

Facility: Callaway		Date of Examination: 6/19/2009
Examination Level: RO		Operating Test Number: _____
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations A1a	P, R	015 A1.04 (3.5) Ability to predict and/or monitor changes in parameters to prevent exceeding design limits associated with operating the NIS controls including Quadrant Power Tilt Ratio JPM: Perform a QPTR Calculation
Conduct of Operations RA2	N, R	2.1.25 (3.9/4.2) Ability to interpret reference materials such as graphs, curves, tables, etc. JPM: Determine RV Venting Time (EOP ADD 33)
Equipment Control RA3	D, R	2.2.13 (4.1) Knowledge of tagging and clearance procedures. JPM: Tag out "B" Bulk Chemical Acid Transfer Pump (PKS02B)
Emergency Procedures/Plan RA4	M, R	2.4.39 (3.9) Knowledge of RO responsibilities in emergency plan implementation. JPM: Visitor Control During an Event
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected)		

RO Admin JPM Summary

- A1a This is bank JPM ILE-A001-RO. It was used on the 2005 NRC Exam, but the values provided will differ from those given in 2005. In the 2005 exam, the candidate was cued as to the value of the NI detector currents. During this exam the candidate will be given a set of values that reflect what is being seen in the plant. He will then use this data to calculate Quadrant Power Tilt Ratio using the most current Curve Book and the surveillance procedure. Therefore, the values calculated will differ from those on the 2005 exam.
- RA2 This is a new JPM. The candidate is to determine the maximum RV Venting time using EOP Addendum 33. A marked up FR-I.3 will be provided.
- RA3 This is bank JPM ILE-A012-RO. Requires the candidate to prepare Workers Protection Assurance (WPA) / tagout on a Bulk Chemical Acid Transfer Pump.
- RA4 This is a Modified JPM obtained from a Ft. Calhoun Station NRC exam and made to be Callaway specific. This JPM requires that the candidate, as a newly licensed Reactor Operator, state where to escort a visitor under his control while in the Protected area and then to state where he is required to report following the previous actions. This is in accordance with the Callaway Emergency Plan.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: A1a KSA NO: 015 A1.04
COMPLETION TIME: 15 MINUTES KSA RATING: 3.5/3.7
JOB TITLE: RO REVISION: 2009
DUTY: NUCLEAR INSTRUMENTATION
TASK TITLE: PERFORM A QPTR CALCULATION

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OSP-SE-00003, Quadrant Power Tilt Ratio, Revision 17
CURVE BOOK TABLE 11-1, Revision 215

TOOLS/EQUIPMENT: Procedures stated above, Calculator, Copy of detector currents page

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is at MOL, 100% power with the indicated Incore axial flux difference (AFD) equal to 0%. Control Room annunciators 78B, 78C, and 78F are not operable. All power range nuclear instruments are operable. The Control Room Plant Computer System is not available for use.

Initiating Cues: The Control Room Supervisor has directed you to perform a QPTR calculation using NI detector currents provided per OSP-SE-00003, Quadrant Power Tilt Ratio Calculation. Forward the data you have entered in OSP-SE-00003 to the Examiner.

TASK STANDARD: Upon completion of this JPM, the operator will have performed a manual QPTR calculation with a final QPTR tolerance of ± 0.01 .

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of OSP-SE-00003, QPTR Calculation.	CANDIDATE SHOULD OBTAIN A COPY OF OSP-SE-00003, QUADRANT POWER TILT RATIO CALCULATION PROVIDE CANDIDATE WITH COPY OF OSP-SE-00003 and page with upper and lower Detector currents	S U Comments:
2. Review Precautions and Limitations. STEP 4.0	Operator should review Precautions and Limitations. All Precautions and Limitations are satisfied.	S U Comments:
3. Record each power range upper current output on Attachment #1. STEP 6.2.1	Using the data sheet provided the Operator should locate the correct upper and lower current meters for the power range detectors and record the values in the correct area of OSP-SE-00003, Attachment A.	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*4. Use Table 11.1 from the Curve Book to obtain the current values for the upper and lower detectors. AFD = 0% values should be used.</p> <p>STEP 6.2.2</p>	<p>Operator locates Table 11-1, AFD Calibration value Table, AFD = 0%, to record power range upper and lower current values.</p>	<p>S U</p> <p>Comments:</p>
<p>*5. Divide each upper lower detector current by its 100%, 0% AFD power detector current value and enter it in the normalized detector current for each channel.</p> <p>STEP 6.2.3</p>	<p>Operator should divide each upper and lower detector current by its 100% power, 0% AFD detector current value and enter it as the normalized detector current for each channel.</p> <p>The upper and lower calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.001 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>
<p>*6 Add the normalized upper detector currents and divide by four (4) to derive the upper detector normalized current average and record it in Attachment #1.</p> <p>STEP 6.2.4</p>	<p>Operator should add up the normalized upper detector currents and divide by 4 to derive the upper detector normalized current averages and record it in Attachment #1.</p> <p>The upper calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.001 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*7. Add the normalized lower detector currents and divide by four (4) to derive the lower detector normalized current averages and record it in Attachment #1.</p> <p>STEP 6.2.5</p>	<p>Operator should add up the normalized lower detector currents and divide by 4 to derive the lower detector normalized current averages and record it in Attachment #1.</p> <p>The lower calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.001 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>
<p>8. The QPTR should be calculated as two significant digits to the right of the decimal point.</p> <p>Note before 6.2.6</p>	<p>The operator should calculate the QPTR, to two (2) significant digits to the right of the decimal point.</p>	<p>S U</p> <p>Comments:</p>
<p>*9. Divide each upper normalized detector current by the upper normalized detector current average to obtain the power tilt ration for each upper channel and RECORD on Attachment 1</p> <p>STEP 6.2.6</p>	<p>Operator should divide each upper normalized detector current by the upper normalized detector average to obtain the power tilt ratio for each upper channel.</p> <p>The Operator should then record this in Attachment 1.</p> <p>The upper calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.01 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*10. Divide each lower normalized detector current by the lower normalized detector current average to obtain the power tilt ratio for each lower channel and RECORD on Attachment 1.</p> <p>STEP 6.2.7</p>	<p>Operator should divide each lower normalized detector current by the lower normalized detector current average to obtain the power tilt ratio for each lower channel.</p> <p>The Operator should then record this in Attachment 1.</p> <p>The upper calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.01 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>
<p>11. IF the manual calculations do NOT confirm a QPTR of greater than 1.02, DECLARE the Plant Computer Points and QPTR alarm INOPERABLE.</p>	<p>All QPTR's are less than 1.02, no action is required. The affected annunciators were identified as inoperable on the Cue sheet</p>	<p>S U</p> <p>Comments:</p>
<p>12.</p>	<p>THE JPM IS COMPLETE</p> <p><u>RECORD STOP TIME ON PAGE 1</u></p>	

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
13.	<p>COMPARE CANDIDATE'S ATTACHMENT 1 WITH THE ONE PROVIDED.</p> <p>ENSURE THE QPTR DOES NOT EXCEED 1.02 FOR ANY CHANNEL</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

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Initial Conditions: Callaway Plant is at MOL, 100% power with the indicated Incore axial flux difference (AFD) equal to 0%. Control Room annunciators 78B, 78C, and 78F are not operable. All power range nuclear instruments are operable. The Control Room Plant Computer System is not available for use.

Initiating Cues: The Control Room Supervisor has directed you to perform a QPTR calculation using NI detector currents provided per OSP-SE-00003, Quadrant Power Tilt Ratio Calculation. Forward the data you have entered in OSP-SE-00003 to the Examiner.

PANEL SE054
POWER RANGE DETECTOR CURRENTS

SENI0041F

182.6

SENI0041E

197.7

SENI0042F

163.2

SENI0042E

192.1

SENI0043F

181.0

SENI0043E

189.2

SENI0044F

180.2

SENI0044E

182.0

CALLAWAY PLANT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM NO: RA2
JOB TITLE:URO
DUTY: ADMINISTRATIVE
TASK TITLE: DETERMINE REACTOR VESSEL VENTING TIME
COMPLETION TIME: 15 MINUTES

KSA NO: G2.1.25
KSA RATING: 3.9/4.2
REVISION: 2009

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: EOP ADDENDUM 33, Revision 001

TOOLS/EQUIPMENT: NONE

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: The crew is responding to plant conditions using FR-I.3, Response to Voids in the Reactor Vessel. The following conditions exist:

- Containment pressure is 2.8 psig.
- Containment Temperature is 167 °F.
- Containment Hydrogen Concentration is 2.3%.
- RCS Pressure is 1825 psig.

Initiating Cues: The CRS now directs you to determine RV Venting Time in accordance with EOP Addendum 33.

TASK STANDARD: RV Venting time is determined

.

START TIME: _____

STOP TIME: _____

1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW TIME FOR REVIEW OF WORK TO BE PERFORMED	CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES	S U Comments:
*2. DETERMINE CONTAINMENT AIR VOLUME AT STP = A STEP 1	CANDIDATE DETERMINES CONTAINMENT AIR VOLUME IS $2.336 \times 10^6 \text{ FT}^3$	S U Comments:
3. *CANDIDATE SHOULD DETERMINE MAXIMUM HYDROGEN VOLUME THAT CAN BE VENTED = B STEP 2	CANDIDATE DETERMINES THAT $1.635 \times 10^4 \text{ FT}^3$ CAN BE VENTED	S U Comments:

* CRITICAL STEP

<p>*4. CANDIDATE SHOULD DETERMINE HYDROGEN FLOW RATE AS A FUNCTION OF RCS PRESSURE = C</p> <p>Step 3</p>	<p>CANDIDATE DETERMINES THAT HYDROGEN FLOW RATE OF 9250 FT3/MINUTE +/- 250 FT3/MINUTE USING FIGURE 1</p>	<p>S U</p> <p>Comments:</p>
<p>*5. CANDIDATE SHOULD DETERMINE MAXIMUM VENTING TIME</p> <p>STEP 4</p>	<p>CANDIDATE DETERMINES THAT THE MAXIMUM VENTING TIME IS 1.767 MINUTES (BAND 1.82 TO 1.72)</p>	<p>S U</p> <p>Comments:</p>
<p>6.</p>	<p>THIS ADMIN JPM IS COMPLETE</p> <p><u>RECORD STOP TIME ON PAGE 1</u></p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: The crew is responding to plant conditions using FR-I.3, Response to Voids in the Reactor Vessel. The following conditions exist:

- Containment Pressure is 2.8 psig.
- Containment Temperature is 167 °F.
- Containment Hydrogen Concentration is 2.3%.
- RCS Pressure is 1825 psig.

Initiating Cues: The CRS now directs you to determine RV Venting Time in accordance with EOP Addendum 33.

* CRITICAL STEP

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: RA3 KSA NO: GEN2.1.18
COMPLETION TIME: 15 MINUTES KSA RATING: 4.1/4.3
JOB TITLE: URO REVISION: 2009
DUTY: ADMINISTRATIVE
TASK TITLE: TAG OUT 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A)

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: APA-ZZ-00310, ODP-ZZ-00310

TOOLS/EQUIPMENT: TAGOUT CONTINUATION SHEET, M-22BL01, E-23BL04

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP MUST BE TAGGED OUT TO REPLACE THE IMPELLER.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO DETERMINE THE FOLLOWING INFORMATION AND COMPLETE THE TAGOUT CONTINUATION SHEET PROVIDED:

- TYPE OF WORKMAN'S PROTECTION ASSURANCE REQUIRED
- APPROPRIATE TAGGING SEQUENCE
- COMPONENTS TO BE TAGGED
- TAGGED POSITIONS OF COMPONENTS

INFORM THE CONTROL ROOM SUPERVISOR WHEN DONE.

Notes: **USE OF THE MAINFRAME COMPUTER IS NOT ALLOWED.**

TASK STANDARD: UPON COMPLETION OF THE TASK, THE CANDIDATE WILL HAVE TAGGED OUT THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP A HOLD OFF TAG ON THE MCC BREAKER (OFF/OPEN), SUCTION VALVE (CLOSED), AND DISCHARGE VALVE (CLOSED), RECIRC LINE (CLOSED) AND DRAIN LINES (OPEN - CAP REMOVED). TAG SEQUENCE IS CRITICAL.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW HIM TO REVIEW WORK TO BE PERFORMED</p> <p>STEPS MAY BE PERFORMED IN ANY ORDER</p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.</p>	<p>S U</p> <p>Comments:</p>
<p>2.* DETERMINE TYPE OF WPA REQUIRED FOR TAGGING OUT 'A' REACTOR MAKEUP WATER XFR PUMP (PBL01A) IS A HOLD OFF</p> <p>APA-ZZ-00310, STEP 4.1.1</p>	<p>CANDIDATE MAY REVIEW APA-ZZ-00310 TO ENSURE TAGGING IS FOR HUMAN PROTECTION, AND THE EQUIPMENT WILL NOT BE OPERATED</p> <p>CANDIDATE SHOULD DETERMINE A HOLD OFF IS REQUIRED</p>	<p>S U</p> <p>Comments:</p>
<p>3. DETERMINE MAIN CONTROL BOARD HANDSWITCH BLHIS3, FOR 'A' REACTOR MAKEUP WATER XFER PUMP MUST BE TAGGED TO THE PULL-TO-LOCK POSITION</p> <p>PRINT E-23BL04</p>	<p>CANDIDATE SHOULD DETERMINE CONTROL BOARD HANDSWITCH IS REQUIRED TO BE TAGGED IN THE PULL-TO-LOCK POSITION</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4. DETERMINE LOCAL CONTROL HANDSWITCH BLHS3, FOR 'A' REACTOR MAKEUP WATER XFER PUMP MUST BE TAGGED TO THE PULL-TO-LOCK POSITION</p> <p>PRINT E-23BL04</p>	<p>CANDIDATE SHOULD DETERMINE LOCAL HANDSWITCH IS REQUIRED TO BE TAGGED IN THE Pull TO LOCK POSITION</p> <p>(THIS IS OPTIONAL SINCE THE CONTROL ROOM HANDSWITH IS TAGGED)</p>	<p>S U</p> <p>Comments:</p>
<p>5.* DETERMINE 'A' REACTOR MAKEUP WATER XFR PUMP BREAKER, PG19NCF5 SHOULD BE TAGGED TO THE OFF/OPEN POSITION</p> <p>PRINT E-23BL04</p>	<p>CANDIDATE SHOULD DETERMINE THE POWER SUPPLY FOR PBL01A IS PG19NCF5 AND IS REQUIRED TO BE TAGGED TO THE OFF/OPEN POSITION</p>	<p>S U</p> <p>Comments:</p>
<p>6.* DETERMINE 'A' REACTOR MAKEUP WATER XFR PUMP SUCTION VALVE, BLV0011, SHOULD BE TAGGED CLOSED</p> <p>PRINT M-22BL01</p>	<p>CANDIDATE SHOULD DETERMINE BLV0011, PBL01A SUCTION VALVE IS REQUIRED TO BE TAGGED CLOSED</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
7.* DETERMINE 'A' REACTOR MAKEUP WATER XFR PUMP DISCHARGE VALVE, BLV0013, SHOULD BE TAGGED CLOSED PRINT M-22BL01	CANDIDATE SHOULD DETERMINE BLV0013, PBL01A DISCHARGE VALVE IS REQUIRED TO BE TAGGED CLOSED	S U Comments:
8.* DETERMINE 'A' REACTOR MAKEUP WATER XFR PUMP RECIRC, BLV0018, SHOULD BE TAGGED CLOSED PRINT M-22BL01	CANDIDATE SHOULD DETERMINE BLV0018, PBL01A RECIRC VALVE IS REQUIRED TO BE TAGGED CLOSED	S U Comments:
9.* DETERMINE 'A' REACTOR MAKEUP WATER XFR PUMP CASING DRAIN VALVE, BLV0081 SHOULD BE TAGGED OPEN PRINT MU2KS01, B4	CANDIDATE SHOULD DETERMINE BLV0081, PBL01A, PUMP CASING DRAIN VALVE SHOULD BE TAGGED OPEN OR OPEN/CAP REMOVED SHOULD ALSO DETERMINE HOSE SHOULD BE USED TO DRAIN SYSTEM	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
10.*DETERMINE 'A' REACTOR MAKEUP WATER XFR PUMP DISCH LINE BLV0084 SHOULD BE TAGGED OPEN PRINT M-22BL01	CANDIDATE SHOULD DETERMINE BLV0084, PBL01A DISCH DRAIN SHOULD BE TAGGED OPEN OR OPEN/CAP REMOVED SHOULD ALSO DETERMINE HOSE SHOULD BE USED TO DRAIN SYSTEM	S U Comments
11.	THIS ADMIN JPM IS COMPLETE <u>RECORD STOP TIME ON PAGE 1</u>	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
12.	<p>COMPARE CANDIDATE'S TAGOUT CONTINUATION SHEET TO THE ATTACHED. ENSURE THE FOLLOWING:</p> <p>WPA TYPE: HOLD OFF</p> <p>BLHIS3 (MCB): PTL</p> <p>BLHS3 (LOCAL): PTL (opt)</p> <p>PG19NCF5: OFF OR OPEN</p> <p>BLV0011: CLOSED</p> <p>BLV0013: CLOSED</p> <p>BLV0018: CLOSED</p> <p>BLV0081: OPEN / CR</p> <p>BLV0084: OPEN / CR</p> <p>TAG SEQUENCE IS CRITICAL TO HAVE BLV0011,13, 18 PG19NCF5 TAGGED</p> <p>PRIOR TO OPENING DRAIN VALVES BLV0081 AND BLV0084</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

RA3

TAGOUT CONTINUATION SHEET

WPA TYPE: ***HOLD OFF**

TAG SEQUENCE NUMBER	TAGGED COMPONENT	TAGGING POSITION
1	BLHIS3	PULL TO LOCK
2	BLHS3	PULL TO LOCK (OPT)
3	*PG19NCF5	*OFF
4	*BLV0011	*CLOSED
5	*BLV0013	*CLOSED
6	*BLV0018	*CLOSED
7	*BLV0081	*OPEN / CAP REMOVED
8	*BLV0084	*OPEN /CAP REMOVED

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Initial Conditions: THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP MUST BE TAGGED OUT TO REPLACE THE IMPELLER.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO DETERMINE THE FOLLOWING INFORMATION AND COMPLETE THE TAGOUT CONTINUATION SHEET PROVIDED:

- TYPE OF WORKMAN'S PROTECTION ASSURANCE REQUIRED
- APPROPRIATE TAGGING SEQUENCE
- COMPONENTS TO BE TAGGED
- TAGGED POSITIONS OF COMPONENTS

INFORM THE CONTROL ROOM SUPERVISOR WHEN DONE.

Notes: **USE OF THE MAINFRAME COMPUTER IS NOT ALLOWED.**

RA3

TAGOUT CONTINUATION SHEET

WPA TYPE: _____

[illegible]

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: RA4 KSA NO: GEN 2.4.39
COMPLETION TIME: 10 MINUTES KSA RATING: 3.9/3.8
JOB TITLE: URO REVISION: 2009
DUTY: ADMINISTRATIVE
TASK TITLE: VISITOR CONTROL DURING AN EVENT

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: EIP-ZZ-00230, ACCOUNTABILITY, REVISION 30

TOOLS/EQUIPMENT:

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: THE CALLAWAY PLANT IS OPERATING AT 100% POWER.

Initiating Cues: YOU ARE ESCORTING A PLANT VISITOR IN THE TURBINE BUILDING.

THE SHIFT MANAGER HAS JUST ANNOUNCED THAT A SITE AREA EMERGENCY (SAE) HAS BEEN DECLARED.

WRITE DOWN YOUR ACTIONS FOLLOWING THIS DECLARATION.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE ENSURED THAT THE VISITOR HAS EXITED THE PROTECTED AREA .

ALSO, SINCE ASSEMBLY IS REQUIRED, THE OPERATOR WILL PROCEED TO THE OPERATIONS FIELD OFFICE.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*1. Escort the visitor to the Main Access Facility STEP 4.3.1.a		Visitor is taken to the Main Access Facility	S U Comments:
*2. INSTRUCT visitors to leave the site following the directions of Security personnel unless authorized to remain by the SM/EC or Security Coordinator/SSS STEP 4.3.1.b	IF asked: The visitor is not authorized to remain on-site by the SM/EC or Security Coordinator/SSS.	Visitor is instructed to leave the Facility/turned over to Security Personnel	S U Comments:
*3. PROCEED to the Field Office for further instructions Attachment 1 , Item #2	IF asked: Inquire where the Operator would now proceed.	Operator informs you he will now go to the Field office for further instruction.	S U Comments
4.	<u>RECORD STOP TIME ON PAGE 1</u>		S U Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: THE CALLAWAY PLANT IS OPERATING AT 100% POWER.

Initiating Cues: YOU ARE ESCORTING A PLANT VISITOR IN THE TURBINE BUILDING.

THE SHIFT MANAGER HAS JUST ANNOUNCED THAT A SITE AREA EMERGENCY (SAE) HAS BEEN DECLARED.

WRITE DOWN YOUR ACTIONS FOLLOWING THIS DECLARATION.

Facility: Callaway		Date of Examination: 6/19/2009
Examination Level: SRO		Operating Test Number: _____
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations A1a	D, P, R	015 A1.04 (3.5) Ability to predict and/or monitor changes in parameters to prevent exceeding design limits associated with operating the NIS controls including Quadrant Power Tilt Ratio JPM: Perform a QPTR Calculation
Conduct of Operations SA2	D, R	2.1.18 (3.8) Ability to make accurate, clear, and concise logs, records, status boards, and reports. JPM: Determine Reportability Requirements
Equipment Control SA3	D, R	2.2.13 (4.3) Knowledge of tagging and clearance procedures. JPM: Review WPA for "B" Bulk Chemical Acid Transfer Pump
Radiation Control SA4	N, R	2.3.4 (3.7) Knowledge of radiation exposure limits under normal or emergency conditions. JPM: Determine if Dose limits will be exceeded
Emergency Procedures/Plan SA5	D, R	2.4.41 (4.6) Knowledge of the emergency action level thresholds and classifications. JPM: Emergency Event Classification
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		
* Type Codes & Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 ; randomly selected)		

SRO Admin JPM Summary

- A1a This is bank JPM ILE-A001-RO. It was used on the 2005 NRC Exam, but the values provided will differ from those given in 2005. In the 2005 exam, the candidate was cued as to the value of the NI detector currents. During this exam the candidate will be given a set of values that reflect what is being seen in the plant. He will then use this data to calculate Quadrant Power Tilt Ratio using the most current Curve Book and the surveillance procedure. Therefore, the values calculated will differ from those on the 2005 exam.
- SA2 This is bank JPM ILE-A025-SRO. Given a set of conditions, the SRO candidate will be required to inform the examiner of the time requirement and the agency requiring notification.
- SA3 This is bank JPM ILE-A013-SRO. Given a copy of Workers Protection Assurance (WPA) on a Bulk Chemical Acid Transfer the Pump, the SRO candidate will review the package for any apparent errors in its preparation.
- SA4 This is a new JPM. The SRO candidate will be given a set of conditions and the appropriate procedures in an emergency radiological situation. The SRO candidate, acting as the Emergency Coordinator, will determine the amount of allowed dose to be extended to a recently hired employee in this scenario.
- SA5 This is bank JPM ILE-A008-SRO. Given a set of conditions and a timeline of events, the SRO candidate will determine the correct Emergency Action level using the EAL charts provided.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: A1a KSA NO: 015 A1.04
COMPLETION TIME: 15 MINUTES KSA RATING: 3.5/3.7
JOB TITLE: RO REVISION: 2009
DUTY: NUCLEAR INSTRUMENTATION
TASK TITLE: PERFORM A QPTR CALCULATION

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OSP-SE-00003, Quadrant Power Tilt Ratio, Revision 17
CURVE BOOK TABLE 11-1, Revision 215

TOOLS/EQUIPMENT: Procedures stated above, Calculator, Copy of detector currents page

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is at MOL, 100% power with the indicated Incore axial flux difference (AFD) equal to 0%. Control Room annunciators 78B, 78C, and 78F are not operable. All power range nuclear instruments are operable. The Control Room Plant Computer System is not available for use.

Initiating Cues: The Control Room Supervisor has directed you to perform a QPTR calculation using NI detector currents provided per OSP-SE-00003, Quadrant Power Tilt Ratio Calculation. Forward the data you have entered in OSP-SE-00003 to the Examiner.

TASK STANDARD: Upon completion of this JPM, the operator will have performed a manual QPTR calculation with a final QPTR tolerance of ± 0.01 .

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a verified working copy of OSP-SE-00003, QPTR Calculation.	CANDIDATE SHOULD OBTAIN A COPY OF OSP-SE-00003, QUADRANT POWER TILT RATIO CALCULATION PROVIDE CANDIDATE WITH COPY OF OSP-SE-00003 and page with upper and lower Detector currents	S U Comments:
2. Review Precautions and Limitations. STEP 4.0	Operator should review Precautions and Limitations. All Precautions and Limitations are satisfied.	S U Comments:
3. Record each power range upper current output on Attachment #1. STEP 6.2.1	Using the data sheet provided the Operator should locate the correct upper and lower current meters for the power range detectors and record the values in the correct area of OSP-SE-00003, Attachment A.	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*4. Use Table 11.1 from the Curve Book to obtain the current values for the upper and lower detectors. AFD = 0% values should be used.</p> <p>STEP 6.2.2</p>	<p>Operator locates Table 11-1, AFD Calibration value Table, AFD = 0%, to record power range upper and lower current values.</p>	<p>S U</p> <p>Comments:</p>
<p>*5. Divide each upper lower detector current by its 100%, 0% AFD power detector current value and enter it in the normalized detector current for each channel.</p> <p>STEP 6.2.3</p>	<p>Operator should divide each upper and lower detector current by its 100% power, 0% AFD detector current value and enter it as the normalized detector current for each channel.</p> <p>The upper and lower calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.001 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>
<p>*6 Add the normalized upper detector currents and divide by four (4) to derive the upper detector normalized current average and record it in Attachment #1.</p> <p>STEP 6.2.4</p>	<p>Operator should add up the normalized upper detector currents and divide by 4 to derive the upper detector normalized current averages and record it in Attachment #1.</p> <p>The upper calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.001 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*7. Add the normalized lower detector currents and divide by four (4) to derive the lower detector normalized current averages and record it in Attachment #1.</p> <p>STEP 6.2.5</p>	<p>Operator should add up the normalized lower detector currents and divide by 4 to derive the lower detector normalized current averages and record it in Attachment #1.</p> <p>The lower calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.001 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>
<p>8. The QPTR should be calculated as two significant digits to the right of the decimal point.</p> <p>Note before 6.2.6</p>	<p>The operator should calculate the QPTR, to two (2) significant digits to the right of the decimal point.</p>	<p>S U</p> <p>Comments:</p>
<p>*9. Divide each upper normalized detector current by the upper normalized detector current average to obtain the power tilt ration for each upper channel and RECORD on Attachment 1</p> <p>STEP 6.2.6</p>	<p>Operator should divide each upper normalized detector current by the upper normalized detector average to obtain the power tilt ratio for each upper channel.</p> <p>The Operator should then record this in Attachment 1.</p> <p>The upper calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.01 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*10. Divide each lower normalized detector current by the lower normalized detector current average to obtain the power tilt ratio for each lower channel and RECORD on Attachment 1.</p> <p>STEP 6.2.7</p>	<p>Operator should divide each lower normalized detector current by the lower normalized detector current average to obtain the power tilt ratio for each lower channel.</p> <p>The Operator should then record this in Attachment 1.</p> <p>The upper calculated values should be as shown in the Attachment 1 KEY</p> <p>Values within ± 0.01 on each calculation are acceptable</p>	<p>S U</p> <p>Comments:</p>
<p>11. IF the manual calculations do NOT confirm a QPTR of greater than 1.02, DECLARE the Plant Computer Points and QPTR alarm INOPERABLE.</p>	<p>All QPTR's are less than 1.02, no action is required. The affected annunciators were identified as inoperable on the Cue sheet</p>	<p>S U</p> <p>Comments:</p>
<p>12.</p>	<p>THE JPM IS COMPLETE</p> <p><u>RECORD STOP TIME ON PAGE 1</u></p>	

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
13.	<p>COMPARE CANDIDATE'S ATTACHMENT 1 WITH THE ONE PROVIDED.</p> <p>ENSURE THE QPTR DOES NOT EXCEED 1.02 FOR ANY CHANNEL</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is at MOL, 100% power with the indicated Incore axial flux difference (AFD) equal to 0%. Control Room annunciators 78B, 78C, and 78F are not operable. All power range nuclear instruments are operable. The Control Room Plant Computer System is not available for use.

Initiating Cues: The Control Room Supervisor has directed you to perform a QPTR calculation using NI detector currents provided per OSP-SE-00003, Quadrant Power Tilt Ratio Calculation. Forward the data you have entered in OSP-SE-00003 to the Examiner.

PANEL SE054
POWER RANGE DETECTOR CURRENTS

SENI0041F

182.6

SENI0041E

197.7

SENI0042F

163.2

SENI0042E

192.1

SENI0043F

181.0

SENI0043E

189.2

SENI0044F

180.2

SENI0044E

182.0

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: SA2 KSA NO: GEN2.1.18
COMPLETION TIME: 15 MINUTES KSA RATING: 3.6/3.8
JOB TITLE: SRO REVISION: 2009
DUTY: ADMINISTRATIVE
TASK TITLE: DETERMINE REPORTABILITY REQUIREMENTS

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: APA-ZZ-00520, REPORTING REQUIREMENTS AND RESPONSIBILITIES,
REVISION 29

TOOLS/EQUIPMENT: Copy of APA-ZZ-00520

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: THE CALLAWAY PLANT IS OPERATING AT 100% POWER. 'A' MAIN STEAM LINE SAFETY VALVE ABV055 FAILS OPEN. THE EVENT RESULTS IN A REACTOR TRIP AND SAFETY INJECTION.

RCS PRESSURE IS CURRENTLY AT 1550 PSIG. 'A' STEAM GENERATOR PRESSURE IS 10 PSIG.

Initiating Cues: YOU ARE AN EXTRA SRO ON SHIFT PERFORMING CONTROL ROOM OBSERVATIONS. THE SHIFT MANAGER (SM) HAS DIRECTED YOU TO DETERMINE THE INITIAL REPORTABILITY REQUIREMENTS FOR THIS EVENT PER APA-ZZ-00520, REPORTING REQUIREMENTS AND RESPONSIBILITIES

WRITE THE INFORMATION HERE YOU WILL TELL THE SM WHEN COMPLETE.

(INCLUDE THE TIME REQUIREMENT AND THE AGENCY REQUIRING NOTIFICATION.)

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE DETERMINED THAT A 4 HOUR REPORT IS REQUIRED TO BE MADE TO THE NRC OPERATIONS CENTER.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF APA-ZZ-00520, REPORTING REQUIREMENTS AND RESPONSIBILITIES	OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2.* DETERMINE A 4 HOUR REPORT NEEDS TO BE MADE TO THE NRC OPERATIONS CENTER	OPERATOR SHOULD DETERMINE A 4 HOUR REPORT NEEDS TO BE MADE TO THE NRC OPERATIONS CENTER Various methods to get this information are available in APA-ZZ-00520. ONE of the following will be used <ul style="list-style-type: none"> • Attachment 1 Steps 5.c AND/OR 5.d • Attachment 2, Step 25 • Attachment 3, Step 93 • Attachment 4, Sheets 2, 9, and 10 	S U Comments:
3.	<u>RECORD STOP TIME ON PAGE 1</u>	S U Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: THE CALLAWAY PLANT IS OPERATING AT 100% POWER. 'A' MAIN STEAM LINE SAFETY VALVE ABV055 FAILS OPEN. THE EVENT RESULTS IN A REACTOR TRIP AND SAFETY INJECTION.

RCS PRESSURE IS CURRENTLY AT 1550 PSIG. 'A' STEAM GENERATOR PRESSURE IS 10 PSIG.

Initiating Cues: YOU ARE AN EXTRA SRO ON SHIFT PERFORMING CONTROL ROOM OBSERVATIONS. THE SHIFT MANAGER (SM) HAS DIRECTED YOU TO DETERMINE THE INITIAL REPORTABILITY REQUIREMENTS FOR THIS EVENT PER APA-ZZ-00520, REPORTING REQUIREMENTS AND RESPONSIBILITIES

WRITE THE INFORMATION HERE YOU WILL TELL THE SM WHEN COMPLETE.

(INCLUDE THE TIME REQUIREMENT AND THE AGENCY REQUIRING NOTIFICATION.)

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: SA3 KSA NO: GEN 2.2.13
COMPLETION TIME: 15 MINUTES KSA RATING: 4.1/4.3
JOB TITLE: SRO REVISION: 2009
DUTY: ADMINISTRATIVE
TASK TITLE: REVIEW WPA FOR 'A' REACTOR MAKEUP WATER TRANSFER PUMP

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: APA-ZZ-00310, ODP-ZZ-00310

TOOLS/EQUIPMENT: COMPLETED TAGOUT CONTINUATION SHEET, M-22BL01, E-23BL04

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: THE REACTOR OPERATOR HAS PREPARED WPA TO REPLACE THE PUMP IMPELLER FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND HAS GIVEN THE WPA TO YOU FOR REVIEW.

