

Facility: Callaway Task No.: N/A

Task Title: Procedure Accumulation/Verification JPM No.: 2007 A1a

K/A Reference: GK/A 2.1.21 (3.1/3.2)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: The following is a task list for the upcoming shift:

- Conduct the Train A Aux Feedwater Valve Inservice Test.
- Conduct the Fire Suppression Water System Valve Position Verification.
- Conduct the Containment Minipurge Valve Leakrate Test.
- Conduct the Spent Fuel Lighting Preservation Surveillance.
- Perform a QPTR Calculation.
- Conduct the RHR Pump B Non-Surveillance Run.

The previous shift Shift Manager has assembled working copies of the procedures to complete the tasks assigned to the shift.

Task Standard: The operator will verify which procedures are necessary, accumulate the one not present, and verify that those possessed are correct and current in accordance with APA-ZZ-00100, "Use and Adherence to procedures and Written Instructions" and APA-ZZ-00200, "Document Control."

Required Materials: Computer with Internet capability and printer.

General References: APA-ZZ-00100, "Use and Adherence To Procedure and Written Instructions."
APA-ZZ-00200, "Document Control."

Handouts: APA-ZZ-00100, "Use and Adherence To Procedure and Written Instructions."
APA-ZZ-00200, "Document Control."

The following five procedures will be provided to the Operator:

- OSP-AL-V001A, Train A Aux Feedwater Valve In Service Test (Correct)
- OTS-EJ-004A, RHR Pump A Non-Surveillance Run (Incorrect Train)
- OSP-KC-00005, Fire Suppression Water System Valve Position Verification (Incorrect Markings)
- OSP-GT-LL160, Containment Minipurge Valve Leakrate Test (Old Revision)
- OTS-EC-00001, Spent Fuel Pool Lighting Preservation (Correct)

The procedure for the QPTR Calculation, OSP-SE-00003, will not be provided and must be obtained as part of JPM.

Initiating Cue: Verify that the given procedures are approved for conducting all the assigned work for the shift. Identify and write down any procedures issues that are encountered.

Time Critical Task: NO

Validation Time: 25 Minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and handout the five previously assembled procedures.

START TIME: _____

APA-ZZ-00100, Step 4.1.1

Performance Step: 1

Safety related, Non-Safety related activities, and special scope activities other than special circumstances (Section 4.4) are performed in accordance with approved Written Instructions appropriate to the task.

Standard:

Operator recognizes that all assigned work activities need appropriate procedures.

Operator recognizes that six tasks are on the list, and only five procedures are provided.

Determines that the procedure for QPTR Calculation will need to be accumulated.

Operator recognizes that OTS-EJ-004A, "RHR Pump A Non-Surveillance Run," has been provided, and this is for the wrong train.

Determines that OTS-EJ-004B, "RHR Pump B Non-Surveillance Run," will need to be accumulated.

Comment:

Examiner Note: If it becomes apparent during the performance of this step that the operator is seeking to use APA-ZZ-00100, provide a copy to the operator.

Examiner Note: When the operator identifies that OTS-EJ-004B needs to be obtained, cue operator that the procedure does not need to be printed out.

PERFORMANCE INFORMATION

	APA-ZZ-00100, Step 4.3.1
Performance Step: 2	All procedures, used at the activity location, are to be verified PRIOR TO USE to be the latest approved revision with all changes incorporated in accordance with APA-ZZ-00200, Document Management.
Standard:	Operator determines that all procedures must be verified PRIOR TO USE to be the latest approved revision with all changes incorporated in accordance with APA-ZZ-00200, Document Management. Refers to section 4.7 of APA-ZZ-00200, Document Management.
Comment:	
	APA-ZZ-00200, Step 4.7.2.a
Performance Step: 3	IF desiring Working Copies of document from Document Control, PERFORM one of the following: <ul style="list-style-type: none">• SUBMIT a completed CA0067, Document Request Form, or other method as appropriate.• PRINT a working copy directly from the Callaway EDMS.
Standard:	Using computer, operator logs onto Internet, and then Callaway EDMS. Operator checks current data and prints working copy of OSP-SE-00003, QPTR Calculation. Operator checks current data and prints working copy of OTS-EJ-004B, RHR Pump B Non-Surveillance Run, and discards the provided copy of OTS-EJ-004A.
Comment:	Examiner Note: If it becomes apparent during the performance of this step that the operator is seeking to use APA-ZZ-00100, provide a copy to the operator. Examiner Note: When the operator identifies that OTS-EJ-004B needs to be obtained, cue operator that the procedure does not need to be printed out.

PERFORMANCE INFORMATION

Performance Step: 4	APA-ZZ-00200, Step 4.7.2.b ENSURE Working Copies issued contain one of the following: <ul style="list-style-type: none">• Cover page of the document is stamped or marked. OR <ul style="list-style-type: none">• Printed with working copy watermark from Callaway EDMS.
Standard:	Operator verifies that the working copy of OSP-SE-00003, QPTR Calculation, has been printed with working copy watermark from Callaway EDMS.
Comment:	Examiner Note: Procedures can be verified in any order.
Performance Step: 5	APA-ZZ-00200, Step 4.7.2.b ENSURE Working Copies issued contain one of the following: <ul style="list-style-type: none">• Cover page of the document is stamped or marked. OR <ul style="list-style-type: none">• Printed with working copy watermark from Callaway EDMS.
Standard:	Operator verifies that the working copy of OTS-EJ-004B, RHR Pump B Non-Surveillance Run, has been printed with working copy watermark from Callaway EDMS.
Comment:	Examiner Note: Procedures can be verified in any order.

√ Performance Step: 6	<p>APA-ZZ-00200, Step 4.7.2.b</p> <p>ENSURE Working Copies issued contain one of the following:</p> <ul style="list-style-type: none">• Cover page of the document is stamped or marked. <p>OR</p> <ul style="list-style-type: none">• Printed with working copy watermark from Callaway EDMS.
Standard:	<p>Using computer and Callaway EDMS, operator checks current data for OSP-AL-V001A, Train A Aux Feedwater Valve In Service Test, and verifies that the copy provided is approved for use.</p> <p>Operator observes the provided copy of OSP-AL-V001A, Train A Aux Feedwater Valve In Service Test, is printed with working copy watermark from Callaway EDMS.</p>
Comment:	Examiner Note: Procedures can be verified in any order.
√ Performance Step: 7	<p>APA-ZZ-00200, Step 4.7.2.b</p> <p>ENSURE Working Copies issued contain one of the following:</p> <ul style="list-style-type: none">• Cover page of the document is stamped or marked. <p>OR</p> <ul style="list-style-type: none">• Printed with working copy watermark from Callaway EDMS.
Standard:	<p>Using computer and Callaway EDMS, operator checks current data for OTS-EC-00001, Spent Fuel Pool Lighting Preservation and verifies that the copy provided is approved for use.</p> <p>Operator observes the provided copy of OTS-EC-00001, Spent Fuel Pool Lighting Preservation is printed with working copy watermark from Callaway EDMS.</p>
Comment:	Examiner Note: Procedures can be verified in any order.

PERFORMANCE INFORMATION

√ Performance Step: 8	<p>APA-ZZ-00200, Step 4.7.2.b</p> <p>ENSURE Working Copies issued contain one of the following:</p> <ul style="list-style-type: none">• Cover page of the document is stamped or marked. <p>OR</p> <ul style="list-style-type: none">• Printed with working copy watermark from Callaway EDMS.
Standard:	<p>Using computer and Callaway EDMS, operator checks current data for OSP-GT-LL160, Containment Minipurge Valve Leakrate Test and recognizes that the copy provided is an old revision.</p> <p>Operator prints latest revision of OSP-GT-LL160, Containment Minipurge Valve Leakrate Test, verifies that it is printed with working copy watermark from Callaway EDMS, and discards the provided copy of OSP-GT-LL160.</p>
Comment:	<p>Examiner Note: Procedures can be verified in any order.</p> <p>Examiner Note: When the operator identifies that OSP-GT-LL160 needs to be obtained, cue operator that the procedure does not need to be printed out.</p>

PERFORMANCE INFORMATION

√ Performance Step: 9	<p>APA-ZZ-00200, Step 4.7.2.b</p> <p>ENSURE Working Copies issued contain one of the following:</p> <ul style="list-style-type: none">• Cover page of the document is stamped or marked. <p>OR</p> <ul style="list-style-type: none">• Printed with working copy watermark from Callaway EDMS.
Standard:	<p>Using computer and Callaway EDMS, operator checks current data for OSP-KC-00005, Fire Suppression Water System Valve Position Verification and recognizes that the copy provided does not have the required markings.</p> <p>Operator prints latest revision of OSP-KC-00005, Fire Suppression Water System Valve Position Verification, verifies that it is printed with working copy watermark from Callaway EDMS, and discards the provided copy of OSP-KC-00005.</p> <p>OR</p> <p>Operator verifies that the procedure is the correct revision from Callaway EDMS, and marks the cover page with Date, Time and Initials.</p>
Comment:	<p>Examiner Note: Procedures can be verified in any order.</p> <p>Examiner Note: When the operator identifies that OSP-KC-00005 needs to be obtained, cue operator that the procedure does not need to be printed out.</p>
Terminating Cue:	This JPM is complete.
STOP TIME:	_____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM A1a

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

The following is a task list for the upcoming shift:

- Conduct the Train A Aux Feedwater Valve Inservice Test.
- Conduct the Fire Suppression Water System Valve Position Verification.
- Conduct the Containment Minipurge Valve Leakrate Test.
- Conduct the Spent Fuel Lighting Preservation Surveillance.
- Perform a QPTR Calculation.
- Conduct the RHR Pump B Non-Surveillance Run.

The previous shift Shift Manager has assembled working copies of the procedures to complete the tasks assigned to the shift.

INITIATING CUE:

Verify that the given procedures are approved for conducting all the assigned work for the shift. Identify and write down any procedures issues that are encountered.

Facility: Callaway Task No.: N/A

Task Title: Perform RCS Inventory Balance JPM No.: 2007 A1b RO

K/A Reference: GK/A 2.1.33 (3.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- Due to an unidentified small RCS leak, OSP-BB-00009, "RCS Inventory Balance," is in progress.
- Section 6.2 of OSP-BB-00009 has been performed through step 6.2.8.a.
- The Plant Computer is unavailable.
- All information has been recorded on Attachments 1 and 3.

Task Standard: The operator will successfully calculate RCS Leakage. All critical tasks evaluated as satisfactory.

Required Materials: Calculator capable of producing calculations to four significant digits.

General References: OSP-BB-00009, RCS Inventory Balance

Handouts:

OSP-BB-00009, RCS Inventory Balance

OSP-BB-00009, Attachment 1 (Filled-In)

OSP-BB-00009, Attachment 3 (Filled-In)

Initiating Cue: Determine the RCS Leakage in accordance with OSP-BB-00009, Step 6.2.8.b.

Time Critical Task: NO

Validation Time: 15 Minutes

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OSP-BB-00009 and completed Attachments 1 and 3 of OSP-BB-00009.

START TIME: _____

Performance Step: 1 Attachment 6, Note prior to Step 1.0
If the input data is identical for initial and final conditions, calculation of specific volumes is not required, since the resultant ΔM value will be zero.

Standard: Operator reads Note.

Comment:

Performance Step: 2 Attachment 6, Step 1.2
Determine change in mass of water contained in the RCDT.

Standard: Operator observes Attachment 3 and recognizes that RCDT Level did not change and leaves Section 1.2 blank.

Comment:

Performance Step: 3 Attachment 6, Step 2.2
Determine change in mass of water contained in the VCT.

Standard: Operator observes Attachment 3 and recognizes that $L_i = 51\%$ and $L_f = 42\%$, and records these values.

Using calculator, operator determines ΔM to be 1531.1607 ($\pm 2\%^*$)

$2.73057 \text{ ft}^3/\% \times (51\% - 42\%) \times 1/.01605 \text{ ft}^3/\text{lbm} = 1531.1607 \text{ lbm}$

*(1500-5375-1561.7839)

Comment:

PERFORMANCE INFORMATION

✓ Performance Step: 4	Attachment 6, Step 3.1 and 3.2 Determine change in mass of water contained in the PZR.
Standard:	<p>Operator observes Attachment 3 and recognizes that Final PZR Pressure = 2235 psig and Initial PZR Pressure = 2235 psig, and records these values.</p> <p>Using Attachment 9, operator determines $V_1 = .026978$ and $V_v = .157059$, and records these values.</p> <p>Operator observes Attachment 3 and recognizes that $Li = 58\%$ and $Lf = 57\%$, and records these values.</p> <p>Using calculator, operator determines ΔM to be 518.5908 lbm ($\pm 2\%^*$)</p> $16.8921 \text{ ft}^3/\% \times (58\% - 57\%) \times (1/.026978 \text{ ft}^3/\text{lbm} - 1/.157059 \text{ ft}^3/\text{lbm}) = 518.5908 \text{ lbm}$ <p>*(508.2189-528.9626)</p>
Comment:	
Performance Step: 5	Attachment 6, Step 4.2 Determine change in mass of water contained in the PRT.
Standard:	Operator observes Attachment 3 and recognizes that PRT Level did not change and leaves Section 4.2 blank.
Comment:	

PERFORMANCE INFORMATION

- ✓ **Performance Step: 6** Attachment 6, Step 5.2
Determine the change in mass of water contained in the RCS Loops.
- Standard:** Operator observes Attachment 3 and recognizes that Final PZR Pressure = 2235 psig and Initial PZR Pressure = 2235 psig, and records these values.
- Operator observes Attachment 3 and recognizes that Final RCS Tavg = 588.2°F and Initial RCS Tavg = 588.3°F, and records these values.
- Using Attachment 11, operator determines $V_{ii} = .022658$ and $V_{if} = .022654$, and records these values.
- Using calculator, operator determines ΔM to be -93.8067 lbm ($\pm 2\%$ *)
- $$12,026.5 \text{ ft}^3 \times (1/.022658 \text{ ft}^3/\text{lbm} - 1/.022654 \text{ ft}^3/\text{lbm}) = -93.8067 \text{ lbm}$$
- *(-91.9305-95.6828)

Comment:

PERFORMANCE INFORMATION

Attachment 6, Step 6.1

✓ **Performance Step: 7** Summarize RCS Leakage - Determine Total RCS Leakage.

Standard:

Operator records 1531.1607 from Step 2.2 in ΔM VCT Block.

Operator records 518.5908 from Step 3.2 in ΔM PZR Block.

Operator records -93.8067 from Step 5.2 in ΔM RCS Block.

Using calculator, operator determines Total RCS Leakage to be to be 1955.9449 lbm, and records this value.

$$1531.1607 \text{ lbm} + 518.5908 \text{ lbm} - 93.8067 \text{ lbm} = 1955.9449 \text{ lbm}$$

Using calculator, operator determines Total RCS Leakage in gallons to be to be 234.8347 gallons, and records this value.

$$1955.9449 \text{ lbm} \times .01605 \text{ ft}^3/\text{lbm} \times 7.4805 \text{ gallons/ft}^3 = 234.8347 \text{ gallons}$$

Operator refers to Attachment 1 and determines that 226 gallons of Makeup Water and 0 gallons of Chemicals were added during the test, and records these values.

Using calculator, operator determines Total RCS Leakage in gallons to be to be 460.8347 gallons, and records this value.

$$234.8347 \text{ gallons} + 226 \text{ gallons} = 460.8347 \text{ gallons}$$

Operator recognizes that the test lasted four hours, and records 240 minutes as Test duration.

Using calculator, operator determines Total RCS Leakage in gpm to be to be 1.9201 gpm ($\pm 2\%^*$), and records this value.

$$460.8347 \text{ gallons} / 240 \text{ minutes} = 1.9201 \text{ gpm}$$

$$*(1.8816-1.9585)$$

Comment:

PERFORMANCE INFORMATION

✓ Performance Step: 8	Attachment 6, Step 6.2 Determine Identified RCS Leakage.
Standard:	<p>Operator observes Attachment 3 and recognizes that RCDT Level did not change and records "0" in ΔM RCDT.</p> <p>Operator observes Attachment 3 and recognizes that PRT Level did not change and records "0" in ΔM PRT.</p> <p>Operator records "0" in Identified Leakage lbm and Identified Leakage gal.</p> <p>Operator observes Attachment 1 and recognizes that there were no Letdown diversions during the test, and records "0" in gal. diverted.</p> <p>Operator observes Attachment 1 and recognizes that there were no samples taken during the test, and records "0" in gal. (Samples Taken).</p> <p>Operator observes Attachment 3 and recognizes that there were no changes to the RCDT Totalizer, and records "0" in gal. (RCDT Totalizer).</p> <p>Operator observes Attachment 1 and recognizes that there was other identified leakage recorded in 9.D as .0882 gpm, and records this in gpm. (Any Other Properly Quantified Leakage).</p> <p>Operator records ".0882" as "gpm Total Identified RCS Leakage</p>
Comment:	
Performance Step: 9	Attachment 6, Step 6.2 Imbedded Caution Identified RCS Leakage must be less than 10.0 gpm to meet Acceptance Criteria.
Standard:	Operator reads Caution and determines that Identified RCS Leakage meets the Acceptance Criteria.
Comment:	

PERFORMANCE INFORMATION

Attachment 6, Step 6.3

√ **Performance Step: 10** Determine Unidentified RCS Leakage.

Standard:

Operator records Total RCS Leakage to be 1.9201 gpm.

Operator records Total Identified RCS Leakage to be .0882 gpm.

Using calculator, operator determines Unidentified RCS Leakage to be 1.8319 gpm ($\pm 2\%$), and records this value. $1.9201 \text{ gpm} - .0882 \text{ gpm} = 1.8319 \text{ gpm}$ $*(1.7592-1.8685)$ **Comment:**

Attachment 6, Step 6.2 Imbedded Caution

√ **Performance Step: 11** Unidentified RCS Leakage must be less than 1.0 gpm to meet Acceptance Criteria.

Standard:

Operator reads Caution and determines that Unidentified RCS Leakage does NOT meet the Acceptance Criteria.

Comment:

Terminating Cue: This JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM A1b RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

- INITIAL CONDITIONS:
- Due to an unidentified small RCS leak, OSP-BB-00009, "RCS Inventory Balance," is in progress.
 - Section 6.2 of OSP-BB-00009 has been performed through step 6.2.8.a.
 - The Plant Computer is unavailable.
 - All information has been recorded on Attachments 1 and 3.

INITIATING CUE: Determine the RCS Leakage in accordance with OSP-BB-00009, Step 6.2.8.b.

Attachment 1

RCS Inventory Plant Status

Sheet 1 of 1

PERFORMER (PRINT)	INITIAL		TIME/DATE
		Date:	10/5/2007
		Time Started:	0300
		Time Completed:	0700

- ENTER the Plant Mode: 1 (1 - 5)
- ENTER the number of RCPs in operation: 4 (1 - 4)
- CIRCLE appropriate PZR Spray Source RCS / CVCS
- ENTER brief description of flow path(s) and flow established for letdown and charging. (i.e., Letdown via RHR Train A to CVCS through BG-HCV-128 at 75 gpm. Charging via NCP to RCS Loop 1.)

Charging Via NCP to RCS Loop 1

Letdown 120 gpm from Loop 3

- Make up calculations (for Step 6.1 on Attachment 6).

$$\text{Counter Reading: } \frac{5643}{\text{Final}} - \frac{5417}{\text{Initial}} = \frac{226}{\text{Total Make Up}} \text{ gal}$$

Record data to the lessor of 1) the best precision available, or 2) four significant figures.

- Chemical Additions, (+) (For Step 6.1 on Attachment 6): RECORD data to the lesser of the best precision available OR four significant figures.

0 gal Purpose NA

- Letdown divert calculations (for Step 6.2 on Attachment 5): RECORD times in 24-hour format to the nearest minute.

$$\frac{\text{NA}}{\text{Time Divert Ended}} - \frac{\text{NA}}{\text{Time Divert Started}} = \frac{0}{\text{Total Minutes Divert}} \times \frac{120}{\text{Letdown Flowrate}} \text{ gpm} = \frac{0}{\text{Total Divert}} \frac{\text{gal}}{\Delta}$$

- Samples taken (+) (For Step 6.2 on Attachment 6): RECORD data to the lessor of the best precision available OR four significant figures.

0 gal Purpose NA

9. GPM Leakages:

- Primary to Secondary Leakage:

GEF0092 Computer Point 127 gpd = 0.0882 gpm CALCULATE result to four significant figures.
1440 min/day

NOTE: If the computer point is not available, CONTACT Chemistry for a value.

- SI Test Header flow: NA RECORD data to the lessor of the best precision available OR four significant figures.
- Other identified leakage which has not gone to the RCDT, PRT, S/G's which has been properly quantified: RECORD data to the lessor of the best precision available OR four significant figures.

Sources	Leakage (gpm)
None	0

- Total gpm leakage (a+b+c) (for Step 6.2 on Att. 6): .0882 gpm

Attachment 3

Leakage Data Sheet - Preferred Method

Sheet 1 of 2

1. RECORD data to the lessor of the best precision available OR four significant figures.
2. IF temperature is less than 212°F, MAINTAIN RCS temperature constant per Precaution 4.14.
3. RECORD the following data:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
Time	N/A (HH:MM)	0300	0400	0500	0600	0700
RCDT Level (HB115) Computer Pt.	HB-LI-1003 (HBL1003)	45%	45%	45%	45%	45%
VCT Level	REL0112M	51%	43%	36%	49%	42%
PZR Level Avg.	REU0483M	58%	58%	58%	58%	57%
PRT Level	REL0485M	75%	75%	75%	75%	75%
PRT Temperature	RET0485M	92°F	92°F	92°F	92°F	92°F

4. IF RCS pressure is greater than 1700 psig, RECORD the following data:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCS Avg. TAVG	REU0484M	588.3°F	588.3°F	588.3°F	588.2°F	588.2°F
PZR Press. Avg.	REU0482M	2235 psig	2235 psig	2235 psig	2235 psig	2235 psig

5. IF RCS pressure is less than 1700 psig, RECORD the following data:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCS WR Pressure	REP0498M	NA psig	NA psig	NA psig	NA psig	NA psig
RCS WR Pressure	REP0499M	NA psig	NA psig	NA psig	NA psig	NA psig
	Avg. Pressure	NA psig	NA psig	NA psig	NA psig	NA psig
RCS Avg. T-Hot	REU0486M	°F	°F	°F	°F	°F

6. IF required due to rapid RCDT level increases, RECORD the following:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCDT Totalizer	HBFIQ11014	NA gal	NA gal	NA gal	NA gal	NA gal

Facility: Callaway Task No.: N/A

Task Title: Review RCS Inventory Balance JPM No.: 2007 A1b SRO

K/A Reference: GK/A 2.1.33 (4.0)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- Due to an unidentified small RCS leak, OSP-BB-00009, "RCS Inventory Balance," is in progress.
- Section 6.2 of OSP-BB-00009 has been performed through step 6.2.8.c.
- The Plant Computer is unavailable.
- The URO has just presented a completed Attachment 6, "RCS Inventory Balance Calculations."

Task Standard: The operator will successfully review an RCS Inventory Balance calculation. All critical tasks evaluated as satisfactory.

Required Materials: Calculator capable of producing calculations to four significant digits.

General References: OSP-BB-00009, RCS Inventory Balance

Handouts:

OSP-BB-00009, RCS Inventory Balance

OSP-BB-00009, Attachment 6 (Filled-In)

OSP-BB-00009, Attachment 1 (Filled-In)

OSP-BB-00009, Attachment 3 (Filled-In)

Initiating Cue: Review the completed Attachment 6 for accuracy, and determine any action required.

Time Critical Task: NO

Validation Time: 25 Minutes

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OSP-BB-00009 and completed Attachments 1, 3 and 6 of OSP-BB-00009.

START TIME: _____

Performance Step: 1 Attachment 6, Note prior to Step 1.0
If the input data is identical for initial and final conditions, calculation of specific volumes is not required, since the resultant ΔM value will be zero.

Standard: Operator reads Note.

Comment:

Performance Step: 2 Attachment 6, Step 1.2
Review determination of change in mass of water contained in the RCDT.

Standard: Operator observes Attachment 3 and recognizes that RCDT Level did not change.
Operator observes that "0" has been recorded for ΔM RCDT.

Comment:

Performance Step: 3 Attachment 6, Step 2.2
Review determination of change in mass of water contained in the VCT.

Standard: Operator observes Attachment 3 and recognizes that $L_i = 51\%$ and $L_f = 42\%$, and records these values.
Using calculator, operator determines ΔM to be 1531.1607 ($\pm 2\%^*$)
 $2.73057 \text{ ft}^3/\% \times (51\% - 42\%) \times 1/0.01605 \text{ ft}^3/\text{lbm} = 1531.1607 \text{ lbm}$
 $*(1500 - 5375 - 1561.7839)$

Comment:

PERFORMANCE INFORMATION

	Attachment 6, Step 3.1 and 3.2
Performance Step: 4	Review determination of change in mass of water contained in the PZR.
Standard:	<p>Operator observes Attachment 3 and recognizes that Final PZR Pressure = 2235 psig and Initial PZR Pressure = 2235 psig, and records these values.</p> <p>Using Attachment 9, operator determines $V_1 = .026978$ and $V_v = .157059$, and records these values.</p> <p>Operator observes Attachment 3 and recognizes that $L_i = 58\%$ and $L_f = 57\%$, and records these values.</p> <p>Using calculator, operator determines ΔM to be 518.5908 lbm ($\pm 2\%^*$)</p> $16.8921 \text{ ft}^3/\% \times (58\% - 57\%) \times (1/.026978 \text{ ft}^3/\text{lbm} - 1/.157059 \text{ ft}^3/\text{lbm}) = 518.5908 \text{ lbm}$ <p>*(508.2189-528.9626)</p>
Comment:	
	Attachment 6, Step 4.2
Performance Step: 5	Review determination of change in mass of water contained in the PRT.
Standard:	<p>Operator observes Attachment 3 and recognizes that PRT Level did not change.</p> <p>Operator observes that "0" has been recorded for ΔM PRT.</p>
Comment:	

PERFORMANCE INFORMATION

Attachment 6, Step 5.2

Performance Step: 6 Review determination of change in mass of water contained in the RCS Loops.

Standard: Operator observes Attachment 3 and recognizes that Final PZR Pressure = 2235 psig and Initial PZR Pressure = 2235 psig, and records these values.

Operator observes Attachment 3 and recognizes that Final RCS Tavg = 588.2°F and Initial RCS Tavg = 588.3°F, and records these values.

Using Attachment 11, operator determines $V_{ii} = .022658$ and $V_{if} = .022654$, and records these values.

Using calculator, operator determines ΔM to be -93.8067 lbm ($\pm 2\%$ *)

$$12,026.5 \text{ ft}^3 \times (1/.022658 \text{ ft}^3/\text{lbm} - 1/.022654 \text{ ft}^3/\text{lbm}) = -93.8067 \text{ lbm}$$

*(-91.9305-95.6828)

Comment:

PERFORMANCE INFORMATION

Attachment 6, Step 6.1

Performance Step: 7 Summarize RCS Leakage - Determine Total RCS Leakage.**Standard:**

Operator records 1531.1607 from Step 2.2 in ΔM VCT Block.

Operator records 518.5908 from Step 3.2 in ΔM PZR Block.

Operator records -93.8067 from Step 5.2 in ΔM RCS Block.

Using calculator, operator determines Total RCS Leakage to be to be 1955.9449 lbm, and records this value.

$$1531.1607 \text{ lbm} + 518.5908 \text{ lbm} - 93.8067 \text{ lbm} = 1955.9449 \text{ lbm}$$

Using calculator, operator determines Total RCS Leakage in gallons to be to be 234.8347 gallons, and records this value.

$$1955.9449 \text{ lbm} \times .01605 \text{ ft}^3/\text{lbm} \times 7.4805 \text{ gallons/ft}^3 = 234.8347 \text{ gallons}$$

Operator refers to Attachment 1 and determines that 226 gallons of Makeup Water and 0 gallons of Chemicals were added during the test, and records these values.

Using calculator, operator determines Total RCS Leakage in gallons to be to be 460.8347 gallons, and records this value.

$$234.8347 \text{ gallons} + 226 \text{ gallons} = 460.8347 \text{ gallons}$$

Operator recognizes that the test lasted four hours, and records 240 minutes as Test duration.

Using calculator, operator determines Total RCS Leakage in gpm to be to be 1.9201 gpm ($\pm 2\%^*$), and records this value.

$$460.8347 \text{ gallons} / 240 \text{ minutes} = 1.9201 \text{ gpm}$$

$$*(1.8816-1.9585)$$

Comment:

PERFORMANCE INFORMATION

	Attachment 6, Step 6.2
Performance Step: 8	Determine Identified RCS Leakage.
Standard:	<p>Operator observes Attachment 3 and recognizes that RCDT Level did not change and that "0" is recorded in ΔM RCDT.</p> <p>Operator observes Attachment 3 and recognizes that PRT Level did not change and that "0" is recorded in ΔM PRT.</p> <p>Operator observes "0" recorded in Identified Leakage lbm and Identified Leakage gal.</p> <p>Operator observes Attachment 1 and recognizes that there were no Letdown diversions during the test, and observes that "0" is recorded in gal. diverted.</p> <p>Operator observes Attachment 1 and recognizes that there were no samples taken during the test, and observes that "0" is recorded in gal. (Samples Taken).</p> <p>Operator observes Attachment 3 and recognizes that there were no changes to the RCDT Totalizer, and observes that "0" is recorded in gal. (RCDT Totalizer).</p> <p>Operator observes Attachment 1 and recognizes that there was other identified leakage recorded in 9.D as .0882 gpm, and that this has been recorded. (Any Other Properly Quantified Leakage).</p> <p>Operator records ".0882" as "gpm Total Identified RCS Leakage</p>
Comment:	
	Attachment 6, Step 6.2 Imbedded Caution
Performance Step: 9	Identified RCS Leakage must be less than 10.0 gpm to meet Acceptance Criteria.
Standard:	Operator reads Caution and determines that Identified RCS Leakage meets the Acceptance Criteria.
Comment:	

PERFORMANCE INFORMATION

Attachment 6, Step 6.3

- √ **Performance Step: 10** Determine Unidentified RCS Leakage.

Standard:

Operator records Total RCS Leakage to be 1.9201 gpm.

Operator records Total Identified RCS Leakage to be .0882 gpm.

Using calculator, operator determines Unidentified RCS Leakage to be 1.8319 gpm ($\pm 2\%$), and records this value. $1.9201 \text{ gpm} - .0882 \text{ gpm} = 1.8319 \text{ gpm}$

*(1.7592-1.8685)

Comment:

Attachment 6, Step 6.2 Imbedded Caution

- √ **Performance Step: 11** Unidentified RCS Leakage must be less than 1.0 gpm to meet Acceptance Criteria.

Standard:

Operator reads Caution and determines that Unidentified RCS Leakage does NOT meet the Acceptance Criteria.

Comment:

Technical Specification 3.4.13 LCO

- √ **Performance Step: 12** RCS Leakage shall be limited to 1 gpm unidentified leakage.

Standard:

Operator recognizes that LCO 3.4.13 is not met.

Operator enters Action Condition A of TS 3.4.13, and identifies that the required Action is to reduce leakage within limits within 4 hours.

Comment:

Terminating Cue: This JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM A1b SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Due to an unidentified small RCS leak, OSP-BB-00009, "RCS Inventory Balance," is in progress.
- Section 6.2 of OSP-BB-00009 has been performed through step 6.2.8.c.
- The Plant Computer is unavailable.
- The URO has just presented a completed Attachment 6, "RCS Inventory Balance Calculations."

INITIATING CUE:

Review the completed Attachment 6 for accuracy, and determine any action required.

Attachment 1

RCS Inventory Plant Status

Sheet 1 of 1

PERFORMER (PRINT)	INITIAL		TIME/DATE
		Date:	10/5/2007
		Time Started:	0300
		Time Completed:	0700

- ENTER the Plant Mode: 1 (1 - 5)
- ENTER the number of RCPs in operation: 4 (1 - 4)
- CIRCLE appropriate PZR Spray Source RCS / CVCS
- ENTER brief description of flow path(s) and flow established for letdown and charging. (i.e., Letdown via RHR Train A to CVCS through BG-HCV-128 at 75 gpm. Charging via NCP to RCS Loop 1.)

Charging Via NCP to RCS Loop 1

Letdown 120 gpm from Loop 3

- Make up calculations (for Step 6.1 on Attachment 6).

$$\text{Counter Reading: } \frac{5643}{\text{Final}} - \frac{5417}{\text{Initial}} = \frac{226}{\text{Total Make Up}} \text{ gal}$$

Record data to the lessor of 1) the best precision available, or 2) four significant figures.

- Chemical Additions, (+) (For Step 6.1 on Attachment 6): RECORD data to the lesser of the best precision available OR four significant figures.

0 gal Purpose NA

- Letdown divert calculations (for Step 6.2 on Attachment 5): RECORD times in 24-hour format to the nearest minute.

$$\frac{\text{NA}}{\text{Time Divert Ended}} - \frac{\text{NA}}{\text{Time Divert Started}} = \frac{0}{\text{Total Minutes Divert}} \times \frac{120}{\text{Letdown Flowrate}} \text{ gpm} = \frac{0}{\text{Total Divert}} \frac{\text{gal}}{\Delta}$$

- Samples taken (+) (For Step 6.2 on Attachment 6): RECORD data to the lessor of the best precision available OR four significant figures.

0 gal Purpose NA

9. GPM Leakages:

- Primary to Secondary Leakage:

GEF0092 Computer Point 127 gpd = 0.0882 gpm CALCULATE result to four significant figures.
1440 min/day

NOTE: If the computer point is not available, CONTACT Chemistry for a value.

- SI Test Header flow: NA RECORD data to the lessor of the best precision available OR four significant figures.
- Other identified leakage which has not gone to the RCDT, PRT, S/G's which has been properly quantified: RECORD data to the lessor of the best precision available OR four significant figures.

Sources	Leakage (gpm)
None	0

- Total gpm leakage (a+b+c) (for Step 6.2 on Att. 6): .0882 gpm

Attachment 3

Leakage Data Sheet - Preferred Method

Sheet 1 of 1

1. RECORD data to the lessor of the best precision available OR four significant figures.
2. IF temperature is less than 212°F, MAINTAIN RCS temperature constant per Precaution 4.14.
3. RECORD the following data:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
Time	N/A (HH:MM)	0300	0400	0500	0600	0700
RCDT Level (HB115) Computer Pt.	HB-LI-1003 (HBL1003)	45%	45%	45%	45%	45%
VCT Level	REL0112M	51%	43%	36%	49%	42%
PZR Level Avg.	REU0483M	58%	58%	58%	58%	57%
PRT Level	REL0485M	75%	75%	75%	75%	75%
PRT Temperature	RET0485M	92°F	92°F	92°F	92°F	92°F

4. IF RCS pressure is greater than 1700 psig, RECORD the following data:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCS Avg. TAVG	REU0484M	588.3°F	588.3°F	588.3°F	588.2°F	588.2°F
PZR Press. Avg.	REU0482M	2235 psig	2235 psig	2235 psig	2235 psig	2235 psig

5. IF RCS pressure is less than 1700 psig, RECORD the following data:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCS WR Pressure	REP0498M	NA psig	NA psig	NA psig	NA psig	NA psig
RCS WR Pressure	REP0499M	NA psig	NA psig	NA psig	NA psig	NA psig
	Avg. Pressure	NA psig	NA psig	NA psig	NA psig	NA psig
RCS Avg. T-Hot	REU0486M	°F	°F	°F	°F	°F

6. IF required due to rapid RCDT level increases, RECORD the following:

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCDT Totalizer	HBFI1014	NA gal	NA gal	NA gal	NA gal	NA gal

Facility: Callaway Task No.: N/A

Task Title: Tagout Containment Isolation Valve JPM No.: 2007 JPM A2 RO

K/A Reference: GK/A 2.2.13 (3.6)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The Callaway plant is in Mode 6 in a refueling outage.
- BM HIS-38, SG D Sample Inner Containment Isolation Valve is scheduled to be replaced.

Task Standard: The operator will correctly identify alignments and tags required to isolate and drain piping for replacement of a Containment Isolation Valve. All critical tasks evaluated as satisfactory.

Required Materials: Computer with Internet capability.

General References: APA-ZZ-00310, Workman's Protective Assurance
ODP-ZZ-00310, WPA and Caution Tagging
ODP-ZZ-00001, Operations Department - Code of Conduct
CP Drawing M-22BM01(Q) P&ID SGBD System
CP Drawing E-23BM02 – Electrical Schematic
CP Drawing E-23RL07 – Electrical Schematic

Handouts: ODP-ZZ-00310, WPA and Caution Tagging

Initiating Cue: Identify the components that must be tagged for WPA in accordance with Section 4.1 of ODP-ZZ-00310. (Do NOT use any previously written WPA)

Time Critical Task: NO

Validation Time: 15 Minutes

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout ODP-ZZ-00310.

START TIME: _____

	ODP-ZZ-00310, Notes prior to Step 4.1.1
Performance Step: 1	The URO who prepares the Tagout is the "RO." The RO fulfills the URO responsibilities listed in APA-ZZ-00310, "Workman's Protection Assurance."
Standard:	Operator reads Notes.
Comment:	NOTE: Writing and Hanging WPA is identified as Skill-of-the-Craft activities for Operations Department personnel and as such fall below the threshold of requiring a procedure (ODP-ZZ-00001, Step 4.5.3).

ODP-ZZ-000001, Step 4.5.3

✓ **Performance Step: 2**

Writing and Hanging WPA is identified as Skill-of-the-Craft activities for Operations Department personnel and as such fall below the threshold of requiring a procedure.

Identify the components that must be tagged for WPA.

Standard:

Operator reviews CP Drawing M-22BM01(Q) P&ID SGBD System and determines the following components must be tagged:

- Handswitch BMHIS0038 (Closed)
- BMV0040 (Closed)
- BMV0041 (Closed)
- BMV0042 (Closed)
- BMV539 (Open, Flange removed)

Operator logs onto computer and uses EMPRV, or uses electrical schematics to identify that Fuse BMFURL024 BMHIS38 must be removed.

Comment:**Terminating Cue:**

This JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2007 NRC JPM A2 RO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The Callaway plant is in Mode 6 in a refueling outage.
- BM HIS-38, SG D Sample Inner Containment Isolation Valve is scheduled to be replaced.

INITIATING CUE:

Identify the components that must be tagged for WPA in accordance with Section 4.1 of ODP-ZZ-00310. (Do NOT use any previously written WPA)

Facility: Callaway Task No.: N/A

Task Title: Review a Prepared Tagout for Containment Isolation Valve JPM No.: 2007 JPM A2 SRO

K/A Reference: GK/A 2.2.13 (3.6)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- The Callaway plant is in Mode 6 in a refueling outage.
- BM HIS-38, SG D Sample Inner Containment Isolation Valve is scheduled to be replaced.
- An RO has identified a list of components that must be tagged to complete the job.

Task Standard: The operator will review a previously prepared Tagout and correctly identify alignments and tags required to isolate a Containment isolation valve. All critical tasks evaluated as satisfactory.

Required Materials: Computer with Internet capability.

General References: APA-ZZ-00310, Workman's Protective Assurance
ODP-ZZ-00310, WPA and Caution Tagging
ODP-ZZ-00001, Operations Department - Code of Conduct
CP Drawing M-22BM01(Q) P&ID SGBD System
CP Drawing E-23BM02 – Electrical Schematic
CP Drawing E-23RL07 – Electrical Schematic

Handouts: ODP-ZZ-00310, WPA and Caution Tagging

List of Suggested Tagged Components

Initiating Cue: Review the prepared WPA component list in accordance with Section 4.4 of ODP-ZZ-00310. Identify any corrections that you want the RO to make. (Do NOT use any previously written WPA)

Time Critical Task: NO

Validation Time: 15 Minutes

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout ODP-ZZ-00310 and a previously prepared List of Tagged Components.

START TIME: _____

- ✓ **Performance Step: 1** ODP-ZZ-00310, Step 4.4.1
- Review the Tagout to ensure it provides proper protection for the job with the exception of the condition listed in Step 4.1.2.b. This review ensures that as needed:
- The equipment is ISOLATED.
- The equipment is DEPRESSURIZED.
- The equipment is DRAINED.
- The equipment is DEENERGIZED.

Standard: Operator reviews list of tagged components.

Operator reviews CP Drawing M-22BM01(Q) P&ID SGBD System and determines the following components must be tagged:

- Handswitch BMHIS0038 (Closed)
- BMV0040 (Closed)
- BMV0041 (Closed)
- BMV0042 (Closed)
- BMV539 (Open, Flange removed)

Operator determines that Suggested List does not include BMV0040, which must be Closed.

Operator determines that Suggested List does not include the need to have the flange downstream of BMV539 removed.

Comment:

	ODP-ZZ-00310, Step 4.4.1
√ Performance Step: 2	Review the Tagout to ensure it provides proper protection for the job with the exception of the condition listed in Step 4.1.2.b. This review ensures that as needed: The equipment is ISOLATED. The equipment is DEPRESSURIZED. The equipment is DRAINED. The equipment is DEENERGIZED.
Standard:	Operator logs onto computer and uses EMPRV, or references the electrical schematics to identify that Fuse BMFURL024 BMHIS38 must be removed. Operator recognizes that Suggested List contains the wrong fuse.
Comment:	
Terminating Cue:	This JPM is complete.
STOP TIME:	_____

Job Performance Measure No.: 2007 NRC JPM A2 SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The Callaway plant is in Mode 6 in a refueling outage.
- BM HIS-38, SG D Sample Inner Containment Isolation Valve is scheduled to be replaced.
- An RO has identified a list of components that must be tagged to complete the job.

INITIATING CUE:

Review the prepared WPA component list in accordance with Section 4.4 of ODP-ZZ-00310. Identify any corrections that you want the RO to make. (Do NOT use any previously written WPA)

List of Suggested Tagged Components

Tag #	Component	Position
1	Handswitch BMHIS0038	Closed
2	Fuse * BMFURL024 BMHIS0037	Pulled
3	BMV0041	Closed
4	BMV0042	Closed
5	BMV539	Open

Facility: Callaway Task No.: N/A

Task Title: Calculate Stay Time JPM No.: 2007 NRC JPM A3

K/A Reference: GK/A 2.3.2 (2.5/2.9)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator _____ Plant X

READ TO THE EXAMINEE

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

- Initial Conditions:
- Callaway Plant is operating at power.
 - A job is being performed on BG PCV-131, Letdown Heat Exchanger Pressure Control Valve that requires WPA Tags to be hung.
 - The job will require the following activities:
 - Close and Hang WPA on BG-8408A
 - Close and Hang WPA on BG-8408B
 - Check Closed and Hang WPA on BG-V-7
 - It is expected that it will take about 30 minutes to align the valves and hang the Tags.
 - RP has directed you to not exceed 10 mrem for the entire job.

Task Standard: The operator will select the correct Radiation Work Permit, determine radiological protective clothing requirements, determine the maximum allowable stay time to conduct the work, and identify demonstrate effective ALARA practices. All critical tasks evaluated as satisfactory.

Required Materials: Computer with Internet capability and printer.

General References: APA-ZZ-01004 Radiological Work Standards
RWP700501PEORNDs Operations Primary Operator Routine Activities
RWP700501PAACT Operations WPA Activities
Callaway Plant Radiological Survey Sheet #1124

Handouts: APA-ZZ-01004 Radiological Work Standards
A book of available RWPS and Radiological Survey Maps

Initiating Cue: Prepare for work within the RCA in accordance with Section 4.1.1 of APA-ZZ-01004. Identify an appropriate RWP to sign in on, determine expected dose based on RWP and room conditions, and determine whether or not this task can be performed under these conditions.

Time Critical Task: NO

Validation Time: 20 Minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout APA-ZZ-01004.

START TIME: _____

APA-ZZ-01004, Step 4.1.1.a

Performance Step: 1 Ensure you know the following Basic Radworker Expectations:
Job Location.

Standard: Operator determines the location of the valves to be aligned using one of three available methods:

- Experience/memory
- Callaway Emprv (Computer program for maintenance)
- Callaway Director (General Computer Program)

Operator determines that the valves are located in the Auxiliary Building, Room 1124, Grid AH35.

Comment:

APA-ZZ-01004, Step 4.1.1.b

√ **Performance Step: 2** Ensure you know the following Basic Radworker Expectations:
RWP Requirements including Special Instructions.

Standard: Operator reviews available RWPs and recognizes that two are available to allow the completion of this Job:

- RWP700501PAACT Operations WPA Activities
- RWP700501PEORNDS Operations Primary Operator Routine Activities

Operator identifies one of these two RWPs as the RWP that will be used to complete the task.

Operator identifies that a full set of PCs is required to be worn to complete the job.

Comment:

PERFORMANCE INFORMATION

APA-ZZ-01004, Step 4.1.1.c

Performance Step: 3 Ensure you know the following Basic Radworker Expectations:
Electronic Dosimeter dose and dose rate alarm setpoints.

Standard: Operator observes that OSLD and Electronic Dosimeter is required to perform this job.
Operator recognizes that the ED is set for 10 mrem and 100 mrem/hour.

Comment:

APA-ZZ-01004, Step 4.1.1.a

√ **Performance Step: 4** Ensure you know the following Basic Radworker Expectations:
Radiological Postings in the area.

Standard: Operator reviews available survey maps and determines that Map #1124 provides radiological information on the work area.
Operator observes survey map #1124 and recognizes that the area is posted as:

- CHRA
- CRP
- CA

Comment:

APA-ZZ-01004, Step 4.1.1.e

Performance Step: 5 Ensure you know the following Basic Radworker Expectations:
Range of dose rates and contamination levels in the work area.

Standard: Operator observes survey map #1124 and recognizes that dose rates around the work area range from 8-30 mr/hr.
Operator observes survey map #1124 and recognizes that contamination levels around the work area range from 1500-6000 DPM/100CM².

Comment:

PERFORMANCE INFORMATION

	APA-ZZ-01004, Step 4.1.1.f
Performance Step: 6	Ensure you know the following Basic Radworker Expectations: Areas to avoid.
Standard:	Operator observes survey map #1124 and recognizes that dose rates of 30 mr/hr exist just east and west of the work area and should be avoided. Operator observes survey map #1124 and recognizes that contamination levels on the southeast side of the work area range are 6000 DPM/100CM ² .
Comment:	
	APA-ZZ-01004, Step 4.1.1.g
Performance Step: 7	Ensure you know the following Basic Radworker Expectations: Low Dose wait areas.
Standard:	Operator observes survey map #1124 and recognizes that low dose wait areas exist at the door, and on the northeast side of BG PCV-131.
Comment:	
	APA-ZZ-01004, Step 4.1.1.h
Performance Step: 8	Ensure you know the following Basic Radworker Expectations: ED Placement (ED in a position where it can be monitored, e.g. outside Protective Clothing).
Standard:	Operator recognizes that ED must be worn outside PC.
Comment:	

PERFORMANCE INFORMATION

APA-ZZ-01004, Step 4.1.1.i

Performance Step: 9

Ensure you know the following Basic Radworker Expectations:
ED monitoring requirements (Approximately every 15 minutes while in the RCA, more frequently if necessary, and to exit the RCA prior to dose alarm).

Standard:

Operator recognizes that the ED must be monitored at least once every 15 minutes.

Comment:

APA-ZZ-01004, Step 4.1.1.j

Performance Step: 10

Ensure you know the following Basic Radworker Expectations:
Actions upon ED Alarm (Place work in safe condition, exit the work area, and report the alarm to RP).

Standard:

Operator recognizes that if the ED alarms the operator must place work in safe condition, exit the work area, and report the alarm to RP.

Comment:

After the operator has reviewed the RWP and Survey Map ask the operator to predict his expected dose while performing the task.

PERFORMANCE INFORMATION

APA-ZZ-01004, Step 4.1.1

- √ **Performance Step: 11** Ensure you know the following Basic Radworker Expectations.
Determines whether or not job can be performed given radiological conditions and RP restrictions.

Standard:

Determines dosimeter setting is 10 mrem total dose and RP instructions indicate that 10 mrem is maximum allowable dose for the job.

Observes survey map and determines that dose rates in the work area are 8-12 mr/hr.

Recognizes that job is expected to take about 30 minutes.

Determines that it is expected that dose received during this job will be about 4-6 mr.

After cue, determines that the job can be performed.

Comment:

After the operator has reviewed the RWP and Survey Map ask the operator to determine if the job can be performed given the current RP restrictions.

