exam copy marked “EXAM USE ONLY” and may not agree with the actual U2 PCB Figure 5.).
- Unit 2 Cycle 15 NDR

**NOTES:**

The procedure used to perform the Shutdown Margin calculation allows interpretation of data as well as a ‘most-conservative’ approach. The instructions provided to the applicant specify he/she is to use EOL data and NOT ‘most-conservative’ data in order to get the best result based on plant conditions.

There is opportunity for interpolation, however, the end result should be the same (i.e. numbers within the interpolation range should still indicate that Tech Spec Shutdown Margin requirements are met).

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**SAT/UNSAT Performance Step:** 1

Procedure Step 5.3: Record the following on Form 2.

- Unit number, Cycle number, date and time
- Reactor Power level (%) and source
- RCCA bank positions from CP-005 step counters or DRPI
- RCS Boron concentration
- The number of inoperable RCCA's due to being immovable due to friction or known to be untrippable.

**Standard:**

- *The applicant should determine the performer has assumed all inoperable rods are untrippable and has entered '3' as the # of inoperable rods whereas it should be only 1 inoperable rod due to being untrippable.*

**Comment:**

- 1) This information is given in the Initial Conditions. If asked by applicant, information provided as the initial conditions is current.
- 2) The following references should have already been provided to the applicant. If not, provide them now:
  - Unit 2 Cycle 15 Nuclear Design Report (NDR)
  - Student Handout copy of 0PSP10-ZG-0005, Shutdown Margin Verification – Modes 1 and 2.
  - Student Handout copy of Unit 2 Plant Curve Book Figure 5.4
  - Calculator
- 3) The performer has entered '3' as the number of inoperable RCCA's, however, even though there are 3 RCCA's inoperable, this step requires the number that are inoperable due to being immovable or known to be untrippable which is 1 (one) per the given information.
  - It is this error that was carried forward by the performer to cause an incorrect result (SDM requirements not met).

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2

Procedure Step 5.4: Enter the Cycle Burnup for the date/time entered in Step 5.3.1.

**Standard:**

*Determines the Cycle Burnup is 19000 MWD/MTU from the given information and is correctly entered on Form 2.*

**Comment:**

**Notes:**

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**SAT/UNSAT Performance Step:** 3

Procedure Step 5.5: If an approved computer application will be used for the data reduction, THEN GO TO Step 5.6, otherwise:

- Sign/date Form 2
- NA Step 5.6

**Standard:**

*Understands from the given information that the SDM calculation was done using the MANUAL method, therefore Form 2 should be signed/dated by the performer and Step 5.6 N/A'd.*

**Comment:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4

Procedure Step 5.7.1: Obtain the All Rods Inserted Less Most Reactive Stuck Rod Worth from the NDR. Enter the amount as a positive value on Form 3.

**Standard:**

*Verifies this information is correct on Form 3*

**Comment:**

The value in the NDR is given in %  $\Delta p$  and must be converted to pcm. There's a note in the procedure to this effect.

The EOL value is 7040 pcm, but the most-conservative value is BOL at 6140 pcm. The applicant should use the EOL value per the JPM instructions.

**Notes:**

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**SAT/UNSAT Performance Step:** 5

Procedure Step 5.7.2: Obtain the Most Reactive Stuck Rod Worth from the NDR. Enter as a positive value on Form 3.

**Standard:**

*Verifies this information is correct on Form 3*

**Comment:**

The EOL value is 970 pcm, but the most-conservative value is at BOL at 1000 pcm. Per the instructions provided to the applicant, he/she should use the EOL value.

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 6

Procedure Step 5.7.3: Obtain the Inserted RCCA Bank Worth at the RCCA positions recorded in Step 5.3.3 from the NDR. Enter as a positive value on Form 3.

**Standard:**

*Verifies this information is correct on Form 3*

**Comment:**

**Notes:**

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**SAT/UNSAT Performance Step:** 7 (C)

Procedure Steps 5.7.4: Determine the Inoperable RCCA Worth by multiplying the Most Reactive Stuck Rod Worth by the number of inoperable RCCA's.

**Standard:**

*Determines the recorded value of Inoperable RCCA Worth is 3 times what it should be.*

**Comment:**

The initial conditions stipulate that 3 rods are inoperable, but only 1 RCCA is untrippable. Per procedure step 5.3.5, only the inoperable rods that are untrippable are to be counted for this data entry.

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 8 (C)

Procedure Step 5.7.5: Determine the Available RCCA Worth by subtracting the Inserted RCCA Bank Worth and the Inoperable RCCA Worth from the All Rods Inserted Less Most Reactive Stuck Rod Worth.

**Standard:**

*Determines this step is in error based on using 3 inoperable rods vice 1.*

**Comment:**

**Notes:**

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**SAT/UNSAT Performance Step:** 9 (C)

Procedure Step 5.7.6: Obtain the Total Power Defect from the NDR.

**Standard:**

*Verifies this information is correct on Form 3.*

**Comment:**

The Total Power Deficit is a function of RCS boron concentration. Per the JPM instructions, the applicant can either use the 0 ppm value or do an interpolation between 0 ppm and 500 ppm. The JPM outcome will be the same regardless of which number the applicant uses. The range of values is 3003.8 – 3067.6 pcm.

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 10 (C)

Procedure Step 5.7.7: Determine the Actual Shutdown Margin..

**Standard:**

*Determines the Actual Shutdown Margin to be 2995 - 3059 pcm depending on the value of Total Power Defect used in JPM Step 9.*

**Comment:**

**Notes:**

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**SAT/UNSAT Performance Step:** 11

Procedure Step 5.7.8: Obtain the Required Shutdown Margin from Plant Curve Book Figure 5.4.

**Standard:**

*Verifies this information is correct on Form 3.*

**Comment:**

The required SDM is 1300 pcm.

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 12 (C)

Procedure Step 5.7.9: Compare the Actual Shutdown Margin to the Required Shutdown Margin.

**Standard:**

*Compares the Actual Shutdown Margin to the Required Shutdown Margin and determines the Acceptance Criteria ARE met. No TS entry is required.*

**Comment:**

There will likely be some differences in the values obtained for the SDM Calculation between the 'KEY' and the applicant, but none of these differences should be sufficient to change the outcome EXCEPT for the intended error OR if the applicant did not go by the instructions on the cue sheet (e.g. used most-conservative values)

**Notes:**

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**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_

**VERIFICATION OF COMPLETION**

**Job Performance Measure:** REVIEW A SHUTDOWN MARGIN CALCULATION

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

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

**Signature:**

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

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK.

### **INITIAL CONDITIONS:**

Unit 2 is operating at 100% power. During performance of 0PSP03-RS-0001, Monthly Control Rod Operability, all three (3) Control Rods in Control Bank 'D', Group 2, failed to move outward after being inserted. I&C has determined that all three (3) Control Rods are being affected by Rod Control logic problems. Further testing has determined that Control Rods D12 and M4 are known to be trippable, but Control Rod H8 has been determined to be untrippable (mechanically stuck).

Plant parameters are stabilized and on program where applicable. Reactor power is 100% by U1169.

A Shutdown Margin Calculation was performed in accordance with 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2, using the MANUAL method, to verify compliance with Technical Specifications.

### **INITIATING CUE:**

You are a shift SRO. The Shift Manager has asked you to perform a second review of the test data per step 5.7.12 of 0PSP10-ZG-0005, Shutdown Margin Verification - Modes 1 and 2.

**For the purposes of this JPM, use the following instructions:**

- 1. RCCA positions given on 0PSP10-ZG-0005, Form 2, are correct for use in this JPM.**
- 2. RCS boron is given as 100 ppm. For data tables that do not have 100 ppm listed, you can either use 0 ppm or interpolate between 0 ppm and 500 ppm to get a value for 100 ppm.**
- 3. Core Burnup is given as 19000 MWD/MTU. Consider this to be End of Life (EOL) and ALWAYS use EOL values.**
- 4. You are to use table data where possible, instead of curve data, to minimize interpolation errors from reading the curve data.**
- 5. 0PSP10-ZG-0005 provides for use of 'most-conservative values', however, DO NOT use 'most-conservative' values; use EOL values to get the most representative result.**

**WHEN YOU'VE COMPLETED YOUR REVIEW, PRESENT YOUR RESULTS TO THE EXAMINER.**

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:**                **REVIEW ESF POWER AVAILABILITY SURVEILLANCE RESULTS**

**JPM NO:**            **NRC A6**

**REVISION:**        **1**



**JOB PERFORMANCE MEASURE WORKSHEET**

**JPM Title:** REVIEW ESF POWER AVAILABILITY SURVEILLANCE RESULTS

**JPM No.:** A6

**Rev. No.:** 1

**STP Task:** 12000, Authorize Start Of And Review Surveillance Tests.

**STP Objective:** 12000, Authorize the start of surveillance tests, and review completion IAW 0PGP03-ZE-0004, Plant Surveillance Program.

**Related K/A Reference:** 2.1.33 [4.0], Ability to recognize indications for system operating parameters which are entry level conditions for Technical Specifications.

**References:** 0PSP03-EA-0002, Rev 25., ESF Power Availability

**Task Normally Completed By:** SRO

**Method of Testing:** Actual Performance

**Location of Testing:** N/A

**Time Critical Task:** NO

**Validation Time:** 30 minutes

**Required Materials (Tools/Equipment):**

- Student Handout Copy of 0PSP03-EA-0002.
- Technical Specifications Section 8 and the Bases for Section 8.

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

Unit 1 is at 100% power with a Train "A" outage week in progress. The following plant conditions exist:

- #11 ESF D/G was taken OOS for scheduled maintenance at 0600 yesterday.
- At 1000 today, the breaker from 4.16 KV Bus E1C to 4.16 KV/480 V XFMR E1C1 (4.16 KV/480 Volt E1C1 Transformer primary side breaker) tripped open.
- Operations personnel have cross tied Load Centers E1C1 and E1C2 (cross tie breaker is closed).
- OPSP03-EA-0002, ESF Power Availability, was performed today at 1200, 30 minutes ago, to satisfy the requirements of Technical Specification 3.8.1.1.b. due to #11 ESF D/G being OOS.

**INITIATING CUE:**

You are the Unit Supervisor in Unit 1 and you're to perform the "Test Results Second Review" for the completed ESF Power Availability Surveillance, and **document your review by completing Step 5** of the Data Package Cover Sheet. **DO NOT PERFORM THE REPORTABILITY REVIEW PORTION OF STEP 5.**

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*Determines that Surveillance Test results should be 'unacceptable' based on failing to meet surveillance acceptance criteria 6.3, Technical Specification LCO 3.8.3.1.c is not met and LCO 3.8.3.1 Action 'a' should be entered.*

**JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)**

**HANDOUTS:**

Student Handout Copy of PSP03-EA-0002, ESF Power Availability.  
Technical Specification Section 8 and the Bases for Section 8.

**NOTES:**

The evaluator is provided with an ANSWER KEY which is appropriately marked "KEY". The evaluator shall not hand out any page(s) marked as "KEY" to the applicant.

**JOB PERFORMANCE MEASURE CHECK SHEET****NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, ...).

**JPM START TIME** \_\_\_\_\_**SAT / UNSAT Performance Step:** 1

Obtain completed ESF Power Availability Surveillance.

**Standard:***The student obtains a copy of the ESF Power Availability.***Comment:**

When student has completed reading the Initiating Cues and has no questions, give the student the Student Copy of PSP03-EA-0002 and Technical Specification Section 8 and the Bases for Section 8.

**Cue:****Notes:**  
  

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT / UNSAT Performance Step:** 2

Review ESF Power Availability Surveillance.

**Standard:**

*The applicant reviews the ESF Power Availability Surveillance for accuracy.*

**Comment:**

**Cue:**

**Notes:**

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**JOB PERFORMANCE MEASURE CHECK SHEET****SAT / UNSAT Performance Step: 3 (C)\***

Complete “Test Results Second Review” section.

**Standard:**

*The student records the following on the “Test Results Second Review” section:*

- 1) ***Test Results – Unacceptable\****
- 2) ***Refer to T.S. – 3.8.3.1.c, Action ‘a’ applies\****
- 3) ***Is this condition a potentially reportable occurrence? – N/A per Initiating Cue***
- 4) ***Should an LCO action statement be entered? – YES***
- 5) ***Explain – Words to the effect of:***  
*Surveillance Acceptance Criteria 6.3 is not satisfied. (480 V Load Center E1C1 is not energized via its respective load center transformer.) Technical Specification LCO action statement 3.8.3.1.c is not met and 3.8.3.1 Action ‘a’ should be entered based on the loss of the normal power supply to the 480 V Load Center E1C1.*

**Comment:**

(\*) Denotes the Critical portions. The applicant is expected to determine that the surveillance is unsatisfactory based on failing to meet acceptance criteria 6.3. The applicant should also specify that the LCO Action to be entered is Action ‘a’ of TS 3.8.3.1.

**Cue:**

If the student begins to pursue a reportability determination, inform him / her that this is not within the identified scope of the JPM.

**Notes:**

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**-TERMINATE THE JPM-**

**JPM STOP TIME**\_\_\_\_\_

**VERIFICATION OF COMPLETION**

**Job Performance Measure:** REVIEW ESF POWER AVAILABILITY  
SURVEILLANCE RESULT

**Student's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:**\_\_\_\_\_ **Signature:**\_\_\_\_\_

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

**JPM – STUDENT HANDOUT****READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU’VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

Unit 1 is at 100% power with a Train “A” outage week in progress. The following plant conditions exist:

- #11 ESF D/G was taken OOS for scheduled maintenance at 0600 yesterday.
- At 1000 today, the breaker from 4.16 KV Bus E1C to 4.16 KV/480 V XFMR E1C1 (4.16 KV/480 Volt E1C1 Transformer primary side breaker) tripped open.
- Operations personnel have cross tied Load Centers E1C1 and E1C2 (cross tie breaker is closed).
- 0PSP03-EA-0002, ESF Power Availability, was performed today at 1200, 30 minutes ago, to satisfy the requirements of Technical Specification 3.8.1.1.b. due to #11 ESF D/G being OOS.

**INITIATING CUE:**

You are the Unit Supervisor in Unit 1 and you’re to perform the “Test Results Second Review” for the completed ESF Power Availability Surveillance, and **document your review by completing Step 5** of the Data Package Cover Sheet. **DO NOT PERFORM THE REPORTABILITY REVIEW PORTION OF STEP 5.**



**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:** DETERMINE TECH SPEC ACTION FOR ABNORMAL RCS  
ACTIVITY

**JPM NO.:** NRC JPM A7

**REVISION:** 1

**LOCATION:** N/A

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** DETERMINE TECH SPEC ACTION FOR ABNORMAL RCS ACTIVITY

**JPM No.:** NRC JPM A7

**Rev. No.:** 1

**STP Task:** 10300, Interpret Technical Specifications

**STP Objective:** 10300, Given that a condition exists requiring entry into a Technical Specification action statement, interpret Technical Specifications accurately, such that plant activities occur safely and smoothly, and that contacting superiors for advice is unnecessary.

**Related K/A Reference:** 2.2.22, Knowledge of limiting conditions for operations and safety limits (SRO 4.1)

**References:** Tech Spec Section 3.4.8, Specific Activity

**Task Normally Completed By:** SRO

**Method of Testing:** Actual Performance

**Location of Testing:** NTF

**Time Critical Task:** NO

**Validation Time:** 15 min.

**Required Materials (Tools/Equipment):** Technical Specifications

## JOB PERFORMANCE MEASURE INFORMATION SHEET

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK**

### INITIAL CONDITIONS:

Unit 1 was at 100% power when a transmission line disturbance required the unit to be down powered to 80%. The down power was completed in 40 minutes. All systems responded as expected during the down power.

Two (2) hours has elapsed since the completion of the down power and the unit is stable at 80% power. Health Physics reports that radiation readings from RT-8039, CVCS Failed Fuel Monitor, are rising toward the Alert alarm. As Unit Supervisor, you directed Chemistry to sample the RCS.

Chemistry reports the following sample results:

- Gross Radioactivity = 58.5  $\mu\text{Ci}/\text{gram}$
- Dose Equivalent Iodine = 75  $\mu\text{Ci}/\text{gram}$
- Last Calculated E-bar = 0.92 Mev/disintegration

### INITIATING CUE:

Based on the information provided on RCS Activity, determine any applicable Tech Spec requirements.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### COMPLETION CRITERIA:

- *Determines that Dose Equivalent Iodine is above the acceptable value of TS Figure 3.4-1.*
- *Apply TS 3.4.8 Action a; be in HOT STANBY with Tavg less than 500°F within 6 hours.*
- *Apply Reactor Coolant Specific Activity Sample and Analysis Program TS Table 4.4-4, item 4.a); Perform an isotopic analysis for iodine once per 4 hours, whenever the specific activity exceeds 1 $\mu\text{Ci}/\text{gram}$  Dose Equivalent I-131 or 100/E-bar  $\mu\text{Ci}/\text{gram}$  of gross radioactivity until the specific activity of the RCS is restored within limits.*

### HANDOUTS:

A copy of Technical Specifications must be available in the testing area.

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **NOTES:**

A KEY is not provided. Answers are included in the JPM.

The applicant may indicate that TS Table 4.4-4, item 4.b) applies. This is not required because performance of item 4.a) will satisfy the requirements of 4.b).

## JOB PERFORMANCE MEASURE CHECK SHEET

***NOTE:***

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**SAT/UNSAT Performance Step:** 1

Reference Tech Spec Section 3.4.8, Reactor Coolant System Specific Activity

**Standard:**

*References Tech Spec Section 3.4.8, Reactor Coolant System Specific Activity*

**Comment:**

Applicant is to use Technical Specifications available in the examination area.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2

Determine if RCS Gross Specific Activity Limits are exceeded.

**Standard:**

**Determines RCS Gross Activity is within limits.**

**Comment:**

The Gross Activity Limit is  $< 100/\bar{E}$ . For the given information, this works out to be  $100/0.92 = 108.69 \mu\text{Ci/gram}$ . The actual RCS Gross Activity is  $58.5 \mu\text{Ci/gram}$  and so is within limits.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3 (C)

Determine if RCS Dose Equivalent I-131 Specific Activity Limits are exceeded.

**Standard:**

**Determines that Dose Equivalent Iodine is above the acceptable value of TS Figure 3.4-1.**

**Comment:**

Action a. limits the DE Iodine to either  $> 1 \mu\text{Ci/gram}$  for 48 continuous hours OR the limit line of Fig. 3.4-1. For the given information, it has been less than 48 hours so this limit has not yet been reached. For Fig. 3.4-1, since the plant at 80% power, the limit on this figure is  $58 \mu\text{Ci/gram}$ . The DE Iodine information given is  $75 \mu\text{Ci/gram}$  thus this limit has been exceeded.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4 (C)

Determine correct TS application.

**Standard:**

- *Determines that TS 3.4.8 Action a. applies; be in HOT STANBY with Tavg less than 500°F within 6 hours.*
- *Apply Reactor Coolant Specific Activity Sample and Analysis Program TS Table 4.4-4, item 4.a); Once per 4 hours, whenever the specific activity exceeds 1μCi/gram Dose Equivalent I-131 or 100/E=bar μCi/gram of gross radioactivity until the specific activity of the RCS is restored within limits.*

**Comment:**

The applicant may indicate that TS Table 4.4-4, item 4.b) applies. This is not required because performance of item 4.a) will satisfy the requirements of 4.b).

**Cue:**

**Notes:**

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**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_



**VERIFICATION OF COMPLETION**

**Job Performance Measure: DETERMINE TECH SPEC ACTION FOR ABNORMAL  
RCS ACTIVITY**

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:                      Sat / Unsat**

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

**Signature**

\_\_\_\_\_

**Date** \_\_\_\_\_

## **JPM - HANDOUT**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK**

### **INITIAL CONDITIONS:**

Unit 1 was at 100% power when a transmission line disturbance required the unit to be down powered to 80%. The down power was completed in 40 minutes. All systems responded as expected during the down power.

Two (2) hours has elapsed since the completion of the down power and the unit is stable at 80% power. Health Physics reports that radiation readings from RT-8039, CVCS Failed Fuel Monitor, are rising toward the Alert alarm. As Unit Supervisor, you directed Chemistry to sample the RCS.

Chemistry reports the following sample results:

- Gross Radioactivity = 58.5  $\mu\text{Ci}/\text{gram}$
- Dose Equivalent Iodine = 75  $\mu\text{Ci}/\text{gram}$
- Last Calculated E-bar = 0.92 Mev/disintegration

### **INITIATING CUE:**

Based on the information provided on RCS Activity, determine any applicable Tech Spec requirements.

### **PROVIDE ANSWER:**

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE: DETERMINE PERSONNEL EXPOSURE LIMITS**

**JPM NO.: A8**

**REVISION: 1**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** DETERMINE PERSONNEL EXPOSURE LIMITS

**JPM No.:** A8

**Rev. No.:** 1

**STP Task:** SRO-12800, Activate the Emergency Plan

**STP Objective:** EPT-003, Objective #4, Discuss radiation exposure controls associated with emergency conditions. Include emergency dose guidelines and access requirements.

**Related K/A Reference:** G2.3.4, Knowledge of radiation exposure limits under normal or emergency conditions. (3.2/3.7)

**References:** 0ERP01-ZV-IN06, Radiological Exposure Guidelines, Rev 5  
0PGP03-ZR-0050, Radiation Protection Program, Rev 10

**Task Normally Completed By:** SRO

**Method of Testing:** Simulated

**Location of Testing:** Classroom

**Time Critical Task:** NO

**Validation Time:** 15 Minutes

**Required Materials (Tools/Equipment):** None

## JOB PERFORMANCE MEASURE CHECK SHEET

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

### INITIAL CONDITIONS:

The site is in a Site Area Emergency (SAE) due to an RCS Loss of Coolant Accident (LOCA) and Loss of Containment integrity.

A Plant Operator from the on-shift crew is assisting with emergency duties and will be required to go into an extremely high radiation area in an attempt to restore Containment integrity.

He has worked at STP for only 4 months. He previously worked as a radiation worker at another facility the prior 6 months. His exposure records are attached.

### INITIATING CUE:

Given the personnel exposure history of the operator, determine the maximum amount of additional exposure this operator is allowed WITHOUT requiring Emergency Exposure Approval in accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines.

Provide the maximum allowed additional exposure for the following:

- 1) TEDE – Total Effective Dose Equivalent
- 2) SDE - Shallow Dose Equivalent
- 3) LDE – Lens Dose Equivalent

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### COMPLETION CRITERIA:

*Determines the following allowed exposures for the operator:*

- **TEDE = 4440 mrem**
- **SDE = 44,160 mrem**
- **LDE = 10,760 mrem**

## **JOB PERFORMANCE MEASURE CHECK SHEET**

### **HANDOUTS:**

- Handout copy of 0ERP01-ZV-IN06, Radiological Exposure Guidelines
- Handout copy of applicable portion of 10CFR20, Standards for Protection against Radiation
- Operator dose record handout (attached to the back of the JPM).

### **NOTES:**

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_.

**SAT/UNSAT Performance Step:** **1**

Obtain applicable reference material

**Standard:**

*Obtains the following from the Examiner:*

- 0ERP01-ZV-IN06, Radiological Exposure Guidelines
- Applicable portion of 10CFR20, Standards for Protection against Radiation
- Operator dose record handout (attached to the back of the JPM).

**Comment:**

**Cue:**

Provide the applicant with the Student Handouts for this JPM:

- Handout copy of 0ERP01-ZV-IN06, Radiological Exposure Guidelines
- Handout copy of applicable portion of 10CFR20, Standards for Protection against Radiation
- Operator dose record handout (attached to the back of the JPM).

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2 (C)

Determine allowed exposure limits for TEDE, SDE and LDE.

**Standard:**

*Refers to 0ERP01-ZV-IN06, Radiological Exposure Guidelines, paragraph 3.2 to 3.4 and Step 5.3 to determine that doses up to 10CFR20 limits are authorized by the procedure without Emergency Exposure Approval.*

*Correctly calculates maximum allowed additional exposure for the operator as follows:*

*TEDE limit is 5000 mrem for current year.*

*Calculation:  $5000 - (320 + 240) = 4440$  mrem*

***Maximum allowed additional TEDE = 4440 mrem***

*SDE limit is 50,000 mrem for current year*

*Calculation:  $50,000 - (5600 + 240) = 44,160$  mrem*

***Maximum allowed additional SDE = 44,160 mrem***

*LDE limit is 15,000 mrem for current year*

*Calculation:  $15,000 - (4000 + 240) = 10,760$  mrem*

***Maximum allowed additional LDE = 10,760 mrem***

**Comment:**

**Cue:**

**Notes:**

---

**TERMINATE THE JPM –**

**JPM STOP TIME \_\_\_\_\_**



## VERIFICATION OF COMPLETION

**Job Performance Measure:** DETERMINE PERSONNEL EXPOSURE LIMITS

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

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

**Signature**

\_\_\_\_\_  
**Date** \_\_\_\_\_

## **JPM - HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

### **INITIAL CONDITIONS:**

The site is in a Site Area Emergency (SAE) due to an RCS Loss of Coolant Accident (LOCA) and Loss of Containment integrity.

A Plant Operator from the on-shift crew is assisting with emergency duties and will be required to go into an extremely high radiation area in an attempt to restore Containment integrity.

He has worked at STP for only 4 months. He previously worked as a radiation worker at another facility the prior 6 months. His exposure records are attached.

### **INITIATING CUE:**

Given the personnel exposure history of the operator, determine the maximum amount of additional exposure this operator is allowed WITHOUT requiring Emergency Exposure Approval in accordance with 0ERP01-ZV-IN06, Radiological Exposure Guidelines.

Provide the maximum allowed additional exposure for the following:

- 1) TEDE – Total Effective Dose Equivalent
- 2) SDE - Shallow Dose Equivalent
- 3) LDE – Lens Dose Equivalent

## **JPM - HANDOUT**

### **OPERATOR DOSE RECORD**

Dose report from previous employer:

TEDE = 320 mrem  
SDE = 5,600 mrem  
LDE = 4,000 mrem

The current dose from STP

TEDE = 240 mrem  
SDE = 240 mrem  
LDE = 240 mrem

**NUCLEAR TRAINING DEPARTMENT**  
**ADMINISTRATIVE JOB PERFORMANCE MEASURE**

**TITLE:** **DETERMINE APPROPRIATE PROTECTIVE ACTION  
RECOMMENDATIONS**

**JPM NO.:** **A9**

**REVISION:** **1**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** DETERMINE APPROPRIATE PROTECTIVE ACTION  
RECOMMENDATIONS

**JPM No.:** A9

**Rev. No.:** 1

**STP Task:** SRO-47030, Implement the requirements of 0ERP01-ZV-SH01,  
Shift Manager

**STP Objective:** SRO-47030, Discuss the duties and responsibilities of the Shift Supervisor  
as delineated in 0ERP01-ZV-SH01, Shift Manager.

**Related  
K/A Reference:** G2.4.44, Knowledge of emergency plan protective action  
recommendations. (2.4/4.4)

**References:** 0ERP01-ZV-SH01, Rev 23, Shift Manger

**Task Normally  
Completed By:** SRO

**Location  
of Testing:** CLASSROOM

**Time  
Critical Task:** YES - 15 Minutes

**Validation  
Time:** 12 minutes

**Required Materials (Tools/Equipment):**  
None

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU HAVE COMPLETED THE TASK**

### **INITIAL CONDITIONS:**

You are the on-duty Shift Manager/Emergency Director. Due to degrading plant conditions you have just declared a General Emergency in Unit 1. Emergency Plan requirements with the exception of Protective Action Recommendations (PARs) are in progress or have been delegated to other individuals.

### **INITIATING CUE:**

You are to determine the PARs for the State/County, including downwind Zones and Sectors, in accordance with 0ERP01-ZV-SH01, Shift Manager, Data Sheet 4, General Emergency Checklist, Step 1.9.

Additional Information:

- A radiological release is NOT in progress.
- Current Weather conditions are:
  - ⇒ Wind - Blowing from 150° at 12 mph.
  - ⇒ Temperature - 88°F
  - ⇒ Precipitation - None
- Containment High Range Radiation Monitors RT-8050 and RT-8051 are not reading correctly and are Out Of Service.
- A temporary hatch monitor has been set up and is reading 2100 mr/hr.
- Containment pressure is 4.5 psig.
- Health Physics field team dose assessments currently indicate normal background readings.

## JOB PERFORMANCE MEASURE INFORMATION SHEET

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### COMPLETION CRITERIA:

*The applicant determines that the Protective Action Recommendation (PAR) is as follows:*

*Evacuate 2 Mile Radius and 5 Miles Downwind, Zones 1, 2 and 5. The affected downwind sectors are P, Q, R and A.*

### HANDOUTS:

1. Student Handout copy of 0ERP01-ZV-SH01, Shift Manager.

### NOTES:

1. The Evaluator is provided with an ANSWER KEY which is appropriately marked ("KEY"). The evaluator shall not handout any page(s) marked as "KEY" to the applicant.

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**SAT/UNSAT Performance Step:** 1

**Start time:** \_\_\_\_\_

Perform Sub Steps of Step 1.9 of 0ERP01-ZV-SH01, Shift Manager.

**Standard:**

*Sub Step 1.9.1 will NOT be performed due to no radiological release in progress.*

*Sub Step 1.9.2 will be performed. See Performance Step 2.*

*Sub Step 1.9.3 will NOT be performed due to no radiological release in progress.*

*Sub Step 1.9.4 will NOT be performed due to no radiological release in progress.*

*Sub Step 1.9.5 will NOT be performed due dose assessment results indicating normal background reading.*

*Sub Step 1.9.6 will be performed. See Performance Step 3.*

**Comment:**

**Cue:**

Provide the applicant with the Student Handout copy of 0ERP01-ZV-SH01, Shift Manager.

**Notes:**

1. Evaluator should start the time for this JPM when the student indicates understanding of the task to be performed.
  2. The applicant will start at the given 0ERP01-ZV-SH01, Shift Manager, Data Sheet 4, General Emergency Checklist, Step 1.9.
  3. A key is provided for the evaluator which indicates the steps the applicant should perform and information used to develop the PAR.
-



## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2 (C)

Perform Step 1.9.2 of 0ERP01-ZV-SH01, Data Sheet 4: IF a radiological release is NOT in progress, THEN determine the PAR using Addendum 2, Core/Containment Status Table

**Standard:**

*With the given Initial Conditions, the applicant determines that the Protective Action Recommendation (PAR) is as follows:*

- *Evacuate 2 Mile Radius and 5 Miles Downwind.*

**Comment:**

**Cue:**

**Notes:**

Refer to the key for Addendum 2.

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3 (C)

Perform Step 1.9.6 of 0ERP01-ZV-SH01, Data Sheet 4: Determine affected downwind sectors and zones using Addendum 4, Protective Response Zones. Use Addendum 5, Protective Response Zones Map to assist.

**Standard:**

*With the given Initial Conditions, the applicant determines the following:*

- *The affected downwind Zones are 1, 2 and 5.*
- *The affected downwind Sectors are P, Q, R and A.*

**Comment:**

**Cue:**

**Notes:**

1. Refer to the key for Addendum 4.
2. The key also includes Addendum 5 for additional information.

---

**- TERMINATE THE JPM -**

**Stop time:** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** DETERMINE PROTECTIVE ACTION RECOMMENDATIONS

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

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

**Signature**

\_\_\_\_\_

**Date** \_\_\_\_\_

## **JPM - HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

### **INITIAL CONDITIONS:**

You are the on-duty Shift Manager/Emergency Director. Due to degrading plant conditions you have just declared a General Emergency in Unit 1. Emergency Plan requirements with the exception of Protective Action Recommendations (PARs) are in progress or have been delegated to other individuals.

### **INITIATING CUE:**

You are to determine the PARs for the State/County, including downwind Zones and Sectors, in accordance with 0ERP01-ZV-SH01, Shift Manager, Data Sheet 4, General Emergency Checklist, Step 1.9.

Additional Information:

- A radiological release is NOT in progress.
- Current Weather conditions are:
  - ⇒ Wind - Blowing from 150° at 12 mph.
  - ⇒ Temperature - 88°F
  - ⇒ Precipitation - None
- Containment High Range Radiation Monitors RT-8050 and RT-8051 are not reading correctly and are Out Of Service.
- A temporary hatch monitor has been set up and is reading 2100 mr/hr.
- Containment pressure is 4.5 psig.
- Health Physics field team dose assessments currently indicate normal background readings.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:** **TRANSFER TO HOT LEG RECIRCULATION**

**JPM NO.:** **C1**

**REVISION:** **1**

**LOCATION:** **UNIT 1 OR UNIT 2 CONTROL ROOM OR THE  
SIMULATOR**

**JOB PERFORMANCE MEASURE WORKSHEET**  
**SOUTH TEXAS PROJECT**

**JPM Title:** TRANSFER TO HOT LEG RECIRCULATION

**JPM No.:** C1

**Rev. No.:** 1

**STP Task:** 81637 - Transfer to Hot Leg Recirculation

**STP Objective:** 81637 - Transfer to Hot Leg Recirculation IAW 0POP05-E0-ES14

**Related  
K/A Reference:** 006 A4.05 - Ability to manually operate and/or monitor in the control room: Transfer of ECCS flowpaths prior to recirculation.

**References:** 0POP05-E0-ES14, Rev. 7, Transfer to Hot Leg Recirculation

**Task Normally  
Completed By:** RO

**Method  
of Testing:** Static Performance

**Location  
of Testing:** Unit 1 or Unit 2 Control Room or the Simulator

**Time  
Critical Task:** NO

**Alternate  
Path JPM:** NO

**Validation  
Time:** 10 minutes

**Required Materials (Tools/Equipment):** Procedure copy if being done in the plant. None needed if being done in the simulator.

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.**

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A large break LOCA occurred 5.5 hours ago. The control room operators have completed 0POP05-EO-EO10 and are evaluating long term plant status.

