

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A1 KSA NO: GEN2.1.25  
COMPLETION TIME: 20 min KSA RATING: 3.9  
JOB TITLE: RO REVISION: 2011  
DUTY: ADMINISTRATIVE  
TASK TITLE: Ability to interpret reference materials, such as graphs, curves, tables, etc.:  
Determine Hydrogen Recombiner Power Settings

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: OTN-GS-00001 Rev 14, Containment Hydrogen Control System  
OOA-GS-00001, Rev 1, Reference Power Settings

TOOLS/EQUIPMENT: Copies of above listed reference procedures  
Student Handout  
Calculator

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 WAS OPERATING AT 100% POWER WHEN IT EXPERIENCED A LOSS OF COOLANT ACCIDENT. THE CONTROL ROOM CREW IS CURRENTLY IN E-1, "LOSS OF REACTOR OR SECONDARY COOLANT," AT THE STEP TO CHECK CONTAINMENT HYDROGEN CONCENTRATION. HYDROGEN CONCENTRATION IS REPORTED TO BE AT 0.7%.

ANOTHER OPERATOR HAS COMPLETED SOME INITIAL STEPS TO PLACE THE HYDROGEN RECOMBINERS IN SERVICE IN ACCORDANCE WITH OTN-GS-00001, CONTAINMENT HYDROGEN CONTROL SYSTEM. STEPS 5.5.1 THROUGH 5.5.10 ARE COMPLETE.

Initiating Cues: THE CONTROL ROOM SUPERVISOR DIRECTS YOU TO CONTINUE IN OTN-GS-00001, CONTAINMENT HYDROGEN CONTROL SYSTEM, AND DETERMINE THE APPROPRIATE HYDROGEN RECOMBINER POWER SETTING FOR RECOMBINER 1A AND RECOMBINER 1B BY PERFORMING STEP 5.5.11.

NOTE: DO NOT USE A "MOST CONSERVATIVE" APPROACH. PERFORM YOUR DETERMINATION AS ACCURATELY AS YOU CAN.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE DETERMINED THAT RECOMBINER 1A REQUIRED POWER = 61.3824 to 62.2656 KW, AND RECOMBINER 1B REQUIRED POWER = 63.245 to 64.155 KW.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OTN-GS-00001 AND OOA-GS-00001.	OPERATOR OBTAINED COPIES OF OTN-GS-00001 AND OOA-GS-00001.	<b>S U</b> Comments:
2. RECORD EXISTING CONTAINMENT PRESSURE (POST-LOCA)          STEP 5.5.11.a	OPERATOR RECORDS FOUR CONTAINMENT PRESSURES AS PROVIDED ON STUDENT HANDOUT.	<b>S U</b> Comments:
*3. CALCULATE CONTAINMENT ABSOLUTE PRESSURE AS FOLLOWS:  14.7 + Average of GNPI934 thru GNPI0937 = _____psia       STEP 5.5.11.b	OPERATOR CALCULATES CONTAINMENT ABSOLUTE PRESSURE = (14.7 + 9.0) = <b><u>23.7</u></b> <b><u>psia</u></b>	<b>S U</b> Comments:
4. USING GN-TR-63, CTMT TEMP RECORDER, DETERMINE THE PRE-LOCA CONTAINMENT TEMPERATURE.  ____ °F.  STEP 5.5.11.c	OPERATOR RECORDS PRE-LOCA CONTAINMENT TEMPERATURE = <b><u>90°F</u></b> , AS PROVIDED ON STUDENT HANDOUT.	<b>S U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*5. USING ATTACHMENT 1 PRESSURE FACTOR (CP) VS POST-LOCA CONTAINMENT PRESSURE, DETERMINE THE PRESSURE FACTOR.</p> <p>CP = _____</p> <p>STEP 5.5.11.d</p>	<p>OPERATOR USES OTN-GS-00001 ATT 1 TO DETERMINE <b><u>CP = 1.4</u></b> BASED ON POST-LOCA CTMT PRESS AND PRE-LOCA CTMT TEMP PROVIDED IN THE STUDENT HANDOUT.</p> <p>(May accept CP = 1.39 – 1.41)</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>* 6. USING OOA-GS-00001, REFERENCE POWER SETTINGS, OBTAIN THE MOST RECENT REFERENCE POWER FOR THE RECOMBINER BEING PLACED IN SERVICE.</p> <p>Reference Power = ____ KW</p> <p>STEP 5.5.11.e</p>	<p>OPERATOR USES OOA-GS-00001 TO DETERMINE:</p> <p>RECOMBINER 1A REFERENCE POWER = <b><u>44.16 KW</u></b></p> <p>RECOMBINER 1B REFERENCE POWER = <b><u>45.5 KW</u></b></p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*7. MULTIPLY THE VALUES FROM STEPS 5.5.11.d and 5.5.11.e TO DETERMINE REQUIRED ETHR POWER.</p> <p>CP X Reference Power = ____ KW</p> <p>STEP 5.5.11.f</p>	<p>OPERATOR DETERMINES:</p> <p>RECOMBINER 1A REQUIRED POWER = <b><u>61.824 KW</u></b></p> <p>(May accept 61.3824 to 62.2656)</p> <p>RECOMBINER 1B REQUIRED POWER = <b><u>63.7 KW</u></b></p> <p>(May accept 63.245 to 64.155)</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>8. THE JPM IS COMPLETE</p>	<p><b><u>RECORD STOP TIME ON PAGE 1</u></b></p>	<p><b>S      U</b></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: THE CALLAWAY PLANT WAS OPERATING AT 100% POWER WHEN IT EXPERIENCED A LOSS OF COOLANT ACCIDENT. THE CONTROL ROOM CREW IS CURRENTLY IN E-1, "LOSS OF REACTOR OR SECONDARY COOLANT," AT THE STEP TO CHECK CONTAINMENT HYDROGEN CONCENTRATION. HYDROGEN CONCENTRATION IS REPORTED TO BE AT 0.7%.

ANOTHER OPERATOR HAS COMPLETED SOME INITIAL STEPS TO PLACE THE HYDROGEN RECOMBINERS IN SERVICE IN ACCORDANCE WITH OTN-GS-00001, CONTAINMENT HYDROGEN CONTROL SYSTEM. STEPS 5.5.1 THROUGH 5.5.10 ARE COMPLETE.

Initiating Cues: THE CONTROL ROOM SUPERVISOR DIRECTS YOU TO CONTINUE IN OTN-GS-00001, CONTAINMENT HYDROGEN CONTROL SYSTEM, AND DETERMINE THE APPROPRIATE HYDROGEN RECOMBINER POWER SETTING FOR RECOMBINER 1A AND RECOMBINER 1B BY PERFORMING STEP 5.5.11.

NOTE: DO NOT USE A "MOST CONSERVATIVE" APPROACH. PERFORM YOUR DETERMINATION AS ACCURATELY AS YOU CAN.

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Plant Parameters:

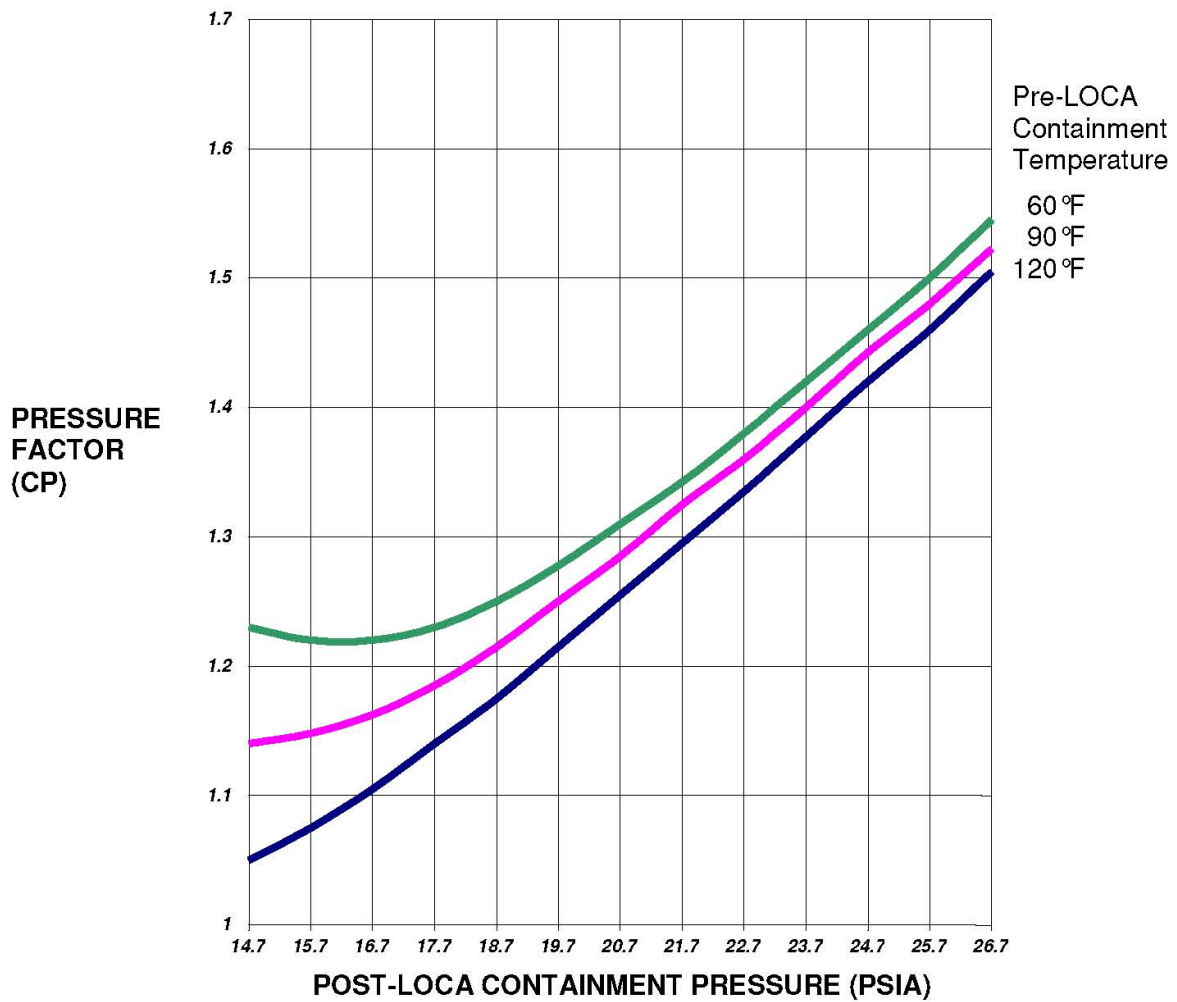
#### Containment Pressures

- GNPI0934, CTMT ATMS PEN 99 PRESS IND = 8.5 PSIG
- GNPI0935, CTMT ATMS PEN 101 PRESS IND = 9.2 PSIG
- GNPI0936, CTMT ATMS PEN 103 PRESS IND = 8.8 PSIG
- GNPI0937, CTMT ATMS PEN 104 PRESS IND = 9.5 PSIG