Terminating Cue:

This JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM A3 RO/SRO

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Callaway Plant is operating at power.
- A job is being performed on BG PCV-131, Letdown Heat Exchanger Pressure Control Valve that requires WPA Tags to be hung.
- The job will require the following activities:
 - Close and Hang WPA on BG-V-8408A
 - Close and Hang WPA on BG-V-8408B
 - Check Closed and Hang WPA on BG-V-7
- It is expected that it will take about 30 minutes to align the valves and hang the Tags.
- RP has directed you to not exceed 10 mrem for the entire job.

INITIATING CUE:

Prepare for work within the RCA in accordance with Section 4.1.1 of APA-ZZ-01004. Identify an appropriate RWP to sign in on, determine expected dose based on RWP and room conditions, and determine whether or not this task can be performed under these conditions.

RWP# _____

Expected Dose _____

Task Can/Cannot be performed under the current conditions.

Facility: Callaway Task No.: N/A

Task Title: Make Protective Action
Recommendations during a General
Emergency JPM No.: 2007 JPM A4

K/A Reference: GK/A 2.4.44 (4.1)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:Simulated Performance: _____ Actual Performance: X
Classroom X Simulator _____ Plant _____**READ TO THE EXAMINEE**

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

- Initial Conditions:
- Callaway plant had been conducting a plant shutdown due to indications of failed fuel when a Large Break LOCA occurred.
 - A minipurge was in progress when the LOCA occurred, and the minipurge Containment Outlet Isolation Valves could not be closed.
 - Because of this an on-going release is occurring from the Containment.
 - A General Emergency has been declared based on EAL 2E (Loss of three barriers).
 - The Control Room Communicator has NOT arrived in the Control Room.
 - Attempts to control the release from Containment have failed and it is not known when the release will be terminated.
 - There are no indications that travel conditions that would present an extreme hazard during any recommended evacuation.
 - Wind speed and direction is as read in Sentry.

Task Standard: Successfully prepare an initial PAR and subsequent PARs. All critical tasks evaluated as satisfactory.

Required Materials: Computer with Sentry Program capability.

Appendix C	Job Performance Measure Worksheet	Form ES-C-1
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General References: EIP-ZZ-00102, Emergency Implementing Actions
EIP-ZZ-00212, Protective Action Recommendations
EIP-ZZ-00201 { [REF: 0030 EIP-ZZ-00201](#) }, Notifications

Handouts: EIP-ZZ-00102, Emergency Implementing Actions
EIP-ZZ-00212, Protective Action Recommendations
Attachment 4 (Blank Copy) of EIP-ZZ-00212

Initiating Cue: Make the Initial Protective Action Recommendation to support the
Emergency Classification Notification in accordance with Section 5.3 of
EIP-ZZ-00102, Emergency Implementing Actions.

Time Critical Task: YES (15 Minutes)

Validation Time: 15 Minutes

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout EIP-ZZ-00102, Emergency Implementing Actions.

START TIME: _____

EIP-ZZ-00102, Step 5.3.1

Performance Step: 1 COMPLETE OR DIRECT completion of the SENTRY screen by completion of Attachment 4 OR by giving the information directly to the Communicator using the SENTRY system.

Standard: Operator logs onto Sentry Program.
Operator completes the Sentry screen for Attachment 4.

Comment: **When it is apparent that the operator is seeking to use Attachment 4 of EIP-ZZ-00102, provide operator a blank copy.**

EIP-ZZ-00102, Step 5.3.2

Performance Step: 2 IF at a GENERAL EMERGENCY, INCORPORATE Protective Action Recommendations in accordance with EIP-ZZ-00212, Protective Action Recommendations.

Standard: Operator recognizes that EIP-ZZ-00212 must be addressed.

Comment: **When it is apparent that operator is seeking to use EIP-ZZ-00212, Protective Action Recommendations, provide copy to the operator.**

PERFORMANCE INFORMATION

✓ Performance Step: 3	EIP-ZZ-00212, Step 5.1.1 Evaluate Plant Parameters and determine the appropriate protective action recommendations based on plant conditions using Attachment 1.
Standard:	<p>Operator refers to Attachment 1.</p> <p>Operator recognizes that a General Emergency is in progress and that the standard GE PAR is required.</p> <p>Operator determines that as a minimum the PAR is "Evacuation 2 miles around and 5 miles downwind in the affected sectors."</p> <p>Operator refers to Note 2 of Attachment 1 and recognizes that:</p> <ul style="list-style-type: none">• Attempts to control the release from Containment have failed and it is not known when the release will be terminated.• There are no indications that travel conditions that would present an extreme hazard during any recommended evacuation. <p>Operator determines that evacuation rather than sheltering is preferred.</p>
Comment:	
✓ Performance Step: 4	EIP-ZZ-00212, Step 5.1.1.1 Upon declaration of a General Emergency the initial protective action recommendation, as a minimum, SHALL be to evacuate a 2 mile radius around the plant and 5 miles downwind of the plant in affected sectors.
	This recommendation SHALL be made immediately to the offsite authorities in accordance with EIP-ZZ-201, "Notifications."
Standard:	<p>Using Sentry operator records initial wind speed, direction and Sectors.</p> <p>Operator recognizes that initial required PAR is to evacuate a 2 mile radius around the plant and 5 miles downwind of the plant in the "as found" sectors.</p>
Comment:	

PERFORMANCE INFORMATION

✓ Performance Step: 5	<p>EIP-ZZ-00212, Note imbedded in Step 5.1.1.1</p> <p>The preferred Protective Action is to Evacuate. Sheltering should only be considered for the following situations:</p> <ul style="list-style-type: none">• Travel conditions that would present an extreme hazard, or• for controlled releases from containment if there is assurance that the release is short term and the area near the plant cannot be evacuated before the plume arrives.
Standard:	<p>Recognizes that initial conditions indicate that Sheltering option will not apply.</p> <p>Operator completes Sentry Form:</p> <p>Will Counties and State be participating: YES or NO</p> <p>Drill Message: YES or NO</p> <p>Emergency Classification: GE</p> <p>Emergency Action Level: 2E</p> <p>Reactor Status: Shutdown</p> <p>Release Info: There is a release above normal limits (.1 mr at EAB)</p> <p>Wind Speed: Records as found</p> <p>Wind Direction: records as found</p> <p>Affected Sectors: As found</p> <p>Protective Action Basis: Plant Conditions</p> <p>Operator is now ready to send message.</p>
Comment:	<p>Examiner cue operator to <u>NOT</u> send data from Sentry program.</p> <p>Record Time Critical Stop Time_____ (15 Minutes).</p> <p>Examiner cue operator that “30 minutes later all conditions remain unchanged except that Field Team Measurements project doses beyond 5 miles of 2 Rem TEDE.”</p>

PERFORMANCE INFORMATION

Performance Step: 6	EIP-ZZ-00212, Step 5.1.1.2 Subsequent protective action recommendations are made based on plant conditions (taking into account core and containment conditions) and/or dose assessment.
Standard:	Operator recognizes that Subsequent PARs may need to be made.
Comment:	
Performance Step: 7	EIP-ZZ-00212, Note prior to Step 5.1.2 Protective Action Recommendations should only be upgraded, never downgraded to a lesser Protective Action Recommendation.
Standard:	Operator reads Note.
Comment:	

PERFORMANCE INFORMATION

EIP-ZZ-00212, Step 5.1.2	
✓ Performance Step: 8	If dose calculations project doses beyond 5 miles that exceed protective action guidelines for evacuation (1 Rem TEDE, 5 Rem CDE Thyroid), or if plant conditions dictate, upgrade protective action recommendations to evacuate a 5 mile radius around the plant and 10 miles downwind of the plant in affected sectors.
Standard:	<p>Operator recognizes that dose calculations which project doses beyond 5 miles that exceed protective action guidelines for evacuation (1 Rem TEDE, 5 Rem CDE Thyroid), require a Subsequent PAR.</p> <p>Operator completes Sentry Form for Condition Changes:</p> <p>Protective Action Basis</p> <p>Location: 5 miles – All</p> <p>Location: 10 miles – As found Sectors previously identified</p> <p>Operator is now ready to send message.</p>
Comment:	Examiner cue operator to <u>NOT</u> send data from Sentry program.
EIP-ZZ-00212, Step 5.1.3	
Performance Step: 9	If dose calculations project doses beyond 10 miles that exceed protective action guidelines for evacuation (1 Rem TEDE, 5 Rem CDE Thyroid), inform the EC/RM. Additionally, inform the State Emergency Management Agency (SEMA) and the Department of Health (DOH) of recommended protective action recommendations and assist them in actions necessary to protect the public beyond the 10 mile Emergency Planning Zone.
Standard:	Operator reads step and is aware of dose projection threshold.
Comment:	Examiner cue operator that “60 minutes later all conditions remain unchanged except that the wind direction has changed from previous as found direction to 220°.”

PERFORMANCE INFORMATION

EIP-ZZ-00212, Step 5.1.4

- √ **Performance Step: 10** If affected sectors change based on meteorological conditions and weather forecasts, the protective actions should be modified accordingly and offsite authorities should be properly notified.

Standard:

Operator recognizes that a Subsequent PAR is necessary.

Operator completes Sentry Form for Condition Changes:

Wind Direction: 220°

Add Sectors B, C, and D to evacuate 10 miles sector.

Operator is now ready to send message.

The operator recognizes that Sectors are now unaffected but cannot be recalled (Step 5.1.1.2 Note).

Comment:**Examiner cue operator to NOT send data from Sentry program.****Terminating Cue:****This JPM is complete.****STOP TIME:**

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM A4

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Callaway plant had been conducting a plant shutdown due to indications of failed fuel when a Large Break LOCA occurred.
- A minipurge was in progress when the LOCA occurred, and the minipurge Containment Outlet Isolation Valves could not be closed.
- Because of this an on-going release is occurring from the Containment.
- A General Emergency has been declared based on EAL 2E (Loss of three barriers).
- The Control Room Communicator has NOT arrived in the Control Room.
- Attempts to control the release from Containment have failed and it is not known when the release will be terminated.
- There are no indications that travel conditions that would present an extreme hazard during any recommended evacuation.
- Wind speed and direction is as read in Sentry.

INITIATING CUE:

Make the Initial Protective Action Recommendation to support the Emergency Classification Notification in accordance with Section 5.3 of EIP-ZZ-00102, Emergency Implementing Actions.

NOTE: This is a Time Critical JPM of 15 Minutes.

Facility: Callaway Task No.:

Task Title: Emergency Boration per ES-0.1 –
Rods Not Inserted JPM No.: 2007 NRC JPM A

K/A Reference: 004 A4.18 4.3 / 4.1

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- A Reactor Trip from 100% power has occurred.
- The crew entered E-0 and completed steps 1-4.
- The crew then transitioned to ES-0.1 and completed steps 1-4.
- Following the trip Pzr Level dropped below 17% momentarily and Letdown isolated. Charging flow was reduced to minimum (RCP Seal Flow).

Task Standard: The operator will successfully align emergency boration from the RWST. All critical tasks evaluated as satisfactory.

Required Materials: Calculator

General References: ES-0.1, Reactor Trip Response
EOP Addendum 4, Emergency Boration
Curve Book

Handouts: ES-0.1, Reactor Trip Response marked up for placekeeping through Step 4.
EOP Addendum 4, Emergency Boration.

Initiating Cue: Beginning at Step 5, continue the performance of ES-0.1.
2007 NRC JPM A

Time Critical Task: NO

Validation Time: 10 minutes

SIMULATOR SETUP

- Initiate to any appropriate 100% power IC
- Insert Malfunction CRF12-11 (Rod J13 Stuck at Top on Trip)
- Insert Malfunction CRF 12-40 (Rod K2 Stuck at Top on Trip)
- Insert Malfunction CVC16A (BA Pump A Trip)
- Insert Malfunction CVC16B (BA Pump B Trip)
- Place simulator in RUN
- Trip Reactor, complete first 4 steps of E-0
- Transition to ES-0.1 and complete through step 4.
- Isolate Letdown by closing BG HIS-459 and 460, BG HIS-8149AA AB and AC.
- Throttle Charging flow to minimum (Supplying RCP Sealwater only)
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

OR (Since JPM is being conducted simultaneously with JPM B)

- IC 151
- Place simulator in RUN
- Place simulator in FREEZE
- Place simulator in RUN when directed by examiner

NOTE: Booth Operator will need to:

- **Control AFW flow to the Steam Generators $\approx 55,000$ lbm/hour.**
- **Adjust PK-455A as necessary to maintain Pzr Pressure within band.**
- **Silence any spurious Alarms.**

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout ES-0.1 marked up for placekeeping through step 4.

START TIME: _____

ES-0.1, Step 5.a

√ **Performance Step: 1** Check all Control Rods Fully Inserted.

Standard: Operator recognizes that DRPI indicates that all Control control rods, except two (K2 and J13) have dropped to the bottom of the Reactor Core.

Operator recognizes that the Step 5.a Response Not Obtained (RNO) action must be completed.

Comment:

ES-0.1, Step 5 RNO a

√ **Performance Step: 2** If two or more control rods are NOT fully inserted, Then Emergency Borate 175 ppm for each Control Rod NOT fully inserted using EOP Addendum 4, "Emergency Boration."

Standard: Operator addresses EOP Addendum 4, "Emergency Boration."

Comment:

PERFORMANCE INFORMATION

Performance Step: 3	<p>EOP Addendum 4, Step 1</p> <p>Check Charging Pumps – At Least One Running</p> <ul style="list-style-type: none">• CCPs<ul style="list-style-type: none">• BG HIS-1A• BG-HIS-2A <p><u>OR</u></p> <ul style="list-style-type: none">• NCP<ul style="list-style-type: none">• BG-HIS-3
Standard:	Operator observes that NCP is running, Red Breaker Status light LIT, Green Breaker Status light OFF, and that flow is indicated on BG-FI-121A, “Charging Header Flow.”
Comment:	
Performance Step: 4	<p>EOP Addendum 4, Note 1 prior to Step 2.a</p> <p>Curve Book Figure 7-8 provides a table for the amount of 4% boric acid solution needed to obtain the required ppm change.</p>
Standard:	Operator reads Note.
Comment:	Examiner Note: The operator may, based on the Caution calculate boration volume. This is NOT required at this time, however if the calculation is made the operator should determine to borate between 4100-4200 gallons.
Performance Step: 5	<p>EOP Addendum 4, Note 2 prior to Step 2.a</p> <p>The RWST Boration source requires approximately 10,000 gallons for each 175 ppm boration.</p>
Standard:	Operator reads Note.
Comment:	Examiner Note: The determination of boration flow time can be completed once the boration flow has been started at the end of the JPM.

PERFORMANCE INFORMATION

Performance Step: 6 EOP Addendum 4, Step 2.a
Start Boric Acid Transfer Pumps:

- BG HIS-5A
- BG-HIS-6A

Standard: Using BG HIS-5A and BG HIS-6A operator attempts start of both BA pumps.
Operator observes that neither BA Pump is operating, Green Breaker Status lights LIT, Red Breaker Status lights OFF.

Comment:

✓ **Performance Step: 7** EOP Addendum 4, Step 2.a RNO
Align one of the following flowpaths:

- RWST flowpath
- Normal or Alternate Boration flowpath

Standard: Operator recognizes that RWST flowpath is necessary because the Normal or Alternate Boration Flowpath requires the BA Transfer Pumps to be started, and these are not operable.
Operator decides to align the RWST Flowpath.

Comment:

PERFORMANCE INFORMATION

✓ Performance Step: 8	<p>EOP Addendum 4, Step 2.a RNO, 1st Bullet, substep 1</p> <p>Open both Charging Pump Suction from RWST Valves:</p> <ul style="list-style-type: none">• BN HIS-112D• BN HIS-112E
Standard:	<p>Operator opens BN HIS-112D by depressing the Open pushbutton, Observes Red Status light LIT, Green Status light OFF.</p> <p>Operator opens BN HIS-112E by depressing the Open pushbutton, Observes Red Status light LIT, Green Status light OFF.</p>
Comment:	
✓ Performance Step: 9	<p>EOP Addendum 4, Step 2.a RNO, 1st Bullet, substep 2</p> <p>Close both VCT Outlet Valves:</p> <ul style="list-style-type: none">• BG HIS-112B• BG HIS-112C
Standard:	<p>Operator Closes BN HIS-112B by depressing the Close pushbutton, Observes Green Status light LIT, Red Status light OFF.</p> <p>Operator Closes BN HIS-112C by depressing the Close pushbutton, Observes Green Status light LIT, Red Status light OFF.</p>
Comment:	

PERFORMANCE INFORMATION

EOP Addendum 4, Step 2.a RNO, 1 st Bullet, substep 3	
√ Performance Step: 10	Establish Maximum Charging Flow
Standard:	<p>Operator Opens BG FK-124 to establish maximum charging flow, and simultaneously opens BG HC-182, Charging Header Back Pressure Control.</p> <p>Operator observes flow on BG FI-215A and B at ≈130-150 gpm.</p> <p>Operator maintains Total RCP Seal flow at 32 gpm.</p>
Comment:	
EOP Addendum 4, Step 3a	
Performance Step: 11	Ensure Letdown Containment System Isolation Valves - Open <ul style="list-style-type: none">• BG HIS-8152• BG HIS-8160
Standard:	<p>Operator checks Open BG HIS-8152, Observes Red Status light LIT, Green Status light OFF.</p> <p>Operator checks Open BG HIS-8160, Observes Red Status light LIT, Green Status light OFF.</p>
Comment:	
EOP Addendum 4, Step 3b	
Performance Step: 12	Open RCS Letdown to Regen HX Valves: <ul style="list-style-type: none">• BG HIS-459• BG HIS-460
Standard:	<p>Operator Opens BG HIS-459 by depressing the Open pushbutton, Observes Red Status light LIT, Green Status light OFF.</p> <p>Operator Opens BG HIS-460 by depressing the Open pushbutton, Observes Red Status light LIT, Green Status light OFF.</p>
Comment:	

PERFORMANCE INFORMATION

	EOP Addendum 4, Step 3c
Performance Step: 13	Place Letdown HX Outlet Pressure Controller in Manual at 75% or greater. <ul style="list-style-type: none">• BG PK-131
Standard:	Operator places BG PK-131 in Manual and adjusts output to 75% or greater.
Comment:	
	EOP Addendum 4, Step 3d
Performance Step: 14	Open Letdown Orifice Isolation valves to establish desired Letdown flow: <ul style="list-style-type: none">• BG HIS-8149A• BG HIS-8149B• BG HIS-8149C
Standard:	Operator establishes 120 gpm Letdown by opening BG HIS-8149AA, AND <u>either</u> BG HIS-8149BA or BG HIS-8149CA by depressing the Open pushbutton, observes Red Status light LIT, Green status light OFF.
Comment:	Examiner Note: A maximum of 120 gpm Letdown flow will be established.
	EOP Addendum 4, Step 3e
Performance Step: 15	Adjust demand on Letdown HX Outlet Pressure Control to establish desired pressure: <ul style="list-style-type: none">• BG PK-131
Standard:	Operator adjusts demand on BG PK-131 to establish ≈350 psig.
Comment:	

EOP Addendum 4, Step 3f
Performance Step: 16 Place BG PK-131 in AUTO

Standard: Operator places BG PK-131 in AUTO.

Comment: **Examiner ask operator how long Emergency Boration must continue:**

A: 133-154 minutes based on Charging flow.

$$\left(\frac{10000 \text{ gallons}}{175 \text{ ppm}} \times \frac{175 \text{ ppm}}{\text{Rod}} \times 2 \text{ Rods} \times \frac{\text{Minutes}}{150 \text{ gal.}^*} \right) = 154-133 \text{ minutes}$$

* Adjust time calculation for Charging Flow of 130-150 gpm

Terminating Cue: **Evaluation on this JPM is complete.**

STOP TIME: _____

Job Performance Measure No.: 2007 NRC JPM A

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A Reactor Trip from 100% power has occurred.
- The crew entered E-0 and completed steps 1-4.
- The crew then transitioned to ES-0.1 and completed steps 1-4.
- Following the trip Pzr Level dropped below 17% momentarily and Letdown isolated. Charging flow was reduced to minimum (RCP Seal Flow).

INITIATING CUE:

Beginning at Step 5, continue the performance of ES-0.1.

Facility: Callaway

Task No.:

Task Title: Raising Accumulator LevelJPM No.: 2007 NRC JPM B

K/A Reference: 006 A1.13 3.5 / 3.7

Examinee:

NRC Examiner:

Facility Evaluator:

Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

- Initial Conditions:
- The plant is in Mode 3.
 - Safety Injection Accumulator C level is 28%.
 - The SI System and the RWST are in a Standby Lineup per OTN-EM-00001, "Safety Injection System."
 - The SI Test Line and EMV0257 are NOT in service.

Task Standard: The operator will successfully raise the level of the C SI Accumulator. All critical tasks evaluated as satisfactory.

Required Materials: None

General References: OTN-EP-00001, Accumulator Safety Injection System
OTN-EP-00001, Addendum 1, SI Accumulator Level Control
OTN-EP-00001, Addendum 2, SI Accumulator Pressure Control

Handouts: OTN-EP-00001, Addendum 1, SI Accumulator Level Control

Initiating Cue: Use the A SI Pump to raise Accumulator C level to 40% while maintaining the C Accumulator Pressure between 602-648 psig, per OTN-EP-00001, Addendum 1, "SI Accumulator Level Control."

Time Critical Task: NO

Validation Time: 15 minutes

SIMULATOR SETUP

- Initiate to any 100% IC.
- Place simulator in RUN.
- Ensure CCW Train A is IN SERVICE.
- Set parameter EPL00_ = 51700 to lower ACC C level to 28%.
- Allow plant to stabilize.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

OR (Since JPM is being conducted simultaneously with JPM A)

- IC 151
- Place simulator in RUN.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

NOTE: Booth Operator will need to:

- **Control AFW flow to the Steam Generators $\approx 55,000$ lbm/hour.**
- **Adjust PK-455A as necessary to maintain Pzr Pressure within band.**
- **Silence any spurious Alarms.**

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OTN-EP-00001, Addendum 1.

START TIME: _____

- | | |
|----------------------------|--|
| | OTN-EP-00001, Addendum 1, Section 3 |
| Performance Step: 1 | Review Precautions and Limitations. |
| Standard: | Operator reviews Precautions and Limitations. |
| Comment: | |
| | OTN-EP-00001, Addendum 1, Section 4 |
| Performance Step: 2 | Review the Prerequisites. |
| Standard: | Operator reviews Prerequisites. |
| Comment: | |
| | OTN-EP-00001, Addendum 1, Section 5.1 |
| Performance Step: 3 | <u>NOTE</u> : Accumulator pressure and level indicators are listed on Attachment 1.
<u>NOTE</u> : SI Accumulator levels and corresponding points are listed on Attachment 2.
Flow through EP8956A-D would require leak testing in accordance with T/S SR 3.4.14.1. |
| Standard: | Operator reads notes. |
| Comment: | |

PERFORMANCE INFORMATION

	OTN-EP-00001, Addendum 1, Section 5.1
Performance Step: 4	CAUTION: Changing accumulator level causes a corresponding change in accumulator pressure. Accumulator pressure must be closely monitored when adjusting level.
Standard:	Operator reads caution.
Comment:	Examiner's Note: Operator may seek to obtain OTN-EP-00001, Addendum 2, SI Accumulator Pressure Control. If so, Cue operator as CRS that Accumulator Pressure adjustments will be accomplished later if need be.
	OTN-EP-00001, Addendum 1, Step 5.1
Performance Step: 5	Raising Accumulator Level in MODE 1, 2, or 3 with RCS Pressure > 2000 PSIG. NOTE: Normal accumulator level is equal to or greater than 15%, and equal to or less than 85%, as indicated on EP LI-950 through EP LI-957. Normal accumulator pressure is equal to or greater than 602 psig, and equal to or less than 648 psig, as indicated on EP PI-960 through EP PI-967.
Standard:	Operator reads note.
Comment:	Examiner's Note: Operator may seek to obtain OTN-EP-00001, Addendum 2, SI Accumulator Pressure Control. If so, Cue operator as CRS that Accumulator Pressure adjustments will be accomplished later if need be.
	OTN-EP-00001, Addendum 1, Step 5.1.1
Performance Step: 6	Check that the reactor is in one of the following: <ul style="list-style-type: none">• MODE 1• MODE 2• MODE 3
Standard:	Operator recognizes that the initial conditions identified as Mode 3.
Comment:	

PERFORMANCE INFORMATION

	OTN-EP-00001, Addendum 1, Step 5.1.2
Performance Step: 7	Check that RCS pressure is equal to or greater than 2000 psig.
Standard:	Operator checks that RCS pressure is equal to or greater than 2000 psig by observing BB PI-403/405, or other equivalent indication.
Comment:	
	OTN-EP-00001, Addendum 1, Step 5.1.3
Performance Step: 8	Ensure the following are in standby alignment per OTN-EM-00001, Safety Injection System. <ul style="list-style-type: none">• SI System• RWST
Standard:	Operator recognizes that the initial conditions identified that both the SI System and the RWST are in a Standby Lineup per OTN-EM-00001, "Safety Injection System."
Comment:	
	OTN-EP-00001, Addendum 1, Step 5.1.4
Performance Step: 9	IF the SI Test Line and EMV0257, SI TEST LINE PRESS REGULATOR, are in service, on RL017, REMOVE BOTH from service.
Standard:	Operator recognizes that the initial conditions identified that the SI Test Line and EMV0257, SI TEST LINE PRESS REGULATOR, are not in service and proceeds to step 5.1.5.
Comment:	

PERFORMANCE INFORMATION

	OTN-EP-00001, Addendum 1, Step 5.1.5
Performance Step: 10	REQUEST SM/CRS to determine desired final level and pressure of selected accumulator and RECORD below. Level _____ Pressure _____
Standard:	Operator recognizes that the direction was to fill the C Accumulator to 40% while maintaining the C Accumulator Pressure between 602-648 psig. Operator records 40% as desired Level for Accumulator C on Step 5.1.5 of OTN-EP-00001, Addendum 1. Operator records 602-648 psig as desired Pressure for Accumulator C on Step 5.1.5 of OTN-EP-00001, Addendum 1.
Comment:	Examiner's Note: Operator may seek to obtain OTN-EP-00001, Addendum 2, SI Accumulator Pressure Control. If so, Cue operator as CRS that Accumulator Pressure adjustments will be accomplished later if need be.
	OTN-EP-00001, Addendum 1, Step 5.1.6
Performance Step: 11	REQUEST SM/CRS to determine SI Pump to start and MARK below. <ul style="list-style-type: none">• SI Pump A• SI Pump B
Standard:	Operator recognizes that the direction was to fill the C Accumulator using the A SI Pump Operator marks A SI Pump as the pump to be used on Step 5.1.6 of OTN-EP-00001, Addendum 1.
Comment:	

PERFORMANCE INFORMATION

- OTN-EP-00001, Addendum 1, Step 5.1.7
- Performance Step: 12** ENSURE the component cooling water train is in service for the respective SI Pump to be started per OTN-EG-00001, Component Cooling Water System.
- Standard:** Operator ensures Train A Component Cooling Water is in service by verifying that CCW A or C is operating.
- Comment:**
- OTN-EP-00001, Addendum 1, Caution Prior to Step 5.1.8
- Performance Step: 13** CAUTION: SI Pumps should not be run on only recirculation flow for greater than 30 minutes due to the pump manufacturer's constraints for running these pumps at reduced flow rates. Pump flow rates should not be lowered to less than 45 gpm.
- Standard:** Operator reads caution.
- Comment:**
- OTN-EP-00001, Addendum 1, Step 5.1.8.a.1
- Performance Step: 14** Using BN HIS-8806A, RWST TO SI PUMPS, ENSURE BNHV8806A is OPEN.
- Standard:** Operator ensures BN HV8806A is OPEN by observing Red Status light LIT, and Green Status light OFF.
- Comment:**
- OTN-EP-00001, Addendum 1, Step 5.1.8.a.2
- Performance Step: 15** Using EM HIS-8923A, SI PUMP A SUCT VLV, ENSURE EMHV8923A is OPEN.
- Standard:** Operator ensures EMHV8923A is OPEN by observing Red Status light LIT, and Green Status light OFF.
- Comment:**

PERFORMANCE INFORMATION

- OTN-EP-00001, Addendum 1, Step 5.1.8.a.3
- √ **Performance Step: 16** Using EM HIS-4, SI PUMP A, START SI Pump A.
- Standard:** Operator starts SI Pump A by taking EM HIS-4 to Start, Observes Red Breaker Status light LIT, Green Breaker Status light OFF.
- Comment:** **Examiner Note: Operator may make a plant announcement regarding Pump Start.**
- OTN-EP-00001, Addendum 1, Step 5.1.8.a.4
- √ **Performance Step: 17** Using EM PI-919, SI PUMP A DISCH PRESS, CHECK SI Pump A discharge rises to approximately 1500 psig.
- Standard:** Operator checks SI Pump A discharge pressure on EM PI-919 and determines it to be acceptable.
- Comment:**
- OTN-EP-00001, Addendum 1, Step 5.1.9
- √ **Performance Step: 18** At RL018, using EM HIS-8888, ACC TANKS FILL LINE VLV, OPEN EMHV8888.
- Standard:** Using EM HIS-8888, operator opens EMHV8888 by depressing Normal pushbutton then depressing Open pushbutton, Observes Red Status light LIT, Green Status light OFF.
- Comment:**

√ Performance Step: 19	<p>OTN-EP-00001, Addendum 1, Step 5.1.10.a</p> <p>FILL and VENT the accumulators per the following:</p> <ul style="list-style-type: none">• At RL018, OPEN the selected accumulator tank fill line isolation valve and MARK the one opened.• Using EP HIS-8878C, ACC TANK C FILL LINE VLV, OPEN EPHV8878C.
Standard:	<p>Using EP HIS-8878C, Operator OPENS EMHV8878C by depressing Open pushbutton, observes Red Status light LIT, Green Status light OFF.</p> <p>Operator observes Level in C Accumulator rising on EP-LI-954/955.</p> <p>Operator marks EP-HIS-8878C as the valve opened at Step 5.1.10.a of OTN-EP-00001, Addendum 1</p>
Comment:	<p>Examiner's Note: Operator may seek to obtain OTN-EP-00001, Addendum 2, SI Accumulator Pressure Control. If so, Cue operator as CRS that Accumulator Pressure adjustments will be accomplished later if need be.</p>
Performance Step: 20	<p>OTN-EP-00001, Addendum 1, Step 5.1.10.b</p> <p>MONITOR selected accumulator pressure while filling and VENT as necessary in accordance with Addendum 2, "SI Accumulator Pressure Control," to maintain pressure in the required range.</p>
Standard:	<p>Operator monitors SI Accumulator C pressure on EP-PI-964/965, and ensures that pressure remains within 602-648 psig.</p>
Comment:	
Performance Step: 21	<p>OTN-EP-00001, Addendum 1, Step 5.1.10.c</p> <p>MONITOR all accumulators for rising pressure or level.</p>
Standard:	<p>Operator monitors SI Accumulators A, B and D pressures and levels, and determines that no other Accumulator Level or Pressure is rising.</p>
Comment:	

PERFORMANCE INFORMATION

- OTN-EP-00001, Addendum 1, Note prior to Step 5.1.10.d
- Performance Step: 22** NOTE: Backleakage past EP8956A (B, C, D), SI ACC TK A (B, C, D) OUT UPSTRM CHECK, may cause forward flow through Pressure Isolation Valves (PIVs) EPV0010/20/30/40, SI PMPS TO RCS COLD LEG LOOP 1(2,3,4) CHECK.
- Standard:** Operator reads note.
- Comment:**
- OTN-EP-00001, Addendum 1, Step 5.1.10.d
- Performance Step: 23** IF level or pressure rises in any accumulator NOT being filled, Refer To T/S SR 3.4.14.1 for testing due to possible forward flow through Pressure Isolation Valves (PIVs) EPV0010/20/30/40, SI PMPS TO RCS COLD LEG LOOP 1(2,3,4) CHECK.
- Standard:** Operator monitors SI Accumulators A, B and D pressures and levels, and determines that no other Accumulator Level or Pressure is rising.
- Comment:**

PERFORMANCE INFORMATION

√ Performance Step: 24	OTN-EP-00001, Addendum 1, Step 5.1.11 WHEN the selected accumulator reaches the desired level recorded in Step 5.1.5, at RL018 CLOSE the selected accumulator tank fill line isolation valve and MARK the one CLOSED.
	Using EP HIS-8878C, ACC TANK C FILL LINE VLV, CLOSE EPHV8878C.
Standard:	Operator observes Level in C Accumulator on EP-LI-954/955 at 40%. Using EP HIS-8878C, Operator Closes EMHV8878C by depressing Close pushbutton, observes Green Status light LIT, Red Status light OFF. Operator marks EP-HIS-8878C as the valve closed at Step 5.1.11 of OTN-EP-00001, Addendum 1
Comment:	
Performance Step: 25	OTN-EP-00001, Addendum 1, Step 5.1.13 WHEN completed with raising the accumulator levels, PERFORM the following: <ul style="list-style-type: none">• Using EP HIS-8878A, ENSURE EPHV8878A is CLOSED.• Using EP HIS-8878B, ENSURE EPHV8878B is CLOSED.• Using EP HIS-8878C, ENSURE EPHV8878C is CLOSED.• Using EP HIS-8878D, ENSURE EPHV8878D is CLOSED.
Standard:	Operator ensures EPHV8878A – D are CLOSED, observes Green Status light LIT, Red Status light OFF.
Comment:	

PERFORMANCE INFORMATION

- OTN-EP-00001, Addendum 1, Step 5.1.14
- √ **Performance Step: 26** At RL017, STOP the running SI Pump and MARK the one stopped:
Using EM HIS-4, SI PUMP A, STOP SI Pump A.
- Standard:** Operator stops SI Pump A by taking EM HIS-4 to Stop, Observes Green Breaker Status light LIT, Red Breaker Status light OFF.
- Comment:** **Examiner Note: Operator may make a plant announcement regarding Pump Start.**
- OTN-EP-00001, Addendum 1, Step 5.1.15
- √ **Performance Step: 27** At RL017, Using EM HIS-8888, ACC TANKS FILL LINE VLV, CLOSE EMHV8888.
- Standard:** Using EM HIS-8888, Operator CLOSES EMHV8888 by depressing Close pushbutton, observes Green Status light LIT, Red Status light OFF.
- Comment:** **Examiner Note: There are additional procedure steps, however the JPM should be terminated here.**
- Terminating Cue:** This JPM is complete.

STOP TIME: _____

Job Performance Measure No.: 2007 NRC JPM B

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is in Mode 3.
- Safety Injection Accumulator C level is 28%.
- The SI System and the RWST are in a Standby Lineup per OTN-EM-00001, "Safety Injection System."
- The SI Test Line and EMV0257 are NOT in service.

INITIATING CUE:

Use the A SI Pump to raise Accumulator C level to 40% while maintaining the C Accumulator Pressure between 602-648 psig, per OTN-EP-00001, Addendum 1, "SI Accumulator Level Control."

Facility: Callaway Task No.:

Task Title: Initiate Cold Overpressure Mitigation with PORV Malfunction JPM No.: 2007 NRC JPM C

K/A Reference: 010 K4.03 3.8 / 4.1

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions: Callaway Plant is in Mode 4, performing an RCS Cooldown. RCS Cold Overpressure Mitigation is being provided by the RHR Suction Relief Valves.

Task Standard: The operator will successfully place COMS in service and respond to a failed open PORV. All critical tasks evaluated as satisfactory.

Required Materials: OOA-BB-0001B, RCS Cold Overpressure Curves (On MCB)

General References: OTN-BB-00005, Pressurizer and Pressurizer Pressure Control
OOA-BB-0001B, RCS Cold Overpressure Curves
ODP-ZZ-00025, EOP/OTO User's Guide

Handouts: OTN-BB-00005, Pressurizer and Pressurizer Pressure Control

Initiating Cue: ARM the Pressurizer Power Operated Relief Valves for Cold Overpressure Mitigation in accordance with OTN-BB-00005, Pressurizer and Pressurizer Pressure Control, Section 5.6.

Time Critical Task: NO

Validation Time: 10 minutes

SIMULATOR SETUP

- Initiate to IC-5.
- Insert the following to cause BB PV-456A to fail open when armed IMF PRS12, PORV B (1), Value = 1, Conditional = X211140A, Activate
- Place simulator in RUN.
- Check both PORVs Closed.
- Check both PORV Block Valves Open.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

OR (Since JPM is being conducted simultaneously with JPM F)

- IC 157
- Place simulator in RUN.
- Check both PORVs Closed.
- Check both PORV Block Valves Open.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

NOTE: Booth Operator will need to Silence any spurious Alarms.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OTN-BB-00005.

START TIME: _____

Performance Step: 1 OTN-BB-0005, Sections 1.0 - 4.0
Review Purpose, Scope, Precautions, Limitations, and Prerequisites

Standard: Operator reviews Purpose, Scope, Precautions, Limitations, and Prerequisites.

Comment:

Performance Step: 2 OTN-BB-0005, Section 5.6, Note Prior to Step 1
NOTE: Refer to OOA-BB-0001A, in the control room or OOA-BB-0001B, in the simulator.

Standard: Operator reads note.

Comment:

✓ **Performance Step: 3** OTN-BB-0005, Step 5.6.1.a
Prior to any RCS cold leg temperature lowering to 275°F, INITIATE Cold Overpressure Mitigation as follows:

- ENSURE RCS pressure is less than the low PORV pressure setting.

Standard: Operator observes Tcold on BB TI-413B/423B to be ≈350°F.
Operator uses OOA-BB-00001 (At MCB), COMS Lift Setpoint for Pressurizer PORVs, with auctioneered Wide Range Temperature of ≈350°F, determines PORV PCV-455A setpoint to be 2185 psig, and PORV PCV-456A setpoint to be 2335 psig.
Operator determines that RCS Wide Pressure is < PORV by observing RCS Wide Range Pressure BB PI-403/405.

Comment:

OTN-BB-0005, Step 5.6.1.b
Performance Step: 4 CHECK BB HIS-8000A, PZR PORV BLOCK VLV, in OPEN.

Standard: Operator checks BB HIS-8000A in OPEN by observing Red Status light LIT, Green Status light OFF.

Comment:

OTN-BB-0005, Step 5.6.1.c
Performance Step: 5 CHECK BB HIS-8000B, PZR PORV BLOCK VLV, in OPEN.

Standard: Operator checks BB HIS-8000B in OPEN by observing Red Status light LIT, Green Status light OFF.

Comment:

OTN-BB-0005, Step 5.6.1.d
Performance Step: 6 CHECK BB HIS-455A, PZR PORV, in AUTO.

Standard: Operator checks BB HIS-455A in AUTO.

Comment:

OTN-BB-0005, Step 5.6.1.e
Performance Step: 7 CHECK BB HIS-456A, PZR PORV, in AUTO.

Standard: Operator checks BB HIS-456A in AUTO.

Comment:

PERFORMANCE INFORMATION

	OTN-BB-0005, Step 5.6.1.f
√ Performance Step: 8	PLACE the following Cold Overpressure Arming Switches in ARM: <ul style="list-style-type: none">• BB HS-8000A, TRN A COLD O/P BLOC/ARM• BB HS-8000B, TRN B COLD O/P BLOC/ARM
Standard:	Operator depresses ARM pushbutton on BB HS-8000A.
	Operator depresses ARM pushbutton on BB HS-8000B.
Comment:	
	OTN-BB-0005, Note prior to Step 5.6.1.g
Performance Step: 9	<u>NOTE:</u> The PORVs are pilot operated valves and should open when the block valves open
Standard:	Operator reads note.
Comment:	
	OTN-BB-0005, Step 5.6.1.g
√ Performance Step: 10	CHECK the following PORVs CLOSED: <ul style="list-style-type: none">• BB HIS-455A, PZR PORV• BB HIS-456A, PZR PORV
Standard:	Operator observes BB HIS-455A and BB HIS-456A Closed, Green Status light LIT, Red Status light OFF.
	Operator recognizes BB HIS-456A is open and RCS Pressure is < PORV Setpoint, Red Status light LIT, Green Status light OFF.
Comment:	

PERFORMANCE INFORMATION

ODP-ZZ-00025, Step 4.1.8

- √ **Performance Step: 11** The RO may place controllers in Manual prior to entry into an OTO if improper operation of the controller or component being controlled is apparent.

Standard:

Operator recognizes BB HIS-456A is open and RCS Pressure is < PORV Setpoint, Red Status light LIT, Green Status light OFF.

Operator attempts to Close PORV 456A by depressing the BLOCK pushbutton on BB HS-8000B.

Operator recognizes that BB HIS-456A indicates that PORV 456A is still Open, Red Status light LIT, Green Status light OFF.

Operator attempts to Close PORV 456A by depressing the Close pushbutton on BB HIS-456A.

Operator observes BB HIS-456A and determines that PORV 456A is still Open, Red Status light LIT, Green Status light OFF.

Operator attempts to Close PORV Block Valve 456A by depressing the Close pushbutton on BB HIS-8000B.

Operator determines that the PORV Block Valve BB HV-8000B is closed, Green Status light LIT, Red Status light OFF

Operator observes that RCS Pressure stabilizes on BB PI-403/405.

Comment:

Terminating Cue: This JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM C

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: Callaway Plant is in Mode 4, performing an RCS Cooldown. RCS Cold Overpressure Mitigation is being provided by the RHR Suction Relief Valves.

INITIATING CUE: ARM the Pressurizer Power Operated Relief Valves for Cold Overpressure Mitigation in accordance with OTN-BB-00005, Pressurizer and Pressurizer Pressure Control, Section 5.6.

Facility: Callaway Task No.:

Task Title: Transfer "A" MFP Speed Control/
Pump Trip JPM No.: 2007 NRC JPM D

K/A Reference: 059 K1.04 3.4 / 3.4

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

- Initial Conditions:
- Callaway plant is at 50% power.
 - Both A and B MFPs are operating in anticipation of power increase.
 - The A MFP Speed Controller FC SK-509B has been malfunctioning causing large rapid changes in pump speed.
 - It has been determined that the A MFP Speed Controller requires Corrective Maintenance.
 - The Plant Computer is unavailable.

Task Standard: The operator will successfully transfer the control of the A MFP to an alternate controller, and then trip the pump in response to an abnormal situation, ensuring that Steam Generator Water Levels are controlled properly during the event. All critical tasks evaluated as satisfactory.

Required Materials: None

General References: OTN-AE-00001, Feedwater System
OTN-AE-00001, Addendum 2, Main Feedpump Operations
OTA-RK-00026, Addendum 122C, MFT A Thrust Bearing High Oil Temperature

Handouts: OTN-AE-00001, Addendum 2, Main Feedpump Operations

OTA-RK-00026, Addendum 122C, MFT A Thrust Bearing High Oil Temperature

Initiating Cue: Transfer "A" MFP from AUTO to MANUAL on the GE Controller (FC HK-88) in accordance with Section 3.3 of OTN-AE-00001, Addendum 2, "Main Feedpump Operations."

Time Critical Task: NO

Validation Time: 11 minutes

SIMULATOR SETUP

- Initiate to any 50% IC.
- Ensure Both A and B MFPs are in operation.
- Place simulator in RUN.
- Turn off Plant Computer.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

OR (Since JPM is being conducted simultaneously with JPM H)

- IC 156
- Place simulator in RUN.
- Turn off Plant Computer.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

Simulator Instructor Note: This JPM is being conducted simultaneously with JPM H (CCW). Ensure that at the end of the JPM the Feed Pump Speed Controller is placed in AUTO to avoid a plant trip while the other operator is performing JPM H.

Simulator Instructor Note: Examiner and Simulator Instructor should be on Headset communication to signal alarm insertion for A MFP.

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OTN-AE-00001, Addendum 2.

START TIME: _____

Performance Step: 1 OTN-AE-00001, Addendum 2, Section 1
Review the Precautions and Limitations of OTN-AE-00001, Addendum 2.

Standard: Operator reads the Precautions and Limitations.

Comment:

Performance Step: 2 OTN-AE-00001, Addendum 2, Section 2
Review the Prerequisites of OTN-AE-00001, Addendum 2.

Standard: Operator reviews the Prerequisites.

Comment:

√ **Performance Step: 3** OTN-AE-00001, Addendum 2, Step 3.3.1
Ensure FC SK-509A, MFP Turbs Master Speed CTRL, is in MANUAL.

Standard: Operator places FC SK-509A, MFP Turbs Master Speed CTRL in MANUAL by depressing the Manual pushbutton.
Operator observes FC SK-509A RED MANUAL light is LIT and RED AUTO light is OFF.

Comment:

PERFORMANCE INFORMATION

- OTN-AE-00001, Addendum 2, Step 3.3.2
- √ **Performance Step: 4** Place FC SK-509B, MFP Turb A Speed CTRL, in MANUAL.
- Standard:** Operator places FC SK-509C, MFP Turb B Speed CTRL in MANUAL by depressing the Manual pushbutton.
Operator observes FC SK-509C RED MANUAL light LIT and RED AUTO light OFF.
- Comment:**
- OTN-AE-00001, Addendum 2, Step 3.3.3
- √ **Performance Step: 5** Using FC HK-88, MFP Turb A Man Speed Ctrl, Null FC EI-88, MFP Turb A MAN/AUTO Sig Match.
- Standard:** Operator nulls FC-EI-88 by adjusting FC HK-88.
Operator observes FC EI-88 indicates "0".
- Comment:**
- OTN-AE-00001, Addendum 2, Step 3.3.4
- √ **Performance Step: 6** Place FC HIS-88, MFP TURB A SPEED CTRL TRANSFER, in MANUAL.
- Standard:** Operator places FC HIS-88, in MAN by depressing Manual pushbutton.
Operator observes FC HIS-88 WHITE MANUAL light LIT and YELLOW AUTO light OFF.
- Comment:**

PERFORMANCE INFORMATION

Performance Step: 7 OTN-AE-00001, Addendum 2, Step 3.3.5
Maintain speed using FC HK-88 MFP TURB A MAN.

Standard: Operator maintains A MFP speed with FC HK-88.

Comment:

Performance Step: 8 OTN-AE-00001, Addendum 2, NOTE prior to Step 3.3.5
Programmed ΔP is between 45 and 149 psid for 0 to 100% power or 1.04 psid/% power. Power is determined by total steam flow from the SGs.

Standard: Operator reads NOTE.

Comment:

√ **Performance Step: 9** OTN-AE-00001, Addendum 2, Step 3.3.6
Ensure ΔP is maintained at programmed ΔP for existing plant conditions as read on AE PDI-508, FW/STEAM HDR ΔP .

Standard: Operator determines programmed ΔP .
$$\left(\frac{1.04 \text{ psid}}{\% \text{ power}} \times 50\% \text{ power} \right) + 45 \text{ psid} = 97 \text{ psid}$$

Operator ensures Feed Water/Main Step ΔP is ≈ 97 psid

After ANN C122, operator recognizes the need to address OTA-RK-00026, Addendum 122C

Comment: **Examiner cue Simulator Instructor Using Headset: Following ΔP adjustment, Booth Instructor Insert Malfunction C122 (On).**

Examiner's Note: When it is apparent that the operator is seeking to use OTA-RK-00026, Addendum 122C, provide the operator with a copy of OTA-RK-00026, Addendum 122C.

PERFORMANCE INFORMATION

	OTA-RK-00026, Addendum 122C, Step 3.1
Performance Step: 10	Monitor Thrust bearing oil temperature using either of the following: <ul style="list-style-type: none">• FCTIS0031, Thrust Brg Oil Drn TIS, (Local)• Computer point FCT0031, MFT A T-Brg Oil Temp
Standard:	Operator recognizes that Plant Computer is not available. Operator dispatches Equipment Operator to Monitor Thrust bearing oil temperature using FCTIS0031 locally.
Comment:	Simulator Instructor as Equipment Operator reports that thrust bearing oil temperature is 185°F.
	OTA-RK-00026, Addendum 122C, Step 3.2.1
Performance Step: 11	Check in service Closed Cooling Water L-O Cooler inlet and outlet isolation valves Open.
Standard:	Operator directs Equipment Operator to Check in service Closed Cooling Water L-O Cooler inlet and outlet isolation valves Open.
Comment:	Simulator Instructor as Equipment Operator reports that Closed Cooling Water L-O Cooler inlet and outlet isolation valves are Open.
	OTA-RK-00026, Addendum 122C, Step 3.2.2
Performance Step: 12	If desired, Adjust FCTIC0055, A MFP LUBE OIL CLRS CLCW OUT TEMP IND CTRL, to increase cooling water flow through the cooler in service.
Standard:	Operator directs Equipment Operator to Adjust FCTIC0055 to increase cooling water flow through the cooler in service.
Comment:	Simulator Instructor as Equipment Operator reports that maximum flow is through the cooler and thrust bearing oil temperature is 186°F.