- Adverse Containment Conditions exist.
- A lockout has occurred on 4160v Bus E1C
- Only SI Trains 'A' and 'B' are operating

### **INITIATING CUE:**

The Unit Supervisor directs you to transfer SI Train 'A' to Hot Leg recirculation in accordance with 0POP05-EO-ES14, Transfer to Hot Leg Recirculation, Step 3.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### **COMPLETION CRITERIA:**

*The Performer Transfers SI Recirculation Flow from Cold Leg to Hot Leg for Train A per 0POP05-EO-ES14.*

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **HANDOUTS:**

Handout copy of 0POP05-EO-ES14, TRANSFER TO HOT LEG RECIRCULATION, if this JPM is being performed in the plant.

### **NOTES:**

This JPM to be performed statically in either Unit 1 or Unit 2 Control Room or the Simulator

### **SIMULATOR SETUP (if applicable)**

1. Ensure Radio volume for both stations are set to a reasonable level.
2. Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.
3. Reset to the 100% power Storepoint and verify:
  - Step counter position annunciator light is out
  - Red light at the end of CP-010 is out
  - ICS annunciators have stopped counting up
4. Check and Clean the following procedures in the simulator (JPM specific)
  - 0POP05-EO-ES14, Transfer to Hot Leg Recirculation
5. Place simulator in run, clear/reset any alarms, then GO TO FREEZE



## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**SAT/UNSAT Performance Step:**      **1**

**Start time:** \_\_\_\_\_

Obtain a copy of 0POP05-EO-ES14, Transfer to Hot Leg Recirculation

**Standard:**

*Obtains a copy of 0POP05-EO-ES14, Transfer to Hot Leg Recirculation.*

**Comment:**

A procedural handout is provided if this JPM is being done in the plant. If this JPM is being performed in the Simulator, the applicant will use procedures located there.

**Cue:**

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2(C\*)

Align the 'A' HHSI pump for Hot Leg Recirculation. (procedure step 2a)

**Standard:**

- \* *Energizes selected SI train HHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER ON. MOV-0008A*
- \* *Opens HHSI hot leg injection valve. MOV-0008A*
- \* *Closes HHSI cold leg injection valve. MOV-0006A*
- Verifies hot leg injection flow on FI-0917.*
- De-energizes selected SI train HHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER OFF. MOV-0008A*

**Comment:**

\* - Items marked with an "\*" are the critical portion of the step.

**Cue:**

Energize MOV-0008A: PWR LOCKOUT: Initially - Green Light LIT, Finally - Red Light LIT

VPI: Initially and Finally - Green Light LIT

INJ: Initially - both lights NOT LIT, Finally - Green light LIT

Open MOV-0008A: VPI and INJ: Initially - Green Light LIT, Finally - Red Light LIT

Close MOV-0006A: Initially - Red Light LIT, Finally - Green Light LIT

Verify Flow: 1500 gpm on FI-0917 for Loop A T<sub>H</sub>  
(0 gpm on FI-0901 for Loop A T<sub>C</sub>)

Deenergize MOV-0008A: PWR LOCKOUT: Initially - Red Light LIT, Finally - Green Light LIT

VPI: Initially and Finally - Red Light LIT

INJ: Initially - Red light LIT, Finally - Both lights NOT LIT

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3(C\*)

Align the 'A' LHSI pump for Hot Leg Recirculation. (procedure step 2b)

**Standard:**

- \*      *Dispatches an operator to locally unlock and close the LHSI cold leg injection valve breaker. MOV-0031A*
- \*      *Energizes selected SI train LHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER ON. MOV-0019A*
- \*      *Opens LHSI hot leg injection valve. MOV-0019A*
- \*      *Closes LHSI cold leg injection valve. MOV-0031A*
- Verifies hot leg injection flow on FI-0927*
- De-energizes selected SI train LHSI hot leg injection valve by momentarily placing the PWR LOCKOUT switch to POWER OFF. MOV-0019A*

**Comment:**

\* - Items marked with an "\*" are the critical portion of the step.

**Cue:**

Close Breaker (MOV-0031): Initially - Both Lights NOT LIT, Finally - Red Light LIT  
As Plant Operator, report you have unlocked and closed E1A1 Breaker C3  
If requested, as Plant Operator report that E1A1 Breaker V6L is closed.

Energize MOV-0019A: PWR LOCKOUT: Initially - Green Light LIT, Finally - Red Light LIT

VPI: Initially and Finally - Green Light LIT  
INJ: Initially - Both Lights NOT LIT, Finally - Green Light LIT

Open MOV-0019A: VPI and INJ: Initially - Green Light LIT, Finally - Red Light LIT

Close MOV-0031A: Initially - Red Light LIT, Finally - Green Light LIT

Verify Flow: 2900 gpm on FI-0927 for Loop A T<sub>H</sub>  
(0 gpm on FI-0851 for Loop A T<sub>C</sub>)

Deenergize MOV-0019A: PWR LOCKOUT: Initially - Red Light LIT, Finally - Green Light LIT

VPI: Initially and Finally - Red Light LIT  
INJ: Initially - Red Light LIT, Finally - Both Lights NOT LIT

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4

Dispatch an Operator to open and lock the breakers for the following valves:

1. LHSI Pump 1A Disch to Loop 1 Cold Leg 1-SI-MOV-0031A
2. LHSI Pump 1B Disch to Loop 2 Cold Leg 1-SI-MOV-0031B
3. LHSI Pump 1C Disch to Loop 3 Cold Leg 1-SI-MOV-0031C

(procedure step 4)

**Standard:**

*A Plant Operator is dispatched to open and lock the breakers for the following valves:*

- *LHSI Pump 1A Disch to Loop 1 Cold Leg 1-SI-MOV-0031A*
- *LHSI Pump 1B Disch to Loop 2 Cold Leg 1-SI-MOV-0031B*
- *LHSI Pump 1C Disch to Loop 3 Cold Leg 1-SI-MOV-0031C*

**Comment:**

**Cue:**

As Plant Operator, acknowledge the request to open and lock the above breakers.

**Notes:**

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**- TERMINATE THE JPM -**

**Stop time** \_\_\_\_\_

VERIFICATION OF COMPLETION

Job Performance Measure: C1, TRANSFER TO HOT LEG RECIRCULATION

Performer's Name: \_\_\_\_\_

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

Time to Complete: \_\_\_\_\_

JPM Results: Sat/Unsat

Evaluator: \_\_\_\_\_

Signature: \_\_\_\_\_

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

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A large break LOCA occurred 5.5 hours ago. The control room operators have completed 0POP05-EO-EO10 and are evaluating long term plant status.

- Adverse Containment Conditions exist.
- A lockout has occurred on 4160v Bus E1C
- Only SI Trains 'A' and 'B' are operating

### **INITIATING CUE:**

The Unit Supervisor directs you to transfer SI Train 'A' to Hot Leg recirculation in accordance with 0POP05-EO-ES14, Transfer to Hot Leg Recirculation, Step 3.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE: RESPOND TO RCB HIGH RADIATION**

**JPM NO: C2**

**REVISION: 1**

**LOCATION: UNIT 1, UNIT 2, OR SIMULATOR**

**JOB PERFORMANCE MEASURE WORKSHEET**

**JPM Title:** RESPOND TO RCB HIGH RADIATION

**JPM No.:** C2

**Rev. No.:** 1

**STP Task:** T83791, Respond to High Containment Radiation

**STP Objective:** CRO 83791, Respond to High Containment Radiation per OPOP05-EO-FRZ3, Response to High Containment Radiation

**Related K/A**

**Reference:** E16 EA2.1, Ability to determine and interpret the following as they apply to the High Containment Radiation: Facility conditions and selection of appropriate procedures during abnormal and emergency conditions (2.9/3.3)

**References:** OPOP05-EO-FO05, Rev. 1, Containment Critical Safety Function Status Tree  
OPOP050-EO-FRZ3, Rev. 2, Response to High Containment Radiation

**Task Normally Completed By:** RO

**Method of Testing:** Static Performance

**Location of Testing:** Unit 1 or Unit 2 Control Room or Simulator

**Time Critical Task:** NO

**Alternate Path JPM:** NO

**Validation Time:** 10 minutes

**Required Materials (Tools/Equipment):**

- OPOP05-EO-F005, Containment Critical Safety Function Status Tree (**copies are to be in color regardless of whether the applicant is performing in the plant or simulator**)



- 0POP05-EO-FRZ3, Response to High Containment Pressure (This handout is only needed if this JPM is being performed in the plant. This handout is not needed if this JPM is being performed in the Simulator)

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

An RCS leak in excess of normal Charging capacity has occurred inside Containment. The crew has manually tripped the Reactor and initiated SI. The crew implemented 0POP05-EO-EO00, Reactor Trip or Safety Injection, then transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant (0POP05-EO-EO00, Addendum 5 is complete).

Instrument air has been restored to Containment.

**INITIATING CUE:**

The Unit Supervisor directs you to evaluate the Containment Critical Safety Function status AND take any appropriate action.

**-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-**

**COMPLETION CRITERIA:**

*Containment is verified isolated and Containment Carbon Filter Units are placed in service.*

**JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)****HANDOUTS:**

THE HANDOUT COPY OF 0POP05-EO-FO05 IS A COLOR DIAGRAM ON WHITE PAPER. THIS IS TO BE HANDED OUT WITH THE OTHER REFERENCE. THESE HANDOUTS ARE LOCATED BEHIND A SEPARATE TAB IN THE EXAMINERS BOOK.

Handout copies of:

- 0POP05-EO-F005, Containment Critical Safety Function Status Tree (copies are to be in color and a sufficient number available regardless of whether the applicant is performing in the plant or simulator)
- 0POP05-EO-FRZ3, Response to High Containment Pressure (only needed for those performing this JPM in the plant)

**NOTES:**

- 1) This JPM will be performed statically in either the Unit 1 or Unit 2 Control Room or on a static simulator.

**SIMULATOR SETUP (if applicable):**

- 1) Ensure Radio volume for both stations are set to a reasonable level.
- 2) Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.
- 3) Reset to the 100% power Storepoint and verify:
  - Step counter position annunciator light is out
  - Red light at the end of CP-010 is out
- 4) Check and clean the following procedures (JPM specific):
  - 0POP05-EO-FRZ3, Response to High Containment Pressure
- 5) Place simulator in run, Silence/acknowledge/reset alarms as necessary.
- 6) Place the simulator in FREEZE

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, ...).

**JPM START TIME** \_\_\_\_\_

**SAT / UNSAT Performance Step:** 1

Obtain a copy of 0POP05-EO-FO05, Containment Critical Safety Function Status Tree

**Standard:**

*Obtains a copy of 0POP05-EO-FO05, Containment Critical Safety Function Status Tree.*

**Comment:**

Provide the applicant with a color copy of 0POP05-EO-F005, Containment Critical Safety Function Status Tree.

**Cue:**

**Notes:**

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 2**

Containment Pressure < 56.5 psig?

**Standard:**

*Determines containment pressure is < 56.5 psig.*

**Comment:**

Applicant may check recorders on back panel CP-018 or computer indication (QDPS or ICS).

For this and other steps that involve retrieving information from a computer system the applicant should be able to actually operate the system to get to the page or point of interest. In the Unit 1 or 2 Control Rooms, the applicant should first obtain permission from the watchstander.

It will be difficult for the examiner to indicate values on the electronic recorders due their variation in scaling. All electronic recorders have digital readouts in addition to the history traces. Recommend the examiners provide these values rather than trying to point to the corresponding value on the chart portion of the recorder.

**Cue:**

If checking a computer screen display, once the applicant correctly shows where to obtain the indication, indicate the reading is 0.3 psig:

- If looking at QDPS, the value will be directly displayed on appropriate screens.
- If looking at ICS, the individual must call up a computer point that displays Containment pressure or a graphic display that has the information on it (like on QDPS).

If checking a recorder indication, use a pointing device to indicate approximately 0.3 psig.

**Notes:**  

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**

**SAT / UNSAT Performance Step:** 3

Containment Pressure < 9.5 psig?

**Standard:**

*Determines containment pressure is < 9.5 psig.*

**Comment:**

By performing the actions of JPM Step 2, the applicant will also be able to answer this procedure step.

**Cue:**

None necessary. Use the cue in JPM step 2 if the applicant wishes to re-check indications.

**Notes:**

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 4**

Containment Water Level < 69 “?”

**Standard:**

*Determines Containment Water Level is < 69”.*

**Comment:**

Applicant may check recorders on back panel CP-018 or computer indication (QDPS or ICS). Ensure applicant is looking at Wide Range (W/R) Containment level indication and NOT Containment Normal or Secondary Sump levels.

**Cue:**

If checking a computer screen display, once the applicant correctly shows where to obtain the indication, indicate the reading is 0 or “as you see it”:

- If looking at QDPS, the value will be directly displayed on appropriate screens either as a value or bar graph
- If looking at ICS, the individual must call up a computer point that displays Containment water level or a graphic display that has the information on it (like on QDPS)

**Notes:**  

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 5(C)**

Containment Radiation <  $2E+3$  R/Hr?

**Standard:**

*Determines Containment radiation >  $2E+3$  R/Hr.*

**Comment:**

There are 2 Rad Monitors that can be used to display high range doserate: RT-8050 and RT-8051. These monitors can be read on any of the following computer systems:

- RM-23
- RM-11
- QDPS
- ICS

**Cue:**

If the applicant obtains the reading from QUAL PAMS display of QDPS this is an average reading of the two monitors. Provide the following indication value:

- $3.1E+3$  R/Hr.

If the applicant obtains readings from the individual Radiation Monitors, then provide the following indications:

- RT-8050  $3E+3$  R/Hr
- RT-8051  $3.2E+3$  R/Hr

These readings are above the 'Alert' alarm setpoint for these monitors. On the RM-23 modules there will be a yellow 'Alert' alarm light ON. On the RM-11 display, the monitors' icons (blocks) will be yellow.

**Notes:**

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 6(C)**

Based on RT-8050 and RT-8051 readings, implement 0POP05-EO-FRZ3, Response to High Containment Radiation Level.

**Standard:**

*Determines radiation levels require entry into 0POP05-EO-FRZ3 and obtains a copy of 0POP05-EO-FRZ3, Response to High Containment Radiation Level.*

**Comment:**

Provide the operator with a copy of 0POP05-EO-FRZ3, Response to High Containment Radiation Level. If performed in the Simulator, applicant may use the controlled copy of the procedure in the Simulator.

**Cue:**

If the applicant seeks concurrence from the Unit Supervisor to perform FRZ3, inform him/her they have US concurrence.

**Notes:**  

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 7**

Verify Containment Atmosphere Radiation Monitor Valves closed. (Procedure step 1a)

**Standard:**

*Verifies the following Containment Atmosphere Radiation Monitor Valves are closed:*

- *MOV-0001*
- *MOV-0004*
- *MOV-0003*
- *MOV-0006*

**Comment:**

In a post-accident condition all these valves will be closed. Indications are on CP-002.

**Cue:**

For all 4 valves:

- GREEN light ON
- RED light OFF

**Notes:**  

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 8**

Verify Normal Purge Supply and Exhaust Fans stopped. (Procedure step 1b)

**Standard:**

*Verifies Normal Purge Supply and Exhaust Fans are stopped:*

Supply Fans

*SPLY FAN 11A HC-VFN007*

*SPLY FAN 11B HC-VFN008*

Exhaust Fans

*EXH FAN 11A HC-VFN009*

*EXH FAN 11B HC-VFN010*

**Comment:**

To comply with Tech Specs during power operations, the Normal Purge Supply and Exhaust fans are placed in PTL (indicating lights operable, Green light on, Red light off).

**Cue:**

RED lights OFF, GREEN lights ON for Normal Purge Supply and Exhaust Fans

Supply Fans

- SPLY FAN 11A HC-VFN007
- SPLY FAN 11B HC-VFN008

Exhaust Fans

- EXH FAN 11A HC-VFN009
- EXH FAN 11B HC-VFN010

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

### **SAT / UNSAT Performance Step: 9**

Verify Supplementary Purge Supply and Exhaust Fans stopped. (Procedure step 1c)

#### **Standard:**

*Verifies Supplementary Purge Supply and Exhaust Fans are stopped:*

#### Supply Fans

*SPLY FAN 11A HC-VFN011*  
*SPLY FAN 11B HC-VFN012*

#### Exhaust Fans

*EXH FAN 11A HC-VFN013*  
*EXH FAN 11B HC-VFN014*

#### **Comment:**

#### **Cue:**

For all the Supplementary Supply and Exhaust Fans: GREEN light ON, RED light OFF

#### Supply Fans

- SPLY FAN 11A HC-VFN011
- SPLY FAN 11B HC-VFN012

#### Exhaust Fans

- EXH FAN 11A HC-VFN013
- EXH FAN 11B HC-VFN014

#### **Notes:**

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step:** 10

Verify Purge Dampers closed. (Procedure step 1d)

**Standard:***Verifies Normal and Supplementary Purge Dampers closed.***Comment:**

This step includes checking both the Normal and Supplementary Purge Dampers. To comply with Tech Specs during power operations, the Normal Purge dampers have their supply breakers locked open (both indicating lights out).

**Cue:**

Supplementary Purge Dampers: GREEN light ON, RED light OFF

- FV-9776
- MOV-0003
- FV-9777
- MOV-0005

Normal Purge Dampers: GREEN light OFF, RED light OFF

- MOV-0007
- MOV-0008
- MOV-0009
- MOV-0010

If asked the status of F/ACT lights on Panels 22M04, 22M05 and 22M06 (above and to the right of the purge fans/valves), report that all component F/ACT lights on these panels are extinguished.

**Notes:**



**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 11**

Check Containment Air Temperature < 200 Deg. F. (Procedure step 2a)

**Standard:**

*Determines Containment Air Temperature < 200 Deg. F.*

**Comment:**

This information can be retrieved from a computer point or CP-002. There are 2 ways of obtaining the information at CP-002:

1) from the CNTMT Temp meter, TI-9681 on the very left side of CP-002

OR

2) from the RCFC Air Temp meters. There are 6 of these meters and each meter displays 2 temperatures; RCFC inlet and outlet temperature. The inlet temperature (higher reading of the 2) will be the RCB air temperature.

The meters on CP-002 are all edge-wise type meters where a pointing device can be used by the Examiner to indicate a displayed value.

**Cue:**

Containment Air Temperature reads 185 Deg. F

**Notes:**  

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 12(C)**

Start Carbon Filter Units. (Procedure step 3)

**Standard:**

*Starts one fan of each train of Carbon Filter Units by holding the selected fan in START until the associated intake and exhaust dampers indicate full open and the fan starts..*

**Comment:**

Per procedure, must hold the fan control switch in START until the associated intake and exhaust dampers open fully and then the fan starts. In actual operation this will take about 10 seconds.

Per procedure, only one fan per train shall be place in service. Train 'A' fans are Fans 11A and 12A, Train 'B' fans are 11B and 12B.

**Cue:**

Initially for each train, the intake and exhaust dampers will be closed (GREEN lights ON, RED lights OFF) and the associated fans will not be running (GREEN light ON, RED light OFF). As applicant places a fan control switch to START, the following changes should take place:

- Intake and exhaust damper RED lights come ON immediately when the fan sw. is placed in Start, then, after several seconds, GREEN lights go OFF.
- Fan lights will then change: RED comes ON and GREEN goes OFF.

The applicant should start one fan in each train, thus will see these indications twice.

- Train A - Fan 11A(21A) HC-VFN029 or Fan 12A(22A) HC-VFN030
- Train B - Fan 11B(21B) HC-VFN031 or Fan 12B(22B) HC-VFN032

If the applicant asks which fans to start, respond as the US and direct him/her to start fans 11A and 11B.

**Notes:**

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**-TERMINATE THE JPM-**



**JPM STOP TIME** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** RESPOND TO RCB HIGH RADIATION

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

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

**JPM – STUDENT HANDOUT****READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

An RCS leak in excess of normal Charging capacity has occurred inside Containment. The crew has manually tripped the Reactor and initiated SI. The crew implemented 0POP05-EO-EO00, Reactor Trip or Safety Injection, then transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant (0POP05-EO-EO00, Addendum 5 is complete).

Instrument air has been restored to Containment.

**INITIATING CUE:**

The Unit Supervisor directs you to evaluate the Containment Critical Safety Function status AND take any appropriate action.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:** **LOCALLY TRIP THE REACTOR**

**JPM NO.:** **P1**

**REVISION:** **1**

**LOCATION:** **Unit 1 or 2**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** LOCALLY TRIP THE REACTOR

**JPM No.:** P1

**Rev. No.:** 1

**STP Task:** 2600, Manually trip the reactor.

**STP Objective:** 2600, When required, manually trip the reactor.

**Related  
K/A Reference:** 002 A2.04, Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of heat sinks. (4.3/4.6)

**References:** 0POP05-EO-EO00, Rev. 21, REACTOR TRIP OR SAFETY INJECTION and 0POP05-EO-FRS1, Rev. 16, RESPONSE TO NUCLEAR POWER GENERATION - ATWS

**Task Normally  
Completed By:** PO/RO

**Method  
of Testing:** Simulated

**Location  
of Testing:** Plant

**Time  
Critical Task:** NO

**Alternate  
Path JPM:** YES

**Validation  
Time:** 15 minutes

**Required Materials (Tools/Equipment):** None

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.**

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A loss of all feedwater has occurred with the Unit operating at 100% power. The reactor did NOT automatically trip when the Steam Generator LO-LO level setpoint was reached.

### **INITIATING CUE:**

The Unit Supervisor directs you to manually trip the reactor and perform the immediate actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### **COMPLETION CRITERIA:**

*The operator has SIMULATED opening the Reactor Trip Breakers locally.*

## JOB PERFORMANCE MEASURE INFORMATION SHEET

### HANDOUTS:

None

### NOTES:

- 1) This JPM **STARTS** in the Control Room where the applicant attempts to trip the reactor (by removing power to the Rod Drive Power MG Sets).
- 2) This is an **Alternate Path** JPM due to the fact that the first attempt to trip the reactor by opening the motor generator set feeder breakers does not work as expected. The applicant must then take measures to trip the reactor by locally opening the reactor trip breakers.
- 3) The actions contained in this JPM are Immediate Actions of 0POP05-EO-EO00, Reactor Trip or Safety Injection, and 0POP05-EO-FRS1, Response to Nuclear Power Generation – ATWS. Applicable pages from these two procedures are given to the Evaluator for reference and are marked with the word ‘**KEY**’ on the pages. The applicant is **NOT** allowed to consult the procedure.

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME:**

**SAT/UNSAT Performance Step:**

1

Manually trip the reactor using both reactor trip switches.

**Standard:**

*The applicant simulates tripping the reactor using both trip switches (CP-05 and CP-07).*

**Comment:**

**Cue:**

When either RX TRIP switch is taken to the “TRIP” position, nothing occurs (reactor does not trip). Reactor trip breakers remain closed, control rods do not fall and power remains at 100%

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2

Open 480V LC 1K1 (2K1) and 1L1 (2L1) feeder breakers.

**Standard:**

*The applicant simulates opening 480V LC 1K1 (2K1) and 1L1 (2L1) feeder breakers.*

**Comment:**

The pistol grip handles for these load center breakers are painted red.

**Cue:**

- LC 1K1 (2K1) feeder breaker failed to open (red light ON, green light OFF)
- LC 1L1 (2L1) feeder breaker opens as expected (green light ON, red light OFF)
- If asked by applicant if Reactor is tripped after attempting to open breakers, inform applicant the Reactor is NOT tripped.
- If asked about inserting control rods, inform the applicant that another RO is inserting control rods.
- If questioned by the applicant, or if the applicant attempts to contact a Plant Operator, as the Unit Supervisor, direct the applicant to continue the immediate actions of OPOP05-EO-FRS1 by performing the necessary actions outside of the Control Room.

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3 (C)

Go to the Rod Control Equipment Room (60 ft EAB RM 323).

**Standard:**

*The applicant proceeds to the Rod Control Equipment Room on the 60 ft. elevation of the EAB.*

**Comment:**

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4 (C)

Open the reactor trip breakers.

**Standard:**

*The applicant SIMULATES pushing the red 'TRIP' access slot for the reactor trip breakers.*

\_\_\_\_\_ *Reactor Trip Breaker R*

\_\_\_\_\_ *Reactor Trip Breaker S*

**Comment:**

The Reactor Trip Breakers are adjacent to the Rod Drive MG Set Control Panel. On the Reactor Trip Breaker doors there is a small red 'TRIP' access slot that is inline with the manual trip push button that is behind the door and on the breaker. When this red 'TRIP' access slot is depressed it pushes the manual trip push button on the breaker which will trip the breaker open.

**DO NOT OPEN REACTOR TRIP BREAKER DOORS.** Allow the applicant to **simulate from a short distance** depressing the red 'TRIP' access slot for the breakers, then provide the cues below.

Currently in Unit 2, the word 'TRIP' is missing from the red access slot on the door of Reactor Trip Breaker S.

**Cue:**

- As the applicant simulates pushing the red 'TRIP' access slot for each breaker, inform him/her they hear the breaker operate.
- If the applicant wishes to open the doors for the trip breakers, **DO NOT OPEN REACTOR TRIP BREAKER DOORS.** Inform him/her the **RED** flag that says "**SHUT**" has dropped (is not visible) and the **GREEN** flag that says, "**OPEN**" is displayed.
- The control room reports that they have open indication and the reactor is tripped.

**Notes:**

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**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** LOCALLY TRIP THE REACTOR

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**        **Sat / Unsat**

**Evaluator:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

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

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A loss of all feedwater has occurred with the Unit operating at 100% power. The reactor did NOT automatically trip when the Steam Generator LO-LO level setpoint was reached.

### **INITIATING CUE:**

The Unit Supervisor directs you to manually trip the reactor and perform the immediate actions of POP05-EO-EO00, Reactor Trip or Safety Injection.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:** **FILL SFP FROM RWST**

**JPM NO.:** **P2**

**REVISION:** **1**

**LOCATION:** **Unit 1 or 2**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** FILL SFP FROM RWST

**JPM No.:** P2

**Rev. No.:** 1

**STP Task:** 43650, Respond to Spent Fuel Cooling and Cleanup System alarms.

**STP Objective:** 43650, When directed by the Control Room or Alarm Condition, respond as the PO to SFPCCS alarms per POP09-AN-22M2 to include: SFP Water Level HI/LO.

**Related K/A Reference:** 033 A1.01, Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with Spent Fuel Pool Cooling System operating the controls including: Spent Fuel Pool water level. (2.7/3.3)

**References:** 0POP02-FC-0001, Rev. 61, Spent Fuel Pool Cooling and Cleanup System  
TS 3.5.5, Refueling Water Storage Tank

**Task Normally Completed By:** PO

**Method of Testing:** Simulated

**Location of Testing:** Plant

**Time Critical Task:** NO

**Alternate Path JPM:** NO

**Validation Time:** 25 minutes

**Required Materials (Tools/Equipment):** None

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.**

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

A 'SFP WATER LEVEL HI/LO' alarm has been received in the Control Room. Investigation has revealed a low level condition in the Spent Fuel Pool (SFP). The 'SFP LOW LEVEL' alarm is in on Local Panel, ZLP-749. Current SFP level is 66'.

**INITIATING CUE:**

SFP boron concentration has been evaluated with Chemistry and it has been determined that the SFP needs to be filled to 66'10" from the Refueling Water Storage Tank (RWST) using 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, Section 9.3.

Plant Operator, Bob Jones, started the task but now has to be relieved to go to Fitness for Duty. Bob Jones completed up to step 9.3.4.

The Unit Supervisor requests that you go back and review the highlighted Notes and Precautions of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System and then continue the task at step 9.3.5. You have been given the wrench required to operate Reach Rod Valves per Prerequisite step 3.6.

The Unit Supervisor requests that you call the Control Room when SFP level starts to go up.

**DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*The Spent Fuel Pool is being filled from the Refueling Water Storage Tank.*



## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **HANDOUTS:**

Handout copy of POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, which consists of sections 1-4 and 9.3.

A handout copy of TS 3.5.5, Refueling Water Storage Tank, is part of this JPM but can be withheld unless asked for by the performer.

### **NOTES:**

This JPM is written so that two Plant Operators can be used for assistance at JPM step 3(C). One can be used for monitoring the SFP level and one can be used to be at the Refueling Water Purification Pump (RWPP) when it is started. This is not given in the **Initiating Cues** because it may prompt the performer prior to starting the JPM.

**If the student asks about help from other Plant Operators at the beginning of this JPM, then instruct the student that he/she must perform all steps of the procedure until instructed otherwise.**

This JPM can be performed in either Unit.

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME:**

**SAT/UNSAT Performance Step:**

1

Obtain a copy of the procedure, enter as a 'Performer and Verifier on the Procedure Performance Cover Sheet' and review highlighted Notes and Precautions.

**Standard:**

\_\_\_ *The performer obtains a copy of the procedure, enters as a 'Performer and Verifier' on the 'Procedure Performance Cover Sheet' and reviews the selected Notes and Precautions.*

\_\_\_ *The Performer circles the correct Unit on the 'Procedure Performance Cover Sheet.'*

**Comment:**

The performer may calculate if RWST level will support continuing with this JPM but it is not required as the step in the procedure is already checked as completed. (Step 9.3.1)

**Cue:**

Give the applicant the handout copy of 0POP02-FC-0001.

If asked, no Spent Fuel Assemblies are being moved in the SFP and there are no loads over the SFP.

If asked, RWST level is 498,000 gallons.

If asked, RWST boron concentration is 2910 ppm.

If asked, SFP boron concentration is 2809 ppm.

If asked, Chemistry concurs with filling SFP from RWST.

If asked, SFP Purification and RWST Purification have been secured.

**Notes:**

TS limit on SFP boron concentration is  $\geq 2500$  ppm but is normally kept at  $\geq 2800$  ppm.

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## JOB PERFORMANCE MEASURE CHECK SHEET

### **SAT/UNSAT Performance Step:**

**2 (C)**

ENSURE the following valves are OPEN: (Procedure step 9.3.5)

- 1(2)-FC-0033 “SFP PURIFICATION LOOP 1A(2A) NORMAL RETURN TO SFPCCS ISOLATION VALVE”.
- 1(2)-FC-0016A “SPENT FUEL POOL PURIFICATION LOOP 1A(2A) RETURN VALVE”.
- “RWST TO SFP CLEANUP SYS FV-3936”
- “RWST TO SFP CLEANUP SYS FV-3937”

(Procedure step 9.3.5)

### **Standard:**

\_\_\_\_\_ *\*Locates and opens FC-0033\**

\_\_\_\_\_ *\*Locates and opens FC-0016A\**

\_\_\_\_\_ *Verifies through the Control Room that FV-3936 AND FV-3937 are open.*

### **Comment:**

**\* Denotes critical portion of this JPM step.**

### **Cue:**

FC-0033: As found position – Closed (41 ft MAB Filter Row Rm 237Q)

As left position – Open

Valve FC-0033 will require the use of a wrench. Per the Initiating Cue, the proper wrench has been given to the student.

FC-0016A: As found position – Closed (36' FHB in SFPC HX Rm)

As left position – Open

In Unit 1, FC-0016A handwheel may not be on the valve. A work order has been written to repair the handwheel. Have the performer simulate that the handwheel is on the valve.

In Unit 2, poor lighting makes it hard to see tag for FC-0016A. A CR has been written for the lighting issue.

**JPM Step 2(C) is continued on the next page.**

### **JOB PERFORMANCE MEASURE CHECK SHEET**

FV-3936: As found position – Closed (10' MAB Penetration Space)  
As left position – Open

FV-3937: As found position - Closed  
As left position - Open

If the performer at anytime starts to go to the 10' MAB Penetration area to verify valve position of FV-3936 & FV-3937 locally, request that he/she radio the Control Room and have the RO verify valve position.

When contacted, as the Control Room Reactor Operator, report that FV-3936 & FV-3937 have been opened.

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3 (C)

START "N1(2)FCHS1419 RWPP 1A(2A)" (Procedure step 9.3.6).

**Standard:**

\_\_\_\_*The performer proceeds to ZLP-749 and places the handswitch for the Refueling Water Purification Pump (RWPP) in the START position.*

**Comment:**

**When the performer gets ready to start the RWPP, tell him/her that Plant Operators are ready at the SFP to monitor level and at the 10' MAB Penetration Space to monitor RWPP start. In addition the Plant Operator at the RWPP is prepared to throttle flow as needed.**

**Cue:**

If asked, the red LED light for low SFP level is illuminated on ZLP-749.

If asked, the Plant Operator at the RWPP reports that oil level in the RWPP is SAT and the pump is ready for a start.

At Local Panel ZLP-749:

Initial Condition - RWPP indication: Green light ON, red light OFF

Final Condition- RWPP indication: Red light ON, green light OFF

When asked about RWPP status, tell the performer as the Plant Operator at the RWPP that the pump is running SAT and flow is 195 gpm. (Step 9.3.7 of the procedure)

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4

Per the Initiation Cue, inform the Unit Supervisor that SFP level is slowly going up.

**Standard:**

\_\_\_ *The performer contacts the Unit Supervisor to report that SFP level is slowly going up.*

**Comment:**

The performer can call the Plant Operator at the SFP to verify level is going up or he/she can go up to the FHB 68' and do their own visual check of SFP level after starting the RWPP.

**Cue:**

If the performer calls the Plant Operator at the SFP, report back that SFP level is 66' 1/2" and slowly going up.

If the performer goes up to the FHB 68' to check SFP level, indicate that SFP level is 66' 1/2" and slowly going up.

If the performer leaves the FHB to continue with the procedure without checking SFP level, then, as the Unit Supervisor, ask the performer if SFP level is being raised.

**Notes:**

SFP level can be checked from outside the contaminated area of the SFP by checking the SFP Transfer Canal level indicator at the north end of the SFP Transfer Canal. During non-outage conditions, the SFP Transfer canal gates are removed and the SFP Transfer Canal and SFP are at the same level.