#### Pre-LOCA Containment Temperature

- GN-TR-63, CTMT TEMP RECORDER = 90°F

**Attachment 1**  
**Recombiner Power Correction Factor vs. Containment Pressure**  
Sheet 1 of 1





OOA-GS-00001  
REFERENCE POWER SETTINGS  
Rev. 0

Approved By: Dale E Young

Location: GS065AA

HYDROGEN RECOMBINER SGS01A

REFERENCE POWER SETTING FROM  
OSP-GS-00001, STEP 6.3.2

DATE	INITIALS	POWER SETTING	DATE	INITIALS	POWER SETTING
			11-5-08	PM <sup>2606</sup>	43.065 KW
11/14/90	DF	42.2 KW	5/16/10	JP <sup>13218</sup>	44.88 KW
			9-17-10	JAP 11504	44.16 KW
2-21-92	JP	42.5 KW			
2-18-93	JP	42.3 KW			
2/21/94	JP	41.1			
5/9/94	KAD	41.4			
7		36.3			
11/3/96	JP	42.5 KW			
4/1/97	JP	42.5 KW			
19980505	JP	45 KW			
5/6/98	JP	40.8 KW			
10/22/99	JP	42.5 KW			
11/19/02	JP	43.5 KW			
5/10/04	QJ	43.5 KW			
11/07/05	PU	43.12 KW			
4-16-07	SM 10303	42.5 KW			
10/30/08	JP	42			

OOA-GS-00001  
REFERENCE POWER SETTINGS  
Rev. 0

Approved By: Dale E. Young

Location: GS065BA

# HYDROGEN RECOMBINER SGS01B

REFERENCE POWER SETTING FROM  
OSP-GS-00001, STEP 6.3.2

DATE	INITIALS	POWER SETTING	DATE	INITIALS	POWER SETTING
11/10/90	JT	41.7 Kw	4-17-07 SM 10303		44.2 Kw
			9-25-08 AS 1669		46 Kw <del>48 Kw</del> <sup>R 9-25-08 1669</sup>
			10-21-08 JR 12241		43.12 Kw
			1-14-10 SDP 12240		45.76 Kw
			5-21-10 BL 13208		44 Kw
			5-21-10 GL 5048		45.5 Kw
01/11/99		44.1 Kw			
1/11/99		44.1 Kw			
10/2/00	BD	45.0 Kw			
10/2/00		45.0 Kw			
10/10/96	JG	46 Kw			
3/30/98	GN	43.5 Kw			
9/15/99	SDA	42.5 Kw			
05/25/00	LB	40.0 Kw			
5-5-01	GBT	43.65			
5/12/04	GL	43.5 Kw			
11-7-05	PN	44 Kw			



# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A2 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: RO  
DUTY: ADMINISTRATIVE  
TASK TITLE: KNOWLEDGE OF PROCEDURES, GUIDELINES, OR LIMITATIONS ASSOCIATED WITH REACTIVITY MANAGEMENT

KSA NO: GEN2.1.37  
KSA RATING: 4.3/4.6  
REVISION: 2010

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: PLANT CURVE BOOK

TOOLS/EQUIPMENT: Copy of Curve Book

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. CORE BURNUP IS 75 EFPD. BORON CONCENTRATION IS 1010 PPM. BORON CONCENTRATION IN BOTH BORIC ACID TANKS (BAT) IS 7000 PPM.

IT HAS BEEN DETERMINED THAT THE PLANT MUST BE SHUTDOWN TO MODE 5 TO REPLACE THE IMPELLER IN PEN01B, CONTAINMENT SPRAY PUMP B.

Initiating Cues: YOU ARE AN EXTRA RO ON SHIFT. THE SHIFT MANAGER HAS ASSIGNED YOU THE TASK OF DETERMINING HOW MANY GALLONS OF BORIC ACID MUST BE ADDED TO THE RCS TO PLACE THE PLANT IN MODE 5.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE DETERMINED THAT  $5354 \pm 535$  GALLONS (4819-5889) OF BORIC ACID WILL BE NEEDED TO PLACE THE PLANT IN MODE 5.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF THE PLANT CURVE BOOK	OPERATOR OBTAINED COPY OF PLANT CURVE BOOK	<p><b>S      U</b></p> <p>Comments:</p>
2. DETERMINE REQUIRED BORON CONCENTRATION FOR MODE 5 IS 1455 PPM FROM CURVE BOOK TABLE 1-8, SHUTDOWN MARGIN DATA	OPERATOR DETERMINED REQUIRED BORON CONCENTRATION FOR MODE 5 IS 1455 PPM FROM CURVE BOOK TABLE 1-8, SHUTDOWN MARGIN DATA	<p><b>S      U</b></p> <p>Comments:</p>
3.* DETERMINE AMOUNT OF BORIC ACID REQUIRED TO PLANCE THE PLANT IN MODE 5	<p>OPERATOR DETERMINED 5354 ±535 GALLONS (4819-5889) OF BORIC ACID IS REQUIRED TO PLACE THE PLANT IN MODE 5</p> <p>FROM CURVE BOOK FIG 7-3:  <math>V_B = (-M/8.33) \ln(7000 - C_f / 7000 - C_i)</math></p> <p><math>V_B = (-577,221/8.33) \times \ln(7000 - 1455 / 7000 - 1010)</math></p> <p><math>V_B = 5349</math> GALLONS ±535</p> <p><b><math>V_B = 4819 - 5889</math> GALLONS</b></p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
4.	<u>RECORD STOP TIME ON PAGE</u> <u>1</u>	<b>S      U</b>  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. CORE BURNUP IS 75 EFPD. BORON CONCENTRATION IS 1010 PPM. BORON CONCENTRATION IN BOTH BORIC ACID TANKS (BAT) IS 7000 PPM.

IT HAS BEEN DETERMINED THAT THE PLANT MUST BE SHUTDOWN TO MODE 5 TO REPLACE THE IMPELLER IN PEN01B, CONTAINMENT SPRAY PUMP B.

Initiating Cues: YOU ARE AN EXTRA RO ON SHIFT. THE SHIFT MANAGER HAS ASSIGNED YOU THE TASK OF DETERMINING HOW MANY GALLONS OF BORIC ACID MUST BE ADDED TO THE RCS TO PLACE THE PLANT IN MODE 5.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A3 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: RO  
DUTY: ADMINISTRATIVE  
TASK TITLE: KNOWLEDGE OF SURVEILLANCE PROCEDURES

KSA NO: GEN2.2.12  
KSA RATING: 3.7/4.1  
REVISION: 2010

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-EN-P001B, TRAIN B CONTAINMENT SPRAY PUMP INSERVICE TEST,  
REVISION 33

TOOLS/EQUIPMENT: Copy of OSP-EN-P001B  
Copy of Attachment 4 filled in with field data.

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 COMPREHENSIVE PUMP TEST IS BEING PERFORMED FOR PEN01B, CTMT SPRY PMP B, IN ACCORDANCE WITH OSP-EN-P001B, TRAIN B CONTAINMENT SPRAY PUMP INSERVICE TEST. FIELD DATA FOR THE SURVEILLANCE HAS BEEN RECORDED ON ATTACHMENT 4, TRAIN B CONTAINMENT SPRAY PUMP COMPREHENSIVE TEST DATA SHEET.

GROUP B PUMP TESTING IS NOT BEING PERFORMED FOR THIS SURVEILLANCE.