PERFORMANCE INFORMATION

	OTA-RK-00026, Addendum 122C, Step 3.2.3
Performance Step: 13	<p>If desired to control lube oil temperature manually, Perform the following:</p> <ul style="list-style-type: none">• Fail air to FCTV0055A or FCTV0055B.• Take manual control of FCTV0055A or FCTV0055B.• Use local temperature indicator, FCTIS0065 for temperature indication.
Standard:	Operator directs Equipment Operator to fail air to FCTV0055A or FCTV0055B, and take manual control of the valve.
Comment:	Simulator Instructor as Equipment Operator reports that maximum flow is through the cooler and thrust bearing oil temperature is 187°F.
	OTA-RK-00026, Addendum 122C, Step 3.3
Performance Step: 14	<p>If transfer to standby oil cooler is desired, Refer to OTN-AE-00001, Feedwater System.</p>
Standard:	Operator directs Equipment Operator to transfer to standby oil cooler in accordance with OTN-AE-00001, Feedwater System.
Comment:	Simulator Instructor as Equipment Operator reports that the standby oil cooler is tagged out.
	OTA-RK-00026, Addendum 122C, Step 3.4
Performance Step: 15	<p>If thrust bearing oil temperature is $\geq 180^{\circ}\text{F}$ and oil system flows and temperature are normal perform the following:</p>
Standard:	Operator recognizes that thrust bearing oil temperature is $\geq 180^{\circ}\text{F}$ and oil system flows and temperature are normal, and that steps 3.4.1 – 3.4.4 must be performed.
Comment:	

PERFORMANCE INFORMATION

OTA-RK-00026, Addendum 122C, Step 3.4.1
Performance Step: 16 Runback Turbine Load to < 60%.

Standard: Operator recognizes that Turbine Load is already < 60%.

Comment:

OTA-RK-00026, Addendum 122C, Step 3.4.2
✓ **Performance Step: 17** Trip MFP A.

Standard: Operator trips A MFP by depressing the Trip pushbutton on FC HIS-18.

Comment:

OTA-RK-00026, Addendum 122C, Step 3.4.3
✓ **Performance Step: 18** Check that MFP B is controlling feedwater flow automatically to maintain steam generator levels at the programmed level.

Standard: Operator adjusts FC SK-509A output manually to ensure programmed ΔP (≈ 97 psid) for existing plant condition as read on AE-PDI-508.

Operator stabilizes feed flow transient.

Comment:

Terminating Cue: This JPM is complete.

STOP TIME: _____

Simulator Instructor Note: This JPM is being conducted simultaneously with JPM H (CCW). Ensure that at the end of the JPM the Feed Pump Speed Controller is placed in AUTO to avoid a plant trip while the other operator is performing JPM H.

Job Performance Measure No.: 2007 NRC JPM D

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Callaway plant is at 50% power.
- Both A and B MFPs are operating in anticipation of power increase.
- The A MFP Speed Controller FC SK-509B has been malfunctioning causing large rapid changes in pump speed.
- It has been determined that the A MFP Speed Controller requires Corrective Maintenance.
- The Plant Computer is unavailable.

INITIATING CUE:

Transfer "A" MFP from AUTO to MANUAL on the GE Controller (FC HK-88) in accordance with Section 3.3 of OTN-AE-00001, Addendum 2, "Main Feedpump Operations."

Facility: Callaway Task No.:

Task Title: Manually Actuate Containment Spray JPM No.: 2007 NRC JPM E

K/A Reference: 026 A2.03 (4.1/4.4)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- While at 100% power, a small steam break in Containment requires a reactor trip and safety injection.
- In response, the crew enters E-0, "Reactor Trip or Safety Injection," and then transitions to E-2, "Faulted Steam Generator Isolation."
- Seconds ago, after transition to E-2 the small steam break degraded to a large Steam Line Rupture.
- The crew is just now transitioning to FR-Z.1, "Response to High Containment Pressure."

Task Standard: The operator will successfully initiate Containment Spray System operation. All critical tasks evaluated as satisfactory.

Required Materials: None

General References: FR-Z.1, "Response to High Containment Pressure."
ODP-ZZ-00001, "Operations Department – Code of Conduct."
ODP-ZZ-00025, "EOP/OTO User's Guide."

Handouts: FR-Z.1, "Response to High Containment Pressure."

Initiating Cue: Perform Step 1 of FR-Z.1.

Time Critical Task: NO

Validation Time: 10 minutes

SIMULATOR SETUP

- Initiate to any 100% IC.
- Insert Malfunction SBI005 (Failure of CS/CSIB Automatic Actuation)
- Insert Malfunction MSS03B and MSS03C @ 100 %. (Steam Line Break Inside Containment)
- Place simulator in RUN.
- Insert Overrides: SBHS43 (OFF), SBHS44 (OFF), SBHS45 (OFF), SBHS46 (OFF) (Failure of CS/CSIB Manual Actuation).
- Carry out action of E-0 and transition to E-2.
- Ensure Containment Pressure is > 27 psig.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

OR (Since JPM is being conducted simultaneously with JPM G)

- IC 152
- Place simulator in RUN.
- Insert Overrides: SBHS43 (OFF), SBHS44 (OFF), SBHS45 (OFF), SBHS46 (OFF) (Failure of CS/CSIB Manual Actuation).
- Trip RCPs based on RCP Trip Criteria.
- Stop flow from TDAFW Pump, and start and control flow from MDAFW Pumps.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

NOTE: Booth Operator will need to Silence any spurious Alarms.

PERFORMANCE INFORMATION

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout FR-Z.1.

START TIME: _____

Performance Step: 1

FR-Z.1 Step 1.a

Check Containment Spray Status: Containment Spray Pumps both running.

Standard:

Operator observes CS Pump Breaker Status lights and observes that both CS Pumps are NOT running.

Comment:

√ **Performance Step: 2**

FR-Z.1 Step 1a RNO

IF ECA-1.1, Loss of Emergency Coolant Recirculation is NOT in effect, Then perform the following:

1. Manually actuate CSAS
 - SB HS-43 and SB HS-45
 - SB HS-44 and SB HS-46
2. Ensure Both Containment Spray Pumps are Running.

Standard:

Operator manually actuates CSAS by simultaneously operating SB HS-43 and SB HS-45.

Operator manually actuates CSAS by simultaneously operating SB HS-44 and SB HS-46.

Operator observes CS Pump Breaker Status lights and observes that both CS Pumps are NOT running.

Operator takes EN HIS-9 to Start, and observes the A CS Pump Red Breaker Status light LIT, and Green Breaker Status light OFF.

Operator takes EN HIS-3 to Start, and observes the B CS Pump Red Breaker Status light LIT, and Green Breaker Status light OFF.

Comment:

NOTE: Ensure is used to indicate the condition should be evaluated, and actions should be taken to make the condition true if they are not (ODP-ZZ-00025, Step 4.17.2).

PERFORMANCE INFORMATION

- Performance Step: 3** FR-Z.1 Step 1b
- Check Containment Spray Status: ESFAS Status Panels CSAS Sections:
- SA066X White lights – All Lit.
 - SA066Y White lights – All Lit.

Standard: Operator observes SA066X White Status lights and observes lights NOT lit.

Operator observes SA066Y White Status lights and observes lights NOT lit.

Comment:

- √ **Performance Step: 4** FR-Z.1 Step 1b RNO
- Align CSAS Valves as Necessary.

Standard: Using EN HIS-6, operator Opens A CS Pump Discharge Valve HV-0006, by depressing the Open pushbutton, observes RED Status light LIT, Green Status light OFF.

Using EN HIS-12, operator Opens B CS Pump Discharge Valve HV-0012, by depressing the Open pushbutton, observes RED Status light LIT, Green Status light OFF.

Comment:

PERFORMANCE INFORMATION

Performance Step: 5 FR-Z.1 Step 1c
Check Containment Spray Status: ESFAS Status Panels CISB Sections:

- SA066X White lights – All Lit
- SA066Y White lights – All Lit

Standard: Observes SA066X White Status lights and observes lights NOT lit.
Observes SA066Y White Status lights and observes lights NOT lit.

Comment:

√ **Performance Step: 6** FR-Z.1 Step 1c RNO
Close CISB Valves as Necessary.

Standard: Using EG HIS-71, operator Closes CCW Supply to RCP Bearing Cooler/Thermal Barrier HV-71 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Using EG HIS-58, operator Closes CCW Supply to RCP Bearing Cooler/Thermal Barrier HV-58 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Using EG HIS-60, operator Closes CCW Return from RCP Bearing Cooler HV-60 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Using EG HIS-59, operator Closes CCW Return from RCP Bearing Cooler HV-59 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Using EG HIS-61, operator Closes CCW Return from Thermal Barrier HV-61 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Using EG HIS-62, operator Closes CCW Return from Thermal Barrier HV-62 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Comment:

PERFORMANCE INFORMATION

√ **Performance Step: 7** FR-Z.1 Step 1d
Stop all RCPs.

Standard:

Operator takes BB-HIS-37 to Stop to stop the A RCP, and observes Green Breaker Status light LIT, and Red Breaker Status light OFF.

Operator takes BB-HIS-38 to Stop to stop the B RCP, and observes Green Breaker Status light LIT, and Red Breaker Status light OFF.

Operator takes BB-HIS-39 to Stop to stop the C RCP, and observes Green Breaker Status light LIT, and Red Breaker Status light OFF.

Operator takes BB-HIS-40 to Stop to stop the D RCP, and observes Green Breaker Status light LIT, and Red Breaker Status light OFF.

Comment:

Terminating Cue: Evaluation on this JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM E

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- While at 100% power, a small steam break in Containment requires a reactor trip and safety injection.
- In response, the crew enters E-0, "Reactor Trip or Safety Injection," and then transitions to E-2, "Faulted Steam Generator Isolation."
- Seconds ago, after transition to E-2 the small steam break degraded to a large Steam Line Rupture.
- The crew is just now transitioning to FR-Z.1, "Response to High Containment Pressure."

INITIATING CUE:

Perform Step 1 of FR-Z.1.

Facility: Callaway Task No.:

Task Title: Loss of Offsite Power Recovery JPM No.: 2007 NRC JPM F

K/A Reference: 062 A4.07 (3.1/3.1)

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

- Initial Conditions:
- The plant is in Mode 4 in a Natural Circulation Cooldown in accordance with ES-0.2, "Natural Circulation Cooldown."
 - Off-site Power was lost and both EDGs (NE01 and NE02) started and automatically re-energized their respective AC Emergency busses (NB01 and NB02).
 - Off-Site Power is now available however, there is an electrical lockout on ESF Transformer XBN02.
 - Transmission Operations has been contacted and has indicated that all Switchyard Breakers may be closed.

Task Standard: The operator will successfully parallel the A EDG (NE01) and the ESF Transformer output (XNB01) on NB01. All critical tasks evaluated as satisfactory.

Required Materials: None

General References: ES-0.1, "Reactor Trip Response."
EOP Addendum 7, "Restoring Offsite Power."
OTN-NE-0001A, "Standby Diesel Generation System – Train A."
OTN-NE-0001A, Addendum 6, "Transferring Bus NB01 From NE01 to Normal or Alternate Source."

Appendix C	Job Performance Measure Worksheet	Form ES-C-1
Handouts:	EOP Addendum 7, "Restoring Offsite Power." OTN-NE-0001A, Addendum 6, "Transferring Bus NB01 From NE01 to Normal or Alternate Source."	
Initiating Cue:	Restore Offsite Power using EOP Addendum 7, "Restoring Offsite Power."	
Time Critical Task:	NO	
Validation Time:	18 minutes	

SIMULATOR SETUP

- Initiate to IC 5.
- Insert Batch File LoopB.Txt (LOOP, OC LO on XNB02)
- Place simulator in RUN.
- Verify NE01 powering NB01.
- Verify NE02 powering NB02.
- Verify that ANN 14A "S/U XFMR LOCKOUT" is in.
- Remove Malfunction for LOOP.
- Verify that the following lights LIT:
 - CAL-BLAND-1
 - MTGY-CAL-7
 - MTGY-CAL-8
 - CAL-LSCR-2
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

OR (Since JPM is being conducted simultaneously with JPM C)

- IC 157
- Place simulator in RUN.
- Verify NE01 powering NB01.
- Verify NE02 powering NB02.
- Verify that ANN 14A "S/U XFMR LOCKOUT" is in.
- Remove Malfunction for LOOP.
- Verify that the following lights LIT:
 - CAL-BLAND-1
 - MTGY-CAL-7
 - MTGY-CAL-8
 - CAL-LSCR-2
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

NOTE: Booth Operator will need to Silence any spurious Alarms.

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout EOP Addendum 7.

START TIME: _____

	EOP Addendum 7 Step 1
Performance Step: 1	Check if Offsite Power Source – Available. Any lights LIT: <ul style="list-style-type: none">• CAL-BLAND-1• MTGY-CAL-7• MTGY-CAL-8• CAL-LSCR-2
Standard:	Operator observes white light is LIT and determines that Offsite Power is available from CAL-BLAND-1. Operator observes yellow light is LIT and determines that Offsite Power is available from MTGY-CAL-7. Operator observes white light is LIT and determines that Offsite Power is available from MTGY-CAL-8. Operator observes white light is LIT and determines that Offsite Power is available from CAL-LSCR-2.
Comment:	
	EOP Addendum 7 Step 2.a
Performance Step: 2	Energize available switchyard buses: Contact Transmission Operations.
Standard:	Operator recognizes that Transmission Operations has indicated that all Switchyard Breakers can be closed.
Comment:	Examiner cue operator about initial conditions if operator forgets that Transmission Operations has already been contacted and has indicated that all Switchyard Breakers may be closed.

PERFORMANCE INFORMATION

√ Performance Step: 3	<p>EOP Addendum 7 Step 2.b</p> <p>Energize available switchyard buses:</p> <p>Close applicable breakers:</p> <ul style="list-style-type: none">• PCB-V85• PCB-V81• PCB-V45• PCB-V71• PCB-V75• PCB-V51
Standard:	<p>Operator closes PCB-V85 and observes Red Breaker Status lights lit, and Green Breaker Status light OFF.</p> <p>Operator closes PCB-V81 and observes Red Breaker Status lights lit, and Green Breaker Status light OFF.</p> <p>Operator closes PCB-V45 and observes Red Breaker Status lights lit, and Green Breaker Status light OFF.</p> <p>Operator closes PCB-V71 and observes Red Breaker Status lights lit, and Green Breaker Status light OFF.</p> <p>Operator closes PCB-V75 and observes Red Breaker Status lights lit, and Green Breaker Status light OFF.</p> <p>Operator observes Red Breaker Status lights lit, and Green Breaker Status lights OFF, and determines that PCB-V51 is already closed.</p> <p>Comment:</p> <p>Examiner Note: Operator may make a plant announcement regarding Breaker closure.</p>
√ Performance Step: 4	<p>EOP Addendum 7 Step 3</p> <p>Check if ESF Transformer XNB01 – Energized:</p> <p>Breakers between energized offsite source and ESF Transformer XNB01 – Closed.</p> <p>Standard:</p> <p>Operator observes switchyard breakers 52-3 and Safeguards XFMR B Bus Disconnect V25 are closed, and determines that XNB01 is energized.</p> <p>Comment:</p>

PERFORMANCE INFORMATION

Performance Step: 5	EOP Addendum 7 Step 4
	Check if Startup Transformer XMR01 - Energized: Breakers between energized offsite source and Startup Transformer XMR01 – Closed.
Standard:	Operator observes switchyard breakers V41 and V43 are Open, and determines that XMR01 is de-energized. Operator recognizes that Step 4 RNO must be implemented.
Comment:	
Performance Step: 6	EOP Addendum 7 Step 4 RNO
	If annunciator 14A, S/U XFMR Lockout is LIT, then go to Step 6.
Standard:	Operator observes that ANN 14A is LIT. Operator goes to Step 6 of EOP Addendum 7.
Comment:	
Performance Step: 7	EOP Addendum 7 Step 6
	Check ESF Transformers – At Least One Energized: <ul style="list-style-type: none">• XNB01 OR <ul style="list-style-type: none">• XNB02
Standard:	Operator determines that XBN01 is energized by observing switchyard breakers 52-3 and Safeguards XFMR B Bus Disconnect V25 are closed. Operator determines that XNB02 is de-energized by observing switchyard breakers V41 and V43 are Open.
Comment:	Examiner Note: When it is apparent that the operator is seeking to use OTN-NE-0001A, Addendum “Transferring Bus NB01 From NE01 to Normal or Alternate Source,” provide operator with a copy.

PERFORMANCE INFORMATION

Performance Step: 8 EOP Addendum 7 Step 7
Check NB01 and NB02 – Both energized by DGs.

Standard: Observes voltage on NB01 to be $\approx 4000-4100$ with NE01 Output Breaker closed and NB0109 open, and determines that NB01 is energized by NE01.
Observes voltage on NB02 to be $\approx 4000-4100$ with NE02 Output Breaker closed and NB0209 open, and determines that NB02 is energized by NE02.

Comment:

Performance Step: 9 EOP Addendum 7 Step 8
Check ESF Transformers – Both Energized.

Standard: Operator determines that XNB02 is de-energized by observing switchyard breakers V41 and V43 are Open.
Operator recognizes that Step 8 RNO must be implemented.

Comment:

✓ **Performance Step: 10** EOP Addendum 7 Step 8 RNO a
Perform the following:
If ESF Transformer XNB01 is energized, then restore NB01 to Normal Source Power following loss of Offsite Power using OTN-NE-0001A, Addendum 6, "Transferring Bus NB01 From NE01 to Normal or Alternate Source."

Standard: Operator recognizes that OTN-NE-0001A, Addendum 6, "Transferring Bus NB01 From NE01 to Normal or Alternate Source".

Comment:

PERFORMANCE INFORMATION

	OTN-NE-0001A, Addendum 6, Note prior to Step 4.1.1
Performance Step: 11	This section is used to transfer Bus NB01 from diesel generator NE01 following a loss of power when referenced by Emergency or Off-Normal procedures.
Standard:	Operator Reads Note.
Comment:	
	OTN-NE-0001A, Addendum 6, Step 4.1.1
√ Performance Step: 12	Place NB HS-6, NB01 NORM SPLY SYNC TRANSFER, to On.
Standard:	Operator places NB HS-6 to On.
Comment:	
	OTN-NE-0001A, Addendum 6, Step 4.1.2
√ Performance Step: 13	Using KJ HS-8A, DG NE01 START-RESET/STOP, Press Reset.
Standard:	Operator presses Reset pushbutton on KJ HS-8A.
Comment:	
	OTN-NE-0001A, Addendum 6, Step 4.1.3
√ Performance Step: 14	Place NB HS-10, 4.16 KV BUS NB01 SYNC SCOPE SEL., to MAIN FDR BRKR.
Standard:	Operator places NB HS-10 to MAIN FDR BRKR.
Comment:	Examiner Note: Synchroscope will now rotate in the SLOW direction, and synch lights will alternately dim and go bright.

PERFORMANCE INFORMATION

OTN-NE-0001A, Addendum 6, Step 4.1.4	
√ Performance Step: 15	Momentarily place NE HS-5, DG NE01 UNIT PARALLEL, to Parallel.
Standard:	Operator momentarily places NE HS-5 to Parallel.
Comment:	Examiner Note: Synchroscope will now rotate in the FAST direction.
OTN-NE-0001A, Addendum 6, Step 4.1.5	
Performance Step: 16	At NE107, check the white Parallel Operation light is On.
Standard:	Operator contacts EO to determine if Parallel Operation light at NE107 is ON.
Comment:	Examiner as EO, cues operator that Parallel Operation light at NE107 is ON.
OTN-NE-0001A, Addendum 6, Step 4.1.6	
Performance Step: 17	At RL015, Check Annunciator 22B, Voltage Control Freeze, is in alarm.
Standard:	Operator recognizes that Annunciator 22B is in alarm.
Comment:	
OTN-NE-0001A, Addendum 6, Step 4.1.7	
Performance Step: 18	Check one of the following: <ul style="list-style-type: none">• Computer Point, NBQ0003, NB03CAPACITOR BANK, indicates Freeze.• Capacitor Bank NB03 is out of service.
Standard:	Operator observes Computer Point Computer Point, NBQ0003 indicates Freeze.
Comment:	

Performance Step: 19 OTN-NE-0001A, Addendum 6, Step 4.1.8
Check one of the following:

- Computer Point, NBX0001, XMFR XNB01, indicates Freeze.
- Transformer XNB01 LTC is in Manual.

Standard: Operator observes Computer Point, NBX0001 indicates Freeze.

Comment:

Performance Step: 20 OTN-NE-0001A, Addendum 6, Note prior to Step 4.1.9
Because the diesel is not the Incoming feed, speed adjustments will have the opposite effect on synchroscope direction, compared to paralleling across the diesel output breaker.

Standard: Operator reads Note.

Comment:

√ **Performance Step: 21** OTN-NE-0001A, Addendum 6, Step 4.1.9
Using KJ HS-7A, DG NE01 GOV, Adjust speed until NB EI-3, 4.16 KV BUS NB01 SYNC-SCOPE, is rotating slowly in the Fast direction.

Standard: Operator Uses KJ HS-7A to adjust speed until NB EI-3 is rotating slowly in the Fast direction.

Comment: **Examiner Note: Taking KJ HS-7A to RAISE will slow synchroscope.**

PERFORMANCE INFORMATION

OTN-NE-0001A, Addendum 6, Step 4.1.10

- √ **Performance Step: 22** Using NE HS-13A, DG NE01 AUTO VOLT REG, Ensure XNB01 Voltage within +50 to -0 volts of NE01 voltage, using the following indicators:

- Place NB HS-10, 4.16 KV BUS NB01 SYNC-SCOPE SEL, in D/G FDR BRKR to read NE01 voltage on NB EI-28, BUS NB01 VOLTAGE INCOMING SOURCE.
- Place NB HS-10, 4.16 KV BUS NB01 SYNC-SCOPE SEL, in MAIN FDR BRKR to read XNB01 voltage on NB EI-28, BUS NB01 VOLTAGE INCOMING SOURCE.

Standard:

Operator places HS-10 in D/G FDR BRKR to read NE01 voltage and then in MAIN FDR BRKR to read XNB01 voltage on NB EI-28.

Operator adjusts NE HS-13A to ensure XNB01 Voltage within +50 to -0 volts of NE01 voltage.

Comment:

OTN-NE-0001A, Addendum 6, Step 4.1.11

- √ **Performance Step: 23** Ensure NB HS-10, 4.16 KV BUS NB01 SYNC-SCOPE SEL, in MAIN FDR BRKR.

Standard:

Operator ensures NB HS-10 in MAIN FDR BRKR.

Comment:

PERFORMANCE INFORMATION

- OTN-NE-0001A, Addendum 6, Step 4.1.12
- √ **Performance Step: 24** As NB EI-3, 4.16 KV BUS NB01 SYNC-SCOPE, rotates slowly in the fast direction, Check the following:
- NB ZL-9, 4.16 KV BUS NB01 SYNCH LIGHT, is dimmed at 12 o'clock position and brightest at 6 o'clock.
 - NB ZL-1, NORM SPLY TO BUS NB01 SYNC, is lit between 11 o'clock and 12 o'clock positions.

Standard: Operator observes that as NB EI-3 rotates slowly in the fast direction, NB ZL-9 is dimmed at 12 o'clock position and brightest at 6 o'clock, and NB ZL-1 is lit between 11 o'clock and 12 o'clock positions.

Comment:

- OTN-NE-0001A, Addendum 6, Step 4.1.13
- √ **Performance Step: 25** If necessary, return to steps 4.1.9 and 4.1.10 to ensure frequency and voltage settings.

Standard: If necessary, Operator Uses KJ HS-7A to adjust speed until NB EI-3 is rotating slowly in the Fast direction.

If necessary, Operator places HS-10 in D/G FDR BRKR to read NE01 voltage and then in MAIN FDR BRKR to read XNB01 voltage on NB EI-28.

If necessary, Operator adjusts NE HS-13A to ensure XNB01 Voltage within +50 to -0 volts of NE01 voltage.

Comment: **Examiner Note: This action will be necessary if NB ZL-1 (White Light) is NOT lit between 11 o'clock and 12 o'clock positions.**

- OTN-NE-0001A, Addendum 6, Step 4.1.14
- √ **Performance Step: 26** Wait for synchroscope NB EI-3 to complete at least one revolution to verify proper speed for synchronization.

Standard: Operator allows the synchroscope to make at least one revolution slowly in fast direction.

Comment:

- OTN-NE-0001A, Addendum 6, Step 4.1.15
- ✓ **Performance Step: 27** When synchroscope NB EI-3 passes between the 11 o'clock and 12 o'clock positions, using NB HIS-2, NB01 NORM SPLY BKR NB0112, Close breaker NB0112.
- Standard:** Operator allows the synchroscope to pass between the 11 o'clock and 12 o'clock positions, and then using NB HIS-2, Closes breaker NB0112.
- Operator observes synchroscope stops rotating.
- Operator observes NB0112 closed, Red Breaker Status light LIT, Green Breaker Status light OFF.
- Comment:** **Examiner Note: Operator may make a plant announcement regarding Breaker closure.**
- OTN-NE-0001A, Addendum 6, Step 4.1.16
- Performance Step: 28** Place NB HS-10, 4.16 KV BUS NB01 SYNCH-SCOPE SEL, to OFF.
- Standard:** Operator places NB HS-10 to OFF.
- Comment:**
- OTN-NE-0001A, Addendum 6, Step 4.1.17
- Performance Step: 29** Place NB HS-6, NB01 NORM SPLY SYNC TRANSFER, to OFF.
- Standard:** Operator places NB HS-6 to OFF.
- Comment:** **Examiner cue operator that someone else will shutdown the Diesel.**
- Terminating Cue:** **Evaluation on this JPM is complete.**

STOP TIME: _____

Job Performance Measure No.: 2007 NRC JPM F

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant is in Mode 4 in a Natural Circulation Cooldown in accordance with ES-0.2, "Natural Circulation Cooldown."
- Off-site Power was lost and both EDGs (NE01 and NE02) started and automatically re-energized their respective AC Emergency busses (NB01 and NB02).
- Off-Site Power is now available however, there is an electrical lockout on ESF Transformer XBN02.
- Transmission Operations has been contacted and has indicated that all Switchyard Breakers may be closed.

INITIATING CUE:

Restore Offsite Power using EOP Addendum 7, "Restoring Offsite Power."

Facility: Callaway Task No.:

Task Title: Radiation Monitors Source Check JPM No.: 2007 NRC JPM G

K/A Reference: 073 A4.03 3.1 / 3.2

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X
Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- MODE 1, NOP, NOT

Task Standard: The operator will successfully source check two Radiation Monitors and respond to the failure of a source check of a third. All critical tasks evaluated as satisfactory.

Required Materials: None

General References: OSP-SP-00001, Radiation Monitors Source Check
OTA-SP-RM011, Radiation Monitor Control Panel RM-11
OOA-SP-Process Monitor Tech Spec/FSAR Actions
FSAR Section 16

Handouts: OSP-SP-00001, Radiation Monitors Source Check

Initiating Cue: Perform OSP-SP-00001, Radiation Monitors Source Check.

Time Critical Task: NO

Validation Time: 15 minutes

NOTE: There is a difference between the RO and SRO portions of this JPM.

The RO will perform Performance Steps 1-12.

The SRO will perform Performance Steps 1-14.

SIMULATOR SETUP

- IC 152 (Since JPM is being conducted simultaneously with JPM E)
- Place simulator in RUN.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

(Denote Critical Steps with a check mark)

NOTE: The Operator will need to be told that he is to disregard conditions in other areas of the Simulator, and to focus solely on RM-11, in the Initial Conditions stated by the JPM.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OSP-SP-00001.

START TIME: _____

OSP-SP-00001, Section 4

Performance Step: 1 Review Precautions and Limitations of OSP-SP-00001.

Standard: Operator reviews the Precautions and Limitations.

Comment:

OSP-SP-00001, Section 5

Performance Step: 2 Review Prerequisites of OSP-SP-00001.

Standard: Operator reviews the Prerequisites.

Comment:

OSP-SP-00001, Notes prior to Step 6.1.

Performance Step: 3 Source Checks are performed on RM-11 Computer Console with a display and printer message.

Monitors may be checked in any order as long as steps specific to performing a source check are performed in order.

Standard: Operator reads Notes.

Comment:

PERFORMANCE INFORMATION

OSP-SP-00001, Note prior to Step 6.1.1

Performance Step: 4

After one minute the source check test will end, the CHECK SOURCE Indicating lights will go off, and the status display will clear the channel CHECK SOURCE ENERGIZED. The test is SAT unless the status display indicates channel CHECK SOURCE TEST Failed. In addition to status display indication, failure of the test will be indicated by a printer message ALM CHECK SOURCE TEST FAILED.

Standard:

Operator reads Note.

Comment:

PERFORMANCE INFORMATION

- ✓ **Performance Step: 5** OSP-SP-00001, Step 6.1.1.a-f
- Select BM-RE-52, Channel 526, Steam Generator Blowdown Discharge Channel for display on RM-11, and perform the following:
- Press the status key to display channel status.
 - Press the Check Source key and check the indicating lights are ON.
 - Check the RM-11 status display indicates channel CHECK SOURCE ENERGIZED.
 - Check the printer message is CHECK SOURCE ENERGIZED.
 - Upon test sequence completion, Circle SAT or UNSAT on Attachment 1.
 - If UNSAT, refer to OTA-SP-RM011, Radiation Monitor Control Panel RM-11.

Standard:

Operator types 526; pushes SELECT on RM-11, and observes White box around BML526.

Operator presses Status Function Key, and observes that "Status Display" screen is displayed on RM-11.

Operator presses Check Source Key, and observes GREEN LEDs are ON above the Check Source Key.

Operator observes that Check Source ENERGIZED is highlighted at bottom of "Status Display" screen, and that Gray Box is to the right of Check Source Energized line.

Operator observes that Printer message "Check Source ENERGIZED" is printed.

Operator observes that after one minute the CHECK SOURCE Indicating lights will go off, and the "Status Display" will clear the channel CHECK SOURCE ENERGIZED, the Gray Box at the end of the Check Source Energized line is no longer present, and the Normal Operating Condition Green Box is lit.

Operator observes that the RM-11 status display does not indicate channel CHECK SOURCE FAILED, nor are there any additional printer messages.

Operator circles SAT on Attachment 1 under 6.1.1.e.

Comment:

PERFORMANCE INFORMATION

OSP-SP-00001, Note prior to Step 6.2.1

Performance Step: 6

After one minute the source check test will end, the CHECK SOURCE Indicating lights will go off, and the status display will clear the channel CHECK SOURCE ENERGIZED. The test is SAT unless the status display indicates channel CHECK SOURCE TEST Failed. In addition to status display indication, failure of the test will be indicated by a printer message ALM CHECK SOURCE TEST FAILED.

Standard:

Operator reads Note.

Comment:

PERFORMANCE INFORMATION

- OSP-SP-00001, Step 6.2.1.a-f
- ✓ **Performance Step: 7** Select GT-RE-21B, Channel 214, Unit Vent Lo Range for display on RM-11, and perform the following:
- Press the status key to display channel status.
 - Press the Check Source key and check the indicating lights are ON.
 - Check the RM-11 status display indicates channel CHECK SOURCE ENERGIZED.
 - Check the printer message is CHECK SOURCE ENERGIZED.
 - Upon test sequence completion, Circle SAT or UNSAT on Attachment 1.
 - If UNSAT, refer to OTA-SP-RM011, Radiation Monitor Control Panel RM-11.

Standard:

Operator types 214; pushes SELECT on RM-11, and observes White box around BML214.

Operator presses Status Function Key, and observes that "Status Display" screen is displayed on RM-11.

Operator presses Check Source Key, and observes GREEN LEDs are ON above the Check Source Key.

Operator observes that Check Source ENERGIZED is highlighted at bottom of "Status Display" screen, and that Gray Box is to the right of Check Source Energized line.

Operator observes that Printer message "Check Source ENERGIZED" is printed.

Operator observes that after one minute the CHECK SOURCE Indicating lights will go off, and the "Status Display" will clear the channel CHECK SOURCE ENERGIZED, the Gray Box at the end of the Check Source Energized line is no longer present, and the Normal Operating Condition Green Box is lit.

Operator observes that the RM-11 status display does not indicate channel CHECK SOURCE FAILED, nor are there any additional printer messages.

Operator circles SAT on Attachment 1 under 6.2.1.e.

Comment:

PERFORMANCE INFORMATION

- OSP-SP-00001, Step 6.2.2.a-d
- ✓ **Performance Step: 8** Select GT-RE-21B, Channel 215, Unit Vent Mid Range for display on RM-11, and perform the following:
- Press the status key to display channel status.
 - Press the Check Source key and check the indicating lights are ON.
 - Check the RM-11 status display indicates channel CHECK SOURCE ENERGIZED.
 - Check the printer message is CHECK SOURCE ENERGIZED.

Standard:

Operator types 215; pushes SELECT on RM-11, and observes White box around BML215.

Operator presses Status Function Key, and observes that "Status Display" screen is displayed on RM-11.

Operator presses Check Source Key, and observes GREEN LEDs are ON above the Check Source Key.

Operator observes that Check Source ENERGIZED is highlighted at bottom of "Status Display" screen, and that Gray Box is to the right of Check Source Energized line.

Operator observes that Printer message "Check Source ENERGIZED" is printed.

Comment:

Examiner Cues operator that after 30 seconds that:

- **"Status Display" Screen indicates "Channel Check Source TEST Failed."**
- **Printer Message reads "ALM CHECK SOURCE TEST FAILED"**

NOTE: The simulator cannot simulate these conditions. Therefore the examiner will need to impress upon the operator that these are the conditions that exist, and NOT those shown on the "Status Display."

PERFORMANCE INFORMATION

√ Performance Step: 9	<p>OSP-SP-00001, Step 6.2.2.e-f</p> <p>Select GT-RE-21B, Channel 215, Unit Vent Mid Range for display on RM-11 and perform the following:</p> <ul style="list-style-type: none">e. Upon test sequence completion, Circle SAT or UNSAT on Attachment 1.f. If UNSAT, refer to OTA-SP-RM011, Radiation Monitor Control Panel RM-11.
Standard:	<p>Operator recognizes that the source check for Channel 215, Unit Vent Mid Range, has failed.</p> <p>Operator circles UNSAT on Attachment 1 under 6.2.2.e.</p> <p>Operator determines the need to Refer to OTA-SP-RM011, Radiation Monitor Control Panel RM-11.</p>
Comment:	<p>Operator will address OTA-SP-RM011, Radiation Monitor Control Panel RM-11, which is located next to RM11 panel.</p>

- OTA-SP-RM011, Step 3a-f
- Performance Step: 10** Operator Actions:
- a. If GT-RE-21A is in Purge, Comply with OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions.
 - b. REQUEST I&C and Count Room to check monitor for proper operation.
 - c. Request Count Room to obtain samples and validate alarm.
 - d. Check Trends to validate alarm.
 - e. After Hi (Alert) clears on GT-RE-21B, Perform the following:
 - Press Reset button on GT RE-21A's ACCIDENT ISOLATE RESET STATION to restore monitor GT-RE-21A.
 - Check that GT-RE-21A is NOT in purge by observing a normal green color on the CRT.
 - f. If it is necessary for I&C to perform work on GTRE0021B and GTRE0021A is not in purge, Defeat the cross-trip to GTRE0021A by performing step 3.2.1.

Standard: Operator recognizes that these actions are for response to a Channel Alarm condition and these actions are unnecessary.

Comment: **If asked, Examiner cues operator that there are no indications that Channel 215 is in Alarm, or in Purge.**

Examiner Note: Operator may contact I&C and report the failed Source Check, or report this to the CRS.

If so, as the CRS, Examiner should ask if there is any additional action necessary.

- OTA-SP-RM011, Step 3g
- Performance Step: 11** If any condition makes the monitor inoperable, Refer to OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions.

Standard: Operator recognizes that GT-RE-21B Hi Range, has failed its Source Check and that Refer to OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions, must be addressed.

Comment: **Operator will address OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions, which is located next to RM11 panel.**

PERFORMANCE INFORMATION

OOA-SP-00002, GT-RE-21 (Gas)	
√ Performance Step: 12	If any condition makes the monitor inoperable, Refer to OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions.
Standard:	Operator recognizes that FSAR 16.11.2.4 Table 16.11-5 Item 1a, and 16.3.3.4, Table 16.3-7 Item 3 needs to be addressed.
Comment:	Examiner Note: Terminate for RO, continue for SRO.
SRO ONLY	
√ Performance Step: 13	FSAR 16.11.2.4 Table 16.11-5 Item 1a Address FSAR 16.11.2.4 Table 16.11-5 Item 1a.
Standard:	Operator Addresses FSAR 16.11.2.4. Operator recognizes that GT-RE-21B is required to be OPERABLE in accordance with Table 16.11-5 item 1a. Operator recognizes that Action b is applicable which requires that Action be taken in accordance with Table 16.11-5. Operator refers to Table 16.11-5 and determines that Action 46 is applicable (Take Action identified in Section 16.3.3.4 Action C).
Comment:	

SRO ONLY

FSAR 16.3.3.4, Table 16.3-7 Item 3

✓ **Performance Step: 14** Addresses FSAR 16.3.3.4, Table 16.3-7 Item 3.**Standard:**

Operator Addresses FSAR 16.3.3.4.

Operator recognizes that GT-RE-21B is required to be OPERABLE in accordance with Table 16.3-7 Item 3.

Operator recognizes that Action c is applicable which requires:

- Initiate the preplanned alternate method of monitoring the appropriate parameter within 72 hours.
- Restore the channel within 7 days OR prepare and submit a Special Report to the Commission within the following 14 days.

Comment:**Terminating Cue:** This JPM is complete.**STOP TIME:** _____

Job Performance Measure No.: 2007 NRC JPM G

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS: MODE 1, NOP, NOT

INITIATING CUE: Perform OSP-SP-00001, Radiation Monitors Source Check.

NOTE: Disregard conditions in other areas of the Simulator, and to focus solely on RM-11, in the Initial Conditions stated by the JPM.

Facility: Callaway Task No.:

Task Title: Shift Non-Essential CCW Supply Loops JPM No.: 2007 NRC JPM H

K/A Reference: 008 A4.01 3.3 / 3.1

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: _____ Actual Performance: X

Classroom _____ Simulator X Plant _____

READ TO THE EXAMINEE

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

Initial Conditions:

- Callaway plant is at 50% power.
- CCW Train B is in service, supplying the service loop.

Task Standard: Successfully shift the CCW Service Loop from the B Train to the A Train. All critical tasks evaluated as satisfactory.

Required Materials: None

General References: OTN-EG-00001, Component Cooling Water System

Handouts: OTN-EG-00001, Component Cooling Water System

Initiating Cue: Start CCW Pump A (has the least run time) and shift the service loop to CCW Train A per OTN-EG-00001, Component Cooling Water System. It is not desired to secure CCW Train B.

Time Critical Task: NO

Validation Time: 13 minutes

SIMULATOR SETUP

- Initiate to any 50% IC.
- Ensure that the CCW service loop is being supplied by CCW Train B and cooling water is aligned to CCW Heat Exchanger A.
- Place simulator in RUN.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

OR (Since JPM is being conducted simultaneously with JPM D)

- IC 156
- Place simulator in RUN.
- Place simulator in FREEZE.
- Place simulator in RUN when directed by examiner.

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout OTN-EG-00001.

START TIME: _____

- | | |
|----------------------------|---|
| | OTN-EG-00001, Section 3.0 |
| Performance Step: 1 | Review Precautions and Limitations. |
| Standard: | Operator reviews Precautions and Limitations. |
| Comment: | If asked, Examiner cue operator that all precautions and limitations are met. |
| | OTN-EG-00001, Section 4.0 |
| Performance Step: 2 | Review Prerequisites. |
| Standard: | Operator reviews Prerequisites. |
| Comment: | If asked, Examiner cue operator that all prerequisites are met. |
| | OTN-EG-00001, Note prior to Step 5.7.1 |
| Performance Step: 3 | NOTE: If it is desired to secure CCW Train B, all the safety related loads should be supplied by Train A. |
| Standard: | Operator reads Note, and recognizes that the initial directions indicated that the B CCW Train was not to be secured. |
| Comment: | |

PERFORMANCE INFORMATION

	OTN-EG-00001, Caution prior to Step 5.7.1
Performance Step: 4	CAUTION: Changes in CCW temperature can affect core reactivity by causing changes in Letdown temperature. Therefore when shifting CCW Service Loops, the operation of BG TK-130, LTDN HX OUTLET TEMP CTRL, should be closely monitored such that Letdown temperature on BG TI-130 is maintained stable. Manual operation of BG TK-130 may be required.
Standard:	Operator reads Caution.
Comment:	
	OTN-EG-00001, Step 5.7.1
Performance Step: 5	Ensure that SW/ESW cooling water is in service to the A CCW Heat Exchanger.
Standard:	Operator ensures that SW/ESW cooling water is IN SERVICE to the A CCW Heat Exchanger by contacting EO and verifying lineup.
Comment:	If the operator calls the EO to check this, Examiner as EO report to operator that SW/ESW cooling water is in service to the A CCW Heat Exchanger.
	OTN-EG-00001, Step 5.7.2
Performance Step: 6	If neither CCW Pump A or C is running, perform the following:
Standard:	Operator checks CCW pump status and determines that neither the A nor the C CCW Pump is running, and that steps 5.7.2.a-c must be performed.
Comment:	

	OTN-EG-00001, Step 5.7.2.a
Performance Step: 7	Ensure the A CCW Surge Tank level is GREATER THAN 50%.
Standard:	Operator observes EG LI-1 and determines that the A CCW Surge Tank level is > 50%.
Comment:	
	OTN-EG-00001, Step 5.7.2.b
Performance Step: 8	Using the following, determine the pump with the least run time on the major equipment log: <ul style="list-style-type: none">• EGQ0021, Pump A• EGQ0023, Pump C
Standard:	Operator recognizes that the pump that has the least run time is the A CCW Pump as given in the initiating cue.
Comment:	
	OTN-EG-00001, Caution prior to Step 5.7.2.c
Performance Step: 9	To ensure minimum flow for CCW pumps, a flow path through the SFP or RHR Heat Exchanger must be maintained at all times. Due to possible automatic pump starts, this applies to an idle CCW train also.
Standard:	Operator reads Caution.
Comment:	
	OTN-EG-00001, Step 5.7.2.c
Performance Step: 10	Using EC HIS-11, SFP HX A CCW OUTLET VLV, ENSURE ECHV0011 is open.
Standard:	Operator observes EC HIS-11 and determines ECHV0011 is open; Red Status light LIT, Green Status light OFF.
Comment:	

PERFORMANCE INFORMATION

OTN-EG-00001, Step 5.7.2.d	
✓ Performance Step: 11	<p>Using the applicable switch below, START the CCW Pump with the least run time:</p> <ul style="list-style-type: none">• EG HIS-21, Pump A• EG HIS-23, Pump C
Standard:	<p>Using EG HIS-21, the Operator STARTS CCW Pump A by taking the switch to Start.</p> <p>Operator observes Red Breaker Status light LIT, Green Breaker Status light OFF.</p>
Comment:	<p>Examiner Note: Operator may make a plant announcement regarding Pump Start.</p>
OTN-EG-00001, Note prior to Step 5.7.3	
Performance Step: 12	<p>NOTE: To protect against a single failure of Supply/Return Isolation Valve during the shifting of the Service Loop supply sources, the surge tank vent valves are CLOSED. This action limits the amount of inventory transferred from one train to the other should a single valve failure occur, while maintaining adequate NPSH for the CCW pumps and allowing sufficient time for the failed valve to be manually secured.</p>
Standard:	<p>Operator reads NOTE.</p>
Comment:	

PERFORMANCE INFORMATION

OTN-EG-00001, Step 5.7.3

Performance Step: 13 CLOSE both CCW Surge Tank Vent Valves:

- EG HIS -9
- EG HIS-10

Standard:

Operator Closes EG HIS-9 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Operator Closes EG HIS-10 by depressing the Close pushbutton, observes Green Status light LIT, Red Status light OFF.

Comment:

OTN-EG-00001, Step 5.7.4

√ **Performance Step: 14** Using EG HIS-15, CCW Train A SPLY/RETURN Valves, OPEN EGHV0015 and EGHV0053.

Standard:

Using EG HIS-15, Operator OPENS EGHV0015 and EGHV0053 by depressing the Open pushbutton on EG HIS-15, observes Red Status light LIT, Green status light OFF for both valves.

Comment:

OTN-EG-00001, Step 5.7.5

√ **Performance Step: 15** Using EG HIS-16 CCW Train B SPLY/RETURN VLVS, CLOSE EGHV0016 and EGHV0054.

Standard:

Using EG HIS-16, Operator Closes EGHV0016 and EGHV0054 by depressing the Close pushbutton on EG HIS-16, observes Green Status light LIT, Red status light OFF for both valves.

Comment:

PERFORMANCE INFORMATION

OTN-EG-00001, Step 5.7.6	
✓ Performance Step: 16	OPEN both CCW Surge Tank Vent Valves: <ul style="list-style-type: none">• EH HIS-9• EG HIS-10
Standard:	Operator Opens EG HIS-9 by depressing the Open pushbutton, observes Red Status light LIT, Green Status light OFF. Operator Opens EG HIS-10 by depressing the Open pushbutton, observes Red Status light LIT, Green Status light OFF.
Comment:	
OTN-EG-00001, Caution prior to Step 5.7.7	
Performance Step: 17	Motor duty rating limits for EC HIS-11 is 10 starts per 15 minute interval.
Standard:	Operator reads Caution.
Comment:	
OTN-EG-00001, Step 5.7.7	
Performance Step: 18	Using EC HIS-11, SFP HX A CCW OUTLET VLV, THROTTLE ECHV0011 as needed to clear low flow alarms.
Standard:	Operator throttles ECHV0011 as needed to clear low flow alarms.
Comment:	

PERFORMANCE INFORMATION

	OTN-EG-00001, Note prior to Step 5.7.8
Performance Step: 19	The following allows CCW flow through the RHR Heat Exchanger and avoids high flows through the RHR Pump Seal Cooler, SI Pump Oil Cooler, CCP Oil Cooler, and SFP Heat Exchanger.
Standard:	Operator reads Note.
Comment:	
	OTN-EG-00001, Step 5.7.8
Performance Step: 20	If both trains of CCW remain in service, using EC HIS-12, SFP HX B CCW OUTLET VLV, Ensure ECHV0012 is open.
Standard:	Operator recognizes that both CCW Trains will remain in service. Using EC HIS-12, operator opens ECHV0012 by depressing Open pushbutton, observes Red Status light LIT, Green Status light OFF.
Comment:	
	OTN-EG-00001, Step 5.7.9
Performance Step: 21	If not required for the Safety Loop Loads (CCP, SFP, SI, RHR), using the applicable switch below, STOP the running train B CCW pump and place the handswitch in AUTO: <ul style="list-style-type: none">• EG HIS-22, Pump B• EG HIS-24, Pump D
Standard:	Operator recognizes that both CCW Trains will remain in service. Operator leaves CCW Train B Pump RUNNING.
Comment:	

PERFORMANCE INFORMATION

Performance Step: 22 OTN-EG-00001, Step 5.7.10
Inform the Shift Chemistry Technician that CCW Train A is IN SERVICE.

Standard: Operator informs the CRS that the CCW Service Loop is now being supplied by A Train CCW.

Comment: **Examiner cue operator that CRS will inform Chemistry Technician.**

Performance Step: 23 OTN-EG-00001, Caution prior to Step 5.7.11
Motor duty rating limits for EG HIS-101 is 8 starts evenly spaced in a one hour period.

Standard: Operator reads Caution.

Comment:

Performance Step: 24 OTN-EG-00001, Step 5.7.11
As necessary for coarse adjustment, using EG HIS-101, CCW TO RHR HX A, THROTTLE EGHV0101 to maintain annunciator 75D, SFP TEMP HI, clear.

Standard: Operator observes that annunciator 75D is clear, and that no throttling action is needed.

Comment:

Terminating Cue: **This JPM is complete.**

STOP TIME: _____

Job Performance Measure No.: 2007 NRC JPM H

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- Callaway plant is at 50% power.
- CCW Train B is in service, supplying the service loop.

INITIATING CUE:

Start CCW Pump A (has the least run time) and shift the service loop to CCW Train A per OTN-EG-00001, Component Cooling Water System. It is not desired to secure CCW Train B.

Facility: Callaway Task No.:

Task Title: Manually/Locally Close Valves for CIS-A JPM No.: 2007 NRC JPM I

K/A Reference: 103 A2.03 3.5/3.8

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance:

Classroom Simulator Plant X

READ TO THE EXAMINEE

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

Initial Conditions:

- The plant has experienced a loss of all AC power.
- Operators are performing ECA-0.0, Loss of All AC Power, to restore power and stabilize plant conditions.
- The Control Room Supervisor is at Step 19 of ECA-0.0.