---

**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** FILL SFP FROM RWST

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**        **Sat / Unsat**

**Evaluator:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

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

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A 'SFP WATER LEVEL HI/LO' alarm has been received in the Control Room. Investigation has revealed a low level condition in the Spent Fuel Pool (SFP). The 'SFP LOW LEVEL' alarm is in on Local Panel, ZLP-749. Current SFP level is 66'.

### **INITIATING CUE:**

SFP boron concentration has been evaluated with Chemistry and it has been determined that the SFP needs to be filled to 66'10" from the Refueling Water Storage Tank (RWST) using 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System, Section 9.3.

Plant Operator, Bob Jones, started the task but now has to be relieved to go to Fitness for Duty. Bob Jones completed up to step 9.3.4.

The Unit Supervisor requests that you go back and review the highlighted Notes and Precautions of 0POP02-FC-0001, Spent Fuel Pool Cooling and Cleanup System and then continue the task at step 9.3.5. You have been given the wrench required to operate Reach Rod Valves per Prerequisite step 3.6.

The Unit Supervisor requests that you call the Control Room when SFP level starts to go up.



**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:** **PERFORM 0POP05-EO-EC00, ADDENDUM 4**

**JPM NO.:** **P3**

**REVISION:** **1**

**LOCATION:** **Unit 1 or 2**

## JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** PERFORM 0POP05-EO-EC00, ADDENDUM 4

**JPM No.:** P3

**Rev. No.:** 1

**STP Task:** 82044, Respond to a loss of all AC power condition.

**STP Objective:** 81044, Respond to a loss of all AC power condition in accordance with POP05-EO-EC00.

**Related  
K/A Reference:** 062 A4.04, Ability to manually operate and/or monitor in the control room: Local operation of breakers. (2.6/2.7)

**References:** 0POP05-EO-EC00, Rev. 21, Loss of All AC Power

**Task Normally  
Completed By:** PO

**Method  
of Testing:** Simulated

**Location  
of Testing:** Plant

**Time  
Critical Task:** NO

**Alternate  
Path JPM:** NO

**Validation  
Time:** 20 minutes

**Required Materials (Tools/Equipment):** JPM keys

## JOB PERFORMANCE MEASURE INFORMATION SHEET

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### INITIAL CONDITIONS:

A loss of all AC power event has occurred. The Control Room crew is performing the actions of 0POP05-EO-EC00, Loss of All AC Power.

### INITIATING CUE:

The Unit Supervisor directs you to perform Addendum 4, steps 1-3 of 0POP05-EO-EC00, Loss of All AC Power.

Power is expected to be restored within 3 hours.

There are no battery cells jumpered.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### COMPLETION CRITERIA:

*The operator has SIMULATED performance of steps 1-3 in Addendum 4 of 0POP05-EO-EC00, Loss of All AC Power.*

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **HANDOUTS:**

Handout copy of OPOP05-EO-EC00, Loss of All AC Power, Addendum 4.

### **NOTES:**

It will be necessary for the applicant to obtain a set of JPM keys from the Control Room Unit Supervisor for access to the rooms housing the ESF Sequencers.

This JPM includes a Student Handout of pictures to be used to simulate breaker operation.

**DO NOT OPEN SEQUENCER OR DISTRIBUTION PANEL DOORS.**

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME:**

**SAT/UNSAT Performance Step:**

1

Obtain a copy of the procedure Addendum.

**Standard:**

*The applicant obtains a copy of Addendum 4 to 0POP05-EO-EC00.*

**Comment:**

**Cue:**

Give the applicant the handout copy of 0POP05-EO-EC00, Addendum 4.

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2 (C)

Deenergize ESF Load Sequencers A, B and C. (Addendum 4, step 1)

**Standard:**

*The applicant locates the 'A' ESF Load Sequencer and describes how to open the "MAIN POWER BKR" using Student Handout #1 & #2:*

\_\_\_\_\_ A 3N091ZLP801

**Comment:**

When the performer goes to the rooms for the sequencers, have them go to Train 'A' first.

The Operator should **NOT** open the sequencer panel door.

After Train 'A' Sequencer is complete, tell the performer that other Plant Operators are completing 'B' & 'C' Trains.

**Cue:**

Breaker:

Initial position – ON/CLOSED (breaker handle UP)

Final position – OFF/OPEN (breaker handle DOWN)

**Notes:**

### **DO NOT OPEN SEQUENCER PANEL DOORS.**

Upon arrival at Train 'A' Sequencer, have the performer indicate which door would be opened (left door). Hand the performer Student Handout #1 for the Train 'A' Sequencer and have them indicate which part of the panel that the 'MAIN POWER' breaker is on. (Top, Middle or Lower - Breaker is on lower section.)

Then, using Student Handout #2, have the applicant indicate which breaker is to be manipulated and describe how the breaker is operated to turn power off to the sequencer.

The breaker handle below the "Main Power" label is pushed down to turn power off.

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3

CHECK if NSSS inverters should be deenergized. (Addendum 4, step 2)

**Standard:**

*Determines that additional action per this step is NOT required.*

**Comment:**

Per the initiating cue, the expected event duration is  $\leq 3$  hours, and there are no battery cells jumpered (normal condition).

**Cue:**

If questioned about event duration, as the Unit Supervisor, inform the applicant that the expected event duration is less than 3 hours.

If questioned about jumpered cells or if the applicant attempts to visually verify battery cell status, as the Unit Supervisor, inform the applicant that there are NO jumpered cells.

**Notes:**

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## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4 (C)

Deenergize 120 VAC NON 1E loads. (Addendum 4, step 3)

**Standard:**

*The applicant locates the breaker panels and describes how the following breakers are operated using Student Handout #3:*

\_\_\_\_\_ DP005 / BKR 25 (MN TURB TRIP CAB ZRR037)

\_\_\_\_\_ DP006 / BKR 9 (EHC CABINET PWR SUPPLY)

\_\_\_\_\_ Unit 1 - DP005 / BKR 26, Unit 2 - DP005 / BKR 28 (TURBINE SUPERVISORY CONTROL CABINET PWR SUPPLY)

\_\_\_\_\_ DP006 / BKR 13 (MN TURB EMER TRIP CAB ZRR037)

\_\_\_\_\_ DP006 / BKR 15 (REHEAT CONTROL CABINET PWR SPLY)

**Comment:**

The Operator should **NOT** open the breaker panel door.

All breakers are normally closed.

Breakers are operated by moving the red handle from the center of the panel towards the outside.

**Cue:**

All breakers:

Initial position – ON (Breaker Handle toward center of Panel)

Final position – OFF (Breaker Handle toward outside of Panel)

**Notes:**

**The use of the photograph is intended to allow the applicant to describe how these breakers are operated and NOT to determine the exact location of the breaker inside the panel.**

When performer has given indication that they are at DP-0005 and DP-0006, give them Student Handout #3 to describe how the breakers would be manipulated.

---

**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_



## VERIFICATION OF COMPLETION

**Job Performance Measure:** PERFORM 0POP05-EO-EC00, ADDENDUM 4

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**        Sat / Unsat

**Evaluator:**\_\_\_\_\_ **Signature:**\_\_\_\_\_

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

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A loss of all AC power event has occurred. The Control Room crew is performing the actions of 0POP05-EO-EC00, Loss of All AC Power.

### **INITIATING CUE:**

The Unit Supervisor directs you to perform Addendum 4, steps 1-3 of 0POP05-EO-EC00, Loss of All AC Power.

Power is expected to be restored within 3 hours.

There are no battery cells jumpered.

# STUDENT HANDOUT #1



**STUDENT HANDOUT #2**



### STUDENT HANDOUT #3



**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:**               **Monthly Control Rod Operability**

**JPM NO:**             **S1**

**REVISION:**       **1**

**LOCATION:**         **Simulator**

**JOB PERFORMANCE MEASURE WORKSHEET**

**JPM Title:** MONTHLY CONTROL ROD OPERABILITY

**JPM No.:** S1

**Rev. No.:** 1

**STP Task:** 2850, Perform Monthly Control Rod Operability Test.

**STP Objective:** 2850, Perform the Monthly Control Rod Operability Test in Accordance with 0PSP03-RS-0001.

**Related K/A Reference:** 001 A2.03, Ability to (a) predict the impacts of the following malfunction or operations on the CRDS- and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effect of stuck rod or Misaligned rod (3.5/4.2)

**References:** 0PSP03-RS-0001, Rev. 30, Monthly Control Rod Operability  
0PGP03-ZO-0042, Rev. 12, Reactivity Management Program

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Simulator

**Time Critical Task:** NO

**Alternate Path JPM:** YES

**Validation Time:** 20 minutes

**Required Materials (Tools/Equipment):** 0POP04-RS-0001, Control Rod Malfunction – Available  
0PGP03-ZO-0042, Reactivity Management Program – Student Copy with applicable sections highlighted and flagged  
Conduct of Operations Manual – Available  
Notepad to use as Control Room Log

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

Unit 1 is at 100% power, with Control Bank D at 235 steps. Corrective maintenance has been performed in the 2AC power cabinet and surveillance test 0PSP03-RS-0001, Monthly Control Rod Operability, is required as a retest for the affected Control Bank "C" following the corrective maintenance.

**INITIATING CUE:**

The Unit Supervisor directs you to perform the required portion of 0PSP03-RS-0001, Monthly Control Rod Operability for Control Bank "C" only. You will **NOT** be moving rods 6 steps in and out prior to moving at least 10 steps in any one direction (0PSP03-RS-0004, Control Rod Operability Test (Six and Ten Steps, is not required)

**-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-**

**COMPLETION CRITERIA:**

*Operator inserts Control Bank "C" at least 10 steps but not more than 20 steps and then determines that control rod K6 has dropped and performs the Immediate Actions of 0POP04-RS-0001, Control Rod Malfunction.*



## JOB PERFORMANCE MEASURE INFORMATION SHEET

### HANDOUTS:

JPM Handout copy of 0PSP03-RS-0001, Monthly Control Rod Operability, and 0PGP03-ZO-0042, Reactivity Management Program.

### NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

### SIMULATOR SETUP

- 1) JPMs S1 and S2 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Ensure a clean notepad is available for student use
- 5) Reset to IC# 215 and verify:
  - Step counter position annunciator light is out on CP-0005
  - Red light at the end of CP-010 is out.
- 6) Check and clean the following procedures (JPM specific):
  - 0POP04-RS-0001, Control Rod Malfunction
  - 0POP04-RA-0001, Radiation Monitoring System Alarm Response
  - Conduct of Operations - available
  - Clean JPM handout copy of PGP03-ZO-0042, Reactivity Management Program, with applicable sections highlighted and flagged - available
- 7) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

**JOB PERFORMANCE MEASURE INFORMATION SHEET**

8) Verify the following:

9) RT-8035 is in alarm (RM11)

INSTRUCTOR NOTE: The desired condition for the RM-11 is to have the audible alarm acknowledged and the RT-8035 icon should be red and preferably flashing. If it is not flashing, that's OK as well. Sometimes the Storepoint may not reset to a flashing alarm icon.

Check no other RM-11 alarms are in.

- FHB HVAC Exhaust Dampers Closed and in AUTO
- ICS display of rod position is called up on an RO monitor and monitor is rotated to face CP-005.
  - The screen is accessed by clicking on the “Custom Graphics” arrow, then selecting the “RS” group (may have to select “Top Level Menu” first), then selecting the “RS-001 CONTROL ROD BANK POSITIONS” screen.

10) Place the simulator in “FREEZE” until the examiners are ready to proceed.

11) Simulator Lesson Plan.

- There is no simulator lesson plan for S1 or S2

**INSTRUCTOR ACTIONS**

None

**JOB PERFORMANCE MEASURE CHECK SHEET****NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, ...).

**JPM START TIME** \_\_\_\_\_**SAT / UNSAT Performance Step: 1**

Obtain a copy of 0PSP03-RS-0001, Monthly Control Rod Operability.

**Standard:**

*Obtains 0PSP03-RS-0001, Monthly Control Rod Operability and reviews the Precautions and Notes.*

**Comment:**

Provide the applicant with the Handout copy of 0PSP03-RS-0001.

Applicant should review 0PSP03-RS-0001, Monthly Control Rod Operability, in its entirety prior to performing the test per Step 3.9 of the procedure.

Applicant should review 0POP04-RS-0001, Control Rod Malfunction, per procedure Cautions and Notes Step 3.10.

**Cue:****Notes:**  
  

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**

**SAT / UNSAT Performance Step: 2**

Ensure Prerequisites have been completed and Notes and Precautions have been read.  
(Procedure Step 5.1.1)

**Standard:**

*Ensures that Prerequisites have been completed and Precautions and Notes have been read and that Procedure Step 5.1.1 is initialed.*

**Comment:**

Pre-reqs have already been verified and signed for.

**Cue:**

If asked, inform the applicant the pre-reqs are still current.

**Notes:**

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 3**

Conduct a prejob briefing. (Procedure Step 5.1.2)

**Standard:**

*Conducts a prejob briefing including a discussion of the following and initials completion of Procedure Step 5.1.2 :*

\_\_\_\_\_ *Available Nuclear Instrumentation*

\_\_\_\_\_ *Expected Results*

\_\_\_\_\_ *Primary or backup indications of reactor power*

\_\_\_\_\_ *Reactivity Management guidelines per 0PGP03-ZO-0042, Reactivity Management Program*

\_\_\_\_\_ *Any applicable lessons learned*

**Comment:**

A prejob brief is normally conducted with all personnel involved in the surveillance test present for the brief.

Due to the nature of conducting a JPM on a one on one basis, the applicants will accomplish this as described below and the cues provided on the next page.

There is a Student Handout copy of 0PGP03-ZO-0042, Reactivity Management Program. Procedure pages that are flagged and the portions that are highlighted are the portions that have been determined to be applicable for the surveillance being performed. The applicant is free to review additional portions as desired.

Applicant should conduct a "Reactivity Briefing" at this point using the provided copy of 0PGP03-ZO-0042, Reactivity Management Program procedure. The requirements of conducting a prejob brief will be satisfied by performing a review of highlighted portions 0PGP03-ZO-0042, Reactivity Management Program procedure AND reviewing the conditions of step 5.1.2 of the surveillance procedure. The cues below provide information for these conditions.

STEP CONTINUED ON NEXT PAGE

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****Cue:**

- Provide the applicant with a highlighted copy of OPGP03-ZO-0042, Reactivity Management Program procedure. The intent of providing a highlighted copy of the procedure is to focus the applicant to the areas that are applicable to the test being performed.

The below conditions are part of the prejob brief referenced in the surveillance procedure (step 5.1.2):

- When the discussion of “Available Nuclear Instrumentation” is conducted, inform the applicant that the Excore Nuclear Instruments and Extended Range Nuclear Instruments are available and in service.
- When the discussion of “Expected Results” is conducted, inform the applicant that it is expected that Control Bank “C” is inserted the required steps per procedure and withdrawn the same number of steps.
- When the discussion of “Primary or Backup indications of reactor power” is conducted, inform the applicant that the Excore Nuclear Instruments will be the primary indication of reactor power and that loop delta T will be the backup indication of reactor power.
- When the discussion of “Reactivity Management Guidelines per OPGP03-ZO-0042, Reactivity Management Guidelines” is conducted, inform the applicant it is per the highlighted portions of the procedure.
- When the discussion of “Any applicable lessons learned” is conducted, inform the applicant that there will be no lessons learned discussed at this time.

If asked, the examiner will act in the capacity of SRO providing oversight.

**Notes:**  

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 4**

Ensure that a Control Room Logbook entry documents the commencement of this surveillance test. (Procedure Step 5.1.3)

**Standard:**

*Completes Control Room Logbook entry documenting the commencement of this surveillance test and initials for completion of Procedure Step 5.1.3.*

**Comment:**

The electronic control room logbook is not available in the simulator. A notepad will be made available to the applicant for making logbook entries.

**Cue:**

Inform the applicant that the electronic control room logbook is not available and that we will be temporarily making log entries on a notepad until the electronic control room logbook is available.

**Notes:**  

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**

**SAT / UNSAT Performance Step: 5**

Ensure that Rod Bank Groups 1 and 2 (Including Control Bank D) Step Demand, are at equal rod positions. (procedure step 5.1.4)

**Standard:**

*At a minimum, ensures that Control Bank D Rod Groups 1 and 2 Step Demand are at equal rod positions.*

**Comment:**

Only Control Bank C would be required to be checked, but the operator may verify all banks.

**Cue:**

**Notes:**

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 6**

Call up the Computer display of rod positions on the Plant Computer. (Procedure Step 5.2.1)

**Standard:**

*Calls up the Computer display of rod positions on the Plant Computer.*

**Comment:**

The display, RS-001 CONTROL ROD BANK POSITIONS, will already be up as part of the Instructor Setup. The applicant will just have to check it on the monitor facing panel CP-005.

This screen is found on the ICS computer and is accessed by clicking on the "Custom Graphics" arrow, then selecting the "RS" group (may have to select "Top Level Menu" first), then selecting the "RS-001 CONTROL ROD BANK POSITIONS" screen.

Procedure also allows use of Plant Computer Point Groups as an indication of rod positions.

**Cue:**

If the applicant doesn't recognize that this display is already available, inform him/her that it is.

If asked, 0PSP03-RS-0003, Control rod Operability (Single Rod) and 0PSP03-RS-0004, Control Rod Operability Test (Six and Ten Steps, are NOT required (procedure steps 5.2.2 and 5.2.3)

If the applicant seeks concurrence from the Unit Supervisor to begin, inform him/her that they have Unit Supervisor concurrence.

**Notes:**

Steps 5.2.2 and 5.2.3 will be NA'd. Step 5.2.4 just requires the operator to complete Table 1 while performing the rod exercise.

---

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 7 (C\*)**

Prepares to test Control Bank "C". (Procedure Step 5.2.5 and 5.2.6)

**Standard:**

*Performs the following:*

\_\_\_\_\_ \* *Selects Control Bank C on ROD BANK SEL SW (CP-0005)*

\_\_\_\_\_ *Records Control Bank C Group Step Counter Demand "As Found" Positions on Table 1. (Rod Movement Verification)*

**Comment:**

\* - Denotes the critical portion of the step.

Steps 5.2.2 and 5.2.3 will be NA'd. Step 5.2.4 just requires the operator to complete Table 1 while performing the rod exercise.

**Cue:**

If asked, 0PSP03-RS-0003, Control rod Operability (Single Rod) and 0PSP03-RS-0004, Control Rod Operability Test (Six and Ten Steps, are NOT required (procedure steps 5.2.2 and 5.2.3)

If the applicant seeks concurrence from the Unit Supervisor to begin, inform him/her that they have Unit Supervisor concurrence.

**Notes:**

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 8 (C\*)**

Insert Control Bank C. (Procedure Steps 5.2.7 through 5.2.9)

**Standard:**

*Performs the following:*

\_\_\_\_\_ *\* Inserts Control Bank "C" at least 10 steps, but not more than 20.*

\_\_\_\_\_ *Verifies DRPI and "STEP DEMAND" indications on the Plant Computer display agree with the DRPI and Group Demand indications on CP005 for each rod in Control Bank "C".*

**Comment:**

\* - Denotes the critical portion of the step.

Inserting Control Bank "C" and Verifying DRPI indicates each rod moved (Procedure Steps 5.2.7 and 5.2.8) are to be performed concurrently.

When Control Bank 'C' has been inserted 9-10 steps, Control Bank Rod K6 will drop. The next JPM step (step 9) determines the response the applicant should take regarding this dropped rod.

**Cue:****Notes:**  

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)****SAT / UNSAT Performance Step: 9 (C)**

Recognize that Control Rod K6 has dropped into the core and performs the immediate actions of 0POP04-RS-0001, Control Rod Malfunction.

**Standard:**

*Performs immediate actions for a dropped control rod:*

\_\_\_\_\_ *Ensure ROD BANK SEL switch in MANUAL*

\_\_\_\_\_ *Verifies All Rods – NO ROD MOTION*

\_\_\_\_\_ *CHECK for Dropped Rods (Checks that only one rod has dropped so a Reactor Trip is not required).*

**Comment:**

1. The applicant should immediately stop rod movement. (He/she should inform the SM as directed by the procedure Caution prior procedure step 5.2.7).
2. The entry requirements are met for entry into 0POP04-RS-0001, Control Rod Malfunction, due to dropping Control Rod K6.
3. The applicant should immediately recognize that the conditions exist for entry into 0POP04-RS-0001, Control Rod Malfunction, and perform the Immediate Actions for this procedure.
4. The Immediate Actions of 0POP04-RS-0001 are to be performed from memory.
5. *The student may not verbalize their immediate actions since some or all will be verification steps because of existing plant conditions. The examiner may have to query the student to ensure the student has considered all of the actions to take.*
6. The step for placing the ROD BANK SEL switch to MANUAL is satisfied if the switch is in any position but AUTO.

STEP CONTINUED ON NEXT PAGE

**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**

**Cue:**

- 1) As the Unit Supervisor or Shift Manager, acknowledge the report that control rod K6 has dropped and inform the applicant to perform his/her immediate actions.
- 2) If the applicant announces that he/she is performing the Immediate Actions for dropped rod, acknowledge that he/she is performing the Immediate Actions.
- 3) If after a short period of time the applicant does not perform the Immediate Actions for a dropped rod, as the SM/US direct the applicant to:

“Perform the Immediate Actions of 0POP04-RS-0001, Control Rod Malfunction.”

**Notes:**

---

**-TERMINATE THE JPM-**

**JPM STOP TIME** \_\_\_\_\_

**VERIFICATION OF COMPLETION**

**Job Performance Measure:** MONTHLY CONTROL ROD OPERABILITY

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:**\_\_\_\_\_ **Signature:**\_\_\_\_\_

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

**JPM – STUDENT HANDOUT****READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

Unit 1 is at 100% power, with Control Bank D at 235 steps. Corrective maintenance has been performed in the 2AC power cabinet and surveillance test 0PSP03-RS-0001, Monthly Control Rod Operability, is required as a retest for the affected Control Bank "C" following the corrective maintenance.

**INITIATING CUE:**

The Unit Supervisor directs you to perform the required portion of 0PSP03-RS-0001, Monthly Control Rod Operability for Control Bank "C" only. You will **NOT** be moving rods 6 steps in and out prior to moving at least 10 steps in any one direction (0PSP03-RS-0004, Control Rod Operability Test (Six and Ten Steps, is not required)

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:** Respond to FHB Rad Monitor Alarm

**JPM NO.:** S2

**REVISION:** 1

**LOCATION:** Simulator



*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**JPM Title:** Respond to FHB Rad Monitor Alarm

**JPM No.:** S2

**Rev. No:** 1

**STP Task:** T86200, Respond to Radiation Monitoring System Alarms

**STP Objective:** CRO-86203, Determine the cause of the high radiation and take corrective action

**Related K/A Reference:** 072.A3.01, Ability to monitor automatic operation of the ARM system, including: Changes in ventilation alignment. (2.9/3.1)

**References:** OPOP04-RA-0001, Radiation Monitoring System Alarm Response, Rev. 27

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Simulator

**Time Critical Task:** No

**Alternate Path JPM:** Yes

**Validation Time:** 10 min.

**Required Materials (Tools/Equipment):** None

*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

The Unit is operating at 100% power. Fuel shuffling is being performed in the Spent Fuel Pool in anticipation for receipt of new fuel.

**INITIATING CUE:**

An alarm has come in on Rad Monitor Panel RM-11. The Unit Supervisor directs you to investigate the Rad Monitor that's in an alarm condition in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response, and take appropriate action.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*Places the Fuel Handling Bldg. HVAC in Emergency Mode in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response*

*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**HANDOUTS:**

Simulator copy of 0POP04-RA-0001, Radiation Monitoring System Alarm Response

**NOTES:**

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

**SIMULATOR SETUP**

12) JPMs S1 and S2 are to run together. The following steps will set up the simulator for **BOTH** JPMs.

13) Ensure Radio volume for both stations are set to a reasonable level.

14) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

15) Ensure a clean notepad is available for student use

16) Reset to IC# 215 and verify:

- Step counter position annunciator light is out on CP-0005
- Red light at the end of CP-010 is out.

17) Check and clean the following procedures (JPM specific):

- 0POP04-RS-0001, Control Rod Malfunction
- 0POP04-RA-0001, Radiation Monitoring System Alarm Response
- Conduct of Operations - available
- Clean JPM handout copy of PGP03-ZO-0042, Reactivity Management Program, with applicable sections highlighted and flagged - available

18) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

19) Verify the following:

- RT-8035 is in alarm (RM11)  
INSTRUCTOR NOTE: The desired condition for the RM-11 is to have the audible alarm acknowledged and the RT-8035 icon should be red and preferably flashing. If it is not flashing, that's OK as well. Sometimes the Storepoint may not reset to a flashing alarm icon.  
Check no other RM-11 alarms are in.
- FHB HVAC Exhaust Dampers Closed and in AUTO
- ICS display of rod position is called up on an RO monitor and monitor is rotated to face CP-005.
  - The screen is accessed by clicking on the “Custom Graphics” arrow, then selecting the “RS” group (may have to select “Top Level Menu” first), then selecting the “RS-001 CONTROL ROD BANK POSITIONS” screen.

20) Place the simulator in “FREEZE” until the examiners are ready to proceed.

21) Simulator Lesson Plan.

- There is no simulator lesson plan for S1 or S2.

### **INSTRUCTOR ACTIONS**

None

*JOB PERFORMANCE MEASURE CHECK SHEET*

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**SAT/UNSAT Performance Step:** 1

Obtain the procedure.

**Standard:**

*Obtains a copy of 0POP04-RA-0001, Radiation Monitoring System Alarm Response.*

**Comment:**

The applicant should use the simulator copy of 0POP04-RA-0001, Radiation Monitoring System Alarm Response.

**Cue:**

If asked, another operator is performing steps in 0POP04-FH-0001, Fuel Handling Accident.

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 2 (C\*)

Investigates the alarm on the RM-11. (procedure steps 1-4)

**Standard:**

- *\*Determines RT-8035 is in alarm (Alert or High)*
- *Calls up a Trend and Status display for RT-8035*
- *\*Goes to Addendum 10 of the procedure (RT-8035 and RT-8036 FHB Response)*

\* Denotes critical portion of the step

**Comment:**

Per a procedure NOTE, the initial actions before going to Addendum 10 are considered skill of the craft and may be performed before entering the procedure.

**Cue:**

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 3 (C)

Check High alarm exists on RT-8035 or RT-8036. (addendum 10, step 1)

**Standard:**

*Determines a High Alarm exists on RT-8035*

**Comment:**

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 4 (C)

Check FHB HVAC operating in Emergency Mode. (addendum 10, step 2)

**Standard:**

*Determines FHB HVAC is NOT operating in Emergency Mode and goes to procedure Addendum 28.*

**Comment:**

The candidate will have to evaluate the FHB HVAC status on Control Room Panel CP-022 to determine the system is not operating in Emergency Mode.

**Cue:**

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 5 (C)

Open the Inlet Isolation Damper for one FHB Exhaust Filter Train to be placed in service.  
(addendum 28, step 1)

**Standard:**

*Opens FV-9549 (Train 'A') or FV-9549A (Train 'B')*

**Comment:**

- Only one Filter Train is to be placed into service per the procedure.
- Note which Train is being placed in service at this step as this information will be used to evaluate subsequent JPM steps.

**Cue:**

If asked which filter train to place in service, as the Unit Supervisor, indicate that you have no preference.

Various alarms will come in and clear on the panel where the candidate is performing procedure steps. If the student wishes to consult Annunciator Response procedures, inform him/her that can be done for any alarms still present after all steps have been completed.

**Notes:**

---

**SAT/UNSAT Performance Step:** 6

Ensure two FHB Main Exhaust Fans are running. (addendum 28, step 2)

**Standard:**

*Ensures two FHB Main Exhaust Fans are running*

**Comment:**

Two Exhaust Fans are normally in service.

**Cue:**

**Notes:**

---



*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 7 (C)

Start two FHB Exhaust Booster Fans. (addendum 28, step 3)

**Standard:**

*Starts two FHB Exhaust Booster Fans*

**Comment:**

Any two booster fans may be started.

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 8

Place the FHB Exhaust Flow Controller in Manual and manually close outlet damper for the Exhaust Filter train NOT being placed in service. (addendum 28, step 4)

**Standard:**

*Places the controller in "Manual" using the Manual/Auto button and depresses the CLOSE button until the exhaust air damper is closed for the Exhaust Train NOT being placed in service.:*

- Train 'A' - HV-9507
- Train 'B' - HV-9507A

**Comment:**

The controller placed in Manual and Closed should be the opposite of the train whose Inlet Isolation Damper was opened in JPM step 5.

**Cue:**

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 9 (C)

Place the FHB Exhaust Filter Train Outlet Damper in the AUTO after MOD position for the Exhaust Filter Train being placed in service. (addendum 28, step 5)

**Standard:**

*Places the FHB Exhaust Filter Train Outlet Damper control in the MOD position and then returns the switch to AUTO on the Exhaust Train to be placed in service:*

- Train 'A' - HV-9507
- Train 'B' - HV-9507A

**Comment:**

The FHB Exhaust Filter Train Outlet Damper should be in the same Train as JPM step 5 and the opposite train selected in JPM step 8.

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 10 (C)

Close both FHB Exhaust Filter Bypass Dampers. (addendum 28, step 6)

**Standard:**

*Closes FHB Exhaust Filter Bypass Dampers FV-9549D and FV-9549C*

**Comment:**

**Cue:**

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 11

Ensure the FHB Exhaust Air Flow Controller for the train placed in service modulating to maintain flow between 26,100 and 31,900 CFM. (addendum 28, step 7)

**Standard:**

*Determines the FHB Exhaust Air Flow Controller on the train that is in service is controlling 26,100 – 31,900 cfm.*

- Train 'A' - HV-9507
- Train 'B' - HV-9507A

**Comment:**

This should be the same train placed in service in JPM steps 5 and 9.

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 12

Open a Relief Damper. (addendum 28, step 8)

**Standard:**

*Opens Relief Damper FV-9500 or FV-9500A*

**Comment:**

Either damper may be opened

**Cue:**

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 13

Verify all FHB Main Supply Fans stopped. (addendum 28, step 9)

**Standard:**

*Verifies all FHB Main Supply Fans are stopped*

**Comment:**

These fans should have automatically stopped when a relief damper was opened in JPM step 12.

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 14

Ensure all FHB Main Supply Fan Inlet Isolation Dampers closed. (addendum 28, step 10)

**Standard:**

*Ensures FHB Main Supply Fan Inlet Isolation Dampers are closed:*

- *FV-9510/9510A*
- *FV-9520/9520A*
- *FV-9530/9530A*

**Comment:**

**Cue:**

**Notes:**

---

**- TERMINATE THE JPM -**

**JPM STOP TIME** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** RESPOND TO FHB RAD MONITOR ALARM

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

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

## **JPM – STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION:** Do not operate or alter equipment configuration in the plant without proper authorization.

### **INITIAL CONDITIONS:**

The Unit is operating at 100% power. Fuel shuffling is being performed in the Spent Fuel Pool in anticipation for receipt of new fuel.

### **INITIATING CUE:**

An alarm has come in on Rad Monitor Panel RM-11. The Unit Supervisor directs you to investigate the Rad Monitor that's in an alarm condition in accordance with OPOP04-RA-0001, Radiation Monitoring System Alarm Response, and take appropriate action.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:** **ISOLATE SI ACCUMULATORS**

**JPM NO.:** **S3**

**REVISION:** **1**

**LOCATION:** **SIMULATOR**

## JOB PERFORMANCE MEASURE INFORMATION SHEET

**JPM Title:** ISOLATE SI ACCUMULATORS

**JPM No.:** S3

**Rev. No:** 1

**STP Task:** T81063, Respond to a LOCA Involving a Break Size in Which Reactor Coolant System Pressure Remains Above High Head Safety Injection Pump Shutoff Head.

**STP Objective:** CRO81063, Respond to a LOCA Involving a Break Size in Which Reactor Coolant System Pressure Remains Above High Head Safety Injection Pump Shutoff Head per POP05-EO-EO10.

**Related K/A Reference:** 006 A4.02, Ability to manually operate and/or monitor in the control room: Valves. (4.0/3.8)

**References:** 0POP03-ZG-0007, Plant Cooldown Rev 62  
0POP02-SI-0001, Safety Injection Accumulators Rev 31

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Simulator

**Time Critical Task:** NO

**Alternate Path JPM:** YES

**Validation Time:** 15 minutes

**Required Materials (Tools/Equipment):** None



## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.**

**CAUTION:** Do not operate or alter equipment configuration in the plant without proper authorization.

### **INITIAL CONDITIONS:**

A plant cooldown is in progress. The Unit is in Mode 3 with RCS Temperature between 440°F and 450°F. RCS Pressure is between 900 and 1000 psig. Steps of OPOP03-ZG-0007, Plant Cooldown have been completed through Step 5.37.

### **INITIATING CUE:**

The Unit Supervisor directs you to CLOSE Safety Injection Accumulator Discharge Valves in accordance with OPOP03-ZG-0007, Plant Cooldown, Step 5.38.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

### **COMPLETION CRITERIA:**

**Safety Injection Accumulator Discharge Valves MOV-0039A and MOV-0039B are closed.**

*Safety Injection Accumulator IC venting is in progress.*

## **JOB PERFORMANCE MEASURE INFORMATION SHEET**

### **HANDOUTS:**

- None, the applicant will use the simulator copies of required procedures.

### **NOTES:**

- 1) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (NO Indication type Cues are provided).