Initiating Cues: YOU ARE AN EXTRA RO ON SHIFT. THE SHIFT MANAGER (SM) HAS GIVEN YOU ATTACHMENT 4 TO COMPLETE THE CALCULATIONS AND DETERMINE IF THE ACCEPTANCE CRITERIA HAS BEEN SATISFIED IAW OSP-EN-P001B. GIVE YOUR RESULTS TO THE SM WHEN COMPLETE.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE COMPLETED FILLING IN THE CALCULATIONS ON ATTACHMENT 4 AND DETERMINED THAT THE ACCEPTANCE CRITERIA FOR EN-P001B ARE SATISFIED.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OBTAIN A VERIFIED WORKING COPY OF OSP-EN-P001B, TRAIN B CONTAINMENT SPRAY PUMP INSERVICE TEST	OPERATOR OBTAINED PROCEDURE COPY  <b>CUE: PROVIDE OPERATOR WITH COPY OF ATTACHMENT 4 FILLED IN WITH FIELD DATA</b>	<b>S U</b>  Comments:
2. CALCULATE ENFO0001 DIFFERENTIAL PRESSURE AND RECORD ON ATTACHMENT4  STEP 6.1.23.e.4	OPERATOR CALCULATES ENFO0001 DIFFERENTIAL PRESSURE AND RECORDS ON ATTACHMENT 4  DIFFERENTIAL PRESSURE CALCULATED TO BE 197.9 PSID	<b>S U</b>  Comments:
3. USING EQUATION ON ATTACHMENT 4, CONVERT ENFE0030 DIFFERENTIAL PRESSURE INTO GPM FLOW AND RECORD ON ATTACHMENT 4  Step 6.1.23.e.6	OPERATOR CONVERTS ENFE0030 DIFFERENTIAL PRESSURE INTO GPM FLOW AND RECORDS ON ATTACHMENT 4  ENFO0030 FLOW CALCULATED TO BE 307.2 GPM	<b>S U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	STANDARD	SCORE
4. USING EQUATION ON ATTACHMENT 4, CONVERT ENFE0030 INCHES OF WATER COLUMN DIFFERENTIAL (H) INTO GPM FLOW AND RECORD ON ATTACHMENT 4  Step 6.1.23.e.7	OPERATOR CONVERTS ENFE0030 INCHES OF WATER COLUMN DIFFERENTIAL (H) INTO GPM FLOW AND RECORDS ON ATTACHMENT 4  ENFE0030 FLOW CALCULATED TO BE 2854.3 GPM	<b>S      U</b>  Comments:
5. CALCULATE PUMP TOTAL FLOW BY ADDING RECIRC LINE FLOW AND ENFO0001 FLOW AND RECORD ON ATTACHMENT 4  Step 6.1.23.e.8	OPERATOR CALCULATES PUMP TOTAL FLOW BY ADDING RECIRC LINE FLOW AND ENFO0001 FLOW AND RECORDS ON ATTACHMENT 4  PUMP TOTAL FLOW CALCULATED TO BE 3161.5 GPM	<b>S      U</b>  Comments:
6. CALCULATE PUMP DIFFERENTIAL PRESSURE AND RECORD ON ATTACHMENT 4  Step 6.1.23.e.8	OPERATOR CALCULATES PUMP DIFFERENTIAL PRESSURE AND RECORDS ON ATTACHMENT 4  PUMP DIFFERENTIAL PRESSURE CALCULATED TO BE 203.6 PSID	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
7. DETERMINE IF SURVEILLANCE RESULTS FROM ATTACHMENT 4 MEET ACCEPTANCE CRITERIA	<p>OPERATOR DETERMINES THAT ACCEPTANCE CRITERIA IS MET</p> <p>Step 3.1: GROUP B PUMP TESTING NOT APPLICABLE FOR THIS SURVEILLANCE (GIVEN IN INITIAL CONDITIONS)</p> <p>Step 3.2: ROOM COOLER AUTOMATICALLY STARTED WHEN PUMP WAS STARTED</p> <p>Step 3.3: PUMP TEST DATA IS NOT WITHIN THE REQUIRED ACTION RANGE</p>	<p><b>S      U</b></p> <p>Comments:</p>
8.	<p><b><u>RECORD STOP TIME ON PAGE 1</u></b></p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

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Initial Conditions: THE COMPREHENSIVE PUMP TEST IS BEING PERFORMED FOR PEN01B, CTMT SPRY PMP B, IN ACCORDANCE WITH OSP-EN-P001B, TRAIN B CONTAINMENT SPRAY PUMP INSERVICE TEST. FIELD DATA FOR THE SURVEILLANCE HAS BEEN RECORDED ON ATTACHMENT 4, TRAIN B CONTAINMENT SPRAY PUMP COMPREHENSIVE TEST DATA SHEET.

GROUP B PUMP TESTING IS NOT BEING PERFORMED FOR THIS SURVEILLANCE.

Initiating Cues: YOU ARE AN EXTRA RO ON SHIFT. THE SHIFT MANAGER (SM) HAS GIVEN YOU ATTACHMENT 4 TO COMPLETE THE CALCULATIONS AND DETERMINE IF THE ACCEPTANCE CRITERIA HAS BEEN SATISFIED IAW OSP-EN-P001B. GIVE YOUR RESULTS TO THE SM WHEN COMPLETE.

# Train B Containment Spray Pump Comprehensive Test Data Sheet

Sheet 1 of 1

Person (s) Performing (print)

Initial/ PIN

Date Started: TODAY

Date Completed: TODAY

Step 6.17 PEN01B start time:

TODAY

Step 6.19 SGL13B, AUX BLD CSP B RM CLR, started as required? (circle one) YES/ NO

Step	Parameter	Actual Value	Normal Range	Alert Range	Required Action Range		Baseline
					Low	High	
6.1.23.e.2	ENFO00001 Press at ENV0108 (psig)	236.1	N/A	N/A	N/A	N/A	200
6.1.23.e.3	ENFO00001 Press at BNV0027 (psig)	38.2	N/A	N/A	N/A	N/A	37.5
6.1.23.e.4	Differential Pressure across ENFO0001 (psid)	_____		N/A	N/A	N/A	162.5
6.1.23.e.5	Recirc Line Inches Of Water Column Differential at ENFE0030 (INWC)	549.8	N/A	N/A	N/A	N/A	550
6.1.23.e.6	ENFO0001 Flow (gpm)	_____	N/A	N/A	N/A	N/A	278.4
6.1.23.e.7	Recirc Line Flow at ENFE0030 (gpm)	_____	N/A	N/A	N/A	N/A	2854.8
6.1.23.e.8	Total Pump Flow (gpm)	_____	3130 to 3190	N/A	N/A	N/A	3133.2
6.1.23.e.9	Disch Press Test Gauge at ENV0034 (psig)	237.2	N/A	N/A	N/A	N/A	238
6.1.23.e.10	Suct Press Test Gauge at ENV0033 (psig)	33.6	N/A	N/A	N/A	N/A	31
6.1.23.e.11	Pump Differential Pressure (psid)	_____	192.5 to 213.2	186.3 to < 192.5	< 186.3	> 213.2	207

$$\text{Flow}_{\text{gpm}} = (21.84) \sqrt{(\text{Differential Press across ENFO0001 psid})}$$

$$\text{Flow}_{\text{gpm}} = (121.73) \sqrt{(h_{\text{INWC}})}$$

Step 7.4.2 Calculated Pump Spin-up Time: N/A (≤ 5 sec)

M & TE Data: ID Numbers GA2013 GAP2041OP  
Cal Due Dates: 3-15-11 4-5-11

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

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A4 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: RO  
DUTY: ADMINISTRATIVE  
TASK TITLE: DETERMINE RADIOLOGICAL REQUIREMENTS FOR HRA ENTRY

KSA NO: GEN2.3.4  
KSA RATING: 3.2/3.7  
REVISION: 2010

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: NONE

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:

- AN EXTENSIVE TAGOUT CONTAINING A LARGE NUMBER OF TAGS IS REQUIRED TO BE HUNG IN AN AREA POSTED AS A HIGH RADIATION AREA (HRA).
- THE GENERAL AREA DOSE RATE IN THE HRA IS 30 mR/hr.
- THE FIRST VALVE ON THE TAGOUT (A VALVE WHICH HAS TO BE MANUALLY CLOSED) IS LOCATED IN A 360 mR/hr FIELD. IT IS ESTIMATED THAT 5 MINUTES WILL BE REQUIRED TO CLOSE THIS VALVE BASED ON PREVIOUS PERFORMANCE HISTORY.
- THE REMAINDER OF THE ITEMS ON THE TAGOUT ARE LOCATED IN THE GENERAL AREA DOSE RATE.
- RADIATION PROTECTION (RP) HAS PLACED A DOSE LIMIT OF 50 mR ON THIS TASK.

Initiating Cues: YOU HAVE BEEN ASSIGNED THE TASK TO DETERMINE THE MAXIMUM TIME THAT CAN BE SPENT HANGING THE REMAINING TAGS IN THE GENERAL AREA WITHOUT EXCEEDING THE DOSE LIMIT FOR THIS TASK.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE DETERMINED THAT THE MAXIMUM TIME THAN CAN BE SPENT HANGING TAGS IN THE GENERAL AREA IS 40 MINUTES.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. DETERMINE THE TOTAL DOSE RECEIVED CLOSING THE VALVE AND HANGING WPA IN THE 360 mR/hr FIELD	OPERATOR CALCULATES TOTAL DOSE FOR CLOSING THIS VALVE AND HANGING WPA IS 30 Mr  $\frac{360 \text{ mR/hr} \times 5 \text{ MIN}}{60 \text{ MIN/HR}} = 30 \text{ mR}$	<b>S      U</b>  Comments:
2. DETERMINE THE AVAILABLE DOSE FOR HANGING TAGS IN THE GENERAL AREA	OPERATOR DETERMINES AVAILABLE DOSE FOR HANGING TAGS IN THE GENERAL AREA IS 20 mR  $50 \text{ mR} - 30 \text{ mR} = 20 \text{ mR}$	<b>S      U</b>  Comments:
3*. DETERMINE MAXIMUM TIME TO HANG REMAINDER OF TAGS	OPERATOR DETERMINES MAXIMUM TIME TO HANG REMAINDER OF TAGS IS 40 MINUTES  $20 \text{ mRr} / 30 \text{ mR/hr} \times 60 \text{ min/hr} = 40 \text{ MINUTES}$	<b>S      U</b>  Comments:
4.	THIS JPM IS COMPLETE  <u><b>RECORD STOP TIME ON PAGE 1</b></u>	<b>S      U</b>  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:
- AN EXTENSIVE TAGOUT CONTAINING A LARGE NUMBER OF TAGS IS REQUIRED TO BE HUNG IN AN AREA POSTED AS A HIGH RADIATION AREA (HRA).
  - THE GENERAL AREA DOSE RATE IN THE HRA IS 30 mR/hr.
  - THE FIRST VALVE ON THE TAGOUT (A VALVE WHICH HAS TO BE MANUALLY CLOSED) IS LOCATED IN A 360 mR/hr FIELD. IT IS ESTIMATED THAT 5 MINUTES WILL BE REQUIRED TO CLOSE THIS VALVE BASED ON PREVIOUS PERFORMANCE HISTORY.
  - THE REMAINDER OF THE ITEMS ON THE TAGOUT ARE LOCATED IN THE GENERAL AREA DOSE RATE.
  - RADIATION PROTECTION (RP) HAS PLACED A DOSE LIMIT OF 50 mR ON THIS TASK.