Task Standard: The operator will successfully close the Phase A Containment Isolation Valves such that at least one valve in each penetration is closed. All critical tasks evaluated as satisfactory.

Required Materials: Required PPE
Required Dosimetry

General References: ECA-0.0, Loss of All AC Power
EOP Addendum 25, Containment Isolation Phase A Valves

Handouts: ECA-0.0, Loss of All AC Power
EOP Addendum 25, Containment Isolation Phase A Valves

Initiating Cue: Perform Step 19 of ECA-0.0.

Time Critical Task: NO

Validation Time: 20 minutes

NOTE: This JPM will start in the Control Room, and finish in the South Piping Pen of the Aux Building.

(Denote Critical Steps with a check mark)

Proceed to Control Room.

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout ECA-0.0.

START TIME: _____

	ECA-0.0, Step 19
Performance Step: 1	Check Containment Isolation Phase A ESFAS Status Panels CISA Sections: <ul style="list-style-type: none">• SA066X White lights - All LIT.• SA066Y White lights – All LIT.
Standard:	Operator observes White lights on SA066X and SA066Y. After cue, recognizes that Step 19 RNO must be implemented.
Comment:	Examiner cues operator that the following White lights are NOT lit: SA066X: <ul style="list-style-type: none">• Red Train Cube #M9• Red Train Cube #J9 SA066Y: <ul style="list-style-type: none">• Yellow Train Cube #M9

PERFORMANCE INFORMATION

Performance Step: 2	ECA-0.0, Step 19, RNO a. Manually Actuate Phase A: <ul style="list-style-type: none">• SB HS-47• SB HS-48
Standard:	Using SB HS-47 and 48, operator manually actuates Phase A Containment Isolation. Operator observes White lights on SA066X and SA066Y. After cue, operator recognizes that there has been no change in status lights and that further action is needed.
Comment:	Examiner cues operator that there is no change in status lights.
Performance Step: 3	ECA-0.0, Step 19, RNO a. If Phase A valve(s) are NOT Closed, Then manually or locally close valves as necessary: <ul style="list-style-type: none">• Refer to EOP Addendum 25, Containment Isolation Phase A Valves, as necessary.
Standard:	Refers to EOP Addendum 25.
Comment:	When it is apparent to the Examiner that the operator is seeking to use EOP Addendum 25, provide operator with copy of EOP Addendum 25.
Performance Step: 4	EOP Addendum 25, Step 1, Bullet 1, Sub-Bullet 2 Manually or locally Close KA FV-29, REACTOR BLDG INSTR AIR SUPPLY OUTSIDE CTMT ISO.
Standard:	Operator observes Status lights on KA HIS-29. After cue, operator depresses Close pushbutton on KA HIS-29.
Comment:	Examiner cues operator that Red Status light is LIT, Green Status light is OFF. Examiner cues operator that there is no change in status lights.

PERFORMANCE INFORMATION

Performance Step: 5	EOP Addendum 25, Step 1, Bullet 1, Sub-Bullet 2 Manually or locally Close KA FV-29, REACTOR BLDG INSTR AIR SUPPLY OUTSIDE CTMT ISO.
Standard:	Operator reports to CRS that KA HIS-29 will not close and must be closed locally.
Comment:	Examiner cues operator as CRS to check other valves as needed and then proceed to valve to take any necessary action locally.
Performance Step: 6	EOP Addendum 25, Step 1, Bullet 3, Sub-Bullet 3 Manually or locally Close BG HIS-8112, SEAL WATER INSIDE CTMT ISO.
Standard:	Operator observes Status lights on BG HIS-8112. After cue, recognizes that because valve is located in the Containment the valve position CANNOT be verified locally.
Comment:	Examiner cues operator that both Red Status light and Green Status light are OFF. If operator reports condition to the CRS, acknowledge and direct the operator to proceed.
Performance Step: 7	EOP Addendum 25, Step 2, Bullet 1, Sub-Bullet 3 Manually or locally Close BG HV-8100, SEAL WATER RETURN OUTSIDE CTMT ISO.
Standard:	Operator observes Status lights on BG HV-8100. After cue, recognizes that valve position will need to be verified locally.
Comment:	Examiner cues operator that both Red Status light and Green Status light are OFF. If operator reports condition to the CRS, cue operator to proceed to the valve and take any necessary action locally.

PERFORMANCE INFORMATION

Performance Step: 8	EOP Addendum 25, Step 1, Bullet 1, Sub-Bullet 2 Manually or locally Close KA FV-29, REACTOR BLDG INSTR AIR SUPPLY OUTSIDE CTMT ISO.
Standard:	Operator proceeds to and locates KA FV-29. Operator observes stem indicator and determines the valve to be Open. Operator unlocks or breaks frangible lock and rotates handwheel in clockwise direction.
Comment:	Examiner cues operator that lock is off and handwheel turns many turns (Point out changing position of stem indicator).
Performance Step: 9	EOP Addendum 25, Step 1, Bullet 1, Sub-Bullet 2 Manually or locally Close KA FV-29, REACTOR BLDG INSTR AIR SUPPLY OUTSIDE CTMT ISO.
Standard:	After cue, operator determines that KA FV-29 is shut.
Comment:	Examiner cues operator that valve handwheel stops turning (Point out new position of stem indicator).
√ Performance Step: 10	EOP Addendum 25, Step 2, Bullet 1, Sub-Bullet 3 Manually or locally Close BG HV-8100, SEAL WATER RETURN OUTSIDE CTMT ISO.
Standard:	Operator locates BG HV-8100. Operator observes stem indicator and determines the valve to be Open. Operator depresses motor declutch handle and turns handwheel in clockwise direction.
Comment:	Examiner cues operator that motor declutch handle is depressed and valve handwheel turns many turns (Point out changing position of stem indicator).

PERFORMANCE INFORMATION

✓ **Performance Step: 11** EOP Addendum 25, Step 2, Bullet 1, Sub-Bullet 3
Manually or locally Close BG HV-8100, SEAL WATER RETURN
OUTSIDE CTMT ISO.

Standard: After cue, operator determines that BG HV-8100 is shut.

Comment: Examiner cues operator that valve handwheel stops turning
(Point out new position of stem indicator).

Terminating Cue: This JPM is complete.

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM I

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant has experienced a loss of all AC power.
- Operators are performing ECA-0.0, Loss of All AC Power, to restore power and stabilize plant conditions.
- The Control Room Supervisor is at Step 19 of ECA-0.0.

INITIATING CUE:

Perform Step 19 of ECA-0.0.

NOTE: Performance is Simulate only, and NO plant equipment should be operated.

Facility: Callaway Task No.:

Task Title: Control Room Evacuation – No Fire JPM No.: 2007 NRC JPM J

K/A Reference: 068 AK3.18 4.2 / 4.5

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance:

Classroom Simulator Plant X

READ TO THE EXAMINEE

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

Initial Conditions:

- A reactor startup was in progress when a bomb was found in the Control Room.
- The Shift Manager has directed a Control Room evacuation per OTO-ZZ-00001.
- The reactor has been tripped and all rods have been verified fully inserted.

Task Standard: The operator will have successfully demonstrated the ability to control SG level from the aux shutdown panel. All critical tasks evaluated as satisfactory.

Required Materials: Required PPE
Required Dosimetry

General References: OTO-ZZ-00001, Control Room Inaccessibility

Handouts: OTO-ZZ-00001, Control Room Inaccessibility, Attachment G

Initiating Cue:

- Perform OTO-ZZ-00001, Attachment G, with the Control Room Supervisor (CRS).
- The CRS has the keys from the Emergency Break Glass Cases, 2 portable radios, and the Shift Manager equipment bag.

Time Critical Task: NO

Validation Time: 15 minutes

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout Attachment G of OTO-ZZ-00001.

START TIME: _____

- OTO-ZZ-00001, Attachment G, Step G1
- Performance Step: 1** Obtain the following:
- All keys in the Emergency Break Glass Cases
 - 2 portable radios
 - Shift Manager Equipment Bag
- Standard:** Operator recognizes that these items are in the possession of the CRS who is also present (Simulated).
- Comment:** **NOTE: For purposes of this JPM, the CRS is Simulated to be present, however, it is expected that the operator accomplish all tasks individually.**
- OTO-ZZ-00001, Attachment G, Step G2
- Performance Step: 2** Exit Control Room with the BOP through SAS.
- Standard:** Operator goes to the ASP with CRS (Simulated to be present).
- Comment:** **NOTE: The JPM does not need to be started in the Control Room to accomplish the step as written.**
- OTO-ZZ-00001, Attachment G, NOTE prior to Step G3
- Performance Step: 3** NOTE: Radio transmission is allowed in all areas of the plant during this event.
- Standard:** Operator reads note.
- Comment:**

PERFORMANCE INFORMATION

Performance Step: 4	OTO-ZZ-00001, Attachment G, Step G3 Inform Control Room ASP is manned.
Standard:	Operator informs Control Room ASP is manned.
Comment:	Examiner cue operator that Control Room personnel acknowledge that the ASP is manned.
Performance Step: 5	OTO-ZZ-00001, Attachment G, Step G4 Check reactor tripped. Check neutron flux – LOWERING (RP 118B) <ul style="list-style-type: none">• SE NI-61X• SE NI-61Y
Standard:	Operator checks neutron flux LOWERING on SE NI-61X and SE NI-61Y.
Comment:	Examiner cue operator that Neutron flux is LOWERING on SE NI-61X and SE NI-61Y.
√ Performance Step: 6	OTO-ZZ-00001, Attachment G, Step G5 Place the following SG Aux FW XFR CTRL VLV switches in LOCAL (RP 118A) <ul style="list-style-type: none">• AL HS-9• AL HS-6• AL HS-8• AL HS-11
Standard:	Operator places AL HS-9, AL HS-6, AL HS-8 and AL HS-11 in LOCAL.
Comment:	Examiner cue operator that AL HS-9, AL HS-6, AL HS-8 and AL HS-11 are in Local.

PERFORMANCE INFORMATION

OTO-ZZ-00001, Attachment G, Step G6	
✓ Performance Step: 7	<p>Place the following switches in LOCAL (RP 118B)</p> <ul style="list-style-type: none">• FC HS-313• AL HS-12• AL HS-7• AL HS-5• AL HS-10
Standard:	Operator places FC HS-313, AL HS-12, AL HS-7, AL HS-5 and AL HS-10 in LOCAL.
Comment:	Examiner cue operator that FC HS-313, AL HS-12, AL HS-7, AL HS-5 and AL HS-10 are in Local.
OTO-ZZ-00001, Attachment G, Step G7	
Performance Step: 8	<p>Check MD AFP - RUNNING</p> <ul style="list-style-type: none">• AL HIS-22B (MD AFP B) (RP 118B)• AL HIS-23B (MD AFP A) (RP 118A)
Standard:	<p>Operator observes AL HIS-22B and AL-HIS-23B for Run Indication.</p> <p>After cue, operator determines that both MD AFW Pumps are running.</p>
Comment:	Examiner cue operator that both MD AFP switches have Red Status light LIT and Green Status light OFF, Red flag on Breaker, and discharge Pressure of 1500 psig.

PERFORMANCE INFORMATION

- OTO-ZZ-00001, Attachment G, Step G8
- √ **Performance Step: 9** Maintain SG WR level 59% to 69% using AFW Reg VLV CTRL
- AL HK-7B (SG A) (RP 118 B)
 - AL HK-9B (SG B) (RP 118A)
 - AL HK-11B (SG C) (RP 118A)
 - AL HK-5B (SG D) (RP 118B)

Standard:

Operator observes SG Level indicators:

- AE LI-501A
- AE LI-502A
- AE LI-503A
- AE LI-504A

After cue, operator throttles open AL HK-5B.

Comment:

Examiner cue operator that:

- **AE LI-501A is reading 65%.**
- **AE LI-502A is reading 66%.**
- **AE LI-503A is reading 62%**
- **AE LI-504A is reading 58%.**

PERFORMANCE INFORMATION

OTO-ZZ-00001, Attachment G, Step G8

√ **Performance Step: 10** Maintain SG WR level 59% to 69% using AFW Reg VLV CTRL

- AL HK-7B (SG A) (RP 118 B)
- AL HK-9B (SG B) (RP 118A)
- AL HK-11B (SG C) (RP 118A)
- AL HK-5B (SG D) (RP 118B)

Standard: Operator observes SG D Level indicator AE LI-504A.
After cue, operator throttles closed AL HK-5B.

Comment: **Examiner cue operator that AE LI-504A is reading 62% and trending up.**

Terminating Cue: **This JPM is complete.**

STOP TIME: _____

VERIFICATION OF COMPLETION

Job Performance Measure No.: 2007 NRC JPM J

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- A reactor startup was in progress when a bomb was found in the Control Room.
- The Shift Manager has directed a Control Room evacuation per OTO-ZZ-00001.
- The reactor has been tripped and all rods have been verified fully inserted.

INITIATING CUE:

- Perform OTO-ZZ-00001, Attachment G, with the Control Room Supervisor (CRS).
- The CRS has the keys from the Emergency Break Glass Cases, 2 portable radios, and the Shift Manager equipment bag.

NOTE: Performance is Simulate only, and NO plant equipment should be operated.

Facility: Callaway Task No.:

Task Title: Locally Start (NE02) Emergency Diesel JPM No.: 2007 NRC JPM K

K/A Reference: 055 EA1.02 4.3 / 4.4

Examinee: NRC Examiner:

Facility Evaluator: Date:

Method of testing:

Simulated Performance: X Actual Performance:

Classroom Simulator Plant X

READ TO THE EXAMINEE

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

Initial Conditions:

- The plant has experienced a loss of all AC power.
- Operators are performing ECA-0.0, Loss of All AC Power, to restore power and stabilize plant conditions.
- The Control Room Supervisor is at Step 7a of ECA-0.0 and determined that neither diesel (NE01/NE02) has started.
- The Field Supervisor and another EO are attempting to start NE01.

Task Standard: The operator will successfully start the B Emergency Diesel Generator (NE02) locally. All critical tasks evaluated as satisfactory.

Required Materials: Required PPE
OTA-KJ-00122, Diesel Generator NE02 Control Panel (At EDG)

General References:

- EOP Addendum 21, Local Start of Emergency DGS
- ECA-0.0, Loss of All AC Power
- OTA-KJ-00122, Diesel Generator NE02 Control Panel

Handouts: EOP Addendum 21, Local Start of Emergency DGS

Initiating Cue: Locally start NE02 per EOP Addendum 21. Inform the CRS if you get NE02 started.

Time Critical Task: NO

Validation Time: 20 minutes

(Denote Critical Steps with a check mark)

Provide Candidate with Initial Conditions/Cue (Last Page of this JPM), and Handout EOP Addendum 21.

START TIME: _____

Performance Step: 1 EOP Addendum 21, Step 1.a
Determine and Correct Cause of DG Failure:
Use OTA-KJ-00122, Diesel Generator NE02 Control Panel

Standard: Operator obtains copy of the OTA at the control panel.

Comment:

Performance Step: 2 EOP Addendum 21, Step 1.b
Determine and Correct Cause of DG Failure:
Check all of the flowing Engine Shutdown Relay actuation annunciators for affected DG – Clear.

- 2A, Lube Oil Pressure Low
- 4C, Jacket Water Temperature High
- 6C, Engine Overspeed
- 6D, Engine Shutdown Trouble
- 6F, Crankcase High Pressure
- 7D, Generator Protection Relay

Standard: Operator checks if any annunciators are in alarm.
After cue, operator recognizes that Step 1.b RNO must be implemented.

Comment: **Examiner cues operator that Annunciators 6C and 6D are in alarm.**

PERFORMANCE INFORMATION

Performance Step: 3	EOP Addendum 21, Step 1.b RNO b. 1) Evaluate reason for engine shutdown relay actuation.
Standard:	Operator uses OTA-KJ-00122 Addendum 6D to determine that the engine trouble annunciator is due to engine overspeed, Annunciator 6C.
Comment:	
Performance Step: 4	EOP Addendum 21, Step 1.b RNO b. 2) Consult with Control Room prior to resetting any relays to prevent potential damage to DG.
Standard:	Operator contacts Control Room personnel and informs them that the engine shutdown relay is energized due to engine overspeed.
Comment:	Examiner cue operator that Control Room personnel acknowledge the engine overspeed annunciator and direct an AUTO START NE02 per EOP Addendum 21, RNO Step 1.b.3).
Performance Step: 5	EOP Addendum 21, Step 1.b RNO b. 3) a) When directed, THEN AUTO START DG as follows: Ensure differential OC Lockout Relay 186-1 is RESET.
Standard:	Operator checks 186-1 (NE1061861DG) relay light at panel NE106. After cue, the operator determines that the differential OC Lockout Relay 186-1 (NE1061861DG) is RESET.
Comment:	Examiner cue operator that BLUE light is LIT.

PERFORMANCE INFORMATION

✓ Performance Step: 6	EOP Addendum 21, Step 1.b RNO b. 3) b) When directed, THEN AUTO START DG as follows: Ensure mechanical overspeed device is RESET.
Standard:	Operator should check mechanical overspeed trip device at SE corner of diesel. After cue, operator determines that mechanical overspeed trip device is NOT reset.
Comment:	Examiner cue operator (1) that Overspeed Limit Switch wheel is riding on the circumference of the Trip Knob (ENGAGED).
✓ Performance Step: 7	EOP Addendum 21, Step 1.b RNO b. 3) b) When directed, THEN AUTO START DG as follows: Ensure mechanical overspeed device is RESET.
Standard:	Operator pulls the overspeed trip knob OUT to disengage (RESET) the limit switch. After cue, operator determines that mechanical overspeed trip device is reset.
Comment:	Examiner cue operator (2) that Overspeed Limit Switch wheel is clear from and not in contact with the Trip Knob (DISENGAGED).
Performance Step: 8	EOP Addendum 21, Step 1.b RNO b. 3) c) When directed, THEN AUTO START DG as follows: Ensure DG master transfer switch is in AUTO.
Standard:	Operator verifies the master transfer switch at panel NE106 is in AUTO.
Comment:	Examiner cue operator that Annunciator 5D, ("SWITCH NOT IN AUTO") is CLEAR on KJ122.

PERFORMANCE INFORMATION

✓ Performance Step: 9	EOP Addendum 21, Step 1.b RNO b. 3) d) When directed, THEN AUTO START DG as follows: RESET the engine shutdown relay.
Standard:	Operator depresses the engine shutdown relay reset button at panel NE106.
Comment:	Examiner cue operator that Diesel Engine is not making noise.
Performance Step: 10	EOP Addendum 21, Step 1.b RNO b. 3) e) When directed, THEN AUTO START DG as follows: Go to Step 2.
Standard:	Operator recognizes that procedure step 2 must be addressed.
Comment:	
Performance Step: 11	EOP Addendum 21, Step 2 Check affected DG RUNNING.
Standard:	Operator checks NE02 run status. After cue, operator recognizes that Step 2 RNO must be implemented.
Comment:	Examiner cue operator that Diesel Engine is not making noise.
Performance Step: 12	EOP Addendum 21, Step 2 RNO Locally START DG NE02 per Att B.
Standard:	Operator refers to Attachment B of EOP Addendum 21 to START NE02.
Comment:	

PERFORMANCE INFORMATION

Performance Step: 13	EOP Addendum 21, Attachment B, Step B1 Notify Control Room of intent to energize NB02 by LOCALLY STARTING DG NE02.
Standard:	Operator notifies Control Room personnel of intent to energize NB02 by LOCALLY STARTING DG NE02.
Comment:	Examiner cues operator that Control Room personnel acknowledges the intent to locally start NE02.
Performance Step: 14	EOP Addendum 21, Attachment B, Step B2 Perform a walkdown of DG NE02 to ensure that no obvious adverse conditions exist prior to starting DG.
Standard:	Operator walks down NE02 to look for causes for why NE02 did NOT START.
Comment:	Examiner cues operator that nothing out of the normal lineup is observed.
Performance Step: 15	EOP Addendum 21, Attachment B, Step B3 Break glass on DG NE02 Emergency Start Pop-out Button KJ-HS-101D.
Standard:	Operator uses attached hammer to break glass on KJHS101D (NE106).
Comment:	Examiner cues operator that Glass is broken, button has POPPED OUT.
Performance Step: 16	EOP Addendum 21, Attachment B, Step B4 Check if DG NE02 - still stopped.
Standard:	Operator observes DG NE02 for signs of starting.
Comment:	Examiner cue operator that Diesel Engine is not making noise.

PERFORMANCE INFORMATION

- EOP Addendum 21, Attachment B, Step B5
- Performance Step: 17** Place the Master Transfer Switch KJ-HS-109 in LOC/MAN.
- Standard:** Operator selects MANUAL with KJ-HS-109 on NE106.
After cue, operator acknowledges annunciator on KJ-122.
- Comment:** **Examiner cue operator that switch is in MANUAL and Annunciator 5D (SWITCH NOT IN AUTO) on KJ-122 is ACTUATED.**
- EOP Addendum 21, Attachment B, Step B6
- Performance Step: 18** Press and hold the Local Start Pushbutton KJ-HS-101C.
- Standard:** Operator depresses and holds KJ-HS-101C on NE106 until the D/G starts.
Operator observes DG NE02 for signs of starting.
- Comment:** **Examiner cue operator that Diesel Engine is not making noise.**
- EOP Addendum 21, Attachment B, Step B7
- Performance Step: 19** Check if DG NE02 - still stopped.
- Standard:** Operator should check if DG NE02 still stopped.
- Comment:** **Examiner cue operator that Diesel Engine is not making noise.**
- EOP Addendum 21, Attachment B, Caution prior to Step B8
- Performance Step: 20** Stay clear of the engine to generator shaft coupling.
- Standard:** Operator reads Caution.
- Comment:**

PERFORMANCE INFORMATION

- EOP Addendum 21, Attachment B, Step B8 a.
- ✓ **Performance Step: 21** Remove cap on top of Manual Air Start Control Valve Housing.
- Standard:** Operator goes to the south end of the D/G and up the ladder to climb on top of the engine at the generator end to access the air start valve.
Operator removes cap on top of Manual Air Start Control Valve Housing
- Comment:** **Examiner cues operator that Cap on manual air start control valve is REMOVED.**
- EOP Addendum 21, Attachment B, Step B8 b.
- ✓ **Performance Step: 22** Remove handle attached to side of air start valve and place handle in the slot on top of the air start control valve.
- Standard:** Operator removes the handle attached to the side of the air start control valve and places the handle in the slot on the top of the air start control valve.
- Comment:** **Examiner cues operator that the handle is in place.**
- EOP Addendum 21, Attachment B, Step B8 c.
- ✓ **Performance Step: 23** Stay clear of engine to generator shaft coupling and push handle down to start engine.
- Standard:** Operator pushes the handle down to START the engine.
Operator observes DG NE02 for signs of starting.
- Comment:** **Examiner cue operator that Diesel Engine is making noise.**

EOP Addendum 21, Attachment B, Step B9

Performance Step: 24 Check if DG NE02 is still stopped.

Standard: Operator observes engine parameters.

Comment: **Examiner cue operator that Engine is rotating at 514 RPM.**

✓ **Performance Step: 25** EOP Addendum 21, Attachment B, Step B9 RNO a.
Place Master Transfer Switch KJ-HS-109 in AUTO.

Standard: Operator selects AUTO with KJHS109 on NE106.
After cue, operator acknowledges annunciator on KJ-122.

Comment: **Examiner cue operator that switch is in AUTO and that Annunciator 5D, (SWITCH NOT IN AUTO) CLEARS on KJ122.**

EOP Addendum 21, Attachment B, Step B9 RNO b.
Performance Step: 26 Go to Step B12.

Standard: Operator recognizes that procedure step B12 must be implemented.

Comment:

EOP Addendum 21, Attachment B, Step B12.
Performance Step: 27 Notify the Control Room of DG NE02 status.

Standard: Operator informs the Control Room Supervisor that NE02 was STARTED, and is running.

Comment: **Examiner cue operator that the CRS acknowledges.**

Terminating Cue: **This JPM is complete.**

STOP TIME: _____

Job Performance Measure No.: 2007 NRC JPM K

Examinee's Name:

Date Performed:

Facility Evaluator:

Number of Attempts:

Time to Complete:

Question Documentation:

Question:

Response:

Result: SAT _____ UNSAT _____

Examiner's Signature: _____ Date: _____

INITIAL CONDITIONS:

- The plant has experienced a loss of all AC power.
- Operators are performing ECA-0.0, Loss of All AC Power, to restore power and stabilize plant conditions.
- The Control Room Supervisor is at Step 7a of ECA-0.0 and determined that neither diesel (NE01/NE02) has started.
- The Field Supervisor and another EO are attempting to start NE01.

INITIATING CUE:

Locally start NE02 per EOP Addendum 21. Inform the CRS if you get NE02 started.

NOTE: Performance is Simulate only, and NO plant equipment should be operated.

Scenario Event Description

NRC Scenario 1

Facility:		Callaway		Scenario No.:		1		Op Test No.:		N07-1-1	
Examiners:				Operators:							
Initial Conditions:		The Plant is at 100% power Steady-State (MOL), and been for the last 14 days following a forced maintenance outage.									
Turnover:		The following equipment is Out-Of-Service: A MDAFW Pump (Expected back in 24 hours), Containment Pressure channel PT-934 failed last shift (I&C is investigating) and MCB Annunciator 16A, "XPB03/04 XFMR LOCKOUT," has alarmed spuriously several times over the last hour (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.									
Event No.	Malf. No.	Event Type*	Event Description								
1	N/A	N - RO N - SRO	Swap charging Pumps								
2	CVC13B	C-RO C (TS) -SRO	Charging Pump B Trip								
3	MSS01C	I - BOP I - SRO	Steam Generator Pressure Instrument Fails								
4	CCW06B	C - RO C -SRO	Failure of B CCW Pump, and Failure of Auto Start of same Train Standby Pump								
5	CCW11D	C - BOP C - SRO	CCW System Leak (Recoverable)								
6	N/A	R - RO C - BOP C - SRO	Condenser Tube Leak/ Rapid Downpower								
7	TUR01 CRF13	M-RO M-BOP M-SRO	Inadvertent Turbine Trip/without Auto Reactor Trip (ATWS)								
8	PRS09	NA	Pressurizer Steam Space Break								
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor											

Scenario Event Description

NRC Scenario 1

Callaway 2007 NRC Scenario #1

The Plant is at 100% power Steady-State (MOL), and been for the last 14 days following a forced maintenance outage.

The following equipment is Out-Of-Service: A MDAFW Pump (Expected back in 24 hours), Containment Pressure channel PT-934 failed last shift (I&C is investigating) and MCB Annunciator 16A, "XPB03/04 XFMR LOCKOUT," has alarmed spuriously several times over the last hour (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

Shortly after taking the watch, the operator will be directed to place the B CCP in service and remove the NCP from service in accordance with Section 5.1 of OTN-BG-00001, Addendum 1, "Shifting From the NCP to One of the CCPs."

About 2 minutes after pump start the B Charging Pump will trip. The operator will respond in accordance with OTO-BG-00001, "Pressurizer Level Control Malfunction," and address Technical Specification 3.5.2, "ECCS-Operating."

Shortly after this, the C Steam Generator Pressure Channel AB-PT-534 will fail low. This will cause the compensation input into C Steam Flow Transmitter AB-FT-534 to also fail low. The operator will respond in accordance with OTO-AE-00002, "Steam Generator Water Level Malfunctions," and defeat the failed channel.

Subsequently, the B CCW Pump will trip and the D CCW pump will fail to auto start. The Operator will manually start the D CCW Pump, and address OTA-RK-00020, Addendum 53B, "CCW Pump B/D Trouble." The mechanical shock to the CCW System will cause a 300 gpm Leak into the Radwaste header which will need to be isolated. The leak will be isolated in accordance with OTO-EG-00001, "CCW System Malfunction."

Following this, a Condenser Tube Leak will develop (LER 2007-2). The operator will take action for Action Level 3 being exceeded in accordance with APA-ZZ-01021, "Secondary Chemistry Program." A Rapid Downpower will be initiated in accordance with OTO-MA-00008 at 30%/hour.

During the downpower, the Turbine will trip without a corresponding Reactor Trip (ATWS), and the Reactor will have to be tripped manually. Upon the trip, a Pressurizer Steam Space break will develop requiring Safety Injection actuation. The operator will enter to E-0, "Reactor Trip or Safety Injection," and transition to E-1, "Loss of Reactor or Secondary Coolant." The crew will trip the RCPs when the trip criteria are met, and ultimately transition to ES-1.2, "Post-LOCA Cooldown and Depressurization."

The scenario will terminate at the transition to ES-1.2.

Scenario Event Description

NRC Scenario 1

Critical Tasks:

CCW 1

Restore CCW flow prior to reaching RCP Trip criteria (CCW lost > 10 minutes).

E-0 A

Manually trip the reactor before transition out of E-0.

E-1 C

Trip all RCPs within 10 minutes of reaching the trip criteria.

Scenario Event Description
NRC Scenario 1

Simulator Set Up

IC-159

Verify Control Rods are in Automatic.
Verify NCP running and A/B CCP secured.
Verify Steam Flow for C Steam Generator selected to F532 position.

Place WPA Tags on:

- A MDAFW Pump

Use "N07-1-1.TXT"

Remove the MDAFP A from service; bat AL01A.txt

Containment Pressure Channel GT-PT-934 Failed high last shift; imf aux05a 69

GTP001:HI2.Cntmt Press PB934 C (Trip)

GTP002:HI3.Cntmt Press PB934 A (Trip)

GTP003:HI1.Cntmt Press PB934 B (Trip)

Annunciator 16A, XPB03/04 XFMR LOCKOUT, Spurious Alarm, imf A016 0

CCW Pump "D" fails to start in AUTO with Event 3; irf sbi008p inhibit

Reactor fails to trip on valid signal (ATWS) with Event 7, imf crf13 0

Events:

1	NA
2	CCP B Trips about 2 minutes following start(MANUAL); imf cvc13b (2) 0
3	Steam Generator Pressure Instrument Fails LOW with 10 sec ramp(MANUAL) with 10 sec. ramp; imf mss01c (3) 0 10
4	Failure of B CCW Pump, and Fail of Auto Start "D" Train STBY (in setup)(MANUAL); imf ccw06b (4)
5	CCW System Leak (Recoverable) 300 gpm leak over one minute in Radwaste(MANUAL); imf ccw11d (4 60) 300 60
6	Condenser Tube Leak/ Rapid downpower with 30 second time delay(MANUAL); imf b104 (6 30) 0
7	Inadvertant Turbine Trip/ without Auto Reactor Trip (ATWS)(MANUAL); imf tur01 (8)
8	Pressurizer Steam Space Break 850 gpm over 30 seconds(MANUAL); imf prs09 (10 30) 850 30

Scenario Event Description
NRC Scenario 1

Shift Turnover:

RO	BOP	Shift	Date
<i>REVIEW/COMPLETE PRIOR TO RELIEVING THE WATCH:</i>			
• URO Logs		• Annunciator Test	
• Control Board Walkdown		• Standing/Night Orders	
'B' Train Protected			
Plant Status: Mode 1		Gross Gen Load: 1292 MWe	
Reactor Power: 100%		Load Limit Pot: 8.2	
Rod movement NONE		Circ. Pump Setback: DISABLE	
Boration: 0 gallons		Cation Bed Run 20 minutes	
Dilution 80 gallons		C/T valves: Normal	

EQUIPMENT OOS OR WPA

- ☐ A MDAFW Pump (Expected back in 24 hours).
- ☐ Containment Pressure channel PT-934 failed last shift (I&C is investigating).
- ☐ Annunciator 16A, "XPB03/04 XFMR LOCKOUT," has alarmed spuriously several times over the last hour (I&C is investigating).
- ☐ The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

INFORMATION

- ☐ The Plant is at 100% power Steady-State (MOL), and been for the last 14 days following a forced maintenance outage.
- ☐ You have been directed to place the B CCP in service and remove the NCP from service in accordance with OTN-BG-00001, for preventative maintenance on the NCP.

BURDENS AND WORKAROUNDS

- ☐ None

Scenario Event Description

NRC Scenario 1

Offgoing Supervisor

Name		Shift	Date
<i>Oncoming Supervisor review or perform the following:</i>			
• AUTO LOG	• Night Orders/Standing Orders	• EOSL Turnover Report	
• Control Board Walk down	• WPA	• Temp Mod Log	
<u>RCS Makeup:</u> 80 gal dil	<u>RODS:</u> D@ 215	<u>Cation Bed Run:</u> 20 min	
<u>RCS:</u> 1031 ppm	<u>'A' CCP:</u> 1050 ppm	<u>'B' CCP:</u> 1065 ppm	
<u>PROTECTED TRAIN:</u> B	<u>CDF:</u> 3.94E-5	<u>LERF:</u> 5.62E-7	
<u>Industrial Safety Focus Area:</u> Industrial Safety Trend		<u>OPS DOSE</u>	
<u>HUP Site Focus Area:</u> Procedure Use and Adherence		<u>Weekly Budget:</u> 11.5 mrem	
<u>HUP OPS Focus Area:</u> WPA		<u>Weekly Actual:</u> 0.0 mrem	

NEW ITEMS:

1. Containment Pressure channel PT-934 failed last shift (I&C is investigating)
2. Annunciator 16A, "XPB03/04 XFMR LOCKOUT," has alarmed spuriously several times over the last hour (I&C is investigating). T.S. 3.3.1 Condition X.1, 3.3.2 Condition D.1, E.1 and N.1 have been complied with.

ONGOING ITEMS:

1. You have been directed to place the B CCP in service and remove the NCP from service in accordance with OTN-BG-00001, for preventative maintenance on the NCP.
2. A MDAFW Pump (Expected back in 24 hours). T.S. 3.7.5 Condition C, 72 hours
3. The Turbine Bearing Monitoring System on the Plant Computer is inoperable.
4. The Plant is at 100% power Steady-State (MOL), and been for the last 14 days following a forced maintenance outage.

Op Test No.:	N07-1	Scenario #	1	Event #	1	Page	7	of	41
Event Description: Swap charging Pumps									
Time	Position	Applicant's Actions or Behavior							

Shortly after taking the watch, the operator will be directed to place the B CCP in service and remove the NCP from service in accordance with Section 5.1 of OTN-BG-00001, Addendum 1, "Shifting From the NCP to One of the CCPs."

Booth Operator Instructions: NA

Indications Available: NA

OTN-BG-00001, Addendum 1, "SHIFTING FROM THE NCP TO ONE OF THE CCPs."

	URO	(Step 5.1.1) NOTIFY RP which CCP is to be started and the NCP will be secured.
	URO	(Step 5.1.2) ENSURE the CCP to be started is supplied by the Component Cooling Water train in service in accordance with OTN-EG-0001, Component Cooling Water System.
	URO	(Step 5.1.3) PLACE BG FK-121, CCP DISCH FLOW CTRL, in MANUAL and SET at minimum flow.
	URO	(Step 5.1.4) CHECK the Charging Pump Recirculation valve for the pump to be started is OPEN:
		<ul style="list-style-type: none"> BG HIS-8111, CCP B RECIRC VLV
	URO	(Step 5.1.5) PLACE the Auxiliary Lube Oil Pump handswitch for the CCP to be started in AUTO and ENSURE the RUN light is on.
		<ul style="list-style-type: none"> BG HIS-2AX, CCP B AUX L-O PUMP
Booth Operator Instructions: (Time Compression) Inform the crew upon the start of the Auxiliary Lube Oil Pump that the pump has been running for five minutes.		
	URO	(Step 5.1.6) START the CCP supplied by the in service CCW train using the appropriate switch:

Op Test No.:	<u>N07-1</u>	Scenario #	<u>1</u>	Event #	<u>1</u>	Page	<u>8</u>	of	<u>41</u>
Event Description: Swap charging Pumps									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> BG HIS-2A, CCP B
	URO	(Step 5.1.7) IF this Addendum was entered from the Section for Charging Pump Breaker Operability Check in OTN-BG-00001, Chemical and Volume Control System, CHECK the CCP Breaker closed properly.
	URO	(Step 5.1.8) CHECK that the Auxiliary Lube Oil Pump handswitch RUN light has gone OUT and the STOP light is LIT after a reasonable time following start of the CCP. [6.2.3]
	URO	(Step 5.1.9) PLACE BG FK-124, NCP DISCH FLOW CTRL, in MANUAL.
	URO	(Step 5.1.10) WHEN flow through the NCP is less than 100 gpm, as indicated by Annunciator Window 41F, use BG HIS-8109, NCP RECIRC VLV and OPEN BGHV8109.
	URO	(Step 5.1.11) RAISE CCP flow using BG FK-121, CCP DISCH FLOW CTRL, while LOWERING NCP flow using BG FK-124, NCP DISCH FLOW CTRL, to maintain a constant charging flow as indicated on BG FI-121A, CHG HDR FLOW.
	URO	(Step 5.1.12) WHEN BG FK-124, NCP DISCH FLOW CTRL, indicates 0%, STOP the NCP using BG-HIS-3, NCP.
	URO	(Step 5.1.13) Using BG HC-182, CHG HDR BACK PRESS CTRL, ENSURE that the RCP seal water injection flow is 8 to 13 gpm per pump as indicated on the following;
		<ul style="list-style-type: none"> BG FR-154, RCP D Seal Leakoff & Inj. Flow. BG FR-155, RCP C Seal Leakoff & Inj. Flow. BG FR-156, RCP B Seal Leakoff & Inj. Flow. BG FR-157, RCP A Seal Leakoff & Inj. Flow.

Op Test No.:	<u>N07-1</u>	Scenario #	<u>1</u>	Event #	<u>1</u>	Page	<u>9</u>	of	<u>41</u>
Event Description: Swap charging Pumps									
Time	Position	Applicant's Actions or Behavior							

	URO	(Step 5.1.14) CHECK PZR Level stable, and then PLACE BG FK-121, CCP DISCH FLOW CTRL, in AUTO.
		NOTE: The B Charging pump will trip 2 minutes after starting.
Upon Trip of the B Charging Pump, or at the Discretion of the Lead Examiner Move to Event #2.		

Op Test No.:	<u>N07-1</u>	Scenario #	<u>1</u>	Event #	<u>2</u>	Page	<u>10</u>	of	<u>41</u>
Event Description: Charging Pump B Trip									
Time	Position	Applicant's Actions or Behavior							

About 2 minutes after pump start the B Charging Pump will trip. The operator will respond in accordance with OTO-BG-00001, "Pressurizer Level Control Malfunction," and address Technical Specification 3.5.2, "ECCS-Operating."

Booth Operator Instructions: Operate Trigger #2 (CVC13B).

Indications Available:

		ANN 42A Charging Line Flow HiLo
		ANN 42E Charging Pump Trouble
		Charging flow decreases.
OTO-BG-00001, "PRESSURIZER LEVEL CONTROL MALFUNCTION."		
	URO	(Step 1) Check for failed Pressurizer level indicator.
		<ul style="list-style-type: none"> • BB LI-459A • BB LI-460A • BB-LI-461
	CRS	(Step 1 RNO) Perform the following:
		Go to Step 18.
	URO	(Step 18) Check Charging Pumps – At least one running.
	URO	(Step 18 RNO) Perform the following:
		<ul style="list-style-type: none"> • Ensure CCP Recirc Valves are Open.
		<ul style="list-style-type: none"> • BG HIS-8110 (CCP A)
		<ul style="list-style-type: none"> • BG HIS-8111 (CCP B)
		<ul style="list-style-type: none"> • Start one CCP.
		<ul style="list-style-type: none"> • BG HIS-1A
		<ul style="list-style-type: none"> • BG HIS-2A
		<ul style="list-style-type: none"> • If CCP can NOT be started, then start NCP.

Op Test No.:	<u>N07-1</u>	Scenario #	<u>1</u>	Event #	<u>2</u>	Page	<u>11</u>	of	<u>41</u>
Event Description: Charging Pump B Trip									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • BG HIS-3
		NOTE: It is likely that the operator has already started the NCP.
		<ul style="list-style-type: none"> • Ensure CCW Pump is running in the same train as the CCP that was started.
	URO	(Step 19) Check Charging Header flow – Indicates Proper Charging Alignment.
		<ul style="list-style-type: none"> • BG FI-121A
	URO	(Step 20) Maintain RCP Seal Injection flow between 8 and 13 gpm per RCP using Charging Header Backpressure Control Valve.
		<ul style="list-style-type: none"> • BG HC-182
	URO	(Step 21) Check letdown – In Service.
	URO	(Step 22) CHECK Pressurizer Level within one of the following:
		<ul style="list-style-type: none"> • Trending to Program Level. OR <ul style="list-style-type: none"> • At Program Level.
	CRS	(Step 23) Review Applicable Technical Specifications:
		<ul style="list-style-type: none"> • Refer to Attachment H, Technical Specifications.

Booth Operator Instructions:**When called to check out the B Charging Pump:**

- As Secondary EO report that there is a “186 Lockout” on B Charging Pump breaker NB0102.
- As Primary EO report that there are no observable problems at the pump.

Op Test No.:	<u>N07-1</u>	Scenario #	<u>1</u>	Event #	<u>2</u>	Page	<u>12</u>	of	<u>41</u>
Event Description: Charging Pump B Trip									
Time	Position	Applicant's Actions or Behavior							

	CRS	(Step 24) PERFORM Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications To Emergency Duty Officer						
	URO	(Step 25) Check any Charging Pump started during performance of this procedure.						
	URO/BOP	(Step 26) Perform the following:						
		<ul style="list-style-type: none"> Adjust RCS Tave as required. 						
		<ul style="list-style-type: none"> Update Status Board with the boron concentration in the running Charging Pump. 						
		<ul style="list-style-type: none"> Notify HP that area radiation levels may change in the affected Charging Pump room. 						
	CRS	(Step 27) Go to the appropriate Plant Procedure as Directed by the Shift/Control Room Supervisor.						
TECHNICAL SPECIFICATION 3.5.2, "ECCS – OPERATING"								
	CRS	LCO 3.5.2 – Two ECCS Trains shall be OPERABLE.						
	CRS	APPLICABILITY: Modes 1, 2 and 3.						
		<table> <tr> <th>CONDITION</th><th>REQUIRED ACTION</th><th>COMPLETION TIME</th></tr> <tr> <td> A. One or more trains inoperable. AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS Train available. </td><td> A.1 Restore Trains to OPERABLE Status </td><td>72 Hours.</td></tr> </table>	CONDITION	REQUIRED ACTION	COMPLETION TIME	A. One or more trains inoperable. AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS Train available.	A.1 Restore Trains to OPERABLE Status	72 Hours.
CONDITION	REQUIRED ACTION	COMPLETION TIME						
A. One or more trains inoperable. AND At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS Train available.	A.1 Restore Trains to OPERABLE Status	72 Hours.						

Op Test No.:	<u>N07-1</u>	Scenario #	<u>1</u>	Event #	<u>2</u>	Page	<u>13</u>	of	<u>41</u>
Event Description:		Charging Pump B Trip							
Time	Position	Applicant's Actions or Behavior							

	CRS	FSAR 16.1.2.2
		At least two of the following three boron injection flowpaths shall be OPERABLE:
		<ul style="list-style-type: none"> The flow path from the Boric Acid Storage System via a boric acid transfer pump and a centrifugal Charging Pump to the RCS, and
		<ul style="list-style-type: none"> Two flowpaths from the Refueling Water Storage Tank via centrifugal Charging Pumps to the RCS.
		Applicability: Modes 1, 2 and 3.
		Action: With only one of the above required boron injection flow paths to the RCS OPERABLE, restore at least two boron injection flow paths to the RCS to OPERABLE status within 72 hours or be in at least Hot Standby and borated to a Shutdown Margin as specified in the COLR for Mode 5 within the next 6 hours; restore at least two flow paths to OPERABLE status within the next 7 days or be in Cold Shutdown within the next 30 hours.
	CRS	FSAR 16.1.2.4
		At least two centrifugal Charging Pumps shall be OPERABLE.
	CRS	Applicability: Modes 1, 2 and 3.
	CRS	Action: With only one centrifugal Charging Pump OPERABLE, restore at least two centrifugal Charging Pumps to OPERABLE status within 72 hours or be in at least Hot Standby and borated to a Shutdown Margin as specified in the COLR for Mode 5 within the next 6 hours; restore at least two centrifugal Charging Pumps to OPERABLE status within the next 7 days or be in Hot Shutdown within the next 6 hours.
At the Discretion of the Lead Examiner Move to Event #3.		

Op Test No.: N07-1 Scenario # 1 Event # 3 Page 14 of 41

Event Description: C Steam Generator Pressure instrument Fails

Time	Position	Applicant's Actions or Behavior
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Shortly after this, the C Steam Generator Pressure Channel AB-PT-534 will fail low. This will cause the compensation input into C Steam Flow Transmitter AB-FT-534 to also fail low. The operator will respond in accordance with OTO-AE-00002, "Steam Generator Water Level Malfunctions," and defeat the failed channel.

Booth Operator Instructions: Operate Trigger #3 (MSS01C (0%)).

Indications Available:

		ANN 110C SG C Level Dev
		ANN 110D SG C Flow Mismatch
		AB-PI-534 decreases to "0"
		AB-FI-532 decreases.
		NOTE: The operator may diagnose a failed instrument prior to entry into the OTO, and deselect the failed instrument from service.

OTO-AE-00002, "STEAM GENERATOR WATER LEVEL MALFUNCTIONS."

	BOP	(Step 1) CHECK SG Feedwater Flow Instrument Indications – NORMAL
	BOP	(Step 2) CHECK SG Steam Flow Instrument Indications – NORMAL:
		<ul style="list-style-type: none"> SG C:
		<ul style="list-style-type: none"> AB FI-532A
		<ul style="list-style-type: none"> AB FS-532C
	BOP	(Step 2 RNO) Select SG Steam Flow Channel Selector to an Operable Channel:
		<ul style="list-style-type: none"> AB FS-532C
	BOP	(Step 3) CHECK SG LEVEL Instrument Indications - NORMAL
	BOP	(Step 4) CHECK SG Pressure Instrument Indications – NORMAL

Op Test No.: N07-1 Scenario # 1 Event # 3 Page 15 of 41

Event Description: C Steam Generator Pressure instrument Fails

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> SG C:
		<ul style="list-style-type: none"> AB PI-534A
	BOP	(Step 4 RNO) Select SG Steam Flow Channel Selector to an Operable Channel:
		<ul style="list-style-type: none"> AB FS-532C
	BOP	(Step 5) CHECK Steam Generator NR Level Within One of the Following:
		<ul style="list-style-type: none"> Trending to between 45% and 55%
		OR
		<ul style="list-style-type: none"> Between 45% and 55%
	CRS	(Step 6) REVIEW Attachment A, Effects of Instrument Failure
	CRS	(Step 7) REVIEW Applicable Technical Specifications:
	CRS	(Step 8) PERFORM Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications To Emergency Duty Officer
	CRS	(Step 9) DIRECT I&C To Trip The Protective Bistables For The Failed Channel, Within The Time Limit Specified In The Applicable Technical Specification Per One Of The Following:
	CRS	(Step 10) Place the Channel in the EOSL and Attach the Following as Applicable to the EOSL:
		<ul style="list-style-type: none"> Attachment B, Tripping Steam Generator NR Level Protective Bistable. Attachment D, Tripping Steam Generator Pressure Protective Bistable.

Op Test No.: N07-1 Scenario # 1 Event # 3 Page 16 of 41

Event Description: C Steam Generator Pressure instrument Fails

Time	Position	Applicant's Actions or Behavior
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	CRS	(Step 11) Initiate Actions to Repair the Failed Channel.
	CRS	(Step 12) Check failed channel has been repaired.
	CRS	(Step 12 RNO) When the failed channel has been repaired, Then continue with this procedure.
At the Discretion of the Lead Examiner Move to Events #4&5.		

Op Test No.: N07-1 Scenario # 1 Event # 4 & 5 Page 17 of 41

Event Description: Failure of B CCW Pump and Failure of Auto Start of Same Train Standby Pump / CCW System Leak (Recoverable)

Time	Position	Applicant's Actions or Behavior
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Subsequently, the B CCW Pump will trip and the D CCW pump will fail to auto start. The Operator will manually start the D CCW Pump, and address OTA-RK-00020, Addendum 53B, "CCW Pump B/D Trouble." The mechanical shock to the CCW System will cause a 300 gpm Leak into the Radwaste header which will need to be isolated. The leak will be isolated in accordance with OTO-EG-00001, "CCW System Malfunction."

Booth Operator Instructions: Operate Trigger #4 (CCW06B, CCW11D (300 gpm)).