### **SIMULATOR SETUP:**

- 1) JPMs S3 and S4 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 2) Ensure Radio volume for both stations are set to a reasonable level.
- 3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 4) Reset to IC #216 and verify:
  - Step counter position Annunciator light is out
  - Red light at the end of CP-010 is out
- 5) Check and clean the following procedures (JPM specific):
  - 0POP03-ZG-0007, Plant Cooldown
  - 0POP02-SI-0001, Safety Injection Accumulators
  - 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup
- 6) Ensure the breaker control sw. target flags agree with breaker positions on CP-003 and CP-010.
- 7) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.
- 8) Place the simulator in 'FREEZE' until the examiners are ready to proceed.
- 9) There is no simulator lesson for S3 or S4.

### **INSTRUCTOR ACTIONS:**

None

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

*JPM START TIME* \_\_\_\_\_

**SAT/UNSAT Performance Step:**                      **1**

Obtain a copy of 0POP03-ZG-0007, Plant Cooldown and transition to Step 5.38.

**Standard:**

Obtains a copy of 0POP03-ZG-0007, Plant Cooldown and transitions to Step 5.38, close safety injection accumulator discharge valves.

**Comment:**

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The applicant may choose to review the notes and precautions again, however it is intended that he/she transition to Step 5.38 as quickly as possible for time considerations. Provide cues as necessary to ensure this occurs.

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 2(C)

CLOSE accumulator discharge valve breakers using the power lockout switches:

- ACC 1A PWR LOCKOUT MOV-0039A
- ACC 1B PWR LOCKOUT MOV-0039B
- ACC 1C PWR LOCKOUT MOV-0039C

(POP03-ZG-0007, step 5.38.1)

**Standard:**

Closes the Accumulator Discharge Valve Breakers by momentarily taking the Accumulator Power

Lockout Switches to the Power On position:

\_\_\_\_\_ ACC 1A PWR LOCKOUT MOV-0039A

\_\_\_\_\_ ACC 1B PWR LOCKOUT MOV-0039B

\_\_\_\_\_ ACC 1C PWR LOCKOUT MOV-0039C

**Comment:**

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3(C)

Close accumulator discharge valves (POP03-ZG-0007, Step 5.38.2)

- ACC 1A DISCH ISOL MOV-0039A
- ACC 1B DISCH ISOL MOV-0039B
- ACC 1C DISCH ISOL MOV-0039C

**Standard:**

Closes the Accumulator Discharge Valve by momentarily taking the Accumulator Discharge Isolation Valve Switches to the close position:

\_\_\_\_\_ ACC 1A DISCHARGE ISOL MOV-0039A\*

\_\_\_\_\_ ACC 1B DISCHARGE ISOL MOV-0039B\*

\_\_\_\_\_ ACC 1C DISCHARGE ISOL MOV-0039C (Fails to close)

\* Denotes critical portion of step

**Comment:**

Accumulator 1C Discharge Isolation Valve MOV-0039C will fail to close. Applicant should inform the Unit Supervisor that MOV-0039C has failed to close.

The Accumulator Outlet Valves have 2 sets of position lights, one set above the other on the Control Board. The motor controllers for the valves are normally de-energized once the valves have been positioned, therefore one set of position lights (the lower set) is not functional unless power is available to the motor controller. The other set is always energized thereby providing valve position indication even when the motor controller is de-energized. The motor controllers each have a Power Lockout Sw. located above the sets of position indication lights that is used to energize or de-energize the respective motor controller. The Power Lockout Sw. have their own set of lights for indicating the position of the MCC breaker to the motor controller. When a Power Lockout Sw. is placed to the POWER ON position, the MCC supply breaker to the respective motor controller closes to energize the motor controller to allow operation of the valve from the Control Room. The position light for the Power Lockout Sw. will now be red.

**Cue:**

If asked, as the Unit Supervisor direct the operator to attempt to close MOV-0039C

When informed by the applicant that MOV-0039C has failed to close, as Unit Supervisor inform him/her

to vent Accumulator 1C in accordance with 0POP02-SI-0001, Safety Injection Accumulators.

If the applicant requests to open Accumulator 1A, 1B, or 1C Discharge Isolation Valve Breakers by taking their Power Lockout Switches to POWER OFF, as Unit Supervisor, inform him/her that you concur.

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 4

Verify Prerequisites and review Notes and Precautions for OPOP02-SI-0001, Safety Injection Accumulators. (POP02-SI-0001, sections 3 and 4) and transition to procedure section 8.0

**Standard:**

- *Verifies Prerequisites section 3.0*
- *Reviews Section 4.0, Notes and Precautions*
- *Transitions to procedure section 8.0*

**Comment:**

**Cue:**

- If asked about procedure prerequisites, as Unit Supervisor, inform the applicant that Prerequisites 3.1, 3.2 and 3.3 are satisfied. Prerequisite 3.4 is not applicable for this evolution.

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 5

Establish/verify conditions in containment for venting. (POP02-SI-0001, Step 8.1)

**Standard:**

- *Dispatches an operator to ensure the local area is clear of personnel not involved in the activity. (Step 8.1.2)*
- *Stations an operator/Safety Rep in the area with an oxygen monitor. (Step 8.1.3)*
- *Simulates a Plant announcement stating “Venting the Safety Injection Accumulators. (Step 8.1.4)*

**Comment:**

**Cue:**

- If asked about the need for placing Normal or Supplementary Purge in service or starting additional RCFCs, as Unit Supervisor, inform the applicant that supplemental purge is in service and starting additional RCFCs is not necessary for the venting of one accumulator.
- If asked about personnel in containment, as the Unit Supervisor, inform the applicant that there are numerous workers in containment.
- If asked about installation of an elbow downstream of the vent valve, as Unit Supervisor, inform the applicant that the use of an elbow is not necessary.
- When dispatched, as Plant Operator, inform the applicant that you are stationed with an oxygen monitor and the area is clear of personnel.
- **Do not allow applicant to make an actual PA announcement.** When applicant indicates that they would make a PA announcement informing personnel to stand clear of Safety Injection Accumulator 1C, inform him/her that the announcement has been made and personnel have been informed of Safety Injection Accumulator 1C venting.

**Notes:**

---



## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 6

MONITOR Accumulator pressure for Safety Injection Accumulator 1C:

- ACC 1C PRESS 1-SI-PI-0964/0965

(POP02-SI-0001, Step 8.2)

**Standard:**

Monitors Safety Injection Accumulator Pressure on pressure indicators PI-0964/0965.

**Comment:**

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 7(C)

OPEN the ACC 1C N2 SPLY/VENT valve PV-3928. (POP02-SI-0001, Step 8.3)

**Standard:**

**Opens ACC 1C N2 SPLY/VENT valve PV-3928.**

**Comment:**

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 8(C)

OPEN a header vent valve to establish desired venting rate. (POP02-SI-0001, Step 8.4)

**Standard:**

Opens HDR Vent HCV-0900 or HV-0899 to start venting Safety Injection Accumulator 1C.

**Comment:**

- A procedure note states that opening HCV-0900 is preferred since it is a throttle valve.
- A considerable amount of time will be needed to completely vent Safety Injection Accumulator completely.

**Cue:**

When a pressure decrease begins on Safety Injection Accumulator 1C, as "Unit Supervisor", inform the applicant to continue with Step 5.38 of 0POP03-ZG-0007, Plant Cooldown Procedure while Safety Injection Accumulator 1C Vents.

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 9

OPEN accumulator discharge valve breakers using the power lockout switches:

- ACC 1A PWR LOCKOUT MOV-0039A
- ACC 1B PWR LOCKOUT MOV-0039B
- ACC 1C PWR LOCKOUT MOV-0039C

(POP03-ZG-0007, Step 5.38.3)

**Standard:**

Opens the Accumulator Discharge Valve Breakers by momentarily taking the Accumulator Power

Lockout Switches to the Power Off position:

\_\_\_\_\_ ACC 1A PWR LOCKOUT MOV-0039A

\_\_\_\_\_ ACC 1B PWR LOCKOUT MOV-0039B

\_\_\_\_\_ ACC 1C PWR LOCKOUT MOV-0039C

**Comment:**

This step may have been performed earlier (see JPM step 3 cues).

**Cue:**

If applicant questions whether he/she should de-energize 1C Accumulator Discharge Isolation Valve, as Unit Supervisor inform him/her to do so.

**Notes:**

---

**- TERMINATE THE JPM -**

*JPM STOP TIME*\_\_\_\_\_

**VERIFICATION OF COMPLETION**

**Job Performance Measure: ISOLATE SI ACCUMULATORS**

**Applicant's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**            **Sat / Unsat**

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

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

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

## **JPM STUDENT HANDOUT**

### **READ TO PERFORMER:**

**The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.**

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.**

**CAUTION:** Do not operate or alter equipment configuration in the plant without proper authorization.

### **INITIAL CONDITIONS:**

A plant cooldown is in progress. The Unit is in Mode 3 with RCS Temperature between 440°F and 450°F. RCS Pressure is between 900 and 1000 psig. Steps of 0POP03-ZG-0007, Plant Cooldown have been completed through Step 5.37.

### **INITIATING CUE:**

The Unit Supervisor directs you to CLOSE Safety Injection Accumulator Discharge Valves in accordance with 0POP03-ZG-0007, Plant Cooldown, Step 5.38.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:**               **ROLL 13.8 KV ELECTRICAL BUSES**

**JPM NO:**            **S4**

**REVISION:**       **1**

**LOCATION:**         **SIMULATOR**

### JOB PERFORMANCE MEASURE WORKSHEET

**JPM Title:** ROLL 13.8 KV ELECTRICAL BUSES

**JPM No.:** S4

**Rev. No.:** 1

**STP Task:** 62800, Shift Auxiliary Busses between the Unit Aux XFMR and the Standby XFMR.

**STP Objective:** 62800, Shift Auxiliary Busses between the Unit Aux XFMR and the Standby XFMR per POP02-AE-0002.

**Related K/A**

**Reference:** 062 A4.07, Ability to manually operate and/or monitor in the control room: Synchronizing and paralleling of different AC supplies. (3.1/3.1)

**References:** 0POP02-AE-0002, Rev 33, Transformer Normal Breaker and Switch Lineup

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Simulator

**Time Critical Task:** NO

**Alternate Path JPM:** NO

**Validation Time:** 15 minutes

**Required Materials (Tools/Equipment):** None



## JOB PERFORMANCE MEASURE INFORMATION SHEET

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

**YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.**

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### INITIAL CONDITIONS:

A plant shutdown is in progress. The Unit is in Mode 3 with RCS Temperature at approximately 445 °F and RCS Pressure at approximately 950 psig.

### INITIATING CUE:

In preparation for a main transformer outage, the Unit Supervisor directs you to Transfer the 13.8 KV Buses to the Standby Transformers in accordance with Section 17.0 of 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup. The Prerequisites of 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup have been verified.

**-DO NOT DISCLOSE INFORMATION BELOW THIS LINE-**

### COMPLETION CRITERIA:

*Performs the following 13.8 KV bus transfers without causing an automatic breaker actuation:*

- *13.8 KV Aux Bus 1F and 13.8 KV STBY Bus 1F from the UAT to STBY XFMR 1*
- *13.8 KV Aux Bus 1G from the UAT to STBY XFMR 1*
- *13.8 KV Aux Bus 1H and 13.8 KV STBY Bus 1H from the UAT to STBY XFMR 2*
- *13.8 KV Aux Bus 1J from the UAT to STBY XFMR 2*

**JOB PERFORMANCE MEASURE INFORMATION SHEET****HANDOUTS:**

Signed procedure Addendum 4.

**NOTES:**

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

**SIMULATOR SETUP:**

- 10) JPMs S3 and S4 are to run together. The following steps will set up the simulator for **BOTH** JPMs.
- 11) Ensure Radio volume for both stations are set to a reasonable level.
- 12) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 13) Reset to IC #216 and verify:
  - Step counter position Annunciator light is out
  - Red light at the end of CP-010 is out
- 14) Check and clean the following procedures (JPM specific):
  - OPOP03-ZG-0007, Plant Cooldown
  - OPOP02-SI-0001, Safety Injection Accumulators
  - OPOP02-AE-0002, Transformer Normal Breaker and Switch Lineup
- 15) Ensure the breaker control sw. target flags agree with breaker positions on CP-003 and CP-010.
- 16) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.
- 17) Place the simulator in 'FREEZE' until the examiners are ready to proceed.
- 18) There is no simulator lesson for S3 or S4.

## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, ...).

**JPM START TIME** \_\_\_\_\_

**SAT / UNSAT Performance Step:** 1

Obtain a copy of 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup, and transitions to Section 17.0.

**Standard:**

*Obtains a copy of 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup, and transitions to Section 17.0, Transferring 13.8 KV Bus Power.*

**Comment:**

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The applicant should review the Notes and Precautions.

**Cue:**

If applicant seeks US approval to proceed, inform the applicant that they have permission to proceed.

**Notes:**

---

**JOB PERFORMANCE MEASURE CHECK SHEET****SAT / UNSAT Performance Step:** 2

IF transferring 13.8 KV AUX Buses to STBY XFMRs while preparing to close the Main Generator Breaker, THEN ENSURE at least one 13.8 KV motor on Aux bus 1G secured. (Procedure step 17.1)

**Standard:**

*NA's this step since we are not preparing to close the main generator breaker.*

**Comment:**

A procedure note prior to Step 17.1 stipulates that at least one 13.8 kV motor on Aux Bus 1G SHALL be secured for alternate lineups. The applicant should verify that at least one 13.8 kV motor supplied from Aux Bus 1G is secured (not running). There are at least 3 motor loads from Aux Bus 1G that are not running: an RCP, a Condensate Pump and a Circ Water Pump

**Cue:****Notes:**

---

**SAT / UNSAT Performance Step:** 3

IF transferring 13.8 KV AUX Buses to STBY XFMRs while preparing to close the Main Generator Breaker, THEN COMPLETE Addendum 5 or Addendum 7 and GO TO Step 17.6. (Procedure step 17.2).

**Standard:**

*NA's this step since we are not preparing to close the main generator breaker.*

**Comment:****Cue:****Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT / UNSAT Performance Step:** 4

IF returning 13.8 KV AUX Buses to AUX XFMR after closing the Main Generator Breaker, THEN COMPLETE Addendum 6 or Addendum 8 and GO TO Step 17.6. (Procedure step 17.3).

**Standard:**

*NA's this step since we are not preparing to close the main generator breaker.*

**Comment:**

**Cue:**

**Notes:**

---

**SAT / UNSAT Performance Step:** 5

Obtain and complete form as shown in Addendum 4 (Procedure step 17.4, 17.5 and 17.6)

**Standard:**

*Obtains a completed Addendum 4 and ensure the Unit Supervisor has reviewed and given permission to perform the breaker manipulation.*

**Comment:**

The Unit Supervisor signature at the bottom of Addendum 4 is evidence that the Addendum has been reviewed and permission granted for the manipulation.

**Cue:**

Provide the applicant with the completed Addendum 4 attached to this JPM if not yet done.

**Notes:**

---

**JOB PERFORMANCE MEASURE CHECK SHEET****SAT / UNSAT Performance Step:            6 (C)**

Perform the breaker manipulations for transferring the 1F Aux Bus and Standby Bus from the UAT to the STBY XFMR #1. (Procedure Step 17.7)

**Standard:**

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 1	“SPLY BKR SYNC SW ST-0120”	ON
_____ Step 2	“STBY XFMR 1 TO STBY BUS 1F SPLY ST-0120”	CLOSED
_____ Step 3	“UAT TO AUX BUS 1F SPLY P-0120”	OPEN
_____ Step 4	“SPLY BKR SYNC SW ST-0120”	OFF

**Comment:**

As the applicant performs breaker operations for this and subsequent steps he/she should check current meters as breakers are operated as a backup indication that the breakers are operating as expected. For example, using the above steps, when breaker ST-0120 is closed the current for the UAT supply will lower and the current for the STBY XFMR supply will rise. Then, when breaker P-0120 is opened, the current for the UAT supply will go to zero and the current for the STBY XFMR supply will rise further.

If the supply breaker from the UAT is not opened within 15 seconds of closing the STBY XFMR 1 to STBY BUS 1F SPLY breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the 1F bus-tie breaker trips. If any breaker automatically trips, the student will fail to meet the requirements of this step.

**Cue:****Notes:**  
  

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**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**

**SAT / UNSAT Performance Step:**            7 (C)

Perform the breaker manipulations for transferring the 1G Aux Bus from the UAT to the STBY XFMR #1. (Procedure Step 17.7)

**Standard:**

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 5	"TIE BKR SYNC SW T-0140"	ON
_____ Step 6	"AUX TO STBY BUS 1G TIE BKR T-0140"	CLOSED
_____ Step 7	"UAT TO AUX BUS 1G SPLY P-0140"	OPEN
_____ Step 8	"TIE BKR SYNC SW T-0140"	OFF

**Comment:**

**Cue:**

**Notes:**

If the supply breaker from the UAT is not opened within 15 seconds of closing the AUX TO STBY Bus 1G Tie Breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the 1G bus-tie breaker trips. If any breaker automatically trips, the student will fail to meet the requirements of this step.

---

## JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)

**SAT / UNSAT Performance Step:** 8 (C)

Perform the breaker manipulations for transferring the 1H Aux Bus and Standby Bus from the UAT to the STBY XFMR #2. (Procedure Step 17.7)

**Standard:**

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 9	<i>“SPLY BKR SYNC SW ST-0150”</i>	<i>ON</i>
_____ Step 10	<i>“STBY XFMR 2 TO STBY BUS 1H SPLY ST-0150”</i>	<i>CLOSED</i>
_____ Step 11	<i>“UAT TO AUX BUS 1H SPLY P-0130”</i>	<i>OPEN</i>
_____ Step 12	<i>“SPLY BKR SYNC SW ST-0150”</i>	<i>OFF</i>

**Comment:**

**Cue:**

**Notes:**

If the supply breaker from the UAT is not opened within 15 seconds of closing the STBY XFMR 2 to STBY Bus 1H SPLY breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the UAT to Aux Bus 1H SPLY breaker will trip. If any breaker automatically trips, the student will fail to meet the requirements of this step.

---



**JOB PERFORMANCE MEASURE CHECK SHEET (cont'd)**

**SAT / UNSAT Performance Step:** 9 (C)

Perform the breaker manipulations for transferring the 1J Aux Bus from the UAT to the STBY XFMR #2.  
(Procedure Step 17.7)

**Standard:**

*Performs the following steps on Addendum 5 **IN SEQUENCE**:*

_____ Step 13 “SPLY BKR SYNC SW ST-0190”	ON
_____ Step 14 “STBY XFMR 2 TO AUX BUS 1J SPLY ST-0190”	CLOSED
_____ Step 15 “UAT TO AUX BUS 1J SPLY P-0150”	OPEN
_____ Step 16 “SPLY BKR SYNC SW ST-0190”	OFF

**Comment:**

**Cue:**

**Notes:**

If the supply breaker from the UAT is not opened within 15 seconds of closing the STBY XFMR 2 to STBY Bus 1J SPLY breaker, a 13KV BUS BKR PARALLELED alarm will annunciate. After 30 seconds, the UAT to Aux Bus 1J SPLY breaker will trip. If any breaker automatically trips, the student will fail to meet the requirements of this step.

---

**-TERMINATE THE JPM-**

**JPM STOP TIME**\_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** ROLL 13.8 KV ELECTRICAL BUSES

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

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

# JPM USE ONLY

	<b>OPOP02-AE-0002</b>	<b>Rev. 33</b>	Page 46 of 96
<b>Transformer Normal Breaker and Switch Lineup</b>			
Addendum 4	Transferring 13.8 KV Bus Power Supply Checklist		Page 3 of 3

## Transferring 13.8 KV Bus Power Supply Checklist

DATE: Today

### TYPICAL

EVOLUTION	<i>Transferring 13.8 KV AUX Buses to Standby XFMRs</i>	
STEP NUMBER	BREAKER	FINAL POSITION
1	"SPLY BKR SYNC SW ST-0120"	ON
2	"STBY XFMR 1 TO STBY BUS 1F SPLY ST-0120"	CLOSED
3	"UAT TO AUX BUS 1F SPLY P-0120"	OPEN
4	"SPLY BKR SYNC SW ST-0120"	OFF
5	"TIE BKR SYNC SW T-0140"	ON
6	"AUX TO STBY BUS 1G TIE BKR T-0140"	CLOSED
7	"UAT TO AUX BUS 1G SPLY P-0140"	OPEN
8	"TIE BKR SYNC SW ST-0140"	OFF
9	"SPLY BKR SYNC SW ST-0150"	ON
10	"STBY XFMR 2 TO STBY BUS 1H SPLY ST-0150"	CLOSED
11	"UAT TO AUX BUS 1H SPLY P-0130"	OPEN
12	"SPLY BKR SYNC SW ST-0150"	OFF
13	"SPLY BKR SYNC SW ST-0190"	ON
14	"STBY XFMR 2 TO AUX BUS 1J SPLY ST-0190"	CLOSED
15	"UAT TO AUX BUS 1J SPLY P-0150"	OPEN
16	"SPLY BKR SYNC SW ST-0190"	OFF

REVIEWED BY : Billy Herzog  
Unit Supervisor

Today / Now  
Date / Time

No Retention Required

## **JPM – STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A plant shutdown is in progress. The Unit is in Mode 3 with RCS Temperature at approximately 445 °F and RCS Pressure at approximately 950 psig.

### **INITIATING CUE:**

In preparation for a main transformer outage, the Unit Supervisor directs you to Transfer the 13.8 KV Buses to the Standby Transformers in accordance with Section 17.0 of 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup and the provided Addendum 4. The Prerequisites of 0POP02-AE-0002, Transformer Normal Breaker and Switch Lineup have been verified.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:**       **Transfer MFW from MFRV to LPFRV**

**JPM NO.:**       **S5**

**REVISION:**       **1**

**LOCATION:**       **SIMULATOR**

*JOB PERFORMANCE MEASURE WORKSHEET*  
**SOUTH TEXAS PROJECT**

**JPM Title:** XFER MFW FROM MFRV TO LPFRV

**JPM No.:** S5

**Rev. No:** 1

**STP Task:** 20950 - Place the Low Power Feed Reg Valves in auto.

**STP Objective:** 20950 - Place the Low Power Feed Reg Valves in auto so that the Steam Generator levels are being controlled at their normal operating levels in accordance with POP03-ZG-0005 or POP03-ZG-0006

**Related K/A Reference:** 059 A4.03, Ability to manually operate and monitor in the control room: Feedwater control during power increase and decrease (2.9/2.9).

**References:** 0POP03-ZG-0006, Rev. 45, Plant Shutdown From 100% to Hot Standby

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Simulator

**Time Critical Task:** NO

**Alternate Path JPM:** NO

**Validation Time:** 15 minutes

**Required Materials (Tools/Equipment):**

None

*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

A plant shutdown is in progress per 0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

- Reactor power is at ~15%.
- The Turbine is on the grid and the Startup Feedwater Pump is in service.

**INITIATING CUE:**

The Unit Supervisor directs you to transfer Steam Generator water level control **from the Main Feedwater Regulating Valve to the Low Power Feedwater Regulating Valve** for 'A' Steam Generator in accordance with Addendum 8 of 0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*Steam Generator 'A' water level control has been transferred to the low power feedwater regulating valve in accordance with 0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.*

## *JOB PERFORMANCE MEASURE INFORMATION SHEET*

### **HANDOUTS:**

None, the applicant is expected to use the simulator copy of the procedure.

### **NOTES:**

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. NO indication type cues are provided.

### **SIMULATOR SETUP:**

JPMs S5 and S6 are to be run together. The following steps will set up the simulator for **BOTH** JPMs:

- 1) Ensure Radio volume for both stations are set to a reasonable level.
- 2) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 3) Reset to IC #217 and verify:
  - Step Counter position annunciator light on CP-005 is out.
  - Red Light at the end of CP-010 is out.
  - ICS Annunciators have stopped counting up.
  - Target flag for DG # 11 Output Breaker matches breaker position (open)
  - 'B' Train ECW/CCW are secured
- 4) Check and clean the following procedures (JPM specific):
  - 0POP02-EW-0001, Essential Cooling Water Operations
  - 0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions
  - 0POPO3-ZG-0006, Plant Shutdown from 100% to Hot Standby.
- 5) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.
- 6) Place the simulator in "FREEZE" until the examiners are ready to proceed.
- 7) There is no Simulator Lesson Plan associated with EITHER JPM.

### **INSTRUCTOR ACTIONS**

None



## JOB PERFORMANCE MEASURE CHECK SHEET

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**SAT/UNSAT Performance Step:**

1

**Start time:** \_\_\_\_\_

Obtain the procedure.

**Standard:**

*Obtains a copy of Addendum 8 of 0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.*

**Comment:**

The applicant should use the simulator copy of 0POP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:**

2

IF SU SGFP 14 is NOT operating, THEN PERFORM the following: (Addendum 8, step 1)

- ENSURE SGFP MASTER SPEED controller in the MAN position
- ENSURE SGFP pump speed approximately 5200 rpm

**Standard:**

*Determines that SU SGFP 14 is in service and NA's this step.*

**Comment:**

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 3

ENSURE main turbine load stabilized and the SG narrow range level stabilized within the normal control band. (Addendum 8, step 2)

**Standard:**

*Verifies that main turbine load and SG levels are stable.*

**Comment:**

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 4

ENSURE the selected SG low power feedwater regulating valve (LPRV) is the MAN position. (Addendum 8, step 3)

**Standard:**

*Verifies that SG 1A "LOW PWR FCV-7151" LPRV is in manual.*

**Comment:**

Controller is in Manual when the orange MAN light at the bottom of the controller is on and the white AUTO light at the top of the controller is off.

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 5 (C)

PLACE the selected SG main feedwater regulating valve (MFRV) in the MAN position.  
(Addendum 8, step 4)

**Standard:**

*Depresses the MAN pushbutton for NORM FCV-0551.*

**Comment:**

**Cue:**

**Notes:**

---

**SAT/UNSAT Performance Step:** 6

VERIFY the selected SG feedwater flow at steady state values. (Addendum 8, step 5)

**Standard:**

*Notes SG 1A Flowrate by recording or marking flow.*

**Comment:**

Recording or marking flow is optional, but helps the operator keep track of flow changes as the transfer is done. Other methods such as grease mark on the control board flow instrument may be used (as approved by the Unit Supervisor).

**Cue:**

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 7 (C)

- Slowly THROTTLE OPEN the selected SG low power feedwater regulating valve (LPRV)  $\approx 1\%$  OR until an increase is noticed in the feedwater flow.
- Slowly THROTTLE CLOSED the selected SG main feedwater regulating valve until SG feedwater flow has returned to the steady state values observed earlier
- PERFORM these steps, UNTIL the selected SG main feedwater regulating valve (MFRV) is CLOSED

(Addendum 8, steps 6, 7, and 8)

**Standard:**

*Maintains SG 1A Feedwater flowrate approximately constant while transferring control as follows:*

\_\_\_ *Throttles open LOW PWR FV-7151 or until feed flow increase is noticed.*

\_\_\_ *Throttles closed NORM FCV-0551 until feed flow returns to initial value.*

\_\_\_ *Repeats these steps until NORM FCV-0551 is closed.*

**Comment:**

**Cue:**

If permission is requested to use 2 handed operations, as the Unit Supervisor, give permission to use 2 handed operation.

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 8 (C\*)

PLACE the selected SG low power feedwater regulating valve (LPRV) in the AUTO position and monitors for proper operation. (Addendum 8, step 9 and 10)

**Standard:**

\_\_\_ \* *Places LOW PWR FV-7151 in AUTO*

\_\_\_ *Monitors for proper operation.*

**Comment:**

\* Denotes critical portion of the step

**Cue:**

**Notes:**

---

**- TERMINATE THE JPM -**

**Stop time:** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** XFER MFW FROM MFRV TO LPFRV

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:** \_\_\_\_\_ **Signature:** \_\_\_\_\_

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

## **JPM - STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION:**            **Do not operate or alter equipment configuration in the plant without proper authorization.**

### **INITIAL CONDITIONS:**

A plant shutdown is in progress per OPOP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

- Reactor power is at ~15%.
- The Turbine is on the grid and the Startup Feedwater Pump is in service.

### **INITIATING CUE:**

The Unit Supervisor directs you to transfer Steam Generator water level control **from the Main Feedwater Regulating Valve to the Low Power Feedwater Regulating Valve** for 'A' Steam Generator in accordance with Addendum 8 of OPOP03-ZG-0006, Plant Shutdown From 100% to Hot Standby.

**NUCLEAR TRAINING DEPARTMENT**  
**OPERATING JOB PERFORMANCE MEASURE**

**TITLE:**               **RESPOND TO ECW LOW DISCHARGE PRESSURE**

**JPM NO.:**           **S6**

**REVISION:**       **1**

**LOCATION:**       **SIMULATOR**



*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**JPM Title:** RESPOND TO ECW LOW DISCHARGE PRESSURE

**JPM No.:** S6

**Rev. No:** 1

**STP Task:** T75050, Respond to ESF DG Alarms

**STP Objective:** CRO 45200, Respond to a DG Trbl Alarm

**Related K/A:** 008 A4.01, Ability to manually operate and/or monitor in the control room: CCW indications and controls. (3.3/3.1)

**References:** 0POP02-EW-0001, Essential Cooling Water Operations, Rev. 56  
0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions, Rev. 24

**Task Normally Completed By:** RO

**Method of Testing:** Actual Performance

**Location of Testing:** Simulator

**Time Critical Task:** No

**Alternate Path JPM:** Yes

**Validation Time:** 10 minutes

**Required Materials (Tools/Equipment):** None

*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.**

**INITIAL CONDITIONS:**

A plant shutdown is being performed in Unit 1 in accordance with 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby. Reactor Power is at approximately 15%

# 11 ESF Diesel Generator is running unloaded in Emergency Mode for a maintenance test run.

**INITIATING CUE:**

CCW and ECW Trains need to be shifted to accommodate upcoming maintenance. As part of this evolution, the Unit Supervisor directs you to place 'B' ECW Train in service in accordance with 0POP02-EW-0001, Essential Cooling Water Operations, Section 5.7, ECW Pump Startup For Product Lubricated Pumps.

- A major overhaul has NOT been performed on ECW Pump 'B' (fill and vent is NOT required).
- An uncoupled run on the ECW pump motor will NOT be done.

**- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -**

**COMPLETION CRITERIA:**

*#11 ESF Diesel Generator is stopped following indication of a loss of cooling water (ECW).*

*JOB PERFORMANCE MEASURE INFORMATION SHEET*

**HANDOUTS:**

None required. The student should use the procedure copy in the simulator.

**NOTES:**

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (No indication type cues are provided.)

**SIMULATOR SETUP:**

JPMs S5 and S6 are to be run together. The following steps will set up the simulator for **BOTH** JPMs:

- 6) Ensure Radio volume for both stations are set to a reasonable level.
- 7) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.
- 8) Reset to IC #217 and verify:
  - Step Counter position annunciator light on CP-005 is out.
  - Red Light at the end of CP-010 is out.
  - ICS Annunciators have stopped counting up.
  - Target flag for DG # 11 Output Breaker matches breaker position (open)
  - 'B' Train ECW/CCW are secured
- 9) Check and clean the following procedures (JPM specific):
  - 0POP02-EW-0001, Essential Cooling Water Operations
  - 0POP09-AN-02M3, Annunciator Lampbox 2M03 Response Instructions
  - 0POPO3-ZG-0006, Plant Shutdown from 100% to Hot Standby.
- 10) Place simulator in run. Silence/acknowledge /reset alarms as appropriate.
- 6) Place the simulator in "FREEZE" until the examiners are ready to proceed.
- 7) There is no Simulator Lesson Plan associated with EITHER JPM.

**INSTRUCTOR ACTIONS**

None

*JOB PERFORMANCE MEASURE CHECK SHEET*

**NOTE:**

- Critical steps are identified by (C).
- Sequenced steps are identified by (S<sub>1</sub>, S<sub>2</sub>, . . .).

**JPM START TIME** \_\_\_\_\_

**SAT/UNSAT Performance Step:** 1

Obtain a copy of 0POP02-EW-0001, Essential Cooling Water Operations.

**Standard:**

*Obtains a copy of 0POP02-EW-0001, Essential Cooling Water Operations.*

**Comment:**

The student should use the simulator copy of the procedure. No working copy will be provided by the Examiner.

The student should review Notes and Precautions.

**Cue:**

If the applicant asks if the Prerequisites are met, inform him/her that they are met.

If the applicant wants to know if applicable Tech Spec sections have been reviewed, inform him/her the Unit Supervisor has reviewed the Tech Spec.

If the applicant seeks to contact Chemistry Dept. to ensure the Chlorine Process Analyzer is aligned to a running ECW pump, respond that the Chlorine Analyzer is aligned to Train 'A'.

**Notes:**

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*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 2

If a major overhaul has been performed on an ECW Pump, THEN PERFORM' Section 9.0 for the affected ECW Pump. (procedure step 5.7.1)

**Standard:**

*Determines a major overhaul of 'B' ECW Pump has not occurred (from initial conditions) and NA's the step.*

**Comment:**

**Cue:**

If asked if a major overhaul has been done on 'B' ECW Pump, inform the applicant that there has been NO MAJOR OVERHAUL ON 'B' ECW PUMP.

**Notes:**

---

**SAT/UNSAT Performance Step:** 3

If uncoupled operations of the ECW Pump Motor is desired, THEN GO TO Addendum 2, Uncoupled Run of ECW Pump Motors. (procedure step 5.7.2)

**Standard:**

*Determines an uncoupled run will NOT be performed and NA's the step.*

**Comment:**

**Cue:**

If asked if an uncoupled run is needed, as the Unit Supervisor, inform the applicant that an uncoupled run will NOT be required.

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 4 (C)

Start the desired ECW Pump. (Procedure step 5.7.3)

**Standard:**

*Starts ECW Pump 1B.*

**Comment:**

45 seconds after the start of ECW Pump 'B', a low discharge pressure alarm will come in for ECW Pump 'A'. This is the alternate path portion of the JPM. Appropriate actions for the applicant to take begin at JPM step 9.