Initiating Cues: YOU HAVE BEEN ASSIGNED THE TASK TO DETERMINE THE MAXIMUM TIME THAT CAN BE SPENT HANGING THE REMAINING TAGS IN THE GENERAL AREA WITHOUT EXCEEDING THE DOSE LIMIT FOR THIS TASK.



# CALLAWAY PLANT JOB PERFORMANCE MEASURE

JPM NO:	A5	KSA NO:	2.1.25
COMPLETION TIME:	20 minutes	KSA RATING:	3.9 / 4.2
JOB TITLE:	SROI / SROU	REVISION:	2011
DUTY:	ADMINISTRATIVE		
TASK TITLE:	Determine Time to Boil for a Loss of Shutdown Cooling		

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: OTO-EJ-00003, Rev. 003

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 Plant operated for 4 days following a refueling outage. An FME concern was identified during Control Rod Testing and the Plant has been returned to Mode 6.

- The Plant has now been shutdown for 5 days
- The present RCS temperature is 140 degrees F
- The RCS has been drained down to 62.5 inches indicated on BBL153A and BBL153B
- The Plant Computer is unavailable

Initiating Cues: The Shift Manager has requested you to determine the time to boil given a a Loss of RHR and the following:

1. Using present conditions.
2. Three (3) days from now based on the following conditions:
  - RCS level will be reduced to 14.5 inches on BBL153A and BBL153B
  - RCS temperature will be lowered to 100 degrees F

Task Standard: Condition 1, Time to Boil is determined to be 14 minutes (accept 13 to 15 minutes)  
Condition 2, Time to Boil is determined to be 21 minutes (accept 20 to 22 minutes)

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. Obtain a copy of drawing OOA-BB-00003, Refuel Level Indications and a copy of OTO-EJ-00003, Loss of RHR while Operating at Reduced Inventory or Mid-Loop.	Provide operator with drawing and procedure.	<b>S      U</b> Comments:
2. Determine using OOA-BB-00003 that Condition 1 is MID-LOOP and Condition 2 is REDUCED INVENTORY.	Operator determined condition 1 is Reduced Inventory due to being less than 64”  and condition 2 is Mid-Loop due to being at 14.5”	<b>S      U</b> Comments:
3. Determine using OTO-EJ-00003, Step 4, that  Figure 2 is used for condition 1  AND  Figure 1 is used for condition 2	Operator determined:  Figure 2 is used for condition 1, Reduced Inventory (Hot Core)  Figure 1 is used for condition 2, Mid-Loop (Hot Core)	<b>S      U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>*4. Determine time to boil for condition 1 is 14 minutes</p> <p>AND</p> <p>Condition 2 is 21 minutes.</p>	<p>Operator determines using Figure 2 time to boil for condition 1 is 13 – 15 minutes</p> <p>Figure 1 time to boil for condition 2 is 20 to 22 minutes</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5. THE JPM IS COMPLETE</p>	<p><b><u>RECORD STOP TIME ON PAGE 1</u></b></p>	<p><b>S      U</b></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: The Plant operated for 4 days following a refueling outage. An FME concern was identified during Control Rod Testing and the Plant has been returned to Mode 6.

- The Plant has now been shutdown for 5 days
- The present RCS temperature is 140 degrees F
- The RCS has been drained down to 62.5 inches indicated on BBL153A and BBL153B
- The Plant Computer is unavailable

Initiating Cues: The Shift Manager has requested you to determine the time to boil given a a Loss of RHR and the following:

3. Using present conditions.
4. Three (3) days from now based on the following conditions:
  - RCS level will be reduced to 14.5 inches on BBL153A and BBL153B
  - RCS temperature will be lowered to 100 degrees F

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A6 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: SRO  
DUTY: ADMINISTRATIVE  
TASK TITLE: DETERMINE SHIFT STAFFING (FATIGUE RULE)

KSA NO: GEN2.1.5  
KSA RATING: 3.9  
REVISION: 2010

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-00905, Limitiations of Callaway Plant Staff Working Hours

TOOLS/EQUIPMENT: Copy of Procedure, Copies of 6 worker's work schedules

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.

Due to illnesses on the crew you are required to call in an additional Senior Reactor Operator (SRO) to maintain minimum crew staffing on DAY shift.

You have been given a package of 6 potential candidate's schedules to fill the SRO position for the 29<sup>th</sup>.

Initiating Cues: Choose which **Senior Reactor Operators** are eligible to work a 12 hour DAY shift on the 29<sup>th</sup> based on their NOT exceeding the limits of the Fatigue Rule or Callaway Work hour limitations.

The shift cycle for determining days off is 4 weeks, starting the 3<sup>rd</sup> of the month provided and DOES NOT REPEAT.

(No waivers or exceptions are allowed, per a recent Management directive.)

Assume all hours on sheets provided are the hours that were or will actually be worked.

Inform the Shift Manager (Examiner) of the eligible individuals.

Task Standard: The candidate chooses only two Senior Reactor Operators that meet the criteria.  
G. Green and T. Davis  
Williams ineligible due to not having off 10 days in the 4 week period.  
Stevens ineligible due to being an RO and not qualified as an SRO  
Johnson ineligible due to not having 34 hr break in 9 day period  
Smith ineligible due to not having off 10 days in 4 weeks and 34 hr break in 9 days.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

<b>TASK NUMBER - ELEMENT</b>	<b>STANDARD</b>	<b>SCORE</b>
1. OBTAIN A VERIFIED WORKING COPY OF APA-ZZ-00905, LIMITATIONS OF CALLAWAY PLANT STAFF WORKING HOURS	Candidate obtained a copy of APA-ZZ-00905 and reviews the working hour limitations.	<b>S U</b> Comments:
2. REVIEW THE HOURS OF THE SIX OPERATORS GIVEN AS POTENTIAL CANDIDATES TO TAKE THE TWELVE HOUR SHIFT	After reviewing the shift schedules, the candidate compared the time worked to the time allowed under working hour limitations.	<b>S U</b> Comments:
3.* CHOOSE OPERATORS THAT WILL BE CONTACTED TO FILL THE VACANT 12 HOUR SHIFT POSITION.	<b>Two (2) candidates are chosen to be eligible to take a 12 hour watch without exceeding overtime limitations.</b>  <b>G. Green and T. Davis were chosen.</b>	<b>S U</b> Comments:
4.	<b><u>RECORD STOP TIME ON PG 1</u></b>	<b>S U</b> 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.

Due to illnesses on the crew you are required to call in an additional Senior Reactor Operator (SRO) to maintain minimum crew staffing on DAY shift.

You have been given a package of 6 potential candidate's schedules to fill the SRO position for the 29<sup>th</sup>.

Initiating Cues: Choose which **Senior Reactor Operators** are eligible to work a 12 hour DAY shift on the 29<sup>th</sup> based on their NOT exceeding the limits of the Fatigue Rule or Callaway Work hour limitations.

The shift cycle for determining days off is 4 weeks, starting the 3<sup>rd</sup> of the month provided and DOES NOT REPEAT.

(No waivers or exceptions are allowed, per a recent Management directive.)

Assume all hours on sheets provided are the hours that were or will actually be worked.

Inform the Shift Manager (Examiner) of the eligible individuals.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A7 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: SRO  
DUTY: ADMINISTRATIVE  
TASK TITLE: ABILITY TO RECOGNIZE SYSTEM PARAMETERS THAT ARE ENTRY-LEVEL CONDITIONS FOR TECHNICAL SPECIFICATIONS

KSA NO: GEN2.2.42  
KSA RATING: 3.9/4.6  
REVISION: 2010

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-NB-00001, CLASS 1E ELECTRICAL SOURCE VERIFICATION, REVISION 35  
OTA-RK-00016, ANNUNCIATOR RESPONSE PROCEDURE MCB PANEL RK016,  
ADDENDUM 25C  
TECHNICAL SPECIFICATIONS

TOOLS/EQUIPMENT: Copy of OSP-NB-00001  
Completed copy of Attachment 1, Train A Status, and Attachment 2, Train B Status, from OSP-NB-00001.

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 IS AT 100% POWER. THE REACTOR OPERATOR HAS JUST COMPLETED THE WEEKLY SURVEILLANCE FOR TRAIN A AND TRAIN B ELECTRICAL LINEUPS AND COMPLETED ATTACHMENTS 1 AND 2 FROM OSP-NB-00001, CLASS 1E ELECTRICAL SOURCE VERIFICATION.

Initiating Cues: YOU ARE AN EXTRA SRO ON SHIFT. THE SHIFT MANAGER (SM) HAS GIVEN YOU ATTACHMENTS 1 AND 2 TO REVIEW. INFORM THE SM WHEN YOUR REVIEW IS COMPLETE AND INCLUDE ANY ACTIONS REQUIRED THAT NEED TO BE TAKEN.