Indications Available:

		ANN 53B CCW Pump B/D Trouble																				
		Green/Yellow breaker status lights on B CCW Pump																				
OTA-RK-00020, ADDENDUM 53B, “CCW PUMP B/D TROUBLE.”																						
	CRS	IF a CCW pump tripped, Go To OTO-EG-00001, CCW System Malfunction.																				
	BOP	CHECK the following:																				
		<ul style="list-style-type: none">CCW Pump lights on RL019																				
		<ul style="list-style-type: none">The following computer points (for the applicable pump):																				
		<table><tr><td></td><td></td><td colspan="3">Computer Points</td></tr><tr><td>Pump</td><td></td><td>Breaker Fault</td><td>IOC</td><td>Current</td></tr><tr><td>PEG01B</td><td></td><td>EGQ0022A, CCW PMP B</td><td>EGQ0022B, CCW PMP B</td><td>EGI0022, CCW PUMP B</td></tr><tr><td>PEG01D</td><td></td><td>EGQ0022C, CCW PMP D</td><td>EGQ0022D, CCW PMP D</td><td>EGI0023, CCW PUMP D</td></tr></table>			Computer Points			Pump		Breaker Fault	IOC	Current	PEG01B		EGQ0022A, CCW PMP B	EGQ0022B, CCW PMP B	EGI0022, CCW PUMP B	PEG01D		EGQ0022C, CCW PMP D	EGQ0022D, CCW PMP D	EGI0023, CCW PUMP D
		Computer Points																				
Pump		Breaker Fault	IOC	Current																		
PEG01B		EGQ0022A, CCW PMP B	EGQ0022B, CCW PMP B	EGI0022, CCW PUMP B																		
PEG01D		EGQ0022C, CCW PMP D	EGQ0022D, CCW PMP D	EGI0023, CCW PUMP D																		
	CRS	DISPATCH operators to investigate the affected pump at the appropriate locations below:																				
		<ul style="list-style-type: none">B Pump:																				
		<ul style="list-style-type: none">PEG01B, COMPONENT COOLING WATER PUMP B																				
		<ul style="list-style-type: none">NB0206, FDR BKR TO PEG01B CCW PMP B																				

Op Test No.: N07-1 Scenario # 1 Event # 4 & 5 Page 18 of 41

Event Description: Failure of B CCW Pump and Failure of Auto Start of Same Train Standby Pump / CCW System Leak (Recoverable)

Time	Position	Applicant's Actions or Behavior
	CRS	IF the standby pump was started, Refer to OTN-EG-00001, Reactor Operator Watchstation Practices and Logs, for guidance on "Breaker Trips and Protective Relaying Actuations."
	CRS	Refer to T/S 3.7.7.
	CRS	Refer to the applicable Attachment in ODP-ZZ-00016, Reactor Operator Watchstation Practices and Logs, for guidance on "Breaker Trips and Protective Relaying Actuations."
OTO-EG-00001, "CCW SYSTEM MALFUNCTION."		
	BOP	(Step 1) CHECK One CCW Pump Running For Each Operating Train:
		<ul style="list-style-type: none"> Train B
		NOTE: The operator may have already started the D CCW Pump by this time.
	BOP	(Step 1 RNO) ENSURE at least one CCW pump running in each operating train.
Critical Task: (CCW 1) Restore CCW flow prior to reaching RCP Trip criteria (CCW lost > 10 minutes).		
	BOP	(Step 2) CHECK CCW Flow – REDUCED OR LOST
		<ul style="list-style-type: none"> EG FI-55A (Radwaste & Containment)
	CRS	(Step 2 RNO) Go To Step 7 for indication of CCW leak.
	BOP	(Step 7) CHECK CCW Surge Tank Level(s) – LOWERING

Op Test No.: N07-1 Scenario # 1 Event # 4 & 5 Page 19 of 41

Event Description: Failure of B CCW Pump and Failure of Auto Start of Same Train Standby Pump / CCW System Leak (Recoverable)

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> EG LI-2 (Tank B)
	BOP	(Step 8) CHECK CCW Surge Tank Level – GREATER THAN 44%
		<ul style="list-style-type: none"> EG LI-2 (Tank B)
		NOTE: The CCW Surge Tank Level is lowering due to a System Leak.
	BOP	(Step 8 RNO) IF CCW Surge Tank B is low, THEN PERFORM the following:
		<ul style="list-style-type: none"> ENSURE EGLV0002, DI Water To CCW Surge Tank B is OPEN.
		<ul style="list-style-type: none"> EG HIS-2
		<ul style="list-style-type: none"> IF EGLV0002 does not open, THEN locally OPEN EGV0150, DI Water To CCW Surge Tank B EGLV0002 Bypass Isolation.
	BOP	(Step 9) CHECK CCW Surge Tank Level – GREATER THAN 10% IN TRAIN SUPPLYING SERVICE LOOP
		<ul style="list-style-type: none"> EG LI-2 (Tank B)
	URO/BOP	(Step 10) DIRECT Operators to Walkdown CCW To Determine Source Of Leakage
	CRS	(Step 11) Go To The Following Attachment As Appropriate:
		<ul style="list-style-type: none"> Attachment B, CCW Train B Leak
OTO-EG-00001, ATTACHMENT B, “CCW Train B Leak”		
	BOP/URO	(Step B1) CHECK Location of the Leak – KNOWN
	CRS	(Step B1 RNO) Go To Step B2 of this Attachment.

Op Test No.: N07-1 Scenario # 1 Event # 4 & 5 Page 20 of 41

Event Description: Failure of B CCW Pump and Failure of Auto Start of Same Train Standby Pump / CCW System Leak (Recoverable)

Time	Position	Applicant's Actions or Behavior
	BOP	(Step B2) Check Service Loop Is Being Supplied From Train B:
	BOP	(Step B3) ISOLATE The Radwaste Building Supply And Return Headers:
		Note: Operator will close EG HS-69/70 to isolate the leak.
	BOP	(Step B4) CHECK For Indications That Leak – STILL PRESENT
	URO/BOP	(Step B4 RNO) PERFORM the following:
		<ul style="list-style-type: none"> DISPATCH Radwaste Operator to walkdown system to determine leak location:
		<ul style="list-style-type: none"> Catalytic Hydrogen Analyzer
		<ul style="list-style-type: none"> Waste Gas Compressors
		<ul style="list-style-type: none"> Aux Steam Rad Monitor
		<ul style="list-style-type: none"> Waste Evaporator
		<ul style="list-style-type: none"> Recycle Evaporator
		<ul style="list-style-type: none"> Secondary Waste Evaporator
		<ul style="list-style-type: none"> Reverse Osmosis Unit
		<ul style="list-style-type: none"> DISPATCH Equipment Operator to Nuclear Sample Coolers (SJ coolers) to determine if leak exist.
		<ul style="list-style-type: none"> WHEN the source of the leak has been identified, THEN PERFORM the following:
		<ul style="list-style-type: none"> CLOSE isolation valves immediately upstream and downstream of leak.
		<ul style="list-style-type: none"> Go To Step 12 of the procedure.

Op Test No.: N07-1 Scenario # 1 Event # 4 & 5 Page 21 of 41

Event Description: Failure of B CCW Pump and Failure of Auto Start of Same Train Standby Pump / CCW System Leak (Recoverable)

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions:

As EO report that the CCW Leak is in the Nuclear Sample Cooler.

After Radwaste Header isolation report that the leak has stopped.

OTO-EG-00001, "CCW SYSTEM MALFUNCTION."

CRS

(Step 12) REVIEW Technical Specifications 3.6.3 and 3.7.7.

CRS

(Step 13) PERFORM Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications To Emergency Duty Officer.

CRS

(Step 14) Go To Appropriate Plant Procedure As Directed By The Shift / Control Room Supervisor.

At the Discretion of the Lead Examiner Move to Event #6.

Op Test No.: N07-1 Scenario # 1 Event # 6 Page 22 of 41

Event Description: Condenser Tube Leak / Rapid Downpower

Time	Position	Applicant's Actions or Behavior
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Following this, a Condenser Tube Leak will develop (LER 2007-2). The operator will take action for Action Level 3 being exceeded in accordance with APA-ZZ-01021, "Secondary Chemistry Program." A Rapid Downpower will be initiated in accordance with OTO-MA-00008 at 30%/hour.

Booth Operator Instructions: **Operate Trigger #6 (B104(ON))**
Call CRS as EDO and direct that due to an ACTION LEVEL 3 required as part of the Secondary Chemistry Program, a downpower to Mode be performed at 30%/hour to Mode 3.

Indications Available:

		ANN 104B Process Sample Trouble
OTO-MA-00008, "RAPID LOAD REDUCTION."		
	URO	(Step 1) PLACE Rod control In AUTO:
		<ul style="list-style-type: none"> SE HS-9
	CRS	(Step 2) DISCUSS The Following With The Shift Crew:
		<ul style="list-style-type: none"> Amount of Turbine load reduction
		<ul style="list-style-type: none"> Rate of Turbine load reduction
	URO	(Step 3) DETERMINE Amount Of Boric Acid To Reduce Reactor Power To Desired Level Using Reactivity Management Brief.
	BOP	(Step 4) REDUCE Turbine Load At Less Than Or Equal To 5% Per Minute Using Any Of The Following:
		<ul style="list-style-type: none"> REDUCE Turbine load using the %/Min Loading Rate:
		<ul style="list-style-type: none"> ROTATE Load Limit Set potentiometer clockwise until both of the following are met:
		<ul style="list-style-type: none"> Load Limit Limiting – EXTINGUISHED
		<ul style="list-style-type: none"> At Set Load - LIT

Op Test No.: N07-1 Scenario # 1 Event # 6 Page 23 of 41

Event Description: Condenser Tube Leak / Rapid Downpower

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • SET Loading Rate Limit %/Min to desired value
		<ul style="list-style-type: none"> • SELECT Decrease Loading Rate – ON
		<ul style="list-style-type: none"> • LOWER load set MW toward desired load using the DECREASE LOAD pushbutton
		OR
		<ul style="list-style-type: none"> • REDUCE Turbine load using the Load Limit Potentiometer.
	URO	(Step 5) BORATE From The BAST By Performing Any Of The Following:
		<ul style="list-style-type: none"> • BORATE using OTN-BG-00002 Attachment 8
		OR
		<ul style="list-style-type: none"> • BORATE to the VCT:
		<ul style="list-style-type: none"> • PLACE RCS Makeup Control in STOP:
		<ul style="list-style-type: none"> • BG HS-26
		<ul style="list-style-type: none"> • PLACE RCS Makeup Control Selector in BORATE:
		<ul style="list-style-type: none"> • BG HS-25
		<ul style="list-style-type: none"> • RESET Boric Acid counter to 000:
		<ul style="list-style-type: none"> • BG FY-110B
		<ul style="list-style-type: none"> • SET BG FY-110B for the desired gallons of boric acid to be added
		<ul style="list-style-type: none"> • PLACE BG HS-26 in RUN
		<ul style="list-style-type: none"> • WHEN desired boration is complete, THEN PLACE BG HS-26 in STOP
		<ul style="list-style-type: none"> • REPEAT Boration as necessary
	URO	(Step 6) INITIATE Boron Equalization By Performing The Following:
		<ul style="list-style-type: none"> • ENERGIZE at least one group of Pressurizer Backup Heaters:
		<ul style="list-style-type: none"> • B/U Group A
		BG HIS-51A

Op Test No.: N07-1 Scenario # 1 Event # 6 Page 24 of 41

Event Description: Condenser Tube Leak / Rapid Downpower

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> B/U Group B
		BB HIS-52A
		<ul style="list-style-type: none"> PLACE the Pressurizer Pressure Master Controller in MAN:
		<ul style="list-style-type: none"> BB PK-455A
		<ul style="list-style-type: none"> LOWER Pressurizer Pressure Master Controller output to 38% to 42%
		<ul style="list-style-type: none"> PLACE the Pressurizer Pressure Master Controller in AUTO
	BOP	(Step 7) CHECK MFP Turbine Speed Control – IN AUTO
		<ul style="list-style-type: none"> FC SK-509B
		<ul style="list-style-type: none"> FC SK-509C
	CRS	(Step 8) NOTIFY The Power dispatcher Of The Following:
		<ul style="list-style-type: none"> Load reduction is in progress
		<ul style="list-style-type: none"> Rate of load reduction
		<ul style="list-style-type: none"> Amount of load reduction
	CRS	(Step 9) NOTIFY The Following Department That Load Reduction Is In Progress And The Rate Of Load Reduction:
		<ul style="list-style-type: none"> Chemistry
		<ul style="list-style-type: none"> Count Room Technician
		<ul style="list-style-type: none"> Radiation Protection
		<ul style="list-style-type: none"> Radwaste
	CRS	(Step 10) CHECK Final Desired Power Level – GREATER THAN 20%
	BOP	(Step 10 RNO) COMMENCE Transferring Steam Generator Level Control From the MFRV Bypass Valves:

Op Test No.: N07-1 Scenario # 1 Event # 6 Page 25 of 41

Event Description: Condenser Tube Leak / Rapid Downpower

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Refer To Attachment C, Transferring From MFRVs to MFRV Bypass Valves.
	URO	(Step 11) CHECK Rod Control System Responding to RCS Tavg/Tref Deviation By Ensuring One of the Following:
		<ul style="list-style-type: none"> Control Rods are inserting AND RCS Tavg trending to within 3°F of Tref
		OR
		<ul style="list-style-type: none"> RCS Tavg within 3°F of Tref
	URO	(Step 12) Maintain Both of the following using Control Rods:
		<ul style="list-style-type: none"> Annunciator 81C, Rod Bank LoLo Limit – Extinguished.
		<ul style="list-style-type: none"> Axial Flux Difference (AFD) within 1% of the AFD target value of Curve Book, Figure 1-1, Axial Flux Difference Limits.
	URO	(Step 13) Check Pressurizer Level within one of the following:
		<ul style="list-style-type: none"> Trending to Program Level.
		<ul style="list-style-type: none"> At Program Level.
		(Step 14) Check Pressurizer Pressure within one of the following:
		<ul style="list-style-type: none"> Trending to between 2225 psig and 2250 psig.
		<ul style="list-style-type: none"> Between 2225 psig and 2250 psig.
	BOP	(Step 15) Check SG Narrow Range Level within one of the following:
		<ul style="list-style-type: none"> Trending between 45% and 55%.
		<ul style="list-style-type: none"> Between 45% and 55%.
After downpower of ≈25 MWe, and/or at the Discretion of the Lead Examiner Move to Event #7.		

<p>During the downpower, the Turbine will trip without a corresponding Reactor Trip (ATWS), and the Reactor will have to be tripped manually. Upon the trip, a Pressurizer Steam Space break will develop requiring Safety Injection actuation. The operator will enter to E-0, "Reactor Trip or Safety Injection," and transition to E-1, "Loss of Reactor or Secondary Coolant." The crew will trip the RCPs when the trip criteria are met, and ultimately transition to ES-1.2, "Post-LOCA Cooldown and Depressurization."</p>		
<p>Booth Operator Instructions: Operate Trigger #8 (TUR01). Shortly afterwards, Operate Trigger #10 (PRS09 (850)).</p>		
<p>Indications Available:</p>		
<p>E-0, REACTOR TRIP OR SAFETY INJECTION</p>		
	URO	(Step 1) CHECK Reactor Trip:
		<ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux - LOWERING
		(Step 1 RNO) Manually TRIP Reactor.
<p>Critical Task: (E-0 A) Manually trip the reactor before transition out of E-0.</p>		
	BOP	(Step 2) CHECK Turbine Trip:
		<ul style="list-style-type: none"> All Turbine Stop valves - CLOSED
	BOP	(Step 3)CHECK Power To AC Emergency BUSES:
		<ul style="list-style-type: none"> AC emergency buses – AT LEAST ONE ENERGIZED
		<ul style="list-style-type: none"> NB01
		OR
		<ul style="list-style-type: none"> NB02

Op Test No.: N07-1 Scenario # 1 Event # 7 & 8 Page 27 of 41

Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> AC emergency buses – BOTH ENERGIZED
	URO/BOP	(Step 4) CHECK SI Status:
		<ul style="list-style-type: none"> CHECK if SI is actuated:
		<ul style="list-style-type: none"> Any SI annunciator 88A through 88D – ALIT
		OR
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT
		OR
		<ul style="list-style-type: none"> LOCA Sequencer annunciators 30A or 31A LIT
	URO/BOP	(Step 5) PERFORM Attachment A, Automatic Action Verification, while Continuing With This Procedure
		NOTE: At Step 5 of E-0, the CRS will assign one board operator to perform Attachment A, while the other operator and the CRS continue in E-0.
	URO/BOP	(Step 6) CHECK Generator Output Breakers - OPEN
		<ul style="list-style-type: none"> MA ZL-3A (V55)
		<ul style="list-style-type: none"> MA ZL-4A (V53)
	URO/BOP	(Step 7) CHECK Feedwater Isolation:
		<ul style="list-style-type: none"> Main Feedwater Pumps - TRIPPED
		<ul style="list-style-type: none"> Annunciator 120A, MFP A Trip – LIT
		<ul style="list-style-type: none"> Annunciator 123A, MFP B Trip – LIT
		<ul style="list-style-type: none"> Main Feedwater Reg Valves - CLOSED
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL-520 (SG B)
		<ul style="list-style-type: none"> AE ZL-530 (SG C)
		<ul style="list-style-type: none"> AE ZL-540 (SG D)
		<ul style="list-style-type: none"> Main Feedwater Reg Bypass Valves - CLOSED

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Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • AE ZL-550 (SG A)
		<ul style="list-style-type: none"> • AE ZL-560 (SG B)
		<ul style="list-style-type: none"> • AE ZL-570 (SG C)
		<ul style="list-style-type: none"> • AE ZL-580 (SG D)
		<ul style="list-style-type: none"> • Feedwater Isolation Valves - CLOSED
		<ul style="list-style-type: none"> • AE HIS-39 (SG A)
		<ul style="list-style-type: none"> • AE HIS-40 (SG B)
		<ul style="list-style-type: none"> • AE HIS-41 (SG C)
		<ul style="list-style-type: none"> • AE HIS-42 (SG D)
	URO/BOP	(Step 8) CHECK AFW Pumps
		<ul style="list-style-type: none"> • MD AFW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • AL HIS-23A (NOTE: A MDAFW Pump OOS)
		<ul style="list-style-type: none"> • AL HIS-22A
		<ul style="list-style-type: none"> • TD AFW Pump – RUNNING IF NECESSARY
	URO/BOP	(Step 9) CHECK AFW Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> • MD AFP Flow control Valves - THROTTLED
		<ul style="list-style-type: none"> • AL HK-7A
		<ul style="list-style-type: none"> • AL HK-9A
		<ul style="list-style-type: none"> • AL HK-11A
		<ul style="list-style-type: none"> • AL HK-5A
		<ul style="list-style-type: none"> • TD AFP Flow Control Valves – FULL OPEN
		<ul style="list-style-type: none"> • AL HK-8A
		<ul style="list-style-type: none"> • AL HK-10A
		<ul style="list-style-type: none"> • AL HK-12A
		<ul style="list-style-type: none"> • AL HK-6A

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step 10) CHECK Total AFW Flow – GREATER THAN 355,000 LBM/HR
	URO/BOP	(Step 11) CHECK PZR PORVs And Spray Valves:
		• PZR PORVs - CLOSED
		• BB HIS-455A
		• BB HIS-456A
		• PZR PORVs – BOTH IN AUTO
		• BB HIS-455A
		• BB HIS-456A
		• PORV Block Valves – BOTH OPEN
		• BB HIS-8000A
		• BB HIS-8000B
		• Normal PZR Spray Valves - CLOSED
		• BB ZL-455B
		• BB ZL-455C
	URO/BOP	(Step 12) CHECK If RCPs Should Be Stopped:
		• RCPs – ANY RUNNING
		• ECCS Pumps – AT LEAST ONE RUNNING
		• CCP
		OR
		• SI Pump
		• RCS pressure – LESS THAN 1425 PSIG
		• STOP all RCPs
Critical Task: (E-1 C) Trip all RCPs within 10 minutes of reaching the trip criteria.		

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step 13) CHECK RCS Temperatures:
		<ul style="list-style-type: none"> Any RCP running – RCS TAVG STABLE AT 557°F OR TRENDING TO 557°F
		OR
		<ul style="list-style-type: none"> NO RCPs running – RCS COLD LEG TEMPERATURES STABLE AT 557°F OR TRENDING TO 557°F
ATTACHMENT A, REACTOR TRIP OR SAFETY INJECTION		
		NOTE: At Step 5 of E-0, the CRS will assign one board operator to perform Attachment A, while the other operator and the CRS continue in E-0.
	BOP/URO	(Step A1) CHECK Charging Pumps:
		<ul style="list-style-type: none"> CCPs – BOTH RUNNING
		<ul style="list-style-type: none"> BG HIS-1A
		<ul style="list-style-type: none"> BG HIS-2A
		<ul style="list-style-type: none"> STOP NCP:
		<ul style="list-style-type: none"> BG HIS-3
	BOP/URO	(Step A2) CHECK SI And RHR Pumps:
		<ul style="list-style-type: none"> SI Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EM HIS-4
		<ul style="list-style-type: none"> EM HIS-5
		<ul style="list-style-type: none"> RHR Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EJ HIS-1
		<ul style="list-style-type: none"> EJ HIS-2
	BOP/URO	(Step A3) Check ECCS Flow.
		<ul style="list-style-type: none"> CCPs To Boron Inj Header – FLOW INDICATED
		<ul style="list-style-type: none"> EM FI-917A
		<ul style="list-style-type: none"> EM FI-917B

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 1700 PSIG
		<ul style="list-style-type: none"> SI Pump Discharge – FLOW INDICATED
		<ul style="list-style-type: none"> EM FI-918
		<ul style="list-style-type: none"> EM FI-922
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 325 PSIG
		<ul style="list-style-type: none"> RHR To Accumulator Injection Loop – FLOW INDICATED
		<ul style="list-style-type: none"> EJ FI-618
		<ul style="list-style-type: none"> EJ FI-619
	BOP/URO	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EF HIS-55A
		<ul style="list-style-type: none"> EF HIS-56A
	BOP/URO	(Step A5) CHECK CCW Alignment:
		<ul style="list-style-type: none"> CCW Pumps – ONE RUNNING IN EACH TRAIN
		<ul style="list-style-type: none"> Red Train:
		<ul style="list-style-type: none"> EG HIS-21 or EG HIS-23
		<ul style="list-style-type: none"> Yellow Train:
		<ul style="list-style-type: none"> EG HIS-22 or EG HIS-24
		<ul style="list-style-type: none"> CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN
		<ul style="list-style-type: none"> EG ZL-15 AND EG ZL-53
		OR
		<ul style="list-style-type: none"> EG ZL-16 AND EG ZL-54
		<ul style="list-style-type: none"> OPEN CCW To RHR HX valves:
		<ul style="list-style-type: none"> EG HIS-101
		<ul style="list-style-type: none"> EC HIS-102
		<ul style="list-style-type: none"> CLOSE Spent Fuel Pool HX CCW Outlet Valves:
		<ul style="list-style-type: none"> EC HIS-11

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> EC HIS-12
		<ul style="list-style-type: none"> STOP Spent Fuel Pool Cooling Pump(s):
		<ul style="list-style-type: none"> EC HIS-27
		<ul style="list-style-type: none"> EC HIS-28
		<ul style="list-style-type: none"> RECORD The Time Spent Fuel Pool Cooling Pump Secured
		<ul style="list-style-type: none"> MONITOR Time Since CCW Flow Isolated To SFP HX – LESS THAN 4 HOURS
	BOP/URO	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-9
		<ul style="list-style-type: none"> GN HIS-17
		<ul style="list-style-type: none"> GN HIS-5
		<ul style="list-style-type: none"> GN HIS-13
	BOP/URO	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-2
		<ul style="list-style-type: none"> GN HIS-4
		<ul style="list-style-type: none"> GN HIS-1
		<ul style="list-style-type: none"> GN HIS-3
	BOP/URO	(Step A8) CHECK If Containment Spray Should Be Actuated:
		<ul style="list-style-type: none"> CHECK the following:
		<ul style="list-style-type: none"> Containment pressure – GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG
		OR

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Annunciator 59A CSAS – LIT
		OR
		<ul style="list-style-type: none"> Annunciator 59B CISB - LIT
	BOP/URO	(Step A8 RNO) Go To Step A9
	BOP/URO	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> CHECK for any of the following:
		<ul style="list-style-type: none"> Containment pressure – GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> Steamline pressure – LESS THAN 615 PSIG
		OR
		<ul style="list-style-type: none"> AB PR-514 or AB PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG
	BOP/URO	(Step A9 RNO) Go To Step A10.
	BOP/URO	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> ESFAS status panels SIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP/URO	(Step A11) CHECK Containment Isolation Phase A:
		<ul style="list-style-type: none"> ESFAS status panels CISA sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
	BOP/URO	(Step A12) CHECK SG Blowdown Isolation:
		<ul style="list-style-type: none"> ESFAS status panels SGBSIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP/URO	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CRVIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP/URO	(Step A14) CHECK Containment Purge Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CPIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	BOP/URO	(Step A15) NOTIFY CRS Of The Following:
		<ul style="list-style-type: none"> Unanticipated Manual actions taken
		<ul style="list-style-type: none"> Failed Equipment status
		<ul style="list-style-type: none"> Attachment A, Automatic Action Verification, completed
E-0, REACTOR TRIP OR SAFETY INJECTION		
	URO/BOP	(Step 14) CHECK If Any SG Is Faulted:
		<ul style="list-style-type: none"> CHECK pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
	CRS	(Step 14 RNO) Go To Step 15.
	URO/BOP	(Step 15) CHECK If SG Tubes Are Intact:
		<ul style="list-style-type: none"> Levels in all SGs:
		<ul style="list-style-type: none"> NO SG NARROW RANGE LEVEL RISING IN AN UNCONTROLLED MANNER
		<ul style="list-style-type: none"> SG Steamline N16 radiation – NORMAL
		<ul style="list-style-type: none"> N16 161 (SG A)
		<ul style="list-style-type: none"> N16 162 (SG B)
		<ul style="list-style-type: none"> N16 163 (SG C)
		<ul style="list-style-type: none"> N16 164 (SG D)
		<ul style="list-style-type: none"> Condenser Air Removal radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GEG 925
		<ul style="list-style-type: none"> SG Blowdown and Sample radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> BML 256
		<ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation – NORMAL
		<ul style="list-style-type: none"> AB RIC-111 (SG A)
		<ul style="list-style-type: none"> AB RIC-112 (SG B)
		<ul style="list-style-type: none"> AB RIC-113 (SG C)
		<ul style="list-style-type: none"> AB RIC-114 (SG D)
		<ul style="list-style-type: none"> Turbine Driven Auxiliary Feedwater Pump Exhaust radiation – NORMAL
		<ul style="list-style-type: none"> FC RIC-385

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Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step 16) CHECK If RCS is Intact:
		<ul style="list-style-type: none"> Containment Pressure - NORMAL
		<ul style="list-style-type: none"> GN PI-934
		<ul style="list-style-type: none"> GN PI-935
		<ul style="list-style-type: none"> GN PI-936
		<ul style="list-style-type: none"> GN PI-937
		<ul style="list-style-type: none"> GN PR-934
		<ul style="list-style-type: none"> Containment Normal Sump Level - NORMAL
		<ul style="list-style-type: none"> LF LI-9
		<ul style="list-style-type: none"> LF LI-10
		<ul style="list-style-type: none"> Containment Radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GTG 313
		<ul style="list-style-type: none"> GTG 323
		<ul style="list-style-type: none"> GTA 591
		<ul style="list-style-type: none"> GTA 601
	CRS	(Step 16 RNO) Go To E-1, Loss of Reactor Or Secondary Coolant, Step 1.
E-1, LOSS OF REACTOR OR SECONDARY COOLANT		
	URO/BOP	(Step 1) CHECK If RCPs Should Be Stopped:
		<ul style="list-style-type: none"> RCPs – ANY RUNNING
		<ul style="list-style-type: none"> ECCS pumps – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> CCP
		OR
		<ul style="list-style-type: none"> SI Pump
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 1425 PSIG
		<ul style="list-style-type: none"> STOP all RCPs

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step 2) CHECK If Any SG Is Faulted:
		<ul style="list-style-type: none"> CHECK pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
	CRS	(Step 2 RNO) Go to Step 3.
	URO/BOP	(Step 3) CHECK Intact SG Levels:
		<ul style="list-style-type: none"> Narrow range levels – GREATER THAN 7% [25%]
		<ul style="list-style-type: none"> CONTROL feed flow to maintain narrow range levels between 7% [25%] and 52%
	URO/BOP	(Step 4) CHECK Secondary Radiation – NORMAL
		<ul style="list-style-type: none"> PERFORM the following:
		<ul style="list-style-type: none"> PERFORM EOP Addendum 11, Restoring SG Sampling After SI Actuation
		<ul style="list-style-type: none"> DIRECT Chemistry to periodically sample all SGs for activity
		<ul style="list-style-type: none"> DIRECT Radiation Protection to survey steamlines in Auxiliary Building Area 5 as necessary
		<ul style="list-style-type: none"> CHECK unisolated secondary radiation monitors:
		<ul style="list-style-type: none"> SG Sample radiation:
		<ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation:
		<ul style="list-style-type: none"> AB RIC-111 (SG A)
		<ul style="list-style-type: none"> AB RIC-112 (SG B)
		<ul style="list-style-type: none"> AB RIC-113 (SG C)

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Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> AB RIC-114 (SG D)
		<ul style="list-style-type: none"> Turbine Driven Auxiliary Feedwater Pump Exhaust radiation:
		<ul style="list-style-type: none"> FC RIC-385
		<ul style="list-style-type: none"> Secondary radiation - NORMAL
	URO/BOP	(Step 5) CHECK PZR PORVs And Block Valves:
		<ul style="list-style-type: none"> Power to Block Valves - AVAILABLE
		<ul style="list-style-type: none"> BB HIS-8000A
		<ul style="list-style-type: none"> BB HIS-8000B
		<ul style="list-style-type: none"> PZR PORVs - CLOSED
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		<ul style="list-style-type: none"> Block Valves – BOTH OPEN
		<ul style="list-style-type: none"> BB HIS-8000A
		<ul style="list-style-type: none"> BB HIS-8000B
	URO/BOP	(Step 6) CHECK If ECCS Flow Should Be Reduced:
		<ul style="list-style-type: none"> RCS subcooling – GREATER THAN 30°F [50°F]
		<ul style="list-style-type: none"> Secondary heat sink:
		<ul style="list-style-type: none"> Narrow range level in at least one intact SG – GREATER THAN 7% [25%]
		OR
		<ul style="list-style-type: none"> Total feed flow to intact SGs – GREATER THAN 355,000 LBM/HR
		<ul style="list-style-type: none"> RCS pressure – STABLE OR RISING
	CRS	(Step 6 RNO) Go To Step 7.
	URO/BOP	(Step 7) CHECK If Containment Spray Should Be Stopped:

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 Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Spray Pumps – ANY RUNNING
	CRS	(Step 7 RNO) Go To Step 8. OBSERVE CAUTIONS prior to Step 8.
	URO/BOP	(Step 8) CHECK If RHR Pumps Should Be Stopped:
		<ul style="list-style-type: none"> CHECK RCS pressure: <ul style="list-style-type: none"> Pressure – GREATER THAN 325 PSIG Pressure – STABLE OR RISING RHR Pumps – ANY RUNNING WITH SUCTION ALIGNED TO RWST RESET SI if necessary: <ul style="list-style-type: none"> SB HS-42A SB HS-43A STOP RHR Pumps and PLACE in standby: <ul style="list-style-type: none"> EJ HIS-1 EJ HIS-2 MONITOR RCS pressure
	URO/BOP	(Step 9) CHECK SG And RCS Pressures:
		<ul style="list-style-type: none"> CHECK pressure in all SGs – STABLE OR RISING CHECK RCS pressure – STABLE OR LOWERING
	URO/BOP	(Step 10) CHECK If Diesel Generators Should Be Stopped:
		<ul style="list-style-type: none"> AC emergency buses – ENERGIZED BY OFFSITE POWER <ul style="list-style-type: none"> NB01 NB02 RESET SI if necessary:

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Event Description:		Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> SB HS-42A
		<ul style="list-style-type: none"> SB HS43A
		<ul style="list-style-type: none"> LOAD equipment on AC emergency bus(es) as necessary using EOP Addendum 8, Loading Equipment On AC Emergency Buses
		<ul style="list-style-type: none"> STOP any unloaded DG(s) and PLACE in standby:
		<ul style="list-style-type: none"> PUSH START/RESET button:
		<ul style="list-style-type: none"> KJ HS-8A
		<ul style="list-style-type: none"> KJ HS-108A
		<ul style="list-style-type: none"> PUSH STOP button:
		<ul style="list-style-type: none"> KJ HS-8A
		<ul style="list-style-type: none"> KJ HS-108A
		<ul style="list-style-type: none"> PERFORM EOP Addendum 9, Placing DGs In Standby
	URO/BOP	(Step 11) INITIATE Evaluation Of Plant Status:
		<ul style="list-style-type: none"> CHECK cold leg recirculation capability:
		<ul style="list-style-type: none"> Train A – AVAILABLE
		<ul style="list-style-type: none"> Train B - AVAILABLE
	URO/BOP	<ul style="list-style-type: none"> CHECK Auxiliary Building radiation - NORMAL
		<ul style="list-style-type: none"> Aux Building Process Radiation monitor:
		<ul style="list-style-type: none"> GLP 604
		<ul style="list-style-type: none"> Aux Building Area radiation monitors
	CRS	<ul style="list-style-type: none"> OBTAIN samples:
		<ul style="list-style-type: none"> DIRECT Chemistry to initiate post accident sampling:
		<ul style="list-style-type: none"> PLACE Hydrogen Analyzers In Service using EOP Addendum 16, Placing Hydrogen Analyzers In Service
		<ul style="list-style-type: none"> CONSULT Plant Engineering Staff for assessing additional sampling requirements for fuel damage
	CRS	<ul style="list-style-type: none"> EVALUATE plant equipment for long term recovery as necessary:

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Event Description: Inadvertent Turbine Trip / Without Auto Reactor Trip (ATWS)/ Pressurizer Steam Space Break

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Hydrogen Recombiners
		<ul style="list-style-type: none"> Radwaste systems
		<ul style="list-style-type: none"> Radiation monitoring
		<ul style="list-style-type: none"> Post accident monitoring
		<ul style="list-style-type: none"> Operating safeguards equipment:
		<ul style="list-style-type: none"> START additional plant equipment to assist in recovery as directed by SS/CRS
	CRS	(Step 12) CHECK If RCS Cooldown And Depressurization Is Required:
		<ul style="list-style-type: none"> RCS pressure – GREATER THAN 325 PSIG
		<ul style="list-style-type: none"> Go To ES-1.2, Post LOCA Cooldown And Depressurization, Step 1.
Booth Instructor: Freeze the Simulator		
EAL ALERT (2B) RCS Barrier Potential Loss, RCS Leakage > 50 gpm. ALERT (4S) Failure of RPS Instrumentation to complete or initiate an automatic reactor trip once an RPS setpoint has been exceeded, and a manual trip was successful.		

Facility:	Callaway	Scenario No.:	4	Op Test No.:	N07-1-4
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:		<p>The Plant is being maintained at 2% power prior to an anticipated a Technical Specification required shutdown. The crew performing the reactor shutdown is receiving Just-In-Time Training on the Simulator and expected to be back within the hour. The plant is in Technical Specification LCO 3.8.1, three hours into Action G, with both the A and B EDGs inoperable. A Containment minipurge is in progress for a planned Containment Entry. Depending on the return of Out-of-Service equipment, the present plan is to go to Mode 3 and hold at NOP/NOT, and await further instructions.</p>			
Turnover:		<p>The following equipment is Out-Of-Service: A EDG (Expected back in 6 hours), B EDG (expected back in 8 hours), Loop Flow channel FT-444 has failed and MCB Annunciator 130E, GEN AUX TROUBLE has been in constant alarm over the last hour four hours (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.</p>			
Event No.	Malf. No.	Event Type*	Event Description		
1	PRS02C	I – RO I (TS)-SRO	Pzr Level Channel Failure		
2	MSS09A	I - BOP I – SRO	Controlling Steam Dump Valves fail open		
3	NIS02B	I - RO I (TS) SRO	Intermediate Range Channel Failure		
4	FWM01B	C - BOP C – SRO	“B” Feed Pump Trip		
5	MSS03B	M - RO M – BOP M – SRO	Faulted SG (B) inside Containment		
6	SBI001	C-RO	Failure of Auto SI		
7	SBI003	C-BOP	Failure of Minipurge isolation valves to close on CI		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

Scenario Event Description

NRC Scenario 4

Callaway 2007 NRC Scenario #4

The Plant is being maintained at 2% power prior to an anticipated a Technical Specification required shutdown. The crew performing the reactor shutdown is receiving Just-In-Time Training on the Simulator and expected to be back within the hour. The plant is in Technical Specification LCO 3.8.1, three hours into Action G, with both the A and B EDGs inoperable. A Containment minipurge is in progress for a planned Containment Entry. Depending on the return of Out-of-Service equipment, the present plan is to go to Mode 3 and hold at NOP/NOT, and await further instructions.

The following equipment is Out-Of-Service: A EDG (Expected back in 6 hours), B EDG (expected back in 8 hours), Loop Flow channel FT-444 has failed and MCB Annunciator 130E, GEN AUX TROUBLE has been in constant alarm over the last hour four hours (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

Shortly after taking the watch, the controlling Pzr Level Channel (PT-461) will fail low. The operator will respond in accordance with OTO-BG-00001, "Pressurizer Level Control Malfunction." The operator will be required to select another controlling channel, and restore Letdown to service. The operator will address Technical Specification 3.3.1, "Reactor Trip System Instrumentation."

Following this, the controlling Steam Dump Valves fail open. The operator will respond in accordance with OTO-AB-00001, "Steam Dump Malfunction." The operator will be required to close the valves manually to control the cooldown, and maintain temperature manually.

After this, the Intermediate Range channel N36 will fail low. The operator will respond in accordance with OTO-SE-00001, "Nuclear Instrument Malfunction," and address Technical Specification 3.3.1, "Reactor Trip System Instrumentation."

Subsequently, the B Main Feed Pump will trip. The operator will respond in accordance with OTA-RK-00026, Addendum 123A, "Main Feedwater Pump B Trip." The operator will place the S/U MFP in service in accordance with OTN-AE-00001, "Feedwater System."

Shortly afterwards, a major Steam Rupture will occur on the "B" Steam Generator inside Containment, initiating a Safety Injection signal. The automatic SI actuation will fail and require the operator to actuate SI manually. Additionally, the mini-purge isolation valves will fail to close on Containment Isolation, and must be closed manually. The Operator will enter E-0, "Reactor Trip or Safety Injection," and transition to E-2, "Faulted Steam Generator Isolation."

The scenario will terminate after the crew isolates the Faulted Steam Generator and decides to transition to ES-1.1 "SI Termination."

Critical Tasks:

E-0 D

Manually actuate at least one train of SIS-Actuated Safeguards before transition to E-2.

E-0 R

Close Containment Minipurge isolation valves such that at least one valve is closed on each purge penetration before transition out of E-0.

Scenario Event Description

NRC Scenario 4

E-2 A

Isolate the Faulted Steam Generator Before Transition out of E-2.

Scenario Event Description

NRC Scenario 4

Simulator Set Up

IC-155

Ensure BBLS459D is selected to L461-L460 position.

Place WPA Tags on:

- EDG A
- EDG B

Insert: N07-1-4.txt

Remove the EDG A from service - bat ne01a.txt

Remove the EDG B from service - bat ne01b.txt

RCS Loop Flow channel BB-FT-444 out of service - ior bbfi444 0

Annunciator 130E GEN AUX TROUBLE in alarm - imf E130 0

Failure of SI and CPIS to Automatically actuate/isolate - irf sbi001 3, irf sbi003 3;

Sets up Trigger #10 when SI is actuated trget 10 "jtsisa.eq.1"

Containment Purge Isolation Valves reposition on SI:

ior GTHIS5_OR (10) ON

ior GTHIS5_OG (10) OFF

ior GTHIS11_OR (10) ON

ior GTHIS11_OG (10) OFF

Events:

1	Pzr Level Channel Failure (PT-461), from Trigger #2 (MANUAL); imf prs02c (2) 0
2	Condenser Steam Dump Failure Group 1, from trigger #1 (MANUAL) with 5 sec. ramp; imf mss09a (1 0) 100 5
3	Intermediate Range Channel B Failure from trigger #3 (MANUAL); imf nis02b (3) 1.01e-11 5
4	Feed Water Pump B Trip (MANUAL); imf fwm01b (5)
5	Faulted SG B Inside Containment (MANUAL), imf mss03b (6) 7.2e+006 10
6	None - Irf SBI001 (Both) SI Fails to Auto Actuate at T=0
7	None - Irf SB003 CPIS fails to Auto Actuate at T=0, Overrides on Minipurge Valves GT HZ-4 and 11.

Scenario Event Description

NRC Scenario 4

Shift Turnover:

RO	BOP	Shift	Date
<i>REVIEW/COMPLETE PRIOR TO RELIEVING THE WATCH:</i>			
• URO Logs		• Annunciator Test	
• Control Board Walkdown		• Standing/Night Orders	
'B' Train Protected			
Plant Status: Mode 2		Gross Gen Load: 0 MWe	
Reactor Power: 2%		Load Limit Pot: Tripped	
Rod movement NONE		Circ. Pump Setback: Disabled	
Boration: 50 gallons		Cation Bed Run 20 minutes	
Dilution 0 gallons		C/T valves: Normal	

EQUIPMENT OOS OR WPA

- ☐ A EDG (Expected back in 6 hours).
- ☐ B EDG (expected back in 8 hours).
- ☐ Loop Flow channel FT-444 has failed.
- ☐ MCB Annunciator 130E, GEN AUX TROUBLE has been in constant alarm over the last hour four hours (I&C is investigating).
- ☐ The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

INFORMATION

- ☐ 3.0.3 Shutdown in effect.
- ☐ The Plant is being maintained at 2% power prior to an anticipated a Technical Specification required shutdown.
- ☐ The crew performing the reactor shutdown is receiving Just-In-Time Training on the Simulator and expected to be back within the hour.
- ☐ A Containment minipurge is in progress for a planned Containment Entry.
- ☐ Depending on the return of Out-of-Service equipment, the present plan is to go to Mode 3 and hold at NOP/NOT, and await further instructions.
- ☐ The Startup Feedwater Pump Prestart checks have been performed in accordance with OTN-AE-00001, Addendum 1, "S/U MFP Operations."

BURDENS AND WORKAROUNDS

- ☐ None

Scenario Event Description

NRC Scenario 4

Offgoing Supervisor

Name		Shift	Date
<i>Oncoming Supervisor review or perform the following:</i>			
• AUTO LOG	• Night Orders/Standing Orders	• EOSL Turnover Report	
• Control Board Walk down	• WPA	• Temp Mod Log	
<u>RCS Makeup:</u> 50 gal bor	<u>RODS:</u> D@ 105	<u>Cation Bed Run:</u> 20 min	
RCS: 274 ppm	'A' CCP: 280 ppm	'B' CCP: 290 ppm	
<u>PROTECTED TRAIN:</u> B	<u>CDF:</u> 1.60E-3	<u>LERF:</u> 1.30E-6	
<u>Industrial Safety Focus Area:</u> Industrial Safety Trend		<u>OPS DOSE</u>	
<u>HUP Site Focus Area:</u> Procedure Use and Adherence		<u>Weekly Budget:</u> 11.5 mrem	
<u>HUP OPS Focus Area:</u> WPA		<u>Weekly Actual:</u> 0.0 mrem	

NEW ITEMS:

1. Loop Flow channel FT-444 has failed.
2. MCB Annunciator 130E, GEN AUX TROUBLE has been in constant alarm over the last hour four hours (I&C is investigating).

ONGOING ITEMS:

1. A EDG (Expected back in 6 hours).
2. B EDG (expected back in 8 hours).
3. The Turbine Bearing Monitoring System on the Plant Computer is inoperable.
4. Tech Spec 3.0.3 Shutdown in effect.
5. The Plant is being maintained at 2% power prior to an anticipated a Technical Specification required shutdown.
6. The crew performing the reactor shutdown is receiving Just-In-Time Training on the Simulator and expected to be back within the hour.
7. A Containment minipurge is in progress for a planned Containment Entry.
8. Depending on the return of Out-of-Service equipment, the present plan is to go to Mode 3 and hold at NOP/NOT, and await further instructions.
9. The Startup Feedwater Pump Prestart checks have been performed in accordance with OTN-AE-00001, Addendum 1, "S/U MFP Operations."

Op Test No.:	<u>N07-1</u>	Scenario #	<u>4</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>36</u>
Event Description: Pzr Level Channel Failure									
Time	Position	Applicant's Actions or Behavior							

Shortly after taking the watch, the controlling Pzr Level Channel (PT-461) will fail low. The operator will respond in accordance with OTO-BG-00001, "Pressurizer Level Control Malfunction." The operator will be required to select another controlling channel, and restore Letdown to service. The operator will address Technical Specification 3.3.1, "Reactor Trip System Instrumentation."

Booth Operator Instructions: Operate Trigger #2 (PRS02C)

Indications Available:

		ANN 32C "PZR LO LEV DEV"
		ANN 32D "PZR HI LEV DEV HTRS ON"
		Pressurizer Control Heaters will de-energize.
		Actual Pzr level increases due to increased Charging Flow.
		Letdown will isolate on low Pressurizer level.
OTO-BG-00001, PRESSURIZER LEVEL CONTROL MALFUNCTION		
	URO	(Step 1) CHECK FOR Failed Pressurizer Level Indicator
		<ul style="list-style-type: none"> BB LI-459A
		<ul style="list-style-type: none"> BB LI-460A
		<ul style="list-style-type: none"> BB LI-461
	URO	(Step 2) Transfer Pressurizer Level Control Selector to Remove Failed Channel from Control
		<ul style="list-style-type: none"> BB LS-459D
		NOTE: The operator may have completed this action prior to entering the OTO.
	URO	(Step 3) Check Letdown in Service
	URO	(Step 3RNO) Perform the Following:
		<ul style="list-style-type: none"> Slowly Close Charging Header Backpressure Control Valve:

Op Test No.:	<u>N07-1</u>	Scenario #	<u>4</u>	Event #	<u>1</u>	Page	<u>8</u>	of	<u>36</u>
Event Description:		Pzr Level Channel Failure							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> • BG HC-182
		<ul style="list-style-type: none"> • Manually throttle appropriate Charging Discharge Flow Control Valve to maintain RCP Seal Injection Flow from 8 gpm to 13 gpm to each RCP while reducing Charging Flow:
		<ul style="list-style-type: none"> • BG FK-121 (CCP)
		OR
		<ul style="list-style-type: none"> • BG FK-124 (NCP)
		<ul style="list-style-type: none"> • Ensure BG HC-182 is full Closed
	URO	(Step 3 RNO d) Restore Letdown Flow as Follows:
		<ul style="list-style-type: none"> • Ensure Letdown System Containment Isolation Valves Open:
		<ul style="list-style-type: none"> • BG HIS-8152
		<ul style="list-style-type: none"> • BG HIS-8160
		<ul style="list-style-type: none"> • Open RCS Letdown to Regenerative Heat Exchanger Valves
		<ul style="list-style-type: none"> • BG HIS-459
		<ul style="list-style-type: none"> • BG HIS-460
		<ul style="list-style-type: none"> • Throttle Charging Header Backpressure Control Valve to establish 85-90 gpm:
		<ul style="list-style-type: none"> • BG HC-182
		<ul style="list-style-type: none"> • Place Letdown HX Pressure Controller in Manual and raise setpoint to > 75% Open:
		<ul style="list-style-type: none"> • BG PK-131
		<ul style="list-style-type: none"> • Open Orifice Isolation Valves to establish desired Letdown flow:
		<ul style="list-style-type: none"> • BG HIS-8149AA
		<ul style="list-style-type: none"> • BG HIS-8149BA
		<ul style="list-style-type: none"> • BG HIS-8149CA
		<ul style="list-style-type: none"> • Adjust Letdown HX Outlet Pressure Controller to maintain between 300 psig and 350 psig and place in automatic:

Op Test No.:	N07-1	Scenario #	4	Event #	1	Page	9	of	36
Event Description: Pzr Level Channel Failure									
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none">BG PK-131		
		<ul style="list-style-type: none">Adjust Charging Flow to Maintain PZr Level		
	URO	(Step 4) Check Pressurizer Heater Control Group C - ON		
		<ul style="list-style-type: none">BB HIS-50		
	URO	(Step 4 RNO) Energize Pressurizer Heater Control Group C		
	URO	(Step 5) Check Pressurizer Level within one of the following:		
		<ul style="list-style-type: none">Trending to Program Level		
		OR		
		<ul style="list-style-type: none">At Program Level		
	CRS	(Step 6) Review Applicable Technical Specifications		
		<ul style="list-style-type: none">Refer to Attachment H, Technical Specifications.		
TECHNICAL SPECIFICATION 3.3.1, RTS INSTRUMENTATION				
	CRS	LCO 3.3.1		
		The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE		
	CRS	APPLICABILITY:		
		According to Table 3.3.1-1		
	CRS	CONDITION	REQUIRED ACTION	COMPLETION TIME
		A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s).	Immediately

Op Test No.: N07-1 Scenario # 4 Event # 1 Page 10 of 36

Event Description: Pzr Level Channel Failure

Time	Position	Applicant's Actions or Behavior
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		E. One channel inoperable.	M.1 Place channel in trip. OR M.2 Reduce Thermal Power to < P-7.	72 hours 78 hours
		At the Discretion of the Lead Examiner Move to Event #2.		