Initiating Cues: YOU HAVE BEEN DIRECTED TO REVIEW THE WPA FOR 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) USING PRINTS PROVIDED. ENSURE IT IS ADEQUATE TO PERFORM THE REQUIRED MAINTENANCE. INFORM THE SHIFT MANAGER WHEN THE WPA REVIEW IS COMPLETE. THERE ARE THREE (3) CRITICAL ERRORS ASSOCIATED WITH THIS WPA.

Notes: **USE OF THE MAINFRAME COMPUTER IS NOT ALLOWED.**

TASK STANDARD: UPON COMPLETION OF THE TASK, THE CANDIDATE WILL HAVE DETERMINED:

- (1) FOR TAG #3 PG20NDF5 IS AN INCORRECT COMPONENT, PG19NCF5 IS THE CORRECT COMPONENT,
- (2) FOR TAG #4, BLV0081 IS IN THE INCORRECT ORDER. OPENING THIS VALVE EARLY WOULD DRAIN ENTIRE SYSTEM
- (3) FOR TAG #6, BLV0026 IS ON THE WRONG RECIRC LINE

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH THE TAGOUT CONTINUATION SHEET AND ALLOW HIM TO REVIEW THE WORK TO BE PERFORMED</p> <p>STEPS MAY BE PERFORMED IN ANY ORDER</p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS, INITIATING CUES, AND TAGOUT CONTINUATION SHEET</p>	<p>S U</p> <p>Comments:</p>
<p>2.* DETERMINE HOLD OFF IS THE CORRECT TYPE OF WPA</p> <p>APA-ZZ-00310, STEP 4.1.1</p>	<p>CANDIDATE MAY REVIEW APA-ZZ-00310 TO ENSURE TAGGING IS FOR PERSONNEL PROTECTION, AND THE EQUIPMENT WILL NOT BE OPERATED</p> <p>CANDIDATE SHOULD DETERMINE A HOLD OFF IS REQUIRED</p>	<p>S U</p> <p>Comments:</p>
<p>3. DETERMINE CORRECT HANDSWITCHES TO BE TAGGED FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND IT'S REQUIRED POSITION</p> <p>PRINT E-23BL04</p>	<p>CANDIDATE SHOULD DETERMINE HANDSWITCHES, BLHIS3 (MCB) AND BLHS3 (LOCAL), SHOULD BE TAGGED TO PULL TO LOCK PER PRINT E-23BL04</p> <p>BLHS3 MAY BE CONSIDERED OPTIONAL SINCE THE CONTROL ROOM HANDSWITCH IS TAGGED</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4.* DETERMINE CORRECT BREAKER TO BE TAGGED FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) MOTOR AND IT'S REQUIRED POSITION</p> <p>PRINT E-23BL04</p>	<p>CANDIDATE SHOULD DETERMINE PG20NDF5 IS <u>INCORRECT</u> BREAKER FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP MOTOR</p> <p>NOTE: MAY NEED TO ASK A FOLLOW UP QUESTION TO ENSURE CANDIDATE SUPPLIES EVALUATOR WITH CORRECT BREAKER</p>	<p>S U</p> <p>Comments:</p>
<p>5.* DETERMINE CORRECT BREAKER TO BE TAGGED FOR THE 'A' REACTOR MAKEUP TRANSFER PUMP (PBL01A) MOTOR AND IT'S REQUIRED POSITION</p> <p>PRINT E-23BL04</p>	<p>CANDIDATE SHOULD DETERMINE THE POWER SUPPLY FOR PBL01A IS PG19NCF5 AND IS REQUIRED TO BE TAGGED TO THE OFF/OPEN POSITION</p>	<p>S U</p> <p>Comments:</p>
<p>6.* DETERMINE VALVE ORDER IS INCORRECT FOR BLV0081. THIS IS A DRAIN VALVE TO BE OPENED / CAP REMOVED PRIOR TO THE SUCTION AND DISCHARGE BEING ISOLATED.</p> <p>PRINT M-22BL01</p>	<p>CANDIDATE SHOULD DETERMINE BLV0081 IS TAGGED OPEN IN THE WRONG SEQUENCE.</p> <p>SHOULD RE-SEQUENCE TO AFTER THE SUCTION, DISCHARGE, AND RECIRC ARE CLOSED</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>7.* DETERMINE CORRECT SUCTION VALVE TO BE TAGGED FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND IT'S REQUIRED POSITION</p> <p>PRINT M-22BL01</p>	<p>CANDIDATE SHOULD DETERMINE BLV0011 IS THE CORRECT SUCTION VALVE AND IS REQUIRED TO BE TAGGED CLOSED</p>	<p>S U</p> <p>Comments:</p>
<p>8.* DETERMINE CORRECT DISCHARGE VALVE TO BE TAGGED FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND IT'S REQUIRED POSITION</p> <p>PRINT M-22BL01</p>	<p>CANDIDATE SHOULD DETERMINE BLV0013 IS THE DISCHARGE VALVE AND IS REQUIRED TO BE TAGGED CLOSED</p>	<p>S U</p> <p>Comments:</p>
<p>9.* DETERMINE CORRECT RECIRC VALVE TO BE TAGGED FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND IT'S REQUIRED POSITION</p> <p>PRINT M-22BL01</p>	<p>CANDIDATE SHOULD DETERMINE BLV0026 IS THE WRONG RECIRC VALVE FOR THIS TRAIN.</p> <p>CANDIDATE IDENTIFIES BLV0018 AS THE CORRECT RECIRC ISOLATION AND MAKES CHANGES TO THE TAGOUT CONTINUATION SHEET</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
10.*DETERMINE PUMP CASING DRAIN VALVE BLV0081 IS CORRECT VALVE AND SHOULD BE TAGGED OPEN/CAP REMOVED AFTER THE PREVIOUS THREE VALVES WERE CLOSED PRINT M-22BL01	CANDIDATE SHOULD DETERMINE BLV0081 IS THE CORRECT CASING DRAIN VALVE AND SHOULD BE TAGGED OPEN OR OPEN/CAP REMOVED	S U Comments:
11.*DETERMINE PUMP DISCH DRAIN VALVE TO BE TAGGED FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND IT'S REQUIRED POSITION PRINT M-22BL01	CANDIDATE SHOULD DETERMINE BLV0084 IS THE PUMP DISCH DRAIN VALVE AND IS REQUIRED TO BE TAGGED OPEN OR OPEN/CAP REMOVED	S U Comments:
14.	THIS ADMIN JPM IS COMPLETE <u>RECORD STOP TIME ON PAGE 1</u>	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
KEY	<p>COMPARE CANDIDATE'S TAGOUT CONTINUATION SHEET TO THE ATTACHED. ENSURE THE FOLLOWING:</p> <p>WPA WAS INCORRECT WITH THREE ERRORS FOUND</p> <p>COULD BE CORRECTED AS FOLLOWS:</p> <p>TAG #3 HAS BEEN CORRECTED TO THE RIGHT BREAKER</p> <p>TAG #4 HAS BEEN RE-SEQUENCED TO THE APPROPRIATE POSITION</p> <p>TAG #6 HAS BEEN CORRECTED TO THE RIGHT TRAIN'S RECIRC VALVE</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

SA3

TAGOUT CONTINUATION SHEET

WPA TYPE: HOLD OFF

TAG SEQUENCE NUMBER	TAGGED COMPONENT	TAGGING POSITION
1	BLHIS3	PULL TO LOCK
2	BLHS3	PULL TO LOCK
3	PG20NDF5 *PG19NCF5	OPEN
4*	BLV0081	OPEN/ CAP REMOVED
5	BLV0011	CLOSED
6	BLV0026 *BLV0018	CLOSED
7	BLV0013	CLOSED
8	BLV0084	OPEN/CAP REMOVED

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: THE REACTOR OPERATOR HAS PREPARED WPA TO REPLACE THE PUMP IMPELLER FOR THE 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) AND HAS GIVEN THE WPA TO YOU FOR REVIEW.

Initiating Cues: YOU HAVE BEEN DIRECTED TO REVIEW THE WPA FOR 'A' REACTOR MAKEUP WATER TRANSFER PUMP (PBL01A) USING PRINTS PROVIDED. ENSURE IT IS ADEQUATE TO PERFORM THE REQUIRED MAINTENANCE. INFORM THE SHIFT MANAGER WHEN THE WPA REVIEW IS COMPLETE. THERE ARE THREE (3) CRITICAL ERRORS ASSOCIATED WITH THIS WPA.

Notes: **USE OF THE MAINFRAME COMPUTER IS NOT ALLOWED.**

SA3

TAGOUT CONTINUATION SHEET

WPA TYPE: HOLD OFF

TAG SEQUENCE NUMBER	TAGGED COMPONENT	TAGGING POSITION
1	BLHIS3	PULL TO LOCK
2	BLHS3	PULL TO LOCK
3	PG20NDF5	OPEN
4	BLV0081	OPEN/CAP REMOVED
5	BLV0011	CLOSED
6	BLV0026	CLOSED
7	BLV0013	CLOSED
8	BLV0084	OPEN/ CAP REMOVED

CALLAWAY PLANT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM NO: SA4 KSA NO: GEN 2.3.4
JOB TITLE: SRO KSA RATING: 3.2/3.7
DUTY: ADMINISTRATIVE REVISION: 2009
TASK TITLE: DETERMINE PERSONNEL EXPOSURE LIMIT
COMPLETION TIME: 15 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: APA-ZZ-01000, Callaway Radiation Protection Program, Rev. 29

TOOLS/EQUIPMENT: Copy of APA-ZZ-01000, Callaway Radiation Protection Program

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions:

The site is in a Site Area Emergency (SAE) due to an inability to establish any feedwater flow to the SG's (LOCA greater than charging pump capacity with bleed and feed initiated) and the actions of FR-H.1 are currently in progress.

The TSC is in the process of being manned, but all building operators have not been released to the TSC by the Shift Manager at this time.

An Operations Technician from the operating shift is assisting with emergency duties and is required to go into an extremely high radiation area to assist in the emergency. He has worked at Callaway for only 3 months. He previously worked at another nuclear plant for the first 6 months of the year (two quarters) and his exposure records have been obtained from his previous employer.

His current exposure record at Callaway and the exposure of his previous plant is attached.

Initiating Cues:

Given the personnel exposure history of the operator and APA-ZZ-01000, Callaway Plant Radiation Protection Program, determine the maximum amount of exposure this operator is allowed based on the Callaway Plant Administrative Dose Guidelines.

As the Emergency Coordinator calculate the individual's allowed:

- 1) TEDE – Total Effective Dose Equivalent
- 2) TODD – Total Organ Dose Equivalent
- 3) LDE – Eye Dose Equivalent
- 4) SDE – Shallow Dose Equivalent

TASK STANDARD: The examinee correctly determines the exposure limits

START TIME: _____

STOP TIME: _____

1. Determine limits for TEDE, TODE, LDE, SDE	<p>CUE:</p> <p>Give candidate the dose sheet</p> <p>Dose from previous plant:</p> <p>TEDE: 2200 mr TODE: 2200 mr LDE: 5000 mr SDE: 6700 mr</p> <p>Dose from Callaway Plant:</p> <p>TEDE: 1500 mr TODE: 2500 mr LDE: 6000 mr SDE: 6500 mr</p>	<p>CANDIDATE SHOULD Correctly calculate remaining exposure allowed for a person with a COMPLETE Dose History</p> <p>Required to count dose received from the previous plant.</p> <p>The examinee should therefore determine the limits are as follows:</p> <p>TEDE limit of 4000 mrem per current year, $2200 + 1500 = 3700$ (allowed <u>300 mr</u> not to exceed 4000 mr)</p> <p>TODE limit of 40,000 mrem per current year, $2200 + 2500 = 4700$ (allowed <u>35300 mr</u>)</p> <p>LDE limit of 12,000 mrem per current year: $5000 + 6000 = 11000$ (allowed <u>1000 mr</u>)</p> <p>SDE limit of 40,000 mrem per current year $6700 + 6500 = 13200$ (Allowed <u>26800 mr</u>)</p>	<p>S U</p> <p>Comments:</p>
2.	<p>THIS ADMIN JPM IS COMPLETE</p> <p><u>RECORD STOP TIME ON PAGE 1</u></p>		

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions:

The site is in a Site Area Emergency (SAE) due to an inability to establish any feedwater flow to the SG's (LOCA greater than charging pump capacity with bleed and feed initiated) and the actions of FR-H.1 are currently in progress.

The TSC is in the process of being manned, but all building operators have not been released to the TSC by the Shift Manager at this time.

An Operations Technician from the operating shift is assisting with emergency duties and is required to go into an extremely high radiation area to assist in the emergency. He has worked at Callaway for only 3 months. He previously worked at another nuclear plant for the first 6 months of the year (two quarters) and his exposure records have been obtained from his previous employer.

His current exposure record at Callaway and the exposure of his previous plant is attached.

Initiating Cues:

Given the personnel exposure history of the operator and APA-ZZ-01000, Callaway Plant Radiation Protection Program, determine the maximum amount of exposure allowed based on the Callaway Plant Administrative Dose Guidelines.

As the Emergency Coordinator calculate the individual's allowed:

- 1) TEDE – Total Effective Dose Equivalent
- 2) TODD – Total Organ Dose Equivalent
- 3) LDE – Eye Dose Equivalent
- 4) SDE – Shallow Dose Equivalent

Dose Record

Dose report from the previous plant:

TEDE: 2200 mr

TODE: 2200 mr

LDE: 5000 mr

SDE: 6700 mr

The current dose from Callaway:

TEDE: 1500 mr

TODE: 2500 mr

LDE: 6000 mr

SDE: 6500 mr

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: SA5 KSA NO: GEN 2.4.41
COMPLETION TIME: 15 MINUTES KSA RATING: 2.9/4.6
JOB TITLE: SRO REVISION: 2009
DUTY: RADIOLOGICAL EMERGENCY RESPONSE
TASK TITLE: CLASSIFY EMERGENCY EVENT PER EIP-ZZ-00101

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT _____ CLASSROOM X

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: EIP-ZZ-00101, CLASSIFICATION OF EMERGENCIES, ADDENDUM 1 AND ATTACHMENT 1 OF EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS

TOOLS/EQUIPMENT: ADDENDUM 1 OF EIP-ZZ-00101, EAL CLASSIFICATION MATRIX AND ATTACHMENT 1 OF EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS

FACILITY REPRESENTATIVE: // _____ // _____ DATE: _____

CHIEF EXAMINER: // _____ // _____ DATE: _____

ADMIN JPM NO: SA5

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: SEE SHIFT MANAGER DAILY LOG SHEET PROVIDED FOR CURRENT PLANT CONDITIONS

Initiating Cues: THE TIME IS NOW 0623

YOU ARE THE EMERGENCY COORDINATOR

CLASSIFY THE EVENT BASED ON CURRENT CONDITIONS AND COMPLETE ATTACHMENT 1 OF EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS, TO INCLUDE **ALL CURRENT EMERGENCY ACTION LEVELS.**

Notes: **THIS IS A TIME CRITICAL ADMIN JPM TO BE COMPLETED WITHIN 15 MINUTES.**

TASK STANDARD: UPON COMPLETION OF THIS TASK, THE CANDIDATE SHOULD DETERMINE AN ALERT EXISTS DUE TO EAL CA1.1 AND HA1.2.

THE CANDIDATE WILL FILL IN ATTACHMENT 1 OF EIP-ZZ-00102 WITH CLASSIFICATION, EMERGENCY ACTION LEVELS, EMERGENCY ORGANIZATION ACTIVATION, AND ACTIONS FOR NON-ESSENTIAL PERSONNEL.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OBTAIN A COPY OF EIP-ZZ-00101, ADDENDUM 1, EAL CLASSIFICATION MATRIX, AND ATTACHMENT 1 OF EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS	CANDIDATE SHOULD OBTAIN A COPY OF EIP-ZZ-00101 ADDENDUM 1 AND EIP-ZZ-00102, ATT. 1 PROVIDE CANDIDATE A COPY OF EIP-ZZ-00101 ADD 1 AND EIP-ZZ-00102, ATT 1	S U Comments:
2.* APPLY GROUP CA1 AND DECLARE AN ALERT on EAL CA1.1 (APPLICABLE IN COLD CONDITIONS $RCS \leq 200$ °F)	CANDIDATE SHOULD DETERMINE THE FOLLOWING APPLIES FROM GROUP CA1 CA1.1.Loss of all offsite and onsite AC power to emergency buses NB01 and NB02 for > 15 min.	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
3.* APPLY GROUP HA1 AND DECLARE AN ALERT BASED ON EAL HA1.2 (APPLICABLE AT ALL TIMES)	CANDIDATE SHOULD DETERMINE THE FOLLOWING APPLY FROM GROUP 3H HA1 REPORT OF A NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING PLANT VITAL AREA HA1.2 Tornado or high winds >100 mph within protected Area boundary and resulting in visible damage to any Table H-1 plant structure/equipment or Control Room indication of degraded performance of these systems	S U Comments:
4.* COMPLETE ATTACHMENT 1 EAL AREA	CANDIDATE SHOULD CIRCLE ALERT FOR EAL CLASSIFICATION	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5. COMPLETE TIME AREA	CANDIDATE SHOULD PUT CURRENT TIME OR ASK EVALUATOR FOR TIME	S U Comments:
6. COMPLETE CAUSE OF EMERGENCY AREA	LOSS OF ALL OFFSITE POWER AND ONSITE AC POWER TO ESSENTIAL BUSES FOR > 15 MINUTES EAL CA1.1 NATURAL AND DESTRUCTIVE PHENOMENA AFFECTING A SAFE SHUTDOWN AREA, EAL HA1.2	S U Comments:
7. COMPLETE EMERGENCY ORGANIZATION ACTIVATION AREA	CANDIDATE SHOULD CHECK “ALERT OR HIGHER” BOX IN EMERGENCY ORGANIZATION ACTIVATION AREA	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
8. COMPLETE ACTIONS FOR NON-ESSENTIAL PERSONNEL AREA	CANDIDATE SHOULD CHECK "ALERT" AREA FOR ACTIONS FOR NON-ESSENTIAL PERSONNEL	S U Comments:
9. COMPLETE SPECIAL INSTRUCTIONS AREA	CANDIDATE MAY MARK SPECIAL INSTRUCTIONS N/A OR LEAVE BLANK	S U Comments:
10. COMPLETE PERSONNEL CAUTION AREA	CANDIDATE MAY MARK POTENTIAL AIRBORNE CONTAMINATION OR LEAVE BLANK	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
11. COMPLETE EC/RM APPROVAL AREA	CANDIDATE SHOULD SIGN EC/RM APPROVAL AREA	S U Comments:
12.	THE JPM IS COMPLETE <u>RECORD STOP TIME ON</u> <u>PAGE 1</u>	

* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
KEY	<p>COMPARE CANDIDATES ATTACHMENT 1 WITH ANSWER KEY</p> <p>ALERT CIRCLED</p> <p>DECLARATION TIME, DATE</p> <p>CAUSE/ EAL CLASSIFICATION</p> <p>“ALERT or HIGHER” BOX CHECKED FOR EMERGENCY ORGANIZATION ACTIVATION</p> <p>“ALERT” BOX CHECKED FOR ACTIONS FOR NON- ESSENTIAL PERSONNEL</p> <p>EC/RM APPROVAL SIGNED</p>	

* CRITICAL STEP

ADMIN JPM NO: SA5

DATE 06/18/09 **CALLAWAY PLANT
SHIFT MANAGER DAILY LOG**

LINE NO.	TIME	
1	0000	Continued logs from log sheet dated 03/17/09. Core has been off-loaded to Spent Fuel Pool.
2		Callaway Plant is in NO MODE.
3		RCS has been drained to mid-loop to support work on letdown piping.to support work on letdown piping.
4	0115	Tagged out NB02 and NE02 for Bus cleaning and breaker PMs. Verified NO fuel movement in progress or planned for Spent Fuel Pool.
5	0345	Severe weather and tornado warning issued by National Weather Service entered EIP-ZZ-00231, "Response to Severe Thunderstorms/High Winds/Tornado Watches and Warnings".
6	0600	Tornado passes thru Callaway Plant causing a loss of switchyard, NB01 and damage to the ESW pump house.
7	0605	NE01 trips due to overheating due to loss of ESW.
8	0610	Maintenance informs the CRS that NB01 can be energized by 0930 via off-site power.
10	0612	Electrical maintenance informs the CRS that NB02 will be able to be energized via NE02 by 0840.
11	0615	HP reports radiation levels normal in Containment and Fuel Building.
12		
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Attachment 1**Emergency Announcement - Gaitronics**

NOTE: If CODE RED or CODE BLACK is in progress, on-site emergency announcements should be held to a minimum and prohibit movement of personnel until CODE condition is secured.

SOUND THE PLANT EMERGENCY ALARM

ATTENTION ALL PERSONNEL! ATTENTION ALL PERSONNEL!

A(N)	UNUSUAL EVENT ALERT SITE EMERGENCY GENERAL EMERGENCY	HAS BEEN DECLARED AT ____: <div style="text-align: right;">(time)</div>
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THE CAUSE OF THE EMERGENCY IS EAL # _____**Emergency Organization Activation**

Unusual Event	All members of the on-shift emergency organization report to your stations.
Alert or Higher	All members of the emergency response organization report to your stations.

Actions For Non-Essential Personnel

Unusual Event	All non-essential personnel continue with your normal duties unless further instructions are given.
Alert	All non-essential personnel continue with your normal duties unless further instructions are given. If you are NOT badged for protected area access, you must evacuate the plant site.
Site/General (Consider weather and radiological conditions PRIOR to making announcement.)	All non-essential personnel report to your pre-designated assembly areas in the CMB and Training Center. Take all personal belongings such as coats, car keys and purses. Follow the instructions of your Supervisor and Security Officers. Accountability will be performed.
Special Instructions	<i>(i.e., Special routes during releases, Seek cover during storms, etc.)</i>

PERSONNEL CAUTION (If required)

Potential Airborne Contamination	There will be NO eating, drinking, smoking, or chewing until further notice.
---	--

(REPEAT ALL ANNOUNCEMENTS)

 EC/RM APPROVAL

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: SEE SHIFT MANAGER DAILY LOG SHEET PROVIDED FOR CURRENT PLANT CONDITIONS.

Initiating Cues: THE TIME IS NOW 0623

YOU ARE THE EMERGENCY COORDINATOR

CLASSIFY THE EVENT BASED ON CURRENT CONDITIONS AND COMPLETE ATTACHMENT 1 OF EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS, TO INCLUDE **ALL CURRENT EMERGENCY ACTION LEVELS**.

Notes: **THIS IS A TIME CRITICAL ADMIN JPM TO BE COMPLETED WITHIN 15 MINUTES.**

Attachment 1

Emergency Announcement - Gaitronics

NOTE: If CODE RED or CODE BLACK is in progress, on-site emergency announcements should be held to a minimum and prohibit movement of personnel until CODE condition is secured.

SOUND THE PLANT EMERGENCY ALARM

ATTENTION ALL PERSONNEL! ATTENTION ALL PERSONNEL!

A(N) UNUSUAL EVENT
ALERT
SITE EMERGENCY
GENERAL EMERGENCY

HAS BEEN DECLARED AT __:__(time)

THE CAUSE OF THE EMERGENCY IS EAL # CA1.1 and HA1.2

Emergency Organization Activation

Unusual Event	All members of the on-shift emergency organization report to your stations.
<u>Alert or Higher</u>	All members of the emergency response organization report to your stations.

Actions For Non-Essential Personnel

Unusual Event	All non-essential personnel continue with your normal duties unless further instructions are given.
<u>Alert</u>	All non-essential personnel continue with your normal duties unless further instructions are given. If you are NOT badged for protected area access, you must evacuate the plant site.
Site/General (Consider weather and radiological conditions PRIOR to making announcement.)	All non-essential personnel report to your pre-designated assembly areas in the CMB and Training Center. Take all personal belongings such as coats, car keys and purses. Follow the instructions of your Supervisor and Security Officers. Accountability will be performed.
Special Instructions	(i.e., Special routes during releases, Seek cover during storms, etc.)

PERSONNEL CAUTION (If required)

Potential Airborne Contamination	There will be NO eating, drinking, smoking, or chewing until further notice.
----------------------------------	--

(REPEAT ALL ANNOUNCEMENTS)

EC/RM APPROVAL

Facility: <u>Callaway</u>		Date of Examination: <u>6/19/2009</u>	
Exam Level (circle one): <u>RO (only)/SRO(I) / SRO (U)</u>		Operating Test No.: _____	
Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)			
	System / JPM Title	Type Code*	Safety Function
S1	001 Control Rod Drive System Perform Control Rod Partial Movement Test	D, S	1
S2	004 Chemical and Volume Control System Remove Excess Letdown From Service	D, S	2
S3	010 Pressurizer Pressure Control System Stuck Open Pressurizer Spray Valve	N, S, A, L, E	3
S4	059 Main Feedwater System Transfer S/G Level Control From Aux. Feed to Main Feed	D, S, L	4S
S5	026 Containment Spray System Manually Actuate Containment Spray System	N, S, A, L, EN	5
S6	062 AC Electrical Distribution Energize / De-Energize Load Center NG01	D, S, L	6
S7	029 Containment Purge System Re-establish Containment Purge After Isolation	N, S	8
S8	015 Nuclear Instrumentation System Respond to a Failed Power Range Instrument	D, S	7
In-Plant Systems® (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)			
P1	064 Emergency Diesel Generators NE01 Pre-start Checks	D, A	6
P2	078 Instrument Air System Respond to Loss of Instrument Air	D, A, E	8
P3	003 Reactor Coolant Pump System Local RCP Seal Isolation	D, A, E, L, R	4P

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.	
* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 (5) / 4-6 (5) / 2-3 (3)
(C)ontrol room	
(D)irect from bank	$\leq 9 (8) / \leq 8 (8) / \leq 4 (4)$
(E)mergency or abnormal in-plant	$\geq 1 (3) / \geq 1 (3) / \geq 1 (2)$
(EN)gineered safety feature	- / - / $\geq 1 (1)$
(L)ow-Power / Shutdown	$\geq 1 (5) / \geq 1 (5) / \geq 1 (3)$
(N)ew or (M)odified from bank including 1(A)	$\geq 2 (3) / \geq 2 (3) / \geq 1 (1)$
(P)revious 2 exams (randomly selected)	$\leq 3 (0) / \leq 3 (0) / \leq 2 (0)$
(R)CA	$\geq 1 (1) / \geq 1 (1) / \geq 1 (1)$
(S)imulator	

JPM Summary

- S1 - Bank JPM URO-SSF01C05J, Perform Control Rod Partial Movement Test. This JPM has the candidate operate the Control Rod Drive System by inserting rods in Shutdown Bank "A" at least 12 steps and then returning them to the their previous position.
- S2 - Bank JPM URO-SBG04C47J, Remove Excess Letdown From Service. This JPM starts with Normal and excess Letdown in Service and requires the candidate to remove the excess letdown system from service and verify RCP Seal Water Leakoff is adequate.
- S3 - NEW JPM - 010 Pressurizer Pressure Control System Stuck Open Spray Valve. This Alternate Path JPM starts with the plant at power. A pressurizer spray valve then fails open and cannot be closed manually from the main control board. This will require the candidate to trip the reactor and stop 2 Reactor Coolant Pumps in order to stop the Pressurizer spray / depressurization.
- S4 - Bank JPM URO-SAE02C46J, Transfer S/G Level Control From Aux. Feed to Main Feed. This JPM starts in Mode 2 with the "B" Main Feed Pump running and both Motor Driven Auxiliary Feed Pumps running to Maintain Steam Generator Level. The candidate will be required to place main feed in control and prepare to shutdown the auxiliary feed water system.
- S5 - NEW JPM - 026 Containment Spray System, Manually Actuate Containment Spray System. This Alternate Path JPM starts with the Reactor tripped and containment Pressure elevated due to a Large Break LOCA. Containment pressure exceeds the Containment Spray Actuation System setpoint, but Containment spray does not actuate. The candidate will be given Attachment A of E-0, Reactor Trip or Safety Injection and told to complete Containment Spray verification.
- S6 - Bank JPM URO-SNG1C82J, Energize / De-Energize Load Center NG01. This JPM starts with the plant in a Mode that allows all loads to be stripped from NG01. The candidate will de-energize NG01 and then re-energize the bus.
- S7 - NEW JPM - 029 Containment Purge System, Re-establish Containment Purge After Isolation. This JPM has the candidate restore Containment Purge following an inadvertent Containment Purge Isolation. The candidate will end up re-establishing Containment Mini-purge to the containment.
- S8 - Bank JPM URO-SSE03C126J, Respond to a Failed Power Range Instrument. This JPM will start at some at power initial condition. Power Range Channel N42 will fail high. The candidate will operate the Nuclear Instrumentation system at the back panels in order to defeat the affected channel.
- P1 - Bank JPM EOS-SNE11048J(A), NE01 Pre-start Checks. This Alternate Path JPM has the candidate perform all of the local pre-start checks on the "A" Diesel Generator. There are two different Alternate Path sections, 1) Rocker Oil Reservoir High level is in alarm – requiring the candidate to drain the reservoir, 2) Limit switch is Engaged for the Overspeed Trip and Silver Knob is NOT pulled out – requiring the candidate to explain to the examiner how to reset the overspeed. The candidate will proceed until the step requiring control room actions.

- P2 - Bank JPM EOS-SKA11040J, Respond to Loss in Instrument Air. This Alternate Path JPM has the candidate simulate the local actions at the Air Compressors for a Loss of Instrument Air. When the candidate is verifying all of the compressors running, he is informed that the "B" Air Compressor has zero oil pressure and is making excessive noise. This will require the candidate to stop the air compressor and close its discharge valve as an alternate path. The candidate will then inform the control room of this status.
- P3 - Bank JPM EOS-AEO05061J(A), Local RCP Seal Isolation. This Alternate Path JPM has the candidate simulate isolating RCP seals per EOP Addendum 22. This JPM will take place inside the RCA. The alternate path comes when trying to isolate BGV0106, he finds it will not close, requiring the candidate to take actions per the "Response Not Obtained" (RNO) column in the procedure. Cues are given at some points in the JPM to prevent excessive movement to different levels of the Auxiliary Building. The JPM will be complete when all steps of EOP Addendum have been completed.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S1 KSA NO: 001A4.03
REVISION: 2009 KSA RATING: 4.0 / 3.7
JOB TITLE: URO/SRO
DUTY: CONTROL ROD DRIVE SYSTEM
TASK TITLE: PERFORM CONTROL ROD PARTIAL MOVEMENT TEST
COMPLETION TIME: 12 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OSP-SF-00002, CONTROL ROD PARTIAL MOVEMENT, R018

TOOLS/EQUIPMENT:

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER _____ DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1, 100% STEADY STATE POWER. THERE ARE NO SPECIAL PHYSICS TESTS IN PROGRESS, NO BORON CONCENTRATION CHANGES BEING MADE OR PLANNED, AND CONTROL RODS ARE IN A NORMAL CONFIGURATION.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM CONTROL ROD PARTIAL MOVEMENT FOR ALL SHUTDOWN BANKS, PER OSP-SF-00002, SECTION 6.1.

START WITH SHUTDOWN BANK A AND PROCEED IN ALPHABETICAL ORDER.

Notes: USE ANY MODE 1 IC.

Task Standard: UPON COMPLETION OF THIS JPM, ALL SHUTDOWN BANK 'A' CONTROL RODS WILL HAVE BEEN INSERTED AT LEAST 10 STEPS INTO THE CORE AND RESTORED TO THEIR PRETEST POSITION.