**Cue:**

If asked as a Plant Operator to check 'B' ECW Pump ready for start, inform the applicant that it is ready for start.

If asked as a Plant Operator to check 'B' ECW Pump after start, report it is running satisfactory.

**Notes:**

---

*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step: 5**

Performs the following to verify proper ECW Pump Operation:

- Verify associated ECW Pump discharge valve starts to open within 11 seconds after the ECW Pump starts.
- Verify the associated ECW pump discharge pressure increases to a nominal value of 45 psig (40 to 55 psig).

(Procedure step 5.7.4)

**Standard:**

- *Verifies 'B' ECW Pump discharge valve starts to open within 11 seconds after the ECW Pump starts (MOV-0137).*
- *Verify the 'B' ECW pump discharge pressure increases to a nominal value of 45 psig (40 to 55 psig).*

**Comment:**

**Cue:**

**Notes:**

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*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step: 6**

IF the ECW pump is started for maintenance (e.g. PMT, continuity check) or weekly chlorination AND will **NOT** remain running, THEN N/A Steps 5.7.6 through 5.7.8 as determined by the Unit Supervisor/Shift Manager. (Procedure step 5.7.5)

**Standard:**

*Determines the pump will remain running and NA's this step..*

**Comment:**

**Cue:**

If asked if this is a maintenance start, as the Unit Supervisor, inform the applicant that the pump will remain in service.

**Notes:**

---

**SAT/UNSAT Performance Step: 7**

Notify I&C Maintenance to perform instrument venting per Instrument Vent Lineup 23 for the ECW Train started. (Procedure step 5.7.6)

**Standard:**

*Notifies I&C Maintenance to perform instrument venting per Instrument Vent Lineup 23 for 'B' ECW Train.*

**Comment:**

**Cue:**

When asked to perform the venting lineup for 'B' ECW Train, report that it is complete.

**Notes:**

---



*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step:** 8

When I&C Maintenance has completed Instrument Vent Lineup 23, then verify flow to the following components is within the specified range for the ECW Train started.

- CCW HX - 14,040 to 17,400 gpm (QDPS)
- STBY DG HX – 1486 to 1743 gpm (QDPS)

(Procedure step 5.7.7)

**Standard:**

*Verifies flows are within specified ranges by checking the QDPS screen for 'B' Train ECW*

**Comment:**

This is essentially the final step to placing 'B' Train ECW in service. The low discharge pressure alarm should have come in by now. Appropriate actions for the candidate to take begin at JPM step 9.

Cue:

**Notes:**

---

## JOB PERFORMANCE MEASURE CHECK SHEET

**SAT/UNSAT Performance Step:** 9

ECW PUMP 1A DISCH PRESS LO alarm annunciates.

**Standard:**

*Acknowledges and responds to the ECW PUMP 1A DISCH PRESS LO alarm by referencing the Annunciator Response procedure.*

**Comment:**

**Cue:**

- If asked about #11 Diesel Trouble alarm, as Plant Operator respond that the local alarm is 'Raw Water Pressure Low'.
- If the applicant seeks to inform the Unit Supervisor of the alarm condition, acknowledge this information as the Unit Supervisor.
- If the applicant doesn't take action for the alarm, as the Unit Supervisor, inform him/her to take appropriate action for the alarm.

**Notes:**

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*JOB PERFORMANCE MEASURE CHECK SHEET*

**SAT/UNSAT Performance Step: 10 (C\*)**

Performs the following in accordance with 0POP09-AN-02M3, Window D-7, ECW PUMP 1A DISCH PRESS LO: (POP09-AN-02M3, step 1)

If ECW header pressure decreased to less than or equal to 30 psig, then perform the following:

- Ensure the standby ECW/CCW train running
- Stop ECW Train 'A' Pump
- Place Standby DG 11 (21) "EMERG STOP" plunger in the PULL TO STOP position to prevent diesel operation without cooling water.

**Standard:**

- *Ensures the standby ECW/CCW train running*
- *Stop ECW Train A Pump*
- *\*Place Standby DG 11 "EMERG STOP" plunger in the PULL TO STOP position to prevent diesel operation without cooling water.*

\* denotes critical actions.

**Comment:**

The Diesel Generator has a trip feature of high Jacket water temperature, but this feature is bypassed when in Emergency Mode as it is on the JPM.

**Cue:**

**Notes:**

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**- TERMINATE THE JPM -**

**STOP TIME** \_\_\_\_\_

## VERIFICATION OF COMPLETION

**Job Performance Measure:** RESPOND TO ECW LOW DISCHARGE PRESSURE

**Performer's Name:** \_\_\_\_\_

**Date Performed:** \_\_\_\_\_

**Time to Complete:** \_\_\_\_\_

**JPM Results:**                      **Sat / Unsat**

**Evaluator:**\_\_\_\_\_ **Signature:**\_\_\_\_\_

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

## **JPM – STUDENT HANDOUT**

### **READ TO PERFORMER:**

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

**CAUTION:** Do not operate or alter equipment configuration in the plant without proper authorization.

### **INITIAL CONDITIONS:**

A plant shutdown is being performed in Unit 1 in accordance with 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby. Reactor Power is at approximately 15%

# 11 ESF Diesel Generator is running unloaded in Emergency Mode for a maintenance test run.

### **INITIATING CUE:**

CCW and ECW Trains need to be shifted to accommodate upcoming maintenance. As part of this evolution, the Unit Supervisor directs you to place 'B' ECW Train in service in accordance with 0POP02-EW-0001, Essential Cooling Water Operations, Section 5.7, ECW Pump Startup For Product Lubricated Pumps. A major overhaul has NOT been performed on ECW Pump 'B' (fill and vent is NOT required).



# **LOT 18 INITIAL LICENSE EXAM**

## **OPERATING TEST #1**

### **SCENARIO #1**

**Revision #1**

**Week of 09/26/2011**

# SCENARIO OUTLINE

**Facility:** STPNOC      **NRC Exam Scenario No.:** 1      **Op-Test No.:** LOT 18 NRC

**Examiners:** By separate schedule      **Operators:** By separate schedule

**Initial Conditions:** 90% Power and Stable.

**Turnover:** At step 7.52 of 0POP03-ZG-0005. Commence raising power to 98% at 10%/hr.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (R) BOP (R) SRO (N)	Raise power from 90% to 98%
2 (10 min)	11-01-02 (1) 11-01-06 (1)	BOP (C) SRO (C)	OLACW Pump #12 Trips and OLACW Pump #13 fails to auto start.
3 (20 min)	02-20-01 (1)	RO (I) SRO (I, TS)	PRZ Level Channel LT-465 fails high.
4 (30 min)	07-04-02 (1) 08-12-05 (1)	BOP (C) SRO (C)	SGFPT #12 trips and SU SGFP #14 fails to auto start.
5 (50 min)	02-13-01 (0.6)	RO (C) SRO (C, TS)	PRZ PORV leakage (isolable) after SG levels stabilize.
6 (60 min)	05-03-02 (0.25)	ALL (M)	SGTR on B Steam Generator (~250 gpm) after PORV isolated/Tech Specs addressed. <b>(CT)</b>
7 (N/A)	10-02-02 (1) 10-09-02 (1)	RO (C) BOP (C) SRO (C)	Loss of 13.8KV Standby Bus 1G and Train B Sequencer failure. (loss of standby bus occurs on RX Trip - integral) <b>(CT)</b>

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



## SCENARIO MISCELLANEOUS INFORMATION

### INSTRUCTOR NOTES:

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

### CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- CET Temperatures
- RCS Subcooling
- ECW Pump 1B Pressure
- ESF DG #12 speed
- SG 'B' NR level
- RCS Wide Range Pressure

### OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 1			
Event 1 Description: Raise Power to 98%			
Time	Position	Required Operator Actions	Notes
	SRO (continuous)	Directs the RO and BOP to commence raising power to 98% at 10% per hour.	<i>Normal evolution with no malfunctions.</i>
	RO	<p>Uses 0POP02-CV-0001, Makeup to the Reactor Coolant System to begin dilution of RCS to raise Tave.</p> <ul style="list-style-type: none"> <li>• Places the RC M/U CONT SYS ON switch to STOP.</li> <li>• Places the RC M/U CONT switch to DILUTE.</li> <li>• Ensure the TOT M/U BATCH GALLONS FY-0111B flow integrator is set for the desired # of gallons of dilution water.</li> <li>• Ensures RMW FLOW CONT FK-0111 is set for the desired flowrate.</li> <li>• Places RC M/U CONT SYS ON switch to START.</li> <li>• Verifies RMW PUMP 1A OR RMW PUMP 1B starts.</li> <li>• When the desired gallons of dilution water have been added, ensure makeup is stopped.</li> <li>• Informs the BOP operator when Tave is at a point to allow turbine load to be raised.</li> <li>• Repeats the above steps as required to control RCS Tave during the power increase.</li> <li>• Co-ordinates with the RO to raise load while maintaining Tave within prescribed limits.</li> </ul>	<i>During the brief before the scenario begins the crew will determine how they will perform the power change including amounts of dilution water to be added.</i>

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 1			
Event 1 Description: Raise Power to 98%			
Time	Position	Required Operator Actions	Notes
	BOP	<p>Sets up Main Turbine to raise load and begins raising load:</p> <ul style="list-style-type: none"> <li>• Uses the SETPOINT CONTROL ↑ PB to set a target load in the SETPOINT display.</li> <li>• Selects the desired load change rate with the LOAD RATE thumbwheel</li> <li>• When RCS Tave is at an appropriate value to commence raising load on the turbine, commences raising load by pushing the GO PB.</li> <li>• Monitors Generator Load change.</li> <li>• Co-ordinates with the RO to raise load while maintaining Tave within prescribed limits.</li> </ul>	<p><i>Manipulation of the Main Turbine controls is skill of the craft. The operator may refer to 0POP01-TM-0001, Main Turbine/Generator Operations Guidelines, as necessary.</i></p> <p><b><u>Event #2</u></b> can occur once Lead Examiner sees the crew raise Reactor Power and Main Turbine Load.</p>

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 2			
Event 2 Description: OLACW Pump #12 Trips and OLACW Pump #13 fails to auto start.			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>0POP09-AN-09M1/D3 "ACW OPEN LOOP PUMP TRIP"</li> <li>0POP09-AN-09M1/F8 "BASEMENT SHELTER PANEL TRBL"</li> </ul>	<i>Annunciators listed are not inclusive.</i>
	SRO/BOP	Determines that OLACW Pump #12 tripped and OLACW Pump #13 failed to auto start. <ul style="list-style-type: none"> <li>Manually starts OLACW Pump #13.</li> </ul>	
	SRO (continuous )	Directs actions of 0POP04-OC-0001, Loss of Open Loop Auxiliary Cooling Water, or 0POP09-AN-09M1/D3, "ACW OPEN LOOP PUMP TRIP."	<b><u>NOTE:</u></b> <i>The steps of 0POP09-AN-09M1/D3, "ACW OPEN LOOP PUMP TRIP." are similar to the steps in 0POP04-OC-0001, Loss of Open Loop Auxiliary Cooling Water, which ensure that OLACW Pump #13 is running.</i>
	SRO/BOP	Checks OLACW Pump status to determine if any OLACW Pump is running; determines OLACW Pump # 13 is running (should have been started by now).	
	BOP	Contacts Plant Operator to secure any liquid waste releases in progress.	<i>Per the turnover, no liquid releases are in progress.</i>
	BOP	MONITOR OL-ACW Pressure - GREATER THAN 68 PSIG	
	BOP	Dispatches an Operator to check the following: <ul style="list-style-type: none"> <li>Signs of OL-ACW System leakage inside Protected Area</li> <li>Seal water flow to the Circ Pumps and seal water pressure for the OLACW pumps.</li> <li>OLACW discharge strainer DP</li> <li>Cause of OLACW Pump #12 trip</li> </ul>	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 2</b>			
<b>Event 2 Description:</b> OLACW Pump #12 Trips and OLACW Pump #13 fails to auto start.			
Time	Position	Required Operator Actions	Notes
	BOP	MONITOR The designated Plant Computer Points for system temperatures to determine in any are in alarm.	<i><b>Event #3</b> can occur on signal from Lead Examiner once the crew has determined that no leakage exists in the system and that system pressures have returned to normal after the start of OLACW Pump #13.</i>
	SRO	GO TO Appropriate Plant Procedure As Directed By Shift Manager/Unit Supervisor	

### OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 3			
Event 3 Description: Controlling PZR Level Channel LT-0465 fails high. (Tech Spec)			
Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>0POP09-AN-04M8/A6 "PRZR LEVEL HI RX TRIP ALERT"</li> <li>0POP09-AN-04M8/C6 "PRZR LEVEL DEV HI B/U HTRS ON"</li> </ul>	<i>Annunciators listed are not inclusive.</i>
	SRO/RO	Determines PZR Level Channel LT-0465 failed high. Performs immediate actions of 0POP04-RP-0002: <ul style="list-style-type: none"> <li>PLACES "CHG FLOW CONT FK-0205" in Manual and controls PZR Level on Program.</li> </ul>	
	SRO (continuous)	Directs actions of 0POP04-RP-0002, Loss of Automatic Pressurizer Level Control.	<i>SRO should direct RO and BOP to stop raising RX Power if power change is still in progress..</i>
	RO	Verifies Letdown is in service.	
	RO	Checks if all Pressurizer Level Channels are operable and determines LT0465 has failed high.	
	RO	Positions the Pressurizer level control selector switch to remove failed channel from service.	<i>Selects L467/466</i>
	RO	Positions the Pressurizer level recorder selector switch to an operable channel.	
	RO	Places Pressurizer "HTR CONT GRP 1C(2C) to ON.	
	SRO	Notifies I&C to bypass or trip the Pressurizer low level for the failed channel, using plant surveillance procedure listed in procedure Addendum 4.	
	RO	Checks All Tavg Channels are operable.	
	RO/BOP	Checks Tavg is within 1.5°F of Tref. <ul style="list-style-type: none"> <li>If needed, the crew can adjust RCS Boron, Turbine Load, Steam Loads and/or Control Rod position.</li> </ul>	
	RO	Checks Pressurizer Level is > 17%	
	RO	Checks Normal Letdown is in service.	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 3 continued</b>			
<b>Event 3 Description:</b> Controlling PZR level Channel LT-0465 fails high. (Tech Spec)			
Time	Position	Required Operator Actions	Notes
	RO	Checks “CHG FLOW CONT FK-0205” – is operable.	
	RO	Checks PZR Level Controller LK-0665 is operable.	
	RO	Places PZR Level Controller LK-0665 and “CHG FLOW CONT FK-0205” In Automatic.	<i>RO will optimize both the demand signals on LK-0665 and FK-0205 prior to placing in Auto.</i>
	RO	Checks Pressurizer Level is being maintained on Pressurizer Program Level.	
	RO	Checks Excess Letdown is isolated.	
	SRO	Refers to Addendum 7 For Applicable Technical Specifications. TS 3.3.1 Item 12 Action 6 (trip bystable within 72 hours); 3.3.3.5 (NA); 3.3.3.6 (NA)	<b><i>Event #4</i></b> can occur once SRO has reviewed TS for this event.
	SRO	Initiates corrective action for failed channel.	

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 4			
Event 4 Description: SGFPT #12 Trips and SU SGFP #14 Fails to Auto Start.			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>0POP09-AN-06M4/B1 “SGFPT 12 TRIP”</li> </ul>	<i>Annunciators listed are not inclusive.</i>
	SRO/BOP	Determines that SGFPT #12 has tripped and performs required immediate actions of 0POP04-FW-0002, SGFPT Trip: <ul style="list-style-type: none"> <li>Starts Startup Feedpump</li> <li>Starts the Standby FW Booster Pump</li> </ul>	
	SRO (continuous)	Directs actions of 0POP04-FW-0002, SGFPT Trip.	
		Determines the required number of SGFPT’s are not running and performs the required immediate actions.	<i>These are the same actions listed above for necessary immediate actions.</i>
	BOP	Checks SGFP Master Controller: <ul style="list-style-type: none"> <li>Operable in Automatic</li> <li>Steam Hdr. Pressure PT-557 operable</li> <li>Feed Hdr. Pressure PT-558 operable</li> <li>Controlling Steam Flow channels operable</li> </ul>	
	BOP	Checks and determines Feedwater Flow is adequate for the current steam demand.	<i>Crew should not have to perform a down power.</i>
	BOP	Checks SGFP Recirculation Valve Status: <ul style="list-style-type: none"> <li>Valves on operating SGFPT’s will be responding automatically (likely closed at this time).</li> <li>Valve on the tripped SGFPT will be closed.</li> </ul>	
	BOP	Monitors Reactor Power and determines it’s greater than 15%.	
	BOP	Monitors SG NR Levels trending to program level.	



# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 4

**Event 4 Description:** SGFPT #12 Trips and SU SGFP #14 Fails to Auto Start.

Time	Position	Required Operator Actions	Notes
	SRO/BOP	Checks for adequate Feed to Steam DP: <ul style="list-style-type: none"> <li>DP is greater than that required from Addendum 3, OR</li> <li>SGFP Master Speed Controller at 100% demand in Auto.</li> <li>If DP is low, places the SGFPT in Manual and manually controls SGFPT speed to attain the required DP.</li> </ul>	<i>If DP is slightly low, the US may not take the SGFPT Master Controller to manual until he/she has determined the secondary system is no longer in a transient condition.</i>
	SRO/RO	Checks ΔI within prescribed band or SGFP Master Controller at 100% demand.	
	SRO/BOP	Checks Steam Dumps are in Tavg mode and monitors: <ul style="list-style-type: none"> <li>UI-0555 demand is minimum</li> <li>Steam Dumps are closed.</li> </ul> Resets Steam Dump Controller C-7 by placing MODE SEL Sw. to RESET. <ul style="list-style-type: none"> <li>Checks C7, Turbine Impulse Pressure Steam Dump Permissive light is out.</li> <li>Checks Steam Dump Unblock Available light is out.</li> </ul>	
	BOP	Checks SGFP Speed - ≤, 5400 RPM OR 5,500 RPM with a flow > 8250 GPM.	<i>If limits cannot be met, a load reduction may be necessary.</i>
	BOP	INITIATE Corrective Action For SGFPT #12.	<b><i>Event #5</i></b> can occur on signal from Lead Examiner or just prior to completing the steps of 0POP04-FW-0002, Steam Generator Feed Pump Trip.

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 1      Event No.: 5

Event 5 Description: PRZ PORV leakage.

Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>0POP09-AN-04M7/D1 "PRT PRESS HI"</li> <li>0POP09-AN-04M7/E1 "PRT TEMP HI"</li> <li>0POP09-AN-04M8/C8 "PRZR PORV DISCH TEMP HI"</li> </ul>	<i>Annunciators listed are not inclusive.</i> <b>NOTE:</b> 0POP09-AN-04M8/B5 "PRZR DNBR PRESS LOW" and 0POP09-AN-04M8/B8 "PRZR SFTY RLFV TEMP HI" may also come in depending on the timing of operator actions.
	RO	Determines that one of the PZR PORVS is leaking past the seat.	<i>RO Based this on elevated PZR PORV Discharge Temperatures.</i>
	SRO (continuous)	Directs performance of 0POP04-RC-0003, Excessive RCS Leakage, or 0POP09-AN-04M8/C8 "PRZR PORV DISCH TEMP HI"	<ul style="list-style-type: none"> <li>From CIP of 0POP04-RC-0004, SRO can go directly to Addendum 4, RCS Leakage to the PRT. 0POP09-AN-04M8/C8 "PRZR PORV DISCH TEMP HI" has similar steps as 0POP04-RC-0003, Add 4.</li> <li>The actions listed below are those the crew would perform from 0POP04-RC-0004, Addendum 4.</li> </ul>
	RO	Ensures all Reactor Head Vent Isolation Valves are closed.	
	RO	Ensures RCP Seal Return ICIV and OCIV closed.	
	RO	Checks if PRZR PORV Discharge Temperature is > 150°F (Lampbox 4M08 Window C-8, "PRZR PORV DISCH TEMP HI" - LIT)	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 5</b>			
<b>Event 5 Description:</b> PRZ PORV leakage.			
Time	Position	Required Operator Actions	Notes
	RO	Checks PRZR PORV(s) for seat Leakage: <ul style="list-style-type: none"> <li>• Closes both Pzr PORV Isolation Valves.</li> <li>• Opens one PORV Isolation Valve and monitors PORV discharge temperature for a rising trend.</li> <li>• Re-closes PORV Isolation Valve just opened.</li> <li>• Opens other PORV Isolation Valves and monitors PORV discharge temperature for a rising trend.</li> <li>• Final outcome should be the Isolation Valve for the leaking PORV will be closed and the Isolation Valve for the PORV that is not leaking will be opened.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>The PORV Isolation Valve on whichever PORV shows signs of leakage when its Isolation Valve is opened will be closed and remain closed.</i></li> <li>• <i>The PORV Isolation Valve on whichever PORV does not show signs of leakage will be opened to provide PORV operability.</i></li> </ul>
	SRO	REFER TO Addendum 7 For Technical Specification Actions. TS 3.4.4 Action A (1 hr action to close PORV Block Valve); 3.4.6.2 (NA once PORV is isolated); 3.4.9.3 (NA)	
	SRO	CONSULT System Engineering and Plant Management To Determine a Plan of Action.	<i><b>Event #6</b> can occur once SRO and RO determine which PZR PORV has seat leakage and TS have been evaluated.</i>

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 6</b>			
<b>Event 6 Description:</b> SGTR on SG 1B. (250 GPM)			
Time	Position	Required Operator Actions	Notes
	RO/BOP	Acknowledges and announces radiation monitoring alarms and begins an investigation into possible tube leak.	
	SRO	Begins investigation of SG tube leakage by directing RO/BOP to monitor RCS leakage and identify the affected SG.	
	SRO/RO/BOP	Identifies the affected SG as 1B SG.	
	SRO (continuous)	Directs/ensures operator actions of 0POP04-RC-0004, Steam Generator Tube Leakage.	<i>Only a few actions of 0POP04-RC-0004 will be performed because the leak rate quickly escalates to a point requiring a Reactor trip and SI.</i>
	ALL	Monitor the following to identify affected SG: <ul style="list-style-type: none"> <li>• Feedflow vs. Steamflow</li> <li>• High radiation in SG samples</li> <li>• High Main Steamline radiation</li> <li>• High SG Blowdown radiation</li> <li>• High leakrate indication on N-16 monitors.</li> </ul>	
	SRO	Maintain contact With Health Physics to evaluate radiological conditions in the Secondary Plant prior to performing local operator actions.	
	SRO	Notifies Chemistry to: <ol style="list-style-type: none"> <li>a. Sample SGs for activity</li> <li>b. Monitor RT-8041 and RT-8042.</li> </ol>	<ul style="list-style-type: none"> <li>• RT-8041 monitors TGB drains.</li> <li>• RT-8042 monitors Condensate Polisher Discharge.</li> </ul>
	BOP	Checks if SG Blowdown Demineralizers are in service.	<i>The Demineralizers are not in service so crew will contact a Plant operator to place them in service.</i>

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 6 continued</b>			
<b>Event 6 Description: SGTR on SG 1B. (250 GPM)</b>			
Time	Position	Required Operator Actions	Notes
	RO	Maintains Pressurizer Level On Program by: <ul style="list-style-type: none"> <li>Lowering Letdown flow</li> <li>Raising charging flow</li> <li>Start an additional Charging Pump</li> </ul>	<ul style="list-style-type: none"> <li><i>Trip the Rx and enter EO00 if can't maintain greater than 17%.</i></li> <li><i>The crew may use charging flow as an indication of when to trip the Reactor. Maximum charging flow is 200 gpm per pump. If charging flow is at 200 gpm and Pzr level is still lowering, then the leak is beyond the capacity of the normal volume control system and the Reactor should be tripped and a manual Safety Injection actuated.</i></li> </ul>
	RO	Maintain VCT Level - > 15% with charging pump suction aligned to VCT by using: <ul style="list-style-type: none"> <li>Automatic makeup</li> <li>Manual makeup</li> </ul>	<i>Trip the Rx and enter EO00 if can't maintain greater than 15%.</i>
	SRO	Determines whether a normal shutdown or fast load reduction is required based on leakage rate and rate of change.	<i>By this time the SRO will have determined that a Manual RX Trip and SI are needed otherwise an automatic RX Trip and SI will occur. Refer to the next page for actions beginning with the Reactor Trip.</i>

# OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 1		Event No.: 6 continued and 7	
<b>Event 6 Description:</b> SGTR on SG 1B. (250 GPM), 13.8 KV STBY BUS 1H Lockout with Train ‘B’ Sequencer Failure.					
<b>Event 7 Description:</b> Loss of 13.8KV Standby Bus 1G and Train B Sequencer failure (loss of standby bus occurs on RX Trip - integral)					
Time	Position	Required Operator Actions		Notes	
	SRO (continuous)	Enters 0POP05-EO-EO00, Reactor Trip or Safety Injection, and directs the crew to perform their immediate actions.		<b><u>Event #7</u></b> will automatically occur when the RX is Tripped.	
	RO/BOP	Completes immediate actions of EO00. Reactor Trip/SI: <ul style="list-style-type: none"><li>• Reactor Tripped.</li><li>• Turbine Tripped.</li><li>• AC ESF Busses energized.</li><li>• SI is actuated.</li></ul>		<ul style="list-style-type: none"><li>• RO will announce status of immediate action steps as he/she performs them.</li><li>• BOP Operator will monitor the plant and make an announcement of the Reactor trip.</li><li>• ESF DG #12 will be running loaded to ESF 4.16 KV Bus ‘B’ and ECW Pump ‘B’ will not be running.</li></ul>	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.		Before beginning the verification of immediate actions, the US may direct the BOP operator to throttle AFW flow to limit RCS cooldown and/or have RO start ECW Pump ‘B’ to supply cooling water to ESF DG #12.	
	<b>SRO/BOP (C)</b>	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation <ul style="list-style-type: none"><li>• FW Isolation</li><li>• Check for Steamline Isolation</li><li>• AFW Status</li><li>• Phase ‘A’ Containment Isolation</li><li>• <b>ECW and CCW</b></li><li>• Containment Cooling</li><li>• ECCS pump and valve status</li><li>• Containment Ventilation Isolation</li><li>• HVAC systems (CR/EAB/FHB)</li></ul>		<ul style="list-style-type: none"><li>• If not already done, will start ECW Pump ‘B’ to supply cooling to ESF DG #12.</li><li>• Will have to manually start all ‘B’ Train Equipment due to Sequencer failure (Event 7).</li></ul> <b>CT – Start ECW Pump ‘B’ prior to or during performance of 0POP05-EO-EO00, Addendum 5</b>	

**OPERATOR ACTIONS**

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 6 and 7 continued</b>			
<b>Event 6 Description: SGTR on SG 1B. (250 GPM)</b>			
<b>Time</b>	<b>Position</b>	<b>Required Operator Actions</b>	<b>Notes</b>
	SRO/RO	Check plant status: <ul style="list-style-type: none"> <li>• Containment pressure: normal</li> <li>• RCP Seal cooling: 6-13 gpm</li> <li>• RCS cooldown: at or trending to 567 °F</li> <li>• Pzr PORV and Spray valve status: closed</li> <li>• Excess Letdown Isol Valves: closed</li> <li>• Monitor RCP trip criteria to determine if RCP's should be stopped: criteria will NOT be met.</li> <li>• Selected Cntmt Isolation Valves: closed.</li> </ul>	<i>RCP trip conditions: at least 1 HHSI Pump is running and RCS pressure is &lt; 1430 psig.</i>
	ALL	Check if there's a faulted SG – none are faulted.	
	ALL	Check if SG tubes are intact and determines SG "B" is ruptured.	<i>Crew should place AFW Pump #12 in PTL once 'B' SG NR level is &gt; 14%.</i>
	BOP	Completes Addendum 5. Reports manually starting 'B' Train components.	<i>May not complete until after transition to EO30.</i>
	SRO	Informs crew of transition to 0POP05-EO-EO30, Steam Generator Tube Rupture, and to monitor Critical Safety Functions	
	ALL (continuous)	Monitors the status of Critical Safety Functions when the crew transitions to 0POP05-EO-EO30.	<i>Cannot implement FRP's until Addendum 5 of 0POP05-EO-EO00, Reactor Trip or Safety Injection, is completed.</i>
	SRO/RO (continuous)	Checks RCP trip criteria. Ensures RCPs are tripped if RCS pressure drops to less than 1430 psig	
	BOP	Identifies Ruptured SG as SG 1B.	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 6 and 7 continued</b>			
<b>Event 6 Description:</b> SGTR on SG 1B. (250 GPM)			
Time	Position	Required Operator Actions	Notes
	SRO/BOP	Isolates Feedwater flow into and steam flow from SG 1B by: <ul style="list-style-type: none"> <li>• Adjusting SG 1B PORV setpoint to between 1260 and 1265 psig and checking SG PORV is closed.</li> <li>• Verifying Blowdown isolated.</li> <li>• Check SG 1D Ruptured.</li> <li>• Closing SG 1B MSIV and MSIB</li> <li>• Verifies SG 1B level is &gt;14% then isolates AFW to SG 1B.</li> <li>• Reset SI and SG Lo-Lo Level signals (done earlier).</li> <li>• Close SG 1B AFW OCIV.</li> </ul>	
	SRO/BOP	Determines SG 1B pressure is > 468 psig	
	SRO/RO	Checks Pzr PORV availability: <ul style="list-style-type: none"> <li>• Power to Isolation Valves</li> <li>• PORV's closed</li> <li>• At least one PORV Isolation Valve open.</li> </ul>	



# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 1      Event No.: 6 and 7 continued</b>			
<b>Event 6 Description: SGTR on SG 1B. (250 GPM)</b>			
Time	Position	Required Operator Actions	Notes
	SRO/BOP (C)	INITIATES RCS COOLDOWN <ul style="list-style-type: none"> <li>• <b>Determines target temperature</b></li> <li>• Blocks Low Steamline Pressure SI when RCS pressure &lt;1985 psig</li> <li>• Determines condenser is available</li> <li>• Places Steam Dumps in Steam Pressure Mode:               <ul style="list-style-type: none"> <li>○ Places Steam Dump Controller to Manual with zero demand.</li> <li>○ Places Steam Dump Mode Sel. Sw. to Steam Pressure mode.</li> </ul> </li> <li>• Places Steam Dump 'INTLK SEL' switches to Bypass Interlock when RCS Tavg is &lt; 563°F.</li> <li>• Dumps steam to condenser at max rate.</li> <li>• Stops cooldown when target temp reached.</li> <li>• Maintains RCS temperature &lt; target temperature.</li> </ul>	<p><i><b>CT – Determines the correct target CET temperature for the RCS cooldown and maintains CET temperatures &lt; the target CET temperature established for the cooldown.</b></i></p> <ul style="list-style-type: none"> <li>• <i>If 'B' SG pressure is 1100-1150 psig (expected range), target temperature will be 512 °F. If pressure is not within this range the Evaluator will have to note what SG pressure is and check if correct target temperature was used after scenario termination.</i></li> <li>• <i>Terminate scenario after cooldown has been completed.</i></li> </ul>

**CRITICAL TASK SUMMARY**

<b>POSITION</b>	<b>EXPECTED RESPONSE</b>	<b>ACCEPTANCE CRITERIA</b>	<b>SAT/ UNSAT</b>
<b>SRO/BOP or RO (C)</b>	<ul style="list-style-type: none"> <li>Manually start 1B ECW Pump to supply cooling water to ESF DG #12.</li> </ul>	Manually start 1B ECW Pump prior to ESF DG #12 stopping due to damage from overheating or prior to completing Addendum 5 of OPOP05-EO-EO00, RX Trip or SI.	
<b>SRO (C)</b>	<ul style="list-style-type: none"> <li>Determines the correct target CET temperature for cooling down the RCS.</li> </ul>	Correct Target RCS temperature is determined prior to beginning the RCS cooldown. CET temperatures are maintained < than the target CET temperatures after the cooldown.	

## **TURNOVER INFORMATION**

- Reactor Power is 90%.
- Plans are to raise power to 98% per 0POP03-ZG-0005, Plant Startup to 100%, Step 7.52.
- All systems are operable and in a normal lineup.
- Cycle Burnup is 150 MWD/MTU. (BOL)
- RCS Boron Concentration is 1416 ppm.
- Boric Acid Tank 'A' is at 7315 ppm and 'B' is at 7309 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed.
- No ESF DG FOST's are on recirc.
- Unit 1 is the Load Control Unit.