WRITE DOWN REQUIRED ACTIONS, IF ANY, ON YOUR CUE SHEET AND RETURN TO THE EXAMINER.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE DETERMINED THAT NK01 IS INOPERABLE AND THAT IT MUST BE RESTORED TO OPERABLE STATUS WITHIN 2 HOURS.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OPERATOR PROVIDED COPIES OF ATTACHMENTS 1 AND 2 TO DETERMINE COMPLETENESS AND REQUIRED ACTIONS, IF ANY	OPERATOR REVIEWS ATTACHMENTS PROVIDED	<b>S      U</b> Comments:
2. OPERATOR REVIEWS OTA 25C FOR REQUIRED ACTIONS	OPERATOR REVIEWS OTA 25C FOR REQUIRED ACTIONS  <b>OPERATOR MAY GO DIRECTLY TO TECH SPECS TO REVIEW OPERABILITY REQUIREMENTS FOR DC BUSES</b>	<b>S      U</b> Comments:
3. DISPATCH AN OPERATOR TO NK01 TO DETERMINE WHICH LOCAL ALARM HAS OCCURRED  Step 3.1	OPERATOR DETERMINES NO LOCAL ALARM IS IN FROM NOTE STATING IF COMPUTER POINT NKE0001 IS IN ALARM THERE WILL BE NO LOCAL ALARMS  <b>IF ASKED THERE ARE NO LOCAL ALARMS</b>	<b>S      U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
4. REFER TO OTA-NK-00001, 125 VDC CLASS IE PANEL NK01  Step 3.2	OPERATOR RECOGNIZES THERE ARE NO LOCAL ALARMS-FROM STEP 3.1	<b>S      U</b>  Comments:
5. IF CHARGER IS LOST, REFER TO OTO-NK-00001, FAILURE OF NK BATTERY CHARGER  Step 3.3	OPERATOR RECOGNIZES CHARGER IS NOT LOST  CHARGER VOLTAGE IS PROVIDED ON COMPLETED ATTACHMENT	<b>S      U</b>  Comments:
6. IF NK01 BUS VOLTAGE INDICATES ZERO VOLTS, REFER TO OTO-NK-00002, LOSS OF VITAL 125 VDC BUS  Step 3.4	OPERATOR RECOGNIZES BUS VOLTAGE IS NOT ZERO DUE TO NOT HAVING ANY LOCAL ALARMS	<b>S      U</b>  Comments:
7. IF ONLY COMPUTER POINT NKE0001 IS IN ALARM, CHECK INSERVICE CHARGER (NK21/NK25) VOLTAGE  Step 3.5	OPERATOR DETERMINES BUS VOLTAGE IS LOW FROM INFORMATION ON COMPLETED ATTACHMENT 1	<b>S      U</b>  Comments:
8. REFER TO THE FOLLOWING TECHNICAL SPECIFICATIONS: T/S LCO 3.8.4 T/S LCO 3.8.5 T/S LCO 3.8.6  Step 3.6	OPERABLE REFERS TO APPLICABLE TECH SPECS-TS 3.8.4 FOR GIVEN CONDITIONS	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>STANDARD</b>	<b>SCORE</b>
9*. OPERATOR REVIEWS T/S LCO FOR OPERABILITY REQUIREMENTS FOR DC SOURCES	<p>OPERATOR DETERMINES THAT DC SOURCES ARE INOPERABLE AND THAT OPERABILITY MUST BE RESTORED WITHIN 2 HOURS</p> <p>TWO (2) HOUR TIME LIMIT TO RESTORE OPERABILITY COULD ALSO BE DETERMINED FROM A REVIEW OF T/S LCO 3.8.4 OR 3.8.9</p>	<p><b>S      U</b></p> <p>Comments:</p>
8.	<p>OPERATOR INFORMS SM THAT THE PLANT IS IN A 2 HOUR TECH SPEC TO RESTORE BUS NK01 TO OPERABLE STATUS</p> <p><b><u>RECORD STOP TIME ON PAGE 1</u></b></p>	<p><b>S      U</b></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 IS AT 100% POWER. THE REACTOR OPERATOR HAS JUST COMPLETED THE WEEKLY SURVEILLANCE FOR TRAIN A AND TRAIN B ELECTRICAL LINEUPS AND COMPLETED ATTACHMENTS 1 AND 2 FROM OSP-NB-00001, CLASS 1E ELECTRICAL SOURCE VERIFICATION.

Initiating Cues: YOU ARE AN EXTRA SRO ON SHIFT. THE SHIFT MANAGER (SM) HAS GIVEN YOU ATTACHMENTS 1 AND 2 TO REVIEW. INFORM THE SM WHEN YOUR REVIEW IS COMPLETE AND INCLUDE ANY ACTIONS REQUIRED THAT NEED TO BE TAKEN.

WRITE DOWN REQUIRED ACTIONS, IF ANY, ON YOUR CUE SHEET AND RETURN TO THE EXAMINER.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A8 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: SRO  
DUTY: ADMINISTRATIVE  
TASK TITLE: DETERMINE REPORTABILITY REQUIREMENTS FOR OVEREXPOSURE

KSA NO: GEN2.3.4  
KSA RATING: 3.2/3.7  
REVISION: 2010

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 33

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. REFUELING ACTIVITIES ARE IN PROGRESS. AN OPERATIONS TECHNICIAN (OT) WAS SENT INSIDE THE INCORE INSTRUMENT TUNNEL TO HANG WPA. DUE TO AN INCORE INSTRUMENT THIMBLE BEING RETRACTED, THE OT RECEIVED AN OVEREXPOSURE OF 30 REM TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE).

Initiating Cues: YOU ARE THE CONTROL ROOM SUPERVISOR. YOU HAVE BEEN DIRECTED TO DETERMINE THE FOLLOWING ITEMS:

1. IS THIS OVEREXPOSURE REPORTABLE
2. IF YES, WHO IS THE PRIMARY RECIPIENT OF THE REPORT
3. IF YES, WHAT IS THE TIME LIMIT FOR THE FIRST REPORT DUE

RECORD YOUR ANSWERS ON YOUR CUE SHEET AND RETURN IT TO THE EXAMINER WHEN COMPLETE.

Task Standard: UPON COMPLETION OF THE TASK, THE CANDIDATE WILL HAVE DETERMINED THE FOLLOWING:

1. THE OVEREXPOSURE **IS** REPORTABLE
2. THE PRIMARY RECIPIENT IS THE **NRC OPERATIONS CENTER**
3. THE TIME LIMIT FOR THE REPORT IS **ONE HOUR**

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW TIME FOR REVIEW OF WORK TO BE PERFORMED	OPERATOR REVIEWS INITIAL CONDITIONS AND INITIATING CUES	<b>S      U</b> Comments:
2. CANDIDATE SHOULD REFER TO APA-ZZ-00520, REPORTING REQUIREMENTS AND RESPONSIBILITIES	OPERATOR REVIEWS APA-ZZ-00520  ATTACHMENT 1, STEP 3.h.1)a), AND ATTACHMENT 2, ITEM 40, CONTAIN THE REPORTING CRITERIA FOR THIS EVENT	<b>S      U</b> Comments:
3*. CANDIDATE SHOULD DETERMINE WHETHER THE OVEREXPOSURE IS REPORTABLE	OPERATOR DETERMINES THE OVEREXPOSURE <b><u>IS</u></b> REPORTABLE	<b>S      U</b> Comments:
4*. CANDIDATE SHOULD DETERMINE WHO IS THE PRIMARY RECIPIENT OF THE REPORT	OPERATOR DETERMINES THE <b><u>NRC OPERATIONS CENTER</u></b> IS THE PRIMARY RECIPIENT OF THE REPORT  NRC ENS LINE (RED PHONE) IS ALSO AN ACCEPTABLE ANSWER	<b>S      U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5*. CANDIDATE SHOULD DETERMINE THE TIME LIMIT FOR THE REPORT	OPERATOR DETERMINES THE TIME LIMIT FOR THE REPORT IS <b><u>ONE HOUR</u></b>	<b>S      U</b>  Comments:
6.	THIS ADMIN JPM IS COMPLETE  <b><u>RECORD STOP TIME ON PAGE 1</u></b>	<b>S      U</b>  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 6. REFUELING ACTIVITIES ARE IN PROGRESS. AN OPERATIONS TECHNICIAN (OT) WAS SENT INSIDE THE INCORE INSTRUMENT TUNNEL TO HANG WPA. DUE TO AN INCORE INSTRUMENT THIMBLE BEING RETRACTED, THE OT RECEIVED AN OVEREXPOSURE OF 30 REM TOTAL EFFECTIVE DOSE EQUIVALENT (TEDE).

Initiating Cues: YOU ARE THE CONTROL ROOM SUPERVISOR. YOU HAVE BEEN DIRECTED TO DETERMINE THE FOLLOWING ITEMS:

1. IS THIS OVEREXPOSURE REPORTABLE
2. IF YES, WHO IS THE PRIMARY RECIPIENT OF THE REPORT
3. IF YES, WHAT IS THE TIME LIMIT FOR THE FIRST REPORT DUE

RECORD YOUR ANSWERS ON YOUR CUE SHEET AND RETURN IT TO THE EXAMINER WHEN COMPLETE.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: A9 Rev 0  
COMPLETION TIME: 15 MINUTES  
JOB TITLE: SRO  
DUTY: ADMINISTRATIVE  
TASK TITLE: MAKE PROTECTIVE ACTION RECOMMENDATION DURING A GENERAL EMERGENCY

KSA NO: GEN2.4.44  
KSA RATING: 4.1  
REVISION: 2010

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-00102, Emergency Implementing Actions  
EIP-ZZ-00212, Protective Action Recommendations  
CA2843, PAR Flowchart

TOOLS/EQUIPMENT: Copy of Procedures and Form CA2843

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: THIS IS A DRILL NOTIFICATION

Callaway Plant has been shutdown following a Reactor Trip due to indications of failed fuel and a Large Break LOCA.

A minipurge was in progress when the LOCA occurred, and the minipurge Containment Outlet Isolation Valves could not be closed. Because of this, an on-going release to the atmosphere is occurring from the Containment. Attempts to control the release have failed and it is not known when the release will be terminated.