START TIME: _____

STOP TIME: _____

**TASK
NUMBER - ELEMENT**

CUE

STANDARD

SCORE

<p>1. OBTAIN A VERIFIED WORKING COPY OF OSP-SF-00002, CONTROL ROD PARTIAL MOVEMENT</p>	<p>PROVIDE OPERATOR WITH PROCEDURE COPY</p>	<p>OPERATOR OBTAINS PROCEDURE COPY</p>	<p>S U</p> <p>Comments:</p>
<p>2. REVIEW THE PRECAUTIONS AND LIMITATIONS OF OSP-SF-00002</p> <p>STEP 4.0</p>	<p>ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED</p>	<p>OPERATOR REVIEWS THE PRECAUTIONS AND LIMITATIONS</p> <p>NOTE: IF ASKED, THE MONTHLY ROD POSITION TEST HAS NOT BEEN PERFORMED YET</p>	<p>S U</p> <p>Comments:</p>
<p>3. REVIEW PREREQUISITES OF OSP-SF-00002</p> <p>STEP 5.0</p>	<p>ALL PREREQUISITES ARE SATISFIED</p>	<p>OPERATOR REVIEWS THE PREREQUISITES</p>	<p>S U</p> <p>Comments:</p>

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4. <u>NOTE:</u></p> <p>PLACEKEEPING FOR SECTION 6.1 THROUGH 6.4 IS PERFORMED ON ATTACHMENT 1.</p> <p>A CABINET WITHOUT ANY GROUP SELECT LIGHT ILLUMINATED MAY INDICATE A BAD LIGHT BULB OR A BLOWN MULTIPLEXER FUSE. MOVING RODS WITHOUT THE CORRECT GROUP SELECT LIGHT ILLUMINATED COULD RESULT IN DROPPED OR MISPOSITIONED RODS.</p> <p>PRIOR TO STEP 6.1</p>		<p>OPERATOR READS NOTE</p>	<p>S U</p> <p>Comments:</p>
<p>5. PLACE SE HS-9, ROD BANK AUTO/MAN SEL, IN THE SHUTDOWN BANK TO BE TESTED AND INITIAL ATTACHMENT 1</p> <p>STEP 6.1.1</p>	<p>SE-HS-9 IS IN THE SBA POSITION</p>	<p>OPERATOR PLACES SE HS-9 IN THE SBA POSITION AND INITIALS ATTACHMENT 1</p>	<p>S U</p> <p>Comments:</p>

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>6. AT POWER CABINETS, ENSURE THE PROPER LIGHTS ARE ON FOR THE SELECTED BANK AND INITIAL ATTACHMENT 1</p> <p>STEP 6.1.2</p>	<p>GROUP SELECT LIGHT C IS ON AT POWER CABINETS 1AC AND 2AC</p>	<p>OPERATOR ENSURES GROUP SELECT LIGHT C IS ON AT POWER CABINETS 1AC AND 2AC AND INITIALS ATTACHMENT 1</p> <p>(Contacts Ops Tech)</p>	<p>S U</p> <p>Comments:</p>
<p>7. RECORD THE SHUTDOWN BANK STEP COUNTER POSITION FOR THE SELECTED BANK ON ATTACHMENT 1</p> <p>STEP 6.1.3</p>	<p>STEP COUNTERS FOR SHUTDOWN BANK A INDICATE 228 STEPS</p>	<p>OPERATOR RECORDS SHUTDOWN BANK A STEP COUNTER POSITION ON ATTACHMENT 1</p>	<p>S U</p> <p>Comments:</p>
<p>8. IF THE SELECTED BANK IS PARKED AT A FULLY WITHDRAWN POSITION OF OTHER THAN 228 STEPS, INSERT OR WITHDRAW THE BANK TO 228 STEPS AS INDICATED BY THE STEP COUNTERS AND DIGITAL ROD POSITION INDICATION.</p> <p>STEP 6.1.4</p>	<p>STEP COUNTERS AND DRPI FOR SHUTDOWN BANK A INDICATE 228 STEPS</p>	<p>OPERATOR CONTINUES PROCEDURE AT STEP 6.1.5</p>	

TASK NUMBER - ELEMENT	CUE	STANDARD	S U SCORE
9. RECORD SF074, DIGITAL ROD POSITION INDICATION (DRPI) AND SHUTDOWN BANK STEP COUNTER POSITION ON ATTACHMENT 1 STEP 6.1.5	SHUTDOWN BANK A DRPI AND STEP COUNTERS INDICATE 228 STEPS	OPERATOR RECORDS SHUTDOWN BANK A DRPI AND STEP COUNTER POSITION ON ATTACHMENT 1	S U Comments:
10. INSERT THE SELECTED BANK TWO STEPS PER STEP COUNTER INDICATION STEP 6.1.6	STEP COUNTERS FOR SHUTDOWN BANK A INDICATE 226 STEPS (AFTER ROD MOVEMENT)	OPERATOR INSERTS SHUTDOWN BANK A TO 226 STEPS	S U Comments:
11. WITHDRAW THE SELECTED BANK TO 228 STEPS PER STEP COUNTER INDICATION STEP 6.1.7	STEP COUNTERS FOR SHUTDOWN BANK A INDICATE 228 STEPS (AFTER ROD MOVEMENT)	OPERATOR WITHDRAWS SHUTDOWN BANK A TO 228 STEPS	S U Comments:

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>12. CHECK THAT NO ROD CONTROL ALARMS ARE PRESENT</p> <p>STEP 6.1.8</p>	<p>NO ROD CONTROL ALARMS ARE PRESENT</p>	<p>OPERATOR CHECKS THAT NO ALARMS ARE PRESENT</p>	<p>S U</p> <p>Comments:</p>
<p>*13.INSERT THE SELECTED BANK AT LEAST 12 STEPS AS INDICATED BY THE STEP COUNTERS AND DRPI</p> <p>STEP 6.1.9</p>	<p>SHUTDOWN BANK A STEP COUNTERS AND DRPI INDICATE 216 STEPS</p> <p>(AFTER ROD MOVEMENT)</p>	<p>OPERATOR INSERTS SHUTDOWN BANK A TO AT LEAST 218 STEPS</p> <p>(ACCEPTANCE CRITERIA OF 10 STEPS)</p>	<p>S U</p> <p>Comments:</p>
<p>14. RECORD DRPI AND SHUTDOWN BANK STEP COUNTER POSITION FOR THE SELECTED BANK ON ATTACHMENT 1</p> <p>STEP 6.1.10</p>	<p>SHUTDOWN BANK A DRPI AND STEP COUNTERS INDICATE 216 STEPS</p>	<p>OPERATOR RECORDS SHUTDOWN BANK A DRPI AND STEP COUNTER POSITION ON ATTACHMENT 1</p>	

[illegible]

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1, 100% STEADY STATE POWER. THERE ARE NO SPECIAL PHYSICS TESTS IN PROGRESS, NO BORON CONCENTRATION CHANGES BEING MADE OR PLANNED, AND CONTROL RODS ARE IN A NORMAL CONFIGURATION.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM CONTROL ROD PARTIAL MOVEMENT FOR ALL SHUTDOWN BANKS, PER OSP-SF-00002, SECTION 6.1.

START WITH SHUTDOWN BANK A AND PROCEED IN ALPHABETICAL ORDER.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S2 KSA NO: 004A4.06
JOB TITLE: URO/SRO KSA RATING: 3.6/3.1
DUTY: CVCS REVISION: 2009
TASK TITLE: REMOVE EXCESS LETDOWN FROM SERVICE
COMPLETION TIME: 8 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OTN-BG-00001, Add. 4, OPERATION OF CVCS LETDOWN, Rev. 6

TOOLS/EQUIPMENT: NONE

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. NORMAL RCS LETDOWN WAS OUT OF SERVICE FOR MAINTENANCE AND HAS BEEN RESTORED PER OTN-BG-00001, CHEMICAL AND VOLUME CONTROL SYSTEM.

EXCESS LETDOWN IS STILL IN SERVICE. IT IS FLOWING TO THE VCT, BUT WAS NEVER DIRECTED TO THE SPRAY NOZZLE.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO REMOVE EXCESS LETDOWN FROM SERVICE USING OTN-BG-00001, ADDENDUM 4, SECTION 5.5.

INFORM THE CONTROL ROOM SUPERVISOR WHEN EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE AFTER RP AND CHEMISTRY HAVE BEEN NOTIFIED

Notes: INITIALIZE IC-117. This IC has Excess Letdown in service.
IF IC -117 will not load, use any at power IC and open 'B' train Excess Letdown valves using BG-8153B and BG HIS 8154B.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE SECURED CVCS EXCESS LETDOWN.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTN-BG-00001, CHEMICAL AND VOLUME CONTROL SYSTEM	PROVIDE OPERATOR WITH PROCEDURE COPY	OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS AND PREREQUISITES SECTION 3 AND 4	ALL PRECAUTIONS, LIMITATIONS AND PREREQUISITES ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS, LIMITATIONS AND PREREQUISITES	S U Comments:
3. NOTE: ALL HANDSWITCHES ARE LOCATED ON PANEL RL001 OR RL002 UNLESS OTHERWISE INDICATED.		OPERATOR READS NOTE	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4. ENSURE THAT NORMAL LETDOWN HAS BEEN PLACED INTO SERVICE PER SECTION 5.4 ADDENDUM STEP 5.5.1	NORMAL LETDOWN IS IN SERVICE PER SECTION 5.4	OPERATOR MAY VERIFY NORMAL LETDOWN IS IN SERVICE NOTE: GIVEN IN INITIAL CONDITIONS	S U Comments:
*5. USING BG HC-123, CLOSE BGHCV0123, EX LETDN HX OUT FLOW HV STEP 5.5.2	BG HC-123, EXCESS LETDOWN HX OUTLET FLOW CONTROL SWITCH, IS IN THE CLOSE POSITION	OPERATOR SHOULD TURN EXCESS LETDOWN HX OUTLET FLOW CONTROL SWITCH, BG HC-123, TO THE CLOSE POSITION	S U Comments:
6. ENSURE BG HIS- 8143, EXCESS LTDN HX TO RCDT/SEAL WTR HX, IS IN THE VCT POSITION STEP 5.5.3	THE RED LIGHT IS ILLUMINATED ON BG HIS-8143, EXCESS LTDN HX TO RCDT/SEAL WTR HX, CONTROL SWITCH	OPERATOR SHOULD ENSURE THAT THE EXCESS LTDN HX TO THE RCDT/SEAL WTR HX, BG HIS- 8143, IS IN VCT POSITION	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*7. CLOSE BG HIS-8153B, REACTOR COOLANT TO EXCESS LETDOWN HX VALVE</p> <p>STEP 5.5.4.b.1</p>	<p>REACTOR COOLANT TO EXCESS LETDOWN HX, BG HIS-8153B, GREEN LIGHT ILLUMINATES AND RED LIGHT EXTINGUISHES</p>	<p>OPERATOR SHOULD CLOSE THE REACTOR COOLANT TO EXCESS LETDOWN HX, BG HIS-8153B</p> <p>NOTE: JPM STEPS 7 AND 8 MAY BE PERFORMED IN ANY ORDER</p>	<p>S U</p> <p>Comments:</p>
<p>*8. CLOSE BG HIS- 8154B REACTOR COOLANT TO EXCESS LETDOWN HX VALVE</p> <p>STEP 5.5.4.b.2</p>	<p>REACTOR COOLANT TO EXCESS LETDOWN HX, BG HIS-8154B, GREEN LIGHT ILLUMINATES AND RED LIGHT EXTINGUISHES</p>	<p>OPERATOR SHOULD CLOSE THE REACTOR COOLANT TO EXCESS LETDOWN HX, BG HIS-8154B</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>9. IF RCS PRESSURE IS BETWEEN 2220 PSIG AND 2250 PSIG, ENSURE RCP SEAL WATER LEAKOFF FLOW IS 1-5 GPM AS INDICATED ON BG FR-154 THROUGH BG FR-157 ON PANEL RL022</p> <p>STEP 5.5.5</p>	<p>RCP A SEAL WATER LEAKOFF, BG FR-157, INDICATES 3 GPM</p>	<p>OPERATOR SHOULD VERIFY THAT RCP A SEAL WATER LEAKOFF FLOW IS 1-5 GPM ON BG FR-157</p> <p>NOTE: JPM STEPS 9, 10, 11 AND 12 MAY BE PERFORMED IN ANY ORDER</p>	<p>S U</p> <p>Comments:</p>
<p>10. IF RCS PRESSURE IS BETWEEN 2220 PSIG AND 2250 PSIG, ENSURE RCP SEAL WATER LEAKOFF FLOW IS 1-5 GPM WITH NORMAL RCS OPERATING PRESSURE AS INDICATED ON BG FR-154 THROUGH BG FR-157 ON PANEL RL022</p> <p>STEP 5.5.5</p>	<p>RCP B SEAL WATER LEAKOFF, BG FR-156, INDICATES 3 GPM</p>	<p>OPERATOR SHOULD VERIFY THAT RCP B SEAL WATER LEAKOFF FLOW IS 1-5 GPM ON BG FR-156</p> <p>NOTE: JPM STEPS 9, 10, 11 AND 12 MAY BE PERFORMED IN ANY ORDER</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>11. IF RCS PRESSURE IS BETWEEN 2220 PSIG AND 2250 PSIG, ENSURE RCP SEAL WATER LEAKOFF FLOW IS 1-5 GPM AS INDICATED ON BG FR-154 THROUGH BG FR-157 ON PANEL RL022</p> <p>STEP 5.5.5</p>	<p>RCP C SEAL WATER LEAKOFF, BG FR-155, INDICATES 3 GPM</p>	<p>OPERATOR SHOULD VERIFY THAT RCP C SEAL WATER LEAKOFF FLOW IS 1-5 GPM ON BG FR-155</p> <p>NOTE: STEPS 9, 10, 11 AND 12 MAY BE PERFORMED IN ANY ORDER</p>	<p>S U</p> <p>Comments:</p>
<p>12. IF RCS PRESSURE IS BETWEEN 2220 PSIG AND 2250 PSIG, ENSURE RCP SEAL WATER LEAKOFF FLOW IS 1-5 GPM AS INDICATED ON BG FR-154 THROUGH BG FR-157 ON PANEL RL022</p> <p>STEP 5.5.5</p>	<p>RCP D SEAL WATER LEAKOFF, BG FR-154, INDICATES 3 GPM</p>	<p>OPERATOR SHOULD VERIFY THAT RCP D SEAL WATER LEAKOFF FLOW IS 1-5 GPM ON BG FR-154</p> <p>NOTE: STEPS 9, 10, 11 AND 12 MAY BE PERFORMED IN ANY ORDER</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>13. IF RCS PRESSURE IS OUTSIDE THE RANGE OF 2220 PSIG TO 2250 PSIG, ENSURE RCP SEAL WATER LEAK-OFF IS ACCEPTABLE PER THE RCP SEAL LEAK-OFF CURVE IN OTN-BB-00003, REACTOR COOLANT PUMPS.</p> <p>STEP 5.5.6</p>	RCS PRESSURE IS WITHIN 2220 TO 2250 PSIG.	RCS PRESSURE IS WITHIN NORMAL RANGE, NO OPERATOR ACTION IS NECESSARY.	<p>S U</p> <p>Comments:</p>
<p>14. INFORM RP AND CHEMISTRY THAT EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE</p> <p>STEP 5.5.7</p>	RP AND CHEMISTRY ACKNOWLEDGE THAT EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE	OPERATOR SHOULD INFORM RP AND CHEMISTRY THAT EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. NOTIFY CRS THAT EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE.	CRS ACKNOWLEDGES THAT EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE.	OPERATOR INFORMS CRS THAT EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE.	<div>S U</div> <div>Comments:</div>
	<u>RECORD STOP TIME</u> <u>ON PAGE 1</u>		

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. NORMAL RCS LETDOWN WAS OUT OF SERVICE FOR MAINTENANCE AND HAS BEEN RESTORED PER OTN-BG-00001, CHEMICAL AND VOLUME CONTROL SYSTEM.

EXCESS LETDOWN IS STILL IN SERVICE. IT IS FLOWING TO THE VCT, BUT WAS NEVER DIRECTED TO THE SPRAY NOZZLE.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO REMOVE EXCESS LETDOWN FROM SERVICE USING OTN-BG-00001, ADDENDUM 4, SECTION 5.5.

INFORM THE CONTROL ROOM SUPERVISOR WHEN EXCESS LETDOWN HAS BEEN REMOVED FROM SERVICE AFTER RP AND CHEMISTRY HAVE BEEN NOTIFIED.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S3 KSA NO: 010 A3.02
REVISION: 2009 NRC KSA RATING: 3.6/3.5
JOB TITLE: SRO
DUTY: PZR Pressure Control
TASK TITLE: Respond to a Failed Pressurizer Spray valve
COMPLETION TIME: 15 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OTO-BB-00006, PRESSURIZER PRESSURE CONTROL MALFUNCTION
REVISION 15

TOOLS/EQUIPMENT:

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1 AT 100% POWER.
All conditions are normal.

Initiating Cues: YOU HAVE BEEN DIRECTED TO respond to plant conditions regarding the Pressurizer Pressure Control System

Task Standard: Failed spray valve failure is addressed

Simulator: When directed insert malfunction to fail spray valve 455B open to reduce pressure slowly as follows:
Insert Malfunction (BB) BBPCV0455B_2, Value = 0.2, Ramp over 1 min.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTO-BB-00006, PRESSURIZER PRESSURE CONTROL MALFUNCTION	<u>RECORD START TIME ON PAGE 1</u>	OPERATOR OBTAINS PROCEDURE COPY	S U Comments:
*2. CHECK PRESSURIZER PRESSURE INDICATOR - FAILED Step 1		NO FAILED INDICATOR – GOES TO RNO – GO TO STEP 17	S U Comments:
*3. CHECK PRESSURIZER PRESSURE – LESS THAN 2235 PSIG Step 17		OPERATOR DETERMINES PRESSURE IS <2235 PSIG	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*4. CHECK BOTH PRESSURIZER SPRAY VALVES - CLOSED</p> <p>Step 18</p>		<p>SPRAY VALVE BB ZL-455B IS IDENTIFIED AS BEING OPEN</p> <p>GOES TO RNO</p>	<p>S U</p> <p>Comments:</p>
<p>*5. PERFORM THE FOLLOWING: PLACE THE AFFECTED PRESSURIZER SPRAY LOOP CONTROLLER IN MANUAL AND CLOSE THE VALVE</p> <p>Step 18 RNO a</p>		<p>SPRAY VALVE CONTROLLER BB PK-455B IS PLACED IN MANUAL AND ATTEMPTED TO CLOSE VALVE DOES RESPOND</p>	<p>S U</p> <p>Comments:</p>
<p>*6. ENERGIZE PRESSURIZER BACKUP HEATERS AS NECESSARY TO STABILIZE PRESURIZER PRESSURE</p> <p>Step 18 RNO b</p>		<p>BB HIS-51A AND BB HIS-52A OPERATED TO ENERGIZE ALL BACKUP HEATERS</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*7. IF PRESSURIZER PRESSURE CONTINUES TO LOWER IN AN UNCONTROLLED MANNER, THEN PERFORM THE FOLLOWING:</p> <p>MANUALLY TRIP THE REACTOR</p> <p>Step 18 RNO c 1</p>		<p>OPERATOR DETERMINES THAT PRESSURE IS NOT DROPPING UNCONTROLLED AND DOES NOT TRIP THE REACTOR</p>	<p>S U</p> <p>Comments:</p>
<p>8. CHECK PRESSURE GREATER THAN 2250 PSIG</p> <p>Step 19</p>		<p>OPERATOR CHECKS PRESSURE SHOULD BE LESS THAN 2250 AT THIS POINT</p> <p>GOES TO STEP 21</p>	<p>S U</p> <p>Comments:</p>
<p>9. CHECK PRESSURIZER PRESSURE – BETWEEN 2225 AND 2250 PSIG</p> <p>Step 21</p>		<p>OPERATOR CHECKS PRESSURE MAY BE IN BAND AT THIS POINT</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10. CHECK PRESSURIZER PRESSURE MASTER CONTROLLER – CONTROLLING IN AUTO BB PK-455A Step 22		OPERATOR VERIFIES THAT THE MASTER CONTROLLER IS IN AUTO	S U Comments:
*11. CHECK PRESSURIZER HEATERS – ALIGNED FOR AUTOMATIC CONTROL BB HIS-50 BB HIS-51A BB HIS-52A Step 23 & RNO		OPERATOR VERIFIES THAT PRESSURIZER HEATERS ARE IN AUTO (MAY HAVE PLACED THEM IN MANUAL DUE TO PREVIOUS STEPS)	S U Comments:
*12. CHECK PRESSURIZER SPRAY LOOP CONTROLLERS – IN AUTO BB PK-455B BB PK-455C Step 24		OPERATOR VERIFIES THAT PRESSURIZER SPRAY CONTROLLER BB PK-455B IS IN MANUAL AND KEEPS IT IN MANUAL TO CONTROL PRESSURE) BB PK-455C REMAINS IN AUTO	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. CHECK PRESSURIZER PORV'S – IN AUTO BB HIS-455A BB HIS-456A Step 25		OPERATOR VERIFIES THAT PRESSURIZER PORV'S ARE IN AUTO	S U Comments:
14. CHECK PRESSURIZER PORV BLOCK VALVE'S – OPEN BB HIS-8000A BB HIS-8000B Step 26		OPERATOR VERIFIES THAT PRESSURIZER PORV BLOCK VALVE'S ARE OPEN	S U Comments:
16. REVIEW APPLICABLE TECHNICAL SPECIFICATION: REFER TO ATTACHMENT J, TECHNICAL SPECIFICATIONS Step 27	THE SRO WILL REVIEW TECH SPEC	OPERATOR ASKS SRO TO REVIEW ATTACHMENT J	S U Comments:

* CRITICAL STEP

JPM NO: S3

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE	
			S	U
17. JPM COMPLETE	<u>RECORD STOP TIME ON PAGE 1</u>		Comments:	

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1 AT 100% POWER.
All conditions are normal.

Initiating Cues: YOU HAVE BEEN DIRECTED TO respond to plant conditions regarding the Pressurizer Pressure Control System

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S4 KSA NO: 059K1.04
JOB TITLE: URO/SRO KSA RATING: 3.4 / 3.4
DUTY: MAIN FEEDWATER REVISION: 2009
TASK TITLE: TRANSFER SG LVL CTRL FROM MFRV BYPASS VALVES TO MFRVs
COMPLETION TIME: 25 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OTN-AE-00001, FEEDWATER SYSTEM, R048

TOOLS/EQUIPMENT: NONE

FACILITY REPRESENTATIVE: _____ DATE: _____

CHIEF EXAMINER: _____ DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The Callaway Plant is in Mode 1 at 22% Reactor Power. The Control Room Crew is performing a power ascension.

Initiating Cues: The Control Room Supervisor directs you to transfer Steam Generator Water Level Control from the MFRV Bypass Valves to the Main Feedwater Regulating Valves using OTN-AE-00001, Feedwater System

The MFRVs have been unisolated and stroked in accordance with the procedure. You are to continue the procedure at step 5.9.16 of OTN-AE-00001

Notes: IC – 6
MFRVs Unisolated

Task Standard: Upon completion of this JPM, the operator will have transferred Steam Generator Water Level Control from the MFRV Bypass Valves to the MFRVs without causing a Feedwater Isolation Signal due to high or low Steam Generator water level.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a Verified Working Copy of OTN-AE-00001, Feedwater System	Provide operator with procedure copy	Operator obtains procedure copy	<div>S U</div> <div>Comments:</div>
2. Review Precautions and Limitations	All Precautions and Limitations are satisfied	Operator reviews Precautions and Limitations	<div>S U</div> <div>Comments:</div>
Section 3.0			
3. Review Prerequisites	There are no Prerequisites		<div>S U</div> <div>Comments:</div>
Section 4.0			

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4. <u>NOTE</u>: MFRVs should be transferred separately (Step 5.9.16) with reactor power stable at approximately 25%. However, if permitted by SS/CRS, the MFRVs may be transferred together in AUTO (Step 5.9.17).</p> <p>MFRV Bypass choked flow occurs at approximately 600 psid.</p> <p>Steps 5.9.16.a through 5.9.16.d may be performed in any order, but should be performed concurrently with permission of the SM/CRS.</p> <p>Note prior to Step 5.9.16</p>	<p>Transfer the MFRVs separately</p>	<p>Operator reads note</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>5*. IF MFRVs will be transferred separately, PERFORM the following for SG A:</p> <p>Ensure AE LK-550, SG A MFW REG BYPASS CTRL, in MANUAL</p> <p>While maintaining SG level stable, OPEN AE FK-510, SG A MFW REG VLV CTRL, and CLOSE AE LK-550, SG MFW REG BYPASS CTRL</p> <p>WHEN AE LK -550, SG A MFW REG BYPASS CTRL, is CLOSED, PLACE AE FK-510, SG A MFW REG VLV CTRL, in AUTO and CHECK SG level and feed flow STABLE</p> <p>Step 5.9.16.a</p>		<p>Operator PLACES / ENSURES</p> <p>AE LK-550 in MAN</p> <p>OPENS AE FK-510 and CLOSES AE LK-550 in a controlled manner</p> <p>PLACES AE FK-510 in AUTO and CHECKS SG level and feed flow STABLE</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>6*. IF MFRVs will be transferred separately, PERFORM the following for SG B:</p> <p>Ensure AE LK-560, SG B MFW REG BYPASS CTRL, in MANUAL</p> <p>While maintaining SG level stable, OPEN AE FK-520, SG B MFW REG VLV CTRL, and CLOSE AE LK-560, SG MFW REG BYPASS CTRL</p> <p>WHEN AE LK-560, SG B MFW REG BYPASS CTRL, is CLOSED, PLACE AE FK-520, SG B MFW REG VLV CTRL, in AUTO and CHECK SG level and feed flow STABLE</p> <p>Step 5.9.16.b</p>		<p>Operator PLACES / ENSURES</p> <p>AE LK-560 in MAN</p> <p>OPENS AE FK-520 and CLOSES AE LK-560 in a controlled manner</p> <p>PLACES AE FK-520 in AUTO and CHECKS SG level and feed flow STABLE</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>7*. IF MFRVs will be transferred separately, PERFORM the following for SG C:</p> <p>Ensure AE LK-570, SG C MFW REG BYPASS CTRL, in MANUAL</p> <p>While maintaining SG level stable, OPEN AE FK-530, SG C MFW REG VLV CTRL, and CLOSE AE LK-570, SG MFW REG BYPASS CTRL</p> <p>WHEN AE LK-570, SG C MFW REG BYPASS CTRL, is CLOSED, PLACE AE FK-530, SG C MFW REG VLV CTRL, in AUTO and CHECK SG level and feed flow STABLE</p> <p>Step 5.9.16.c</p>		<p>Operator PLACES / ENSURES</p> <p>AE LK-570 in MAN</p> <p>OPENS AE FK-530 and CLOSES AE LK-570 in a controlled manner</p> <p>PLACES AE FK-530 in AUTO and CHECKS SG level and feed flow STABLE</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>8*. IF MFRVs will be transferred separately, PERFORM the following for SG D:</p> <p>Ensure AE LK-580, SG A MFW REG BYPASS CTRL, in MANUAL</p> <p>While maintaining SG level stable, OPEN AE FK-540, SG D MFW REG VLV CTRL, and CLOSE AE LK-580, SG MFW REG BYPASS CTRL</p> <p>WHEN AE LK-580, SG A MFW REG BYPASS CTRL, is CLOSED, PLACE AE FK-540, SG D MFW REG VLV CTRL, in AUTO and CHECK SG level and feed flow STABLE</p> <p>Step 5.9.16.d</p>		<p>Operator PLACES / ENSURES</p> <p>AE LK-580 in MAN</p> <p>OPENS AE FK-540 and CLOSES AE LK-580 in a controlled manner</p> <p>PLACES AE FK-540 in AUTO and CHECKS SG level and feed flow STABLE</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. <u>NOTE:</u> Programmed DP is 45 to 149 psid for 0 to 100% power or 1.04 psid/%. 25% power equates to approximately 70 psid		Operator reads note	S U Comments:
10. DECREASE DP on FC SK-509A, MFP TURBS MASTER SPEED CTRL, to 70 psid as read on AE PDI-508, FW/STEAM HDR DP (2.8 on SET PT) Step 5.9.16.e	FW/STEAM HDR DP is 70 psid	Operator DECREASES DP on FC SK-509A, MFP TURBS MASTER SPEED CTRL, to 70 psid as read on AE PDI-508	S U Comments:
11. CHECK MFRVs operate to maintain SG levels Step 5.9.16.f	MFRVs are operating to maintain SG levels	Operator CHECKS MFRVs operate to maintain SG levels	S U Comments:

* CRITICAL STEP

[illegible]

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>13. PLACE High Power Speed Control Circuit in service as follows:</p> <p>If MFP A is running:</p> <p>PLACE FC SK-509B, MFP TURB A SPEED CTRL, in MAN</p> <p>TURN FC PS-509, MFP DP CTRL SEL, to HI PWR PROG DP</p> <p>PLACE FC SK 509A, MFP TURBS MASTER SPEED CTRL, in MAN</p> <p>ADJUST FC SK-509A, MFP TURBS MASTER SPEED CTRL, to match output of FC SK-509B, MFP TURB A SPEED CTRL</p> <p>PLACE FC SK-509B, MFP TURB A SPEED CTRL, in AUTO</p> <p>Step 5.9.18.a</p>	MFP B is running	Operator realizes that MFP B is running and goes to step 5.9.18.b.	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>14. PLACE High Power Speed Control Circuit in service as follows:</p> <p>If MFP B is running:</p> <p>PLACE FC SK-509C, MFP TURB B SPEED CTRL, in MAN</p> <p>TURN FC PS-509, MFP DP CTRL SEL, to HI PWR PROG ΔP</p> <p>PLACE FC SK-509A, MFP TURBS MASTER SPEED CTRL, in MAN</p> <p>ADJUST FC SK-509A, MFP TURBS MASTER SPEED CTRL, to match output of FC SK-509C, MFP TURB C SPEED CTRL</p> <p>PLACE FC SK-509C, MFP TURB B SPEED CTRL, in AUTO</p> <p>Step 5.9.18.b</p>	<p>FC SK-509C is in MAN</p> <p>FC PS-509 is in HI PWR PROG ΔP</p> <p>FC SK-509A is in MAN</p> <p>FC SK-509A matches output of FC SK-509C</p> <p>FC SK-509C is in AUTO</p>	<p>Operator PLACES FC SK-509C in MAN</p> <p>URNS FC PS-509 to HI PWR PROG ΔP</p> <p>PLACES FC SK-509A in MAN</p> <p>ADJUSTS FC SK-509A to match output of FC SK-509C</p> <p>and PLACES FC SK-509C in AUTO</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. ENSURE AE PDI-508, FW/STEAM HDR ΔP, is set for existing power level Step 5.9.18.c	AE PDI-508, FW/STEAM HDR ΔP, is set for existing power level Approximately 70 psid	Operator ENSURES AE PDI-508, FW/STEAM HDR ΔP, is set for existing power level	S U Comments:
16. PLACE FC SK-509A, MFP TURBS MASTER SPEED CTRL, in AUTO Step 5.9.18.d	FC SK-509A, MFP TURBS MASTER SPEED CTRL, is in AUTO	Operator PLACES FC SK-509A, MFP TURBS MASTER SPEED CTRL, in AUTO	S U Comments:
17. ENSURE AE PDI-508, FW/STEAM HDR ΔP, is automatically maintaining Feed Hdr/Steam Hdr ΔP for existing plant conditions Step 5.9.19	AE PDI-508 is automatically maintaining Feed Hdr/Steam Hdr ΔP for existing plant conditions _____ The JPM is Complete Record Stop Time on Page 1	Operator ENSURES AE PDI-508 is automatically maintaining Feed Hdr/Steam Hdr ΔP for existing plant conditions	S U Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: The Callaway Plant is in Mode 1 at 22% Reactor Power. The Control Room Crew is performing a power ascension.

Initiating Cues: The Control Room Supervisor directs you to transfer Steam Generator Water Level Control from the MFRV Bypass Valves to the Main Feedwater Regulating Valves.

The MFRVs have been unisolated and stroked in accordance with the procedure. You are to continue the procedure at step 5.9.16 of OTN-AE-00001.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S5
JOB TITLE: RO
DUTY: Emergency Procedures
TASK TITLE: Manually Actuate Containment Spray
COMPLETION TIME: 15 MINUTES

KSA NO: 026 A1.01
KSA RATING: 3.9/4.2
REVISION: 2009

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: E-0, Reactor Trip or Safety Injection, REVISION 12

TOOLS/EQUIPMENT:

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT WAS IN MODE 1 AT 100% POWER.
The unit experienced a Large Break LOCA
Containment pressure is 28.9 psig.
E-0, Attachment A is in progress

Initiating Cues: YOU HAVE BEEN DIRECTED TO COMPLETE CONTAINMENT SPRAY
VERIFICATION IN ACCORDANCE WITH E-0, ATTACHMENT A., STEP A8.

Task Standard: CONTAINMENT SPRAY IS ACTUATED TO REDUCE CONTAINMENT
PRESSURE.