# **LOT 18 INITIAL LICENSE EXAM**

## **OPERATING TEST #1**

### **SCENARIO #2**

**Revision #1**

**Week of 09/26/2011**

# SCENARIO OUTLINE

**Facility:** STPNOC      **NRC Exam Scenario No.:** 2      **Op-Test No.:** LOT 18 NRC

**Examiners:** By separate schedule

**Operators:** By separate schedule

**Initial Conditions:** 48% power and stable. Condensate Pump #13 OOS for Maintenance.

**Turnover:** Tornado Watch is in effect. 0POP04-ZO-0002, Addendum 1 has been completed to step 10. Management has made the decision to hold reactor power at 48% until a current line of thunderstorms moves through the area. Start Train A and secure Train C Control Room HVAC for surveillance testing later in the shift.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	POSBBA RP08433 TCC (0)	RO (N) SRO (N, TS)	Swap running CRE HVAC trains. Train A Supply fan trips on overcurrent after starting.
2 (15 min)	05-14-01 (0.6)	BOP (I) SRO (I)	Feedwater Header Pressure PT-557 fails to an intermediate position. (Ramps in over 5 minutes)
3 (25 min)	04-01-01 (1)	RO (C) SRO (C, TS)	CCW Pump 1A Trips and CCW Pump 1C fails to Auto Start.
4 (45 min)	AST1 & AST3 (1)	RO (C) BOP (C) SRO (C)	Main Turbine trip below P-9
5 (N/A)	02-01-02 (.0007) (.4)	ALL (M)	308 gpm SBLOCA on Loop B when Steam Dumps are placed in Steam Pressure Mode in POP04-TM-0003. <b>(CT)</b> . Leak rate rises after IA OCIV opened in POP05-EO-EO10. <b>(CT)</b>
6 (N/A)	01-12- 16,17,18, 19,22,23, (1)	BOP (C) SRO (C)	Automatic Feedwater Isolation fails following the SI actuation (Integral)

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

## SCENARIO MISCELLANEOUS INFORMATION

### INSTRUCTOR NOTES:

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

### CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- Containment Spray Pump Flows (all 3)
- All SG Pressures
- Containment Pressure
- WR RCS Pressure

### OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 2      Event No.: 1			
<b>Event 1 Description:</b> Start Train ‘A’ and Secure Train ‘C’ CRE HVAC Trains. Train ‘A’ Supply fan will develop a sheared shaft after starting.			
Time	Position	Required Operator Actions	Notes
	SRO (continuous)	Directs the RO to start Train ‘A’ CRE HVAC and secure Train ‘C’ CRE HVAC per 0POP02-HE-0001, Electrical Auxiliary Building HVAC System.	<i>RO will start at step 5.1.2 of 0POP02-HE-0001, Electrical Auxiliary Building HVAC System.</i>
	RO	OPEN Train A “INL ISOL DMPR FV-9670 and 9671” by holding handswitch in “OPEN” until the damper indicates fully OPEN.	
	RO	OPEN Train A “RET DMPR FV-9698” by holding handswitch in “OPEN” until the damper indicates fully OPEN.	
	RO	START Train A “RET FAN 11A(21A)”.	
	RO	START Train A “SPLY AHU 11A(21A)”.	<i>Train ‘A’ Supply Fan will trip on overcurrent after starting.</i>
	RO	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>22M12 Bypass INOP Alarm “SPLY FAN 11A”</li> </ul>	
	SRO/RO	Determines that Train ‘A’ Supply Fan tripped after starting. Dispatches a Plant Operator to investigate.	<i>Plant Operator calls back with information that the Train ‘A’ Control Room Supply Fan motor is hot to the touch.</i>
	SRO/RO	Determines that Train ‘A’ CRE HVAC needs to be secured.	<i>It is OK if the crew does not secure Train ‘A’ CRE HVAC prior to moving on to next event.</i>
	SRO	INITIATE Corrective Action For Failed Component.	
	SRO	Determines applicable Technical Specification Actions for Train ‘A’ Control Room Supply Fan. TS 3.7.7 Action A. (Restore within 7 days)	<b><i>Event #2</i></b> can occur once SRO has reviewed TS for this event. <ul style="list-style-type: none"> <li><i>Event #2 ramps in over 5 minutes.</i></li> </ul>

# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 2      Event No.: 2			
Event 2 Description: Steam Header Pressure PT-0557 fails to an intermediate position.			
Time	Position	Required Operator Actions	Notes
	BOP	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>• 0POP09-AN-06M3/E3 &amp; E7</li> <li>• 0POP09-AN-06M4/E3 &amp; E7</li> <li>• “SG STM/FW FLOW MSMTCH” on ≥ SG’s.</li> </ul>	<i>Annunciators listed are not inclusive.</i>
	SRO/BOP	Determines Steam Header Pressure PT-0557 has failed. Performs required immediate actions of 0POP04-FW-0002: <ul style="list-style-type: none"> <li>• Checks SGFP Master Speed Controller and determines it is NOT responding appropriately in Automatic.</li> <li>• Takes manual control of SGFP Master Speed Controller and adjusts output to restore SG levels to 68-74%.</li> </ul>	<i>PT-0557 will fail to approximately mid-scale over 5 min. so crew may not immediately diagnose why SG Feed Pumps are slowing down.</i>
	SRO (continuous)	Directs performance of 0POP04-FW-0002, Steam Generator Feed Pump Trip.	
	BOP	Checks SGFPT’s – required number running.	
	BOP	Checks SGFP Master Speed Controller: <ul style="list-style-type: none"> <li>• Operable in Automatic – determines it is not.</li> <li>• Places the controller in manual and adjusts output to raise feedflow.</li> </ul>	<i>The PT-557 failure should be revealed during this step if not already done.</i>
	BOP	Checks if Feedflow is adequate for current steam demand.	<i>By now, the BOP operator should have raised the output of the SGFP Master Speed Controller sufficiently to raise feedflow above steam flow.</i>
	BOP	Checks SGFP Recirc Valves status – should be responding in Automatic	
	BOP	Monitors SG Levels trending to program.	



# OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 2      Event No.: 2			
Event 2 Description: Steam Header Pressure PT-0557 fails to an intermediate position.			
Time	Position	Required Operator Actions	Notes
	BOP	Checks Feedwater/Steam Header DP per Addendum 3 requirements	<i>BOP may have to make manual adjustments to SGFP Master Speed Controller to maintain Feedwater/Steam Header DP per Addendum 3.</i>
	RO	Checks Delta-I is within the required band.	
	BOP	Checks Steam Dumps status: <ul style="list-style-type: none"> <li>• in Tave mode</li> <li>• Steam Dump Controller UI-0555 at minimum demand and Steam Dumps are closed.</li> <li>• Reset C7 by momentarily placing the Steam Dump Mode Sel Sw. to RESET.</li> <li>• Check C7 TURB IMP PRESS STM DUMP PERMISSIVE light is extinguished.</li> <li>• Check STEAM DUMP UNBLOCK AVAILABLE light is extinguished.</li> </ul>	
	BOP	Checks SGFP speeds are: <ul style="list-style-type: none"> <li>• <math>\leq 5400</math> rpm</li> </ul> OR <ul style="list-style-type: none"> <li>• <math>\leq 5500</math> rpm with a flow <math>&gt; 8250</math> gpm</li> </ul>	<i><b>Event #3</b> can occur here since SRO and BOP have essentially completed the steps of 0POP04-FW-0002, Steam Generator Feed Pump Trip.</i>
	SRO	INITIATE Corrective Action For Failed Component.	

### OPERATOR ACTIONS

Op-Test No.: 1      Scenario No.: 2      Event No.: 3			
Event 3 Description: CCW Pump 1A Trips and CCW Pump 1C fails to auto start.			
Time	Position	Required Operator Actions	Notes
	RO	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>0POP09-AN-02M3/A5 “CCW PUMP 1A TRIP”</li> </ul>	<i>Annunciators listed are not inclusive.</i>
	SRO/BOP	Determines that CCW Pump 1A tripped and CCW Pump 1C failed to auto start.	
	SRO	Directs RO to perform the Annunciator Response Procedure for the trip of CCW Pump 1A.	<i>0POP09-AN-02M3 02M3-A-5, CCW PUMP 1A TRIP</i>
	RO	IF CCW header pressure decreased to less than or equal to 76 psig, then ensure the standby ECW/CCW train running.	<ul style="list-style-type: none"> <li><i>ECW Pump 1A is already running. The RO will have to manually start CCW Pump 1C.</i></li> <li><i>Depending on the CCW pressure perturbation, the crew may also have to implement 0POP04-RC-0002, RCP Off Normal, to re-open the CCW Thermal Barrier Isolation Valves.</i></li> </ul>
	RO	Ensure CCW is available to the in service charging pump.	<i>CCP 1A is in service.</i>
	RO	IF standby ECW/CCW pumps started, then check for proper operation and alignment per: <ul style="list-style-type: none"> <li>0POP02-CC-0001, Component Cooling Water <ul style="list-style-type: none"> <li>Supply and return header valves are open.</li> <li>Checks system pressure <math>\geq 80</math> psig</li> <li>Checks flow 7500-15000 gpm</li> <li>Supplementary Cooler is running</li> <li>CCW Train Mode Switches are positioned appropriately.</li> <li>CCW System temperature is 60 °F to 105 °F.</li> </ul> </li> <li>0POP02-EW-0001 – Train ‘C’ ECW was already in service so no actions should be required.</li> </ul>	<i>The Mode Switches have 3 positions: OFF, STANDBY, and RUN. They will likely be positioned as follows:  Train ‘A’ – OFF  Train ‘B’ – STANDBY  Train ‘C’ – RUN</i>

### OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 3</b>			
<b>Event 3 Description:</b> CCW Pump 1A Trips and CCW Pump 1C fails to auto start.			
Time	Position	Required Operator Actions	Notes
	RO	Place CCW PUMP 1A handswitch in PULL TO LOCK.	
	RO	Place the remaining ECW/CCW train in standby per 0POP02-CC-0001, Component Cooling Water.	<i>This action may have already been done by aligning the CCW Train Mode Switches described earlier.</i>
	RO	ENSURE CCW Train A secured per 0POP02-CC-0001, Component Cooling Water: <ul style="list-style-type: none"> <li>• CCW aligned to its Train RHR Hx</li> <li>• CCW Rad Monitor aligned to an operating train.</li> <li>• Places all CCW Train Mode Switches to OFF</li> <li>• Close Train RHR Hx Outlet Valve</li> <li>• Checks system pressure <math>\geq 80</math> psig</li> <li>• Checks flow 7500-15000 gpm</li> <li>• Places CCW Train Mode Switches in desired positions.</li> <li>• Stops CCW Pump 1A Supplementary Cooler</li> <li>• Ensures CCW Flow Control Valve MOV-0642 is closed.</li> <li>• Ensures CCW Temperature Control Valve MOV-0643 is open.</li> </ul>	
	SRO	TAKE appropriate action per Technical Specification 3.7.3 Action A. (Restore within 7 days)	<i><b>Event #4</b> can occur once the SRO has addressed Tech Specs for CCW Pump 1A.</i>
	SRO	INVESTIGATE cause of CCW Pump 1A trip.	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 4</b>			
<b>Event 4 Description:</b> Main Turbine Trip Below P-9.			
Time	Position	Required Operator Actions	Notes
	RO/BOP	Determines that the Main Turbine has tripped.	
	SRO (continuous)	Directs performance of 0POP04-TM-0003, Main Turbine Trip Below P-9.	
	BOP	VERIFY Main Turbine tripped: <ul style="list-style-type: none"> <li>• All Throttle Valves closed</li> <li>• Main Generator output breaker open</li> </ul>	
	RO	CHECK Rod Control System in Automatic. If not, place in Automatic	
	RO	Monitor Rod Control System is responding to RCS Tave/Tref deviation.	
	BOP	Monitor Steam Dump Valves are responding to RCS Tave/Tnoload deviation.	
	RO	Checks if RCS Tave is between 572°F and 577°F. If not, when Tave is within this range, places Rod Control in Automatic.	
	BOP	Checks for AMSAC actuation – should not be actuated.	<i>AMSAC – ATWS Mitigation Actuation Circuit</i>
	BOP	Checks Steam Generator NR Levels at or trending to 68 – 74%.	
	RO	Checks Pressurizer Level at or trending to Program level.	
		Checks Pressurizer Pressure at or trending to 2220 – 2250 psig.	
	RO	Checks Reactor Power is < 35%	
	BOP	Checks SGFPT Status – two in service	<i>Will end up with 1 SGFPT running.</i>
	BOP	Checks SGFPT Master Controller in Automatic	<i>Controller will be in Manual due to previous failure of PT-557.</i>

# OPERATOR ACTIONS

<p>Op-Test No.: 1      Scenario No.: 2      Event No.: 4</p>			
<p>Event 4 Description: Main Turbine Trip Below P-9.</p>			
Time	Position	Required Operator Actions	Notes
	BOP	<p>Secures one SGFPT:</p> <ul style="list-style-type: none"> <li>Places respective speed controller in Manual.</li> <li>Reduces speed to 3300 rpm</li> <li>Checks SGFP Master Speed Controller is in Manual.</li> <li>Adjusts speed of IN-SERVICE SGFPT to approximately 5200 rpm.</li> <li>Secure unnecessary SGFP's per direction of Unit Supervisor.</li> </ul>	<p><i>US may leave SGFPT at 3300 rpm so there's an immediate backup available if the operating SGFPT fails for some reason.</i></p>
	BOP	<p>Monitor the following for Main Turbine coastdown:</p> <ul style="list-style-type: none"> <li>Proper Turning Gear operation</li> <li>Turbing Bearing Lift Pump starts at Main Turbine speed of 600 rpm.</li> </ul>	
	BOP	<p>Starts the Main Turbine "L.O./SEAL OIL BACKUP PUMP"</p>	<p><i>Pump may have already started by the time this step is reached.</i></p>
	BOP	<p>Places Steam Dumps in Steam Pressure Mode:</p> <ul style="list-style-type: none"> <li>Places Steam Dump Header pressure Controller PK-0557 in Manual.</li> <li>Adjusts PK-0557 output to match the demand on meter UI-0555.</li> <li>Places Steam Dump MODE SEL Sw. to STM PRESSURE.</li> <li>Adjusts PK-0557 setpoint dial to current header pressure.</li> <li>Uses PK-0555 in Manual to control steam header pressure.</li> </ul>	<p><b><u>Event #5</u></b> will actuate on a time delay when Steam Dumps are placed in the Steam Pressure Mode.</p> <p><i>Steam Dumps cannot be placed in Automatic because of the PT-557 failure that occurred earlier.</i></p>

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 4</b>			
<b>Event 4 Description:</b> Main Turbine Trip Below P-9.			
Time	Position	Required Operator Actions	Notes
	BOP	Checks AFW System Status <ul style="list-style-type: none"> <li>• AFW secured</li> <li>• AFW system alignment is in Standby status.</li> </ul>	
	RO	Checks RCS Tave is within 1.5 °F of Program Tave per Addendum 2.	
	BOP	Perform the following for the Main Generator: <ul style="list-style-type: none"> <li>• Place "GEN BKR" in the PULL TO LOCK position</li> <li>• Place Main Generator Exciter "FLD BKR" in the PULL TO LOCK position</li> <li>• Place the "VOLT REG CONT" switch in the OFF position</li> <li>• Ensure the "BASE ADJUSTER" and "VOLTAGE ADJUSTER" control in the full counterclockwise position.</li> </ul>	
	BOP	Place "TURB STM LN DRN VLV" in the OPEN Position.	
	SRO	REVIEW Applicable Technical Specifications.	
	SRO	GO TO The Appropriate Plant Procedure As Determined By The Shift Manager/Unit Supervisor.	

### OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 5</b>			
<b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.			
Time	Position	Required Operator Actions	Notes
	RO/BOP	Acknowledges and announces annunciators: <ul style="list-style-type: none"> <li>• RM-11 Radiation Monitor alarms in Containment.</li> </ul>	<i>Annunciators listed are not inclusive.</i>
	All	Determine that an RCS leak has developed in the RCB.	
	SRO (continuous)	Directs performance of 0POP04-RC-0003, Excessive RCS Leakage.	
	SRO/RO	Determine an RCS leak rate amount.	<i>The SRO may elect to go straight to 0POP05-EO-EO00, Rx Trip or SI due to escalating leakage.</i>
	RO	Maintains Pressurizer Level On Program Level by: <ul style="list-style-type: none"> <li>• Lowering Letdown flow</li> <li>• Raising Charging flow</li> <li>• Start an additional Charging Pump</li> </ul>	
	RO	Maintain VCT Level – greater than 15% with Charging Pump suction aligned to VCT by: <ul style="list-style-type: none"> <li>• Auto Makeup</li> </ul> OR <ul style="list-style-type: none"> <li>• Manual Makeup</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Once the leak has been identified as being inside Containment, the US should go to Addendum #3.</i></li> <li>• <i>SRO will eventually be required to go to 0POP05-EO-EO00, Rx Trip or SI, when PZR and/or VCT level can not be maintained.</i></li> </ul>

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 5 continued and 6</b>			
<b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.			
<b>Event 6 Description:</b> Automatic Feedwater Isolation fails following the SI actuation. (Integral)			
Time	Position	Required Operator Actions	Notes
	SRO (continuous)	Enters 0POP05-EO-EO00, Reactor Trip or Safety Injection, and directs the crew to perform their immediate actions.	<b><i>Event #6</i></b> will automatically occur when SI is actuated.
	RO/BOP	Completes immediate actions of EO00. Reactor Trip/SI: <ul style="list-style-type: none"> <li>• Reactor Tripped.</li> <li>• Turbine Tripped.</li> <li>• AC ESF Busses energized.</li> <li>• SI is actuated.</li> </ul>	<ul style="list-style-type: none"> <li>• RO will announce status of immediate action steps as he/she performs them.</li> <li>• BOP Operator will monitor the plant and make an announcement of the Reactor trip.</li> </ul>
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.	Before beginning the verification of immediate actions, the US may direct the BOP operator to throttle AFW flow to limit RCS cooldown.



# OPERATOR ACTIONS

<p><b>Op-Test No.:</b> 1      <b>Scenario No.:</b> 2      <b>Event No.:</b> 5 continued and 6</p> <p><b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.</p> <p><b>Event 6 Description:</b> Automatic Feedwater Isolation fails following the SI actuation. (Integral)</p>			
Time	Position	Required Operator Actions	Notes
	SRO/BOP	<p>Directs BOP to perform Addendum 5, Verification of SI Equipment Operation</p> <ul style="list-style-type: none"> <li>FW Isolation; must manually close or check closed the following: <ul style="list-style-type: none"> <li>FW Isolation Valves</li> <li>FW Isolation Bypass Valves</li> <li>FW Preheater Bypass Valves</li> <li>FW Reg Valves</li> <li>Low Power FW Reg Valves</li> <li>SG Blowdown Isolation Valves</li> <li>SG Sample Isolation Valves</li> </ul> </li> <li>Check for Steamline Isolation</li> <li>AFW Status</li> <li>Phase 'A' Containment Isolation</li> <li>ECW and CCW</li> <li>Containment Cooling</li> <li>ECCS pump and valve status</li> <li>Containment Ventilation Isolation</li> <li>HVAC systems (CR/EAB/FHB)</li> </ul>	<p><b><u>Event #6</u></b> BOP will have to manually perform Feedwater Isolation by manually closing or checking closed the appropriate valves.</p> <p>RCFC – Reactor Containment Fan Cooler.</p>
	SRO/RO	<p>Check plant status:</p> <ul style="list-style-type: none"> <li>Containment pressure: normal</li> <li>RCP Seal cooling: 6-13 gpm</li> <li>RCS cooldown: at or trending to 567 °F</li> <li>Pzr PORV and Spray valve status: closed</li> <li>Excess Letdown Isol Valves: closed</li> <li>Monitor RCP trip criteria to determine if RCP's should be stopped: criteria will NOT be met.</li> <li>Selected Cntmt Isolation Valves: closed.</li> </ul>	<p>RCP trip conditions: at least 1 HHSI Pump is running and RCS pressure is &lt; 1430 psig.</p>

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 5 continued</b>			
<b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.			
Time	Position	Required Operator Actions	Notes
	All	Checks for Faulted SG – all SG pressures are controlled and > Containment pressure.	
	All	Checks if SG Tube are intact: <ul style="list-style-type: none"> <li>• Main Steamline Rad Monitors</li> <li>• SG Blowdown Rad Monitors</li> <li>• CARS Pump Rad Monitor</li> <li>• No SG level rising in an uncontrolled manner.</li> </ul>	<i>No evidence of tube leakage will exist.</i>  <i>CARS – Condenser Air Removal System</i>
	All	Determines that there is an active RCS leak in containment.	
	SRO (continuous)	Informs crew of transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.	
	RO	Monitors if RCP's should be stopped.	<i>RCP trip conditions: at least 1 HHSI Pump is running and RCS pressure is &lt; 1430 psig.</i>
	<b>SRO/BOP (C)</b>	<b>DEPRESSURIZE Intact SG's To 1000 PSIG</b> <ul style="list-style-type: none"> <li>• Check RCS pressure - &gt; 415 PSIG</li> <li>• Check Pressurizer pressure &lt;1985 psig</li> <li>• Block Low Steamline Pressure SI</li> <li>• Check condenser is available</li> <li>• Checks Steam Dumps in steam pressure mode</li> <li>• Ensures "HDR PRESS CONT PK-0557" is in MANUAL</li> <li>• Adjusts "HDR PRESS CONT PK-0557" setpoint to between 7.0 (980 PSIG) and 7.1 (994 PSIG).</li> <li>• Depressurize intact SG's to between 980 PSIG and 994 PSIG using steam dumps in Manual</li> <li>• Checks RCS TAVG - &lt; 563°F</li> </ul> <b>ACTIONS CONTINUED ON NEXT PAGE</b>	<i>Steam Dumps were placed in Steam Pressure Mode following Turbine trip.</i>

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 5 continued</b>			
<b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.			
Time	Position	Required Operator Actions	Notes
	BOP	<ul style="list-style-type: none"> <li>Places Steam Dump "INTLK SEL" switches to BYPASS INTERLCK.</li> <li>Ensures "HDR PRESS CONT PK-0557" is in Automatic.</li> <li>Control Steam Dumps manually to control SG pressures <math>\leq</math> to 994 PSIG</li> <li>Adjusts intact SG PORV controller setpoints to between 995 PSIG and 1000 PSIG (QDPS PRI/SEC).</li> <li>Ensures SG PORV controllers are in Automatic</li> </ul>	<ul style="list-style-type: none"> <li><i>These actions are a continuation from the previous page.</i></li> <li><i>PK-0557 cannot be placed in Auto due to the failure of PT-557 earlier.</i></li> </ul>
	BOP	Monitors if SG Secondary Pressure Boundaries are intact: SG pressures controlled or rising and $>$ Containment pressure.	
	RO	<ul style="list-style-type: none"> <li>Resets SI</li> <li>Resets ESF Load Sequencers</li> <li>Resets Containment Isolation Phase 'A'</li> <li>Resets Containment Isolation Phase 'B'</li> </ul>	
	BOP	Monitor Intact SG Levels 22-50% NR <ul style="list-style-type: none"> <li>Controls AFW to maintain NR levels within this band</li> </ul>	
	BOP	CHECK Secondary Radiation: <ul style="list-style-type: none"> <li>Reset SG LO-LO level actuations.</li> <li>Reset SG Blowdown and Sample Isolations.</li> <li>Notify Chemistry to sample SG's.</li> <li>Monitor secondary radiation:               <ul style="list-style-type: none"> <li>o Main Steamline Rad Monitors</li> <li>o SG Blowdown Rad Monitors</li> <li>o CARS Pump Rad Monitor</li> </ul> </li> </ul>	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 5 continued</b>			
<b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.			
Time	Position	Required Operator Actions	Notes
	RO	Monitors Pressurizer PORVs and Isolation Valves: <ul style="list-style-type: none"> <li>• Power available to Isolation Valves</li> <li>• PORV's closed</li> <li>• At least one Isolation Valve open</li> </ul>	
	RO	Establishes IA to Containment: <ul style="list-style-type: none"> <li>• Checks IA pressure &gt; 95 psig</li> <li>• Opens IA OCIV</li> </ul>	<i>When the IA OCIV is opened the RCS leak will become a LBLOCA.</i>
	All	Determines that RCS LOCA has gotten worse and notes an Orange path on the Containment Integrity CSF.	<i>A CSF Orange will occur for the Containment Critical Safety Function Status Tree.</i>
	SRO (continuous)	Informs crew of transition to 0POP05-EO-FRZ1, Response to Containment High Pressure.	
	RO	Verifies Containment Spray established: <ul style="list-style-type: none"> <li>• Containment pressure &lt; 56.5 psig</li> <li>• Determines NO Containment Spray Pumps are running.</li> </ul>	<i>CS Pumps will not start on Containment Pressure above 9.5 psig because the ESF Sequencers have been reset.</i>
	RO	Verifies Containment Isolation Phase A Valves - CLOSED, REFER TO ADDENDUM 1, PHASE A ISOLATION VERIFICATION.	
	RO	Verifies Containment Ventilation Isolation: Purge Fans stopped, dampers closed.	

# OPERATOR ACTIONS

<b>Op-Test No.: 1      Scenario No.: 2      Event No.: 5 continued</b>			
<b>Event 5 Description:</b> 308 gpm SBLOCA on Loop B. Leak rate rises after IA OCIV opened in POP05-EO-EO10.			
Time	Position	Required Operator Actions	Notes
	<b>SRO/RO (C)</b>	Check if Containment Spray is required: <ul style="list-style-type: none"> <li>• Determines Containment pressure has exceeded 9.5 PSIG</li> <li>• Stops ALL RCP's</li> <li>• <b>Manually starts 2 Containment Spray Pumps</b></li> <li>• <b>Verifies proper Containment Spray valve alignment:</b> <ul style="list-style-type: none"> <li>○ <b>Containment Sump to SI Suction Header Valve closed.</b></li> <li>○ <b>RWST to SI SI Suction Header Valve open</b></li> <li>○ <b>CS Pump Discharge Valves open</b></li> </ul> </li> </ul>	<i>Stop scenario when Containment Spray Pumps are started and spray flow is verified.</i>

**CRITICAL TASK SUMMARY**

<b>POSITION</b>	<b>EXPECTED RESPONSE</b>	<b>ACCEPTANCE CRITERIA</b>	<b>SAT/ UNSAT</b>
<b>SRO/BOP (C)</b>	<b>Depressurize intact SG's to 1000 psig.</b>	Depressurize intact SG's to less than 1000 psig within 45 minutes of the initiation of the SBLOCA.	
<b>SRO/RO (C)</b>	<ul style="list-style-type: none"> <li>• <b>Manually starts 2 Containment Spray Pumps</b></li> <li>• <b>Verifies proper Containment Spray valve alignment:</b> <ul style="list-style-type: none"> <li>○ <b>Containment Sump to SI Suction Header Valve closed.</b></li> <li>○ <b>RWST to SI SI Suction Header Valve open</b></li> </ul> </li> </ul> <b>CS Pump Discharge Valves open</b>	Manually starts 2 CS Pumps and verifies valve alignment prior to exiting 0POP05-EO-FRZ1.	

### **TURNOVER INFORMATION**

- 48% power and stable.
- Condensate Pump #13 OOS for Maintenance.
- Tornado Watch is in effect. 0POP04-ZO-0002, Natural or Destructive Phenomena Guidelines, Addendum 1 has been completed to step 10.
- Management has made the decision to hold reactor power at 48% until a current line of thunderstorms moves through the area.
- Upon taking the watch, start Train 'A' and secure Train 'C' Control Room HVAC for surveillance testing later in the shift.
- All other systems are operable and in a normal lineup.
- Cycle Burnup is 150 MWD/MTU. (MOL)
- RCS Boron Concentration is 1544 ppm.
- Boric Acid Tank 'A' is at 7316 ppm and 'B' is at 7305 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed.
- No ESF DG FOST's are on recirc.
- Unit 1 is the Load Control Unit.

# **INITIAL LICENSE EXAM**

## **OPERATING TEST # 1**

### **NRC SCENARIO # 3**

**Revision 1**

**Week of 9/26/2011**



### SCENARIO OUTLINE

**Facility:** South Texas Project      **Scenario No.:** 3      **Op-Test No.:** LOT18 NRC

**Examiners:** By separate schedule

**Operators:** By separate schedule

**Initial Conditions:** 100% Power and Stable. Three (3) Condensate Pumps are in service to support maintenance on LPHD Pump #13. LPHD Pump #13 and RCFC 12A are OOS.

**Turnover:** LPHD Pump #13 has been repaired and is ready to be placed back in service. When LPHD Pump #13 is in service, secure Condensate Pump #13.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	(N/A)	BOP (N) SRO (N)	Return a Low Pressure Heater Drip Pump to service.
2 (15 min)	09-02-01 (true)	RO (C) SRO (C, TS)	RCFC Fan 11A Low DP occurs 3 minutes after the Heater Drip Pump level control valve is placed in Auto (integral).
3 (25 min)	06-16-02 (0)	RO (I) BOP (I) SRO (I, TS)	PT-505 (Turbine Impulse Pressure) fails low. <b>(CT)</b>
4 (35 min)	03-10-01 (0.1)	RO (C) SRO (C)	Charging line leak in Containment.
5 (50 min)	10-06-01 (1)	RO (C) BOP (C) SRO (C)	Reactor trip due to loss of load (Generator output breaker opens) 2 minutes after the charging line isolation valve is closed (integral).
6 (N/A)	05-04-01 (1)	ALL (M)	Steam Generator 1A Safety Valve fails open 10 seconds after the reactor trips. (Integral) <b>(CT)</b>
7 (N/A)	01-12-04A (1)	BOP (I) SRO (I)	Phase 'A', Train 'A' fails to actuate. (auto and manual)

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

## SCENARIO MISCELLANEOUS INFORMATION

### INSTRUCTOR NOTES:

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

### CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- Turbine Impulse Pressure, PT-505
- Control Bank 'D' Rod Position (DRPI)\*
- AFD
- SG 1A pressure
- SG 1A AFW flow
- SG 1A Steamflow

\* Only 1 rod in CB 'D' is being recorded and that rod will serve to represent all CB 'D' rods.

### OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 1</b>  <b>Event Description:</b> Return a Low Pressure Heater Drip Pump to service			
Time	Position	Required Operator Actions	Notes
	SRO	Directs the BOP operator to place LPHD Pump #13 in service and restore associated LPH Drips per 0POP02-HV-0001, then secure Condensate Pump #13 per 0POP02-CD-0001.	
	BOP	Records the following: <ul style="list-style-type: none"> <li>• Reactor Power, U1118</li> <li>• MWe, Q0340</li> <li>• FW Temp, U0490</li> <li>• First Stage IMP Pressure, MSPA0505</li> <li>• Deaerator (DA) Level Control Signal (%)</li> <li>• Circ Water Inlet Temp, UG0330</li> <li>• Condensate Flow, F7030</li> </ul>	<i>All data is taken from the Plant Computer (ICS) except DA level controller signal.</i>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 1</b>			
<b>Event Description:</b> Return a Low Pressure Heater Drip Pump to service (cont'd.)			
Time	Position	Required Operator Actions	Notes
	BOP	Starts LPHD Pump #13.	<ul style="list-style-type: none"> <li>• <i>BOP Operator may contact a Plant Operator to check LPHD Pump #13 is ready for start before starting pump.</i></li> <li>• <i>BOP Operator may check for proper interlocks for pump start:</i> <ul style="list-style-type: none"> <li>○ <i>Flash Tk. Level &gt; 7.5"</i></li> <li>○ <i>Seal Water Pressure &gt;30 psig.</i></li> <li>○ <i>FW Htrs. 15C &amp; 16C levels &lt; High level trip.</i></li> <li>○ <i>Pump Discharge Valve is closed.</i></li> </ul> </li> <li>• <i>A Control Room operator should make a plant announcement prior to starting the pump.</i></li> <li>• <i>After pump start, BOP operator may contact a Plant Operator to determine if start was satisfactory (i.e. no noted issues).</i></li> <li>• <i><b>Event #2</b> will occur 3 minutes after Flash Tank Controller #13 is placed in Auto.</i></li> </ul>

### OPERATOR ACTIONS

<b>Op-Test No.:</b> # 1 <b>Scenario No.:</b> # 3 <b>Event No.:</b> 1			
<b>Event Description:</b> Return a Low Pressure Heater Drip Pump to service (cont'd.)			
Time	Position	Required Operator Actions	Notes
	BOP	Slowly opens Flash Tank # 13's Level Control Valve using Controller FK-7361 on CP-008 until Flash Tank level is normal and stable.	<i>The Control Room may contact Chemistry to ask if chemistry of LPH Drips for Flash Tank #13 is satisfactory to send to Condensate. Chemistry IS good and this information was given as part of the turnover information, but operators may check again.</i>
	BOP	When Flash Tank #13 level is normal and stable, the operator will place Level Controller in AUTO at CP-008.	
	BOP	Refers to 0POP02-CD-0001 to secure Condensate Pump #13.	
	BOP	Closes Condensate Pump #13 Discharge Valve, MOV-0088 at CP-008.	
	BOP	Ensures Condensate Pump #13 Miniflow Recirc Valve, FV-7016, opens at CP-008.	
	BOP	Stops Condensate Pump #13 at CP-008.	