Op Test No.:	<u>N07-1</u>	Scenario #	<u>4</u>	Event #	<u>2</u>	Page	<u>11</u>	of	<u>36</u>
Event Description: Controlling Steam Dump Valves fail open									
Time	Position	Applicant's Actions or Behavior							

Following this, the controlling Steam Dump Valves fail open. The operator will respond in accordance with OTO-AB-00001, "Steam Dump Malfunction." The operator will be required to close the valves manually to control the cooldown, and maintain temperature manually.

Booth Operator Instructions: Operate Trigger #1 (MSS09A)

Indications Available:

		ANN 65E "Tref/Tauct Lo"
		Steam Dump Valve Position – Open (AB-ZI-34, 35, and 36)
		ANN 108-111C "SG A-D Level Deviation"
		Pressurizer level decreases due to RCS cooldown
		Letdown may isolate on low Pressurizer level.
OTO-AB-00001, STEAM DUMP MALFUNCTION		
	URO	(Step 1) CHECK Reactor Power – LESS THAN 100%
	BOP	(Step 2) CHECK At Least One SG ASD – FAILED OPEN
		NOTE: No ASD failures have occurred.
	CRS	(Step 2 RNO) Go To Step 6
	BOP	(Step 6) CHECK Condenser Steam Dump – FAILED OPEN
		NOTE: Condenser Steam Dump Cooldown valves have failed open.
	BOP	(Step 7) PLACE Steam Dump Bypass Interlock Switches To OFF/RESET:
		<ul style="list-style-type: none"> AB HS-63
		<ul style="list-style-type: none"> AB HS-64
		NOTE: The operator may have completed this action prior to entering the OTO.

Op Test No.:	<u>N07-1</u>	Scenario #	<u>4</u>	Event #	<u>2</u>	Page	<u>12</u>	of	<u>36</u>
Event Description: Controlling Steam Dump Valves fail open									
Time	Position	Applicant's Actions or Behavior							

	BOP	(Step 8) CHECK Affected Condenser Steam Dump – CLOSED
	BOP	(Step 9) CHECK Steam Dump Control STEAM PRESSURE MODE
	BOP	(Step 10) CHECK Steam Header Pressure/Feedwater Header Pressure – CONSISTENT WITH PLANT CONDITIONS.
		<ul style="list-style-type: none"> AB PI-507
	BOP	(Step 11) CHECK Instruments Indications:
		<ul style="list-style-type: none"> RCS Tavg - NORMAL
		<ul style="list-style-type: none"> BB TI-412
		<ul style="list-style-type: none"> BB TI-422
		<ul style="list-style-type: none"> BB TI-432
		<ul style="list-style-type: none"> BB TI-442
		<ul style="list-style-type: none"> HP Turbine First Stage Pressure - NORMAL
		<ul style="list-style-type: none"> AC PI-505
		<ul style="list-style-type: none"> AC PI-506
		NOTE: The CRS may direct BOP to reset ASD Controllers to maintain 1092 psig.
	CRS	(Step 12) INITIATE Actions to Repair the Failed Component.
	CRS	(Step 13) REVIEW Technical Specification 3.7.4.
		NOTE: Tech Spec associated with ASD Valves and not affected by this event.
	CRS	(Step 14) PLACE Inoperable Component In the EOSL.

Op Test No.:	<u>N07-1</u>	Scenario #	<u>4</u>	Event #	<u>2</u>	Page	<u>13</u>	of	<u>36</u>
Event Description: Controlling Steam Dump Valves fail open									
Time	Position	Applicant's Actions or Behavior							

	CRS	(Step 15) RECORD Any Locked Valve Manipulations in the Locked Valve Deviation Log Per ODP-ZZ-00004, Locked Component Control.
	CRS	(Step 16) PERFORM Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications to Emergency Duty Officer.
	CRS	(Step 17) CHECK Failed Component Has Been Repaired.
	CRS	(Step 17 RNO) WHEN the failed Component has been repaired, THEN CONTINUE with this procedure.
At the Discretion of the Lead Examiner Move to Event #3.		

Op Test No.:	<u>N07-1</u>	Scenario #	<u>4</u>	Event #	<u>3</u>	Page	<u>14</u>	of	<u>36</u>
Event Description: Intermediate Range Channel Failure									
Time	Position	Applicant's Actions or Behavior							

After this, the Intermediate Range channel N36 will fail low. The operator will respond in accordance with OTO-SE-00001, "Nuclear Instrument Malfunction," and address Technical Specification 3.3.1, "Reactor Trip System Instrumentation."

Booth Operator Instructions: Operate Trigger #3 (NIS02B).

Indications Available:

		N36 indication fails low.
OTO-SE-00001, NUCLEAR INSTRUMENT MALFUNCTION		
	URO	(Step 1) Check Power Range Nuclear Instruments - NORMAL
	URO	(Step 2) CHECK Intermediate Range Instruments – NORMAL
		NOTE: Intermediate Range is NOT normal, N36 has failed low.
	CRS	(Step 2 RNO) Go to Attachment B, Intermediate Range Instrument Malfunction.
ATTACHMENT B, INTERMEDIATE RANGE INSTRUMENT MALFUNCTION		
	URO	(Step B1) CHECK Intermediate Range Trip - BLOCKED
		<ul style="list-style-type: none"> IR Trip A Bloc
		<ul style="list-style-type: none"> IR Trip B Bloc
	URO	(Step B2) CHECK Reactor Power – LESS THAN P-6
	CRS	(Step B2 RNO) PERFORM the following:
		<ul style="list-style-type: none"> IF Reactor Power is less than P-10 AND at least one Intermediate Range channel is operable, THEN PERFORM One of the following within 24 hours:
		<ul style="list-style-type: none"> REDUCE Reactor Power to less than P-6.
		OR
		<ul style="list-style-type: none"> RAISE Reactor Power to greater than P-10.

Op Test No.: N07-1 Scenario # 4 Event # 3 Page 15 of 36

Event Description: Intermediate Range Channel Failure

Time	Position	Applicant's Actions or Behavior
	URO	(Step B3) CHECK Reactor Shutdown – IN PROGRESS
	RO	(Step B4) CHECK Intermediate Range Channel – FAILED HIGH
		NOTE: IR N36 has failed low.
	CRS	(Step B4 RNO) Go to Step B7.
	URO/BOP	(Step B7) BYPASS the Malfunctioning Intermediate Range Channel By Placing the Level Trip Switch in BYPASS
	CRS	(Step B8) CHECK P-6 Permissive Is In the Correct State Within One Hour of the Time of Intermediate Range Channel Failure per Attachment H, Permissives
	URO	(Step B9) SELECT An Operable Channel On NIS Recorder
		<ul style="list-style-type: none"> SE NR-45
	CRS	(Step B10) RECORD P-6 Permissive Is In the Correct State in the Control Room Log
	CRS	(Step B11) PLACE Inoperable Intermediate Range Channel in the EOSL
	CRS	(Step B12) REVIEW Applicable Technical Specifications:
		<ul style="list-style-type: none"> Refer to Attachment I, Technical Specifications
TECHNICAL SPECIFICATION 3.3.1, RTS INSTRUMENTATION		
	CRS	LCO 3.3.1
		The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE

Op Test No.: N07-1 Scenario # 4 Event # 3 Page 16 of 36

Event Description: Intermediate Range Channel Failure

Time	Position	Applicant's Actions or Behavior
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	CRS	APPLICABILITY:												
		According to Table 3.3.1-1.												
		<table> <tr> <th>CONDITION</th><th>REQUIRED ACTION</th><th>COMPLETION TIME</th></tr> <tr> <td>A. One or more Functions with one or more required channels or trains inoperable.</td><td>A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s).</td><td>Immediately</td></tr> <tr> <td>F. One Intermediate Range Neutron Flux channel inoperable.</td><td>F.1 Reduce THERMAL POWER to < P-6. OR F.2 Increase THERMAL POWER to > P-10.</td><td>24 hours 24 hours</td></tr> <tr> <td>S. One or more required channel(s) inoperable.</td><td>S.1 Verify interlock is in required state for existing unit conditions. OR S.2 Be in MODE 3.</td><td>1 hour 7 hours</td></tr> </table>	CONDITION	REQUIRED ACTION	COMPLETION TIME	A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s).	Immediately	F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6. OR F.2 Increase THERMAL POWER to > P-10.	24 hours 24 hours	S. One or more required channel(s) inoperable.	S.1 Verify interlock is in required state for existing unit conditions. OR S.2 Be in MODE 3.	1 hour 7 hours
CONDITION	REQUIRED ACTION	COMPLETION TIME												
A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s).	Immediately												
F. One Intermediate Range Neutron Flux channel inoperable.	F.1 Reduce THERMAL POWER to < P-6. OR F.2 Increase THERMAL POWER to > P-10.	24 hours 24 hours												
S. One or more required channel(s) inoperable.	S.1 Verify interlock is in required state for existing unit conditions. OR S.2 Be in MODE 3.	1 hour 7 hours												

ATTACHMENT B, INTERMEDIATE RANGE INSTRUMENT MALFUNCTION

	CRS	(Step B13) DIRECT I&C To Repair Failed Channel.
	CRS	(Step B14) CHECK Failed Intermediate Range Channel Has Been Repaired
	CRS	(Step B14 RNO) WHEN the failed Intermediate Range channel has been repaired, THEN CONTINUE with the remainder of this Attachment.

At the Discretion of the Lead Examiner Move to Event #4.

Op Test No.: N07-1 Scenario # 4 Event # 4 Page 17 of 36

Event Description: "B" Feed Pump Trip

Time	Position	Applicant's Actions or Behavior
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Subsequently, the B Main Feed Pump will trip. The operator will respond in accordance with OTA-RK-00026, Addendum 123A, "Main Feedwater Pump B Trip." The operator will place the S/U MFP in service in accordance with OTN-AE-00001, "Feedwater System."

Booth Operator Instructions: Operate Trigger #5 (FWM01B)

Indications Available:

		ANN 123A Main Feedwater Pump Trip B
		Feed flow to all Steam Generators is lost.
		AFAS will occur

NOTE: If AFAS Not Blocked and AFAS actuates:

	BOP	Maintain SG Narrow Range Level by throttling AL HV-0005, AL-HV-0007, AL HV-0009 and AL HV-0011 as necessary.

OTA-RK-00026, ADDENDUM 123A, MAIN FEEDWATER PUMP B TRIP

	BOP	ENSURE the following:
		<ul style="list-style-type: none"> FC HIS-118, MFP TURB B, TRIP light LIT
		<ul style="list-style-type: none"> AE HIS-15, MFP B DISCH VLV, CLOSED
		<ul style="list-style-type: none"> FC ZL-105A, MFP TURB B HSPV, CLOSED light LIT
		<ul style="list-style-type: none"> FC ZL-109A, MFP TURB B LPSV, CLOSED light LIT
	CRS	IF the Main Generator is synchronized to the grid, Go To OTO-AE-00001, Feedwater System Malfunction.
	BOP	IF the Main Generator is NOT synchronized to the grid, PERFORM the following:
		<ul style="list-style-type: none"> DEPRESS Main Turbine, CLOSE VALVES pushbutton.
		<ul style="list-style-type: none"> STABILIZE power at less than 2% by performing any combination of the following:

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Event Description: "B" Feed Pump Trip

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> ENSURE AB PK-507, STEAM HDR PRESS CTRL set to 1092 psig (7.28 pot setting).
		<ul style="list-style-type: none"> INSERT Control Rods to stabilize RCS temperature at no load Tav_g.
		<ul style="list-style-type: none"> BORATE the RCS to reduce RCS temperature to no load Tav_g.
		<ul style="list-style-type: none"> TERMINATE CHEST/SHELL WARMING per OTN-AC-00001, Main Turbine and Generator System
		<ul style="list-style-type: none"> IF the Plant cannot be stabilized, TRIP the Reactor and Go To E-0, Reactor Trip or Safety Injection.
		<ul style="list-style-type: none"> IF Aux Feed is the only available source of feed to the Steam Generators, SHUT DOWN the Reactor per OTG-ZZ-00005, Plant Shutdown 20% Power to Hot Standby.
	BOP	COMPLETE shutdown of MFP B per OTN-AE-00001, Feedwater System.
		NOTE: The crew may respond by seeking to place the Startup Feed Pump in service.
OTN-AE-00001, FEEDWATER SYSTEM		
	BOP	(Step 5.4.1) ENSURE MFRV Bypass Valves in AUTO:
		<ul style="list-style-type: none"> AE LK-550, SG A MFW REG BYPASS CTRL
		<ul style="list-style-type: none"> AE LK-560, SG B MFW REG BYPASS CTRL
		<ul style="list-style-type: none"> AE LK-570, SG B MFW REG BYPASS CTRL
		<ul style="list-style-type: none"> AE LK-580, SG D MFW REG BYPASS CTRL
	BOP	(Step 5.4.2) ENSURE controller for running MFP is in MAN:
		<ul style="list-style-type: none"> FC SK-509B, MFP TURB A SPEED CTRL
		<ul style="list-style-type: none"> FC SK-509C, MFP TURB B SPEED CTRL
	CRS	(Step 5.4.1) ENSURE S/U MFP has been started per Addendum 01.

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Event Description: "B" Feed Pump Trip

Time	Position	Applicant's Actions or Behavior
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OTN-AE-00001, ADDENDUM 1, S/U MAIN FEEDPUMP OPERATIONS		
	BOP	(Step 3.3.1) ENSURE the following are OPEN:
		<ul style="list-style-type: none"> • AE HIS-7, FW HP HTRS TRN B SPLY/RETURN VLVS
		<ul style="list-style-type: none"> • AE HIS-18, FW HP HTRS TRN A SPLY/RETURN VLVS
	BOP	(Step 3.3.2) ENSURE AE HK-36, FW RECIRC CTRL, is in MANUAL and CLOSED.
	BOP	(Step 3.3.3) ENSURE AEV0280, FW RECIRC TO COND ISO, is LOCKED CLOSED.
	BOP	(Step 3.3.4) ENSURE the following are CLOSED:
		<ul style="list-style-type: none"> • AEV0369, MFP A DISCH ISO VLV UPSTRM BYP VLV
		<ul style="list-style-type: none"> • AEV0370, MFP A DISCH ISO VLV DNSTRM BYP VLV
		<ul style="list-style-type: none"> • AEV0367, MFP B DISCH ISO VLV UPSTRM BYP VLV
		<ul style="list-style-type: none"> • AEV0368, MFP B DISCH ISO VLV DNSTRM BYP VLV
	BOP	(Step 3.3.5) ENSURE one of the following per OTN-BM-00001, Steam Generator Blowdown System:
		<ul style="list-style-type: none"> • SG Blowdown is isolated.
		<ul style="list-style-type: none"> • SG Blowdown flow through Regenerative Hx is less than 60 klbm/hr.
	BOP	(Step 3.3.6) ENSURE HDT level is GREATER THAN 40 inches as read on AFLI0078, HEATER DRAIN TANK LEVEL INDICATOR, or plant computer display AF1.
	BOP	(Step 3.3.7) Slowly ADJUST setpoint on BMTIC0040, SG B/D REGEN HX (EBM01) OUTLET TEMP, TO 175°F

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Event Description: "B" Feed Pump Trip

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 3.3.8) DECLUTCH AEHV0102, S/U MFP SUCT ISO HV, and THROTTLE OPEN 1 TURN past indication of flow.
	BOP	(Step 3.3.9) Using AEV0344, S/U MFP CASING VENT, VENT pump casing.
	BOP	(Step 3.3.10) THROTTLE OPEN AEV0342, S/U MFP DISCH TO HDT ISO, 1 TURN past indication of flow.
	BOP	(Step 3.3.11) ADJUST AEV0342, S/U MFP DISCH TO HDT ISO, as necessary, to maintain heatup rate at less than or equal to 100°F/hr.
	BOP	(Step 3.3.12) WHEN casing temperature is stable AND within 100°F of BMTI0042, SG B/D REGEN HX FIRST STAGE SHELL SIDE OUTLET TEMP IND, OPEN AEV0342, S/U MFP DISCH TO HDT ISO.
	BOP	(Step 3.3.13) CLOSE AEHV0102, S/U MFP SUCT ISO HV, AND ENGAGE clutch.
	BOP	(Step 3.3.14) OPEN AE HS-103, S/U MFP SUCT / DISCH VLVS.
	BOP	(Step 3.3.15) ENSURE the following indicate OPEN:
		• AE ZL-102, S/U MFP SUCT VLV
		• AE ZL-103, S/U MFP DISCH VLV
	BOP	(Step 3.3.16) CLOSE BMV0185, SG B/D REGEN HX SHELL SIDE OUTLET ISO.
	BOP	(Step 3.3.17) MONITOR S/U MFP motor amps as read on plant computer point AEI0001, MTR DRIVEN FW PMP AMPS.

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Event Description: "B" Feed Pump Trip

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 3.3.18) Using AE HIS-104, S/U MFP, START PAE02.
	BOP	(Step 3.3.19) ENSURE recirc flow rate of 70 to 75 klbm/hr (150 gpm) as read on AE FI-105, S/U MFP SUCT FLOW
	BOP	(Step 3.3.20) IF required to maintain recirc flow rate, PERFORM the following:
		<ul style="list-style-type: none"> • THROTTLE AEV0342, S/U MFP DISCH TO HDT ISO.
		<ul style="list-style-type: none"> • NOTIFY System Engineer to evaluate AEV0738, S/U MFP DISCH CHECK.
	BOP	(Step 3.3.21) IF necessary, ADJUST SG Blowdown per OTN-BM-00001, Steam Generator Blowdown System.
At the Discretion of the Lead Examiner move to Events #5, 6 & 7.		

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
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Shortly afterwards, a major Steam Rupture will occur on the "B" Steam Generator inside Containment, initiating a Safety Injection signal. The automatic SI actuation will fail and require the operator to actuate SI manually. Additionally, the mini-purge isolation valves will fail to close on Containment Isolation, and must be closed manually. The Operator will enter E-0, "Reactor Trip or Safety Injection," and transition to E-2, "Faulted Steam Generator Isolation." The scenario will terminate after the crew isolates the Faulted Steam Generator and decides to transition to ES-1.1 "SI Termination."

Booth Operator Instructions: Operate Trigger #6 (MSS03B).**Indications Available:**

E-O, REACTOR TRIP OR SAFETY INJECTION		
	URO	(Step 1) CHECK Reactor Trip:
		<ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux – LOWERING
	BOP	(Step 2) CHECK Turbine Trip:
		<ul style="list-style-type: none"> All Turbine Stop valves - CLOSED
	BOP	(Step 3) CHECK Power to AC Emergency Buses:
		<ul style="list-style-type: none"> AC emergency buses – AT LEAST ONE ENERGIZED
		<ul style="list-style-type: none"> NB01
		OR
		<ul style="list-style-type: none"> NB02
		<ul style="list-style-type: none"> AC emergency buses – BOTH ENERGIZED
	URO/BOP	(Step 4) CHECK SI Status:
		<ul style="list-style-type: none"> CHECK if SI is actuated:
		<ul style="list-style-type: none"> Any SI annunciator 88A through 88D – LIT
		OR

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT
		OR
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT
		OR
		<ul style="list-style-type: none"> LOCA Sequencer annunciators 30A or 31A - LIT
	URO/BOP	(Step 4 RNO) CHECK if SI is required:
		<ul style="list-style-type: none"> PZR pressure less than or equal to 1849 PSIG
		OR
		<ul style="list-style-type: none"> Any SG pressure less than or equal to 615 PSIG
		OR
		<ul style="list-style-type: none"> Containment pressure greater than or equal to 3.5 PSIG
		IF SI is required, THEN manually ACTUATE SI:
		<ul style="list-style-type: none"> SB HS-27
		<ul style="list-style-type: none"> SB HS-28
CRITICAL TASK: (E-0 D) Manually actuate at least one train of SIS-Actuated Safeguards before transition to E-2.		
	URO/BOP	(Step 4) CHECK both Trains of SI – ACTUATED
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 30A – LIT
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 31A – LIT
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT SOLID (NOT blinking)
	URO/BOP	(Step 5) PERFORM Attachment A, Automatic Action Verification, While Continuing With This Procedure
		NOTE: The CRS will assign one board operator to perform Attachment A, while the other operator and the CRS continue in E-0.

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
	BOP/URO	(Step 6) CHECK Generator Output Breakers – OPEN
		<ul style="list-style-type: none"> MA ZL-3A (V55)
		<ul style="list-style-type: none"> MA ZL-4A (V53)
	BOP/URO	(Step 7) CHECK Feedwater Isolation:
		<ul style="list-style-type: none"> Main Feedwater Pumps - TRIPPED
		<ul style="list-style-type: none"> Annunciator 120A, MFP A Trip – LIT
		<ul style="list-style-type: none"> Annunciator 123A, MFP B Trip – LIT
		<ul style="list-style-type: none"> Main Feedwater Reg Valves – CLOSED
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL-520 (SG B)
		<ul style="list-style-type: none"> AE ZL-530 (SG C)
		<ul style="list-style-type: none"> AE ZL-540 (SG D)
		<ul style="list-style-type: none"> Main Feedwater Reg Bypass valves - CLOSED
		<ul style="list-style-type: none"> AE ZL-550 (SG A)
		<ul style="list-style-type: none"> AE ZL-560 (SG B)
		<ul style="list-style-type: none"> AE ZL-570 (SG C)
		<ul style="list-style-type: none"> AE ZL-580 (SG D)
		<ul style="list-style-type: none"> Feedwater Isolation Valves - CLOSED
		<ul style="list-style-type: none"> AE HIS-39 (SG A)
		<ul style="list-style-type: none"> AE HIS-39 (SG B)
		<ul style="list-style-type: none"> AE HIS-39 (SG C)
		<ul style="list-style-type: none"> AE HIS-39 (SG D)
	BOP/URO	(Step 8) CHECK AFW Pumps:
		<ul style="list-style-type: none"> MD AFW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> AL HIS-23A
		<ul style="list-style-type: none"> AL HIS-22A

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		START MD AFW Pump(s).
		<ul style="list-style-type: none"> TD AFW Pump – RUNNING IF NECESSARY
	BOP/URO	(Step 9) CHECK AFW Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> MD AFP Flow Control Valves - THROTTLED
		<ul style="list-style-type: none"> AL HK-7A
		<ul style="list-style-type: none"> AL HK-9A
		<ul style="list-style-type: none"> AL HK-11A
		<ul style="list-style-type: none"> AL HK-5A
		<ul style="list-style-type: none"> TD AFP Flow Control Valves – FULL OPEN
		<ul style="list-style-type: none"> AL HK-8A
		<ul style="list-style-type: none"> AL HK-10A
		<ul style="list-style-type: none"> AL HK-12A
		<ul style="list-style-type: none"> AL HK-6A
	BOP/URO	(Step 10) CHECK Total AFW Flow – GREATER THAN 355,000 LBM/HR
	BOP/URO	(Step 11) CHECK PZR PORVs and Spray Valves:
		<ul style="list-style-type: none"> PZR PORVs – CLOSED
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		<ul style="list-style-type: none"> PZR PORVs – BOTH IN AUTO
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		<ul style="list-style-type: none"> PORV Block Valves – BOTH OPEN

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BB HIS-8000A
		<ul style="list-style-type: none"> • BB HIS-8000B
		<ul style="list-style-type: none"> • Normal PZR Spray valves - CLOSED
		<ul style="list-style-type: none"> • BB ZL-455B
		<ul style="list-style-type: none"> • BB ZL-455C
	BOP/URO	(Step 12) CHECK If RCPs Should Be Stopped:
		<ul style="list-style-type: none"> • RCPs – ANY RUNNING
		<ul style="list-style-type: none"> • ECCS pumps – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> • CCP
		OR
		<ul style="list-style-type: none"> • SI Pump
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 1425 PSIG
	CRS	(Step 12 RNO) Go To Step 13.
	BOP/URO	(Step 13) CHECK RCS Temperatures:
		<ul style="list-style-type: none"> • Any RCP running – RCS TAVG STABLE AT 557°F OR TRENDING TO 557°F
		OR
		<ul style="list-style-type: none"> • NO RCPs running – RCS COLD LEG TEMPERATURES STABLE AT 557°F OR TRENDING TO 557°F
ATTACHMENT A, AUTOMATIC ACTION VERIFICATION		
		NOTE: At Step 5 of E-0, the CRS will assign one board operator to perform Attachment A, while the other operator and the CRS continue in E-0.
	URO/BOP	(Step A1) CHECK Charging Pumps:
		<ul style="list-style-type: none"> • CCPs – BOTH RUNNING
		<ul style="list-style-type: none"> • BG HIS-1A

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BG HIS-2A
		<ul style="list-style-type: none"> • STOP NCP
		<ul style="list-style-type: none"> • BG HIS-3
	URO/BOP	(Step A2) CHECK SI And RHR Pumps:
		<ul style="list-style-type: none"> • SI Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • EM HIS-4
		<ul style="list-style-type: none"> • EM HIS-5
		<ul style="list-style-type: none"> • RHR Pumps BOTH RUNNING
		<ul style="list-style-type: none"> • EJ HIS-1
		<ul style="list-style-type: none"> • EJ HIS-2
	URO/BOP	(Step A3) CHECK ECCS Flow:
		<ul style="list-style-type: none"> • CCPs to Boron Inj Header – FLOW INDICATED
		<ul style="list-style-type: none"> • EM FI-917A
		<ul style="list-style-type: none"> • EM FI-917B
		<ul style="list-style-type: none"> • RCS pressure – LESS THAN 1700 PSIG
	URO/BOP	(Step A3 RNO) Go To Step A4
	URO/BOP	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • EF HIS-55A
		<ul style="list-style-type: none"> • EF HIS-56A
	URO/BOP	(Step A5) CHECK CCW Alignment:
		<ul style="list-style-type: none"> • CCW Pumps – ONE RUNNING IN EACH TRAIN
		<ul style="list-style-type: none"> • Red Train:
		<ul style="list-style-type: none"> • EG HIS-21 or EG HIS-23

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Yellow Train:
		<ul style="list-style-type: none"> EG HIS-22 or EG HIS-24
		<ul style="list-style-type: none"> CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN
		<ul style="list-style-type: none"> EG ZL-15 AND EG ZL-53
		OR
		<ul style="list-style-type: none"> EG ZL-16 AND EG ZL-54
		<ul style="list-style-type: none"> OPEN CCSW To RHR HX valves:
		<ul style="list-style-type: none"> EG HIS-101
		<ul style="list-style-type: none"> EG HIS-102
		<ul style="list-style-type: none"> CLOSE Spent Fuel Pool HX CCW Outlet Valves:
		<ul style="list-style-type: none"> EG HIS-101
		<ul style="list-style-type: none"> EG HIS-102
		<ul style="list-style-type: none"> CLOSE Spent Fuel Pool HX CCW Outlet Valves:
		<ul style="list-style-type: none"> EC HIS-11
		<ul style="list-style-type: none"> EC HIS-12
		<ul style="list-style-type: none"> STOP Spent Fuel Pool Cooling Pump(s):
		<ul style="list-style-type: none"> EC HIS-27
		<ul style="list-style-type: none"> EC HIS-28
		<ul style="list-style-type: none"> RECORD The Time Spent Fuel Pool Cooling Pump Secured
		<ul style="list-style-type: none"> MONITOR Time Since CCW Flow Isolated to SFP HX LESS THAN 4 HOURS
	URO/BOP	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-9
		<ul style="list-style-type: none"> GN HIS-17
		<ul style="list-style-type: none"> GN HIS-5
		<ul style="list-style-type: none"> GN HIS-13

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> • GN HIS-2
		<ul style="list-style-type: none"> • GN HIS-4
		<ul style="list-style-type: none"> • GN HIS-1
		<ul style="list-style-type: none"> • GN HIS-3
	URO/BOP	(Step A8) CHECK If Containment Spray should Be Actuated:
		<ul style="list-style-type: none"> • CHECK the following:
		<ul style="list-style-type: none"> • Containment pressure – GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> • GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> • Annunciator 59A CSAS LIT
		OR
		<ul style="list-style-type: none"> • Annunciator 59B CISB – LIT
		<ul style="list-style-type: none"> • Containment Spray Pumps -
		<ul style="list-style-type: none"> • EN HIS-3
		<ul style="list-style-type: none"> • EN HIS-9
		<ul style="list-style-type: none"> • ESFAS status panels CSAS sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> • SA066Y WHITE light – ALL LIT
		<ul style="list-style-type: none"> • ESFAS status panels CISB sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> • SA066Y WHITE light – ALL LIT
		<ul style="list-style-type: none"> • ESFAS status panels CISB sections:
		<ul style="list-style-type: none"> • SA066X WHITE lights – ALL LIT

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
		<ul style="list-style-type: none"> STOP all RCPs
	URO/BOP	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> CHECK for any of the following:
		<ul style="list-style-type: none"> Containment pressure – GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> Steamline pressure – LESS THAN 615 PSIG
		OR
		<ul style="list-style-type: none"> AB PR-514 or AB PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG
		<ul style="list-style-type: none"> CHECK MSIVs and Bypass valves - CLOSED
	URO/BOP	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> ESFAS status panels SIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
	URO/BOP	(Step A11) CHECK Containment Isolation Phase A:
		<ul style="list-style-type: none"> ESFAS status panels CISA sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
	URO/BOP	(Step A12) CHECK SG Blowdown Isolation:
		<ul style="list-style-type: none"> ESFAS status panels SGBSIS sections:

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Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
	URO/BOP	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CRVIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
	URO/BOP	(Step A14) CHECK Containment Purge Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CPIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
		NOTE: All minipurge valves are still open. Valves inside Containment are stuck open, and only those outside can be manually closed.
	URO/BOP	(Step A14 RNO) Manually ACTUATE CPIS:
		<ul style="list-style-type: none"> SA HS-11
		<ul style="list-style-type: none"> SA HS-15
		IF CPIS damper(s) are NOT closed, THEN manually CLOSE damper(s) as necessary
CRITICAL TASK (E-0 R) Close Containment Minipurge isolation valves such that at least one valve is closed on each purge penetration before transition out of E-0.		
	URO/BOP	(Step A15) NOTIFY CRS of the following:
		<ul style="list-style-type: none"> Unanticipated Manual actions taken.
		<ul style="list-style-type: none"> Failed Equipment status
		<ul style="list-style-type: none"> Attachment A, Automatic Action Verification, completed.

Op Test No.: N07-1 Scenario # 4 Event # 5, 6, and 7 Page 32 of 36

Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
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E-O, REACTOR TRIP OR SAFETY INJECTION

	BOP/URO	(Step 14) CHECK If Any SG Is Faulted:
		<ul style="list-style-type: none"> CHECK pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
	CRS	(Step 14 RNO) Go To E-2, Faulted Steam Generator Isolation, Step 1
		NOTE: SG B is completely depressurized.

E-2, FAULTED STEAM GENERATOR ISOLATION

	BOP/URO	(Step 1) CHECK MSIVs and Bypass Valves – CLOSED
	BOP/URO	(Step 2) CHECK If Any SG Secondary Pressure Boundary Is Intact:
		<ul style="list-style-type: none"> CHECK pressures in all SGs – ANY STABLE OR RISING
	BOP/URO	(Step 3) Identify Faulted Steam Generator:
		<ul style="list-style-type: none"> Check Pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
	BOP/URO	(Step 4) ISOLATE Faulted SG(S):
		<ul style="list-style-type: none"> ISOLATE AFW flow to faulted SG(s):
		<ul style="list-style-type: none"> CLOSE associated MD AFP Flow Control Valve(s)

Op Test No.: N07-1 Scenario # 4 Event # 5, 6, and 7 Page 33 of 36

Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> AL HK-8A (SG A)
		<ul style="list-style-type: none"> AL HK-10A (SG B)
		<ul style="list-style-type: none"> AL HK-12A (SG C)
		<ul style="list-style-type: none"> AL HK-6A (SG D)
		<ul style="list-style-type: none"> CHECK ASD from faulted SG(s) - CLOSED
		<ul style="list-style-type: none"> AB PIC-1A (SG A)
		<ul style="list-style-type: none"> AB PIC-2A (SG B)
		<ul style="list-style-type: none"> AB PIC-3A (SG C)
		<ul style="list-style-type: none"> AB PIC-4A (SG D)
		<ul style="list-style-type: none"> Locally CLOSE TDAFP Steam Supply From Main Steam Loop Manual Isolation valve from Faulted SG:
		<ul style="list-style-type: none"> ABV0085 (SG B)
BOOTH INSTRUCTOR NOTE: When directed by operator, Use IRF ABV023 to close ABV0085.		
		<ul style="list-style-type: none"> CHECK Main Feedwater valves to faulted SG(s) – CLOSED
	BOP/URO	CHECK Main Feedwater valves to faulted SG(s) CLOSED
		<ul style="list-style-type: none"> Main Feedwater Reg Valve:
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL-520 (SG B)
		<ul style="list-style-type: none"> AE ZL-530 (SG C)
		<ul style="list-style-type: none"> AE ZL-540 (SG D)
		<ul style="list-style-type: none"> Main Feedwater Reg Bypass valve:
		<ul style="list-style-type: none"> AE ZL-550 (SG A)
		<ul style="list-style-type: none"> AE ZL-560 (SG B)
		<ul style="list-style-type: none"> AE ZL-570 (SG C)

Op Test No.: N07-1 Scenario # 4 Event # 5, 6, and 7 Page 34 of 36

Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • AE ZL-580 (SG D)
		<ul style="list-style-type: none"> • Feedwater Isolation Valve:
		<ul style="list-style-type: none"> • AE HIS-39(SG A)
		<ul style="list-style-type: none"> • AE HIS-40 (SG B)
		<ul style="list-style-type: none"> • AE HIS-41 (SG C)
		<ul style="list-style-type: none"> • AE HIS-42 (SG D)
		<ul style="list-style-type: none"> • CHECK SG Blowdown Containment Isolation Valve from faulted SG(s) - CLOSED
		<ul style="list-style-type: none"> • BM HIS-1A (SG A)
		<ul style="list-style-type: none"> • BM HIS-2A (SG B)
		<ul style="list-style-type: none"> • BM HIS-3A (SG C)
		<ul style="list-style-type: none"> • BM HIS-4A (SG D)
		<ul style="list-style-type: none"> • CLOSE Steamline Low Point Drain valve from faulted SG(s):
		<ul style="list-style-type: none"> • AB HIS-9 (SG A)
		<ul style="list-style-type: none"> • AB HIS-8 (SG B)
		<ul style="list-style-type: none"> • AB HIS-7 (SG C)
		<ul style="list-style-type: none"> • AB HIS-10 (SG D)
CRITICAL TASK (E-2 A) Isolate the Faulted Steam Generator Before Transition out of E-2.		
	BOP/URO	(Step 5) CHECK CST To AFP Suction Header Pressure – GREATER THAN 2.75 PSIG
	BOP/URO	(Step 6) CHECK Secondary Radiation:
		<ul style="list-style-type: none"> • PERFORM the following:
		<ul style="list-style-type: none"> • PERFORM EOP Addendum 11, Restoring SG Sampling After SI Actuation

Op Test No.: N07-1 Scenario # 4 Event # 5, 6, and 7 Page 35 of 36

Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> DIRECT Chemistry to periodically sample all SGs for activity
		<ul style="list-style-type: none"> DIRECT Radiation Protection to survey steamlines in Auxiliary Building Area 5 as necessary.
		<ul style="list-style-type: none"> CHECK unisolated secondary radiation monitors:
		<ul style="list-style-type: none"> SG Sample radiation:
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation:
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> AB RIC-111 (SG A)
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> AB RIC-112 (SG B)
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> AB RIC-113 (SG C)
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> AB RIC-114 (SG D)
		<ul style="list-style-type: none"> Turbine Driven Auxiliary Feedwater Pump Exhaust radiation:
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> FC RIC-385
		<ul style="list-style-type: none"> Secondary radiation - NORMAL
	CRS	(Step 6 RNO) Go to E-3, Steam Generator Tube Rupture, Step 1.
	URO	(Step 7) Check if ECCS Flow Should Be reduced:
		<ul style="list-style-type: none"> RCS Subcooling – Greater Than 30°F.
		<ul style="list-style-type: none"> Secondary Heat Sink:
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> NR Level in at least One SG > 7%
		OR
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> Total Feedflow to intact SGs > 355,000 lbm/hr.
		<ul style="list-style-type: none"> RCS Pressure – Stable or Rising.
		<ul style="list-style-type: none"> Pzr Level- > 9%.
	URO	(Step 8) Reset SI

Op Test No.: N07-1 Scenario # 4 Event # 5, 6, and 7 Page 36 of 36

Event Description: Faulted SG (B) Inside Containment/Failure of Auto SI/ Failure of Minipurge Isolation Valves to Close on CI

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> SB HS-42A
		<ul style="list-style-type: none"> SB HS-43A
	URO	(Step 9) Stop all but one CCP:
		<ul style="list-style-type: none"> BG HIS-1A
		OR
		<ul style="list-style-type: none"> BG HIS-2A
	CRS	Go to ES-1.1, SI Termination, Step 3.
Booth Instructor: Freeze the Simulator		
EAL	UE (3G, Explosion in Containment)	

Facility:	CALLAWAY	Scenario No.:	3	Op Test No.:	N07-1-3
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions: The Plant is at 100% power Steady-State after 150 continuous days on line.					
Turnover: The following equipment is Out-Of-Service: B MDAFW Pump (Expected back in 6 hours), RWST Level channel BN-LI-930 has failed low, and MCB Annunciator 134E, MNXFMR TROUBLE has been in constant alarm for the past two hours (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.					
Event No.	Malf. No.	Event Type*	Event Description		
1	PCS02A	I – BOP I – RO I – SRO	1 st Stage Pressure Channel Failure		
2	CCW04A	I – RO I – SRO	Letdown HX Temperature Control Valve Controller fails		
3	CVC06F	C – SRO	#2 Seal Failure on B RCP/ Orderly Plant Shutdown		
4	TUR02F TUR02G	C – RO C – BOP C - SRO	High Vibration on Main Turbine/Rapid Load Reduction		
5	N/A	M – RO M – BOP M – SRO	Manual Rx Trip		
6	MSS12	N/A	Isolable Steam Break/MSI Fails to Auto Actuate		
7	CCW06A	C – RO	Failure of A CCW Pump, and Failure of Auto Start of same Train Standby Pump		
8	CVC06B	N/A	#1 Seal Failure/High Vibrations on B RCP		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario Event Description

NRC Scenario 3

Callaway 2007 NRC Scenario #3

The Plant is at 100% power Steady-State after 150 continuous days on line.

The following equipment is Out-Of-Service: B MDAFW Pump (Expected back in 6 hours), RWST Level channel BN-LI-930 has failed low, and MCB Annunciator 134E, MNXFMR TROUBLE has been in constant alarm for the past two hours (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

Shortly after taking the watch, the First Stage Pressure Transmitter, PT-505, will fail low. The operator will respond in accordance with OTO-AC-00003, "Turbine Impulse Pressure Channel Failure." The operator will address Technical Specification 3.3.1, "RTS Instrumentation," and defeat the failed channel.

Following this the Letdown HX Temperature Control Valve Controller fails such that BGTV0130 goes fully closed. The operator will respond in accordance with OTA-RK-00018, Addendum 39B, "LTDN HX DISCH TEMP HI," and take manual control of the controller to re-establish CCW flow to the Letdown HX. It is expected that VCT temperature will rise.

Shortly after this, a #2 Seal failure will occur on RCP B. It is expected that Annunciator 73A, "RCP #2 Seal Flow Hi," will alarm, and the operator will respond in accordance with OTO-BB-00002, "RCP Off Normal." The operator will decide that a #2 Seal Failure of the B RCP has occurred and that an orderly (6-hour) shutdown must be performed using either OTO-MA-00008, "Rapid Load Reduction," or OTG-ZZ-00004, "Power Operation."

During the load reduction high vibration alarms will occur on the Main Turbine. The operator will respond in accordance with OTO-AC-00002, "Turbine Vibration." Turbine bearing vibration will continue from 10-11 mils vibration throughout the load reduction.

Eventually, the Turbine vibrations will exceed the setpoint at which the Turbine must be tripped. The operator will trip the reactor, and the turbine and enter E-0, "Reactor Trip or Safety Injection."

Shortly after reactor trip a steam break will occur in Area 5. The Main Steamline Isolation signal will fail to automatically actuate, and require manual actuation by the operator. The plant will cooldown and depressurize to the point where SI is required. On the SI actuation the A CCW Pump will trip with a simultaneous failure of the C CCW Pump to auto start. The operator will need to start the C CCW Pump manually.

The operator will transition from E-0, "Reactor Trip or Safety Injection," to ES-1.1, "SI Termination."

During the implementation of the Emergency Operating Procedures, a #1 Seal Failure will occur on the B RCP, along with high vibrations. If the pump has not been previously stopped, the pump will need to be stopped in accordance with OTO-BB-00002, "RCP Off Normal."

The scenario will terminate at step 15 of ES-1.1, after the CCP suction has been aligned to the VCT.

Critical Tasks:

E-0 P

Manually actuate Main Steamline Isolation before a transition out of E-0.

E-0 K

Manually start an A Train CCW pump to provide adequate component cooling for the operating safeguards train before transition out of E-0.

Examiner Notes:

This scenario is intended to examine the three Instant SRO candidates (ISRO) in the URO (or ATC) position. Because of this, a surrogate CRS will be used. To most effectively examine the ISRO, the Examiner should ensure that the CRS is aware of a specific desired course of action in the following two instances:

- When faced with conducting a downpower via an OTO or an OTG in Event 3, the CRS should choose to use OTO-MA-0008.**
- When faced with assigning responsibilities within the initial steps of E-0 in Events 6&7, the CRS should assign the URO to complete Attachment A.**

Examiner Notes are provided within the body of this Guide to ensure that the CRS takes these actions.

Scenario Event Description

NRC Scenario 3

Simulator Set Up

IC-154

Verify Control Rods are in Automatic.

Verify NCP running.

Verify B CCW Pump running.

Place WPA Tags on:

- B Motor Driven Aux Feed Pump.

Insert:

Remove the B Motor Driven Aux Feed Pump from service, bat AL01B.txt

RWST Channel BN-LI-930 has failed low and appropriate Bistables tripped, imf rhr07a 0, imf BNL001 TRIP, imf BNL005 TRIP, imf BNL006 TRIP, imf BNL007 TRIP, imf BNL008 TRIP

Main Transformer Trouble Alarm, Annunciator 134E, imf E134 0

Failure of MSIVs to close on AUTO Signal, irf sas009a 1, irf sas009b 1, irf sas009c 1, irf sas009d 1

sets up trigger #7 when turbine load is less than or equal to 50 Mwe. trgset 7 "sac.le.50.0"

sets up trigger #8 when SI is actuated, trgset 8 "jstsisa.eq.1"

Events:

1	First stage pressure transmitter channel 505 failure from trigger #2 (MANUAL) to 0 psi with 15 sec. ramp; imf pcs02a (2) 0 15
2	Letdown HX Temperature Control Valve Controller fails (MANUAL); imf ccw04a (3) 0
3	Number 2 Seal failure on B RCP/ to cause orderly plant shutdown (MANUAL) with 10 sec. ramp; imf cvc06f (4) 50 10, imf A073 (4) 0
4	High Vibration on Main Turbine/Rapid Load Reduction by Crew (MANUAL); imf tur02f (5) 11 120, imf tur02g (5) 11 180
5	None
6	Steam Line Break in the Turbine Building/ MSLIS Fails to Auto Actuate(CONDITIONAL) and a delay of 30 seconds; imf mss12 (7 30) 3e+007 10
7	Failure of A CCW Pump following SI actuation (CONDITIONAL) imf ccw06a (8), Failure of C CCW Pump to start in AUTO (PRELOADED), irf sbi008o 1
8	#1 Seal Failure / High Vibrations on B RCP (MANUAL), imf cvc06b (9) 50 10, irf bbv006 (9) 17 60

Scenario Event Description

NRC Scenario 3

Shift Turnover:

RO	BOP	Shift	Date
<i>REVIEW/COMPLETE PRIOR TO RELIEVING THE WATCH:</i>			
• URO Logs		• Annunciator Test	
• Control Board Walkdown		• Standing/Night Orders	
'A' Train Protected			
Plant Status: Mode 1		Gross Gen Load: 1286 MWe	
Reactor Power: 100%		Load Limit Pot: 8.30	
Rod movement NONE		Circ. Pump Setback: DISABLE	
Boration: 0 gallons		Cation Bed Run 20 minutes	
Dilution 80 gallons		C/T valves: Normal	

EQUIPMENT OOS OR WPA

- ☐ B MDAFW Pump (Expected back in 6 hours).
- ☐ RWST Level channel BN-LI-930 has failed low.
- ☐ MCB Annunciator 134E, MNXFMR TROUBLE has been in constant alarm for the past two hours (I&C is investigating).
- ☐ The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

INFORMATION

- ☐ The Plant is at 100% power Steady-State after 150 continuous days on line.

BURDENS AND WORKAROUNDS

- ☐ None

Scenario Event Description

NRC Scenario 3

Offgoing Supervisor

Name		Shift	Date
<i>Oncoming Supervisor review or perform the following:</i>			
• AUTO LOG	• Night Orders/Standing Orders	• EOSL Turnover Report	
• Control Board Walk down	• WPA	• Temp Mod Log	
<u>RCS Makeup:</u> 80 gal dil	<u>RODS:</u> D@ 215	<u>Cation Bed Run:</u> 20 min	
<u>RCS:</u> 1035 ppm	<u>'A' CCP:</u> 1050 ppm	<u>'B' CCP:</u> 1065 ppm	
<u>PROTECTED TRAIN:</u> A	<u>CDF:</u> 3.94E-5	<u>LERF:</u> 5.62E-7	
<u>Industrial Safety Focus Area:</u> Industrial Safety Trend		<u>OPS DOSE</u>	
<u>HUP Site Focus Area:</u> Procedure Use and Adherence		<u>Weekly Budget:</u> 11.5 mrem	
<u>HUP OPS Focus Area:</u> WPA		<u>Weekly Actual:</u> 0.0 mrem	

NEW ITEMS:

1. RWST Level channel BN-LI-930 has failed low.
2. MCB Annunciator 134E, MNXFMR TROUBLE has been in constant alarm for the past two hours (I&C is investigating).

ONGOING ITEMS:

1. The Plant is at 100% power Steady-State after 150 continuous days on line.
2. The Turbine Bearing Monitoring System on the Plant Computer is inoperable.
3. B MDAFW Pump (Expected back in 6 hours). T.S. 3.7.5, Condition C, 72 hours

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>40</u>
Event Description:		1 st Stage Pressure Channel Failure							
Time	Position	Applicant's Actions or Behavior							

Shortly after taking the watch, the First Stage Pressure Transmitter, PT-505, will fail low. The operator will respond in accordance with OTO-AC-00003, "Turbine Impulse Pressure Channel Failure." The operator will address Technical Specification 3.3.1, "RTS Instrumentation," and defeat the failed channel.

Booth Operator Instructions: Operates Trigger #2 (PCS02A (0%)).

Indications Available:

		ANN 65E Tref/Tauct Lo.
		ANN 77A React Dev.
		Rods move in Auto.
		NOTE: The operator will check to see if there is a Turbine runback in progress and then take Rods to Manual. The URO/BOP may deselect PT-505 prior to being directed by the OTO.