Simulator: Reset to IC - , No Cont. Spray Pumps running, HV-6 & 12 do not open (AUTO), verify
containment pressure > 28.9 psig, Ensure Annunciators 59A and 59B are Lit

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF E-0, REACTOR TRIP OR SAFETY INJECTION	<p><u>Once E-0 located give operator a marked up copy of Attachment A</u></p> <p><u>RECORD START TIME ON PAGE 1</u></p>	OPERATOR OBTAINS PROCEDURE COPY	<p>S U</p> <p>Comments:</p>
<p>*2. Check if containment spray should be actuated:</p> <p>Check the Following:</p> <p>Check Containment Pressure greater than 27 psig</p> <p>OR</p> <p>GN PR-934 indicates containment pressure has been greater than 27 psig</p> <p>OR</p> <p>Annunciator 59A CSAS – LIT</p> <p>OR</p> <p>Annunciator 59B CISB – LIT</p> <p>Step A8 a</p>		OPERATOR IDENTIFIES THAT CONTAINMENT PRESSURE IS GREATER THAN 27 PSIG	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*3. CONTAINMENT SPRAY PUMPS BOTH RUNNING Step A8 b		OPERATOR IDENTIFIES THAT NEITHER CONTAINMENT SPRAY PUMP IS RUNNING, GOES TO RNO	S U Comments:
*4. PERFORM THE FOLLOWING AS NECESSARY: 1) MANUALLY ACTUATE CSAS; SB HS-43 AND SB HS-45 SB HS-44 AND SB HS-46 Step A8 b RNO 1)		OPERATOR MANUALLY ACTUATES CONTAINMENT SPRAY BY OPERATING HANDSWITCHES SB HS-43 & SB HS-45 <u>OR</u> SB HS-44 & SB HS-46	S U Comments:
*5. ENSURE BOTH CONTAINMENT SPRAY PUMPS ARE RUNNING Step A8 b RNO 2)		OPERATOR IDENTIFIES THAT BOTH CONTAINMENT SPRAY PUMPS ARE RUNNING	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*6. ESFAS STATUS PANELS CSAS SECTIONS: SA066X WHITE LIGHTS – ALL LIT SA066Y WHITE LIGHTS – ALL LIT Step A8 c		OPERATOR IDENTIFIES THAT EN HV-6 & EN HV-12 DID NOT OPEN – GOES TO RNO	S U Comments:
*7. ALIGNS VALVES AS NECESSARY Step A8 c RNO		OPERATOR OPENS EN HV-6 & EN HV-12 SHOULD IDENTIFY FLOW ON EN FT-5 & EN FT-11	S U Comments:
8. ESFAS STATUS PANELS CISB SECTIONS: SA066X WHITE LIGHTS – ALL LIT SA066Y WHITE LIGHTS – ALL LIT Step A8 c		OPERATOR IDENTIFIES THAT ALL WHITE LIGHTS LIT	S U Comments:
*9. STOP ALL RCPs Step A8 e		OPERATOR STOPS ALL RCPS	S U Comments:

* CRITICAL STEP

JPM NO: S5

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE	
			S	U
10. JPM COMPLETE	<u>RECORD STOP TIME ON PAGE 1</u>		Comments:	

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT WAS IN MODE 1 AT 100% POWER.
The unit experienced a Large Break LOCA
Containment pressure is 28.9 psig.
E-0, Attachment A is in progress

Initiating Cues: YOU HAVE BEEN DIRECTED TO COMPLETE CONTAINMENT SPRAY
VERIFICATION IN ACCORDANCE WITH E-0, ATTACHMENT A., STEP A8.

CALLAWAY PLANT JOB PERFORMANCE MEASURE

JPM No:	S6	KSA No:	062A4.01
Job Title:	URO / SRO	KSA Rating:	3.3 / 3.1
Duty:	Safety Related Elec. Gen. & Dist. (NG) Revision: 2009		
Task Title:	Operate the System – De-Energize / Energize Load Center NG01		
Completion Time:	15 minutes		

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator / Lab X Plant _____ Classroom _____

Method of Performance: Simulated _____ Performed X

References: OTN-NG-00001, Class 1E 480 VAC Electrical System, R012

Tools / Equipment: None

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: _____ // _____ DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 6. Electrical Maintenance is scheduled to clean load center NG01.

Initiating Cues: The Control Room Supervisor directs you to de-energize load center NG01 per OTN-NG-00001, Class 1E 480 VAC Electrical System.

You will be directed to energize NG01 when the cleaning activity is complete and the WPA is cleared.

Notes: Ensure SFP Cooling Pump B is running

Task Standard: Upon completion of this JPM, the operator will have de-energized and re-energized NG01 in accordance with OTN-NG-00001, Class 1E 480 VAC Electrical System.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of OTN-NG-00001	Provide operator with procedure copy	Operator obtains procedure copy	S U Comments:
2. Review the Purpose, Scope, Precautions, Limitations, and Prerequisites Sections 1.0 – 4.0	All Precautions, Limitations, and Prerequisites are satisfied	Operator reviews the Purpose, Scope, Precautions, Limitations, and Prerequisites	S U Comments:
3. CAUTION: Technical Specifications must be reviewed before de-energizing a 480V load center to prevent de-energizing equipment required by Limiting Conditions for Operation Section 5.5		Operator reads caution	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
4. Refer to Steps 3.1 and 3.2 AND ENSURE Technical Specifications will allow de-energizing the selected load center Step 5.5.1	Technical Specifications will allow de-energizing NG01	Operator ensures Technical Specifications will allow de-energizing NG01	Comments:	
5. ENSURE all loads supplied by the load center to be de-energized are shut down Step 5.5.2	All loads supplied by NG01 are shut down	Operator ensures all loads supplied by NG01 are shut down	Comments:	
*6. If de-energizing NG01, OPEN the following breakers: Using NG HIS-9, 480 V XNG01 TO LC NG01 BKR NG0101, OPEN NG0101 Step 5.5.3.a	NG HIS-9 indicates OPEN	Operator opens NG0101	Comments:	

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*7. Using NG HIS-1, 4.16 KV BUS NB01 TO XNG01 BKR NB0113, OPEN NB0113</p> <p>Step 5.5.3.b</p>	<p>NG HIS-1 indicates OPEN</p> <hr/> <p>NG01 cleaning is complete and the WPA is clear.</p> <p>The CRS directs you to energize NG01 per OTN-NG-00001</p>	<p>Operator opens NB0113</p>	<p>S U</p> <p>Comments:</p>
<p>8. ENSURE NG0116, TIE BKR FOR NG01 AND NG03, is RACKED IN and OPEN</p> <p>Step 5.1.1</p>	<p>NG0116 is RACKED IN and OPEN</p>	<p>Operator ensures NG0116 is RACKED IN and OPEN</p>	<p>S U</p> <p>Comments:</p>
<p>9. Using NG HIS-10, 480 V LC NG01/NG03 TIE BKR NG0116, CHECK NG0116 is OPEN</p> <p>Step 5.1.2</p>	<p>NG HIS-10 indicates OPEN</p>	<p>Operator checks NG0116 is OPEN</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*10. Using NG HIS-1, 4.16 KV BUS NB01 TO XNG01 BKR NB0113, CLOSE NB0113</p> <p>Step 5.1.3</p>	NG HIS-1 indicates CLOSED	Operator CLOSES NB0113	<p>S U</p> <p>Comments:</p>
<p>*11. Using NG HIS-9, 480 V XNG01 TO LC NG01 BKR NG0101, CLOSE NG0101</p> <p>Step 5.1.4</p>	NG HIS-9 indicates CLOSED	Operator CLOSES NG0101	<p>S U</p> <p>Comments:</p>
<p>12. At NG01, A TRAIN 480 VAC LC, ENSURE the following breakers are CLOSED:</p> <p>NG0106 NG0107 NG0108</p> <p>Step 5.1.5</p>	<p>NG0106, NG0107, and NG0108 are CLOSED</p> <p>The JPM is Complete</p> <hr/> <p>Record Stop Time on Page 1</p>	<p>Operator directs Equipment Operator to locally ensure</p> <p>NG0106, NG0107, and NG0108 are CLOSED</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 6. Electrical Maintenance is scheduled to clean load center NG01.

Initiating Cues: The Control Room Supervisor directs you to de-energize load center NG01 per OTN-NG-00001, Class 1E 480 VAC Electrical System.

You will be directed to energize NG01 when the cleaning activity is complete and the WPA is cleared.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S7 KSA NO:029 K1.05
JOB TITLE: RO/SRO KSA RATING: 2.9/3.1
DUTY: PURGE SYSTEM OPERATION REVISION: 2009
TASK TITLE: ESTABLISH CONTAINMENT PURGE
COMPLETION TIME: 30 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OTN-GT-00001, CONTAINMENT PURGE SYSTEM, REVISION 26

TOOLS/EQUIPMENT:

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

JPM NO: S7

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1 AT 100% POWER.

A CONTAINMENT ENTRY AT POWER IS REQUIRED.

Initiating Cues: YOU HAVE BEEN DIRECTED TO ESTABLISH CONTAINMENT MINI-PURGE IAW OTN-GT-00001, CONTAINMENT PURGE SYSTEM.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR HAS RESTORED CONTAINMENT PURGE TO OPERATION

Simulator instructions: Establish conditions at power with Mini Purge NOT in service.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTN-GT-00001, Containment Purge System	<p><u>Once operator obtains a copy of the procedure, give him a marked up copy</u></p> <p><u>RECORD START TIME ON PAGE 1</u></p>	OPERATOR OBTAINS PROCEDURE COPY	<p>S U</p> <p>Comments:</p>
2. PLACING MINI-PURGE SYSTEM IN SERVICE ENSURE SECTION 5.1 HAS BEEN PERFORMED Step 5.2.1		OPERATOR REVIEWS THE PROCEDURE AND VERIFIES THAT SECTION 5.1 HAS BEEN COMPLETED (MAY SPOT CHECK SECTION 5.1 TO VERIFY)	<p>S U</p> <p>Comments:</p>
3. ENSURE SHUTDOWN PURGE SYSTEM NOT IN SERVICE Step 5.2.2	SHUTDOWN PURGE IS NOT IN SERVICE	OPERATOR VERIFIES THAT PURGE SUPPLY AND EXHAUST FANS ARE SECURED	<p>S U</p> <p>Comments:</p>
4. NOTE: Minivent time trend may be used		Operator Reads NOTE	<p>S U</p> <p>Comments</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
5. MONITOR THE FOLLOWING INSTRUMENTATION SDRE0041 (SDR0041H) SDRE0042 (SDR0042H) GT PDI-40 (GTD0040) Step 5.2.3		OPERATOR MONITORS INSTRUMENTATION. MAY USE ASSOCIATED PLANT COMPUTER POINTS	S U Comments:
*6. RECORD CONTAINMENT PRESSURE AS READ ON GT PDI-40 Step 5.2.4		OPERATOR RECORDS CONTAINMENT PRESSURE FROM GT-PDI-40	S U Comments:
*7. IF IN MODES 1-4 OR PREPARING TO ENTER MODE 4 FROM MODE 5, ENSURE THE FOLLOWING ARE IN OPERATE WITH "CONTAINMENT PURGE IN PROGRESS DO NOT BYPASS" COVERS IN PLACE GTRT0022 GTRT0033 Step 5.2.5	Once the operator locates the panels – CUE: GTRT22 and GTRT33 are in OPERATE with the "DO NOT BYPASS" covers in place	OPERATOR GOES TO BACK PANELS SA036D & SA036E VERIFIES THAT GTRT022 & 0033 ARE NOT BYPASSED AND "DO NOT BYPASS" COVERS ARE IN PLACE	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*8. USING GT HIS-20, START CGT02 Step 5.2.7		OPERATOR STARTS CGT02	S U Comments:
*9. USING GT HIS-11, OPEN GTHZ0011 Step 5.2.8		OPERATOR OPENS GTHZ0011	S U Comments:
*10. USING GT HIS-12, OPEN GTHZ0012 Step 5.2.9		OPERATOR OPENS GTHZ0012	S U Comments:
*11. USING GT HIS-28, OPEN GTHZ0028 Step 5.2.10		OPERATOR OPENS GTHZ0028	S U Comments:
*12. USING GT HIS-29, OPEN GTHZ0029 Step 5.2.11		OPERATOR OPENS GTHZ00292	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. RECORD DATE AND TIME DAMPERS WERE OPENED ON THE GASEOUS RADWASTE RELEASE PERMIT Step 5.2.12	When the Operator goes looking for the Permit – CUE: Another Operator has Recorded the time dampers were opened on the Gaseous Radwaste Release Permit	OPERATOR ENSURES GASEOUS RADWASTE RELEASE PERMIT IS ADDRESSED	S U Comments:
14. NOTIFY RAD/CHEM TECHNICIAN (COUNT ROOM) OF TIME OF PURGE INITIATION Step 5.2.13		OPERATOR NOTIFIES RAD/CHEM TECH	S U Comments:
*15. WHEN CONTAINMENT PRESSURE IS < 10.0 IN. H ₂ O, OPEN THE FOLLOWING USING GT HIS-41: GTHZ0041 & GTHZ0042 Step 5.2.14	Containment Pressure is 2.5 IN H ₂ O	OPERATOR OPENS GTHZ0041 & GTHZ0042	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*16. WHEN CONTAINMENT PRESSURE IS < 4.25 IN. H2O, OPEN THE FOLLOWING USING GT HIS-26 & 27:</p> <p>GTHZ0026 & GTHZ0027</p> <p>Step 5.2.15</p>	Containment Pressure is 2.5 IN H2O	OPERATOR OPENS GTHZ0026 & GTHZ0027	<p>S U</p> <p>Comments:</p>
<p>17. CAUTION: SGT02, CTMT MINI PURGE AIR SPLY UNIT, should be running anytime CGT02, CTMT MINI PURGE EXH FAN, is running and Equipment Hatch is closed to prevent drawing excessive vacuum in Containment and creating a personnel hazard.</p>		OPERATOR READS CAUTION	
<p>*18. USING GT HIS-23, START SGT02</p> <p>Step 5.2.16</p>		OPERATOR STARTS SGT02 USING GT HIS-23	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*19. USING GT HIS-5, OPEN GTHZ0005 Step 5.2.17		OPERATOR OPENS GTHZ0005 USING GT HIS-5	S U Comments:
*20. USING GT HIS-4, OPEN GTHZ0004 Step 5.2.18		OPERATOR OPENS GTHZ0004 USING GT HIS-4	S U Comments:
21. MAINTAIN CONTAINMENT PRESSURE +41.5 TO -8.35 IN. H2O AS READ ON GT PDI- 40, CTMT D/P, OR PLANT COMPUTER POINT GTD0040, CTMT-AUX BLD DIFF PRESS. Step 5.2.19		OPERATOR MONITORS CONTAINMENT PRESSURE	S U Comments:

* CRITICAL STEP

JPM NO: S7

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE	
			S	U
22. JPM COMPLETE	<u>RECORD STOP TIME ON PAGE 1</u>		Comments:	

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1 AT 100% POWER.

A CONTAINMENT ENTRY AT POWER IS REQUIRED.

Initiating Cues: YOU HAVE BEEN DIRECTED TO ESTABLISH CONTAINMENT MINI-PURGE IAW OTN-GT-00001, CONTAINMENT PURGE SYSTEM.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: S8 KSA NO: 015 A4.03
JOB TITLE: URO KSA RATING: 3.8/3.9
DUTY: OFF NORMAL - NUCLEAR INST. REVISION: 2009
TASK TITLE: RESPOND TO A FAILED POWER RANGE INSTRUMENT
COMPLETION TIME: 17 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB X PLANT _____ CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED _____ PERFORMED X

REFERENCES: OTO-SE-00001, NUCLEAR INSTRUMENT MALFUNCTION, R018

TOOLS/EQUIPMENT:

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 1. Power Range NIS channel N42 failed high. The actions of OTO-SE-00001, Nuclear Instrument Malfunction, have been performed through step A4 of Attachment A.

Initiating Cues: The Control Room Supervisor directs you to perform OTO-SE-00001, Attachment A, Power Range Instrument Malfunction, steps A5 through A9.

Notes: Use any Mode 1 IC above 50%, with the Main Feedwater Reg Valves in service.

Ensure Rod Control is in **MANUAL**

Insert Malfunction (SE) SEN0042, Value = 200, with a 10 second ramp.

Task Standard: Upon Completion of this JPM, Power Range NIS channel N42 current comparator and rod stop inputs will be bypassed. The protective bistables for N42 will be tripped and the control power fuses removed.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>1. Obtain a verified working copy of OTO-SE-00001, Nuclear Instrument Malfunction</p> <p><i>Examiner Note:</i></p> <p><i>JPM Steps 2 through 5 can be performed in any order</i></p>	Provide Operator with procedure copy	Operator obtains procedure copy	<p>S U</p> <p>Comments:</p>
<p>*2. Bypass the malfunctioning channel by selecting it on the following switches:</p> <p>Detector Current Comparator drawer:</p> <p>Place Upper Section switch to the failed channel</p> <p>Step A5.a</p>	The Upper Section switch on the Detector Current Comparator drawer is in the N42 position	Operator places the Upper Section switch, on the Detector Current Comparator drawer, in the N42 position	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*3. Detector Current Comparator drawer:</p> <p>Place Lower Section switch to the failed channel</p> <p>Step A5.a</p>	<p>The Lower Section switch on the Detector Current Comparator drawer is in the N42 position</p>	<p>Operator places the Lower Section switch, on the Detector Current Comparator drawer, in the N42 position</p>	<p>S U</p> <p>Comments:</p>
<p>*4. Detector Current Comparator drawer:</p> <p>Place Rod Stop Bypass switch to the failed channel</p> <p>Step A5.a</p>	<p>The Rod Stop Bypass switch on the Detector Current Comparator drawer is in the N42 position</p>	<p>Operator places the Rod Stop Bypass switch, on the Detector Current Comparator drawer, in the N42 position</p>	<p>S U</p> <p>Comments:</p>
<p>*5. Detector Current Comparator drawer:</p> <p>Place Power Mismatch Bypass switch to the failed channel</p> <p>Step A5.a</p>	<p>The Power Mismatch Bypass switch on the Detector Current Comparator drawer is in the N42 position</p>	<p>Operator places the Power Mismatch Bypass switch, on the Detector Current Comparator drawer, in the N42 position</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*6. On the Comparator and Rate drawer, Place Comparator Channel Defeat switch to the failed channel</p> <p>Step A5.b</p>	<p>The Comparator Channel Defeat switch on the Comparator and Rate drawer is in the N42 position</p>	<p>Operator places the Comparator Channel Defeat switch, on the Comparator and Rate drawer, in the N42 position</p>	<p>S U</p> <p>Comments:</p>
<p>7. Ensure the following Annunciators are extinguished:</p> <p>78A, PR CH DEV 78B, UP DET DEV 78C, LO DET DEV 82A, PR ROD STOP</p> <p>Step A5.c</p>	<p>78A, PR CH DEV 78B, UP DET DEV 78C, LO DET DEV 82A, PR ROD STOP</p> <p>are extinguished:</p>	<p>Operator ensures the following Annunciators are extinguished:</p> <p>78A, PR CH DEV 78B, UP DET DEV 78C, LO DET DEV 82A, PR ROD STOP</p>	<p>S U</p> <p>Comments:</p>
<p>8. <u>NOTE:</u> Step A5 of this section must be completed before continuing</p>	<p>Step A5 of this section is complete.</p>	<p>Operator reads note and ensures Step A5 of this section is completed before continuing</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. Check Rod Control – In AUTO <u>RNO</u> – When RCS Tavg/Tref are equal AND rods were in AUTO prior to the event, THEN PLACE Rod Control in AUTO Step A6	RCS Tavg/Tref are equal AND rods were in AUTO prior to the event.	Operator PLACES Rod Control In AUTO	S U Comments:
10. Check any SG level being controlled by MFW REG VALVE BYPASS VALVES <u>RNO</u> – Go to Step A8 Step A7	No SG level being controlled by MFW REG VALVE BYPASS VALVES	Operator checks any SG level being controlled by MFW REG VALVE BYPASS VALVES and goes to Step A8	S U Comments:
11. Check Reactor Power – Greater than 10% Step A8	Reactor Power is >10%	Operator checks Reactor Power – Greater than 10%	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>12. Trip Protective Bistables per Attachment D, Tripping PR Protective Bistables, within the time limit specified in the applicable Technical Specification</p> <p>Step A9</p>	The Control Room Supervisor directs you to perform Attachment D	Operator goes to Attachment D	<p>S U</p> <p>Comments:</p>
<p>13. Check the failed Power Range Channel:</p> <p>_____ N41 _____ N42 _____ N43 _____ N44</p> <p>Step D1</p>		Operator checks N42	<p>S U</p> <p>Comments:</p>
<p>14. Ensure no other Power Range channels are in a tripped condition</p> <p>Step D2</p>	No other Power Range channels are in a tripped condition	Operator ensure no other Power Range channels are in a tripped condition	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*15. REMOVE Control Power fuses for the failed channel</p> <p>Step D3</p>	Control Power fuses for N42 are removed	Operator REMOVES Control Power fuses for N42	<p>S U</p> <p>Comments:</p>
<p>16. DIRECT I&C to perform the following:</p> <p>Place N/A in the boxes for the operable channels</p> <p>Place TEST switches for the failed channel in TEST</p> <p>Step D4</p>	<p>DIRECT SIMULATOR OPERATOR TO TRIP BISTABLES:</p> <p>Run lesson:</p> <p>SEN42 bistables.Isn</p> <p>Once Complete CUE Operator Step D4 is Complete</p>	Operator ensures I&C performs Step D4	<p>S U</p> <p>Comments:</p>
<p>17. PERFORM the following:</p> <p>Place N/A in the boxes for the operable channels</p> <p>CHECK that the following status lights are LIT for the failed PR channel:</p> <p>Step D5</p>			<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

[illegible]

* CRITICAL STEP

JPM NO: S8

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
	THE JPM IS COMPLETE <u>RECORD STOP TIME ON PAGE 1</u>		S U Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: Callaway Plant is in Mode 1. Power Range NIS channel N42 failed high. The actions of OTO-SE-00001, Nuclear Instrument Malfunction, have been performed through step A4 of Attachment A.

Initiating Cues: The Control Room Supervisor directs you to perform OTO-SE-00001, Attachment A, Power Range Instrument Malfunction, steps A5 through A9.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: P1 KSA NO: 064A4.01
JOB TITLE: URO/SRO KSA RATING: 4.0/4.3
DUTY: SAFETY RELATED ELEC GEN & DIST (NE) REVISION: 2009
TASK TITLE: DIESEL GENERATOR PRE-START CHECKS ON NE01
COMPLETION TIME: 30 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT X CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED X PERFORMED _____

REFERENCES: OTN-NE-0001A, STANDBY DIESEL GENERATOR SYSTEM - TRAIN A; REV. 26

TOOLS/EQUIPMENT: PPE

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1 AT 100% POWER. 'A' DIESEL GENERATOR WILL NEED TO BE RUN FOR ITS NORMAL SURVEILLANCE. THE AUXILIARY COMPONENTS HAVE BEEN ALIGNED AND NO OTHER CHECKLISTS FROM SECTION 5.1 OF THIS PROCEDURE NEED TO BE PERFORMED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM THE DIESEL GENERATOR PRE-START CHECKS ON NE01, PER OTN-NE-0001A, SECTION 5.2. INFORM THE CONTROL ROOM SUPERVISOR WHEN SECTION 5.2 HAS BEEN COMPLETED TO STEP 5.2.19 (RO ACTIONS)

Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED. **FILL OUT ATTACHMENT 2 FOR OPERATOR TO VERIFY ROCKER ARM PRELUBE PUMP HAS BEEN RUN 3 HOURS AGO (FOR 6 MINUTES)**

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE COMPLETED THE PRE-START CHECK ON NE01.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTN-NE-0001A, STANDBY DIESEL GENERATOR SYSTEM - TRAIN A		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS OF OTN-NE-0001A SECTION 3	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW THE PRECAUTIONS AND LIMITATIONS	S U Comments:
3. REVIEW THE PREREQUISITES OF OTN-NE-0001A SECTION 4	ALL PREREQUISITES ARE SATISFIED ASK IF THE OPERATOR UNDERSTANDS THE PREREQUISITES AND INITIATING CUES	OPERATOR SHOULD REVIEW THE PREREQUISITES	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4. REQUEST SM/CRS TO DETERMINE IF ANY CHECKLISTS FROM SECTION 5.1 NEED TO BE PERFORMED TO RETURN COMPONENTS TO NORMAL STANDBY ALIGNMENT STEP 5.2.1	IF ASKED: ALL CHECKLISTS FROM SECTION 5.1 ARE COMPLETE	OPERATOR UNDERSTANDS THAT ALL STANDBY ALIGNMENTS ARE COMPLETE AS STATED IN THE INITIAL CONDITIONS CUE SHEET	S U Comments:
NOTE: THE CONTROL ROOM SHOULD BE INFORMED OF ANY ALARMS TO DETERMINE EFFECT ON DIESEL OPERATION STEPS IN THIS SECTION MAY BE PERFORMED IN ANY ORDER	UNDERSTAND THAT THE OPERATOR MAY PERFORM STEPS IN THIS SECTION IN ANY ORDER	OPERATOR READS AND UNDERSTANDS NOTE	S U Comments:
5*. AT LOCAL ALARM PANEL KJ121, CHECK FOR ALARMS AND NOTIFY RO STEP 5.2.2	ANNUNCIATOR 3C IS CURRENTLY IN ALARM – CRS DIRECTS YOU TO CONTINUE IN PROCEDURE	OPERATOR SHOULD LOOK AT PANEL KJ121 AND CHECK FOR ANY ALARMS CONTINUES IN PROCEDURE PER DIRECTION OF THE CRS	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>6. ENSURE JEHS0001B, DG F.O. XFR PMP HAND SWITCH, IN NORMAL</p> <p>STEP 5.2.3</p>	<p>JEHS0001B IS IN THE NORMAL POSITION</p>	<p>OPERATOR SHOULD VERIFY JEHS0001B IS IN THE SPRING RETURN TO NORMAL POSITION</p>	<p>S U</p> <p>Comments:</p>
<p>7. CHECK JELI0012B, EMERG F.O. DAY TK A FUEL LEV IND B, INDICATES GREATER THAN OR EQUAL TO 3.5 FEET.</p> <p>STEP 5.2.4</p>	<p>POINT TO JELI0012B AND INDICATE LEVEL IS AT 4.0 FT</p>	<p>OPERATOR SHOULD VERIFY DG F.O. DAY TK LEVEL GREATER THAN 3.5 FEET</p>	<p>S U</p> <p>Comments:</p>
<p>8. CHECK LOCAL GAUGE JELIT0005, EMERG F.O. STOR TK A LEV IND XTMR, INDICATES GREATER THAN 80%</p> <p>STEP 5.2.5</p>	<p>POINT TO JELIT0005 AND INDICATE LEVEL IS AT 90%</p> <p>(SE corner of room in box)</p>	<p>OPERATOR SHOULD VERIFY EMERGE F.O. STOR TK A LEV INDICATES GREATER THAN 80%</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. CHECK THE FUEL INJECTOR PUMPS AS FOLLOWS: <ul style="list-style-type: none"> • MOVE THE CALIBRATED CYL ON THE RIGHT SIDE OF EACH INJ TO THE RACK 30 MARK AND RET TO NORM • CHECK EACH MOVES FREELY STEP 5.2.6	AFTER SIMULATING / DEMONSTRATING HOW THIS IS ACCOMPLISHED ON ONE CYLINDER - STATE THAT ALL MOVE FREELY	OPERATOR DEMONSTRATES THE ABILITY TO CHECK THE FUEL INJECTOR PUMP RACKS	S U Comments:
10. ENSURE THE FOLLOWING AIR COMPRESSOR CONTROL SWITCHES IN AUTO <ul style="list-style-type: none"> • KJHIS0002A • KJHIS0002B STEP 5.2.7	BOTH AIR COMPRESSOR SWITCHES ARE IN AUTO	OPERATOR LOCATES AND ENSURES AIR COMPRESSOR CONTROL SWITCHES ARE IN AUTO <ul style="list-style-type: none"> • KJHIS0002A • KJHIS0002B 	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
11. ENSURE THE FOLLOWING STARTING AIR RECEIVER PRESSURES ARE GREATER THAN 610 PSIG. <ul style="list-style-type: none"> • KJPI0003A • KJPI0003B STEP 5.2.8	BOTH STARTING AIR RECEIVERS INDICATE 650 PSIG	OPERATOR LOCATES AND VERIFIES STARTING AIR RECEIVER PRESSURE INDICATES > 610# <ul style="list-style-type: none"> • KJPI0003A • KJPI0003B 	S U Comments:
12. ENSURE LUBE OIL SUMP LEVEL WITH EITHER OF THE FOLLOWING: <ul style="list-style-type: none"> • KJLI0031 85% TO 100% IN GREEN BAND • ENGINE CRANK CASE DIPSTICK INDICATES ABOVE THE FILL MARK STEP 5.2.9	KJLI0031, LUBE OIL SUMP LEVEL INDICATES 95%	OPERATOR LOCATES AND VERIFIES APPROPRIATE LUBE OIL SUMP LEVEL	S U Comments:
NOTE KJ121 Annunciator 2D, LUBE OIL TEMP LOW, alarms at 116.5 °F and resets at approximately 126.5°F.			

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>13 ENSURE KJTISL0030, DG A L-O SMP LOW TEMP IND SW, INDICATES BETWEEN 120°F AND 140°F</p> <ul style="list-style-type: none"> • KJTISL0030 <p>STEP 5.2.10</p>	<p>POINT TO KJTISL0030 and INDICATE TEMPERATURE IS AT 130°F</p>	<p>OPERATOR SHOULD LOCATE AND THEN ENSURE KJTISL0030 INDICATES THE BETWEEN 120°F AND 140°F</p>	<p>S U</p> <p>Comments:</p>
<p>NOTE Failure to satisfy the prelube requirement does not render the diesel generator inoperable, and the diesel generator is operable during performance of a rocker arm prelube</p>			
<p>CAUTION If diesel or pre-lube pump have been run in preceding 8 hours, another pre-lube should not be performed, to prevent possibility of excessive oil in the cylinders.</p>			

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
14*. ENSURE ROCKER ARM LUBRICATION PER ATTACHMENT 2 IS PERFORMED ONCE WITHIN 8 HOURS BEFORE STARTING ENGINE. STEP 5.2.11	ATTACHMENT 2 HAS BEEN FILLED OUT SHOWING THAT ROCKER ARM LUBRICATION WAS PERFORMED 3 HOURS AGO	OPERATOR GOES TO ATTACHMENT 2 OF THE PROCEDURE AND SEES THAT ROCKER ARM LUBRICATION HAS BEEN PERFORMED LESS THAN 8 HOURS AGO AND <u>DOES NOT</u> PERFORM ANOTHER PRE-LUBE.	S U Comments:
15*. IF KJ121 ANN 3C, ROCKER OIL RESERVOIR LEVEL HIGH IS IN ALARM, PERFORM THE FOLLOWING: STEP 5.2.12	ANNUNCIATOR 3C IS IN ALARM	OPERATOR UNDERSTANDS ANNUNCIATOR 3C IN ALARM AND TAKES ACTIONS TO DRAIN THE ROCKER OIL RESERVOIR.	S U Comments:
16*. UNCAP AND OPEN KJV0811A, DG A ROCKER OIL RESERVOIR DRN, LOCATED NW CORNER OF DG A, TO CLEAR ALARM RECORD ON ATTACHMENT 2 STEPS 5.2.12a & b	WHEN OPERATOR TAKES ACTION TO DRAIN THE RESERVOIR, INFORM ANN 3C HAS CLEARED	OPERATOR SIMULATES DRAINING OF THE ROCKER OIL RESERVOIR AND LOGS INFORMATION IN ATTACHMENT 2	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
17*. ENSURE KJV0811A IS CLOSED /CAPPED WHEN DRAINING IS COMPLETE RECORD ON ATTACHMENT 2 RECORD IND VER. STEPS 5.2.12c, d, e	ACKNOWLEDGE KJV0811A IS CLOSED/CAPPED INDEPENDENT VERIFICATION HAS BEEN PERFORMED	OPERATOR SIMULATES CLOSING KJV0811A AND LOGS INFORMATION IN ATTACHMENT 2	S U Comments:
18. ENSURE KJTI0060, DG A JACKET WTR SPLY & RTN TEMP IND, INDICATES BETWEEN 135°F AND 167°F <ul style="list-style-type: none"> KJTI0060 STEP 5.2.13	KJTI0060 CURRENTLY READS: 145°F from the engine 140°F to the engine	OPERATOR SHOULD LOCATE KJTI0060 AND SEE THAT TEMP IS BETWEEN 135°F AND 167°F	S U Comments:
19. PERFORM THE FOLLOWING TO INSPECT COOLANT LEVEL: UNISOLATE KJLG0070 AND READ LEVEL AT GREATER THAN 3 INCHES. THEN RE-CLOSE THE ISOLATION VALVES STEP 5.2.14	KJLG0070 INDICATES APPROXIMATELY 10 INCHES	OPERATOR SHOULD SIMULATE OPENING ISOLATION VALVES: KJV0767A AND 068A: VERIFIES LEVEL GREATER THAN 3 INCHES THEN CLOSES VALVES TO KJLG0070	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
22. ENSURE EACH OF THE FOLLOWING LOCKOUT RELAYS ARE RESET: <ul style="list-style-type: none"> • NE1071861DG, LOR1 • NE1071862DG, LOR2 • NE107130DG, UNIT S/D TARGET RLY STEP 5.2.17	AS THE OPERATOR LOCATES THESE, INFORM THEM THE LOCKOUT RELAYS ARE RESET	OPERATOR ENSURES THE LISTED LOCKOUT RELAYS ARE RESET	S U Comments:
23*. MOMENTARILY PRESS NEHS0023, EXCITER RESET, PUSHBUTTON. STEP 5.2.18	THE EXCITER RESET PUSHBUTTON HAS BEEN DEPRESSED	OPERATOR SIMULATES DEPRESSING NEHS0023	S U Comments:
24. NOTE: THE REMAINING STEPS IN THIS SECTION ARE PERFORMED AT MAIN CONTROL BOARDS RL015 OR RL024. NOTE PRIOR TO STEP 5.2.19	CONTROL ROOM SUPERVISOR ACKNOWLEDGES THIS JPM IS COMPLETE <u>RECORD STOP TIME ON PAGE 1</u>	OPERATOR READS NOTE. OPERATOR SHOULD CONTACT CONTROL ROOM SUPERVISOR HE IS DONE UP TO STEP 5.2.19	S U Comments:

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1 AT 100% POWER. 'A' DIESEL GENERATOR WILL NEED TO BE RUN FOR ITS NORMAL SURVEILLANCE. THE AUXILIARY COMPONENTS HAVE BEEN ALIGNED AND NO OTHER CHECKLISTS FROM SECTION 5.1 OF THIS PROCEDURE NEED TO BE PERFORMED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM THE DIESEL GENERATOR PRE-START CHECKS ON NE01, PER OTN-NE-0001A, SECTION 5.2. INFORM THE CONTROL ROOM SUPERVISOR WHEN SECTION 5.2 HAS BEEN COMPLETED TO STEP 5.2.19 (RO ACTIONS)

Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM NO: P2 KSA NO: 065AK3.08
JOB TITLE: URO/SRO KSA RATING: 3.7/3.9
DUTY: INSTRUMENT AIR SYSTEM REVISION: 2009
TASK TITLE: RESPOND TO LOSS OF INSTRUMENT AIR
COMPLETION TIME: 15 MINUTES

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: _____ DATE: _____

TASK PERFORMER: _____

LOCATION OF PERFORMANCE:

CONTROL ROOM _____ SIMULATOR/LAB _____ PLANT X CLASSROOM _____

METHOD OF PERFORMANCE: SIMULATED X PERFORMED _____

REFERENCES: OTO-KA-00001, ADD 1, TURBINE BUILDING LOSS OF INSTRUMENT AIR, REV 000.