The Control Room Communicator arrived and made the correct Emergency Announcement using Attachment 1, of EIP-ZZ-00102 (provided).

Containment radiation on GT RE-59 and GT RE-60 indicate 9.5 Rem/hr.  
Core Exit Thermocouples are reading approximately 950 °F.

There are no indications of travel conditions that would present an extreme hazard during any recommended evacuation. Wind speed is 5 mph heading from 270°.

The Dose Assessment Technician has informed you there is a RELEASE ABOVE NORMAL OPERATING LIMITS with dose readings at the site boundary of 0.2 rem TEDE and 0.5 CDE Thyroid.

Initiating Cues: Make the Initial Protective Action Recommendation (PAR) based on the above conditions.

Fill out and approve, if applicable, the following forms to document the PAR and submit them to the Control Room Communicator (Examiner):

- 1) EIP-ZZ-00102, Att. 4, Control Room Offsite Notification Form, (only items required for an accurate notification are BOLDED and RED on Form provided)
- 2) CA2843, PAR Flowchart

Task Standard: The candidate recommends default of Evacuation of the 2 mile radius around the plant and 5 miles downwind. See exam key for appropriate form usage.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. OBTAIN COPIES OF EIP-ZZ-00102, EMERGENCY IMPLEMENTING ACTIONS, EIP-ZZ-00212, PROTECTIVE ACTION RECOMMENDATIONS, AND FORM CA 2843, PAR FLOWCHART</p> <p>OPERATOR MAY USE THE EIP PROCEDURES TO ASSIST FILLING OUT THE APPLICABLE EMERGENCY FORMS</p>	<p>Candidate obtained copies of the various required procedures and forms.</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>2*. FILL OUT EIP-ZZ-00102, Att 4 WITH INFORMATION GIVEN IN THE CUE AS WELL AS FROM Att 1 (provided)</p>	<p>Operator fills out the form with critical information as is circled on the "KEY"</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>3.* PLACEKEEP AND FILL OUT FORM CA2843</p>	<p>Operator Placekeeps on the Flow chart and fills in information per the key.</p> <p>Marks an "E" for Evacuation in Sectors/Segments as seen on the KEY</p> <p>Fills in pertinent information at top of Form CA2843 as seen on KEY.</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
4.	<u>RECORD STOP TIME ON PG 1</u>	<div>S U</div> <div>Comments:</div>

\* 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: THIS IS A DRILL NOTIFICATION

Callaway Plant has been shutdown following a Reactor Trip due to indications of failed fuel and a Large Break LOCA.

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The Control Room Communicator arrived and made the correct Emergency Announcement using Attachment 1, of EIP-ZZ-00102 (provided).

Containment radiation on GT RE-59 and GT RE-60 indicate 9.5 Rem/hr.  
Core Exit Thermocouples are reading approximately 950 °F.

There are no indications of travel conditions that would present an extreme hazard during any recommended evacuation. Wind speed is 5 mph heading from 270°.

The Dose Assessment Technician has informed you there is a RELEASE ABOVE NORMAL OPERATING LIMITS with dose readings at the site boundary of 0.2 rem TEDE and 0.5 CDE Thyroid.

Initiating Cues: Make the Initial Protective Action Recommendation (PAR) based on the above conditions.

Fill out and approve, if applicable, the following forms to document the PAR and submit them to the Control Room Communicator (Examiner):

- 1) EIP-ZZ-00102, Att. 4, Control Room Offsite Notification Form, (only items required for an accurate notification are BOLDED and RED on Form provided)
- 2) CA2843, PAR Flowchart

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: Sim A KSA NO: 001A2.14  
JOB TITLE: RO/ SROI/ SROU KSA RATING: 3.7 / 3.9  
DUTY: CONTROL ROD DRIVE SYSTEM  
TASK TITLE: PERFORM CONTROL ROD PARTIAL MOVEMENT  
COMPLETION TIME: 20 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, R021

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 Control Bank D, Per OSP-SF-00002, Section 6.3, Control Banks Partially Withdrawn.

**Notes: IC-11 or any Mode 1 IC  
ENSURE ALL FULLY WITHDRAWN ROD BANKS ARE AT 228 STEPS.**

**Insert Malfunction (SF) SF003a, Value = In, Conditional = X03I115I eq true**

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL RESPOND TO A CONTINUOUS ROD MOTION EVENT AND TRIP THE REACTOR IN ACCORDANCE WITH OTO-SF-00001, ROD CONTROL MALFUNCTION

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

[illegible]

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4. <b><u>NOTE:</u></b></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 6.3</p>		<p>OPERATOR READS NOTE</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5. LIST THE CONTROL BANKS THAT ARE PARTIALLY WITHDRAWN ON ATTACHMENT 3.</p> <p>STEP 6.3.1</p>		<p>OPERATOR UNDERSTOOD THAT ATTACHMENT 3 WILL BE USED AND FILLS OUT THE TOP OF THE PAGE</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*6. PLACE SE HS-9, ROD BANK AUTO/MAN SEL, IN THE SHUTDOWN BANK TO BE TESTED AND INITIAL ATTACHMENT 3</p> <p>STEP 6.3.2</p>		<p>OPERATOR SWITCHED SE HS-9 TO THE SCD POSITION AND INITIALED ATTACHMENT 3</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
7. AT POWER CABINETS, ENSURE THE PROPER LIGHTS ARE ON FOR THE SELECTED BANK AND INITIAL ATTACHMENT 3  STEP 6.3.3	GROUP SELECT LIGHT B IS ON AT POWER CABINETS 1BD AND 2BD	OPERATOR CONTACTED OT TO ENSURE GROUP SELECT LIGHT B IS ON AT POWER CABINETS 1BD AND 2BD AND INITIALED ATTACHMENT 3	S U  Comments:	
8. RECORD THE CONTROL BANK STEP COUNTER POSITION FOR THE SELECTED BANK ON ATTACHMENT 3  STEP 6.3.4	Note: AT 100% POWER THE STEP COUNTERS FOR CONTROL BANK D WILL INDICATE 215 STEPS	OPERATOR RECORDED APPROPRIATE CONTROL BANK D STEP COUNTER POSITION ON ATTACHMENT 3	S U  Comments:	
9. If the Selected Bank will be Inserted BELOW THE LIMITS shown on Figure 2, Rod Bank Insertion Limit vs. Rated Thermal Power- four loop operation, of the Callaway Core Operating Limits Report, PERFORM the following while monitoring Reactor Power.  STEP 6.3.5	THE ROD BANK SELECTED WILL NOT BE INSERTED BELOW THE ROD INSERTION LIMITS	OPERATOR CONTINUED in PROCEDURE AT STEP 6.3.6	S U  Comments	

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>*10. While monitoring Reactor Power and DRPI, PERFORM the following:</p> <p>WITHDRAW the selected bank at least 12 steps from initial position of Step 6.3.4 or to all rods out condition, whichever comes first</p> <p>STEP 6.3.6a</p>	<p><b>Note:</b> At 100% power Control Bank D rods will be withdrawn to 227 steps</p>	<p>Group D Control Bank Rods were withdrawn to 12 steps higher than initial conditions.</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>11. While monitoring Reactor Power and DRPI, PERFORM the following:</p> <p>RECORD DRPI and CONTROL BANK STEP COUNTER positions for the selected bank on Attachment 3</p> <p>STEP 6.3.6b</p>	<p><b>Note:</b> Ensure the Operator records the position correctly in Attachment 3</p>	<p>The correct position for the Group D Control Bank Step Counter was recorded in Attachment 3</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>*12 While monitoring Reactor Power and DRPI, PERFORM the following:</p> <p>INSERT the selected bank at least 12 steps as indicated by the step counters and digital rod position</p> <p>STEP 6.3.6c</p>	<p><b>Note:</b> Control Bank D will be returned to 215 steps if at 100%</p>	<p>Operator commenced rod insertion to return rods to their original position</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*13. Rods continue to INSERT after Manual Control is completed</p> <p>OTO-SF-00001</p>	<p>Alternate Path</p>	<p>Operator determined that an uncontrolled rod insertion occurred and performs Immediate Actions of OTO-SF-00001, Rod Control Malfunction</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>14. Check Both of the Following Are Met For Indication of Multiple Rod Drops</p> <p>THIS STEP NOT MET Go To Step 3</p> <p>OTO-SF-00001 STEP 1</p>		<p>Operator determined that NO Rods have dropped, but that rods were still inserting</p>	<p><b>S      U</b></p> <p>Comments</p>

\* CRITICAL STEP



<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
15. CHECK Main Turbine Runback or Load Reject – IN PROGRESS  THIS STEP NOT MET Go To Step 5  OTO-SF-00001  STEP 3		Operator determined that NO Main Turbine Runback or Load Reject is Progress	<b>S      U</b>  Comments:
*16. PLACE Rod Control in MANUAL  SE HS-9  OTO-SF-00001  STEP 5		Operator Selected MANUAL on Handswitch SE HS-9	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*17. CHECK Control Rods Motion - STOPPED</p> <p>THIS STEP NOT MET</p> <ul style="list-style-type: none"> <li>Manually Trip the Reactor</li> <li>Go To E-0, Reactor Trip Or Safety Injection</li> </ul> <p>OTO-SF-00001</p> <p>STEP 6</p>	<p><b>Acknowledge as the CRS that the Reactor is Tripped</b></p> <p><b>Other Operators will perform the steps of E-0</b></p> <hr/> <p><b>The JPM is Complete</b></p> <p>Record Stop Time on Page 1</p>	<p>Reactor was Tripped by the Operator</p>	<p><b>S      U</b></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 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 Control Bank D, Per OSP-SF-00002, Section 6.3, Control Banks Partially Withdrawn.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: SIM B KSA NO: 006A1.13  
JOB TITLE: RO / SROI / SROU KSA RATING: 3.5 / 3.7  
DUTY: Inventory Control /Safety Injection Accumulators  
TASK TITLE: Lowering Accumulator Level  
COMPLETION TIME: 20 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-EP-00001, Accumulator Safety Injection System, R025  
Addendum 1, SI Accumulator Level Control, R003

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.