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 2</b>  <b>Event Description: RCFC Fan 11A Low DP</b>			
Time	Position	Required Operator Actions	Notes
	All	Recognize and respond to RCFC FAN DP LO alarm on Annunciator Panel 02M2 at CP-002.	
	SRO/RO	Ensures/Implements appropriate Annunciator Response.	
	RO	Checks computer points and determines the affected fan is RCFC Fan 11A.	<ul style="list-style-type: none"> <li>• <i>The referenced computer points are for the DP across each RCFC Fan.</i></li> <li>• <i>An ICS alarm will also occur that identifies the affected RCFC.</i></li> </ul>
	SRO/RO	Directs/Stops RCFC Fan 11A	<i>Crew will probably put Fan control in PTL to prevent further operation until issue is investigated.</i>
	SRO	<ul style="list-style-type: none"> <li>• Evaluates whether to start an additional RCFC Fan.</li> <li>• Directs the RO to start another RCFC Fan.</li> </ul>	<i>If another fan is not started, RCB pressure will slowly rise and may reach a high pressure alarm at 0.3 psig which is a TS entry condition.</i>
	RO	Refers to 0POP02-HC-0001 and starts RCFC 11C: <ul style="list-style-type: none"> <li>• Ensure CCW valves MOV-0197 and MOV-0210 are CLOSED.</li> <li>• Ensures Chilled Water valves MOV-0199, MOV-0209, and FV-0864 are OPEN.</li> <li>• Ensures ESF DG #13 is not being paralleled, or is paralleled to the grid.</li> <li>• Starts RCFC 11C</li> </ul>	

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 2</b>			
<b>Event Description:</b> RCFC Fan 11A Low DP			
<b>Time</b>	<b>Position</b>	<b>Required Operator Actions</b>	<b>Notes</b>
	SRO	Refers to Tech Spec 3.6.2.3, Containment Cooling, and determines Action 'A' applies which requires restoration of the required group of RCFC within 7 days or apply the requirements of the Configuration Risk Management Program or be in Hot Standby within the next 6 hrs. and in Cold Shutdown within the following 30 hrs.	<ul style="list-style-type: none"><li>• <i>One of the required groups of RCFC's is inoperable because there are now 2 RCFC's inoperable since RCFC 12A was OOS as a pre-existing condition to the scenario.</i></li><li>• <i><b>Event 3</b> will occur on Lead Examiners signal once another RCFC is started and TS have been consulted.</i></li></ul>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 3</b> <b>Event Description: PT-505 (Turbine Impulse Pressure) fails LOW</b>			
Time	Position	Required Operator Actions	Notes
	RO/BOP	Recognize and respond to the following alarms at CP-005 and indication at CP-006: <ul style="list-style-type: none"> <li>• TREF/AUCT TAVG DEV</li> <li>• TURB IMP PRESS ROD WTHDRWL BLKD</li> <li>• PI-505 indicating off scale LOW</li> <li>• Control Rods stepping inward automatically.</li> </ul>	<i>Listing of symptoms is not inclusive.</i>
	RO	<ul style="list-style-type: none"> <li>• Consults appropriate Annunciator Response procedures for alarms that are present.</li> <li>• Determines inward rod motion is due to an inst failure and places Rod Control in MANUAL.</li> <li>• Informs US to enter 0POP04-TM-0004, Failure of Turbine Impulse Pressure Transmitter (PT-505/506).</li> </ul>	<i>The instrument failure will cause rods to drive inward in Automatic.</i>
	SRO	Implements 0POP04-TM-0004, Failure of Turbine Impulse Pressure Transmitter (PT-505/506).	
	<b>SRO/RO (C)</b>	<b>Directs/Places Rod Control in MANUAL.</b>	
	SRO/RO	Directs/Verifies RCS Tave is within 1.5 °F of Tref.	<ul style="list-style-type: none"> <li>• <i>Must use a procedure Addendum to obtain Tref value.</i></li> <li>• <i>Rod withdrawal is limited to the number of steps they inserted due to the instrument failure.</i></li> <li>• <i>Other means of controlling Tavg allowed by the procedure are adjusting RCS boron concentration and/or turbine load.</i></li> </ul>



### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 3</b> <b>Event Description: PT-505 (Turbine Impulse Pressure) fails LOW</b>			
Time	Position	Required Operator Actions	Notes
	SRO/BOP	Directs/Checks Steam Dumps in Pressure Control Mode; determines Steam Dumps are NOT in Pressure Control Mode.	
	SRO/BOP	Directs/Places Steam Dumps in Pressure Control Mode: <ul style="list-style-type: none"> <li>• Adjust Steam Dump HDR PRESS CONT PK-0557 setpoint for 1185 psig (8.46 on controller setting).</li> <li>• Place INTLK SEL Sw. to OFF/RESET for Train 'A' OR Train 'B'.</li> <li>• Places Steam Dump MODE SEL Sw. in the STEAM PRESS position.</li> <li>• Ensures Steam Dump DEMAND on UI-0555 is 0% using PK-0557.</li> <li>• Ensures INTLK SEL. Sw. is ON for Train 'A' AND 'B'.</li> <li>• Ensures Steam Dump HDR PRESS CONT PK-0557 in AUTO.</li> <li>• Ensures all Steam Dumps are closed.</li> </ul>	<i>All controls are on CP-007.</i>
	SRO/BOP	Directs/Select the failed channel to DEFEAT on the IMP SEL Sw.	<i>Sw. is located on CP-007.</i>
	SRO/RO	Checks TURB IMP PRESS WTHDRWL BLKD Annunciator on CP-005 is EXTINGUISHED	

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 3</b> <b>Event Description:</b> PT-505 (Turbine Impulse Pressure) fails LOW			
Time	Position	Required Operator Actions	Notes
	SRO	Verifies Permissive P-13 is in the correct state for the current plant conditions.	<ul style="list-style-type: none"> <li>• <i>This action fulfills a 1 hr. Tech Spec requirement; Table 3.3.1, Item 19.f.</i></li> <li>• <i>SRO may not refer to the actual TS since the procedure step fulfills the requirements of the TS.</i></li> <li>• <i>Permissive Status light P-13 TURB LOAD LESS THAN 10 PRCT should be EXTINGUISHED for the current plant conditions and it will be during the instrument failure, therefore P-13 is in the correct state.</i></li> <li>• <i><b>Event 4</b> can occur once this procedure step has been completed and on Lead Examiners signal.</i></li> </ul>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 4</b>  <b>Event Description:</b> Charging Line Leak inside Containment			
Time	Position	Required Operator Actions	Notes
	ALL	Recognize and respond to the following alarms and indications at CP-004: <ul style="list-style-type: none"> <li>• Containment Atmosphere Rad Monitor RT-8011 alarms</li> <li>• Lowering Pressurizer level and pressure</li> <li>• Charging flow rising.</li> </ul>	
	SRO	Enters 0POP04-RC-0003, Excessive RCS Leakage.	<i>The Conditional Information Page (CIP) allows isolation steps to be performed out of order if the leak location is diagnosed providing the remainder of the procedure is completed to identify any other leak locations.</i>
	SRO/RO	Directs/Maintains Pressurizer Level at program by: <ul style="list-style-type: none"> <li>• Lowering Letdown flow (changing orifices) (crew may isolate Letdown since cooling to the Regen Hx is no longer present)</li> <li>• Raising Charging Flow</li> <li>• Starting an additional Charging Pump</li> </ul>	<i>The CIP directs a Manual Reactor trip and Safety Injection be performed if any of the following exist:</i> <ul style="list-style-type: none"> <li>• RCS leakrate is &gt;200 gpm and Pzr level is lowering.</li> <li>• Pzr level cannot be maintained &gt;17%.</li> <li>• VCT level cannot be maintained &gt;15%.</li> <li>• RCB pressure cannot be maintained &lt;3 psig.</li> </ul> <i>It is NOT expected for any of the above conditions to exist at this time.</i>
	SRO/RO	<ul style="list-style-type: none"> <li>• Directs/Maintains VCT level &gt;15% by Auto OR manual makeup.</li> </ul>	
	SRO/RO	Directs/Estimates RCS Leakrate by: <ul style="list-style-type: none"> <li>• Performing a leakrate surveillance.</li> <li>• Using Charging flow, Letdown flow, Pzr Level and VCT level to estimate leakrate.</li> </ul>	<ul style="list-style-type: none"> <li>• Actual leakrate is approximately 130 gpm.</li> <li>• Difficult to get a leakrate from charging &amp; letdown flows due to instabilities.</li> </ul>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 4</b>			
<b>Event Description:</b> Charging Line Leak inside Containment (cont'd.)			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Directs/Checks for leakage to the MAB: <ul style="list-style-type: none"> <li>• MAB Radiation levels</li> <li>• MAB Floor Drain Tank (FDT) level</li> <li>• Recycle Holdup Tank (RHT) and Waste Holdup Tank (WHT) Levels.</li> <li>• BTRS Chiller Surge Tank level</li> <li>• Plant Computer points for CVCS Letdown Area Temperatures (2 points).</li> </ul>	<ul style="list-style-type: none"> <li>• <b>The crew may quickly diagnose the leakage is into the RCB and immediately transition to the appropriate procedure Addendum (which is allowed by the CIP). If so, refer to the actions on the next page associated with leakage into the RCB.</b></li> <li>• <i>All indications for leakage into MAB are normal (i.e. no leakage indicated).</i></li> <li>• <i>FDT, RHT, and WHT levels must be checked locally.</i></li> <li>• <i>BTRS Surge Tk. Level is checked by Annunciator 4M07 - Window F4, BTR CHLR SRG TK LEVL HI/LO, NOT in alarm.</i></li> </ul>
	SRO/RO or BOP	Directs/Contacts Chemistry to sample all SG's for activity.	
	SRO/RO or BOP	Directs/Checks the following for signs of leakage: <ul style="list-style-type: none"> <li>• Condenser Air Removal System (CARS) Radiation</li> <li>• SG Blowdown Radiation</li> <li>• Main Steamline Radiation</li> <li>• N-16 Monitors</li> </ul>	<ul style="list-style-type: none"> <li>• <i>All indications for leakage into a SG are normal (i.e. no leakage indicated).</i></li> <li>• <i>All checks are done at the Rad Monitor Panel, RM-11.</i></li> </ul>
	SRO/RO	Directs/Checks Reactor Coolant Drain Tank level is < 90%.	

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 4</b> <b>Event Description:</b> Charging Line Leak inside Containment (cont'd.)			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Directs/Checks RCS leakage to the Reactor Coolant Drain Tank is normal: <ul style="list-style-type: none"> <li>• RCDT Level Control Valve, LV-4911 is closed.</li> <li>• Monitor RCDT level to determine in-leakage using Plant Curve Book Figure 10.9.</li> </ul>	<i>Fig. 10.9 is a Tank level vs. volume data sheet for the RCDT.</i>
	SRO/BOP	Directs/Checks Incore Instrumentation Panel Leak Alarm is CLEAR at CP-012.	<i>The leak alarm is an indicating light located in the lower half of the Incore Panel.</i>
	SRO/RO	Directs/Checks for <b>RCS Leakage to the RCB:</b> <ul style="list-style-type: none"> <li>• Containment Radiation – will NOT be normal.</li> <li>• Containment Normal and Secondary sump levels checked by:               <ul style="list-style-type: none"> <li>○ Computer points for Containment Sump Inflows (3 points).</li> <li>○ Computer point for Unidentified 1 Hr. Average Leak Rate.</li> </ul> </li> <li>• Containment Sump level chart recorders at CP-018 – shows RISING level.</li> <li>• Containment Temperature – normal</li> <li>• Containment Dew Point - normal</li> <li>• Containment Pressure &lt; 0.3 psig - normal</li> </ul>	<ul style="list-style-type: none"> <li>• <i>There will be multiple indications there is leakage to the RCB therefore the US will transition to procedure Addendum 3.</i></li> <li>• <i>RCB Normal sump level will be rising.</i></li> <li>• <i>Containment pressure, temperature and dew point indications will be normal since charging water is relatively cool.</i></li> </ul>
	SRO	Directs a Control Room Operator to notify Health Physics of the problem and request assistance.	<ul style="list-style-type: none"> <li>• <i>The HP assistance should be to help with making a Containment entry and for escorting a Plant Operator so he/she can locate and isolate the leak.</i></li> </ul>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 4</b>  <b>Event Description:</b> Charging Line Leak inside Containment (cont'd.)			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Directs/Checks RCP Seal parameters are normal: <ul style="list-style-type: none"> <li>• Individual Seal Injection flows</li> <li>• Seal Inlet temperature</li> <li>• Seal Injection Filter DP</li> </ul>	<ul style="list-style-type: none"> <li>• <i>All seal injection parameters will be normal.</i></li> <li>• <i>Seal injection Filter DP can be checked by the absence of Annunciator SEAL WTR INJ FLTR DP HI alarm on panel CP-004 (Lampbox 4M08, Window D-1).</i></li> <li>• <i>A Plant Operator may be dispatched to check Seal Injection filter DP locally.</i></li> </ul>
	SRO/RO	Directs/Removes normal Charging and Letdown from service: <ul style="list-style-type: none"> <li>• Closes FV-0011, LTDN ORIF HDR ISOL valve.</li> <li>• Closes FCV-0205, CHG FLOW CONT VLV.</li> <li>• Opens Charging Pump recirc valve for operating Charging Pump.</li> <li>• Adjusts HCV-0218 to maintain RCP seal injection flow between 6 and 13 gpm.</li> <li>• Close orifice isolation valves:               <ul style="list-style-type: none"> <li>○ FV-0012</li> <li>○ FV-0013</li> <li>○ MOV-0014</li> </ul> </li> <li>• Closes LCV-0465 and LCV-0468, LETDN ISOL valves.</li> <li>• Closes MOV-0025, OCIV Charging Valve.</li> </ul>	<p><i>Only FV-0012 will require closing because only that orifice path is normally in service.</i></p> <ul style="list-style-type: none"> <li>• <i>Closing MOV-0025 will isolate the leak.</i></li> <li>• <i>2 minutes after MOV-0025 is closed, <b>Event #5</b> will occur automatically.</i></li> </ul>

## OPERATOR ACTIONS

<b>Op-Test No.: #</b>	<b># 1</b>	<b>Scenario No.: #</b>	<b># 3</b>	<b>Event No.:</b>	<b>4</b>
<b>Event Description:</b> Charging Line Leak inside Containment (cont'd.)					
Time	Position	Required Operator Actions	Notes		
	SRO/RO	<p>Directs/Places Excess Letdown in service per OPOP02-CV-0004, CVCS Subsystem:</p> <ul style="list-style-type: none"> <li>• Ensures adequate RCDT volume exists to receive Excess Letdown.</li> <li>• Notify HP of changes in Letdown flowpath.</li> <li>• Notify Chemistry of changes in CVCS Letdown and/or charging.</li> <li>• Ensures CCW is in service to the Excess Letdown Hx.</li> <li>• Checks Charging is isolated because Normal Letdown has been isolated.</li> <li>• Checks the mini-flow recirc on the operating Charging Pump is open.</li> <li>• Places Excess Letdown DIVERT FV-3123 in the RCDT position.</li> <li>• Ensure EXCESS/NORMAL LETDN CROSS CONNECTION HS-0469 in the CLOSE position.</li> <li>• Opens Letdown Hx inlet isolation valve ‘LOOP D ISOL MOV-0083.</li> <li>• Opens Letdown Hx inlet isolation valve ‘LOOP D ISOL MOV-0082.</li> <li>• Slowly opens Excess Letdown TEMP CONT HCV-0227.</li> <li>• Adjusts Seal Injection flow and Excess Letdown flow to maintain desired:               <ul style="list-style-type: none"> <li>○ Pressurizer level</li> <li>○ RCDT level</li> <li>○ RCDT pressure</li> </ul> </li> </ul>	<p><i><b>Event 5</b> will likely occur before Excess Letdown is entirely placed in service.</i></p>          <p><i>Will have to contact a Plant Operator to check the position of this switch.</i></p>		

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 4</b> <b>Event Description:</b> Charging Line Leak inside Containment (cont'd.)			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Directs/Determines if RCS leakage has been isolated by any of the following methods: <ul style="list-style-type: none"> <li>• Monitor RCB Parameters</li> <li>• Monitor RCS leakrate by performing a surveillance.</li> <li>• Determine RCS leakrate using Pressurizer level, VCT level, seal injection flows.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Crew should determine the leakage has stopped.</i></li> <li>• <i>Crew can use <u>any</u> one of the three listed methods to monitor if leakage has stopped.</i></li> </ul>



### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 5, 6, and 7</b>			
<b>Event Description:</b> Loss of Main Generator Load/Reactor trip (Event 5) SG 1A Safety Valve Fails Open (Event 6) Failure of Train 'A' of Phase 'A' Isolation to actuate (Event 7)			
Time	Position	Required Operator Actions	Notes
	ALL	Recognize and respond to indications the Reactor has tripped.	
	SRO	Enters 0POP05-EO-EO00, Reactor Trip or Safety Injection, and directs the crew to perform their immediate actions.	<i><b>Event #6</b> will occur 10 seconds after the Reactor trip.</i>
	RO	Completes immediate actions of 0POP05-EO-EO00 and determines: <ul style="list-style-type: none"> <li>• Reactor is tripped</li> <li>• Turbine is tripped</li> <li>• AC ESF Busses are energized</li> <li>• SI is actuated</li> </ul>	<ul style="list-style-type: none"> <li>• RO will announce status of immediate action steps as he/she performs them.</li> <li>• BOP Operator will monitor the plant and make an announcement of the Reactor trip.</li> <li>• The failed open Safety Valve on 'A' SG (<b>Event #6</b>) will be difficult to diagnose using steam pressure because all the SG's are still x-tied at this time because the MSIV's are still open.</li> <li>• <b>Event #6</b> will cause RCS pressure and Pzr level to lower eventually creating a need to trip the Reactor and initiate SI.</li> <li>• If crew doesn't diagnose the stuck open Safety Valve by the time they leave EO00, they will transition to 0POP05-EO-ES01, Reactor Trip Response</li> </ul>
	SRO/BOP	Determine SG 1A is faulted. SRO directs the BOP operator to place AFW Pump #11 in PTL.	<i>These actions should occur shortly after the Reactor trip</i>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 5, 6, and 7</b>			
<b>Event Description:</b> Loss of Main Generator Load/Reactor trip (Event 5) SG 1A Safety Valve Fails Open (Event 6) Failure of Train 'A' of Phase 'A' Isolation to actuate (Event 7)			
Time	Position	Required Operator Actions	Notes
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.	<ul style="list-style-type: none"> <li>• Before beginning the verification of immediate actions, the US may direct the BOP operator to throttle AFW flow to limit RCS cooldown.</li> <li>• The Unit Supv. may transition to 0POP05-EO-ES01, Reactor Trip Response, if the crew hasn't yet diagnosed the faulted SG. If a transition to ES01 occurs</li> </ul>
	SRO/BOP	Directs/Performs 0POP05-EO-EO00, Addendum 5, Verification of SI Equipment Operation: <ul style="list-style-type: none"> <li>• FW Isolation</li> <li>• Check for Steamline Isolation</li> <li>• AFW Status</li> <li>• Phase 'A' Containment Isolation</li> <li>• ECW and CCW</li> <li>• Containment Cooling</li> <li>• ECCS pump and valve status</li> <li>• Containment Ventilation Isolation</li> <li>• HVAC systems (CR/EAB/FHB)</li> </ul>	<p><i>This procedure action will not apply until a Safety Injection occurs.</i></p> <p><i>Should place # 11 AFWP in PTL to stop feeding the faulted SG if not already done</i></p> <p><i>BOP operator should note Train 'A' of Phase 'A' Isolation failed to actuate. This is <b>Event #7</b>. See specific actions on next page.</i></p>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 5, 6, and 7</b>			
<b>Event Description:</b> Loss of Main Generator Load/Reactor trip (Event 5) SG 1A Safety Valve Fails Open (Event 6) Failure of Train 'A' of Phase 'A' Isolation to actuate (Event 7)			
Time	Position	Required Operator Actions	Notes
	BOP	Determines Train 'A' of Phase 'A' Isolation has failed to actuate and performs the following: <ul style="list-style-type: none"> <li>Attempts manual actuation, but does not work.</li> <li>Individually closes or checks closed the following valves as a minimum: <ul style="list-style-type: none"> <li>FV-3653</li> <li>MOV-0312</li> <li>FV-4920</li> <li>FV-7800</li> <li>MOV-0025</li> <li>FV-1025</li> <li>FV-1026</li> <li>FV-1027</li> <li>FV-1028</li> </ul> </li> </ul>	<p><b><u>This is Event #7</u></b></p> <p><i>Operator may perform the entire addendum instead of just checking Train 'A' valves.</i></p>
	SRO/RO	Check plant status: <ul style="list-style-type: none"> <li>Containment pressure: normal</li> <li>RCP Seal cooling: 6-13 gpm</li> <li>RCS cooldown: at or trending to 567 °F</li> <li>Pzr PORV and Spray valve status: closed</li> <li>Excess Letdown Isol Valves: closed</li> <li>Monitor RCP trip criteria to determine if RCP's should be stopped: criteria will NOT be met.</li> <li>Selected Cntmt Isolation Valves: closed.</li> </ul>	<ul style="list-style-type: none"> <li><i>The Excess Letdown Isolation Valves will be open if RO placed Excess LD in service before the Rx trip occurred.</i></li> <li><i>RCP trip conditions: RCS pressure is &lt; 1430 psig and at least 1 HHSI Pump is running.</i></li> </ul>
	SRO/RO or BOP	Determines SG "A" is faulted	

### OPERATOR ACTIONS

<b>Op-Test No.:</b> # 1 <b>Scenario No.:</b> # 3 <b>Event No.:</b> 5, 6, and 7			
<b>Event Description:</b> Loss of Main Generator Load/Reactor trip (Event 5) SG 1A Safety Valve Fails Open (Event 6) Failure of Train 'A' of Phase 'A' Isolation to actuate (Event 7)			
Time	Position	Required Operator Actions	Notes
	BOP	Completes Addendum 5, reports the failure of Train 'A' of Phase 'A' Isolation to actuate, but all valves were closed individually to complete the Phase 'A' Isolation.	<i>Addendum 5 will likely not be completed until after transition to EO20.</i>
	SRO	Informs crew of transition to 0POP05-EO-EO20, Faulted SG Isolation, and to monitor Critical Safety Functions	
	<b>SRO/BOP (C)*</b> * denotes critical portion of step	Directs/Checks MSIV's and MSIB's closed including *'A' SG MSIV and MSIB are closed.	
	SRO/BOP	Checks pressures in all SG's and determines: <ul style="list-style-type: none"> <li>Pressure is controlled or rising in at least one SG</li> <li>'A' SG is faulted.</li> </ul>	<ul style="list-style-type: none"> <li>SG's 'B', 'C', and 'D' pressures are 'controlled'.</li> <li>SG 'A' pressure is NOT controlled.</li> </ul>

### OPERATOR ACTIONS

<b>Op-Test No.:</b> # 1 <b>Scenario No.:</b> # 3 <b>Event No.:</b> 5, 6, and 7			
<b>Event Description:</b> Loss of Main Generator Load/Reactor trip (Event 5) SG 1A Safety Valve Fails Open (Event 6) Failure of Train 'A' of Phase 'A' Isolation to actuate (Event 7)			
Time	Position	Required Operator Actions	Notes
	<b>SRO/BOP (C) *</b> <i>* denotes critical portion of step</i>	<b>Isolates the faulted SG ("A")</b> <ul style="list-style-type: none"> <li>Verifies all FWIV's closed.</li> <li>Verifies all FWIB's closed.</li> <li>Verifies all FW Preheater bypass valves closed.</li> <li>Verifies all FW Regulating and Low Power FW Regulating Valves closed.</li> <li><b>Isolates AFW flow to 'A' SG*</b> <ul style="list-style-type: none"> <li><b>Resets SI*</b></li> <li><b>Resets ESF load sequencers*</b></li> <li><b>Resets SG LO-LO level AFW actuations*</b></li> <li><b>Checks SG 1D intact*</b></li> <li><b>Closes 'A' SG AFW OCIV*</b></li> </ul> </li> <li><b>Verifies SG "A" PORV closed*</b></li> <li><b>Verifies SG 'A' Blowdown and sample isolation valves closed*</b></li> </ul>	<i>* indicates critical portion of step – only those items bolded.</i>
	SRO/BOP or RO	Check Secondary Radiation: <ul style="list-style-type: none"> <li>Resets SI</li> <li>Resets ESF load sequencers</li> <li>Resets SG LO-LO level AFW actuations</li> <li>Resets SG Blowdown and Sampling Isolations</li> <li>Notifies Chemistry to sample all SG's hourly for activity.</li> <li>Checks the following Rad Monitors:               <ul style="list-style-type: none"> <li>Main Steamline</li> <li>SG Blowdown</li> <li>CARS Pump</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><i>The first 3 resets have already been done so the operator will just check that they are still reset.</i></li> </ul> <i>CARS = Condenser Air Removal System.</i>

### OPERATOR ACTIONS

<b>Op-Test No.: # 1      Scenario No.: # 3      Event No.: 5, 6, and 7</b>			
<b>Event Description:</b> Loss of Main Generator Load/Reactor trip (Event 5) SG 1A Safety Valve Fails Open (Event 6) Failure of Train 'A' of Phase 'A' Isolation to actuate (Event 7)			
Time	Position	Required Operator Actions	Notes
	ALL	Check is SI flow should be terminated <ul style="list-style-type: none"> <li>• RCS subcooling - &gt;35° F</li> <li>• Secondary heat sink – NR level in one SG &gt; 14% OR total AFW Flow &gt; 576 gpm.</li> <li>• RCS pressure &gt; 1745 psig and stable or rising</li> <li>• Pressurizer level &gt; 8%</li> </ul>	<ul style="list-style-type: none"> <li>• <i>If conditions are met, a transition to 0POP05-EO-ES11, SI Termination, will be made.</i></li> <li>• <i>Conditions will likely NOT be met for transition at this time.</i></li> <li>• <i>If not met (expected), the crew will transition to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant.</i></li> </ul>
	SRO	Announces transition from 0POP05-EO-EO20 (to ES11 or EO10, as appropriate).	<i>Terminate the scenario</i>

### CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
SRO/RO	Directs/Places Rod Control in MANUAL.	Place Rod Control in MANUAL prior to receiving an automatic Reactor trip following the failure of PT-505.	
SRO/BOP	<b>Isolates the Faulted SG ('A'):</b> <ul style="list-style-type: none"> <li>• 'A' SG MSIV and MSIB are closed.</li> <li>• Isolates AFW flow to 'A' SG* <ul style="list-style-type: none"> <li>○ Resets SI*</li> <li>○ Resets ESF load sequencers*</li> <li>○ Resets SG LO-LO level AFW actuations*</li> <li>○ Checks SG 1D intact*</li> <li>○ Closes 'A' SG AFW OCIV*</li> </ul> </li> <li>• Verifies SG "A" PORV closed*</li> <li>• Verifies SG 'A' Blowdown and sample isolation valves closed*</li> </ul>	Isolate SG 1A feed and steam lines prior to exiting 0POP05-EO-EO20, Faulted SG Isolation.	

**TURNOVER INFORMATION**

- Reactor Power is 100%
  - Cycle Burnup is 150 MWD/MTU (BOC)
  - RCS Boron Concentration is 1351 ppm
  - Hourly dilutions to maintain current power are approximately 10 gallons. Total Batch Integrator set at 10 gallons, getting 11. Xenon is at equilibrium conditions.
  - Boric Acid Tanks 'A' and 'B' are at 7485 ppm.
  - No liquid waste discharges are in progress or planned.
  - No personnel are in containment.
  - FHB Truck Bay doors are closed
  - No ESF DG FOST's are on recirc.
  - This IS the load control unit.
  - #13 Low Pressure Heater Drip Pump and RCFC 12A are OOS.
  - Three (3) Condensate Pumps are in service to support the maintenance on LPHD #13.
  - Repairs have just been completed on LPHD #13 and it is ready to be returned to service.
  - Upon assuming the watch, place LPHD #13 in service and restore associated LPH Drips per 0POP02-HV-0001, then secure #13 Condensate Pump per 0POP02-CD-0001.
- Additional Information associated with returning LPH Drips to service:
- Chemistry results are satisfactory for returning LPH Drips to Condensate.
  - I&C has NOT adjusted the settings for the High Level Dump Controller on Flash Tank #13.



# **INITIAL LICENSE EXAM**

## **OPERATING TEST # 1**

### **NRC SCENARIO # 4**

**Revision 1**

**Week of 09/26/2011**

### SCENARIO OUTLINE

**Facility:** South Texas Project

**Scenario No.:** 4

**Op-Test No.:** LOT18 NRC

**Examiners:** By separate schedule

**Operators:** By separate schedule

**Initial Conditions:** 100% Power and Stable at BOC. Train 'B' work week with ECW Pump, D/G, CCW Pump, LHSI and HHSI Pumps, and AFW Pump inoperable. SG 'B' LT-0528 (CH 3) is in the Tripped condition.

**Turnover:** All Tech Spec actions associated with ESF DG #12 being out of service are complete. ESF Power Availability surveillance (PSP03-EA-0002) is due in 6 hours. Continuing Train 'B' Work Week. I&C is continuing to trouble shoot SG 'B' LT-0528. The level transmitter has been inoperable for the last 4 days and is currently in the Tripped condition per Tech. Specs. After taking the watch, secure SGFPT #12.

Event No.	Malf. No.	Event Type*	Event Description
1 (1 min)	NA	SRO (N) BOP (N)	Shutdown SGFPT # 12
2 (11 min)	02-19-03 (0)	RO (I) SRO (I, TS)	PRZ Pressure Channel PT0457 fails low
3 (25 min)	05-22-01 (1)	BOP (I) SRO (I, TS)	SG 1A Steam Pressure PT-0514 fails high.
4 (40 min)	10-11-01 (1)	ALL (C)	Lockout of 4.16KV Bus E1A
5 (N/A)	05-20-08 (0)	ALL (M)	Inadvertent FWI when SG 'B' CH 4 HI-Hi Bistable comes in. (7 minutes after DG 11 is placed in PTS - integral)
6 (N/A)	06-02-01 (1)	RO (C) SRO (C)	Main Turbine fails to auto trip and doesn't trip with Manual Trip PB. (integral) <b>(CT)</b>
7 (N/A)	08-03-03 (1) 08-02-01 (1)	ALL (C)	AFW Pump 13 trips 3 minutes after start and AFW Pump 14 overspeeds upon starting creating a Loss of Heat Sink condition. (integral) <b>(CT)</b>
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Technical Specification			

**SCENARIO MISCELLANEOUS INFORMATION****INSTRUCTOR NOTES:**

Refer to the Instructor Guide for directions on Simulator Setup, Expected Booth Communications and Expected Booth Actions.

**CRITICAL PARAMETERS:**

The following parameters may be of value in evaluating crew performance and should be automatically recorded during the scenario. Once the scenario is complete for each crew, printout the Critical Parameters and label the printout with date, time, Crew # and scenario #.

- SG 1A NR level
- Main Turbine Throttle Valve positions (all 4)
- RCS Wide Range Pressure
- HHSI Flow in Train 'C'
- PRT Pressure
- Pressurizer PORV tailpipe temperatures

**OPERATOR ACTIONS TABLE NOTES:**

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.
2. Actions required throughout the event are indicated as "(continuous)" in the position column.
3. Shaded cells indicate procedural entry points.

**OPERATOR ACTIONS**

Op-Test No.: 1		Scenario No.: 4	Event No.: 1
Event Description: Shutdown of SGFPT #12			
Time	Position	Applicant's Actions or Behavior	Notes
	SRO	Directs the BOP Operator to shutdown SGFPT #12.	
	BOP	The BOP Operator goes to 0POP02-FW-0002, SGFP Turbine, to perform a shutdown of SGFPT #12	
	BOP	Checks "STM LN DRAIN" switch in Auto.	
	BOP	Ensures the 'SPEED' Controller in the 'MAN' position.	<i>Controller will originally be in Auto so operator will have to place the Controller to 'MAN'.</i>
	BOP	Slowly reduces turbine speed to 3300 rpm by repeatedly depressing the 'SPEED' Controller 'LOWER' pushbutton.	
	BOP	Closes Discharge Valve MOV-0072	
		Depresses the SGFP "TRIP" pushbutton and verifies the following: <ul style="list-style-type: none"> <li>• "TRIP" light is lit.</li> <li>• "LATCH/ALM RST" light is extinguished.</li> <li>• SGFPT HP stop valves closed.</li> <li>• SGFPT LP stop valves closed.</li> </ul>	
	BOP	Momentarily depresses the 'LATCH/ALM RST' pushbutton and verifies the following: <ul style="list-style-type: none"> <li>• "LATCH/ALM RST" lit</li> <li>• "TRIP" light extinguished</li> <li>• SGFP 12 "RECIRC" valve FV-7109, is open.</li> </ul>	

### OPERATOR ACTIONS

<b>Op-Test No.: 1</b>		<b>Scenario No.: 4</b>	<b>Event No.: 1</b>
<b>Event Description:</b> Shutdown of SGFPT #12			
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>	<b>Notes</b>
	BOP	Depresses the SGFP “TRIP” pushbutton and verifies the following: <ul style="list-style-type: none"> <li>• “HP GOV VLV” closed</li> <li>• “LP GOV VLV” closed</li> <li>• “HP STOP VALVE” closed</li> <li>• “LP STOP VALVE” closed</li> <li>• “TRIP” light lit</li> </ul>	
	BOP	Ensures the Startup Feedpump Hand Switch is in Auto.	<i>The Startup Feedpump will be running.</i>
	BOP	Ensures the “STM LN DRAIN” valves are open for SGFPT #12: <ul style="list-style-type: none"> <li>• FV-7952</li> <li>• FV-7953</li> <li>• FV-7974</li> </ul>	<b><u>Event 2</u></b> can occur here on Lead Examiner’s signal.
	BOP	Contacts a Plant Operator to have him/her ensure SGFPT #12 goes on its Turning Gear once turbine speed has reached zero rpm.	