TOOLS/EQUIPMENT: PPE

FACILITY REPRESENTATIVE: // _____ // DATE: _____

CHIEF EXAMINER: // _____ // DATE: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. "INSTRUMENT AIR PRESSURE IS 0 PSIG, LOSS OF INSTRUMENT AIR" HAS JUST BEEN ANNOUNCED OVER THE GAITRONICS. YOU ARE AN EXTRA EQUIPMENT OPERATOR ON SHIFT.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM OTO-KA-00001, ADD 1, TURBINE BUILDING LOSS OF INSTRUMENT AIR. NOTIFY THE CONTROL ROOM SUPERVISOR WHEN THIS OTO ADDENDUM HAS BEEN COMPLETED.

Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE TURNED OFF POWER TO BOTH AIR DRYERS AND MANUALLY ISOLATED THE SERVICE AIR HEADER WITH KAV0004.

START TIME: _____

STOP TIME: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTO-KA-00001, ADD1, TURBINE BUILDING LOSS OF INSTRUMENT AIR (Located on a station between the 'A' and 'B' Air Compressors)	PROVIDE OPERATOR WITH COPY OF OTO-KA-00001, ADD 1	OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2. REVIEW PRECAUTIONS AND LIMITATION ASSOCIATED WITH OTO-KA-00001, ADDENDUM 1 STEP 2.0		OPERATOR REVIEWS THE PRECAUTIONS AND LIMITATIONS IN SECTION 2	S U Comments:
3. ENSURE ALL AVAILABLE KA AIR COMPRESSORS ARE RUNNING KAHS0003C KAHS0002C KAHS0001C STEP 3.1	AS THE OPERATOR CHECKS ALL COMPRESSORS INFORM THAT THE 'COMP LOADED' AND 'MAIN DRIVE MOTOR RUNNING' LIGHTS ARE LIT ON ALL COMPRESSORS	OPERATOR CHECKS ALL AIR COMPRESSORS RUNNING	S U Comments:

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4*. IF SYSTEM PRESSURE HAS DROPPED BELOW 110 PSIG, THEN PERFORM THE FOLLOWING:</p> <p>ENSURE KAPV0011 HAS AUTOMATICALLY CLOSED -OR-</p> <p>CLOSE KAV0004</p> <p>STEP 3.2</p>	<p>INFORM OPERATOR THAT KAPV0011 IS OPEN</p> <p>WHEN OPERATOR DEMONSTRATES ABILITY TO CLOSE KAV0004, INFORM THAT KAV0004 IS CLOSED</p>	<p>OPERATOR UNDERSTANDS THAT KAPV00011 IS OPEN AND GOES TO KAV0004 AND CLOSES THE VALVE.</p>	<p>S U</p> <p>Comments:</p>
<p>5. NOTE: THE DRYER TRAIN INLET/OUTLET ISOLATION VALVES FAIL OPEN AT APPROXIMATELY 105 PSIG</p> <p>NOTE BEFORE STEP 3.3</p>		<p>OPERATOR READS NOTE</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>6*. IF A TOTAL LOSS OF INSTRUMENT AIR HAS OCCURRED, THEN PERFORM THE FOLLOWING:</p> <p>TURN POWER OFF TO BOTH AIR DRYERS AND PLACE THEM IN THE FAIL SAFE LINEUP:</p> <p>KAHS0359A</p> <p>KAHS0359B</p> <p>STEP 3.3.1</p>	<p>Note: Instrument air pressure is 0 psig (Given in initial conditions)</p> <p>AS THE OPERATOR TURNS OFF POWER TO THE AIR DRYERS INFORM THEM THE SWITCH HAS BEEN TURNED TO OFF AND THE 'POWER ON' LIGHT IS OFF</p>	<p>OPERATOR SHOULD LOCATE THE AIR DRYER HANDSWITCHES AND TURN THEM OFF</p> <p>KAHS0359A</p> <p>KAHS0359B</p>	<p>S U</p> <p>Comments:</p>
<p>7. VERIFY THE DRYER TRAIN INLET/OUTLET ISOLATION VALVES AND THE "A" TOWER INLET ISOLATION VALVES HAVE FAILED OPEN:</p> <p>TRAIN A – KAFV0354, KAFV0355, KAFV0344</p> <p>TRAIN B – KAFV0356, KAFV0357, KAFV0346</p> <p>STEP 3.3.2</p>	<p>AS THE OPERATOR LOCATES THE DRYER INLET/OUTLET ISOLATION VALVES AND "A" TOWER ISOLATIONS INFORM THAT THEY ARE OPEN</p>	<p>OPERATOR CHECKS THE FOLLOWING VALVES FAILED OPEN:</p> <p>TRAIN A – KAFV0354, KAFV0355, KAFV0344</p> <p>TRAIN B – KAFV0356, KAFV0357, KAFV0346</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>8. NOTE: FAILURE OF THE DISCHARGE CHECK VALVE WILL BE INDICATED BY FREQUENT UNLOAD AND LOADING CYCLES WHICH MAY CAUSE THE COMPRESSOR TO OVERHEAT AND TRIP.</p> <p>NOTE BEFORE STEP 3.4</p>		<p>OPERATOR READS THE NOTE</p>	<p>S U</p> <p>Comments:</p>
<p>9*. IF A PROBLEM EXISTS WITH A PARTICULAR AIR COMPRESSOR THEN STOP IT AND CLOSE THE DISCHARGE VALVE</p> <p>STEP 3.4</p>	<p>THE 'B' AIR COMPRESSOR HAS ZERO OIL PRESSURE INDICATED AND IS NOW MAKING EXCESSIVE NOISE</p> <p>ACKNOWLEDGE THE STOP PUSHBUTTON WAS DEPRESSED</p> <p>ONCE THE OPERATOR LOCATES AND SIMULATES CLOSING VALVE – STATE: DISCHARGE VALVE KAV210 IS CLOSED</p>	<p>OPERATOR MAY WALKDOWN ALL AIR COMPRESSORS</p> <p>OPERATOR REALIZES AIR COMPRESSOR CK01B MUST BE SHUTDOWN AND DEPRESSES:</p> <p>KAHS0002D- STOP PB</p> <p><u>AND</u></p> <p>CLOSES DISCHARGE:</p> <p>KAV0210 – COMPRESS AIR SYS AIR CMPSR B AIR RCVR OUT ISO</p>	<p>S U</p> <p>Comments:</p>

* CRITICAL STEP

[illegible]

* CRITICAL STEP

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. "INSTRUMENT AIR PRESSURE IS 0 PSIG, LOSS OF INSTRUMENT AIR" HAS JUST BEEN ANNOUNCED OVER THE GAITRONICS. YOU ARE AN EXTRA EQUIPMENT OPERATOR ON SHIFT.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM OTO-KA-00001, ADD 1, TURBINE BUILDING LOSS OF INSTRUMENT AIR. NOTIFY THE CONTROL ROOM SUPERVISOR WHEN THIS OTO ADDENDUM HAS BEEN COMPLETED.

Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED.

CALLAWAY PLANT

JOB PERFORMANCE MEASURE

JPM No: P3
Job Title: URO/SRO
Duty: Emergency Ops / Containment Isolation
Task Title: Locally Close Valves for a CIS-A
Completion Time: 15 Minutes

KSA No: 103A2.03
KSA Rating: 3.5 / 3.8
Revision: 2009

The performance of this task was evaluated against the standards contained in this JPM and determined to be:

☐ SATISFACTORY ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

Evaluator Signature: _____ Date: _____

Task Performer: _____

Location of Performance:

Control Room _____ Simulator/Lab _____ Plant X Classroom _____

Method of Performance: Simulated X Performed _____

References: EOP Addendum 25, CONTAINMENT ISOLATION PHASE A VALVES, R001

Tools/Equipment: Personal Protective Equipment
Required Dosimetry and RWP

FACILITY REPRESENTATIVE: _____ Date: _____

CHIEF EXAMINER: _____ Date: _____

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

Initial Conditions: There has been a Station Blackout at the Callaway Plant. The Control Room Crew is performing the actions of Emergency Procedure ECA-0.0, Loss of All AC Power.

Initiating Cues: The Control Room Supervisor (CRS) directs you to isolate the following Train 'B' valves using EOP Addendum 25, CONTAINMENT ISOLATION PHASE A VALVES:

BL HV-8047, Reactor Makeup Water Outside Ctmt Isolation
LF HV-96, Ctmt Normal Sumps to Floor Drain Tank Outside Ctmt Isolation
SJ HV-127, PZR/RCS Liquid Sample Outside Ctmt Isolation

Close any valves that are out of position or close their manual isolations and inform the CRS when complete.

Note: All Operator Actions are to be simulated.

Task Standard: Upon completion of this JPM, the operator will have demonstrated the ability to ensure valves associated with penetrations 25, 32 and 93 are closed.

Start Time: _____

Stop Time: _____

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. Obtain a verified working copy of EOP Addendum 25, CONTAINMENT ISOLATION PHASE A VALVES	Provide operator with procedure copy	Operator obtains procedure copy	S U Comments:
2. Proceed to the South Piping Penetration Room (2000 Aux)		Operator proceeds to the South Piping Penetration Room (2000 Aux)	S U Comments:
3.* Ensure BL HV-8047, Reactor Makeup Water Outside Cmt Iso (P-25)	BL HV-8047 is STUCK OPEN After the Operator locates and demonstrates the ability to close the manual isolation valve BL V0035 – tell them it is closed.	Since there is NO Manual Actuator on the Valve (Air Operated) the Operator closes the manual isolation: BL V0035, Rx M/U Wtr Outer Cmt Iso	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4.* Ensure LF FV-96, Ctmt Norm Sumps to Floor Dran Tk Outside Iso (P-32)	LF FV-96, is <u>OPEN</u> After operator demonstrates the ability to locally close LF HV-96, provide the cue that the valve is closed	Operator determines that LF FV-96 is out of position and demonstrates the ability to locally close it	S U Comments:
5. Proceed to the North Piping Penetration Room (2000 Aux)		Operator proceeds to the North Piping Penetration Room (2000 Aux)	S U Comments:
6*. Ensure SJ HV-127, PZR/RCS Liquid Sample Outside Ctmt Iso is closed (P-93)	SJ HV-127 is <u>STUCK OPEN</u>	Since there is NO Manual Actuator (Solenoid) on the Valve the Operator closes the manual isolation: SJ V0054, PASS HOT LEG SAMP OUT CTMT ISO VLVS DNSTRM ISO	S U Comments:

* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7. Notify the CRS that steps assigned in EOP Addendum 25 are complete	The CRS acknowledges completion of EOP Addendum 25 steps	Operator notifies the CRS that assigned steps of EOP Addendum 25 are complete	S U Comments:
8. The JPM is Complete	Record Stop Time on Page 1		S U Comments:

* Critical Step

Read to Performer: I will explain the initial conditions, which steps to simulate or discuss, and provide initiating and subsequent cues. You may use any approved reference materials normally available to you. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Job Performance Measure will be satisfied.

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Close any valves that are out of position or close their manual isolations and inform the CRS when complete.

Note: All Operator Actions are to be simulated.

Facility:	Callaway	Scenario No.:	1	Op Test No.:	
Examiners:		Operators:			
Initial Conditions:		The following is the plant /equipment status: <ul style="list-style-type: none"> Operating at 100% steady state power MDAFP "B" OOS for an oil change. Scheduled for completion on the PM shift. (Activate Lesson "a101b.lsn") TS 3.7.5 Condition C, 72 hours			

Event No.	Malfunction No.	Event Type*	Event Description
A	N/A	R (RO) N (SRO/BOP)	Reduce Power to 95% for turbine valve testing
1	BBPT0455	I (RO/SRO) I-TS-SRO	Pressurizer Pressure Channel Failure Insert Malfunction (BB) BBPT0455, Value= 1700
2	JEPS209L	C (all)	Loss of ESF Bus NB02 Insert Remote Function (NB) JEPS209L, Value= Trip
3	ABPV0001_1	C (BOP) C-TS-SRO	"A" Atmospheric Steam Dump Fails Open Insert Malfunction (AB), ABV0001_1, Value = 1, ramp = 20s
4	BBTE421A1	I (RO)	RCS Loop RTD Failure Insert Malfunction (BB) BBTE0421A1, Value = 650
5	SF006	C (all)	Nuclear Power Generation Accident / ATWS Insert Malfunction (SF) SF006, Value = Both
6	EBB01C	M (all)	Steam Generator Tube Rupture Insert Malfunction (BB) EBB01C, Value= 400, time delay = 10 sec, ramp = 300 secs, conditional of "jcrftr eq true"
7	BG	C (RO)	CCP Auto Start Failure Insert Remote Function (BG) JLOASBI8_3, Value = Inhibit

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

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Callaway 2009 NRC Scenario #1

This unit is at 100% steady state power. MDAFP B is out of service for scheduled maintenance.

Reduce power to 95% to perform turbine valve testing IAW OSP-AC-00003, Turbine Valve Stroke Test.

Pressurizer Pressure Channel 455 fails low. The crew should respond per OTO-BB-00006, Pressurizer Pressure Control Malfunction, defeat control system channel input and stabilize RCS pressure. I&C should be contacted to trip protective bistables and repair the failed channel.

A bus lockout occurs on NB02. The emergency diesel NE02 starts but the output breaker will not close due to the lockout condition. The crew should respond per OTO-NB-00002, Loss of Power to NB02. They will ensure reactor power <100%, throttle Auxiliary Feedwater flow, refer to Tech Specs and direct Electrical Maintenance to perform required testing and repairs.

After the plant is stabilized "A" SG Atmospheric Steam Dump fails open with a 20 sec. ramp is inserted. The crew will respond using OTO-AB-00001, STEAM DUMP MALFUNCTION.

Deleted: a Condenser Steam Dump Failure Group 1, from trigger #1 (MANUAL)

RCS Loop 2 Thot RTD fails high, resulting in an OTΔT trip signal. The reactor fails to trip automatically and manually. The crew should enter FR-S.1, Response to Nuclear Power Generation/ATWS. The reactor will be shutdown approximately two minutes after PG19 and PG20 feeder breakers are opened due to the rod drive MG set coast down.

10 seconds after the Reactor Trip, a Tube Rupture occurs on Steam Generator C. The tube rupture will ramp to 250 gpm resulting in a Safety Injection. The crew should complete FR-S.1 and transition to E-0, Rx Trip or Safety Injection. CCP A will fail to start automatically and will have to be started manually. The crew will then transition to E-3, Steam Generator Tube Rupture. The scenario is complete when RCS cooldown is commenced.

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A Site Emergency should be declared based on EAL SS2.1, Failure of the Reactor Protection System, or EAL FS1.1, SGTR supplying the TD AFP which is a loss of RCS and Containment Barrier.

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Scenario Event Description

NRC Scenario 1

Critical Tasks:

Event #5 CT – Insert negative Reactivity into the core by at least one of the following methods before completing immediate actions steps of FR-S.1

- De-energize PG19 and PG20
- Insert Control Rods
- Establish emergency boration flow

Event #7 CT – Establish flow from at least one high head ECCS pump before a transition from E-0.

Event #6 CT – Isolate Feedwater flow into and steam flow from SG C before a transition to ECA-3.1 occurs.

Deleted: Event #1 CT – Control Pressurizer Pressure to prevent an automatic Reactor trip due to the failed channel.¶
¶
Event #4 CT – Place Rod Control in MANUAL prior to receiving a Reactor Trip on Low Pressurizer Level.¶
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References
OTG-ZZ-00004
OTG-ZZ-00004, ADD 03
OSP-AC-00003
OTO-BB-00006
OTO-NB-00002
OTO-AB-00001
E-0
FR-S.1
E-3
EIP-ZZ-00101
CSF-1, Attachment A

Scenario Event Description
NRC Scenario 1

Simulator Set Up

Establish the initial conditions of IC-11, MOL 100%:

- RCS boron concentration 966 ppm
- CCP A 976 ppm minus 5 days
- CCP B 986 ppm minus 15 days
- Rod Control Bank D 215 steps, Other banks 228 steps
- PZR pressure channel 455 selected for control
- CCW Train B supplying service loop
- Hang WPA on MDAFP B

=====SCENARIO SETUP ITEMS=====

Remove MD AFP B from service

- Run lesson "a101b.lsn"

Following Reactor Trip Steam Generator "C" Tube Leak of 400 gpm over 5 minutes

- Insert Malfunction (BB) EBB01C, Value= 400, time delay = 10 sec, ramp = 300 secs, conditional of "jcrftr eq true"

Prevent Reactor Trip and Bypass breakers from opening in AUTO or MANUAL

- Insert Malfunction (SF) SF006, Value = Both

CCP "A" Fails to start Automatically (can be started Manually)

- Insert Remote Function (BG) JLOASB18_3, Value = Inhibit

=====EVENT 1=====

PZR Pressure Channel 455 fails low

- Insert Malfunction (BB) BBPT0455, Value = 1700

=====EVENT 2=====

NB02 feeder breaker lockout

- Insert Remote Function (NB) JEPS209L, Value = trip

=====EVENT 3=====

"A" SG Atmospheric Steam Dump Failure OPEN with a 20 sec ramp

- Insert Malfunction (AB) ABPV0001_1, Value =1, ramp = 20 secs

=====EVENT 4=====

RCS loop 2 Thot RTD fails high

- Insert Malfunction (BB) BBTE0421A1, Value = 650

=====EVENT 5 PRELOADED=====

Prevent Reactor Trip and Bypass breakers from opening in AUTO or MANUAL (ATWS)

- Insert Malfunction (SF) SF006, Value = Both

=====EVENT 6 PRELOADED=====

Steam Generator "C" Tube Rupture

- Insert Malfunction (BB) EBB01C, Value= 400, time delay = 10 sec, ramp = 300 secs, conditional of "jcrftr eq true"

=====EVENT 7 PRELOADED=====

CCP A auto start failure (will start in Manual)

Insert Remote Function (BG) JLOASB18_3, Value = Inhibit

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Op Test No.:	Scenario #	1	Event #	A	Page	5	of	27
Event Description: Reduce Power								
Time	Position	Applicant's Actions or Behavior						

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Shortly after taking the watch, reduce power to 95% for turbine valve testing

Indications Available:**OTG-ZZ-00004, Power Operation, Addendum 03**

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CRS	Direct the power reduction
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RO	(Step 5.1.1) MONITOR Main Generator Megavars and Voltage
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RO	(Step 5.1.2) MAINTAIN Control Rods above insertion limits:
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RO	(Step 5.1.3) CONTROL programmed Tavg
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CRS	Section 5.4 Items
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CRS	(Step 5.4.1a) NOTIFY the Power Dispatcher how much load will be changed and the loading rate to be used.
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CRS	(Step 5.4.1b) NOTIFY the following departments power will be changed and any instructions from the Shift Manager: · Chemistry · Radiation Protection · Radwaste
------------	--

CRS	(Step 5.4.1c) IF a planned power change will be greater than 10%, REQUEST Reactor Engineering be present in the Control room to assist with transient conditions.
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CRS	(Step 5.4.1d) Using one of the computer programs listed below, PERFORM a Xenon Prediction for the anticipated change in power. · I:\NUCENG\SYSTEMS\REACTOR\SOFTWARE\APPROVED\XEPR ED\XEPRED.EXE · I:\NUCENG\SYSTEMS\REACTOR\SOFTWARE\APPROVED\XENO N_PREDICTION\XENON_PREDICTION.xlt
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	Provided from Reactor Engineering
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RO	(5.4.1e) PERFORM a Dilution/Boration Calculation for the anticipated change in power.
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Op Test No.: _____ Scenario # 1 Event # A Page 6 of 27

Event Description: Reduce Power

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Time

Position

Applicant's Actions or Behavior

	CRS	<u>(5.4.1f)</u> REQUEST guidance from Reactor Engineering for desired control rod positioning for optimum Axial Offset (AO) control.
	CRS	<u>(5.4.1g)</u> N/A not more than 10% power reduction
	RO	<u>(5.4.1h)</u> Using the following hand switches, ENSURE at least one group of Pressurizer Back-up Heaters is ENERGIZED to equalize RCS and Pressurizer boron concentrations. · BB HIS-51A, PZR HTR B/U GROUP A, in CLOSE · BB HIS-52A, PZR HTR B/U GROUP B, in CLOSE
	RO	<u>(5.4.1i)</u> PLACE BB PK-455A, PZR PRESS MASTER CTRL, in MANUAL and LOWER to 40%.
	RO	<u>(5.4.1i)</u> PLACE BB PK-455A, PZR PRESS MASTER CTRL, in AUTO.
	RO	<u>(5.4.1k)</u> WHEN the difference between Boron Concentration in the pressurizer and the RCS is less than 50 ppm SECURE pressurizer back up heaters.
	RO	<u>(5.2.2.a)</u> BORATE the RCS as required to support lowering power to the desired final load.
	RO	<u>(5.2.2.b)</u> ENSURE SE HS-9, ROD BANK AUTO/MAN SEL, is in MAN.
	RO	<u>(5.2.2.c)</u> IF using MANUAL turbine control, INITIATE load reduction by slowly turning LOAD LIMIT SET potentiometer counter-clockwise.

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Op Test No.: _____ Scenario # 1 Event # A Page 7 of 27

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Event Description: Reduce Power

Time	Position	Applicant's Actions or Behavior
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BOP

[\(5.2.2.c\)](#) IF using AUTOMATIC turbine control, PERFORM the following:

Using EHC Panel DECREASE LOAD pushbutton, SLOWLY LOWER load until the following conditions are met:

- LOAD LIMIT LIMITING light OFF
- DECREASE LOADING RATE "OFF" light LIT
- LOADING RATE LIMIT %/MIN "1/2" light LIT

TURN LOAD LIMIT SET potentiometer fully clockwise.

SELECT DECREASE LOADING RATE "ON"

SELECT desired loading rate.

- Use 0.05 for 3%/hr.
- Use 0.166 for 10%/hr.
- Use 1/2 for 30%/hr.

Using EHC Panel DECREASE LOAD pushbutton, INITIATE load reduction.

CREW

[\(5.2.3\)](#) WHEN the desired power level is achieved PERFORM the following:

- Set Turbine Controls for steady state operation
- Borate/Dilute as needed to maintain power level
- Insert/withdraw rods as needed to maintain power level

RO

[\(5.2.4\)](#) ENSURE annunciator 77A, REACT DEV, setpoint is 0.7°F.

At the Discretion of the Lead Examiner Move to the next Event

Op Test No.: _____ Scenario # 1 Event # 1 Page 8 of 27

Event Description: Pressurizer Pressure Channel 455 Failure

Time

Position

Applicant's Actions or Behavior

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Shortly after taking the watch, the Pressurizer Pressure Channel will fail low

Booth Operator Instructions

- As Directed by the Lead Examiner
- Insert Malfunction (BB) BB PT0455, Value= 1700
- When contacted, respond as I&C. Acknowledge the request to trip bistables and investigate the channel failure.
- When contacted, respond as EDO. Acknowledge the channel failure and Tech Spec entry.

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↑**Indications Available:**

		33 C PZR PRESS LO HTRS ON
		83 C RX PARTIAL TRIP

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OTO-BB-00006, Pressurizer Pressure Control Malfunction

	CRS	Implement OTO-BB-00006, Pressurizer Pressure Control Malfunction
	CRS/RO	<u>(Step 1)</u> Check Pressurizer Pressure Indicator – Failed <u>BB</u> PI-455A
	CRS/RO	<u>(Step 2)</u> Transfer Pressurizer Pressure Control Selector to Remove Failed Channel (455) from Control BB PS-455F
	CRS/RO	<u>(Step 3)</u> Check Pressurizer Pressure Trending to or between 222 <u>5</u> -2250 psig
	CRS/RO	<u>(Step 4)</u> Check P-11 in Correct State Within One Hour _____ Current Time
	CRS/RO	<u>(Step 5)</u> Select an Operable Channel for: Pressure Recorder BB PS-455G OPDT/OTDT Temperature Recorder SC TS-411E DDA REP0 <u>0480A</u> , 481A, 482A, <u>or</u> 483A

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Op Test No.: _____ Scenario # 1 Event # 1 Page 9 of 27

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Event Description: Pressurizer Pressure Channel 455 Failure

Time	Position	Applicant's Actions or Behavior
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	CRS	<u>(Step 6)</u> Review Applicable Tech Specs, Attachment J 3.3.1, Table 3.3.1-1 Item 6 Cond E (OTDT 72hr) 3.3.1, Table 3.3.1-1 Item 8 Cond M, E (P 72hr) 3.3.2, Table 3.3.2-1 Item 1.d Cond D (SI 72hr) 3.3.2, Table 3.3.2-1 Item 8.b Cond L (P-11 1hr) 3.3.2, Table 3.3.2-1 Item 9 Cond D (PORV 72hr)
	CRS	<u>(Step 7)</u> Record P-11 in Correct State in SS/CRS log
	<u>CRS/RO</u>	<u>(Step 8)</u> Review Attachment A, Effects of Pressurizer Pressure Instrument Failure
	CRS	<u>(Step 9)</u> Direct I&C to Trip Protective Bistables – Att. B
	CRS	<u>(Step 10)</u> Place Inoperable Channel in the EOSL
	CRS	<u>(Step 11)</u> Direct I&C to Repair Failed Channel
At the Discretion of the Lead Examiner Move to the next Event		

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 3.4.1 (DNB 2hr if < 2223 psig)

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Op Test No.: _____ Scenario # 1 Event # 2 Page 10 of 27

Event Description: Loss of ESF Bus NB02 Lockout

Time

Position

Applicant's Actions or Behavior

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Loss of ESF Bus NB02

Booth Operator Instructions:

- Following an update brief by the crew or as directed by the Lead Examiner.
- Insert Remote Function (NB) JEPS209L, Value = Trip
- Act as Secondary EO and investigate the loss of NB02. Report an Instantaneous Overcurrent Trip and Lockout on the Normal Feeder Breaker.
- If requested to isolate CCW valves, then perform the following:
Insert Remote Function (EG) EGHV0016TASTEM, Value = 0
Insert Remote Function (EG) EGHV0054TASTEM, Value = 0
- If requested to manually stop the "B Diesel Generator (NE02),
Insert Remote Function (KJ) JAUTODG2, Value = LOCAL/MANUAL
Insert Remote Function (KJ) JSTOPDG2, Value = STOP
- Act as Emergency Duty Officer and acknowledge the OTO/TS entry
- Act as Electrical maintenance supervisor if requested to investigate the failure

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LOCAL/MANUAL

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Indications Available:

21 A NB02 Bus Lockout
 21 B NB02 Bus UV

OTO-NB-00002, Loss of Power to NB02

CRS

Implement OTO-NB-00002, Loss of Power to NB02

CRS/BOP

May choose to perform step 10 early as prudent action to prevent overpower condition caused by cold Aux Feedwater addition. Prudent Action allowed per ODP-ZZ-00025.

CRS/RO

(Step 1) Check 4160 VAC Bus NB02 – Deenergized
 4.16 KV Bus NB02 light extinguished
 4.16 KV Bus NB02 voltage indicates zero

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Op Test No.: _____ Scenario # 1 Event # 2 Page 11 of 27

Event Description: Loss of ESF Bus NB02 Lockout

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Time	Position	Applicant's Actions or Behavior
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	CRS/RO	(Step 2) Check Reactor Power - < 100% If Not – Reduce Turbine load
	CRS/RO	(Step 3) Check CCW Pump A or C = Running – NO RNO – START CCW pump A or C
	CRS/RO	(Step 4) Check CCW Service Loop Supplied From Train A RNO Re-aligns CCW system for Service loop to be aligned
	CRS/RO	(Step 5) Check CCW Aligned to RCPs
	CRS/RO	(Step 6) Check RHR in service prior to event RNO – Go To Step 9
	CRS/RO	(Step 9) Check SG NR Level At or trending to 45 - 55% NOTE: TDAFP remains operable with discharge valves closed or throttled to control SG level after AFAS
	CRS/RO	(Step 10) Check TDAFP – Secured RNO – Throttle or close discharge valves as required
	CRS/RO	(Step 11) Check PZR Level At or trending to program level
	CRS/RO	(Step 12) Check PZR Pressure At or trending to 2225 – 2250psig

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Op Test No.: _____ Scenario # 1 Event # 2 Page 12 of 27

Event Description: Loss of ESF Bus NB02 Lockout

Time

Position

Applicant's Actions or Behavior

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CRS/RO

(Step 13) Ensure the following NB02 loads shed
 ESW Pump B
 CCW Pump B/D
 SI Pump B
 Cmt Spray Pump B
 RHR Pump B

CRS/RO

(Step 14) Open NB02 Normal and Alternate Feeder Breakers

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NOTE: Attachment B may be used as an aid

CRS/RO

(Step 15) Check EDG B – Running

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CRS/RO

(Step 16) Check NB02 Emergency Supply Breaker – Closed
 RNO – Locally stop EDG without ESW cooling

CONTACTS OPERATIONS TECH TO LOCALLY STOP DG B

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CRS/RO

(Step 17) Check NCP or CCP A - Running

CRS/RO

(Step 18) Check RCP Seal Injection flow 8 – 13 gpm

CRS/RO

(Step 19) Check Any Service Air Compressor – Running

CRS/RO

(Step 20) Check PN08 Transferred to Emergency Source

CRS/RO

(Step 21) Check SFP Cooling Pump A - Running

CRS/RO

(Step 22) Check The Following – Running
 CR Air Conditioner A
 Class 1E Air Conditioner A

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Op Test No.: _____ Scenario # 1 Event # 2 Page 13 of 27

Event Description: Loss of ESF Bus NB02 Lockout

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Time	Position	Applicant's Actions or Behavior
	CRS/RO	(Step 23) Perform Contingency Actions of OTN-GK-00001, as time permits
	CRS/RO	(Step 24) Check the following busses supplied from associated battery NK02 and NK04 PK02 and PK04
	CRS/RO	(Step 25) Perform the following to maintain battery life Contact system engineer Monitor battery load Cross-tie PK busses to functional charger
	CRS/RO	(Step 26) Check Swing Charger NK26 – Available
	CRS/RO	(Step 27) Transfer Swing Charger NK26 to Alt Pwr Supply
	CRS/RO	(Step 28) Charge Batteries NK12 or NK14
	CRS	(Step 29) Review Applicable Tech Specs – Attachment G Tech Spec 3.8.1, AC Sources – 72 hours Tech Spec 3.8.4, DC Sources – 2 hours – most limiting
	CRS	(Step 30) Perform Notifications per ODP-ZZ-00001, Add 13
	CRS/RO	(Step 31) Check ANN 21A – Extinguished RNO – Direct EM to repair faults
At the Discretion of the Lead Examiner Move to the next Event		

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Op Test No.: _____ Scenario # 1 Event # 3 Page 14 of 27Event Description: Atmospheric Steam Dump "A" Fails 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 in manual.

Booth Operator Instructions:

- Following an update brief by the crew or As directed by the Lead Examiner
- Insert Malfunction (AB) ABPV0001_1, Value =1, ramp = 20 secs
- Act as Emergency Duty Officer and acknowledge the OTO/TS entry
- Act as I&C maintenance supervisor if requested to investigate the failure

Indications Available:

		ANN <u>109F</u> <u>"SG PORV OPEN"</u>
		<u>SG "A" Atmospheric</u> Steam Dump Valve <u>Indicates OPEN</u>
		Pressurizer level decreases due to RCS cooldown
		Letdown may isolate on low Pressurizer level.
OTO-AB-00001, STEAM DUMP MALFUNCTION		
	<u>URO</u>	(Step 1) CHECK Reactor Power – LESS THAN 100%
	<u>BOP</u>	(Step 2) CHECK At Least One SG ASD – FAILED OPEN
	<u>BOP</u>	(Step 3) <u>Place affected SG ASD Controller in MANUAL and</u> <u>Close the valve -- AB-PIC-1A</u>
	<u>BOP</u>	(Step 4) <u>Notify Count Room Tech of Opening/Closing Times</u>
	<u>CRS</u>	(Step 5) <u>GO TO Step 12</u>
	<u>CRS</u>	(Step 12) INITIATE Actions to Repair the Failed Component.