OTO-AC-00003, TURBINE IMPULSE PRESSURE CHANNEL FAILURE

	URO	(Step 1) PLACE Rod Control in MANUAL:
	BOP	(Step 2) CHECK HP Turbine First Stage Pressure Indicator - FAILED
		<ul style="list-style-type: none"> AC PI-505
	BOP	(Step 3) SELECT HP Turbine First Stage Pressure Selector To Operable Channel:
		<ul style="list-style-type: none"> AC PS-505Z
	URO	(Step 4) CHECK RCS Tav _g Within 1.5°F of Tref
	URO	(Step 4RNO) Restore RCS Tav _g to within 1.5°F of Tref using any of the following:
		<ul style="list-style-type: none"> Adjust Control Rods
		<ul style="list-style-type: none"> Adjust Turbine Load
		<ul style="list-style-type: none"> Adjust RCS Boron concentration

Op Test No.: 1 Scenario # 3 Event # 1 Page 8 of 40Event Description: 1st Stage Pressure Channel Failure

Time	Position	Applicant's Actions or Behavior
	URO	(Step 5) CHECK Rod Control – IN AUTO
		<ul style="list-style-type: none"> SE HS-9
	BOP	(Step 6) PLACE Steam Dump Bypass Interlock Switches To OFF/RESET:
		<ul style="list-style-type: none"> AB HS-63
		<ul style="list-style-type: none"> AB HS-64
	BOP	(Step 7) CHECK C- 7, Load Loss Stm Dump Armed – EXTINGUISHED
	BOP	(Step 8) TRANSFER Steam Dumps To The Steam Pressure Mode By Performing The Following:
		<ul style="list-style-type: none"> SET the AB PK-507, Steam Header Pressure Controller for 7.28 turns (1092 psig)
		<ul style="list-style-type: none"> PLACE Steam Dump Select to STEAM PRESS:
		<ul style="list-style-type: none"> AB US-500Z
	BOP	(Step 9) PLACE Steam Dump Bypass Interlock Switches to ON:
		<ul style="list-style-type: none"> AB HS-63
		<ul style="list-style-type: none"> AB HS-64
At the Discretion of the Lead Examiner Move to Event #2.		

Op Test No.: 1 Scenario # 3 Event # 2 Page 9 of 40

Event Description: Letdown HX Temperature Control Valve Controller Fails

Time	Position	Applicant's Actions or Behavior
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Following this the Letdown HX Temperature Control Valve Controller fails such that BGT0130 goes fully closed. The operator will respond in accordance with OTA-RK-00018, Addendum 39B, "LTDN HX DISCH TEMP HI," and take manual control of the controller to re-establish CCW flow to the Letdown HX. It is expected that VCT temperature will rise.

Booth Operator Instructions: Operate Trigger #3 (CCW04A (0%)).

Indications Available:

		ANN 39A Letdown HX Temp Hi Divert
		ANN 39B Letdown HX Disch Temp Hi
		VCT Temperature increases

OTA-RK-00018, ADDENDUM 39B, LTDN HX DISCH TEMP HI

	URO	MONITOR the following:
		<ul style="list-style-type: none"> BG TI-130, LTDN HX OUTLET TEMP BG TI-127, REGEN HX LETDN OUTLET TEMP
	URO	IF letdown temperature exceeds 120°F, PERFORM the following for BG TK-130, LTDN HX OUTLET TEMP CTRL:
		<ul style="list-style-type: none"> CHECK output is at OR RAISING towards 100%. IF required, TAKE MANUAL control and RAISE CCW flow to the Letdown Heat Exchanger.
	URO	IF letdown temperature exceeds 130°F, MANUALLY DIVERT letdown to the VCT using BG HIS-129, CVCS DEMIN INLET DIVERT VLV.
	URO	MONITOR the following:
		<ul style="list-style-type: none"> BG FI-121A, CHG HDR FLOW BG FI-132, LTDN HX OUTLET FLOW

Op Test No.: 1 Scenario # 3 Event # 2 Page 10 of 40

Event Description: Letdown HX Temperature Control Valve Controller Fails

Time	Position	Applicant's Actions or Behavior
	URO	IF Charging and Letdown flow mismatch exists, ADJUST Charging and Letdown flows as necessary to lower BG TI-127, REGEN HX LTDN OUTLET TEMP.
		NOTE: There is no Charging/Letdown flow mismatch that exists.
	URO	CHECK CCW conditions from available indications, including the temperature of the CCW train supplying the non-essential loop:
		<ul style="list-style-type: none"> • BG TI-31, CCW HX A OUTLET TEMP
		<ul style="list-style-type: none"> • BG TI-32, CCW HX B OUTLET TEMP
	CRS	IF CCW appears to be the problem, Refer to OTO-EG-00001, CCW System Malfunctions.
		NOTE: CCW to the Letdown HX is the issue, NOT CCW overall. The operator should not go to OTO-EG-00001.
	URO	IF letdown temperature cannot be reduced, PERFORM the following per OTN-BG-00001, Chemical And Volume Control System.
		<ul style="list-style-type: none"> • SECURE normal letdown.
		<ul style="list-style-type: none"> • ESTABLISH Excess letdown.
		NOTE: Operator should be able to take manual control of BGTV0130, Letdown should NOT need to be secured.
OTA-RK-00018, ADDENDUM 41C, SEALWATER INJECTION TEMPERATURE HIGH		
		NOTE: This Annunciator may alarm if there is a delay in taking manual control of BGTV0130.
	URO	MONITOR the following:
		<ul style="list-style-type: none"> • BG TI-216, RCP SEAL WTR INJ TEMP
		<ul style="list-style-type: none"> • Computer Point RET0140A, VCT TEMP
		<ul style="list-style-type: none"> • #1 seal and pump bearing inlet temperatures for all four RCPs using either:
		<ul style="list-style-type: none"> • Plant computer group displays, SG 8 through SG 11

Op Test No.: 1 Scenario # 3 Event # 2 Page 11 of 40

Event Description: Letdown HX Temperature Control Valve Controller Fails

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> System Display BB3
	CRS	IF #1 seal and pump bearing inlet temperature exceeds 200°F on any pump, Go To OTO-BB-00002, Reactor Coolant Pump Off Normal.
	URO	CHECK the following: <ul style="list-style-type: none"> BG FI-121A, CHG HDR FLOW BG FI-132, LTDN HX OUTLET FLOW
	URO	IF a charging and letdown flow mismatch exists, ADJUST charging and letdown flows as necessary to lower BG TI-127, REGEN HX LTDN OUTLET TEMP.
	CRS/URO	IF desired, MAKEUP to the VCT to reduce temperature per OTN-BG-00002, Reactor Makeup Control and Boron Thermal Regeneration System.
	CRS/URO	IF Seal Injection temperature can NOT be lowered, PERFORM the following per OTN-BG-00001, Chemical and Volume Control System: <ul style="list-style-type: none"> SECURE letdown PLACE excess letdown in service.
At the Discretion of the Lead Examiner Move to Event #3.		

Op Test No.: 1 Scenario # 3 Event # 3 Page 12 of 40

Event Description: #2 Seal Failure on B RCP / Orderly Plant Shutdown

Time	Position	Applicant's Actions or Behavior
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Shortly after this, a #2 Seal failure will occur on RCP B. It is expected that Annunciator 73A, "RCP #2 Seal Flow Hi," will alarm, and the operator will respond in accordance with OTO-BB-00002, "RCP Off Normal." The operator will decide that a #2 Seal Failure of the B RCP has occurred and that an orderly (6-hour) shutdown must be performed using either OTO-MA-00008, "Rapid Load Reduction," or OTG-ZZ-00004, "Power Operation."

Booth Operator Instructions: Operate Trigger #4 (CVC06F).

Indications Available:

		ANN 74A RCP #2 Seal Flow Hi
		ANN 73B RCP #1 Seal Flow Lo
		#1 Seal leakoff Flow from B RCP will go low

OTO-BB-00002, RCP OFF-NORMAL

	URO	(Step 1) CHECK All RCPs - RUNNING
	CRS	(Step 2) Go To One Of The Following Attachments, As Applicable:
		<ul style="list-style-type: none"> Attachment B, RCP Seal Parameters Abnormal

ATTACHMENT B, RCP SEAL PARAMETERS ABNORMAL

	URO	(Step B1) CHECK CCW Flow To Containment – NORMAL OR HIGH FOR PLANT CONDITIONS
		<ul style="list-style-type: none"> EG FI-128
		<ul style="list-style-type: none"> EG FI-129
	URO	(Step B2) CHECK No. 1 Seal Leakoff flow On All RCPs – LESS THAN 6 GPM
		<ul style="list-style-type: none"> BG FR-157
		<ul style="list-style-type: none"> BG FR-156
		<ul style="list-style-type: none"> BG FR-155

Op Test No.: 1 Scenario # 3 Event # 3 Page 13 of 40

Event Description: #2 Seal Failure on B RCP / Orderly Plant Shutdown

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> BG FR-154
	URO	(Step B3) CHECK No. 1 Seal Leakoff Flow On All RCPs – GREATER THAN 0.8 GPM
		<ul style="list-style-type: none"> BG FR-157
		<ul style="list-style-type: none"> BG FR-156
		<ul style="list-style-type: none"> BG FR-155
		<ul style="list-style-type: none"> BG FR-154
Examiner Note: In the subsequent downpower ensure that the CRS uses OTO-MA-00008, Raid Load Reduction.		
	CRS	(Step B3 RNO) IF the affected RCP pump bearing temperatures AND seal injection temperatures are stable, THEN PERFORM the following:
		<ul style="list-style-type: none"> TRANSITION to Mode 3 within 6 hours using any of the following:
		<ul style="list-style-type: none"> OTO-MA-0008, Rapid Load Reduction
		<ul style="list-style-type: none"> OTG-ZZ-00004, Power Operation
		<ul style="list-style-type: none"> OTG-ZZ-00005, Plant Shutdown 20% Power to Hot Standby
		<ul style="list-style-type: none"> TRIP the affected RCP.
		<ul style="list-style-type: none"> When the affected RCP has come to a stop (≈4 minutes), Then Close #1 Seal Leakoff Valve for the affected RCP (BB HIS-8141B).
	URO	(Step B4) CHECK No. 1 Seal & Bearing Inlet Temperature – LESS THAN 230°F ON ALL RCPS
	URO	(Step B5) CHECK No. 1 Seal & Bearing Inlet Temperature – LESS THAN 200°F ON ALL RCP

Op Test No.: 1 Scenario # 3 Event # 3 Page 14 of 40

Event Description: #2 Seal Failure on B RCP / Orderly Plant Shutdown

Time	Position	Applicant's Actions or Behavior
	URO	(Step B6) CHECK RCP Seal Injection Flow – BETWEEN 8 AND 13 GPM PER PUMP
	URO	(Step B7) CHECK No. 1 Seal Leakoff Flow On Any RCP – LESS THAN 0.8 GPM
		• BG FR-157
		• BG FR-156
		• BG FR-155
		• BG FR-154
	URO	(Step B8) CHECK Annunciator Window 73A, RCP #2 SEAL FLOW HI – EXTINGUISHED
	URO	(Step B8 RNO) PERFORM the following:
		• DETERMINE which RCP is causing Annunciator 73A by checking computer points:
		• BBF0194 (RCP A)
		• BBF0193 (RCP B)
		• BBF0192 (RCP C)
		• BBF0191 (RCP D)
		• IF the alarm is for the same RCP that has low #1 Seal Leakoff Flow, THEN PERFORM the following:
		• ENSURE affected RCP #1 Seal Leakoff valve is OPEN:
		• BB HIS-8141B (RCP B)
		• MONITOR RCDT level.
	URO	(Step B9) CHECK Both Of The Following:
		• RCP Vibration – NORMAL
		• CCW to RCPs – NORMAL

Op Test No.: 1 Scenario # 3 Event # 3 Page 15 of 40

Event Description: #2 Seal Failure on B RCP / Orderly Plant Shutdown

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step B10) CONTINUE Monitoring RCP Parameters
	CRS	(Step B11) CONTACT Engineering To Determine Additional Actions To Be Taken
	URO	(Step B12) CHECK Reactor Power – GREATER THAN 48% (P-8 lit)
	URO	(Step B13) CHECK Any RCPs – RUNNING
	CRS	(Step B14) REVIEW Applicable Technical Specifications:
	CRS	(Step B15) PERFORM Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications To Emergency Duty Officer
	CRS	(Step B16) Go To Appropriate Plant Procedure As Directed By The Shift Manager/Control Room Supervisor
OTO-MA-00008, RAPID LOAD REDUCTION		
	URO	(Step 1) PLACE Rod Control In AUTO:
		<ul style="list-style-type: none"> SE HS-9
	CRS	(Step 2) DISCUSS The Following With The Shift Crew:
		<ul style="list-style-type: none"> Amount of Turbine load reduction
		<ul style="list-style-type: none"> Rate of Turbine load reduction
	URO	(Step 3) DETERMINE Amount of Boric Acid to Reduce Reactor Power to Desired Level using Reactivity Management Brief

Op Test No.: 1 Scenario # 3 Event # 3 Page 16 of 40

Event Description: #2 Seal Failure on B RCP / Orderly Plant Shutdown

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 4) REDUCE Turbine Load At Less Than Or Equal to 5% per Minute Using Any of the Following:
		<ul style="list-style-type: none"> REDUCE Turbine load using the %/Min Loading Rate:
		<ul style="list-style-type: none"> ROTATE Load Limit Set potentiometer clockwise until both of the following are met:
		<ul style="list-style-type: none"> Load Limit Limiting – EXTINGUISHED
		<ul style="list-style-type: none"> At Set Load – LIT
		<ul style="list-style-type: none"> SET Loading Rate Limit %/Min to desired value
		<ul style="list-style-type: none"> SELECT Decrease Loading Rate - ON
		<ul style="list-style-type: none"> LOWER load set MW toward desired load using the DECREASE LOAD pushbutton
	URO	(Step 5) BORATE From the BAST by performing the following:
		<ul style="list-style-type: none"> BORATE to the VCT:
		<ul style="list-style-type: none"> PLACE RCS Makeup Control in STOP:
		<ul style="list-style-type: none"> BG HS-26
		<ul style="list-style-type: none"> PLACE RCS Makeup Control Selector in BORATE:
		<ul style="list-style-type: none"> BG HS-25
		<ul style="list-style-type: none"> RESET Boric Acid Counter to 000:
		<ul style="list-style-type: none"> BG FY-110B
		<ul style="list-style-type: none"> SET BG FY-110B for the desired gallons of boric acid to be added
		<ul style="list-style-type: none"> PLACE BG HS-26 in RUN
		<ul style="list-style-type: none"> WHEN desired boration is complete, THEN PLACE BG HS-26 in STOP
		<ul style="list-style-type: none"> REPEAT Boration as necessary
	URO	(Step 6) INITIATE Boron Equalization By Performing the following:
		<ul style="list-style-type: none"> ENERGIZE at least one group of Pressurizer Backup Heaters:

Op Test No.: 1 Scenario # 3 Event # 3 Page 17 of 40

Event Description: #2 Seal Failure on B RCP / Orderly Plant Shutdown

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> B/U Group A BB HIS-51A
		<ul style="list-style-type: none"> B/U Group B BB HIS-52A
		<ul style="list-style-type: none"> PLACE the Pressurizer Pressure Master Controller in MAN;
		<ul style="list-style-type: none"> BB PK-455A
		<ul style="list-style-type: none"> LOWER Pressurizer Pressure Master Controller output to 38% to 42%
		<ul style="list-style-type: none"> PLACE the Pressurizer Pressure Master Controller in AUTO
	BOP	(Step 7) CHECK MFP Turbine Speed Control – IN AUTO
		<ul style="list-style-type: none"> FC SK-509B
		<ul style="list-style-type: none"> FC SK-509C
	CRS	(Step 8) NOTIFY the Power Dispatcher of the following:
		<ul style="list-style-type: none"> Load reduction is in progress
		<ul style="list-style-type: none"> Rate of load reduction
		<ul style="list-style-type: none"> Amount of load reduction
	CRS	(Step 9) NOTIFY the following departments that Load Reduction is in progress and the rate of load reduction:
		<ul style="list-style-type: none"> Chemistry
		<ul style="list-style-type: none"> Count Room Technician
		<ul style="list-style-type: none"> Radiation Protection
		<ul style="list-style-type: none"> Radwaste

At the Discretion of the Lead Examiner Move to Events #4 & 5.

Op Test No.: 1 Scenario # 3 Event # 4 & 5 Page 18 of 40

Event Description: High Vibration on Main Turbine / Rapid Load Reduction / Manual Rx Trip

Time	Position	Applicant's Actions or Behavior
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During the load reduction high vibration alarms will occur on the Main Turbine. The operator will respond in accordance with OTO-AC-00002, "Turbine Vibration." Turbine bearing vibration will continue from 10-11 mils vibration throughout the load reduction. Eventually, the Turbine vibrations will exceed the setpoint at which the Turbine must be tripped. The operator will trip the reactor, and the turbine and enter E-0, "Reactor Trip or Safety Injection."

Booth Operator Instructions: Operate Trigger #5 (TUR02F, TUR02G (11)).

Indications Available:

		ANN 119B Turb Vib/Sys Alert

OTO-AC-00002, TURBINE VIBRATION

	BOP	(Step 1) CHECK Main Turbine is – ON LINE
	BOP	(Step 2) MONITOR Main Turbine Vibration – LESS THAN 12 MILS
		NOTE: The computer's Turbine Bearing Monitoring System is inoperable. The BOP will need to dispatch an operator locally to monitor Turbine Bearing Vibration.
		NOTE: If the Turbine Vibration is NOT < 12 Mils, a Reactor/Turbine Trip is required. This is a continuous action step, and will require addressing later when higher Turbine Vibration (> 12 mils) is reported.
	BOP	(Step 3) MONITOR Time Main Turbine Vibration Remains Greater Than 10 Mils – LESS THAN 15 MINUTES

Booth Operator Instructions: As EO report Turbine Bearing Vibration as follows:

#6 Bearing – 10-11 mils.

#7 Bearing – 10-11 mils.

	URO	(Step 4) PLACE Rod Control In AUTO:
		<ul style="list-style-type: none"> SE HS-9
	CRS	(Step 5) DISCUSS the following with the Shift Crew:

Op Test No.: 1 Scenario # 3 Event # 4 & 5 Page 19 of 40

Event Description: High Vibration on Main Turbine / Rapid Load Reduction / Manual Rx Trip

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Amount of Turbine load reduction
		<ul style="list-style-type: none"> Rate of Turbine load reduction
	URO	(Step 6) DETERMINE amount of Boric Acid to reduce reactor power to desired level using Reactivity Management Brief
	BOP	(Step 7) REDUCE Turbine Load At Less than Or Equal To 5% Per Minute Using Any of the following:
		<ul style="list-style-type: none"> REDUCE Turbine load using the %/Min Loading Rate:
		<ul style="list-style-type: none"> ROTATE Load Limit Set potentiometer clockwise until both of the following are met:
		<ul style="list-style-type: none"> Load Limit Limiting – EXTINGUISHED
		<ul style="list-style-type: none"> At Set Load – LIT
		<ul style="list-style-type: none"> SET Loading Rate Limit %/Min to desired value
		<ul style="list-style-type: none"> SELECT Decrease Loading Rate – ON
		<ul style="list-style-type: none"> LOWER load set MW toward desired load using the DECREASE LOAD pushbutton
	URO	(Step 8) BORATE from the BAST by performing any of the following:
		<ul style="list-style-type: none"> BORATE to the VCT:
		<ul style="list-style-type: none"> PLACE RCS Makeup Control in STOP
		<ul style="list-style-type: none"> BG HS-26
		<ul style="list-style-type: none"> PLACE RCS Makeup Control Selector in BORATE:
		<ul style="list-style-type: none"> BG FY-110B
		<ul style="list-style-type: none"> SET BG FY-110B for the desired gallons of boric acid to be added
		<ul style="list-style-type: none"> PLACE BG HS-26 in STOP
		<ul style="list-style-type: none"> WHEN desired boration is complete, THEN PLACE BG HS-26 in STOP
		<ul style="list-style-type: none"> REPEAT Boration as necessary

Op Test No.: 1 Scenario # 3 Event # 4 & 5 Page 20 of 40

Event Description: High Vibration on Main Turbine / Rapid Load Reduction / Manual Rx Trip

Time	Position	Applicant's Actions or Behavior
	URO	(Step 9) INITIATE Boron Equalization by performing the following:
		<ul style="list-style-type: none"> ENERGIZE at least one group of Pressurizer Backup Heaters:
		<ul style="list-style-type: none"> B/U Group A BB HIS-51A
		<ul style="list-style-type: none"> B/U Group B BB HIS-52A
		<ul style="list-style-type: none"> PLACE the Pressurizer Pressure Master Controller in MAN:
		<ul style="list-style-type: none"> BB PK-455A
		<ul style="list-style-type: none"> Lower Pressurizer Pressure Master Controller output to 38% to 42%
		<ul style="list-style-type: none"> PLACE the Pressurizer Pressure Master Controller in AUTO
	BOP	(Step 10) CHECK MFP Turbine Speed Control – IN AUTO
		<ul style="list-style-type: none"> FC SK-509B
		<ul style="list-style-type: none"> FC SK-509C
	BOP	(Step 11) CHECK Main Turbine Vibration – STABLE OR LOWERING
	CRS	(Step 12) CHECK Elapsed Time From Time Recorded In Step 3 – Less Than 15 Minutes.
Booth Operator Instructions:		
After approximately 10 minutes, or at the Discretion of the Lead Examiner:		
As EO report Turbine Bearing Vibration as follows:		
#6 Bearing – 14-15 mils.		
#7 Bearing – 15-16 mils.		

Op Test No.: 1 Scenario # 3 Event # 4 & 5 Page 21 of 40

Event Description: High Vibration on Main Turbine / Rapid Load Reduction / Manual Rx Trip

Time	Position	Applicant's Actions or Behavior
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E-0, REACTOR TRIP OR SAFETY INJECTION

	URO	(Step 1) CHECK Reactor Trip:
		<ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux – LOWERING
	BOP	(Step 2) CHECK Turbine Trip:
		<ul style="list-style-type: none"> All Turbine Stop valves - CLOSED
	URO/BOP	(Step 3) CHECK Power to AC Emergency Buses
		<ul style="list-style-type: none"> AC emergency buses – AT LEAST ONE ENERGIZED
		<ul style="list-style-type: none"> NB01
		OR
		<ul style="list-style-type: none"> NB02
		<ul style="list-style-type: none"> AC emergency buses – BOTH ENERGIZED
Critical Task: (E-0 P) Manually actuate Main Steamline Isolation before a transition out of E-0.		
		NOTE: The Steam Line break is triggered to occur when Turbine Load is < 50Mwe. Operator may recognize early in scenario that MSI is needed and has not occurred. If so, manual actuation of MSI may occur here.
Move to Events #6 & 7.		

Op Test No.:	<u>1</u>	Scenario #	<u>3</u>	Event #	<u>6 & 7</u>	Page	<u>22</u>	of	<u>40</u>
Event Description:		Isolable Steam Break / MSI Fails to AUTO Actuate / Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump							
Time	Position	Applicant's Actions or Behavior							

Shortly after reactor trip a steam break will occur in Area 5. The Main Steamline Isolation signal will fail to automatically actuate, and require manual actuation by the operator. The plant will cooldown and depressurize to the point where SI is required. On the SI actuation the A CCW Pump will trip with a simultaneous failure of the C CCW Pump to auto start. The operator will need to start the C CCW Pump manually. The operator will transition from E-0, "Reactor Trip or Safety Injection," to ES-1.1, "SI Termination."

Booth Operator Instructions: Trigger #7 (MSS12) and #8 (CCW06A) will occur automatically on Turbine Load <50MWe and SI actuation respectively.

Indications Available: NA

E-O, REACTOR TRIP OR SAFETY INJECTION		
	URO/BOP	(Step 4) CHECK SI Status:
		<ul style="list-style-type: none"> CHECK if SI is actuated:
		<ul style="list-style-type: none"> Any SI annunciator 88A through 88D – LIT
		OR
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT
		OR
		<ul style="list-style-type: none"> LOCA Sequencer annunciators 30A or 31A - LIT
	URO/BOP	(Step 4 RNO) CHECK if SI is required:
		<ul style="list-style-type: none"> PZR pressure less than or equal to 1849 PSIG
		OR
		<ul style="list-style-type: none"> Any SG pressure less than or equal to 615 PSIG
		OR
		<ul style="list-style-type: none"> Containment pressure greater than or equal to 3.5 PSIG
		IF SI is required, THEN manually ACTUATE SI:
		<ul style="list-style-type: none"> SB HS-27
		<ul style="list-style-type: none"> SB HS-28

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 23 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
	URO/BOP	<ul style="list-style-type: none"> CHECK both Trains of SI - ACTUATED
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 30A – LIT
		<ul style="list-style-type: none"> LOCA Sequencer annunciator 31A – LIT
		<ul style="list-style-type: none"> SB069 SI Actuate RED light – LIT SOLID (NOT blinking)
	URO/BOP	(Step 5) PERFORM Attachment A Automatic Action Verification, While Continuing With This Procedure
		NOTE: The CRS will assign one board operator to perform Attachment A, while the other operator and the CRS continue in E-0.
Examiner Note: During the implementation of E-0, ensure that the CRS assigns the URO to conduct Attachment A.		
Booth Operator Instructions: As the EO report that there has been some kind of Steam explosion in Area 5.		
	BOP/URO	(Step 6) CHECK Generator Output Breakers - OPEN
		<ul style="list-style-type: none"> MA XL-3A (V55)
		<ul style="list-style-type: none"> MA ZL-4A (V53)
	BOP/URO	(Step 7) CHECK Feedwater Isolation:
		<ul style="list-style-type: none"> Main Feedwater Pumps - TRIPPED
		<ul style="list-style-type: none"> Annunciator 120A, MFP A Trip – LIT
		<ul style="list-style-type: none"> Annunciator 123A, MFP B Trip – LIT
		<ul style="list-style-type: none"> Main Feedwater Reg Valves - CLOSED
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL-520 (SG B)
		<ul style="list-style-type: none"> AE ZL-530 (SG C)
		<ul style="list-style-type: none"> AE ZL-540 (SG D)

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 24 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> Main Feedwater Reg Bypass valves - LCOSED
		<ul style="list-style-type: none"> AE ZL-550 (SG A)
		<ul style="list-style-type: none"> AE ZL-560 (SG B)
		<ul style="list-style-type: none"> AE ZL-570 (SG C)
		<ul style="list-style-type: none"> AE ZL-580 (SG D)
		<ul style="list-style-type: none"> Feedwater Isolation Valves - CLOSED
		<ul style="list-style-type: none"> AE HIS-39 (SG A)
		<ul style="list-style-type: none"> AE HIS-40 (SG A)
		<ul style="list-style-type: none"> AE HIS-41 (SG A)
		<ul style="list-style-type: none"> AE HIS-42 (SG A)
	BOP/URO	(Step 8) CHECK AFW Pumps
		<ul style="list-style-type: none"> MD AFW Pumps – BOTH RUNNING (NOTE: B MDAFW Pump is OOS)
		<ul style="list-style-type: none"> AL HIS-23A
		<ul style="list-style-type: none"> AL HIS-22A
		<ul style="list-style-type: none"> TD AFW Pump – RUNNING IF NECESSARY
	BOP/URO	(Step 9) CHECK AFW Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> MD AFP Flow Control Valves - THROTTLED
		<ul style="list-style-type: none"> AL HK-7A
		<ul style="list-style-type: none"> AL HK-9A
		<ul style="list-style-type: none"> AL HK-11A
		<ul style="list-style-type: none"> AL HK-5A
		<ul style="list-style-type: none"> TD AFP Flow Control Valves – FULL OPEN
		<ul style="list-style-type: none"> AL HK-8A
		<ul style="list-style-type: none"> AL HK-10A
		<ul style="list-style-type: none"> AL HK-12A

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 25 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> AL HK-6A
	BOP/URO	(Step 10) CHECK Total AFW Flow – GREATER THAN 355,000 LBM/HR
	BOP/URO	(Step11) CHECK PZR PORVs And Spray Valves:
		<ul style="list-style-type: none"> PZR PORVs - CLOSED
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		<ul style="list-style-type: none"> PZR PORVs – BOTH IN AUTO
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		PORV Block Valves – BOTH OPEN
		<ul style="list-style-type: none"> BB HIS-8000A
		<ul style="list-style-type: none"> BB HIS-8000B
		<ul style="list-style-type: none"> Normal PZR Spray valves – CLOSED
		<ul style="list-style-type: none"> BB ZL-455B
		<ul style="list-style-type: none"> BB ZL-456C
	BOP/URO	(Step 12) CHECK If RCPs Should Be Stopped:
		<ul style="list-style-type: none"> RCPs – ANY RUNNING
		<ul style="list-style-type: none"> ECCS Pumps – AT LEAST ONE RUNNING
		<ul style="list-style-type: none"> CCP
		OR
		<ul style="list-style-type: none"> SI Pump
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 1425 PSIG
		Go To Step 13.

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 26 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
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	BOP/URO	(Step 13) CHECK RCS Temperatures:
		<ul style="list-style-type: none"> Any RCP running – RCS TAVG STABLE AT 557°F OR TRENDING TO 557°F
		OR
		<ul style="list-style-type: none"> NO RCPs running – RCS COLD LEG TEMPERATURES STABLE AT 557°F OR TRENDING TO 557°F
ATTACHMENT A, AUTOMATIC ACTION VERIFICATION		
	URO/BOP	(Step A1) CHECK Charging Pumps:
		<ul style="list-style-type: none"> CCPs – BOTH RUNNING
		<ul style="list-style-type: none"> BG HIS-1A
		<ul style="list-style-type: none"> BG HIS-2A
		<ul style="list-style-type: none"> STOP NCP:
		<ul style="list-style-type: none"> BG HIS-3
	URO/BOP	(Step A2) CHECK SI And RHR Pumps:
		<ul style="list-style-type: none"> SI Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EM HIS-4
		<ul style="list-style-type: none"> EM HIS-5
		<ul style="list-style-type: none"> RHR Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> EJ HIS-1
		<ul style="list-style-type: none"> EJ HIS-2
	URO/BOP	(Step A3) CHECK ECCS Flow:
		<ul style="list-style-type: none"> CCPs to Boron Inj Header – FLOW INDICATED
		<ul style="list-style-type: none"> EM FI-917A
		<ul style="list-style-type: none"> EM FI-917B
		<ul style="list-style-type: none"> RCS pressure – LESS THAN 1700 PSIG

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 27 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
		Go To Step A4.
	URO/BOP	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> • EF HIS-55A
		<ul style="list-style-type: none"> • EF HIS-56A
	URO/BOP	(Step A5) CHECK CCW Alignment:
		<ul style="list-style-type: none"> • CCW Pumps – ONE RUNNING IN EACH TRAIN
		<ul style="list-style-type: none"> • Red Train:
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> • EG HIS-22 or EG HIS-23
		<ul style="list-style-type: none"> • Yellow Train
		<ul style="list-style-type: none"> <ul style="list-style-type: none"> • EG HIS-22 or EG HIS-24
		START CCW Pump(s) as necessary
Critical Task: (E-0 K) Manually start an A Train CCW pump to provide adequate component cooling for the operating safeguards train before transition out of E-0.		
		<ul style="list-style-type: none"> • CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN
		<ul style="list-style-type: none"> • EG ZL-15 AND EG ZL-53
		OR
		<ul style="list-style-type: none"> • EG ZL-16 AND EG ZL-54
		<ul style="list-style-type: none"> • OPEN CCW To RHR HX valves:
		<ul style="list-style-type: none"> • EG HIS-101
		<ul style="list-style-type: none"> • EG HIS-102
		<ul style="list-style-type: none"> • CLOSE Spent Fuel Pool HX CCW Outlet Valves:
		<ul style="list-style-type: none"> • EC HIS-11

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 28 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> EC HIS-12
		<ul style="list-style-type: none"> STOP Spent Fuel Pool Cooling Pump(s):
		<ul style="list-style-type: none"> EC HIS-27
		<ul style="list-style-type: none"> EC HIS-28
		<ul style="list-style-type: none"> RECORD the Time Spent Fuel Pool Cooling Pump Secured
		<ul style="list-style-type: none"> MONITOR Time Since CCW Flow Isolated To SFP HX – LESS THAN 4 HOURS
	URO/BOP	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-9
		<ul style="list-style-type: none"> GN HIS-17
		<ul style="list-style-type: none"> GN HIS-5
		<ul style="list-style-type: none"> GN HIS-13
	URO/BOP	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> GN HIS-2
		<ul style="list-style-type: none"> GN HIS-4
		<ul style="list-style-type: none"> GN HIS-1
		<ul style="list-style-type: none"> GN HIS-3
	URO/BOP	(Step A8) CHECK If Containment Spray Should Be Actuated:
		<ul style="list-style-type: none"> CHECK the following:
		<ul style="list-style-type: none"> Containment pressure – GRETER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG
		OR
		<ul style="list-style-type: none"> Annunciator 59A CSAS – LIT

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 29 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate / Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
		OR
		<ul style="list-style-type: none"> Annunciator 59B CISB - LIT
		Go To Step A9
	URO/BOP	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> CHECK for any of the following:
		<ul style="list-style-type: none"> Containment pressure – GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG
		OR
		<ul style="list-style-type: none"> Steamline pressure – LESS THAN 615 PSIG
		OR
		<ul style="list-style-type: none"> AB PR-514 or AB PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG
		<ul style="list-style-type: none"> CHECK MSIVs and Bypass valves – CLOSED
		FAST CLOSE all MSIVs and Bypass valves:
		<ul style="list-style-type: none"> AB HS-79
		<ul style="list-style-type: none"> AB HS-80
Critical Task: (E-0 P) Manually actuate Main Steamline Isolation before a transition out of E-0.		
	URO/BOP	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> ESFAS status panels SIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 30 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate / Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step A11) CHECK Containment Isolation Phase A:
		<ul style="list-style-type: none"> ESFAS status panels CISA sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	URO/BOP	(Step A12) CHECK SG Blowdown Isolation:
		<ul style="list-style-type: none"> ESFAS status panels SGBSIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	URO/BOP	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CRVIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	URO/BOP	(Step A14) CHECK Containment Purge Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CPIS sections:
		<ul style="list-style-type: none"> SA066X WHITE lights – ALL LIT
		<ul style="list-style-type: none"> SA066Y WHITE lights – ALL LIT
	URO/BOP	(Step A15) NOTIFY CRS of the following:
		<ul style="list-style-type: none"> Unanticipated Manual actions taken
		<ul style="list-style-type: none"> Failed Equipment status
		<ul style="list-style-type: none"> Attachment A, Automatic Action Verification, completed
E-0, REACTOR TRIP OR SAFETY INJECTION		

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 31 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
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	URO/BOP	(Step 14) CHECK If Any SG Is Faulted:
		<ul style="list-style-type: none"> CHECK pressures in all SGs:
		<ul style="list-style-type: none"> ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER
		OR
		<ul style="list-style-type: none"> ANY SG COMPLETELY DEPRESSURIZED
		Go To Step 15
	URO/BOP	(Step 15) CHECK If SG Tubes Are Intact:
		<ul style="list-style-type: none"> Levels in all SGs:
		<ul style="list-style-type: none"> NO SG NARROW RANGE LEVEL RISING IN AN UNCONTROLLED MANNER
		<ul style="list-style-type: none"> SG Steamline N16 radiation - NORMAL
		<ul style="list-style-type: none"> N16 161 (SG A)
		<ul style="list-style-type: none"> N16 162 (SG B)
		<ul style="list-style-type: none"> N16 163 (SG C)
		<ul style="list-style-type: none"> N16 164 (SG D)
		<ul style="list-style-type: none"> Condenser Air Removal radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GEG 925
		<ul style="list-style-type: none"> SG Blowdown and Sample radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> BML 256
		<ul style="list-style-type: none"> SJL 026
		<ul style="list-style-type: none"> SG ASD radiation - NORMAL
		<ul style="list-style-type: none"> Condenser Air Removal radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> GEG 925
		<ul style="list-style-type: none"> SG Blowdown and Sample radiation – NORMAL BEFORE ISOLATION

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 32 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BML 256
		<ul style="list-style-type: none"> • SIL 026
		<ul style="list-style-type: none"> • SG ASD radiation - NORMAL
		<ul style="list-style-type: none"> • AB RIC-111 (SG A)
		<ul style="list-style-type: none"> • AB RIC-112 (SG B)
		<ul style="list-style-type: none"> • AB RIC-113 (SG C)
		<ul style="list-style-type: none"> • AB RIC-114 (SG D)
		<ul style="list-style-type: none"> • Turbine Driven Auxiliary Feedwater Pump Exhaust radiation – NORMAL
		<ul style="list-style-type: none"> • FC RIC-385
	URO/BOP	(Step 16) CHECK If RCS Is Intact:
		<ul style="list-style-type: none"> • Containment Pressure - NORMAL
		<ul style="list-style-type: none"> • GN PI-934
		<ul style="list-style-type: none"> • GN PI-935
		<ul style="list-style-type: none"> • GN PI-936
		<ul style="list-style-type: none"> • GN PI-937
		<ul style="list-style-type: none"> • GN PR-934
		<ul style="list-style-type: none"> • Containment Normal Sump Level – NORMAL
		<ul style="list-style-type: none"> • LF LI-9
		<ul style="list-style-type: none"> • LF LI-10
		<ul style="list-style-type: none"> • Containment Radiation – NORMAL BEFORE ISOLATION
		<ul style="list-style-type: none"> • GTG 313
		<ul style="list-style-type: none"> • GTG 323
		<ul style="list-style-type: none"> • GTA 591
		<ul style="list-style-type: none"> • GTA 601
	URO/BOP	(Step 17) CHECK if ECCS Flow should be reduced:
		<ul style="list-style-type: none"> • RCS subcooling – GREATER THAN 30°F

Op Test No.: 1 Scenario # 3 Event # 6 & 7 Page 33 of 40

Event Description: Isolable Steam Break / MSI Fails to AUTO Actuate /Failure of A CCW Pump, and Failure of AUTO Start of Same Train Standby Pump

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Secondary heat sink:
		<ul style="list-style-type: none"> Narrow range level in at least one SG – GREATER THAN 7%
		OR
		<ul style="list-style-type: none"> Total feed flow to SGs – GREATER THAN 355,000 LBM/HR
		<ul style="list-style-type: none"> RCS pressure – STABLE OR RISING
		<ul style="list-style-type: none"> PZR level – GREATER THAN 9%
	CRS	<ul style="list-style-type: none"> Go To ES-1.1, SI Termination, Step 1
Move to Event #8		

Op Test No.: 1 Scenario # 3 Event # 8 Page 34 of 40

Event Description: #1 Seal Failure / High Vibrations on B RCP

Time	Position	Applicant's Actions or Behavior
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During the implementation of the Emergency Operating Procedures, a #1 Seal Failure will occur on the B RCP, along with high vibrations. If the pump has not been previously stopped, the pump will need to be stopped in accordance with OTO-BB-00002, "RCP Off Normal." The scenario will terminate at step 15 of ES-1.1, after the CCP suction has been aligned to the VCT.

Booth Operator Instructions: Operate Trigger #9 (CVC06B).

NOTE: The crew has had previous procedural direction to trip the RCP when reactor power is < 48%, and when the RCP comes to a complete stop, close the affected Seal Leak Valve (Event 4). This action should have already occurred. If it has, then the seal failure/high vibration malfunction will have NO effect, and the crew should continue with SI Termination. If the crew has NOT taken this action, the pump will further degrade and the crew will need to address the event in accordance with OTO-BB-00002.

Indications Available:

		ANN 70A RCP VIB Danger
OTO-BB-00002, RCP OFF-NORMAL		
	URO/BOP	(Step 1) CHECK All RCPs - RUNNING
	CRS	(Step 2) Go to One of the following attachments, as applicable:
		<ul style="list-style-type: none"> Attachment A, RCP High Vibration
		<ul style="list-style-type: none"> Attachment B, RCP Seal Parameters Abnormal
ATTACHMENT A, RCP HIGH VIBRATION		
	URO/BOP	(Step A1) CHECK RCP Vibration Level:
		<ul style="list-style-type: none"> ALL RCPs vibration on the frame – LESS THAN 5 MILS
		<ul style="list-style-type: none"> ALL RCPs vibration on the shaft – LESS THAN 20 MILS
	URO/BOP	(Step A1 RNO) IF Reactor power is less than 48% (P-8 extinguished), THEN PERFORM the following:
		<ul style="list-style-type: none"> TRIP the affected RCP.

Op Test No.: 1 Scenario # 3 Event # 8 Page 35 of 40

Event Description: #1 Seal Failure / High Vibrations on B RCP

Time	Position	Applicant's Actions or Behavior
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ATTACHMENT B, RCP SEAL PARAMETERS ABNORMAL		
	URO/BOP	(Step B1) CHECK CCW Flow to Containment – NORMAL OR HIGH FOR PLANT CONDITIONS
		<ul style="list-style-type: none"> EG FI-128
		<ul style="list-style-type: none"> EG F-129
	URO/BOP	(Step B2) Check No. 1 Seal Leakoff flow On All RCPs – LESS THAN 6 GPM
		<ul style="list-style-type: none"> BG FR-157
		<ul style="list-style-type: none"> BG FR-156
		<ul style="list-style-type: none"> BG FR-155
		<ul style="list-style-type: none"> BG FR-154
	URO/BOP	(Step B2 RNO) PERFORM the following:
		<ul style="list-style-type: none"> TRIP the affected RCP
		<ul style="list-style-type: none"> WHEN the affected RCP has come to a stop (approximately 4 minutes), THEN CLOSE #1 Seal Leakoff valve for the affected RCP:
		<ul style="list-style-type: none"> BB HIS-814B (RCP B)
ES-1.1, SI TERMINATION		
	URO/BOP	(Step 1) RESET SI:
		<ul style="list-style-type: none"> SB HS-42A
		<ul style="list-style-type: none"> SB HS-43A
	URO	(Step 2) STOP All But One CCP:
		<ul style="list-style-type: none"> BG HS-1A
		OR

Op Test No.: 1 Scenario # 3 Event # 8 Page 36 of 40

Event Description: #1 Seal Failure / High Vibrations on B RCP

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> BG HIS-2A
	URO/BOP	(Step 3) RESET Containment Isolation Phase A and Phase B:
		<ul style="list-style-type: none"> Phase A (CISA):
		<ul style="list-style-type: none"> SB HS-53
		<ul style="list-style-type: none"> SB HS-56
		<ul style="list-style-type: none"> Phase B (CISB):
		<ul style="list-style-type: none"> SB HS-52
		<ul style="list-style-type: none"> SB HS-55
	BOP/URO	(Step 4) ESTABLISH Instrument Air To Containment:
		<ul style="list-style-type: none"> CHECK if ESW to Air Compressor valves - OPEN
		<ul style="list-style-type: none"> EF HIS-43
		<ul style="list-style-type: none"> EF HIS-44
		<ul style="list-style-type: none"> START Air Compressor(s):
		<ul style="list-style-type: none"> KA HIS-3C
		<ul style="list-style-type: none"> KA HIS-2C
		<ul style="list-style-type: none"> OPEN Instrument Air Supply Containment Isolation valve:
		<ul style="list-style-type: none"> KA HIS-29
	URO/BOP	(Step 5) CHECK RCS Pressure – STABLE OR RISING
	URO	(Step 6) ISOLATE Boron Injection Header:
		<ul style="list-style-type: none"> CCP – SUCTION ALIGNED TO RWST
		<ul style="list-style-type: none"> BG HS-8110
		<ul style="list-style-type: none"> BG HS-8111
		<ul style="list-style-type: none"> CHECK CCP Recirc valves
		<ul style="list-style-type: none"> BG HS-8110
		<ul style="list-style-type: none"> BG HS-8111

Op Test No.: 1 Scenario # 3 Event # 8 Page 37 of 40

Event Description: #1 Seal Failure / High Vibrations on B RCP

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • CLOSE Boron Injection Header Inlet valves:
		<ul style="list-style-type: none"> • EM HIS-8803A
		<ul style="list-style-type: none"> • EM HIS-8803B
		<ul style="list-style-type: none"> • CLOSE Boron Injection Header Outlet valves:
		<ul style="list-style-type: none"> • EM HIS-8801A
		<ul style="list-style-type: none"> • EM HIS-8801B
	URO	(Step 7) ESTABLISH Charging Flow:
		<ul style="list-style-type: none"> • CLOSE Charging Header Back Pressure Control valve:
		<ul style="list-style-type: none"> • BG HC-182
		<ul style="list-style-type: none"> • OPEN Charging Pumps to Regen HX Containment Isolation valves:
		<ul style="list-style-type: none"> • BG HIS-8105
		<ul style="list-style-type: none"> • BG HIS-8106
		<ul style="list-style-type: none"> • ESTABLISH desired charging flow using the following:
		<ul style="list-style-type: none"> • CCP Discharge Flow Control valve:
		<ul style="list-style-type: none"> • BG FK-121
		<ul style="list-style-type: none"> • Charging Header Back Pressure Control valve:
		<ul style="list-style-type: none"> • BG HC-182
	URO	(Step 8) CONTROL Charging Flow To Maintain PZR Level
	URO/BOP	(Step 9) CHECK IF SI Pumps Should Be Stopped:
		<ul style="list-style-type: none"> • CHECK RCS pressure:
		<ul style="list-style-type: none"> • Pressure – STABLE OR RISING
		<ul style="list-style-type: none"> • Pressure – GREATER THAN 1700 PSIG
		<ul style="list-style-type: none"> • STOP SI Pumps and PLACE in standby:
		<ul style="list-style-type: none"> • EM HIS-4
		<ul style="list-style-type: none"> • EM HIS-5

Op Test No.: 1 Scenario # 3 Event # 8 Page 38 of 40

Event Description: #1 Seal Failure / High Vibrations on B RCP

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step 10) CHECK IF RHR Pumps Should Be Stopped:
		<ul style="list-style-type: none"> RHR Pumps – ANY RUNNING WITH SUCTION ALIGNED TO RWST
		<ul style="list-style-type: none"> STOP RHR Pumps and PLACE in standby:
		<ul style="list-style-type: none"> EJ HIS-1
		<ul style="list-style-type: none"> EJ HIS-2
	URO BOP	(Step 11) CHECK ECCS Flow NOT Required:
		<ul style="list-style-type: none"> RCS subcooling – GREATER THAN 30°F [50°F]
		<ul style="list-style-type: none"> PZR level – GREATER THAN 9% [29%]
	URO/BOP	(Step 12) CHECK If Containment Spray Should Be Stopped:
		<ul style="list-style-type: none"> Spray Pumps – ANY RUNNING
		GO To Step 13.
	URO	(Step 13) CHECK VCT Makeup Control System
		<ul style="list-style-type: none"> Boric Acid Transfer Pumps – AT LEAST ONE AVAILABLE
		<ul style="list-style-type: none"> BG HIS-5A
		<ul style="list-style-type: none"> BG HIS-6A
		<ul style="list-style-type: none"> Makeup controls:
		<ul style="list-style-type: none"> SET for greater than RCS boron concentration
		<ul style="list-style-type: none"> SET for automatic control
	URO	(Step 14) CHECK If Letdown Can Be Established:
		<ul style="list-style-type: none"> PZR level – GREATER THAN 25% [45%]
		<ul style="list-style-type: none"> ESTABLISH letdown:
		<ul style="list-style-type: none"> OPEN Letdown System Containment Isolation valves:

Op Test No.: 1 Scenario # 3 Event # 8 Page 39 of 40

Event Description: #1 Seal Failure / High Vibrations on B RCP

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • BG HIS-8152
		<ul style="list-style-type: none"> • BG HIS-8160
		<ul style="list-style-type: none"> • OPEN RCS Letdown to Regen HX valves:
		<ul style="list-style-type: none"> • BG HIS-469
		<ul style="list-style-type: none"> • BG HIS-460
		<ul style="list-style-type: none"> • PLACE Letdown HX Outlet Pressure Controller in ANNUAL at 75% or greater:
		<ul style="list-style-type: none"> • BG PK-131
		<ul style="list-style-type: none"> • OPEN Letdown Orifice Isolation Valve(s) to establish desired letdown flow:
		<ul style="list-style-type: none"> • BG HIS-8149AA
		<ul style="list-style-type: none"> • BG HIS-8149BA
		<ul style="list-style-type: none"> • BG HIS-8149CA
		<ul style="list-style-type: none"> • ADJUST demand on Letdown HX Outlet Pressure Control to establish desired pressure:
		<ul style="list-style-type: none"> • BG PK-131
		<ul style="list-style-type: none"> • PLACE BG PK-131 in AUTO
	URO	(Step 15) ALIGN CCP Suction to VCT:
		<ul style="list-style-type: none"> • CCP – SUCTION ALIGNED TO RWST
		<ul style="list-style-type: none"> • OPEN both VCT Outlet valves:
		<ul style="list-style-type: none"> • BG HIS-112B
		<ul style="list-style-type: none"> • BG HIS-112C
		<ul style="list-style-type: none"> • CLOSE both Charging Pump Suction From RWST valves:
		<ul style="list-style-type: none"> • BN HIS-112D
		<ul style="list-style-type: none"> • BN HIS-112E
Booth Instructor: Freeze the Simulator		

Op Test No.: <u>1</u> Scenario # <u>3</u> Event # <u>8</u> Page <u>40</u> of <u>40</u>		
Event Description: <u>#1 Seal Failure / High Vibrations on B RCP</u>		
Time	Position	Applicant's Actions or Behavior

EAL	ALERT (3H) Report of explosion to Area 5 and there is visible damage to permanent structure or equipment affecting plant conditions.
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Facility:	Callaway	Scenario No.:	2	Op Test No.:	N07-1-2
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	<p>The Plant is at 50% power Steady-State (5 days), MOL, following a downpower from 100% for high vibrations in the B MFP. The B MFP was removed from service and repaired, and has just been restarted. I&C is working in Protection Racks, expected to be out in about 30 minutes. Letdown flow is 75 gpm for I&C calibration work on BG-FI-132, which is now complete. Chemistry has requested that Letdown be increased from 75 to 120 gpm.</p>				
Turnover:	<p>The following equipment is Out-Of-Service: B MDAFW Pump (Expected back in 6 hours) due to a pinhole leak on the ESW System Suction Line, Containment Radiation Monitor GTRIC0059 as well as Radwaste Discharge Monitor HB-RE-18 RM-11 indication (Out indefinitely), and MCB Annunciator 103D has been in an erroneous constant alarm condition for several hours (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.</p>				
Event No.	Malf. No.	Event Type*	Event Description		
1	N/A	N – RO N – SRO	Increase letdown from 75 gpm to 120 gpm		
2	FWM02D	I – BOP I (TS) - SRO	SG Narrow Range Level Transmitter fails high		
3	RCS01A	R – RO C - SRO	Loop 1 Thot RTD Failure		
4	EPS03F	C – RO C – BOP C – SRO	Loss of Train A Off-Site Power		
5	SBI008K	C	A ESW Pump fails to auto start		
6	FWM12C	C	TDAFW Pump trip		
7	ABHS79 ABHS80	M – RO M – BOP M – SRO	Inadvertent MSI		
8	FWM12A	C	A MDAFW Pump trips		
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>					

Scenario Event Description
NRC Scenario 2

Plant 2007 NRC Scenario #2

The Plant is at 50% power Steady-State (5 days), MOL, following a downpower from 100% for high vibrations in the B MFP. The B MFP was removed from service and repaired, and has just been restarted. I&C is working in Protection Racks, expected to be out in about 30 minutes. Letdown flow is 75 gpm for I&C calibration work on BG-FI-132, which is now complete. Chemistry has requested that Letdown be increased from 75 to 120 gpm.