### OPERATOR ACTIONS

Op-Test No.: 1                      Scenario No.: 4                      Event No.: 2			
Event Description: Pressurizer pressure controlling channel (PT-457) fails LOW.			
Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Identify and respond to annunciators on CP004 indicative of a failed Pressurizer pressure channel: <ul style="list-style-type: none"> <li>• PRZR PRESS DEV LO B/U HTRS ON</li> <li>• PRZR PRESS LO RX TRIP ALERT</li> <li>• PRZR PRESS LO SI ALERT</li> </ul>	<i>Annunciator list is not inclusive.</i>
	RO	Identifies the failed pressure channel as PT-0457 failed low and performs immediate actions.	
	SRO (continuous)	Enters 0POP04-RP-0001, Loss of Automatic Pressurizer Pressure Control, and ensures RO is performing immediate actions.	
	RO	Places Pressurizer Master Pressure Controller in MANUAL.	<i>Immediate action</i>
	RO	Removes failed channel PT-0457 from control by selecting 455/456 or 455/458.	<i>Immediate action</i>
	RO	Adjusts Pressurizer pressure Controller to control between 2220 and 2250 psig.	<ul style="list-style-type: none"> <li>• <i>Immediate action</i></li> <li>• <i>Failure will result in actual pressure rising.</i></li> </ul>
	RO	Checks Pressurizer Pressure Controller operable.	
	RO	Checks Pressurizer PORV's closed: <ul style="list-style-type: none"> <li>• PCV-0655A</li> <li>• PCV-0656A</li> </ul>	

### OPERATOR ACTIONS

Op-Test No.: 1                      Scenario No.: 4                      Event No.: 2			
Event Description: Pressurizer pressure controlling channel (PT-457) fails LOW			
Time	Position	Applicant's Actions or Behavior	Notes
	RO	Checks: <ul style="list-style-type: none"> <li>• Normal spray valves closed (PCV-0655B and PCV-0655C)</li> <li>• Spray line temperature normal.</li> <li>• Auxiliary spray valve closed (LV-3119).</li> </ul>	
	RO	Checks Pressurizer pressure > 2210 psig. If not, ensures Pzr. Heaters are on.	
	RO	Checks Pressurizer pressure is < 2250 psig. If not: <ul style="list-style-type: none"> <li>• Places Variable Heaters in PTL</li> <li>• Ensures Pzr. Spray Valves are modulating open to control pressure.</li> <li>• Checks Pzr pressure stable or trending lower. If not: <ul style="list-style-type: none"> <li>○ Checks Pzr PORV Isolation Valves are open.</li> <li>○ If pressure is &gt;2335 psig, ensures at least one PORV is open.</li> <li>○ If pressure reduces to less than 2315 psig, ensures the PORV's are closed or isolated.</li> </ul> </li> </ul>	
	RO	Ensures an operable Pressurizer Pressure channel is selected on CP-005 Pressure Recorder.	
	RO	Checks Pressurizer Pressure Controller is operable.	
	RO	Checks Pressurizer pressure is between 2220 and 2250 psig.	
	RO	Checks Pressurizer Pressure Controller demand is normal for existing plant conditions.	<i>Nominal Pressurizer Pressure Controller output (demand) is approximately 15%-35%.</i>

## OPERATOR ACTIONS

Op-Test No.: 1                      Scenario No.: # 4                      Event No.: 2			
Event Description: Pressurizer Pressure Channel PT-0457 fails LOW			
Time	Position	Required Operator Actions	Notes
	RO	Checks the following Pressurizer Pressure features: <ul style="list-style-type: none"> <li>• Spray Valves in Auto</li> <li>• Heaters in Auto</li> <li>• PORV's in Auto</li> <li>• PORV Isolation Valves open</li> <li>• Pzr Pressure Controller in Auto</li> <li>• Pzr Pressure being maintained 2220-2250 psig</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Pressure controller will still be in Manual, but placed in Auto at this step.</i></li> </ul>
	SRO/RO	Checks Pzr Pressure channels operable and determines PT0457 has failed low, then performs the following: <ul style="list-style-type: none"> <li>• NOTIFIES I&amp;C to trip or bypass bistables for the failed channel Addendum 1.</li> <li>• Determine if Permissive P-11 status is appropriate for plant conditions.</li> </ul>	<i>The action to check Permissive P-11 is for Tech Spec compliance. The status light should be out indicating Permissive P-11 is NOT present. The P-11 permissive should be present only if Pzr. Pressures is &lt;1985 psig.</i>
	SRO	Refers to Technical Specifications and determines that Table 3.3.1, items 8, 10 and 11 (action 6) and Table 3.3-3, item 1e (action 20), currently apply for the failed channel.  The specified actions of both TS table 3.3-1 and 3.3-3 indicate the channel MAY be bypassed, but MUST be tripped within 72 hr.	<p><b><u>Event # 3</u></b> will occur here after TS consulted and Lead Examiner indicates to proceed.</p> <p><i>Tech Spec Table 3.3-3, item 9.a is for Permissive P-11 which was checked in an action above.</i></p>



**OPERATOR ACTIONS (Cont')**

<b>Op-Test No.: 1</b>		<b>Scenario No. 4</b>		<b>Event No. 3</b>
<b>Event Description:</b>		SG 'A' Steam Pressure Channel PT-514 fails HIGH		
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>	<b>Notes</b>	
	BOP	Acknowledges and reports annunciators on Control Panel CP006: <ul style="list-style-type: none"> <li>SG 'A' STM/FW FLOW MSMTCH</li> </ul>		
	<i>SRO/BOP</i> <i>C*</i> * - denotes critical portion of step	Performs immediate actions of 0POP04-FW-0001: <ul style="list-style-type: none"> <li><b>PLACES SG 'A' FEEDWATER MAIN FEED REG. VALVE (MFRV) CONTROLLER IN MANUAL*</b></li> <li><b>ADJUSTS CONTROLLER OUTPUT TO RESTORE SG 'A' LEVEL TO PROGRAM*</b></li> <li>Determines SGFPT Master and Individual Speed Controllers are responding in Auto.</li> </ul>	<i>The Steam Pressure instrument failure will result in 'A' SG level rising.</i>  <i>This action is NOT part of the Critical steps, but is part of the immediate actions.</i>	
	SRO (continuous)	Directs/ensures actions of 0POP04-FW-0001, Loss of Steam Generator Level Control.		
	SRO	Ensures immediate actions are taken: <ul style="list-style-type: none"> <li>Manual control of 'A' MFRV, SG level being returned to 68-74%.</li> <li>Determines SGFPT Master and Individual Speed Controllers are responding in Auto.</li> </ul>		
	SRO/BOP	Determines MFRV's are in service and 'A' Main. Reg Valve is in Manual and is responding in Manual.		
	BOP	Determines the Low Power Feed Reg Valves (LPRV's) are not in service.		
	BOP	Checks if SGFP Master Speed Controller is in Manual.	<i>Controller will be in Auto.</i>	
		Checks if Master and individual SGFP Speed Controllers are in Manual.	<i>All SGFP Controller will be in Auto.</i>	

**OPERATOR ACTIONS**

Op-Test No.: 1		Scenario No. 4		Event No. 3	
Event Description:		SG ‘A’ Steam Pressure Channel PT-514 fails HIGH			
Time	Position	Applicant’s Actions or Behavior		Notes	
	SRO/BOP	<ul style="list-style-type: none"><li>Ensure appropriate Feed to steam DP OR SGFP Master Speed Controller at 100% demand in Auto.</li><li>If DP is too low, BOP operator may take manual control of the SGFPT Master Speed Controller to raise DP.</li></ul>		<ul style="list-style-type: none"><li><i>DP should be 169 psid at 100% power.</i></li><li><i>If DP is too low, but close to required value, the US may elect to first monitor DP since the Feedwater System is still in a state of change.</i></li></ul>	
	BOP	Restore SG ‘A’ NR level 68-74%		<i>BOP continues to manually adjust ‘A’ SG MFRV to establish and maintain ‘A’ SG level 68-74%.</i>	
	SRO/BOP	Ensure all SG NR levels > 20%, but < 87.5%			
	BOP	<p>Checks SG water level control instruments for failures:</p> <ul style="list-style-type: none"><li>Level</li><li>Feed Flow</li><li>Steam Flow – determines the selected Steamflow channel has failed (due to failure of steam pressure input) and selects an alternate channel for SG ‘A’ level control.</li><li>Steam Pressure – determines that PT-0514 has failed high. An alternate Steamflow channel has already been selected.</li></ul>		<ul style="list-style-type: none"><li><i>‘B’ SG Level channel LT-0528 is in a tripped condition with I&amp;C troubleshooting in progress per turnover info.</i></li><li><i>A procedure note indicates that a steam pressure inst. failure could affect the computer secondary heat balance results (computer point U1118) and the operator should check alternate computer points to determine if has been affected.</i></li></ul>	

## OPERATOR ACTIONS

Op-Test No.: 1		Scenario No. 4	Event No. 3
Event Description:		SG 'A' Steam Pressure Channel PT-514 fails HIGH	
Time	Position	Applicant's Actions or Behavior	Notes
	SRO/BOP	<p>Performs the following:</p> <ul style="list-style-type: none"> <li>Verifies ALL SG levels between 68% and 74%.</li> <li>Checks all SG Main and Low Power FWRV's Automatic Control is operable.</li> <li>Checks MFRV's OR LPRV's – in Automatic control.</li> <li>Determines SG 'A' MFRV Controller is operable, but not in Automatic and places SG 'A' MFRV Controller in AUTO if SG 'A' NR level is 68-74%, then monitors for proper operation.</li> <li>Places SG 'A' Feed Regulating Valve in AUTO when 'A' SG level 68-74%.</li> </ul>	<p><b>FWRV's = Feedwater Reg Valves</b></p> <p><i>This is where the operator returns 'A' SG MFRV to Automatic control.</i></p>
	BOP	<p>Checks Feedpump Master Speed Controller in Auto.</p> <ul style="list-style-type: none"> <li>If the controller is in Manual, but it's desired to place it in Auto, adjust the controller to provide the required Feed-to-Steam DP.</li> <li>Place the Controller in Auto</li> </ul> <p>Monitor for proper operation (i.e. maintains required DP).</p>	<p><i>SGFP Master Speed Controller may be in Manual to maintain desired DP from an earlier step.</i></p>
	SRO	<p>Checks Tech Specs and determines the following apply:</p> <ul style="list-style-type: none"> <li>Table 3.3-3, items 1.f, 4.c and 4.e (Action 20 for all 3)</li> <li>Action 20: failed channel MAY be bypassed, but MUST be tripped within 72 hrs.</li> </ul>	<p><b><u>Event # 4</u></b> can occur after TS have been consulted and on signal from Lead Evaluator.</p>
	SRO	Notifies I&C to trip or bypass the failed channel.	

## OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 4	Event No.: 4
Event Description: Lockout of 4.16 kV Bus E1A			
Time	Position	Required Operator Actions	Notes
	RO/BOP	Acknowledges and reports the following alarms (partial list): <ul style="list-style-type: none"> <li>• 4KV E1A SPLY BKR TRIP</li> <li>• 4KV E1A UNDERVOLT ALERT</li> </ul>	<i>Annunciator list is not inclusive</i>
	RO	Determines 4160v Bus E1A is de-energized due to an overcurrent lockout condition.	
	SRO	Directs/ensures actions of 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus.	<i>There's direction on the CIP to place SG PORV's associated with any de-energized 4160v Bus in Manual. A loss of 4160v Bus E1A will require SG PORV's for 'A' and 'D' SG's be placed in MANUAL. This action can be done anytime and up to and including the step to perform it.</i>
	SRO	Determines plant is in Mode 1 and all RCP's are running.	
	SRO/RO	Determines 4160v Bus E1A is NOT energized from offsite power and #11 ESF DG is running, but the output breaker is not closed due to overcurrent lockout.	<i>Operators will not close breaker due to lockout on bus.</i>
	RO	Places # 11 ESF DG in Pull-to-Stop	<ul style="list-style-type: none"> <li>• <i>This action may be done sooner if the crew diagnoses the need.</i></li> <li>• <b><i>Event #5</i></b> <i>will occur 7 minutes after the DG is placed in Pull-to-Stop.</i></li> </ul>

### OPERATOR ACTIONS

<div style="display: flex; justify-content: space-between;"> <span>Op-Test No.: 1</span> <span>Scenario No.: 4</span> <span>Event No.: 4</span> </div> <div>Event Description: Lockout of 4.16 kV Bus E1A (cont'd)</div>			
Time	Position	Required Operator Actions	Notes
	SRO/BOP	Checks/determines the following: <ul style="list-style-type: none"> <li>At least 1 Closed Loop Auxiliary Cooling Water (CL-ACW) Pump running.</li> <li>At least 1 Instrument Air Compressor is running.</li> <li>At least 1 Condensate Pump Running</li> <li>TSC DG is not running and LC 1W is energized.</li> <li>Lighting DG is not running and MCC 12K3 is energized.</li> </ul>	
	SRO/RO	Check the following: <ul style="list-style-type: none"> <li>RCP Seal Cooling exists from either Thermal Barrier CCW or Seal Injection flow.</li> <li>One Charging Pump (CCP) is running and it's CCP 1A.</li> </ul>	<i>Both Seal Injection and Thermal Barrier cooling exist.</i>
	SRO/RO	Determines the following: <ul style="list-style-type: none"> <li>'C' Train CCW Pump is in service.</li> <li>CCP 1B is NOT running</li> </ul>	<b><u>Event #5</u></b> <i>should be occurring at about this point if it hasn't already occurred.</i>

## OPERATOR ACTIONS

Op-Test No.: 1		Scenario No.: 4	Event No.: 4
Event Description: Lockout of 4.16 kV Bus E1A			
Time	Position	Required Operator Actions	Notes
	SRO/RO	<p>Determines Normal Letdown is NOT in service then implements 0POP04-CV-0004, Loss of Normal Letdown, to attempt to return Letdown to service.</p> <ul style="list-style-type: none"> <li>• Verifies Letdown valves LCV-0465 and LCV-0468 are open.</li> <li>• Verifies Letdown Containment Isolation Valves MOV-0023 and MOV-0024 are open.</li> <li>• Verifies LD Orifice Header Isolation Valve FV-0011, is open.</li> <li>• Determines no LD Orifice Isolation Valves are open and performs the following: <ul style="list-style-type: none"> <li>○ Closes FV-0011</li> <li>○ Closes Chg Flow Valve FV-205</li> <li>○ Opens CCP Recirc Valve</li> <li>○ Goes to Addendum 4 to restore LD</li> </ul> </li> <li>• Ensures RCP seal injection in service.</li> <li>• Ensures CCW supplying Excess and Normal LD Hx's.</li> <li>• Ensures Divert Valve TCV-0143 is in the 'VCT' position.</li> <li>• Opens Excess LD Isolation Valve MOV-0083.</li> <li>• Determines Excess LD Isolation Valve MOV-0082 has no power so it cannot be opened.</li> <li>• Determines neither Normal LD or Excess LD can be placed in service and performs the following: <ul style="list-style-type: none"> <li>○ Isolates Charging</li> <li>○ Controls RCP Seal Injection Flow to 6-8 gpm per pump.</li> </ul> </li> </ul>	<p><i>All actions for 0POP04-CV-0004 are within the shaded area. The steps for continuing in 0POP04-AE-0001 begin again on the next page.</i></p> <ul style="list-style-type: none"> <li>• <i>Only LCV-0468 will have power, but LCV-0465 was open before the power loss.</i></li> <li>• <i>Letdown flow was isolated when Orifice Isolation Valve FV-0012 closed due to the loss of power.</i></li> <li>• <i>Normal Letdown cannot be re-established quickly because there is no power to one of the MOV's required to be operated and it's in the RCB.</i></li> <li>• <i>The loss of power to MOV-0082 will prevent placing either Normal <u>OR</u> Excess Letdown in service quickly because it's located inside the RCB.</i></li> </ul>

## OPERATOR ACTIONS

Op-Test No.: 1                      Scenario No.: 4                      Event No.: 4			
Event Description: Lockout of 4.16 kV Bus E1A			
Time	Position	Required Operator Actions	Notes
	SRO	Continues in OPOP04-AE-0001, First Response to Loss Of Any Or All 13.8KV Or 4.16 KV Bus	
	SRO/RO	Verifies at least one RCP is running.	
	SRO/RO	Checks the following in their normal range: <ul style="list-style-type: none"> <li>• RCS pressure</li> <li>• RCS temperature</li> <li>• Pressurizer level</li> </ul>	<i>Will not be able to stabilize Pressurizer level until some form of Letdown is re-established.</i>
	SRO/BOP	Maintain SG levels 68-74% using Main or Auxiliary Feedwater.	<i>Normal Feedwater will still be in service.</i>
	SRO/BOP	Checks if all 4160v ESF Busses are energized and determine 4160v Bus E1A is de-energized, then: <ul style="list-style-type: none"> <li>• places 'A' and 'D' SG PORV's in MANUAL.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>This action can be done at anytime from the CIP.</i></li> <li>• <i>If the Unit Supv. desires to restore Control of the SG PORV's to the Control Room, he must dispatch an operator to operate switches in the plant.</i></li> </ul>
	SRO	Determines the following are energized: <ul style="list-style-type: none"> <li>• All 13.8 kV Standby Buses</li> <li>• All 13.8 kV Auxiliary Buses</li> <li>• Non-1E 4160v Buses 1D1 and 1D2.</li> </ul>	<i><b>Event # 5</b> should have automatically occurred by this step. If not, it should occur soon.</i>

Op-Test No.: # 1                      Scenario No.: # 4                      Event No.: 5 and 6			
Event Description: Inadvertent Feedwater Isolation/Reactor Trip/Turbine fails to trip			
Time	Position	Required Operator Actions	Notes
	ALL	Respond to multiple alarms due to Inadvertent Feedwater Isolation.	<i>If plant conditions are diagnosed soon enough, the crew will perform a manual Reactor trip. Otherwise they will respond to an automatic Reactor trip.</i>
	SRO	Directs/ensures crew enters 0POP05-EO-EO00, Reactor Trip or Safety Injection	
	<b>RO (C)*</b> * - denotes critical portion of step.	Completes immediate actions of 0POP05-EO-EO00 and determines: <ul style="list-style-type: none"> <li>Reactor is tripped</li> <li><b>*Turbine has NOT automatically tripped, attempts a turbine trip using the TURB TRIP PB; but turbine does not trip.</b> <ul style="list-style-type: none"> <li>Places both EH Pumps in PTL</li> <li>Manually runs back turbine to cause turbine to trip.</li> </ul> </li> <li>AC ESF Busses are energized except 4160v Bus E1A.</li> <li>SI may or may not have actuated – depends on fast turbine got tripped – see ‘Notes’ to the right →</li> </ul>	<ul style="list-style-type: none"> <li><i>RO will announce status of immediate action steps as he/she performs them.</i></li> <li><i>BOP Operator will monitor the plant and make an announcement of the Reactor trip.</i></li> <li><i>Once the Turbine EH Pumps are placed in PTL, a turbine trip will eventually occur, but running the turbine back will cause it to occur sooner because EH pressure is bled down faster.</i></li> <li><i>The delay in tripping the Main Turbine after the Reactor has tripped may result in a large RCS over-cooling and depressurization which results in an SI actuation (expected response) If this occurs, RCS pressure will quickly recover.</i></li> </ul>



## OPERATOR ACTIONS

Op-Test No.: # 1                      Scenario No.: # 4                      Events No.: 5 and 6			
Event Description: Inadvertent Feedwater Isolation/Reactor Trip/Turbine fails to trip (cont'd.)			
Time	Position	Required Operator Actions	Notes
	SRO	<p>Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed by performing a procedure read through of them.</p> <p><b>NOTE TO EXAMINER:</b></p> <ul style="list-style-type: none"> <li>• If an SI has occurred, continue with the operator actions on this page.</li> <li>• If an SI has NOT occurred, go to page 19 of this scenario guide for operator actions.</li> </ul>	<p><i>AFW will automatically start immediately after the Rx trip due to SG level shrink. <b>Event # 7</b> consists of AFW Pump #14 tripping on overspeed while starting and AFW Pump #13 tripping 3 minutes after starting. This will create a Loss of Heat Sink condition because AFW Pumps 11 and 12 are already OOS.</i></p>
	SRO/BOP	<p>Directs/Performs OPOP05-EO-EO00, Addendum 5, Verification of SI Equipment Operation:</p> <ul style="list-style-type: none"> <li>• FW Isolation</li> <li>• Check for Steamline Isolation</li> <li>• AFW Status</li> <li>• Phase 'A' Containment Isolation <ul style="list-style-type: none"> <li>○ MOV-0025 will have to be closed manually due to loss of power on 'A' Train.</li> </ul> </li> <li>• ECW and CCW</li> <li>• Containment Cooling</li> <li>• ECCS pump and valve status</li> <li>• Containment Ventilation Isolation</li> <li>• HVAC systems (CR/EAB/FHB)</li> </ul>	<ul style="list-style-type: none"> <li>• <i>If SI did not actuate, the crew will transition to OPOP05-EO-ES01, Reactor Trip Response, then transition to the Loss of Heat Sink FRP when all AFW is lost.</i></li> <li>• <i>Crew should diagnose the loss of all AFW which creates a Red Path on the Heat Sink CSF. Implementation of the appropriate FRP cannot be done until Addendum 5 has been completed.</i></li> <li>• <i>Some Containment Isolation Valves have no power, but there are usually redundant valves that will act to isolate the penetration. The only exception in this scenario is the Charging Line OCIV, MOV-0025.</i></li> </ul>

### OPERATOR ACTIONS

<div style="display: flex; justify-content: space-between;"> <span><b>Op-Test No.: # 1</b></span> <span><b>Scenario No.: # 4</b></span> <span><b>Events No.: 5 and 6</b></span> </div> <div><b>Event Description:</b> Inadvertent Feedwater Isolation/Reactor Trip/Turbine fails to trip (cont'd.)</div>			
Time	Position	Required Operator Actions	Notes
	SRO/RO	Check plant status: <ul style="list-style-type: none"> <li>• Containment pressure &lt; 9.5 psig</li> <li>• RCP Seal cooling: 6-13 gpm</li> <li>• RCS cooldown: Tave at or trending to 567 °F</li> <li>• Pzr PORV and Normal and Auxiliary Spray valve status: closed</li> <li>• Excess Letdown Isol Valves: closed</li> <li>• Monitor RCP trip criteria to determine if RCP's should be stopped: criteria will NOT be met.</li> <li>• The following Containment Isolation Valves are closed:               <ul style="list-style-type: none"> <li>○ RCP Seal Return Valves (2)</li> <li>○ Containment Rad Monitor Isolation Valves (4)</li> </ul> </li> </ul>	<i>When AFW Pump #13 trips a Red Path will occur in the Heat Sink Critical Safety Function. The SRO should then transition to 0POP05-EO-FRH1, Loss of Secondary Heat Sink IF ADDENDUM 5 IS COMPLETE. Go to page 20 of this scenario guide for associated operator actions.</i>  <i>RCP trip criteria: RCS pressure is &lt; 1430 psig and at least 1 HHSI Pump is running.</i>
	ALL	Diagnose plant conditions to determine appropriate procedure to implement next: <ul style="list-style-type: none"> <li>• Check SG pressures to determine if they are controlled or rising and are &gt; Containment pressure; all SG pressures will be controlled/rising.</li> <li>• Check for SG tube leak/rupture with Rad Monitor and SG level trends; no SG tube leak/rupture exists.</li> <li>• Check if RCS is intact with Containment radiation, pressure, and water level trends; RCS is intact.</li> </ul>	
	ALL	Monitors if SI flow can be terminated based on the following conditions: <ul style="list-style-type: none"> <li>• RCS subcooling &gt; 35 °F – this condition will be met.</li> <li>• Secondary Heat Sink based on AFW flow OR SG NR levels – this condition will NOT be met because there are no AFW Pumps running.</li> </ul>	

## OPERATOR ACTIONS

Op-Test No.: # 1		Scenario No.: # 4	Events No.: 5 and 6
<b>Event Description:</b> Inadvertent Feedwater Isolation/Reactor Trip/Turbine fails to trip (cont'd.)			
Time	Position	Required Operator Actions	Notes
	SRO	Transitions to 0POP05-EO-ES01, Reactor Trip Response	<i>This procedure transition will apply if an SI DID NOT occur after the Reactor trip.</i>
	SRO/RO	Monitor RCS Tave to determine if it's stable or trending to 567 °F. If not: <ul style="list-style-type: none"> <li>• Ensures AFW is appropriately throttled.</li> <li>• Isolate steam dump drains</li> <li>• Isolate steam chest drains</li> <li>• Isolate steam to MSR's and steam line drains to MSR's.</li> <li>• Trip all SGFPT's</li> <li>• Stop dumping steam</li> <li>• Isolate SG Blowdown</li> <li>• If cooldown continues, close all MSIV's and MSIB's.</li> </ul>	<i>When AFW Pump #13 trips a Red Path will occur in the Heat Sink Critical Safety Function. The SRO should then transition to 0POP05-EO-FRH1, Loss of Secondary Heat Sink. Go to page 20 of this scenario guide for associated operator actions.</i>
	SRO/BOP	Checks FW status if Tave < 574 °F: <ul style="list-style-type: none"> <li>• FWIV's and FWIB's closed</li> <li>• FW Preheater Bypass Valves closed</li> <li>• FW Main and Low Power Feed Reg Valves closed.</li> <li>• Trip all SGFPT's</li> </ul>	
	SRO/BOP	Verifies feedflow to $\geq 3$ SG's from either MFW or AFW and determines there is only 1 AFW pump providing water to 1 SG. Directs BOP operator to either cross-tie AFW systems to be able to feed 3 SG's OR establish MFW by performing procedure Addendum 6.	<i>At this time, only #13 AFW Pump is running supplying feedwater to 'C' SG (IF it hasn't yet tripped)</i>
	SRO/RO	Verifies all control rods are fully inserted.	
	SRO/RO	Check Standby DG status	<b><u>Event # 7</u></b> should have occurred by this step. If not, it should occur soon.

## OPERATOR ACTIONS

Op-Test No.: # 1                      Scenario No.: # 4                      Event No.: 7			
Event Description: Loss of Heat Sink			
Time	Position	Required Operator Actions	Notes
	ALL	Initiate monitoring of Critical Safety Functions.	<ul style="list-style-type: none"> <li>• <i>A Red Path on Heat Sink will be present.</i></li> <li>• <i>Crew cannot implement any FRP's until Addendum 5 is complete.</i></li> </ul>
	SRO continuous	Once Addendum 5 is complete, transitions to 0POP05-EO-FRH1, Response to Loss of Secondary Heat Sink, and directs operator actions.	
	ALL	Determine if a Secondary heat sink is required due to: <ul style="list-style-type: none"> <li>• RCS pressure is &gt; all SG pressures and no SG are faulted.</li> <li>• RCS Wide Range Thot is &gt; 350 °F</li> </ul>	<ul style="list-style-type: none"> <li>• <i>The crew should first evaluate if a Secondary Heat Sink exists per the CIP of the procedure.</i></li> <li>• <i>The plant conditions for this step will be present therefore a Secondary Heat Sink IS required.</i></li> </ul>
	SRO/BOP	Checks if Secondary Heat Sink exists: <ul style="list-style-type: none"> <li>• SG WR level in <math>\geq 3</math> SG's is &gt; 50%.</li> <li>• Pressurizer Pressure is &lt; 2335 psig.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>At this time, there will NOT be sufficient level in <math>\geq 3</math> SG's so crew will have to implement an alternate method of RCS heat removal which will be Bleed and Feed.</i></li> <li>• <i>These conditions are also on the procedure CIP therefore the crew may directly evaluate the conditions upon entering the procedure.</i></li> </ul>
	SRO/RO	Directs/Trips all Reactor Coolant Pumps.	<i>This action removes a heat source to the RCS.</i>

## OPERATOR ACTIONS

<b>Op-Test No.: # 1                      Scenario No.: # 4                      Event No.: 7</b> <b>Event Description: Loss of Heat Sink</b>			
<b>Time</b>	<b>Position</b>	<b>Required Operator Actions</b>	<b>Notes</b>
	SRO/RO	Directs/Actuates Safety Injection	<i>SI may have actuated earlier due to the RCS cooldown after the Reactor trip and may have been reset. If so, the Manual SI Actuation Sw. can be used to re-actuate SI.</i>
	<b>SRO/RO (C)</b>	<b>Directs/Verifies RCS Feed path:</b> <ul style="list-style-type: none"> <li>• At least one HHSI Pump running</li> <li>• HHSI Valve alignment: <ul style="list-style-type: none"> <li>○ HHSI Pump suction valves from RWST – OPEN</li> <li>○ HHSI Pump discharge valves – OPEN</li> <li>○ HHSI Cold Leg Injection valves - OPEN</li> </ul> </li> </ul>	<i>Only 'C' Train HHSI Pump will be running; 'A' has no power due to bus lockout and 'B' was OOS at start of scenario.</i>
	<b>SRO/RO (C)</b>	<b>Direct/Establishes an RCS Bleed Path:</b> <ul style="list-style-type: none"> <li>• Verifies power to both Pressurizer PORV Isolation Valves.</li> <li>• Verifies both Pressurizer PORV Isolation Valves are open.</li> <li>• Opens both Pressurizer PORV's</li> </ul> <b>OR see next page for alternate actions if crew considers only 1 PORV Isolation Valve is open.</b>	<i>Only one PORV Isolation Valve (MOV-0001B) has power (valve indication). The one without power can be verified open by:</i> <ul style="list-style-type: none"> <li>• Noting it was open before 4160V Bus E1A lost power.</li> <li>• Use of ICS graphic display.</li> </ul> <i>Crew may conservatively consider the PORV Isolation valve without power to be not full open and implement an alternate bleed path. See next page for steps.</i>

### OPERATOR ACTIONS

Op-Test No.: # 1		Scenario No.: # 4		Event No.: 7	
Event Description: Loss of Heat Sink					
Time	Position	Required Operator Actions		Notes	
	<b>SRO/RO (C)*</b>  * - denotes critical portion	Verify Adequate RCS Bleed Path: <ul style="list-style-type: none"><li>Both Pressurizer PORV's OPEN.</li><li>Both Pressurizer PORV's Isolation Valves OPEN.</li></ul> OR *if crew assumes only 1 PORV Isolation Valve is open, they perform the following steps to ensure an adequate RCS Bleed Path exists: <ul style="list-style-type: none"><li>*Open Rx Vessel Head Vent Valves: 4 Isolation Valves and 2 Throttle valves to give 2 vent paths.</li></ul>		Terminate the scenario once the RCS Bleed path has been verified by having either: <ul style="list-style-type: none"><li>Both Pzr PORV's and PORV Isolation Valves open.</li></ul> OR <ul style="list-style-type: none"><li>1 Pzr PORV and PORV Isolation Valve open and 2 Rx Vessel Head Vent paths open.</li></ul>	

**CRITICAL TASK SUMMARY**

<b>POSITION</b>	<b>EXPECTED RESPONSE</b>	<b>ACCEPTANCE CRITERIA</b>	<b>SAT/ UNSAT</b>
<b><i>SRO/BOP (C)</i></b>	<p>Performs immediate actions of 0POP04-FW-0001:</p> <ul style="list-style-type: none"> <li>• <b>PLACES SG ‘A’ FEEDWATER MAIN FEED REG. VALVE (MFRV) CONTROLLER IN MANUAL</b></li> <li>• <b>ADJUSTS CONTROLLER OUTPUT TO RESTORE SG ‘A’ LEVEL TO PROGRAM</b></li> </ul>	Manually control SG ‘A’ level such that a manual or automatic Reactor trip does not occur.	
<b>SRO/RO (C)</b>	<p><b>*Turbine is has NOT automatically tripped, attempts a turbine trip using the TURB TRIP PB; but turbine does not trip.</b></p> <ul style="list-style-type: none"> <li>• <b>Places both EH Pumps in PTL</b></li> <li>• <b>Manually runs back turbine to cause turbine to trip.</b></li> </ul>	Turbine is manually tripped prior to transitioning from 0POP05-EO-EO00, Reactor Trip or Safety Injection.	

**CRITICAL TASK SUMMARY CONTINUED ON NEXT PAGE**

**CRITICAL TASK SUMMARY (cont'd)**

<b>POSITION</b>	<b>EXPECTED RESPONSE</b>	<b>ACCEPTANCE CRITERIA</b>	<b>SAT/ UNSAT</b>
<b>SRO/RO (C)</b>	<p><b>Directs/verifies RCS Feed path:</b></p> <ul style="list-style-type: none"> <li>• <b>At least one HHSI Pump running</b></li> <li>• <b>HHSI Valve alignment:</b> <ul style="list-style-type: none"> <li>○ <b>HHSI Pump suction valves from RWST – OPEN</b></li> <li>○ <b>HHSI Pump discharge valves – OPEN</b></li> </ul> </li> <li>• <b>HHSI Cold Leg Injection valves – OPEN</b></li> </ul> <p><b>Direct/Establishes an RCS Bleed Path:</b></p> <ul style="list-style-type: none"> <li>• <b>Verifies power to both Pressurizer PORV Isolation Valves.</b></li> <li>• <b>Verifies both Pressurizer PORV Isolation Valves are open.</b></li> <li>• <b>Opens both Pressurizer PORV's</b></li> </ul> <p><b>OR</b></p> <p><b>if crew assumes only 1 PORV Isolation Valve is open, they perform the following steps to ensure an adequate RCS Bleed Path exists:</b></p> <ul style="list-style-type: none"> <li>• <b>Open Rx Vessel Head Vent Valves: 4 Isolation Valves and 2 Throttle valves to give 2 vent paths.</b></li> </ul>	Establishes feed and bleed of the RCS prior to transition from OPOP05-EO-FRH1.	



**TURNOVER INFORMATION**

- Reactor Power is 100%
- Cycle Burnup is 150 MWD/MTU (BOC)
- RCS Boron Concentration is 1351 ppm
- Hourly dilutions to maintain current power are approximately 10 gallons. Total Batch Integrator set at 10 gallons, getting 11. Xenon is at equilibrium conditions.
- Boric Acid Tanks 'A' and 'B' are at 7410 ppm.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment.
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc.
- 'B' Train work week is in progress with the following out of service:
  - 'B' ECW Pump
  - 'B' CCW Pump
  - #12 AFW Pump
  - 'B' HHSI Pump
  - 'B' LHSI Pump
  - #12 ESF DG
- ESF Power Availability surveillance, 0PSP03-EA-0002, is due to be performed in 6 hrs.
- There are no jumpered cells on any of the 1E 125 VDC Batteries.
- I&C is troubleshooting SG 'B' Level Transmitter, LT-0528. LT-0528 has been inoperable for 4 days and the channel is in the tripped condition to comply with Tech Spec requirements.
- All FWBP's and the SUFP are operating in preparation to secure SGFPT #12.
- After taking the watch, secure SGFPT #12 to allow repair of a steam leak on the bonnet of a manual Main Steam valve associated with SGFPT #12. The Shift Manager has directed that the following tests NOT BE PERFORMED when securing SGFPT #12:
  - 0POP02-FW-0002, Step 16.1.4, Mechanical overspeed test
  - 0POP02-FW-0002, Step 16.1.7, Turbine Stop Valves.
  - 0POP02-FW-0002, Step 16.1.12, Main Oil Pump Swap Test