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Op Test No.: _____ Scenario # 1 Event # 3 Page 15 of 27Event Description: Atmospheric Steam Dump "A" Fails OPEN

Time

Position

Applicant's Actions or Behavior

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Failure Group 1

	CRS	(Step 13) REVIEW Technical Specification 3.7.4.
		NOTE: Tech Spec associated with ASD Valves <u>is valid for this condition.</u>
	CRS	(Step 14) PLACE Inoperable Component In the EOSL.
	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 next Event.		

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Op Test No.:	Scenario #	1	Event #	4, 5, 6, and 7	Page	16	of	27
Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure								
Time	Position	Applicant's Actions or Behavior						

After this, the RCS Thot RTD will fail and the rest of the events will sequence per timeline

Booth Operator Instructions:

- Insert Malfunction (BB) BBTE0421A1, Value = 650
- When primary EO requested to locally open Reactor Trip Breakers
- Delete Malfunction SF006
- ON THE TRIP - Steam Generator Tube Rupture C, 400 gpm, 300 s ramp, Insert Malfunction (BB) EBB01C, Value= 400, time delay = 10 sec, ramp = 300 secs, conditional of "jcrfr eq true"
- If asked to take radiation readings on the Main Steamlines, report that there is high radiation on 'C' steamline.
- If asked to isolate steam to TDAFP from SG C:
- INSERT REMOTE FUNCTION (AB) ABV0087TASTEM, Value = 0
- Act as Emergency Duty Officer and acknowledge Site Emergency if and or when called

Indications Available:

		<u>84B OTAT RX TRIP (RED)</u>
	CRS	Implement E-0, Reactor Trip or Safety Injection NOTE: Steps 1 through 4 are immediate actions.
<u>E-0</u>	CRS/RO	<u>(E-0, Step 1)</u> Check Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux – Lowering RNO – Manually Trip the Reactor. If power > 5%, Go To FR-S.1, Response to Nuclear Power Generation/ATWS

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.irf SAS018C = FC

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Op Test No.: _____ Scenario # 1 Event # 4, 5, 6, and 7 Page 17 of 27

Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure

Time	Position	Applicant's Actions or Behavior
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	CRS	<u>(FR-S.1 Steps)</u> Implement CSF Status Tree Monitoring CAUTION: RCPs should NOT be tripped with reactor power greater than 5%. NOTE: Steps 1 and 2 are immediate action steps.
<u>FR-S.1</u>	CRS/RO	<u>(Step 1)</u> Check Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux - Lowering RNO– Manually Trip the Reactor. Insert Control Rods at the Maximum Rate Open supply breakers to PG19 and PG20
Critical Task	CREW	Insert negative reactivity into the core by at least one of the following methods before completing immediate action steps of FR-S.1 Deenergize PG19 and PG20 Insert Control Rods Establish RCS emergency boration flow
	CRS/BOP	<u>(Step 2)</u> Check Turbine Trip All Stop Valves – Closed RNO – Manually TRIP Turbine
	CRS/BOP	<u>(Step 3)</u> Check AFW Pumps Running MDAFPs – Both running TDAFP – Running if necessary
	CRS/RO	<u>(Step 4)</u> Initiate Emergency Boration of RCS At least one charging pump running Start boric acid transfer pumps Open BG HIS-8104 -NO POWER go to RNO Open BN HIS-112D and 112E Close BG HIS-112B and 112C Establish maximum charging flow

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Op Test No.: _____ Scenario # 1 Event # 4, 5, 6, and 7 Page 18 of 27

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Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure

Time	Position	Applicant's Actions or Behavior
	CRS/RO	<p>(Step 5) Check Containment Purge Isolation ESFAS status panel lit white for CPIS</p> <p>CAUTION: If an SI signal exists or occurs, Steps 1 through 10 of E-0, Reactor Trip or Safety Injection, should be performed, as manpower and time permits, while continuing with this procedure.</p>
	CRS/RO	<p>(Step 6) Check if the Following Trips Have Occurred Reactor Trip RNO – Locally trip breakers</p> <p>Turbine Trip</p>
	CRS/RO	<p>(Step 7) Check if the Reactor is Subcritical RNO – Go To Step 8 YES – Go To Step 16</p>
	CRS/BOP	<p>(Step 8) Check Intact SG Levels NR level in at least one SG > 7% (25%) RNO – Check total feed flow > 527,000 lbm/hr Control SG level 7% (25%) – 52%</p>
	CRS/RO	<p>(Step 9) Check All Dilution Paths Isolated BG HS-25 set to OFF BG HIS-111A Closed BG HIS-27 set to OFF Zero flow on BG FI-385 Locally check BGV0183 Locked Closed Locally check BGV0187 Locked Closed</p>
	CRS/RO	<p>(Step 10) Check For Reactivity Addition From Uncontrolled RCS Cooldown RCS temperature lowering in uncontrolled manner Any SG pressure lowering in uncontrolled manner RNO- Stop any controlled cooldown Go to step 14</p>

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Op Test No.: _____ Scenario # 1 Event # 4, 5, 6, and 7 Page 19 of 27

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Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure

Time	Position	Applicant's Actions or Behavior
	CRS/RO	(Step 14) Check Core Exit TCs < 1200 °F
	CRS/RO	(Step 15) Check Reactor Subcritical YES – Proceed with Step 16 RNO – Continue boration and return to step 4 CAUTION: Boration should continue to obtain adequate shutdown margin during subsequent actions.
	CRS	(Step 16) Return to procedure and step in effect (E-0, step 1)
	CRS	(E-0) Implement E-0, Reactor Trip or Safety Injection NOTE: Steps 1 and 2 are immediate action steps
	CRS/RO	(Step 1) Check Reactor Trip Rod Bottom Lights - All lit Reactor Trip and Bypass Breakers - Open Neutron Flux – Lowering
	CRS/BOP	(Step 2) Check Turbine Trip Turbine Stop Valves – Closed
	CRS/RO	(Step 3) Check Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized
	CRS/RO	(Step 4) Check SI Status Actuated or Required Check both Trains of SI Actuated LOCA Sequencer ANN 30A – Lit LOCA Sequencer ANN 31A – Lit SB069 SI Actuate Red Light – Lit Solid

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Op Test No.: _____ Scenario # 1 Event # 4, 5, 6, and 7 Page 20 of 27

Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure

Time	Position	Applicant's Actions or Behavior
	CRS/RO	<u>(Step 5)</u> Perform Attachment A, Automatic Action Verification, while continuing with this procedure
<u>E-0 Att A</u>	RO	<u>(Step A1)</u> Check Charging Pumps – Both CCPs running RNO – Start CCP A Stop NCP
Critical Task	<u>CREW</u>	Establish flow from at least one high head ECCS pump before transition from E-0.
	RO	<u>(Step A2)</u> Check SI and RHR Pumps – All running
	RO	<u>(Step A3)</u> Check ECCS Flow – BIH flow indicated
	RO	<u>(Step A4)</u> Check ESW Pumps – Both Running
	RO	<u>(Step A5)</u> Check CCW Alignment One pump running in each train Service loop supplied OPEN CCW To RHR HX valves CLOSE SFP HX Outlet Valves STOP SFP Cooling Pumps Record time SFP Cooling Pump secured Monitor time CCW isolated to SFP HX (< 4 hrs)
	RO	<u>(Step A6)</u> Check Ctmt Cooler Fans – Running in slow
	RO	<u>(Step A7)</u> Check Ctmt H2 Mixing Fans – Running slow
	RO	<u>(Step A8)</u> Check if Containment Spray should be actuated
	RO	<u>(Step A9)</u> Check if Main Steamlines should be isolated

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Op Test No.:		Scenario #	1	Event #	4, 5, 6, and 7	Page	21	of	27
Event Description:		RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure							
Time	Position	Applicant's Actions or Behavior							

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	RO	(Step A10) Check ECCS Valves – Proper emergency alignment as indicated on ESFAS status panel
	RO	(Step A11) Check CIS-A – ESFAS status panel
	RO	(Step A12) Check SG Blowdown Isolation - ESFAS panel
	RO	(Step A13) Check Both Trains of Control Room Ventilation Isolation – ESFAS status panel
	RO	(Step A14) Check Containment Purge Isolation – ESFAS status panel
	RO	(Step A15) Notify CRS of failed equipment status, manual actions taken, and attachment completion
E-0		
	CRS/BOP	(E-0 Step 6) Check Generator Output Breakers – Open
	CRS/BOP	(Step 7) Check Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves – Closed Feedwater Isolation Valves – Closed
	CRS/BOP	(Step 8) Check AFW Pumps MD AFW Pumps – Both Running TD AFW Pump – Running if Necessary
	CRS/BOP	(Step 9) Check AFW Valves – Proper Alignment MD AFP Flow Control Valves - Throttled TD AFP Flow Control Valves – Full Open AFW may be isolated to SG C per foldout page
	CRS/BOP	(Step 10) Check Total AFW Flow > 355,000 lbm/hr

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Op Test No.:		Scenario #	1	Event #	4, 5, 6, and 7	Page	22	of	27
Event Description:		RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure							
Time	Position	Applicant's Actions or Behavior							

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	CRS/RO	<p>(Step 11) Check PZR PORVs and Spray Valves PZR PORVs – Closed PZR PORVs – Both in AUTO PORV Block Valves – Both Open Normal PZR Spray Valves – Closed</p>
	CRS/RO	<p>(Step 12) Check if RCPs should be Stopped RCPs – Any Running ECCS Pumps – At least One Running RCS Pressure – Less than 1425 psig RNO – Go to step 13</p>
	CRS/RO	<p>(Step 13) Check RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F</p>
	CRS/BOP	<p>(Step 14) Check if any SG is Faulted Any SG pressure lowering uncontrollably Any SG completely depressurized RNO – Go to step 15</p>
	CRS/BOP	<p>(Step 15) Check if SG Tubes are Intact No SG NR level rising uncontrollably SG N16 radiation – Normal Condenser Air Removal radiation – Normal SG Blowdown and Sample radiation – Normal RNO – Go to E-3, Steam Generator Tube Rupture</p> <p>NOTES: Personnel should be available for sampling. Seal injection flow should be maintained to RCPs. Step 1 criterion applies until cooldown initiated.</p>
E-3	CRS/RO	<p>(E-3 Step 1) Check if RCPs should be Stopped RCPs – any running ECCS Pumps – at least one running RCS Pressure – less than 1425 psig</p>

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Op Test No.: _____ Scenario # 1 Event # 4, 5, 6, and 7 Page 23 of 27

Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure

Time

Position

Applicant's Actions or Behavior

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CRS/BOP

(Step 2) Identify Ruptured SG(s)

Unexpected rise in any SG NR level OR
 High radiation from any SG sample OR
 High radiation from any SG steamline OR
 High radiation from any SG Blowdown line sample
 SG C is ruptured

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CAUTIONS:

-- If the TDAFP is the only available source of feed flow, steam supply to the TDAFP must be maintained from at least one SG
 -- At least one SG must be maintained for RCS Cooldown

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CRS/BOP

(Step 3) Isolate Flow From Ruptured SG(s)

Adjust ruptured SG ASD setpoint to 1160 psig
 Check ruptured SG ASD Closed
 Locally close ruptured SG TDAFP steam supply
 Check SG Blowdown Ctmt Iso Closed
 Close steamline low point drain
 Check if C-9 Interlock Lit
 Close MSIV – Fast close w/ EOP Addendum 35
 Close All MSIV Bypass Valves

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CAUTION: If any ruptured SG is faulted, feed flow to that SG should remain isolated during subsequent recovery actions unless needed for RCS cooldown

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AB PIC-3A
 Locally close ABV0087
 BM HIS-3A
 AB HIS-7

SIM
OPERSimulator Operator Close ABV0087Insert Remote Function (AB) ABV0087TASTEM, Value = 0

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Op Test No.: _____	Scenario # <u>1</u>	Event # <u>4, 5, 6, and 7</u>	Page <u>24</u> of <u>27</u>
Event Description: RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure			
Time	Position	Applicant's Actions or Behavior	

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CRS/BOP

(Step 4) Check Ruptured SG(s) Level
 NR level > 7% (25%)
 Stop feed flow to ruptured SG
 Close MDAFP flow control valve
 Close TDAFP flow control valve
 AL HK-11A
 AL HK-12A

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Critical Task

CREW

Isolate feedwater flow into and steam flow from SG C before a transition to ECA-3.1 occurs

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CAUTION: Major steam flow paths from the ruptured SG should be isolated before initiating RCS cooldown

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CRS/RO

(Step 5) Check Ruptured SG(s) Pressure > 340 psig

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CAUTION: If RCPs are NOT running, the following steps may cause a false CSF-1, Fig 4, Integrity Status Tree indication for the ruptured loop. Disregard the ruptured loop T-cold indication until after performing Step 29.

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NOTE After the low steamline pressure SI signal is blocked, main steamline isolation will occur if the high steam pressure rate setpoint is exceeded

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CRS/BOP

(Step 6) Initiate RCS Cooldown
 Check RCS pressure < 1970 psig
 Block Steamline Pressure SI
 Determine required core exit temperature

Dump steam to condenser from intact SGs at max rate
 AB PK-507 manual at zero output
 AB US-500Z in STM PRESS position
 AB PK-507 adjusted for maximum Cooldown

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RNO – Manually or locally Dump Steam using ASDs

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END OF SCENARIO

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Op Test No.:		Scenario #	1	Event #	4, 5, 6, and 7	Page	25	of	27
Event Description:		RCS Thot RTD Failure, ATWS, SGTR, CCP Auto Start Failure							
Time	Position	Applicant's Actions or Behavior							

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	CRS	Declare a Site Emergency based on EAL SS2.1 , Failure of the RPS to initiate a reactor trip, or FS1.1 , Loss of RCS and Containment Barriers

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<u>OG RO</u>	<u>OG BOP</u>	<u>N</u>	<u>TODAY</u>
<u>RO</u>	<u>BOP</u>	<u>Shift</u>	<u>Date</u>

Review/Complete Prior to Relieving the Watch:

- | | | |
|---------------------------------|--------------------------------|-----------------------------------|
| • <u>URO Logs</u> | • <u>Annunciator Test</u> | • <u>Plant Status Control Log</u> |
| • <u>Control Board Walkdown</u> | • <u>Standing/Night Orders</u> | • <u>Status Panel Horns</u> |

'A' Train Protected

<u>Plant Status: Mode 1</u>	<u>Gross Gen Load: 1306 MWe</u>
<u>Reactor Power: 100%</u>	<u>Load Limit Pot 8.65</u>
<u>Rod movement: None</u>	<u>Circ. Pump Setback: DISABLE</u>
<u>Boration: 0 gallons</u>	<u>Cation Bed Run: 20 min</u>
<u>Dilution 20 gallons</u>	<u>C/T valves: Normal</u>

Equipment OOS or WPA

- ☐ "B" MDAFP Out of Service for an oil change. Scheduled for completion on the PM shift

Information

- ☐ Reduce Power to 95% for Main Turbine Valve testing.

Equipment Burdens and Workarounds

Review/Complete After Relieving the Watch:

- CAR's Applicable to Operations • Indicating Lights/Chart Recorders

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CRS WATCH RELIEF CHECKLIST

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Off-going Supervisor	CR Supervisor	Nights	Today
	Name	Shift	Date

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Oncoming Supervisor review or perform the following:

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• Control Board Walk down	• Night Orders/Standing Orders	• EOSL Turnover Report
• AUTO LOG	• Temp Mod Log / Plant Status Control Log	• WPA
• Shift Brief Items to Cover: New Night / Standing Orders, Work for the Shift & Dose (Budget vs. Actual)		

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<u>RCS Makeup:</u> <u>20 gal dilution</u>	<u>RODS:</u> <u>D@ 215</u>	<u>Cation Bed Run:</u> <u>20 min</u>
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<u>RCS: 966 ppm (sample)</u>	<u>'A' CCP: 976 ppm</u>	<u>'B' CCP: 986 ppm</u>
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<u>PROTECTED TRAIN: A</u>	<u>CDE: 3.94 E-5</u>	<u>LERE: 5.62 E-7</u>
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<u>Industrial Safety Focus Area:</u> Ensure good Pre-Job Briefs are conducted	<u>OPS DOSE</u>
<u>HUP Site Focus Area:</u> Two Minute Drill – Keep the BIG Picture	<u>Actual: 1.6 mrem</u>
<u>HUP OPS Focus Area:</u> Precise Communications	<u>Budget: 13.0 mrem</u>

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CURRENT ISSUES:

"B" MDAFP Out of Service for an oil change. Scheduled for completion on the PM shift.

Tech Spec 3.7.5, Condition C 72 hours

ONGOING ITEMS:

Reduce Power to 95% for Main Turbine Valve testing

Review or complete after relieving the watch:

• CARS Applicable to Ops (CTSN 5468)

• Highlights of Weekly Schedule

Oncoming Supervisor:

Name

Time

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, trigger #3 (manual) 90 s ramp		
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R C, 400 gpm, trigger #5 (conditional) 300 s ramp, 30 s td imf rcs02c (4 30) 400 300		
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	BOP	MAINTAIN symmetric heating and steam quality to the turbine:
	BOP	MAINTAIN SG feedwater inlet temperature above the curve
OTG-ZZ-00004, Power Operation, Addendum 3		

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Booth Operator Instructions: Operate Trigger for (steamdumpfails.lsn)				
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65E				
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Tref/Tauct Lo				
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Position – Open (AB-ZI-34, 35, and 36)				
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		ANN 108-111C “SG A-D Level Deviation”		
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		NOTE: No ASD failures have occurred.		
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RNO)				
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Go To Step 6				
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6				
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CHECK Condenser Steam Dump – FAILED OPEN				
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		NOTE: Condenser Steam Dump Cooldown valves have failed open.		
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7				
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PLACE Steam Dump Bypass Interlock Switches To OFF/RESET:				
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		AB HS-63		
		AB HS-64		
		NOTE: The operator may have completed this action prior to entering the OTO.		

	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.
		AB PI-507
	BOP	(Step 11) CHECK Instruments Indications:
		RCS Tavg - NORMAL
		BB TI-412
		BB TI-422
		BB TI-432
		BB TI-442
		HP Turbine First Stage Pressure - NORMAL
		AC PI-505
		AC PI-506
		NOTE: The CRS may direct BOP to reset ASD Controllers to maintain 1092 psig.

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Instructor Turnover Information	Exam #: 2009 NRC Scenario #1
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MODE:	1
RX POWER:	100 %
DELTA I:	-0.29 %
TURBINE LOAD:	1290 MWe
COND VAC:	3.2 In HgA
GEN H2 USE:	635 scfd
RCS BORON:	1030 ppm
CDF:	3.37 E-5 Green
LERF:	3.25 E-6 Green

SYS STATUS:	Green
RCS MAKEUP:	18 gallons dilution
RODS:	D @ 215
ROD MOVEMENT:	None
CATION BED RUN	20 min
CIRC PUMP SETBACK:	Disabled
COOLING TOWER VALVES:	Normal

INDUSTRIAL SAFETY ISSUES / RED BARRIER TAPE:

TECH SPEC / MAINTENANCE RULE:

MDAFP A OOS for an oil change. Scheduled for completion on the PM shift.

TS 3.7.5
Condition C, 72 hours

OPERATIONAL DECISION MAKING ISSUES: EMERGENT WORK / PRIORITY WORK:
SIGNIFICANT SCHEDULED WORK:

INFORMATION:

Protected Train B
CCP A 1045 ppm minus 5 days
CCP B 1060 ppm minus 15 days

Facility:	Callaway	Scenario No.:	2	Op Test No.:	
Examiners:	_____	Operators:	_____		
	_____		_____		
	_____		_____		
Initial Conditions:	The following is the plant /equipment status: <ul style="list-style-type: none"> 60% steady state power NE02 OOS (Activate Lesson "ne01b.lsn") TS 3.8.1.B, This Date, 0500 OSP-NE-00003, 72 hours due in 4 hours Ensure SG level channel 539 is selected for control 				
Turnover:	See Turnover Pages				
Event No.	Malf. No.	Event Type*	Event Description		
A		R (RO) N (SRO/BOP)	Increase power to 75%		
1	PBG04	C (RO/SRO)	Normal Charging Pump Trips Insert Malfuction (BG) PBG04, Value = True		
2	AELT0539	I (BOP) I-TS-SRO	Steam Generator Level Channel Fails High Insert Malfuction (AE) AELT0539, Value = 100, ramp=15 s		
3	SFH08_DR	C, R (RO/SRO) C-TS-SRO	Dropped Control Rod Insert Malfuction (SF) SFF06_DR, Value = stationary gripper		
4	BB002_A	M (All)	LOCA Insert Malfuction (BB) BB002_A, Value = 0-1300, Ramp in over 10 min.		
5	NEM8803B	C (RO)	BIH Valve Failure to Open Insert Remote Function (NG) NG04CKF2, Value = Close, Condition of "jpplsia eq "		
6	JINHBSI	C (RO)	Automatic Safety Injection Failure Insert Remote Function (SB) JINHBSI, Value = Both		
7	PAL02_1 AL	C (BOP)	TDAFP Trip with MDAFP Auto Start Failure Insert Malfuction (AL) PAL02_1, Value = True Insert Remote Function (AL) JLOASBI8_1, Value = Inhibit		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Callaway 2009 NRC Scenario #2

The crew takes the shift at 60% power with direction to increase power to 75%. Diesel Generator NE02 is out of service for preplanned maintenance. The crew should complete all control manipulations to increase power, including dilution and turbine controls. The crew should demonstrate the ability to monitor the power increase using diverse/redundant indications and conservative actions. Once the examiners are satisfied with the crew response the next event can be inserted.

Two minutes after power increase (dilution or rod withdrawal) has begun or when directed by the lead examiner, the Normal Charging Pump will trip. The crew will respond by shifting to the "A" CCP in accordance with OTO-BG-00001, Pressurizer Level Control Malfunction.

The controlling Steam Generator Level channel on SG "C" (AE LT-539) fails high. The crew should respond per OTO-AE-00002, Steam Generator Water Level Control Instrument Malfunctions, identify the failed channel, select an operable channel, and stabilize SG "C" level. Tech Specs 3.3.1 and 3.3.2 apply.

Approximately twelve (12) minutes into the scenario, Rod F-6 drops into the core causing RCS temperature, pressure, and pressurizer level to lower. The crew should respond per OTO-SF-0001, Rod Control Malfunctions. TS 3.2.4 for QPTR will apply requiring the crew to reduce power to less than 50%.

A small RCS leak then develops after Tech specs have been addressed, which will steadily increase in size to a maximum value of 1300 gpm. The crew should diagnose the RCS leak and respond per OTO-BB-00003, RCS Excessive Leakage. When it is determined that the leak exceeds 50 gpm, the reactor should be tripped.

The crew should respond to the reactor trip by entering E-0, Reactor Trip or Safety Injection. When the determination is made that pressurizer pressure will not be maintained greater than 1849 psig, a manual Safety Injection should be initiated, since the AUTO SI was inhibited.

When the Safety Injection occurs, BIH inlet valve EM-HV-8803B fails to open due to the breaker opening. The crew should take action to re-close the breaker and open EM-HV-8803B.

While performing the actions of E-0, the crew should recognize the automatic start failure of MDAFP A and manually start the pump. The trip of the TDAFP should be identified and investigated.

The crew should perform the applicable actions of E-0 and at step 16, transition to E-1, Loss of Reactor or Secondary Coolant. CSF monitoring should commence when E-0 is exited.

The crew should perform the applicable actions of E-1 and at step 12, transition to ES-

Scenario Event Description

NRC Scenario 2

1.2, Post LOCA Cooldown and Depressurization. The scenario may be terminated when RCS cooldown is initiated.

An ALERT should be declared based on EAL FA1.1, RCS Barrier Loss Indicator.

Critical Tasks:

Event #5 CT – Manually actuate at least one train of SIS before:

- Transition to any E-1 series, E-2 series, or E-3 series procedure or transition to FRG or Completion of Step 3.a of ES-0.1

Event #6 CT – Establish flow from at least one high head ECCS pump before transitioning out of E-0

Event #7 – Start MDAFP Pump A to establish total AFW flow rate greater than 355,000 lbm/hr to the SGs before transition out of E-0.

References
OTO-BB-00002
OTO-AE-00002
OTO-SF-00001
OTO-BB-00003
E-0
E-1
ES-1.2
EIP-ZZ-00101
OTG-ZZ-00004

Scenario Event Description

NRC Scenario 2

Simulator Set Up

Establish the initial conditions of **IC-3**, BOL 60%:

- Ensure Rod Control is in AUTO
- Rod Control Bank D 160 steps, Other banks 228 steps
- RCS boron concentration 1207 ppm
- CCP A 1230 ppm minus 5 days
- CCP B 1215 ppm minus 15 days
- Place TIP tag on NE HIS-26, Pull to Lock
- Place TIP tag on KJ HS-108
- NE02 inoperable, TS 3.8.1.B, 72 Hours, OOS at 0500, this date
- OSP-NE-00003 due in 4 hours, If desired provide marked up copy of OSP-NE-00003
- **Ensure SG level channel 539 is selected for control**

=====SCENARIO SETUP ITEMS=====

Load the following LESSONS and REMOTE FUNCTION

Click on Lesson Tab, Then under TRNGSIM/LOCA

- ne01b.Isn (PRELOAD)
- amdafpautofail.Isn(PRELOAD)
- pal02trip.Isn(PRELOAD on SIS)
- autosifail.Isn (PRELOAD)
- Insert Remote Function (NG) NG04CKF2, Value = tripped, with CONDITION of "jstsis eq 1" (PRELOAD)

=====EVENT 1 =====

Normal Charging Pump Trips

Insert Malfuction (BG) PBG04, Value = True

=====EVENT 2 =====

Steam Generator Level Channel 539 Fails to 100% over 15 secs

Insert Malfuction (AE) AELT0539, Value = 100, ramp = 15 sec

=====EVENT 3 =====

Rod F6 drops to bottom of core

Insert Malfuction (SF) SFF06_DR, Value = stationary gripper

=====EVENT 4 =====

Loss of Coolant Accident (LOCA) of 1300 gpm over 10 minutes

Insert Malfuction (BB) BB002_A, Value = 1300, ramp = 10 minutes

=====EVENT 5 PRELOADED=====

Boron Injection Header Valve Failure (Breaker Opens)

Insert Remote Function (NG) NG04CKF2, Value = Tripped, Condition of "jpplsia eq 1"

=====EVENT 6 PRELOADED=====

Automatic Safety Injection Failure (autosifail.Isn)

Insert Remote Function (SB) JINHBSI, Value = Both

=====EVENT 7 PRELOADED=====

TDAFP Trip (pal02trip.Isn) with MDAFP Auto Start Failure (amdafpautofail.Isn)

Insert Malfuction (AL) PAL02_1, Value = True, with a condition of "jpplsia eq 1"

Insert Remote Function (AL) JLOASBI8_1, Value = Inhibit

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>A</u>	Page	<u>5</u>	of	<u>25</u>
Event Description:		Power Increase							
Time	Position	Applicant's Actions or Behavior							

Shortly after taking the watch, raise power to 75% IC should start them at step 5.2.11, with section 5.5 complete

OTG-ZZ-00004, Power Operation

5.2.11	BOP	As power is raised from 65 to 70% power, ENSURE that the Mini-flow Recirc Valve for the second MFP is CLOSED in AUTOMATIC. · AE FIC-2B, MFP A RECIRC CTRL · AE FIC-IB, MFP B RECIRC CTRL
	BOP	ENSURE CAPV0013, STM SEAL SYS AUX STM SPLY PV, and CAPV0014A, STM SEAL SYS MN STM SPLY PV, are CLOSED.
	BOP	Prior to exceeding 75% power, IF available, INITIATE placing a fifth Condensate Demineralizer in service per OTN-AK-01001, Condensate Demineralizer System DCS Normal Operation.
5.4 steps	CRS	NOTIFY the Power Dispatcher how much load will be changed and the loading rate to be used.
	CRS	NOTIFY the following departments power will be changed and any instructions from the Shift Manager: · Chemistry · Radiation Protection · Radwaste
	CRS	IF a planned power change will be greater than 10%, REQUEST Reactor Engineering be present in the Control room to assist with transient conditions

Op Test No.:		Scenario #	2	Event #	A	Page	6	of	25
Event Description:		Power Increase							
Time	Position	Applicant's Actions or Behavior							

	CRS/RO	Using one of the computer programs listed below, PERFORM a Xenon Prediction for the anticipated change in power. [Ref: 6.2.5] <ul style="list-style-type: none"> · I:\NUCENG\SYSTEMS\REACTOR\SOFTWARE\APPROVED\XEPRED\XEPRED.EXE · I:\NUCENG\SYSTEMS\REACTOR\SOFTWARE\APPROVED\XENON_PREDICTION\XENON_PREDICTION.xlt
	RO	PERFORM a Dilution/Boration Calculation for the anticipated change in power. [Ref: 6.2.5, 6.2.17 and 6.2.19]
	CRS	REQUEST guidance from Reactor Engineering for desired control rod positioning for optimum Axial Offset (AO) control.
	RO	Using the following hand switches, ENSURE at least one group of Pressurizer Back-up Heaters is ENERGIZED to equalize RCS and Pressurizer boron concentrations. <ul style="list-style-type: none"> · BB HIS-51A, PZR HTR B/U GROUP A, in CLOSE · BB HIS-52A, PZR HTR B/U GROUP B, in CLOSE
	RO	PLACE BB PK-455A, PZR PRESS MASTER CTRL, in MANUAL and LOWER to 40%.
	RO	PLACE BB PK-455A, PZR PRESS MASTER CTRL, in AUTO.
	RO	WHEN the difference between Boron Concentration in the pressurizer and the RCS is less than 50-ppm SECURE pressurizer back up heaters.
	RO	
At the Discretion of the Lead Examiner Move to Event #1.		

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>25</u>
Event Description: Seal Injection Filter "A" clogs 65%									
Time	Position	Applicant's Actions or Behavior							

After a Power Increase has been established to 65%. (The crew should complete all control manipulations to increase power, including dilution and turbine controls. The crew should demonstrate the ability to monitor the power increase using diverse/redundant indications and conservative actions. Once the examiners are satisfied with the crew response the next event can be inserted.)

Booth Operator Instructions:

- T = 2 minutes
- Insert Malfunction (BG) PBG04, Value = True
- When contacted, respond as Primary and/or Secondary Operator. Acknowledge the request to investigate the NCP Trip at the pump and breaker.
- When contacted, respond as EDO. Acknowledge the pump trip.

Indications Available:

		Annunciator 41A, Seal Inj To RCP Lo Annunciator 42A, Chg Line Flow Hi/Lo
OTO-BG-00001, Pressurizer Level Control Malfunction		
	CRS	Implement OTO-BG-00001, Pzr Level Control Malfunction
		Note: Letdown isolates and Pressurizer control heaters will deenergize if the controlling level channel fails low.
	RO	(Step 1) Check for failed Pressurizer Level Indicator – NO RNO - Perform the following: <ul style="list-style-type: none"> • Check Master Controller Malfunctioning – NO • Go To Step 19
		Notes: Charging pumps that show signs of cavitation should be stopped and standby pumps should not be started without investigating The CCPs should not be run at less than 60 gpm total flow at anytime or less than 130 gpm total for greater than 30 minutes.
	RO	(Step 19) Check Charging Pumps – At least ONE Running-NO RNO – Perform the following: <ul style="list-style-type: none"> • Ensure CCP Recirc Valves OPEN • Start One CCP • Ensure CCW pump is running in same train as pump started

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>1</u>	Page	<u>8</u>	of	<u>25</u>
Event Description:		Seal Injection Filter "A" clogs 65%							
Time	Position	Applicant's Actions or Behavior							

	RO	(Step 20) Check Charging Header Flow – indicates proper charging alignment <ul style="list-style-type: none"> EG FI-121A
	RO	(Step 21) Maintain RCP Seal Injection Flow between 8 gpm and 13 gpm per RCP using Charging Header Back Pressure Control Valve <ul style="list-style-type: none"> BG HC-182
	BOP	(Step 22) Check Instrument Air – In Service
	RO	(Step 23) Check Letdown – In Service
	RO	(Step 24) Check Letdown Relief Valve (BG8117) – NORMAL <ul style="list-style-type: none"> Letdown Relief to PRT Outlet Temp – BG TI-125 Annunciator 39C, LTDN RLF TEMP HI- CLEAR
	RO	(Step 25) Check Pressurizer Level At Program Level or Trending to Program Level
	RO	(Step 26) Check RCS – Intact <ul style="list-style-type: none"> Containment Conditions – Normal Aux Building Conditions – Normal PRT Conditions – Normal Recycle Holdup Tank Levels - Normal
	CRS	(Step 27) Review applicable Tech Specs – Att H None
	CRS	(Step 28) Perform Notifications Per ODP-ZZ-0001 Add 13 Contact the EDO

Op Test No.: _____ Scenario # 2 Event # 1 Page 9 of 25

Event Description: Seal Injection Filter "A" clogs 65%

Time	Position	Applicant's Actions or Behavior
------	----------	---------------------------------

	RO	(Step 29) Check Any Charging Pump Started During the Performance of this Procedure
	CRS/RO	(Step 30) Perform the Following: Adjust RCS Tave as required Update Status Board with the boron concentration in the running charging pump Notify HP that area radiation levels may change in the affected charging pump room
	RO/BOP	(Step 31) Go To Appropriate Plant procedure as directed by the Control Room Supervisor
At the Discretion of the Lead Examiner Move to Event #2.		