The following equipment is Out-Of-Service: B MDAFW Pump (Expected back in 6 hours) due to a pinhole leak on the ESW System Suction Line, Containment Radiation Monitor GTRIC0059 as well as Radwaste Discharge Monitor HB-RE-18 RM-11 indication (Out indefinitely), and MCB Annunciator 103D has been in an erroneous constant alarm condition for several hours (I&C is investigating). The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

Shortly after taking the watch, the operator will increase letdown flow from 75 to 120 gpm in accordance with section 5.6 of OTN-BG-00001, Addendum 4, "Operation of CVCS Letdown." After this, the operator will be directed to prepare for load increase to 100%.

Just after the Letdown flow adjustment, the controlling Narrow Range Level transmitter (LT-549) on the D SG will fail high causing the FRV to go closed. The operator will respond in accordance with OTO-AE-00002, "Steam Generator Water Level Control Malfunctions," take manual control of the FRV, and defeat the failed channel. The operator will address Technical Specifications 3.3.1, "RTS Instrumentation," and 3.3.2, "ESFAS Instrumentation."

Shortly after this, the Loop 1 hot leg RTD will fail high causing the control rods to drive in, in auto. The operator will take manual control of the control rods and respond in accordance with OTO-BB-0004, "RCS RTD Channel Failures."

Following this, a Loss of A Train Off-Site Power (NB01) will occur. The operator will respond in accordance with OTO-NB-00001, "Loss of Power to NB01." It is expected that NB01 will undergo load shed, the A EDG will start, and Shutdown Sequencer actuation for the A Train will occur. The A ESW Pump will not auto start and the operator will need to manually start the pump. The TDAFW Pump will start and a SG/Blowdown/Sample Isolation will occur. 60 Seconds after the TDAFW auto start the pump will trip on overspeed (The Pump will not be able to be restored to service).

During the partial LOP recovery, an inadvertent MSIV will occur, causing the reactor to trip. The operator will respond in accordance with E-0, "Reactor Trip or Safety Injection," and then transition to ES-0.1, "Reactor Trip Response." On the Reactor Trip, the A MDAFW Pump will start, and then trip, leaving the crew without a source of feed flow. A Red Path will exist on Heat Sink and transition will be made to FR-H.1, "Response to Loss of Secondary Heat Sink."

After transition to FR-H.1, the crew will be required to establish a source of feed flow from the Main Feedwater System using EOP Addendum 30, "Establishing Main Feedwater Flow."

After Heat Sink is restored, the operator will transition back to ES-0.1, Reactor Trip Response." The scenario will terminate at Step 6 of ES-0.1, after the crew verifies total feed flow to SGs > 355,000 lbm/hr.

Scenario Event Description
NRC Scenario 2

Critical Tasks:

ECA-0.0 F

Manually start the ESW Pump within 15 minutes of the start of the A EDG.

FR-H.1 A

Establish feedwater flow into at least one Steam Generator before RCS bleed and feed is required.

Scenario Event Description
NRC Scenario 2

Simulator Set Up

IC-158

Verify Control Rods are in Automatic.

Verify NCP running.

Verify Letdown flow is at 75 gpm.

Verify the D SG Controlling Narrow Range Level Channel is selected to L549.

Place WPA Tags on:

- B MDAFW Pump

Use "N07-1-2.TXT":

Remove the MDAFP B from service; bat AL01B.txt

Containment radiation monitor GTRIC0059/ Radwaste Discharge Monitor HB-RE-18 Out of Service; imf rms6_29 GTRT59 TRUE

Annunciator 103D, FW HTR DUMP VLV OPEN, in erroneously; imf D103 0

sets up trigger #8 when turbine load is less than or equal to 50 Mwe; trgset 8 "sac.le.50.0"

Events:

1	NA
2	SG D Narrow Range Level Transmitter LT-549 fails high (MANUAL) with 15 sec. ramp; imf fwm02D (2) 100 15
3	Hot Leg RTD Failure; imf RCS01A (650) (3)
4	Loss of Train A Off-Site Power (MANUAL); imf eps03f (4)
5	A ESW Pump fails to AUTO START (PRELOAD IN SETUP); irf sbi008k 1
6	TDAFW Pump Trip following loss of A Train Power (CONDITIONAL) and a delay of 60 seconds; imf fwm12c (4 60)
7	Inadvertant MSLIS which will cause a Reactor Trip (MANUAL) ior ABHS79 (7) ON ior ABHS80 (7) ON
8	A MDAFW Pump trips following the Inadvertant MSIS (CONDITIONAL) and a delay of 30 seconds; imf fwm12a (8 30)

Scenario Event Description
NRC Scenario 2

Shift Turnover:

RO	BOP	Shift	Date
<i>REVIEW/COMPLETE PRIOR TO RELIEVING THE WATCH:</i>			
• URO Logs		• Annunciator Test	
• Control Board Walkdown		• Standing/Night Orders	
'A' Train Protected			
Plant Status: Mode 1		Gross Gen Load: 595 MWe	
Reactor Power: 50%		Load Limit Pot:	
Rod movement NONE		Circ. Pump Setback: DISABLE	
Boration: 0 gallons		Cation Bed Run 20 minutes	
Dilution 50 gallons		C/T valves: Normal	

EQUIPMENT OOS OR WPA

- ☐ B MDAFW Pump (Expected back in 6 hours) due to a pinhole leak on the ESW System Suction Line.
- ☐ Containment Radiation Monitor GTRIC0059, RM-11 indication only (Out indefinitely).
- ☐ Radwaste Discharge Monitor HB-RE-18, RM-11 indication only (Out indefinitely).
- ☐ MCB Annunciator 103D has been in an erroneous constant alarm condition for several hours (I&C is investigating).
- ☐ The Turbine Bearing Monitoring System on the Plant Computer is inoperable.

INFORMATION

- ☐ You have been directed to raise Letdown flow from 75 gpm to 120 gpm in accordance with OTN-BG-00001.
- ☐ I&C is working in Protection Racks, expected to be out in about 30 minutes.
- ☐ The Plant is at 50% power Steady-State (5 days), MOL, following a downpower from 100% for high vibrations in the B MFP. The B MFP was removed from service and repaired, and has just been restarted.

BURDENS AND WORKAROUNDS

- ☐ None

Scenario Event Description
NRC Scenario 2

Offgoing Supervisor

Name		Shift	Date
<i>Oncoming Supervisor review or perform the following:</i>			
• AUTO LOG	• Night Orders/Standing Orders	• EOSL Turnover Report	
• Control Board Walk down	• WPA	• Temp Mod Log	
<u>RCS Makeup:</u> 50 gal dil	<u>RODS:</u> D@ 105	<u>Cation Bed Run:</u> 20 min	
<u>RCS:</u> 993 ppm	<u>'A' CCP:</u> 1015 ppm	<u>'B' CCP:</u> 1050 ppm	
<u>PROTECTED TRAIN:</u> A	<u>CDF:</u> 3.94E-5	<u>LERF:</u> 5.62E-7	
<u>Industrial Safety Focus Area:</u> Industrial Safety Trend		<u>OPS DOSE</u>	
<u>HUP Site Focus Area:</u> Procedure Use and Adherence		<u>Weekly Budget:</u> 11.5 mrem	
<u>HUP OPS Focus Area:</u> WPA		<u>Weekly Actual:</u> 0.0 mrem	

NEW ITEMS:

1. MCB Annunciator 103D has been in an erroneous constant alarm condition for several hours (I&C is investigating).

ONGOING ITEMS:

1. B MDAFW Pump (Expected back in 6 hours) due to a pinhole leak on the ESW System Suction Line. T.S. 3.7.5 Condition C 72 hours
2. Containment Radiation Monitor GTRIC0059 and Radwaste Discharge Monitor HB-RE-18, RM-11 indication only (Out indefinitely).
3. The Turbine Bearing Monitoring System on the Plant Computer is inoperable.
4. I&C is working in Protection Racks, expected to be out in about 30 minutes.
5. Letdown flow is 75 gpm for I&C calibration work on BG-FI-132, which is now complete. Chemistry has requested that Letdown be increased from 75 to 120 gpm.
6. The Plant is at 50% power Steady-State (5 days), MOL, following a downpower from 100% for high vibrations in the B MFP. The B MFP was removed from service and repaired, and has just been restarted.

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>30</u>
Event Description: Increase Letdown From 75 GPM to 120 GPM									
Time	Position	Applicant's Actions or Behavior							

Shortly after taking the watch, the operator will increase letdown flow from 75 to 120 gpm in accordance with section 5.6 of OTN-BG-00001, Addendum 4, "Operation of CVCS Letdown." After this, the operator will be directed to prepare for load increase to 100%.

Booth Operator Instructions: N/A

Indications Available: N/A

OTN-BG-00001, ADDENDUM 4, OPERATION OF CVCS LETDOWN		
	URO	(Step 5.6.1) INFORM Chemistry that letdown flow is being changed.
	URO	(Step 5.6.2) RAISE charging flow to 115 – 120 gpm using one of the following controllers:
		<ul style="list-style-type: none"> IF the NCP is in service, ADJUST BG FK-124, NCP DISCH FLOW CTRL
		NOTE: ANN 41C "NCP Flow Hi/Lo" may alarm. It is an expected alarm during this evolution.
	URO	(Step 5.6.3) IF the NCP is in service, WHEN flow indicated at BG FI 0121A, GHG HDR FLOW, is greater than 100 gpm, CLOSE BGHV8109 using BG HIS 8109, NCP RECIRC VLV.
	URO	(Step 5.6.4) ADJUST BG HC-182, CHG HDR BACK PRESS CTRL, to maintain seal injection flow of approximately 8 gpm per pump, as indicated on:
		<ul style="list-style-type: none"> BG FR-154, RCP D SEAL LEAKOFF & INJ FLOW
		<ul style="list-style-type: none"> BG FR-155, RCP C SEAL LEAKOFF & INJ FLOW
		<ul style="list-style-type: none"> BG FR-156, RCP B SEAL LEAKOFF & INJ FLOW
		<ul style="list-style-type: none"> BG FR-157, RCP A SEAL LEAKOFF & INJ FLOW

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>8</u>	of	<u>30</u>
Event Description: Increase Letdown From 75 GPM to 120 GPM									
Time	Position	Applicant's Actions or Behavior							

	URO	(Step 5.6.5) PLACE BG PK-131, LTDN HX OUTLET PRESS CTRL, in MANUAL and ADJUST the output to control pressure on BG PI-131, LTDN HX OUTLET PRESS, at approximately 190 psig.
	URO	(Step 5.6.6) Using BG HIS-8149AA, LTDN ORIFIC A VLV, OPEN the 45 gpm Letdown orifice.
	URO	(Step 5.6.7) MONITOR pressure at BG PI-131, LTDN HX OUTLET PRESS, AND:
		<ul style="list-style-type: none"> IF required, SLOWLY ADJUST BG PK-131, LTDN HX OUTLET PRESS CTRL, to control pressure at approximately 350 psig.
		<ul style="list-style-type: none"> WHEN letdown flow and pressure have stabilized, AND BG PI-131 is reading 350 psig, PLACE BG PK-131 in AUTO.
	URO	(Step 5.6.8) CHECK BG TI-130, LTDN HX OUTLET TEMP.
	URO	(Step 5.6.9) IF required, slowly adjust the potentiometer on BG TK-130, LTDN HX TEMP CTRL (3.0 to 4.3 turns) to control temperature at 95°F to 115°F.
	URO	(Step 5.6.10) WHEN pressurizer level is being maintained at program level, PLACE the following in AUTO as required:
		<ul style="list-style-type: none"> BG FK-124, NCP DISCH FLOW CTRL
	URO	(Step 5.6.11) ENSURE the following in AUTO:
		<ul style="list-style-type: none"> BBG HIS-51A, PZR HTR B/U GROUP A
		<ul style="list-style-type: none"> BB HIS-52A, PZR HTR B/U GROUP B
<p>NOTE: Before moving to event #2, ensure all CVS control systems are back in automatic. This is essential to subsequent loss of heat sink event.</p> <p>At the Discretion of the Lead Examiner Move to Event #2.</p>		

Op Test No.: 1 Scenario # 2 Event # 2 Page 9 of 30

Event Description: SG Narrow Range Level Transmitter fails high

Time	Position	Applicant's Actions or Behavior
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Just after the Letdown flow adjustment, the controlling Narrow Range Level transmitter (LT-549) on the D SG will fail high causing the FRV to go closed. The operator will respond in accordance with OTO-AE-00002, "Steam Generator Water Level Control Malfunctions," take manual control of the FRV, and defeat the failed channel. The operator will address Technical Specifications 3.3.1, "RTS Instrumentation," and 3.3.2, "ESFAS Instrumentation."

Booth Operator Instructions: Operates Trigger #2 (FWM02D (100%)).

Indications Available:

		ANN 111C SG D Level Dev
		ANN 111D SG D Flow Mismatch
		D SG FRV closes.

OTO-AE-00002, STEAM GENERATOR WATER LEVEL MALFUNCTIONS

	BOP	(Step 1) CHECK SG Feedwater Flow Instrument Indications - NORMAL
	BOP	(Step 2) CHECK SG Steam Flow Instrument Indications - NORMAL
	BOP	(Step 3) CHECK SG Level Instrument Indications – NORMAL
		<ul style="list-style-type: none"> SG D:
		<ul style="list-style-type: none"> AE LI-557
		<ul style="list-style-type: none"> AE LI-548
		<ul style="list-style-type: none"> AE LI-549
		<ul style="list-style-type: none"> AE LI-554
	BOP	(Step 3 RNO) SELECT SG Level Channel Selector to an operable channel:
		<ul style="list-style-type: none"> SG D:
		<ul style="list-style-type: none"> AE LS-549

Op Test No.: 1 Scenario # 2 Event # 2 Page 10 of 30

Event Description: SG Narrow Range Level Transmitter fails high

Time	Position	Applicant's Actions or Behavior
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	BOP	(Step 4) CHECK SG Pressure Instrument Indications - NORMAL															
	BOP	(Step 5) CHECK Steam Generator NR Level Within One of the Following:															
		<ul style="list-style-type: none"> Trending to between 45% and 55% 															
		OR															
		<ul style="list-style-type: none"> Between 45% and 55% 															
	CRS	(Step 6) REVIEW Attachment A, Effects of Instrument Failure															
	CRS	(Step 7) REVIEW Applicable Technical Specifications:															
		<ul style="list-style-type: none"> Refer To Attachment F, Technical Specifications 															
TECHNICAL SPECIFICATION 3.3.1, RTS INSTRUMENTATION																	
	CRS	LCO 3.3.1															
		The RTS instrumentation for each Function in Table 3.3.1-1 shall be OPERABLE															
	CRS	APPLICABILITY:															
		According to Table 3.3.1-1															
		<table> <thead> <tr> <th>CONDITION</th><th>REQUIRED ACTION</th><th>COMPLETION TIME</th></tr> </thead> <tbody> <tr> <td>A. One or more Functions with one or more required channels or trains inoperable.</td><td>A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s).</td><td>Immediately</td></tr> <tr> <td>E. One channel inoperable.</td><td>E.1 Place channel in trip.</td><td>72 hours</td></tr> <tr> <td></td><td>OR</td><td></td></tr> <tr> <td></td><td>E.2 Be in MODE 3.</td><td>78 hours</td></tr> </tbody> </table>	CONDITION	REQUIRED ACTION	COMPLETION TIME	A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.1-1 for the channel(s) or train(s).	Immediately	E. One channel inoperable.	E.1 Place channel in trip.	72 hours		OR			E.2 Be in MODE 3.	78 hours
CONDITION	REQUIRED ACTION	COMPLETION TIME															
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	OR																
	E.2 Be in MODE 3.	78 hours															

Op Test No.: 1 Scenario # 2 Event # 2 Page 11 of 30

Event Description: SG Narrow Range Level Transmitter fails high

Time	Position	Applicant's Actions or Behavior
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TECHNICAL SPECIFICATION 3.3.2, ESFAS INSTRUMENTATION

	CRS	LCO 3.3.2																														
		The ESFAS instrumentation for each Function in Table 3.3.2-1 shall be OPERABLE.																														
	CRS	APPLICABILITY:																														
		According to Table 3.3.2-1.																														
		<table> <thead> <tr> <th>CONDITION</th><th>REQUIRED ACTION</th><th>COMPLETION TIME</th></tr> </thead> <tbody> <tr> <td>A. One or more Functions with one or more required channels or trains inoperable.</td><td>A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).</td><td>Immediately</td></tr> <tr> <td>D. One channel inoperable.</td><td>D.1 Place channel in trip.</td><td>72 hours</td></tr> <tr> <td></td><td>OR</td><td></td></tr> <tr> <td></td><td>D.2.1 Be in MODE 3.</td><td>78 hours</td></tr> <tr> <td></td><td>AND</td><td></td></tr> <tr> <td></td><td>D.2.2 Be in MODE 4.</td><td>84 hours</td></tr> <tr> <td>I. One channel inoperable.</td><td>I.1 Place channel in trip.</td><td>72 hours</td></tr> <tr> <td></td><td>OR</td><td></td></tr> <tr> <td></td><td>I.2 Be in MODE 3.</td><td>78 hours</td></tr> </tbody> </table>	CONDITION	REQUIRED ACTION	COMPLETION TIME	A. One or more Functions with one or more required channels or trains inoperable.	A.1 Enter the Condition referenced in Table 3.3.2-1 for the channel(s) or train(s).	Immediately	D. One channel inoperable.	D.1 Place channel in trip.	72 hours		OR			D.2.1 Be in MODE 3.	78 hours		AND			D.2.2 Be in MODE 4.	84 hours	I. One channel inoperable.	I.1 Place channel in trip.	72 hours		OR			I.2 Be in MODE 3.	78 hours
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I. One channel inoperable.	I.1 Place channel in trip.	72 hours																														
	OR																															
	I.2 Be in MODE 3.	78 hours																														
	CRS	(Step 8) Perform Notifications Per ODP-ZZ-00001 Addendum 13, Shift Manager Communications To Emergency Duty Officer																														
	CRS	(Step 9) DIRECT I&C To Trip The Protective Bistables For The Failed Channel, Within The Time Limit Specified In The Applicable Technical Specification Per One Of The Following:																														
		<ul style="list-style-type: none"> Attachment B, Tripping Steam Generator NR Level Protective Bistable 																														
	CRS	(Step 10) PLACE Inoperable Channel In The EOSL And ATTACH The Following As Applicable To The EOSL:																														
		<ul style="list-style-type: none"> Attachment B, Tripping Steam Generator NR Level Protective Bistable 																														

Op Test No.: 1 Scenario # 2 Event # 2 Page 12 of 30

Event Description: SG Narrow Range Level Transmitter fails high

Time	Position	Applicant's Actions or Behavior
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	CRS	(Step 11) INITIATE Actions To Repair The Failed Component
	CRS	(Step 12) CHECK Failed Channel Has Been Repaired
	CRS	(Step 12 RNO) WHEN the failed Channel has been repaired, THEN CONTINUE with this procedure.
At the Discretion of the Lead Examiner Move to Event #3.		

Op Test No.: 1 Scenario # 2 Event # 3 Page 13 of 30

Event Description: RCS RTD Failure

Time	Position	Applicant's Actions or Behavior
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Shortly after this, the Loop 1 hot leg RTD will fail high causing the control rods to drive in, in auto. The operator will take manual control of the control rods and respond in accordance with OTO-BB-0004, "RCS RTD Channel Failures."

Booth Operator Instructions: Operate Trigger #3 (RCS01A (650)).

Indications Available:

		Inward rod motion occurs in Auto
		Many MCB Alarms
OTO-BB-00004, RCS RTD CHANNEL FAILURES		
	URO	(Step 1) Place Rod Control in Manual
		<ul style="list-style-type: none"> SE HS-9
	URO	(Step 2) Check RCS Loop NR Tavg and Delta-T indicator – Failed.
		<ul style="list-style-type: none"> Loop 1
		<ul style="list-style-type: none"> BB TI-412 (Tavg)
		<ul style="list-style-type: none"> B TI-411A
	URO	(Step 3) Select ΔT and Tavg Channel Defeat Switches to failed channel.
		<ul style="list-style-type: none"> BB TS-411F, ΔT Defeat Switch
		<ul style="list-style-type: none"> BB TS-412T, Rod Control Tave Input Channel Defeat Switch
	URO	(Step 4) Check RCS Tavg Within 1.5°F of Tref.
	URO	(Step 4 RNO) Restore RCS Tavg to within 1.5°F of Tref using any of the following:
		<ul style="list-style-type: none"> Adjust Control Rods
		<ul style="list-style-type: none"> Adjust Turbine Load

Op Test No.: 1 Scenario # 2 Event # 3 Page 14 of 30

Event Description: RCS RTD Failure

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> Adjust RCS Boron concentration
	URO	(Step 5) Check rod control – In Auto
		<ul style="list-style-type: none"> SE HS-9
	URO	When RCS Tavg/Tref are equal and the Shift/Control Room supervisor concurs, Then place rod control in Auto:
		<ul style="list-style-type: none"> SE HS-9
		<ul style="list-style-type: none"> Continue with Step 6.
At the Discretion of the Lead Examiner Move to Events #4, 5, and 6.		

Op Test No.: 1 Scenario # 2 Event # 4, 5 & 6 Page 15 of 30

Event Description: Loss of Train A Offsite Power / A ESW Pump Fails to Auto Start / TDAFW Pump Trip

Time	Position	Applicant's Actions or Behavior
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Following this, a Loss of A Train Off-Site Power (NB01) will occur. The operator will respond in accordance with OTO-NB-00001, "Loss of Power to NB01." It is expected that NB01 will undergo load shed, the A EDG will start, and Shutdown Sequencer actuation for the A Train will occur. The A ESW Pump will not auto start and the operator will need to manually start the pump. The TDAFW Pump will start and a SG/Blowdown/Sample Isolation will occur. 60 Seconds after the TDAFW auto start the pump will trip on overspeed (The Pump will not be able to be restored to service).

Booth Operator Instructions: Operate Trigger #4 (EPS03F, SBI008K, FWM12C).

Indications Available:

		Many MCB Annunciators
		Control Room lights dim and regain strength.
		NB01 Voltage lost and then regained.
		NE01 starts and auto loads on to NB01.

OTA-RK-00016, ADDENDUM 18C, NF039A SHUTDOWN SEQUENCER ACTUATED

	CRS	IF the following conditions occur, Refer To OTO-NF-00001, Load Shed Emergency Load Sequencer (LSELS) Channel Failure.
		<ul style="list-style-type: none"> NB ZL-5, 4.16 KV BUS NB01, OFF
		<ul style="list-style-type: none"> Annunciator Window 18B, NB01 Bus Undervoltage, in ALARM.
	CRS	IF NB01 is energized from NE01, Go To OTO-NB-00001, Loss of Power to NB01.

OTO-NB-00001, LOSS OF POWER TO NB01

	BOP/URO	(Step 1) CHECK 4160 VAC Bus NB01 - DEENERGIZED
		<ul style="list-style-type: none"> 4.16 KV Bus NB01 light – EXTINGUISHED
		<ul style="list-style-type: none"> NB ZL-5

Op Test No.: 1 Scenario # 2 Event # 4, 5 & 6 Page 16 of 30

Event Description: Loss of Train A Offsite Power / A ESW Pump Fails to Auto Start / TDAFW Pump Trip

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> 4.16 KV Bus NB01 Voltage indicates zero
		<ul style="list-style-type: none"> NB EI-1
	CRS	(Step 1 RNO) Go To Attachment A, Power Restored to NB01.
ATTACHMENT A, POWER RESTORED TO NB01		
	BOP/URO	(Step A1) CHECK 4160 VAC Bus NB01 - ENERGIZED
		<ul style="list-style-type: none"> 4.16 KV Bus NB01 light LIT
		<ul style="list-style-type: none"> NB ZL-5
		<ul style="list-style-type: none"> 4.16 KV Bus NB01 Voltage indicates approximately 4160 volts:
		<ul style="list-style-type: none"> NB EI-1
	BOP/URO	(Step A2) CHECK EDG A – RUNNING
	BOP/URO	(Step A3) CHECK ESW Flow – ALIGNED TO EDG A
	BOP/URO	(Step A3 RNO) PERFORM the following:
		<ul style="list-style-type: none"> ATTEMPT to align ESW flow to EDG A.
CRITICAL TASK (ECA-0.0 F) Manually start the ESW Pump within 15 minutes of the start of the A EDG.		
	BOP/URO	(Step A4) CHECK ESW Train B – PROPERLY ALIGNED
		<ul style="list-style-type: none"> ESW Pump B – RUNNING
		<ul style="list-style-type: none"> EF HIS-56A
		<ul style="list-style-type: none"> ESW Train B To CCW Hx B – OPEN
		<ul style="list-style-type: none"> EF HIS-52

Op Test No.:	<u>1</u>	Scenario #	<u>2</u>	Event #	<u>4, 5 & 6</u>	Page	<u>17</u>	of	<u>30</u>
Event Description:		Loss of Train A Offsite Power / A ESW Pump Fails to Auto Start / TDAFW Pump Trip							
Time	Position	Applicant's Actions or Behavior							

		<ul style="list-style-type: none"> ESW Train B To UHS – OPEN
		<ul style="list-style-type: none"> EF HIS-38
	BOP/URO	(Step A4 RNO) IF required, THEN manually ALIGN components as necessary.
At the Discretion of the Lead Examiner Move to Events #7 & 8.		

Op Test No.: 1 Scenario # 2 Event # 7 & 8 Page 18 of 30

Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
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During the partial LOP recovery, an inadvertent MSIV will occur, causing the reactor to trip. The operator will respond in accordance with E-0, "Reactor Trip or Safety Injection," and then transition to ES-0.1, "Reactor Trip Response." On the Reactor Trip, the A MDAFW Pump will start, and then trip, leaving the crew without a source of feed flow. A Red Path will exist on Heat Sink and transition will be made to FR-H.1, "Response to Loss of Secondary Heat Sink." After transition to FR-H.1, the crew will be required to establish a source of feed flow from the Main Feedwater System using EOP Addendum 30, "Establishing Main Feedwater Flow."

Booth Operator Instructions: **Operate Trigger #7 (ABHS79/80)**
Trigger #8 set operate when Turbine Load < 50MWe (FWM12A).

Indications Available:

		ANN 108-111C SG Level Dev
		ANN 108-111D SG Flow Mismatch
		MSIVs Close

E-0, REACTOR TRIP OR SAFETY INJECTION

	URO	(Step 1) CHECK Reactor Trip:
		<ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT
		<ul style="list-style-type: none"> Reactor Trip and Bypass Breakers – OPEN
		<ul style="list-style-type: none"> Neutron Flux – LOWERING
	BOP	(Step 2) CHECK Turbine Trip:
		<ul style="list-style-type: none"> All Turbine Stop valves - CLOSED
	BOP	(Step 3) CHECK Power To AC Emergency Buses:
		<ul style="list-style-type: none"> AC emergency buses – AT LEAST ONE ENERGIZED
		<ul style="list-style-type: none"> NB01
		OR
		<ul style="list-style-type: none"> NB02
		<ul style="list-style-type: none"> AC emergency buses – BOTH ENERGIZED

Op Test No.: 1 Scenario # 2 Event # 7 & 8 Page 19 of 30

Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
	URO/BOP	(Step 4) CHECK SI Status:
		• CHECK if SI is actuated:
		• Any SI annunciator 88A through 88D – LIT
		OR
		• SB069 SI Actuate RED light – LIT
		OR
		• LOCA Sequencer annunciators 30A or 31A – LIT
	URO/BOP	(Step 4 RNO) CHECK if SI is required:
		• PZR pressure less than or equal to 1849 PSIG
		OR
		• Any SG pressure less than or equal to 615 PSIG
		OR
		• Containment pressure greater than or equal to 3.5 PSIG
	CRS	IF SI is NOT required, THEN Go To ES-0.1, Reactor Trip Response, Step 1.
		NOTE: STA will be called to monitor CSFST. Crew may transition to ES-0.1 momentarily until Red Path on Heat Sink is identified. The Simulator Instructor will, acting as the STA, report to Control Room to monitor CSFST and identify the Red Path on Heat Sink. When this occurs, the crew will immediately transition to FR-H.1.
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK		
	URO/BOP	(Step 1) CHECK If Secondary Heat Sink Is Required:
		• RCS pressure – GREATER THAN ANY NON-FAULTED SG PRESSURE
		• RCS temperature – GREATER THAN 350°F
	URO/BOP	(Step 2) CHECK If RCS Bleed And Feed – REQUIRED

Op Test No.: 1 Scenario # 2 Event # 7 & 8 Page 20 of 30

Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> Any RCS bleed and feed condition – SATISFIED
		<ul style="list-style-type: none"> WIDE RANGE level in any three SGs – LESS THAN 27% [42%]
		OR
		<ul style="list-style-type: none"> PZR pressure – GREATER THAN 2335 PSIG DUE TO LOSS OF SECONDARY HEAT SINK
		OR
		<ul style="list-style-type: none"> NO CCPs – AVAILABLE
	URO/BOP	(Step 2 RNO) PERFORM the following:
		<ul style="list-style-type: none"> MONITOR RCS bleed and feed conditions.
		<ul style="list-style-type: none"> IF any condition occurs, THEN PERFORM Steps 2.b and 2.c.
		<ul style="list-style-type: none"> CONTINUE with Step 3, OBSERVE CAUTION prior to Step 3.
	BOP/URO	(Step 3) TRY To Establish AFW Flow To At Least One SG:
		<ul style="list-style-type: none"> CHECK SG blowdown isolation:
		<ul style="list-style-type: none"> SG Blowdown Containment Isolation Valves - CLOSED
		<ul style="list-style-type: none"> BM HIS-1A (SG A)
		<ul style="list-style-type: none"> BM HIS-2A (SG B)
		<ul style="list-style-type: none"> BM HIS-3A (SG C)
		<ul style="list-style-type: none"> BM HIS-4A (SG D)
		<ul style="list-style-type: none"> SG Sample Outer Containment Isolation Valves - CLOSED
		<ul style="list-style-type: none"> BM HIS-65 (SG A)
		<ul style="list-style-type: none"> BM HIS-66 (SG B)
		<ul style="list-style-type: none"> BM HIS-67 (SG C)
		<ul style="list-style-type: none"> BM HIS-68 (SG D)
		<ul style="list-style-type: none"> CHECK Control Room indications for cause of AFW failure:

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> CST level
		<ul style="list-style-type: none"> MD AFW pump power supply
		<ul style="list-style-type: none"> TD AFW pump steam supply
		<ul style="list-style-type: none"> AFW valve alignment: <ul style="list-style-type: none"> Refer To EOP Addendum 18, AFW Emergency Valve Alignment, as necessary
		<ul style="list-style-type: none"> TRY to restore AFW flow
	BOP/URO	<ul style="list-style-type: none"> CHECK total flow to SGs – GREATER THAN 355,000 LBM/HR
	CRS	IF any feed flow to at least one SG is NOT verified, THEN PERFORM the following
		<ul style="list-style-type: none"> Locally RESTORE AFW flow.
		<ul style="list-style-type: none"> Go To Step 4.
	URO/BOP	(Step 4) STOP All RCPs
	BOP/URO	(Step 5) TRY To Establish Main Feedwater Flow To At Least One SG:
		<ul style="list-style-type: none"> Check Condensate System – IN SERVICE
		<ul style="list-style-type: none"> RESET SI if necessary: (NOTE: Not Necessary)
		<ul style="list-style-type: none"> SB HS-42A
		<ul style="list-style-type: none"> SB HS-43A
		<ul style="list-style-type: none"> RESET FWIS: <ul style="list-style-type: none"> SB HS-17 SB HS-18
		<ul style="list-style-type: none"> BYPASS the FWIS using EOP Addendum 29, FWIS Bypass Operation
EOP ADDENDUM 29, FWIS BYPASS OPERATION		

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
	EO/BOP	(Step 1) BYPASS the FWIS:
		<ul style="list-style-type: none"> On Emergency Override Panel at MSFIS Cabinet SA075A, PLACE FWIV toggle switch(es) for desired FWIV(s) to FWIS BYPASS position:
		<ul style="list-style-type: none"> AE FV-39 (SG A)
		<ul style="list-style-type: none"> AE FV-40 (SG B)
		<ul style="list-style-type: none"> AE FV-41 (SG C)
		<ul style="list-style-type: none"> AE FV-42 (SG D)
		<ul style="list-style-type: none"> On Emergency Override Panel at MSFIS Cabinet SA075B, PLACE FWIV toggle switch(es) for desired FWIV(s) to FWIS BYPASS position:
		<ul style="list-style-type: none"> AE FV-39 (SG A)
		<ul style="list-style-type: none"> AE FV-40 (SG B)
		<ul style="list-style-type: none"> AE FV-41 (SG C)
		<ul style="list-style-type: none"> AE FV-42 (SG D)
Booth Operator Instructions: RESETTING AND OPENING FWIVS When the Operator goes to the back panel initiate event Trigger #15: irf sas018e (15 2) 1 irf sas022e (15 2) 1 irf sas018f (15 5) 1 irf sas022f (15 5) 1 irf sas018g (15 10) 1 irf sas022g (15 10) 1 irf sas018h (15 12) 1 irf sas022h (15 12) 1		
	BOP/EO	(Step 2) RESET the FWIV FAST CLOSE Output:
		<ul style="list-style-type: none"> On A7 Test Panel at MSFIS Cabinet SA075A, PRESS OP (open) button for FWIV(s) placed in FWIS BYPASS in Step 1:
		<ul style="list-style-type: none"> AE FV-39 (SG A)
		<ul style="list-style-type: none"> AE FV-40 (SG B)
		<ul style="list-style-type: none"> AE FV-41 (SG C)

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • AE FV-42 (SG D)
		<ul style="list-style-type: none"> • On A7 Test Panel at MSFIS Cabinet SA075B, PRESS OP (open) button for FWIV(s) placed in FWIS BYPASS in Step 1:
		<ul style="list-style-type: none"> • AE FV-39 (SG A)
		<ul style="list-style-type: none"> • AE FV-40 (SG B)
		<ul style="list-style-type: none"> • AE FV-41 (SG C)
		<ul style="list-style-type: none"> • AE FV-42 (SG D)
Booth Operator Instructions: RESETTING FAST CLOSE SIGNAL and SLOW OPEN FWIVS event Trigger #15: irf sas023e (15 15) 1 irf sas023f (15 17) 1 irf sas023g (15 20) 1 irf sas023h (15 22) 1 To open valve: AE FV-39 (SG A) Use irf024E SO AE FV-40 (SG B) Use irf024F SO AE FV-41 (SG C) Use irf024G SO AE FV-42 (SG D) Use irf024H SO		
	BOP/EO	(Step 3) NOTIFY SS/CRS of FWIS Bypass Status.
Booth Operator Instructions: As EO report all local actions taken to BOP/CRS.		
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK		
	BOP/URO	<ul style="list-style-type: none"> • OPEN at least one Feedwater Isolation Valve:
		<ul style="list-style-type: none"> • AE HIS-39 (SG A)
		<ul style="list-style-type: none"> • AE HIS-40 (SG B)
		<ul style="list-style-type: none"> • AE HIS-41 (SG C)
		<ul style="list-style-type: none"> • AE HIS-42 (SG D)
		<ul style="list-style-type: none"> • ESTABLISH main feedwater flow:

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> Refer to EOP Addendum 30, Establishing Main Feedwater Flow

EOP ADDENDUM 30, ESTABLISHING MAIN FEEDWATER FLOW

	BOP	(Step 1) Check Feedwater System - Available
	BOP	(Step 2) Ensure High Pressure Heater Isolation Valves – At Least One Set Open
		<ul style="list-style-type: none"> AE HIS-18
		<ul style="list-style-type: none"> AE HIS-17
	CRS	(Step 3) DISPATCH Equipment Operator With Maintenance Jack Headset To Main Feedwater Reg Valve For Selected SG:
		<ul style="list-style-type: none"> AEFCV0510 (SG A)
		<ul style="list-style-type: none"> AEFCV0520 (SG B)
		<ul style="list-style-type: none"> AEFCV0530 (SG C)
		<ul style="list-style-type: none"> AEFCV0540 (SG D)

Booth Operator Instructions:

OPENING FRV SG A FV510
irf aev013=Manual Override

OPENING FRV SG B FV520
irf aev014=Manual Override

OPENING FRV SG C FV530
irf aev015=Manual Override

OPENING FRV SG D FV540
irf aev016=Manual Override

	BOP/EO	(Step 4) ESTABLISH Communication Between Control Room Operator And Equipment Operator At Main Feedwater Reg Valve:
		<ul style="list-style-type: none"> DISCUSS the following terminology to be used for adjusting feed flow:

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> • RAISE flow
		<ul style="list-style-type: none"> • LOWER flow
		<ul style="list-style-type: none"> • DISCUSS the direction of rotation of manual handwheel to achieve desired flow:
		<ul style="list-style-type: none"> • CCW to open/raise flow
		<ul style="list-style-type: none"> • CW to close/lower flow
	BOP	(Step 5) DIRECT Equipment Operator To Perform The Following For Selected Main Feedwater Reg Valve:
		<ul style="list-style-type: none"> • ENSURE local isolation valves for selected main feedwater reg valve – OPEN
		<ul style="list-style-type: none"> • ROTATE handwheel to align handwheel engaging mechanism to stem engaging mechanism
		<ul style="list-style-type: none"> • With engaging mechanism hole aligned, PLACE T-handle in alignment holes
		<ul style="list-style-type: none"> • Prior to closing 3-way valve in the following step, ENSURE T-Handle fully inserted in engaging mechanism holes to ensure valve does not drift closed or open
		<ul style="list-style-type: none"> • CLOSE the 3-way Iso/Bleed Inst Air Valve to bleed air from top and bottom of actuator:
		<ul style="list-style-type: none"> • AEFCV0510V6 (AEFCV0510)
		<ul style="list-style-type: none"> • AEFCV0520V6 (AEFCV0520)
		<ul style="list-style-type: none"> • AEFCV0530V6 (AEFCV0530)
		<ul style="list-style-type: none"> • AEFCV0540V6 (AEFCV0540)
		<ul style="list-style-type: none"> • INFORM Control Room when main feedwater reg valve is mechanically aligned to handwheel and ready for local operation only
	URO/BOP	(Step 6) PLACE FWIS TRIP BLOCK Switches to BLOCK (RP068):
		<ul style="list-style-type: none"> • FC HIS-83
		<ul style="list-style-type: none"> • FC HIS-183

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 7) Start One Main Feedwater Pump PAE01A or PAE01B
		NOTE: Operator will recognize that neither MFW Pump is available because all MSIVs are closed.
	BOP	(Step 7 RNO) If neither Main Feedwater Pump can be started, The Start Startup Feed Pump PAE02:
		<ul style="list-style-type: none"> • Ensure PB04 is energized
		<ul style="list-style-type: none"> • Open Startup Feed Pump Suction/Discharge valves:
		<ul style="list-style-type: none"> • AE HS-103
		<ul style="list-style-type: none"> • Start Startup Feed Pump
		<ul style="list-style-type: none"> • AE HIS-104
		<ul style="list-style-type: none"> • Go to Step 8. Observe Caution and Note prior to Step 8.
	BOP	(Step 8) DIRECT Equipment Operator To slowly Hand jack Main Feedwater Reg Valve OPEN For Selected SG To Establish Desired Flow:
		<ul style="list-style-type: none"> • AEFCV0510 (SG A)
		<ul style="list-style-type: none"> • AEFCV0520 (SG B)
		<ul style="list-style-type: none"> • AEFCV0530 (SG C)
		<ul style="list-style-type: none"> • AEFCV0540 (SG D)
Booth Operator Instructions:		OPENING FRV SG A FV510 irf aev017>manual input % OPEN OPENING FRV SG B FV520 irf aev018>manual input % OPEN OPENING FRV SG C FV530 irf aev019>manual input % OPEN OPENING FRV SG D FV540 irf aev020>manual input % OPEN
	BOP	(Step 9) NOTIFY SS/CRS Of Feedwater System Flow Status

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 10) CHECK If Feedwater Flow Established For All Selected SG(s)
	BOP	(Step 11) MAINTAIN Local Operation Of Feedwater Reg Valve(s) As Necessary To Control Selected SG(s) Level
FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK		
	BOP	(Step 8) CHECK SG Levels:
		<ul style="list-style-type: none"> Narrow range level in at least one SG – GREATER THAN 7% [25%]
	BOP	(Step 8 RNO) IF feed flow to at least one SG is verified, THEN MAINTAIN flow to restore narrow range level to greater than 7% [25%].
		<ul style="list-style-type: none"> Return To Procedure and Step in Effect.
CRITICAL TASK (FR-H.1 A) Establish feedwater flow into at least one Steam Generator before RCS bleed and feed is required.		
ES-0.1, REACTOR TRIP RESPONSE		
	URO/BOP	(Step 1) CHECK RCS Temperatures:
		<ul style="list-style-type: none"> Any RCP running – RCS TAVG STABLE AT 557°F OR TRENDING TO 557°F
		OR
		<ul style="list-style-type: none"> NO RCPs running – RCS COLD LEG TEMPERATURES STABLE AT 557°F
	URO/BOP	(Step 2) CHECK Status of AC Buses:

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> CHECK Generator Output Breakers – OPEN
		<ul style="list-style-type: none"> MA ZL-3A (V55)
		<ul style="list-style-type: none"> MA ZL-4A (V53)
		<ul style="list-style-type: none"> CHECK All AC Buses ENERGIZED BY OFFSITE POWER
		<ul style="list-style-type: none"> PA01
		<ul style="list-style-type: none"> PA02
		<ul style="list-style-type: none"> NB01
		<ul style="list-style-type: none"> NB02
		PERFORM the following:
		<ul style="list-style-type: none"> ENSURE both PZR PORVs are in AUTO unless closed due to low PZR pressure:
		<ul style="list-style-type: none"> BB HIA-455A
		<ul style="list-style-type: none"> BB HIS-456A
		<ul style="list-style-type: none"> ENSURE both PORV Block Valves are energized and OPEN unless closed to isolate an open PORV:
		<ul style="list-style-type: none"> BB HIS-8000A (NG01BBR3)
		<ul style="list-style-type: none"> BB HIS-8000B (NG02BDF1)
		<ul style="list-style-type: none"> IF any AC emergency bus(es) are NOT energized by offsite power, THEN ENSURE DGs have assumed the following loads:
		<ul style="list-style-type: none"> CCP(s)
		<ul style="list-style-type: none"> ESW pump(s)
		<ul style="list-style-type: none"> CCW Pump(s) (One per Train)
		<ul style="list-style-type: none"> Containment Cooler Fan(s)
		<ul style="list-style-type: none"> MD AFW Pump(s)
		<ul style="list-style-type: none"> Control Room AC Unit(s)
		<ul style="list-style-type: none"> Class 1E Electrical Equipment Room AC Unit(s)
		<ul style="list-style-type: none"> TRY to restore offsite power using EOP Addendum 7, Restoring Offsite Power.

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
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	URO/BOP	(Step 3) CHECK PZR Pressure Control:
		<ul style="list-style-type: none"> Pressure – GREATER THAN 1849 PSIG
		<ul style="list-style-type: none"> Pressure – STABLE AT OR TRENDING TO 2235 PSIG
		IF pressure is less than 2235 PSIG AND lowering, THEN PERFORM the following:
		<ul style="list-style-type: none"> CHECK PZR PORVs closed:
		<ul style="list-style-type: none"> BB HIS-455A
		<ul style="list-style-type: none"> BB HIS-456A
		<ul style="list-style-type: none"> CHECK PZR Spray valves closed:
		<ul style="list-style-type: none"> BB PCV-455B
		<ul style="list-style-type: none"> BB PCV-455C
		<ul style="list-style-type: none"> CHECK PZR Haters on.
	URO/BOP	(Step 4) CHECK PZR Level Control:
		<ul style="list-style-type: none"> PZR Level – GREATER THAN 17%
		<ul style="list-style-type: none"> CHECK Instrument Air Supply Containment Isolation valve – OPEN
		<ul style="list-style-type: none"> KA HIS-29
		<ul style="list-style-type: none"> CHECK charging – IN SERVICE
		<ul style="list-style-type: none"> CHECK letdown – IN SERVICE
		<ul style="list-style-type: none"> PZR level – TRENDING TO 25%
	URO	(Step 5) CHECK Shutdown Reactivity Status:
		<ul style="list-style-type: none"> CHECK all control rods – FULLY INSERTED
		<ul style="list-style-type: none"> CHECK if uncontrolled RCS dilution – IN PORGRESS
	CRS	(Step 5 RNO) Go To Step 6.
	BOP/URO	(Step 6) CHECK Feedwater Status:

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Event Description: Inadvertent MSI / A MDAFW Pump Fails to Start

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> CHECK RCS TAVG – LESS THAN 564°F
		<ul style="list-style-type: none"> Main Feedwater Pumps - TRIPPED
		<ul style="list-style-type: none"> Annunciator 120A, MFP A Trip – LIT
		<ul style="list-style-type: none"> Annunciator 123A, MFP B Trip – LIT
		<ul style="list-style-type: none"> CHECK Main Feedwater Reg Valves - CLOSED
		<ul style="list-style-type: none"> AE ZL-510 (SG A)
		<ul style="list-style-type: none"> AE ZL-520 (SG B)
		<ul style="list-style-type: none"> AE ZL-530 (SG C)
		<ul style="list-style-type: none"> AE ZL-540 (SG D)
		CLOSE valve(s) as necessary:
		<ul style="list-style-type: none"> CHECK Main Feedwater Reg Bypass valves - CLOSED
		<ul style="list-style-type: none"> AE ZL-550 (SG A)
		<ul style="list-style-type: none"> AE ZL-560 (SG B)
		<ul style="list-style-type: none"> AE ZL-570 (SG C)
		<ul style="list-style-type: none"> AE ZL-580 (SG D)
		<ul style="list-style-type: none"> CHECK total feed flow to SGs – GREATER THAN 355,000 LBM/HR
Booth Instructor: Freeze the Simulator		
EAL SAE (2C) RCS barrier potential loss: 4. CSFS - Meet the entry conditions for FR.H-1. Fuel Clad barrier potential loss: 4. CSFS - Meet the entry conditions for FR-H.1.		