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>10</u>	of	<u>25</u>
Event Description:		Feed Flow Channel Failure							
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:

- T = 12 minutes or when directed
- Insert Malfunction (AE) AELT0539, Value =100, ramp = 15 secs
- When contacted, respond as I&C. Acknowledge the request to investigate the channel failure.
- When contacted, respond as EDO. Acknowledge the channel failure and OTO entry.

Indications Available:

		110 C SG C LEV DEV
		110 D SG C FLOW MISMATCH

OTO-AE-00002, Steam Generator Water Level Control Instrument Malfunctions

	CRS	Implement OTO-AE-00002, Steam Generator
	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 <u>RNO</u> – Select SG Level Channel - Selector (AE LS-539C) to an operable channel
	BOP	(Step 4) Check SG Pressure Instrument Indications – Normal
	BOP	(Step 5) Check SG NR Level Within One of the Following: Trending to between 45% and 55% Between 45% and 55%

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>2</u>	Page	<u>11</u>	of	<u>25</u>
Event Description:		Feed Flow Channel Failure							
Time	Position	Applicant's Actions or Behavior							

	CRS	(Step 6) Review Attachment A, Effects of Instrument Failure
	CRS	(Step 7) Review Applicable Tech Specs, Attachment F T.S. 3.3.1 and 3.3.2 apply
	CRS	(Step 8) Perform Notifications per ODP-ZZ-00001, Add 13
	CRS	(Step 9) Direct I&C to Trip Protective Bistables – Att. B
	CRS	(Step 10) Place AE LT-539 in the EOSL
	CRS	(Step 11) Initiate Action to Repair AE LT-539
At the Discretion of the Lead Examiner Move to Event #4.		

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>12</u>	of	<u>25</u>
Event Description:		Dropped Control Rod							
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions:

- T = 18 minutes or when directed
- Insert Malfunction (SF) SFF06_DR, Value=Stationary Gripper

When directed by the Lead Examiner enter EVENT #4, the LOCA

- Respond as the WWM if contacted about the dropped rod
- Respond as I&C if contacted about the dropped rod
- Respond as Reactor Engineering if contacted about the dropped rod
- Respond as the EDO if contacted about the dropped rod

Indications Available:

		65 D	TREF TAUCT HI
		78 A	PR CHANNEL DEV
		79 C	CONTROL ROD DEV
		80 C	RPI ROD DEV
		81 B	RODS AT BOTTOM
OTO-SF-00001, Rod Control Malfunctions			
	CRS	Implement OTO-SF-00001, Rod Control Malfunctions	
		NOTE: Steps 1 through 6 are immediate action steps	
	RO	(Step 1) Check both of the following are met for indication of multiple dropped rods Ann 81A, TWO/MORE RODS AT BOTTOM – LIT Rod Bottom lights lit for greater than one rod RNO – Go To Step 3	
	CRS/BOP	(Step 3) Check Main Turbine Runback or Load Rejection in Progress RNO – Go To Step 5	
	RO	(Step 5) Place Rod Control in Manual - SE HS-9	

Op Test No.:	_____	Scenario #	<u>2</u>	Event #	<u>3</u>	Page	<u>13</u>	of	<u>25</u>
Event Description:		Dropped Control Rod							
Time	Position	Applicant's Actions or Behavior							

	RO	(Step 6) Check Control Rods Motion - Stopped 82B, OTDT Rod Stop 82C, OPDT Rod Stop
	RO	(Step 7) Check Instruments Indications – Normal RCS Tavg HP Turbine First Stage Pressure Power Range Nuclear Instrument
	RO	(Step 8) Check Annunciator 79A, Rod Ctrl Urg Fail – Lit - NO RNO Maintain RCS Tavg/Tref Deviation within 1.5 °F <ul style="list-style-type: none"> Adjust Turbine Load Adjust RCS boron Concentration Adjust Control Rods Go To Step 10
	CRS/RO	(Step 10) Check Both of the Following Extinguished Annunciator 81B, Rod at Bottom All Rod Bottom Lights RNO – Go To Attachment A, Dropped/Misaligned Control Rod
	CRS	Attachment A, Dropped/Misaligned Control Rod
	CRS/RO	(Step A1) Check Reactor Power – Less Than 5% RNO – Go To Step A3
	CRS	(Step A3) Contact I&C to Determine Reason for Dropped Rod
	CRS	(Step A4) Check Shutdown Margin Within COLR Limits within 1 hour
	CRS	(Step A5) Check AFD Within Curve Book Figure 1-1 Limits

Op Test No.: _____ Scenario # 2 Event # 3 Page 14 of 25

Event Description: Dropped Control Rod

Time	Position	Applicant's Actions or Behavior
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	CRS/RO	(Step A6) Check QPTR – Less than or equal to 1.02 REU1151 REU1152 REU1153 REU1154 REU1159 REU1160 REU1161 REU1162 RNO – T.S. 3.2.4 applies
At the Discretion of the Lead Examiner Move to Event #4.		

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 15 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

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

- Respond as the EDO if contacted about the RCS/ LOCA
- Respond as the Primary Operator to investigate the loss of power to EMHV8803B, after three minutes report the breaker is tripped but there is no apparent problem with the breaker.
- If directed by the control room close the breaker by deleting and re-closing Remote Function (NG) NG04CKF2, value = Close
- Respond as the secondary Operator if contacted to investigate the trip of the TDAFP, after 4 minutes report that the mechanical linkage is tripped, lube oil is all over the room and there appears to be a large oil leak on the pump.
- If contacted as maintenance, report that the TDAFP trip will be investigated
- IF contacted, respond as secondary operator and investigate the "A" MDAFP not starting and after 5 minutes report no obvious problems with the "A" MDAFP or its power supply breaker.

Indications Available:

		32 C PZR LO LEV DEV 60 E/F CTMT SUMP LEV HI 61 A/B PROCESS RAD HI
OTO-BB-00003, RCS Excessive Leakage		
	CRS	Implement OTO-BB-00003, RCS Excessive Leakage
	CRS/RO	(Step 1) Check if Pressurizer Level can be maintained <ul style="list-style-type: none"> • Control Charging flow as necessary to maintain level • Check Pressurizer Level – STABLE OR RISING
	RO	(Step 2) Check Pressurizer Level – STABLE OR RISING
	RO	Evacuate Non-Essential Personnel in Containment – N/A

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 16 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
	CRS/RO	(Step 4) Check if VCT Level Can Be Maintained <ul style="list-style-type: none"> VCT Level – Maintained > 5% by Normal Makeup
	CRS/RO	(Step 5) Determine if Plant Trip is Required Determine Leak Size Leak Rate - < 50 GPM – NO – Manually Trip the Reactor
E-0, Reactor Trip or Safety Injection		
	CRS	Implement E-0, Reactor Trip or Safety Injection
		(Steps 1-4 are immediate action steps)
E-0	RO	(Step 1) Check Reactor Trip Rod Bottom Lights – All lit Reactor Trip and Bypass Breakers – Open Neutron Flux – Lowering
	BOP	(Step 2) Check Turbine Trip Turbine Stop Valves - Closed
	BOP	(Step 3) Check Power to AC Emergency Buses At least One Emergency Bus - Energized Both Emergency Buses - Energized
	RO	(Step 4) Check SI Status Actuated or Required Manually actuate SI (SB HS-27/28) Check LOCA Seq Ann 30A and 31A – Lit Check SB069, SI Actuate Red Light – Lit Solid
Critical Task	CREW	Manually actuate at least one train of SIS before: Transition to any E-1 series, E-2 series, or E-3 series procedure or transition to any FRG or Completion of Step 3.a of ES-0.1
	RO	(Step 5) Perform Attachment A, Automatic Action Verification while continuing with this procedure

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 17 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
Att A	RO	(Step A1) Check Charging Pumps Both CCPs running
	RO	(Step A2) Check SI and RHR Pumps All running
	RO	(Step A3) Check ECCS Flow BIH flow indicated on EM FI-917A/B - NO RNO – Start CCPs or Align valves as necessary,
Critical Task	CREW	Establish flow from at least one high head ECCS pump before transitioning out of E-0
	BOP	(Step A4) Check ESW Pumps Both Running
	BOP	(Step A5) Check CCW Alignment One pump running in each train Service loop being supplied Open CCW to RHR Valves – EG HIS-101&102 Close SFPHX Outlet Valves – EC HIS-11&12 Stop SFP Cooling Pumps – EC HIS-27&28 Record & Monitor time that SFP cooling is isolated
	RO	(Step A6) Check Containment Cooling Fans Running in slow speed
	RO	(Step A7) Check Hydrogen Mixing Fans Running in slow speed
	RO	(Step A8) Check if Containment Spray Should be Actuated

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 18 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
	RO/BOP	(Step A9) Check if Main Steamlines Should be Isolated
	RO	(Step A10) Check ECCS Valves Proper Emergency Alignment
	RO	(Step A11) Check CIS-A
	BOP	(Step A12) Check SG Blowdown Isolation
	RO	(Step A13) Check Both Trains CRVIS
	RO	(Step A14) Check Containment Purge Isolation
	RO	(Step A15) Notify CRS of completion and any manual actions taken
E-0	BOP	(Step 6) Check Generator Output Breakers – Open MA ZL – 3A (V55) MA ZL – 4A (V53)
	BOP	(Step 7) Check Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves - Closed Feedwater Isolation Valves - Closed
	BOP	(Step 8) Check AFW Pumps MD AFW Pumps – Both Running RNO – Start MD AFW Pump (s) TD AFW Pump – Running if Necessary
Critical Task	CREW	Start MD AFW Pump A to establish total AFW flow rate greater than 355,000 lbm/hr to the SGs before transition out of E-0

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 19 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 9) Check AFW Valves-Proper Emergency Alignment MD AFP Flow Control Valves – Throttled TD AFP Flow Control Valves – Full Open
	BOP	(Step 10) Check Total AFW Flow-Greater than 355,000 lbm/hr
	RO	(Step 11) Check PZR PORVs and Spray Valves PZR PORVs – Closed PZR PORVs – Both in Auto PORV Block Valves – Both Open Normal PZR Spray Valves – Both Closed
	RO	(Step 12) Check if RCPs Should be Stopped RCPs – Any Running ECCS Pumps – At least one Running RCS Pressure – Less than 1425 PSIG Stop All RCPs
	RO	(Step 13) Check RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F
	RO	(Step 14) Check if any SG is Faulted No SG pressure lowering uncontrollably No SG completely depressurized
	RO	(Step 15) Check if SG Tubes are Intact No narrow ranger level rising uncontrolled SG steamline N16 radiation – Normal Condenser air removal – Normal before isolation SG ASD radiation – Normal TDAFP exhaust – Normal

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 20 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
	RO	(Step 16) Check if RCS is Intact Containment pressure – Normal Containment Normal Sump Level – Normal Containment Radiation – Normal before isolation RNO – Go to E-1, Loss of Reactor or Secondary Coolant
	CRS	Commence CSF Status Tree monitoring
E-1, Loss of Reactor or Secondary Coolant		
E-1	CRS	Implement E-1, Loss of Reactor or Secondary Coolant
	RO	(Step 1) Check if RCPs should be Stopped RCPs – any running ECCS Pumps – at least one running RCS Pressure – less than 1425 psig Stop All RCPs
	BOP	(Step 2) Check if any SG is faulted Any SG pressure lowering uncontrollably Any SG completely depressurized Check all Faulted SGs – Isolated
	BOP	(Step 3) Check Intact SG Levels NR levels – greater than 7% (25%) Control levels between 7% (25%) and 52%
	BOP	(Step 4) Check Secondary Radiation - Normal Perform EOP Addendum 11, Restore SG sampling Direct Chemistry to sample the Steam Generators Direct RP to survey steamlines Check unisolated secondary radiation monitors
	RO	(Step 5) Check PZR PORVs and Block Valves Power to Block Valves – Available PZR PORVs – Closed Block Valves – Both Open

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 21 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
	RO	(Step 6) Check if ECCS flow should be reduced RCS Subcooling – greater than 30°F (50°F) One SG NR Level – greater than 7% (25%) OR Total AFW flow – greater than 355,000 lbm/hr RCS Pressure – Stable or rising PZR Level – greater than 9% (29%)
	RO	(Step 7) Check if Containment Spray Should be Stopped Spray pumps – running Determine number of required pumps (if required)
	RO	(Step 8) Check if RHR Pumps Should be Stopped Check RCS pressure – greater than 325 psig RCS Pressure – Stable or rising Stop RHR Pumps with suction aligned to RWST
	BOP	(Step 9) Check SG and RCS Pressures All SG Pressures – stable or rising RCS Pressure – stable or lowering
	BOP	(Step 10) Check if Diesel Generators Should be Stopped Emergency Buses – Energized from offsite power Perform EOP Addendum 8, Loading Equipment Stop any unloaded Diesel Generators
	CRS/RO	(Step 11) Initiate Evaluation of Plant Status Check cold leg recirculation capability Check Aux Building radiation – normal Obtain samples Evaluate long term recovery capability
	CRS/RO	(Step 12) Check if RCS Cooldown and Depressurization is Required RCS Pressure – greater than 325 psig Go to ES-1.2, Post LOCA Cooldown and Depressurization
	CRS	Implement ES-1.2 Post LOCA Cooldown and Depressurization
ES-1.2	RO	(Step 1) Reset SI

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 22 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
	RO	(Step 2) Reset Containment Isolation Phase A and Phase B
	RO	(Step 3) Establish Instrument Air to Containment Check EF HIS-43/44 – Open Start Air Compressor (s) Open KA HS-29
	RO	(Step 4) Deenergize PZR Heater
	BOP	(Step 6) Check all AC Buses – Energized by Offsite Power NB01 NB02 PA01 PA02
	RO	(Step 7) Check if RHR Pumps Should be Stopped Any RHR Pump running with suction aligned to the RWST RCS Pressure – Greater than 325 psig Stop RHR Pumps and Place in Standby
	BOP	(Step 8) Check Intact SG Levels NR levels – greater than 7% (25%) Control levels between 7% (25%) and 52%
	BOP	(Step 9) Check if Condenser Air Removal Should be Returned to Normal Check Condenser Vacuum – Established Check MSIVs – any open Open GE HIS-101/102 Open GE HIS-103/104 Start one Condenser Air Removal Fan Start desired number of condenser vacuum pumps

Op Test No.: _____ Scenario # 2 Event # 4, 5, 6, and 7 Page 23 of 25

Event Description: LOCA/Hi Head ECCS Isolated/Auto SI Failure/TDAFW Trip

Time	Position	Applicant's Actions or Behavior
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	CRS/RO	(Step 10) Initiate RCS Cooldown to Cold Shutdown Check RCS pressure – less than 1970 psig Block Steamline Pressure SI, SB HS-9/10 Maintain cooldown rate (Tc) – less than 100°F/HR Dump Steam to Condenser from intact SGs Condenser available (C-9 lit and MSIVs open) Place AB PK-507 in manual and zero output Place AB US-500Z in STM PRESS position Adjust AB PK-507 to achieve desired cooldown rate
	CRS	Declare an ALERT based on EAL FA1.1, RCS Barrier Loss Indicator
Once the crew has commenced a Cooldown <u>or</u> at the Discretion of the Lead Examiner – Terminate Scenario		

OG RO		OG BOP		N		TODAY
RO		BOP		Shift		Date

Review/Complete Prior to Relieving the Watch:

• URO Logs	• Annunciator Test	• Plant Status Control Log
• Control Board Walkdown	• Standing/Night Orders	• Status Panel Horns
'A' Train Protected		
Plant Status: Mode 1	Gross Gen Load: 743 MWe	
Reactor Power: 100%	Load Limit Pot 8.65	
Rod movement: None	Circ. Pump Setback: DISABLE	
Boration: 0 gallons	Cation Bed Run: 20 min	
Dilution 20 gallons	C/T valves: Normal	

Equipment OOS or WPA

- ☐ Diesel Generator NE02 is OOS for preplanned maintenance, OSP-NE-00003, 72 hours, due in 4 hours. NE02 was taken out of service at 0500 this morning.

Information

- ☐ Raise Reactor Power to 75%

Equipment Burdens and Workarounds

Review/Complete After Relieving the Watch:

- CAR's Applicable to Operations • Indicating Lights/Chart Recorders

CRS WATCH RELIEF CHECKLIST

Off-going Supervisor	CR Supervisor	Nights	Today
	Name	Shift	Date

Oncoming Supervisor review or perform the following:

Control Board Walk down	• Night Orders/Standing Orders	• EOSL Turnover Report
TO LOG	• Temp Mod Log / Plant Status Control Log	• WPA
Shift Brief Items to Cover: New Night / Standing Orders, Work for the Shift & Dose (Budget vs. Actual)		

	<u>RODS:</u> D@ 160	<u>Ca</u>
RCS: 1207 ppm (sample)	'A' CCP: 1230 ppm	'B' C
<u>PROTECTED TRAIN: A</u>	CDF: 1.67 E-4	LI
<u>Industrial Safety Focus Area:</u> Ensure good Pre-Job Briefs are conducted	<u>OPS DOSE</u>	
<u>HUP Site Focus Area:</u> Two Minute Drill – Keep the BIG Picture	Actual: 1.6 mrem	
<u>HUP OPS Focus Area:</u> Precise Communications	Budget: 13.0 mrem	

CURRENT ISSUES:

Diesel Generator is OOS for preplanned maintenance

Tech Spec 3.8.1, Condition B 72 hours, entered at 0500 this morning

OSP-NE-000003, 72 hours due in 4 hours

ONGOING ITEMS:

Raise Power to 75%

Review or complete after relieving the watch:

- CARS Applicable to Ops (CTSN 5468)

- Highlights of Weekly Schedule

Oncoming Supervisor:

Name

Time

Facility: Callaway		Scenario No.: 3		Op Test No.:	
Examiners: _____		Operators: _____			
_____		_____			
_____		_____			
Initial Conditions:		The following is the plant /equipment status: <ul style="list-style-type: none"> 100% steady state power CCW Pump A OOS. (Activate Lesson "eg01a.lsn") TS 3.7.7 Info Only 			
Turnover:					
Event No.	Malf. No.	Event Type*	Event Description		
1	ABPT0507	I (All)	Steam Header Pressure Channel Failure Insert Malfunction (AB) ABPT0507, Value = 0, ramp = 60 secs		
2	BBLT0460_1	I (RO) I-TS-SRO	Pressurizer Level Channel 460 Failure Insert Malfunction BBLT0460_1, Value = 0, ramp = 15secs		
3	JNN2XFR	C (RO) C-TS-SRO	NN12 Inverter Trouble/Transfer Insert Remote Function (NN) JNN2XFR, Value = Bypass CVT		
4	BBPCV0455	C (RO)	Stuck Open PZR Spray Valve Imf (BB) BBPCV0455C_2, Value = 0.3		
5	AB001_B	M (All)	Steam Line Break Inside Containment Insert Malfunction (AB) AB001_B, Value = 750000, ramp = 30 secs, condition of "jcfr eq true"		
6	JINHBSLIS	C (BOP)	Steam Line Isolation Signal Failure Insert Remote Function (SB) JINHBSLIS, Value = Both		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Callaway 2009 NRC Scenario #3

The plant is operating at 100%, steady state power. CCW Pump A is Out of service pump bearing replacement. A 24 hour pump run will take place following maintenance.

Main Steam header pressure transmitter ABPT507 fails low, resulting in lowering Main Feedwater Pump speed and lowering SG levels. The crew should identify the failure and take manual control of Main Feedwater Pump speed to stabilize SG levels in accordance with OTO-AB-00004, Steam Header/Feedwater Header Pressure Channel Failure.

Following the ABPT507 failure, Pressurizer Level Channel 460 fails low. The crew should respond per OTO-BG-00001, Pressurizer Level Control Malfunctions, and restore PZR level. Technical Specification 3.3.1 applies.

NN12 inverter will fail and transfer to the Bypass Constant Voltage Transformer. Technical Specification 3.8.7 applies. The Control Room Supervisor should identify the TS requirement to restore the inverter to operable status within 24 hours.

Pressurizer Spray valve BB PCV-455C fails to 30% open. After attempts to close the spray valve and restore Pressurizer Pressure using Pressurizer Backup Heaters, the crew should trip the reactor and secure RCPs B and D, since these supply spray flow.

Immediately upon the reactor trip, a steam line break occurs on SG B inside Containment. The crew should continue the actions of E-0, Reactor Trip or Safety Injection, following the Safety Injection.

The Main Steamline Isolation Valves will fail to automatically close in response to the Low Steam Line Pressure. The crew should manually isolate the Main Steamlines and complete the isolation of SG B in accordance with E-2, Faulted S/G Isolation.

The crew should then transition to ES-1.1, SI Termination. The scenario is complete when the Boron Injection Header is isolated.

An Alert should be declared per EAL HA2.1, Natural and Destructive Phenomena Affecting a Safe Shutdown Area.

Scenario Event Description

NRC Scenario 3

Critical Tasks:

Event #7 CT – Fast close MSIVs before a severe challenge develops to either subcriticality or Integrity CSFs or before transition to ECA-2.1.

Event #6 CT – Isolate SG B before a transition out of E-2

- MSIV Closed
- AFW Isolated from SG B

References
OTO-AB-00004
OTA-RK-00016 Addendum 26B
OTO-NN-00001
OTO-BB-00006
OTO-BG-00001
E-0
E-2
ES-1.1
CSF-1, Attachment A
EIP-ZZ-00101

Scenario Event Description

NRC Scenario 3

Scenario Setup Guide:

Establish the initial conditions of IC-11, MOL 100% power:

- RCS boron concentration 966 ppm
- CCP A 976 ppm minus 5 days
- CCP B 986 ppm minus 15 days
- Rod Control Bank D 215 steps, Other banks 228 steps
- CCW Pump A OOS. TS 3.7.7 Info Only
- **ENSURE BB LT-460 is selected for Control**

=====SCENARIO SETUP ITEMS=====

Remove CCW Pump "A" from service

- Run Lesson "eg01a.lsn"

Steam Line Break inside containment actuates on Reactor Trip

- Insert Malfunction (AB) AB001_B, Value = 750000, ramp = 30 secs, condition = "jcfr eq true"

Steam Line Isolation Signal Failure

- Insert Remote Function (SB) JINHBSLI, Value = Both

=====EVENT 1 =====

ABPT507 fails to 0 psig over 60 sec

- Insert Malfunction (AB) ABPT0507, Value = 0, ramp = 60 secs

=====EVENT 2 =====

Pressurizer Level Channel 460 Fails Low over 15 secs

- Insert Malfunction BBLT0460_1, Value = 0, ramp = 15 secs
-

=====EVENT 3 =====

NN12 Inverter Trouble/Transfer

- Insert Remote Function (NN) JNN2XFR, Value = Bypass CVT

=====EVENT 4 =====

Stuck open PZR Spray Valve

Insert Malfunction (BB) BBPCV0455C_2, Value =0.3

=====EVENT 5 PRELOADED=====

Steam Line Break inside containment actuates on Reactor Trip

- Insert Malfunction (AB) AB001_B, Value = 750000, ramp = 30 secs, condition = "jcfr eq true"

=====EVENT 6 PRELOADED=====

Steam Line Isolation Signal Failure

- Insert Remote Function (SB) JINHBSLI, Value = Both

Op Test No.:	_____	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>5</u>	of	<u>26</u>
Event Description:		Steam Header Pressure Channel Failure							
Time	Position	Applicant's Actions or Behavior							

Shortly after taking the watch

Booth Operator Instructions

- T = 2 minutes
- Insert Malfunction (AB) ABPT0507, Value = 0, ramp = 60 secs
- When contacted, respond as I&C. Acknowledge the request to investigate the instrument failure.
- When contacted, respond as EDO. Acknowledge entry into the OTO.

Indications Available:

		108 - 111 D SG FLOW MISMATCH
OTO-AB-00004, Steam Header/Feedwater Header Pressure Channel Failure		
	CRS	Implement OTO-AB-00004
	RO	(Step 1) Check Steam HDR/FW Pressure Indicator – Indicating Significantly Different than existing Plant Conditions <ul style="list-style-type: none"> • AB PI-507 (red needle) • AB PI-507 (green needle)
	BOP	(Step 2) CHECK Main feed Pump Speed – Changing Due to Failed Channel
	BOP	(Step 3) Place GE Main Feed Pump Turbine control transfer switch in Manual <ul style="list-style-type: none"> • FC HIS-88 • FC HIS-188
		Note: Normal indication is not valid and DP must be determined by comparing Feed Pressure to the Steam Generator Pressure
	BOP	(Step 4) Control Main Feed Pump Turbine speed to restore Programmed Feedwater D/P

Op Test No.:	_____	Scenario #	<u>3</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>26</u>
Event Description:		Steam Header Pressure Channel Failure							
Time	Position	Applicant's Actions or Behavior							

	BOP	(Step 5) CHECK Steam Header Pressure Channel – Failed AB PI-507 (red needle)
	BOP	(Step 6) CHECK Steam Dump Control – In Steam Pressure Mode - NO RNO – Place AB PK-507 in Manual. Demand at Zero Go to step 10
	CRS	(Step 10) Initiate Actions to Repair Failed Component
	CRS	(Step 11) Perform Notifications to the EDO
	CRS	(Step 12) Go To Appropriate Plant Procedure
At the Discretion of the Lead Examiner Move to Event #2.		

Op Test No.:	_____	Scenario #	<u>3</u>	Event #	<u>2</u>	Page	<u>7</u>	of	<u>26</u>
Event Description:		Pressurizer Level Channel 460 Failure							
Time	Position	Applicant's Actions or Behavior							

Booth Operator Instructions

- T = 20minutes
- Insert Malfunction (BB) BBLT0460_1, Value = 0, ramp = 15 secs
- When contacted, respond as I&C. Acknowledge the request to investigate the instrument/channel failure.
- When contacted, respond as EDO. Acknowledge entry into the OTO.

Indications Available:

		ANN 32B, PZR 17% HTRS OFF LTDN ISO
OTO-BG-00001, Pressurizer Level Control Malfunctions		
	CRS	Implement OTO-BG-00001, Pressurizer Level Control Malfunctions
		NOTE: Letdown isolates and Pressurizer control heaters will deenergize if the controlling level channel fails low.
	RO	(Step 1) Check For Failed Pressurizer Level Indicator
	RO	(Step 2) Transfer Pressurizer Level Control Selector to Remove Failed Channel From Control

Op Test No.:	_____	Scenario #	<u>3</u>	Event #	<u>2</u>	Page	<u>8</u>	of	<u>26</u>
Event Description:		Pressurizer Level Channel 460 Failure							
Time	Position	Applicant's Actions or Behavior							

	RO	(Step 3) Check Letdown – In Service RNO – Slowly close BG HC-182 Throttle BG FK-124 for 8-13gpm seal injection Ensure BG HC-182 is full closed Ensure BG HIS-8152 and 8160 are open Ensure BG HIS-459 and 460 are open Throttle BG HC-182 to establish 85-90 gpm Place BG PK-131 in manual and 75% open Open orifice isolation valves for desired flow Adjust BG PK-131 to obtain 300-350 psig Adjust charging flow to maintain PZR level
	RO	(Step 4) Check PZR Heater Control Group C - On
	RO	(Step 5) Check PZR Level Trending to or at program level
	RO	(Step 6) Check Operable PZR Level Channel – USED FOR RECORDER
	CRS	(Step 7) Review Applicable Tech Specs, Attachment H 3.3.1, Table 3.3.1-1 Item 9 Cond M 72h 3.3.3, Table 3.3.3-1 Item 11 Info Only 3.3.4, Table 3.3.4-1 Item 12 Info Only
	CRS	(Step 8) Review Attachment A, Effects of Failure
	CRS	(Step 9) Perform Notifications per ODP-ZZ-00001, ADD 13
	CRS	(Step 10) Direct I&C to Trip Protective Bistables Attachment C for LT-460
	CRS	(Step 11) Place BB LT-460 in the EOSL

Op Test No.: _____	Scenario # <u>3</u>	Event # <u>2</u>	Page <u>9</u> of <u>26</u>
Event Description: Pressurizer Level Channel 460 Failure			
Time	Position	Applicant's Actions or Behavior	

	CRS	(Step 12) Initiate Action to Repair BB LT-460
At the Discretion of the Lead Examiner Move to Event #3.		

Op Test No.:	Scenario #	3	Event #	3	Page	10	of	26
Event Description:		NN12 Inverter Trouble/Transfer						
Time	Position	Applicant's Actions or Behavior						

Booth Operator Instructions

- T = 10 minutes
- Insert Remote Function (NN) JNN2XFR, Value = Bypass CVT
- When contacted, respond as secondary OT. Report that the static transfer switch has transferred to the alternate supply and the P202 light is illuminated.
- In addition, there is a faint smell of something hot, but no smoke and no fire is present.
- The Inverter DC Input (B1) breaker and Inverter Output (B2) breaker are tripped. The "Undervoltage on DC Input" alarm is illuminated.
- If Work Control is contacted, report investigation and repair of NN12 will begin immediately.
- When as EDO. Acknowledge entry into the OTO and Tech Spec entry.

Indications Available:

		26 B NN12 INV TRBL/XFR
OTA-RK-00016, Addendum 26B		
	CRS	Implement OTA-RK-00016, Addendum 26B
Add 26B	CRS/RO	(Step 3.1) Refer to OTO-NN-00001, Loss of Safety Related Inst Power
OTO-NN	RO	(Step 1) Check the following Annunciators – Extinguished 25 A – 28 A, NN Bus UV
	CRS	(Step 2) Exit this procedure
	CRS	Return to OTA-RK-00016, Addendum 26B
Add 26B	CRS/BOP	(Step 3.2) IF NK02 bus voltage indicates zero volts, Refer to OTO-NK-00002, Loss of Vital 125 VDC Bus - NO

Op Test No.: _____ Scenario # 3 Event # 3 Page 11 of 26

Event Description: NN12 Inverter Trouble/Transfer

Time	Position	Applicant's Actions or Behavior
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	CRS/BOP	(Step 3.3) Check the following computer points to determine cause of the alarm NNU0003A, 1E INV NN12 XFER TO ALT SPLY NNU0003B, 1E INV NN12 LOCAL TROUBLE
	CRS/BOP	(Step 3.4) If NNU0003A is in alarm, Direct OT to check the static transfer switch transferred to bypass source (P202 lit)
	CRS/BOP	(Step 3.5) If NNU0003B is in alarm, Direct OT to check local alarms and reset as required
	CRS	(Step 3.6) Refer to OTS-NN-00012 for additional information
	BOP	(Step 3.7) Dispatch OT to investigate for abnormal conditions
	CRS	(Step 3.8) Refer to TS LCO 3.8.7 or 3.8.8 Restore inverter within 24 hours
At the Discretion of the Lead Examiner Move to Events #4, 5, and 6.		

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 12 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions

- T = 45 minutes
- Insert Malfunction(BB) BBPCV0455C_2, Value =0.3
- When contacted, respond as EDO to acknowledge the Spray valve failure and plant trip.

Indications Available:

		33 C PZR PRESS LO HTRS ON
OTO-BB-00006, Pressurizer Pressure Control Malfunction		
	CRS	Implement OTO-BB-00006, Pressurizer Pressure Control Malfunction
	RO	(Step 1) Check Pressurizer Pressure Indicator – Failed <u>RNO</u> – Go to step 17
	RO	(Step 17) Check Pressurizer Pressure less than 2235 psig
	RO	(Step 18) Check Both Pressurizer Spray Valves – Closed <u>RNO</u> – Manually close the affected spray valve Energize backup heaters If pressure continues to lower, Manually Trip the Reactor Ensure the Main Turbine is Tripped If BB PCV-455C cannot be closed, Stop RCP B and RCP D Perform E-0, Rx Trip or SI If pressure continues to lower, stop all but 1 RCP

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 13 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions

- Immediately following Reactor Trip
- Insert Malfunction (AB) AB001_B, Value = 750000, ramp = 30 secs, condition = "jcfr eq true" - SHOULD BE PRELOADED
- When contacted, respond as EDO to acknowledge the Spray valve failure and plant trip.
- If contacted as Chemistry acknowledge sampling SG
- If asked as Primary OT to close SG B steam supply to TDAFP, ABV0085 – use remote function (AB) ABV0085TASTEM, value = 0

Indications Available:

		60 A/B CTMT SUMP LEV HI 88 F MANUAL RX TRIP
E-0, Reactor Trip or Safety Injection		
	CRS	Implement E-0, Reactor Trip or Safety Injection
		NOTE Steps 1 through 4 are immediate actions
E-0	RO	(Step 1) Check Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux - Lowering
	BOP	(Step 2) Check Turbine Trip Turbine Stop Valves - Closed
	BOP	(Step 3) Check Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 14 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
	RO	(Step 4) Check SI Status Actuated or Required Manually Actuate SI (If not actuated) Check both Trains of SI Actuated LOCA Sequencer ANN 30A – Lit LOCA Sequencer ANN 31A – Lit SB069 SI Actuate Red Light – Lit Solid
	RO/BOP	(Step 5) Perform Attachment A, Automatic Action Verification, while continuing with this procedure
E-0 Att A	RO/BOP	(Step A1) Check Charging Pumps – Both CCPs running
	RO/BOP	(Step A2) Check SI and RHR Pumps – All running
	RO/BOP	(Step A3) Check ECCS Flow – BIH flow indicated
	RO/BOP	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		• EF HIS-55A
		• EF HIS-56A
	RO/BOP	(Step A5) CHECK CCW Alignment:
		• CCW Pumps – ONE RUNNING IN EACH TRAIN
		• Red Train:
		• EG HIS-21 or EG HIS-23
		• Yellow Train:
		• EG HIS-22 or EG HIS-24
		• CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN
		• EG ZL-15 AND EG ZL-53
		OR
		• EG ZL-16 AND EG ZL-54

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 15 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
		<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
	RO/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
	RO/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

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 16 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
	RO/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
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
		<ul style="list-style-type: none"> STOP all RCPs
	RO/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

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 17 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
		<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
	RO/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
	RO/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
	RO/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 light – ALL LIT
	RO/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

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 18 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
	RO/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
	RO/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
	RO/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		
E-0		
	BOP	(Step 6) Check Generator Output Breakers – Open
	BOP	(Step 7) Check Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves – Closed Feedwater Isolation Valves – Closed
	BOP	(Step 8) Check AFW Pumps MD AFW Pumps – Both Running TD AFW Pump – Running if Necessary

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 19 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
	BOP	(Step 9) Check AFW Valves – Proper Alignment MD AFP Flow Control Valves – Throttled TD AFP Flow Control Valves – Full Open (AFW may be isolated to SG B per foldout page)
	BOP	(Step 10) Check Total AFW Flow > 355,000 lbm/hr
	RO	(Step 11) Check PZR PORVs and Spray Valves PZR PORVs – Closed PZR PORVs – Both in AUTO PORV Block Valves – Both Open Normal PZR Spray Valves – Closed RNO – If BB PCV-455C cannot be closed, Stop RCP B and RCP D
	RO	(Step 12) Check if RCPs should be Stopped RCPs – Any Running ECCS Pumps – At least One Running RCS Pressure – Less than 1425 psig YES – Stop all RCPs RNO – Go To Step 13
	RO	(Step 13) Check RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F
	RO/BOP	(Step 14) Check if any SG is Faulted Any SG pressure lowering uncontrollably Any SG completely depressurized Go To E-2, Faulted SG Isolation

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 20 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
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E-2, FAULTED STEAM GENERATOR ISOLATION		
		Initiate CSF Monitoring CAUTION At least one SG must be maintained available for RCS cooldown CAUTION Any faulted SG or secondary break should remain isolated during subsequent recovery unless needed for RCS cooldown
E-2	BOP/RO	(Step 1) CHECK MSIVs and Bypass Valves – CLOSED
Critical Task	CREW	Fast close MSIVs before a severe challenge develops to either subcriticality or Integrity CSFs or before transition to ECA-2.1
	BOP/RO	(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/RO	(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/RO	(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)
		<ul style="list-style-type: none"> AL HK-8A (SG A)
		<ul style="list-style-type: none"> AL HK-10A (SG B)

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 21 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
		<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 Remote Function (AB) ABV0085TASTEM to close ABV0085.		
	BOP/RO	<ul style="list-style-type: none"> CHECK Main Feedwater valves to faulted SG(s) – CLOSED
	BOP/RO	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)
		<ul style="list-style-type: none"> AE ZL-580 (SG D)
		<ul style="list-style-type: none"> Feedwater Isolation Valve:

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 22 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
		<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	CREW	Isolate the Faulted Steam Generator Before Transition out of E-2. <ul style="list-style-type: none"> • MSIV Closed • AFW ISOLATED to SG B
	BOP/RO	(Step 5) CHECK CST To AFP Suction Header Pressure – GREATER THAN 2.75 PSIG
		NOTE Subsequent actions should NOT be delayed while awaiting SG sampling. Sampling of the SGs is repeated in E-1, Loss of Reactor or Secondary Coolant.
	BOP/RO	(Step 6) CHECK Secondary Radiation:
		<ul style="list-style-type: none"> • PERFORM the following:

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 23 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
		<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"> <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
	RO	(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%.
		CAUTION If offsite power is lost after SI reset, manual actions may be required to restart safeguards equipment

Op Test No.: _____ Scenario # 3 Event # 4, 5, and 6 Page 24 of 26

Event Description: PZR Spray Valve Failure, Steam line Break I/S Cntmt, SLIS failure

Time	Position	Applicant's Actions or Behavior
	RO	(Step 8) Reset SI
		<ul style="list-style-type: none"> • SB HS-42A
		<ul style="list-style-type: none"> • SB HS-43A
	RO	(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.
ES-1.1, SI Termination		
ES-1.1	RO	(Step 3) Reset CIS-A and CIS-B
	BOP	(Step 4) Establish Instrument Air to Containment
	RO	(Step 5) Check RCS Pressure – Stable or Rising
	RO	(Step 6) Isolate Boron Injection Header CCP – Suction aligned to RWST Reset CCP Recirc Valves BG HS-8110 and BG HS-8111 Check CCP Recirc Valves Open BG HIS-8110 and BG HIS-8111 Close BIH Inlet Valves EM HIS-8803A and EM HIS-8803B Close BIH Outlet Valves EM HIS-8801A and EM HIS-8801B
	CRS	Declare an Alert per EAL HA2.1, Fire or explosion affecting the operability of plant safety systems required to establish or maintain safe shutdown
Once the crew enters ES-1.1 Scenario is complete. - Freeze the Simulator		

OG RO		OG BOP		N		TODAY
RO		BOP		Shift		Date

Review/Complete Prior to Relieving the Watch:

• URO Logs	• Annunciator Test	• Plant Status Control Log
• Control Board Walkdown	• Standing/Night Orders	• Status Panel Horns
'B' Train Protected		
Plant Status: Mode 1	Gross Gen Load: 1306 MWe	
Reactor Power: 100%	Load Limit Pot 8.65	
Rod movement: None	Circ. Pump Setback: DISABLE	
Boration: 0 gallons	Cation Bed Run: 20 min	
Dilution 20 gallons	C/T valves: Normal	

Equipment OOS or WPA

- ☐ "A" CCW Pump OOS for pump bearing replacement.

Information

- ☐ Maintain steady state power.

Equipment Burdens and Workarounds

Review/Complete After Relieving the Watch:

- CAR's Applicable to Operations • Indicating Lights/Chart Recorders

CRS WATCH RELIEF CHECKLIST

Off-going Supervisor	CR Supervisor	Nights	Today
	Name	Shift	Date

Oncoming Supervisor review or perform the following:

• Control Board Walk down	• Night Orders/Standing Orders	• EOSL Turnover Report
• AUTO LOG	• Temp Mod Log / Plant Status Control Log	• WPA
• Shift Brief Items to Cover: New Night / Standing Orders, Work for the Shift & Dose (Budget vs. Actual)		

<u>RCS Makeup:</u> 20 gal dilution	<u>RODS:</u> D@ 215	<u>Cation Bed Run:</u> 20 min
RCS: 966 ppm (sample)	'A' CCP: 976 ppm	'B' CCP: 986 ppm
<u>PROTECTED TRAIN:</u> B	CDF: 4.03 E-5	LERF: 4.62 E-7
<u>Industrial Safety Focus Area:</u> Ensure good Pre-Job Briefs are conducted		<u>OPS DOSE</u>
<u>HUP Site Focus Area:</u> Two Minute Drill – Keep the BIG Picture		Actual: 1.6 mrem
<u>HUP OPS Focus Area:</u> Precise Communications		Budget: 13.0 mrem

CURRENT ISSUES:

“A” CCW Pump Out of Service for pump bearing replacement.

Tech Spec 3.7.7, Info Only

ONGOING ITEMS:

Maintain Steady State Power

Review or complete after relieving the watch:

- CARS Applicable to Ops (CTSN 5468)

- Highlights of Weekly Schedule

Oncoming Supervisor:

Name

Time

Facility:	Callaway	Scenario No.:	SB	Op Test No.:
Examiners:	_____	Operators:	_____	
	_____		_____	
	_____		_____	
Initial Conditions:	<p>The following is the plant /equipment status:</p> <ul style="list-style-type: none"> 80% Power for last 6 hours due to Chemistry concerns PBG05B OOS for coupling lubrication and alignment check and oil change. Work should be complete in 4 to 5 hours. (Actuate lesson "bg01b.lsn") <p>TS 3.5.2, Cond A, 72 hours</p>			
Turnover:				
Event No.	Malf. No.	Event Type*	Event Description	
A		R (RO) N (SRO/BOP)	Increase power to 100%	
1	AELT0551	I (BOP) I – TS - SRO	SG Level Channel Failure Insert Malfunction (AE) AELT0551, Value = 75 , ramp over 1 minute	
2	BBPT0455	I (RO) I – TS - SRO	Pressurizer Pressure Channel Failure High Insert Malfunction (BB) BBPT0455, Value = 2500, ramp over 10 secs	
3	ACPT0506	I (All)	Turbine Impulse (1 st Stage) Pressure Channel Failure Insert Malfunction (AC) ACPT0506, Value = 0	
4	EBB01B	M (All)	SG B Tube Leak/Rupture Insert Malfunction (BB) EBB01B, Value = 40	
5	CEPV0013	C (BOP/SRO)	Loss of Stator Cooling Water – Manual Turbine Trip Insert Malfunction (CE) CEPV0013_C, Value = True Modify Malfunction (BB) EBB01B, Value = 450, ramp over 300 secs	
6	SA	C (BOP)	FWIV Auto Closure Failure (IN SETUP) Insert Remote Function (SA) LOASAS10XX_2, Value = Fail	
7	EF	C (BOP)	ESW Pump Auto Start Failure (IN SETUP) Insert Remote Function (EF) JLOASASBI8_11, Value = Inhibit	
8	AB002_B	M (All)	Faulted SG outside Containment w/existing SGTR Insert Malfunction (AB) AB002_B, Value = 750,000, ramp over 20 secs	
<p>* (N)ormal, leactivity, (I)nstrument, lomponent, (M)ajor</p>				

Scenario Event Description

NRC Scenario SB

Callaway 2009 NRC Scenario #SB

The plant is at 80% power BOL and has been for the last 6 hours for Chemistry cleanup. Centrifugal Charging Pump B is out of service for preplanned maintenance. Work includes coupling lubrication and alignment check and oil change. Work should be completed in 4 to 5 hours. Shift direction is to increase power to 100%. Once the dilution and power increase has begun, proceed with scenario.

A circuit card failure causes SG "A" controlling level channel to slowly fail to 75%. The crew should take actions per OTO-AE-00002, Steam Generator Water Level Control Instrument Malfunctions. Tech Specs 3.3.1 should be applied and I&C contacted to trip bistables and troubleshoot.

Pressurizer Pressure Channel BB PT-455 fails high, causing spray valves to open and pressurizer heaters to turn off. The crew should respond per OTO-BB-00006, "Pressurizer Pressure Control Malfunction", and stabilize pressurizer pressure.

Turbine Impulse Pressure Channel AC PI-506 fails low. The crew should respond per OTO-AC-00003, Turbine Impulse Pressure Channel Failure, select an operable channel for control, reset C-7, and place the Condenser Steam Dumps in the Steam Pressure mode. TS 3.1.1 requires a permissive check within one hour.

A Tube Leak initiates on Steam Generator B. The crew should respond in accordance with OTO-BB-00001, Steam Generator Tube Leak. The tube leak will start out at 15 gpm. It will increase to 450 once the stator cooling water problems start.

Main Turbine Stator cooling water pressure control valve CEPV0013 fails closed. Attempts will be made to restore stator cooling by starting a second pump, but this will not help. The crew should trip the Reactor and trip the turbine due to being greater than 50% power (P-9). As stated above the SG Tube Leak will now be building up to a value of 450 gpm.

During trip recovery it will be determined that the S/G Tube leak is greater than 50 gpm by observing SG D level rising more rapidly. A manual or automatic safety injection will occur.

When the LOCA sequencer actuates, ESW Pump A fails to automatically start. The crew should manually start the pump. SG B Feedwater Isolation Valve does not close when a FWIS occurs. The crew should manually close the valve.

When Feed Flow is isolated to SG B per the foldout page, a non-isolable steam break develops on SG B outside containment. The crew should transition to E-2, Faulted Steam Generator Isolation, from the foldout page. They should later enter E-3 and then transition to ECA-3.1, SGTR with LOCA Subcooled Recovery Desired.

A Site Emergency should be declared on EAL FS1.1 due to RCS Barrier Loss and Containment Barrier Loss Indicators.

Scenario Event Description

NRC Scenario SB

Critical Tasks:

Event #7 CT – Establish ESW Train A cooling before a transition from E-0

Event #8 CT – Isolate the Faulted Steam Generator before Transition out of E-2

References
OTO-AE-00002
OTO-BB-00006
OTO-AC-00003
OTO-BB-00001
E-0
E-3
E-2
ES-1.1
CSF-1, Attachment A

Scenario Event Description

NRC Scenario SB

Scenario Setup Guide:

Establish the initial conditions of IC-2, BOL 80% power:

- RCS boron concentration 1143 ppm
- CCP A 1158 ppm minus 5 days
- CCP B 1154 ppm minus 15 days
- Rod Control Bank D 150 steps, Other banks 228 steps
- NIS indicates 80%
- **AC PT-506 is Selected for Control**
- **SG level channel 551 selected for control**
- **Place WPA on CCP B**

=====SCENARIO SETUP ITEMS=====

Remove CCP B from service

- Run lesson bg01b.lsn

FWIV Auto Closure Failure

- Insert Remote Function (SA) LOASAS10XX_2, Value = Fail

ESW Pump Auto Start Failure

- Insert Remote Function (EF) JLOASASBI8_11, Value = Inhibit

=====EVENT 1 =====

SG level channel 551 fails to 75% over a 60 sec ramp

- Insert Malfunction (AE) AELT0551, Value = 75, ramp over 1 minute

=====EVENT 2 =====

Pressurizer Pressure Channel Fails High BB PT0455

- Insert Malfunction (BB) BBPT0455, Value = 2500 over 10 secs

=====EVENT 3 =====

Turbine Impulse (1st Stage) Pressure Channel Failure

- Insert Malfunction (AC) ACPT0506, Value = 0

=====EVENT 4 =====

SG B tube leak, 40 gpm,

- Insert Malfunction (BB) EBB01B, Value = 40

=====EVENT 5=====

Stator Cooling Water Turbine Runback / SG Tube Rupture

- Insert Malfunction (CE) CEPV0013_13, Value = True
- Insert Malfunction (BB) EBB01B, Value = 450, ramp over 300 secs

=====EVENT 6 =====

FWIV B auto closure failure (**IN SETUP**)

- Insert Remote Function (SA) LOASAS10XX_2, Value = Fail

=====EVENT 7 =====

ESW Pump Auto Start Failure (**IN SETUP**)

- Insert Remote Function (EF) JLOASASBI8_11, Value = Inhibit

=====EVENT 8 =====

SG B steam break outside containment

- Insert Malfunction (AB) AB002_B, Value = 750,000, ramped over 20 secs

Op Test No.:	_____	Scenario #	<u>SB</u>	Event #	<u>0</u>	Page	<u>5</u>	of	<u>31</u>
Event Description:		Power Increase							
Time	Position	Applicant's Actions or Behavior							

OTG-ZZ-00004, Power Operation		
	CRS	Refer to OTG-ZZ-00004, Power Operation Step 5.2.10
	CRS	<p>Perform a Pre-Job Brief of power ascension:</p> <ul style="list-style-type: none"> • General strategy for proceeding to 100% Power. • Any items not completed as expected to this point. • Applicable Precautions and Limitations • MFP and MFRV control status <p>Discuss the use of Optional Parameter Alarms as an aid to avoid undesired challenges to legal or system requirements</p>
	CRS/BOP	Initiate a 10% per hour loading rate
	RO/BOP	Commence raising reactor power to 100%
	RO	Dilute the RCS or withdraw rods to enable the power increase
When the crew has demonstrated the ability to raise power OR At the Discretion of the Lead Examiner Move to Event #1.		

Op Test No.:	<u>N07-1</u>	Scenario #	<u>SB</u>	Event #	<u>1</u>	Page	<u>6</u>	of	<u>31</u>
Event Description:		Steam Generator Level Channel Failure							
Time	Position	Applicant's Actions or Behavior							

Booth Instructions:**Insert Malfunction (AE) AELT0551, Value = 75, ramped in over 1 minute****Indications Available**

		REACTOR PARTIAL TRIP, Annunciator 83C SG A LEV DEV, Annunciator 108C SG A LEV LO, Annunciator 108B
OTO-AE-00002, Steam Generator Water Level Control Malfunction		
	CRS	Refer to OTO-AE-00002 for level malfunction
	BOP	IDENTIFY failed channel (LT-551) by comparing steam generator level indicators.
Critical Task	CREW	Select an operable channel or take manual control of SG A level to prevent a Reactor Trip.
	BOP	SELECT alternate level channel LT-551.
	BOP	STABILIZE steam generator level at its programmed level (45-55%).
	BOP	WHEN steam generator level is returned to programmed level and IF placed in "MANUAL" during the transient, PLACE feedwater regulating valve to automatic control.
	CRS	Refer to T/S LCO 3.3.1 TAB 3.3.1-1 Item 14 and T/S LCO 3.3.2 TAB 3.3.2-1 Item 5 and 6 and ENSURE compliance with requirement for minimum operable channels and action statements. - TS 3.3.1 and 3.3.2 apply (72 Hour Action)

Op Test No.:	<u>N07-1</u>	Scenario #	<u>SB</u>	Event #	<u>1</u>	Page	<u>7</u>	of	<u>31</u>
Event Description: Steam Generator Level Channel Failure									
Time	Position	Applicant's Actions or Behavior							

	CRS	Refer to T/S LCO 3.3.4 and T/S LCO 3.3.3 and ENSURE compliance – not applicable.
At the Discretion of the Lead Examiner Move to Event #2.		

Op Test No.: _____ Scenario # SB Event # 2 Page 8 of 31

Event Description: Pressurizer Pressure Channel Failure

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions

- Insert Malfunction (BB) BBPT0455, Value =2500 over 10 secs
- When contacted, respond as I&C. Acknowledge the request to trip bistables and investigate the channel failure.
- When contacted, respond as EDO. Acknowledge the channel failure and Tech Spec entry.

		PZR HIGH PRESSURE DEVIATION Annunciator 33B PZR PRESSURE LOW HEATERS ON Annunciator 33C REACTOR PARTIAL TRIP Annunciator 83C PT-455 indicates high
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OTO-BB-00006, Pressurizer Pressure Control Malfunction

	RO	Select an alternate channel (457/456)
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	RO	Check PZR pressure 2200 – 2250 psig
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	RO	Check P-11 correct state (Not Lit)
--	-----------	------------------------------------

	RO	Select recorder to valid channel
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	CRS	Direct I&C to trip the affected bistables
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	CRS	Refer to Tech Specs <ul style="list-style-type: none"> • 3.3.1, Condition E, M • 3.3.2 Condition D, L • 3.3.4 Item 3 • 3.4.1 (DNB)
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At the Discretion of the Lead Examiner Move to Event #3.		
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Op Test No.: _____ Scenario # SB Event # 3 Page 9 of 31Event Description: Turbine Impulse (1st Stage) Pressure Channel Failure

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions

- Insert Malfunction (AC) ACPT0506, Value =0
- When contacted, respond as I&C. Acknowledge the request to trip bistables and investigate the channel failure.
- When contacted, respond as EDO. Acknowledge the channel failure and Tech Spec entry.

Indications Available:

		PT-506 indication failing low Control Rods stepping in if in auto REACT DEV, Annunciator 77A
OTO-AC-00003, Turbine Impulse Pressure Channel Failure		
	CRS	Refer to OTO-AC-00003, Turbine Impulse Pressure Channel Failure
	RO	Place Rod Control in MANUAL
	RO/BOP	Identify the failed channel by comparing meter indications and identifying alarmed annunciators. (PT-506)
	BOP	Select the alternate impulse pressure channel by utilizing the Impulse Pressure selector switch AC PS-505Z
	RO	Check Tave within 1.5°F of Tref (When restored, then maintain)
	RO	Check Rod Control in AUTO • Will place in AUTO if directed by SRO and Tave and Tref are matched

Op Test No.: _____ Scenario # SB Event # 3 Page 10 of 31Event Description: Turbine Impulse (1st Stage) Pressure Channel Failure

Time	Position	Applicant's Actions or Behavior
	RO	Maintain Tavg at the corresponding Tref value for existing plant power. Ensure RX power is less than 3565 MWth.
	BOP	Place the Steam Dump Interlock Selector switches (AB-HS-64 and AB-HS-63) to the OFF/RESET position.
	BOP	Check C-7, Load Loss Stm Dump Armed - Extinguished
	BOP	Transfer Steam Dumps to the Steam Pressure Mode: <ul style="list-style-type: none"> • Set the AB PK-507, Steam Header Pressure controller for 7.28 turns (1092 psig) • Place the Steam Dump Select to STEAM PRESS
	BOP	Place the Steam Dump Bypass Interlock switches to ON
	BOP	Check the following permissives are in their correct state within 1 hour of the channel failure per Attachment B, permissives: <ul style="list-style-type: none"> • P-7 (LIT) • P-13 (LIT)
	RO/BOP	Direct an RO to Place SW12 for PT-506 at AMSAC Test/Bypass Panel and place SW11, Bypass toggle switch, to the right hand position
	CRS	Refer to T/S LCO 3.3.1 (Improved T/S LCO 3.3.1) to ensure compliance with the requirements for minimum channels. <ul style="list-style-type: none"> • Condition T
	RO	Restore Rod Control to Manual if directed

Op Test No.:		Scenario #	SB	Event #	3	Page	11	of	31
Event Description:		Turbine Impulse (1 st Stage) Pressure Channel Failure							
Time	Position	Applicant's Actions or Behavior							

		Note: 10 minutes after the failure, ATWS System Trouble Alarm, 83F, will annunciate. (No consequence)
At the Discretion of the Lead Examiner move to the next event.		

Op Test No.: _____ Scenario # SB Event # 4 Page 12 of 31

Event Description: S/G Tube Leak/Rupture

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions

- Insert Malfunction (BB) EBB01B, Value = 40
- When contacted, respond as Count Room Tech that the alarm is valid.
- When contacted, respond as EDO. Acknowledge the plant is at operation with a Steam Generator Tube Leak in "B" Steam Generator

Indications Available:

PROCESS RAD HIHI, Annunciator 61A
PROCESS RAD HI, Annunciator 61B

OTO-BB-00001, SG Tube Leak**CRS**

Implement OTO-BB-00001, SG Tube Leak

NOTE: SGTL time trend available on the computer

RO/BOP

Determine approximate size and location of leak

NOTE: Radiation monitor readings used for diagnosis should be obtained from the RM11 using the ten-minute trend option.

RO/BOP

Utilize N16 Monitors RM11 channels 161 – 164

RO/BOP

Confirm N16 Monitor(s) response by increasing trends on GERE0092, SJRE0002, or BMRE0025.

CREW

Utilize the following computer points to determine the size and rate of change of the leakage:

GEF0092 (GPD)

GEF0092A (GPD/HR)

GEF0792 (GPD 10 minute average)

NOTE: The plant computer group tabular time trend GD SG17 can be used to approximate the leak size.

Op Test No.: _____ Scenario # SB Event # 4 Page 13 of 31

Event Description: S/G Tube Leak/Rupture

Time	Position	Applicant's Actions or Behavior
	RO	Use trends of VCT level and/or PZR level <u>NOTE:</u> Only one charging pump should be in operation until PZR level is to be increased for the plant cooldown
	RO	Compare Charging and Letdown flow rates <u>NOTE:</u> If a Blowdown and Sample Process Isolation Signal has occurred, BM HV-5 thru 8 need to be opened to sample SGs and monitor SJL026
	BOP	Ensure SG BD Sampling is in operation by opening the upper or lower sample isolations and the common isolation valves
	CRS	Have Chemistry personnel sample SG for activity and perform CTP-ZZ-02590 to confirm leak rate
		<u>NOTE:</u> It takes 45-60 minutes to obtain and analyze SG samples Reducing Letdown to 75gpm is required only for large leaks when 1 charging pump cannot maintain PZR level with 120 gpm Letdown
	RO	If required, reduce Letdown flow to 75 gpm. Refer to OTN-BG-00001, Chemical and Volume Control System
	CRS	Survey the main steamlines for radiation
	CREW	Crew should determine that SG Tube Leakage is 15 -20 gpm
At the Discretion of the Lead Examiner move to the next event.		

Op Test No.: _____ Scenario # SB Event # 5 Page 14 of 31

Event Description: Stator Cooling Water Runback

Time	Position	Applicant's Actions or Behavior
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Booth Operator Instructions

- Insert Malfunction (CE) CEPV00013_C, Value = True
- When contacted, respond as Secondary Operations Technician and report the CEPV0013, Stator Cooling Water Supply Pressure Control Valve, is stuck closed and can not be opened.

Indications Available:**132 C GEN PROT RUNBACK CKT****OTA-RK-00026, ADD 132C****CRS**

Implement actions of OTA-RK-00026 ADD 132C

Note: For High Outlet Temperature or Low Inlet Flow Conditions, further degradation will cause a Turbine Runback.
If the Turbine Runback doesn't restore conditions within certain time limits, a Turbine trip will occur

BOP

If a Turbine Runback occurs, Go To OTO-MA-00001

BOP

ENSURE Stator Cooling Water Pump RUNNING
 Starts Second Pump, but Low Flow condition still exists

CRS

Due to Reactor being at > 50% power directs Reactor and
 Turbine Trip

Booth Instructions: Modify malfunction to increase tube leak to 450 gpm**Insert Malfunction (BB) EBB01B, Value = 450, ramp over 300 secs****CREW**

Trip the Reactor and Perform E-0, Reactor Trip or Safety
 Injection

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 15 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
Indications Available: 88 F MANUAL RX TRIP		
E-0, REACTOR TRIP OR SAFETY INJECTION		
E-0	RO	(Step 1) CHECK Reactor Trip: <ul style="list-style-type: none"> Rod Bottom Lights – ALL LIT Reactor Trip and Bypass Breakers – OPEN 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 NB02 AC emergency buses – BOTH ENERGIZED
	RO/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 SB069 SI Actuate RED light – LIT OR SB069 SI Actuate RED light – LIT OR LOCA Sequencer annunciators 30A or 31A - LIT

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 16 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
	RO/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
	RO/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)
	RO/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.
	BOP/RO	(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/RO	(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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 17 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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/RO	(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
		START MD AFW Pump(s).
		<ul style="list-style-type: none"> TD AFW Pump – RUNNING IF NECESSARY
	BOP/RO	(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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 18 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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/RO	(Step 10) CHECK Total AFW Flow – GREATER THAN 355,000 LBM/HR
	BOP/RO	(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
		<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/RO	(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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 19 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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/RO	(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.
E-0, Att A	RO/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
	RO/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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 20 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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
	RO/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
	RO/BOP	(Step A3 RNO) Go To Step A4
	RO/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
Critical Task	CREW	Establish ESW Train 'A' cooling before a transition from E-0
	RO/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
		<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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 21 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		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
	RO/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
	RO/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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 22 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> GN HIS-1
		<ul style="list-style-type: none"> GN HIS-3
	RO/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
		<ul style="list-style-type: none"> SA066Y WHITE light – ALL LIT
		<ul style="list-style-type: none"> STOP all RCPs
	RO/BOP	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> CHECK for any of the following:

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 23 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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
	RO/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
	RO/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
	RO/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 light – ALL LIT
	RO/BOP	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> ESFAS status panels CRVIS sections:

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 24 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

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
	RO/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.
	RO/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
	RO/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		
	BOP/RO	(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

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 25 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
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	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/RO	(Step 1) CHECK MSIVs and Bypass Valves – CLOSED
	BOP/RO	(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/RO	(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/RO	(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)
		<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)

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 26 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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 RABV085 to close ABV0085.		
		<ul style="list-style-type: none"> CHECK Main Feedwater valves to faulted SG(s) – CLOSED
	BOP/RO	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)
		<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)

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 27 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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	CREW	Isolate the Faulted Steam Generator Before Transition out of E-2
	BOP/RO	(Step 5) CHECK CST To AFP Suction Header Pressure – GREATER THAN 2.75 PSIG
	BOP/RO	(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
		<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)

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 28 of 31

Event Description: Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G

Time	Position	Applicant's Actions or Behavior
		<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:
		<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.
		E-3, STEAM GENERATOR TUBE RUPTURE
	CRS	Transitions to E-3, Steam Generator Tube Rupture
E-3	RO	(Step 1) Check if RCPs should be stopped <ul style="list-style-type: none"> RCPs – any Running ECCS pumps – at least one Running RCS Pressure – Less than 1425 psig Stop all RCPs
	BOP	(Step 2) Identify the Ruptured SG(s) <ul style="list-style-type: none"> Unexpected rise in “B” SG High radiation from “B” SG sample High radiation from “B” SG steamline High radiation from “B” SG blowdown line sample

Op Test No.: _____ Scenario # SB Event # 5, 6, and 7 Page 29 of 31

Event Description: **Steam Generator Tube Rupture/FWIV Auto Closure Failure/ESW Pump Auto Start Failure/Faulted – Ruptured S/G**

Time	Position	Applicant's Actions or Behavior
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	BOP	(Step 3) Isolate flow from ruptured Steam Generator Should be isolated from steps taken in E-2
	BOP	(Step 4) Check Ruptured SG(s) Level Narrow Range level > 7% [25%]
	RO	(Step 5) Check Ruptured SG(s) Pressure – > 340 PSIG - NO RNO – GO TO ECA-3.1, SGTR With Loss of Reactor Coolant – Subcooled Recovery Desired, Step 1.
Booth Instructor: Freeze the Simulator		

OG RO		OG BOP		N		TODAY
RO		BOP		Shift		Date

Review/Complete Prior to Relieving the Watch:

• URO Logs	• Annunciator Test	• Plant Status Control Log
• Control Board Walkdown	• Standing/Night Orders	• Status Panel Horns
'A' Train Protected		
Plant Status: Mode 1	Gross Gen Load: 311 MWe	
Reactor Power: 80%	Load Limit Pot 8.65	
Rod movement: None	Circ. Pump Setback: DISABLE	
Boration: 0 gallons	Cation Bed Run: 20 min	
Dilution 20 gallons	C/T valves: Normal	

Equipment OOS or WPA

- ☐ PBG05B OOS for coupling lubrication/alignment check and oil change. Work should be complete in 4 to 5 hours. TS 3.5.2, Condition A, 72 hours

Information

- ☐ 80% Power for the last 6 hours for secondary chemistry cleanup.
- ☐ Raise Power to 100%

Equipment Burdens and Workarounds

Review/Complete After Relieving the Watch:

- CAR's Applicable to Operations • Indicating Lights/Chart Recorders

CRS WATCH RELIEF CHECKLIST

Off-going Supervisor	CR Supervisor	Nights	Today
	Name	Shift	Date

Oncoming Supervisor review or perform the following:

• Control Board Walk down	• Night Orders/Standing Orders	• EOSL Turnover Report
• AUTO LOG	• Temp Mod Log / Plant Status Control Log	• WPA
• Shift Brief Items to Cover: New Night / Standing Orders, Work for the Shift & Dose (Budget vs. Actual)		

<u>RCS Makeup:</u> 20 gal dilution	<u>RODS:</u> D@ 174	<u>Cation Bed Run:</u> 20 min
RCS: 1143 ppm (sample)	'A' CCP: 1158 ppm	'B' CCP: 1154 ppm
<u>PROTECTED TRAIN: A</u>	CDF: 3.72 E-5	LERF: 4.61 E-7
<u>Industrial Safety Focus Area:</u> Ensure good Pre-Job Briefs are conducted		<u>OPS DOSE</u>
<u>HUP Site Focus Area:</u> Two Minute Drill – Keep the BIG Picture		Actual: 1.6 mrem
<u>HUP OPS Focus Area:</u> Precise Communications		Budget: 13.0 mrem

CURRENT ISSUES:

PBG05B OOS for coupling lubrication/alignment check and oil change. Work should be complete in 4 to 5 hours.

TS 3.5.2, Condition A, 72 hours

ONGOING ITEMS:

80% Power for the last 6 hours for secondary chemistry cleanup.

Raise Power to 100%

Review or complete after relieving the watch:

- CARS Applicable to Ops (CTSN 5468)

- Highlights of Weekly Schedule

Oncoming Supervisor:

Name

Time