SAFETY INJECTION ACCUMULATOR A LEVEL IS 84%.

THE SAFETY INJECTION SYSTEM AND RWST ARE IN A NORMAL LINEUP  
IAW OTN-EM-00001 AND OTN-BN-00001.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO LOWER  
SAFETY INJECTION ACCUMULATOR A LEVEL TO 78% BY DRAINING IT TO  
THE RWST, PER OTN-EP-00001 ADDENDUM 1, SECTION 5.7.

Notes: Use any MODE 1 IC. To raise SI Accumulator A level:  
Set Parameter TEP01ATAZTCPLL To 10.9  
Set Remote BNV0004TASTEM To 100  
Set Remote EMV0120TASTEM To 0

Task Standard: Upon completion of this JPM, the operator will have lowered SI Accumulator A  
level to 78%  $\pm$  3%.

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

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



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4. <u>CAUTION:</u> BECAUSE CHANGING ACCUMULATOR LEVEL CAUSES A CORRESPONDING CHANGE IN ACCUMULATOR PRESSURE, ACCUMULATOR PRESSURE NEEDS TO BE CLOSELY MONITORED WHEN ADJUSTING LEVEL.		OPERATOR READ CAUTION	<div> <div>S</div> <div>U</div> </div> COMMENTS:
5. ENSURE THE SAFETY INJECTION SYSTEM AND RWST ARE IN A NORMAL LINEUP IN ACCORDANCE WITH BOTH OF THE FOLLOWING:  OTN-EM-00001 AND OTN-BN-00001  STEP 5.7.1	<b>THE SAFETY            INJECTION SYSTEM            AND RWST ARE IN A            NORMAL LINEUP IN            ACCORDANCE WITH            BOTH OF THE            FOLLOWING:</b>  <b>OTN-EM-00001            OTN-BN-00001</b>  (GIVEN IN INITIAL CONDITIONS)	OPERATOR ENSURED THE SAFETY INJECTION SYSTEM AND RWST ARE IN A NORMAL LINEUP	<div> <div>S</div> <div>U</div> </div> COMMENTS:

\* Critical Step

<b>TASK NUMBER - ELEMENT</b>		<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
6. ENSURE RCS PRESSURE IS SUFFICIENT TO PREVENT OPENING OF THE ACCUMULATOR OUTLET CHECK VALVES		RCS PRESSURE IS 2235 PSIG	OPERATOR ENSURED RCS PRESSURE IS SUFFICIENT TO PREVENT OPENING OF THE ACCUMULATOR OUTLET CHECK VALVES	<b>S U</b> COMMENTS:
STEP 5.7.2				
7. AT RL018, PERFORM THE FOLLOWING: ENSURE EPHV8808A EPHV8808B EPHV8808C EPHV8808D ARE OPEN		THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS EXTINGUISHED ON:  EP HIS-8808A EP HIS-8808B EP HIS-8808C AND EP HIS-8808D	OPERATOR ENSURED EPHV8808A EPHV8808B EPHV8808C EPHV8808 ARE OPEN	<b>S U</b> COMMENTS:
STEP 5.7.3				

\* Critical Step



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
8. AS DIRECTED BY THE SM/CRS, ENSURE EITHER OF THE FOLLOWING IS AVAILABLE AND HAS SUFFICIENT AVAILABLE VOLUME TO RECEIVE THE WATER FROM THE ACCUMULATOR: • THE RWST • A RHUT  STEP 5.7.4	THE RWST IS AVAILABLE AND HAS SUFFICIENT AVAILABLE VOLUME TO RECEIVE THE WATER FROM THE ACCUMULATOR	OPERATOR ENSURED EITHER THE RWST OR A RHUT IS AVAILABLE AND HAS SUFFICIENT AVAILABLE VOLUME TO RECEIVE THE WATER FROM THE ACCUMULATOR	<b>S      U</b>  COMMENTS:
9. <u>NOTE:</u> NORMAL LINEUP IS DRAINING TO THE RWST	THE ACCUMULATOR WILL BE DRAINED TO THE RWST  (GIVEN IN INITIATING CUES)	OPERATOR READ NOTE	<b>S      U</b>  COMMENTS:

\* Critical Step

[illegible]

\* Critical Step

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p><b>*13. TO ALIGN TO THE RWST, PERFORM THE FOLLOWING:</b></p> <p>CLOSE EMV0120, SI SYS TEST LINE ISO TO RHT</p> <p>STEP 5.7.5.a.2</p>	<p><b>OT REPORTS EMV0120 IS CLOSED</b></p>	<p>OPERATOR DIRECTED OT TO CLOSE EMV0120</p> <p>THEN PROCEEDED TO STEP 5.7.6</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>
<p><b>*14. AT RL017, PERFORM THE FOLLOWING:</b></p> <p>USING EM HIS- 8964, SI SYS TEST LINE OUTER CTMT ISO VLV, OPEN EMHV8964</p> <p>STEP 5.7.6.a</p>	<p>THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS EXTINGUISHED ON EM HIS-8964</p>	<p>OPERATOR OPENED EMHV8964 USING EM HIS-8964</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>
<p><b>*15. AT RL017, PERFORM THE FOLLOWING:</b></p> <p>USING EM HIS- 8871, SI SYS TEST LINE INNER CTMT ISO VLV, OPEN EMHV8871</p> <p>STEP 5.7.6.b</p>	<p>THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS EXTINGUISHED ON EM HIS-8871</p>	<p>OPERATOR OPENED EMHV8871 USING EM HIS-8871</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>

\* Critical Step

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>*16. AT RL018, OPEN THE APPROPRIATE ACCUMULATOR TANK TEST LINE ISOLATION VALVE AND MARK THE ONE OPENED:</p> <p>USING EP HIS-8877A, ACC TANK A UPSTREAM TEST VLV, OPEN EPHV8877A</p> <p>STEP 5.7.7</p>	<p>THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS EXTINGUISHED ON EM HIS-8877A</p>	<p>OPERATOR OPENED EPHV8877A USING EP HIS-8877A</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>
<p>*17. WHEN THE DESIRED LEVEL IS REACHED, AS DETERMINED BY THE SM/CRS, CLOSE THE APPROPRIATE ACCUMULATOR TANK TEST LINE ISO VALVE AT RL018 AND MARK THE ONE CLOSED</p> <p>STEP 5.7.8</p>	<p>ACCUMULATOR A LEVEL IS 78%</p> <p>THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON EM HIS-8877A</p>	<p>OPERATOR CLOSED EPHV8877A USING EP HIS-8877A WHEN ACCUMULATOR A LEVEL REACHED 78% ± 3%</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>

\* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*18.AT RL017, PERFORM THE FOLLOWING:</p> <p>USING EM HIS- 8964, SI SYS TEST LINE OUTER CTMT ISO VLV, CLOSE EMHV8964</p> <p>STEP 5.7.9.a</p>	<p>THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON EM HIS-8964</p>	<p>OPERATOR CLOSED EMHV8964 USING EM HIS-8964</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>
<p>*19.AT RL017, PERFORM THE FOLLOWING:</p> <p>USING EM HIS- 8871, SI SYS TEST LINE INNER CTMT ISO VLV, CLOSE EMHV8871</p> <p>STEP 5.7.9.b</p>	<p>THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON EM HIS-8871</p>	<p>OPERATOR CLOSED EMHV8871 USING EM HIS-8871</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>
<p>20. <u>NOTE</u>: ADJUSTING ACCUMULATOR PRESSURE IS NOT REQUIRED IF ACCUMULATOR LEVEL IS SUBSEQUENTLY RAISED PER THIS ADDENDUM.</p>		<p>OPERATOR READ NOTE</p>	<p><b>S      U</b></p> <p>COMMENTS:</p>

\* Critical Step



<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
24. <u>CAUTION:</u> CARE MUST BE USED WHEN PERFORMING STEP 5.7.12.a OR 5.7.12.b TO ENSURE THAT THE CORRECT VALVES ARE PROPERLY ALIGNED		OPERATOR READ CAUTION	<b>S      U</b>  COMMENTS:
25. AS DIRECTED BY THE SM/CRS, ALIGN THE SIS TEST LINE DISCHARGE TO EITHER THE RWST OR THE RECYCLE HOLDUP TANK          STEP 5.7.12	<b>THE CRS DIRECTS YOU TO LEAVE THE SIS TEST LINE DISCHARGE ALIGNED TO THE RWST</b>	OPERATOR PROCEEDED TO STEP 5.7.13	<b>S      U</b>  COMMENTS:
26. AS DIRECTED BY THE SM/CRS, RESTORE THE SI TEST LINE REGULATOR IN ACCORDANCE WITH OTN-EM- 00001          STEP 5.7.13	<b>THE CRS DIRECTS YOU TO LEAVE THE SI TEST LINE REGULATOR AS IS</b>  <b>"THE JPM IS COMPLETE"</b>  RECORD STOP TIME ON PAGE 1	OPERATOR RESTORED THE SI TEST LINE REGULATOR AS DIRECTED BY THE SM/CRS	<b>S      U</b>  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.

SAFETY INJECTION ACCUMULATOR A LEVEL IS 84%.

THE SAFETY INJECTION SYSTEM AND RWST ARE IN A NORMAL LINEUP IAW OTN-EM-00001 AND OTN-BN-00001.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO LOWER SAFETY INJECTION ACCUMULATOR "A" LEVEL TO 78% BY DRAINING IT TO THE RWST, PER OTN-EP-00001 ADDENDUM 1, SECTION 5.7.



# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: SIM C  
JOB TITLE: RO/SRO-I  
DUTY: Reactor Coolant Pumps  
TASK TITLE: Start "B" Reactor Coolant Pump; Trip on High Vibration  
COMPLETION TIME: 15 minutes

KSA NO: 003 A1.01  
KSA RATING: 2.9/2.9

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-BB-00003 Rev 21, "Reactor Coolant Pumps"  
OTO-BB-00002 Rev 26, "RCP Off-Normal"  
OTA-RK-00022 Add. 70A, "Reactor Coolant Pump Vibration Danger"

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 3 at 557 deg F and 2235 psig. "B" Reactor Coolant Pump had been secured for maintenance on #1 seal leakoff isolation valve, BBHV8141B. CCW is in operation and is supplying cooling water to the Thermal Barrier Cooling Coils per OTN-EG-00001.

There are no personnel in Containment at this time.

Initiating Cues: Tags have been cleared on BBHV8141B and signed off.

The Control Room Supervisor has directed you to start "B" RCP per OTN-BB-00003, Section 5.2.

Inform the Control Room Supervisor when the "B" RCP has been started and the lift oil pump is secured.

**Simulator Setup:**

Reset to IC-9, Mode 3 Operations and STOP the "B" RCP, Plant stabilizes  
Close BB HIS-8141B and BB-HIS8351B  
Put System BB10 (RCPs) on Screen #1

Insert Remote Function (BG) BGV0199ASTEM set to 100  
Adjust BG HC-182 to establish 8-13 gpm Seal Injection Flow to RCP "B"

Insert malfunction (BB) CRCPV1\_2, Value = 10, Ramp = 1 min, Delay = 15 sec,  
conditional = x21i116r eq TRUE

Insert malfunction (BB) CRCPV2\_2, Value = 30, Ramp = 1 min, Delay = 15 sec,  
conditional = x21i116r eq TRUE

**ENSURE VIBRATION LEVELS POSTED ON EASEL**

Task Standard: Upon completion of this JPM, the operator will have tripped "B" RCP due to high vibration.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

## **RCP Vibration Data**

All green OK LEDs illuminated solid

RCP B Shaft Vibration 30 mils

RCP B Frame Vibration 10 mils

RCP B Shaft Vibration Rising 5 mils/hr

RCP B Frame Vibration Rising 1 mil/hr

All other RCP Shaft Vibrations are 8.0 mils

All other RCP Frame Vibrations are 1.0 mil

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1. OBTAIN A VERIFIED WORKING COPY OF OTN-BB-00003, REACTOR COOLANT PUMPS	PROVIDE OPERATOR WITH PROCEDURE COPY	OPERATOR OBTAINED PROCEDURE COPY	<b>S      U</b> Comments:
2. REVIEW THE PRECAUTIONS AND LIMITATIONS OF OTN-BB-00003	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR REVIEWED THE PRECAUTIONS AND LIMITATIONS	<b>S      U</b> Comments:
SECTION 3			
3. REVIEW THE PREREQUISITES OF OTN-BB-00003	ALL PREREQUISITES ARE SATISFIED	OPERATOR REVIEWED THE PREREQUISITES	<b>S      U</b> Comments:
SECTION 4			

\* CRITICAL STEP

[illegible]

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
7.	ENSURE DIFFERENTIAL PRESSURE ACROSS BGV0199, RCP B SEAL WTR INJ THROT VLV, DOES NOT EXCEED 1700 PSID  STEP 5.2.2.c	DIFF PRESSURE ACROSS BGV0199 IS 200 PSID	OPERATOR ENSURED DIFFERENTIAL PRESSURE ACROSS BGV0199 IS < 1700 PSID	Comments:
8.	ENSURE SEAL INJECTION TO RCP B IS 8 TO 13 GPM  STEP 5.2.2.d	SEAL INJECTION FLOW TO RCP B IS 8 - 9 GPM ON BG FR-156	OPERATOR ENSURED SEAL INJECTION FLOW TO RCP B IS 8 TO 13 GPM	Comments:
9.	IF REQUIRED, ADJUST BGV0199, RCP B SEAL WTR INJ THROT VLV, USING OSP-BG-00005, SETTING THROTTLE POSITION OF RCP SEAL INJECTION VALVES  STEP 5.2.2.e	ALL RCPs SHOW A FLOW OF 8 TO 9 GPM ON THE BLUE PEN FOR BG FR-157, 156, 155, AND 154	OPERATOR DETERMINED THAT NO ADJUSTMENT IS REQUIRED	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10. IF STARTING THE LAST IDLE RCP, ENSURE RCS TEMPERATURE IS GREATER THAN 140°F	RCS TEMPERATURE IS 557°F	OPERATOR ENSURED RCS TEMPERATURE IS GREATER THAN 140°F	S U  Comments:
STEP 5.2.3			
11. ENSURE THE FOLLOWING ANNUNCIATORS ARE CLEAR:  42C, VCT PRESS HI/LO 71A, RCP #1 SEAL DP LO 73A, RCP #2 SEAL FLOW HI 74D, RCP OIL RSVR LEV HI LO 71C, RCP B THRM BAR CCW FLOW 71E, RCP B STNDPIPE LEV LO	ANNUNCIATORS 42C, 71A, 73A, 74D, 71C, AND 71E ARE CLEAR	OPERATOR ENSURED ANNUNCIATORS 42C, 71A, 73A, 74D, 71C, AND 71E ARE CLEAR	S U  Comments:
STEP 5.2.4			

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>12. ENSURE THE FOLLOWING:</p> <p>RCP MOTOR BEARING RTD TEMPERATURES ARE ALL LESS THAN 190°F</p> <p>STEP 5.2.5</p>	<p>RCP MOTOR BEARING RTD TEMPERATURES ALL INDICATE LESS THAN 190°F</p>	<p>OPERATOR ENSURED RCP MOTOR BEARING RTD TEMPERATURES ARE ALL LESS THAN 190°F</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>13. ENSURE THE FOLLOWING:</p> <p>RCP #1 SEAL DIFF PRESSURE GREATER THAN 200 PSID</p> <p>STEP 5.2.5</p>	<p>RCP #1 SEAL DIFF PRESSURE GREATER THAN 200 PSID</p>	<p>OPERATOR ENSURED RCP #1 SEAL DIFF PRESSURE IS GREATER THAN 200 PSID</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>14. ENSURE THE FOLLOWING:</p> <p>RCP #1 SEAL BACK PRESSURE GREATER THAN 15 PSIG VCT PRESSURE</p> <p>STEP 5.2.5</p>	<p>RCP #1 SEAL BACK PRESSURE IS GREATER THAN 15 PSIG VCT PRESSURE</p>	<p>OPERATOR ENSURED RCP #1 SEAL BACK PRESSURE IS GREATER THAN 15 PSIG VCT PRESSURE</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP



<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
15. AT RL022 USING RECORDER BG FR-156, ENSURE RCP B #1 SEAL LEAKOFF IS WITHIN THE NORMAL OPERATING RANGE PER ATTACHMENT 3  STEP 5.2.6	BG FR-156 INDICATES 3 GPM #1 SEAL LEAKOFF FLOW	USING BG FR-156 THE OPERATOR ENSURED RCP B #1 SEAL LEAKOFF IS WITHIN THE NORMAL OPERATING RANGE PER ATTACHMENT 3	<b>S      U</b>  Comments:
16. IF SEAL LEAKOFF FLOW IS GREATER THAN THE NORMAL OPERATING RANGES THEN ENGINEERING SHOULD CONTACTED BEFORE THE RCP IS STARTED  STEP 5.2.7	BG FR-156 INDICATES 3 GPM #1 SEAL LEAKOFF FLOW	USING BG FR-156 THE OPERATOR ENSURED RCP B #1 SEAL LEAKOFF IS WITHIN THE NORMAL OPERATING RANGE PER ATTACHMENT 3	<b>S      U</b>  Comments:
17. IF SEAL LEAKOFF FLOW DOES NOT EXCEED THE MINIMUM OPERATING FLOW PERFORM THE FOLLOWING STEPS. IF LEAKOFF FLOW IS NORMAL PROCEED TO STEP 5.2.9  STEP 5.2.8	LEAKOFF FLOW IS NORMAL	OPERATOR PROCEEDED TO STEP 5.2.9	<b>S      U</b>  Comments:

\* CRITICAL STEP

[illegible]

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
*24. WAIT 10-15 SECONDS, THEN USE BB HIS-38, RCP B, AND START RCP B	AFTER OPERATING BB HIS-38, THE RED LIGHT IS ON AND GREEN LIGHT IS OFF	OPERATOR STARTED RCP B	<b>S      U</b> Comments:
STEP 5.2.13			
25. AFTER RCP B STARTS MONITOR THE FOLLOWING PARAMETERS:  RCP STARTING CURRENT, AMMETERS PEGS FOR 15 TO 20 SECONDS  RCP RUNNING CURRENT, 351 AMPS MAX  RCP LOOP FLOW, SLOWLY INCREASES AS PUMP SPEED INCREASES	STARTING CURRENT PEGS FOR 20 SECONDS AFTER PUMP STARTS AND THEN LOWERS TO 250 AMPS  RCP LOOP FLOW, SLOWLY INCREASES AS PUMP SPEED INCREASES	OPERATOR MONITORED RCP B STARTING CURRENT  OPERATOR MONITORED RCP LOOP FLOW	<b>S      U</b> Comments:
STEP 5.2.12			

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
*26. ACKNOWLEDGE ANNUNCIATORS  70A AND 70B	ANNUNCIATORS 70A AND 70B LIGHT.	OPERATOR DETERMINED THAT ANNUNCIATORS 70A (RCP VIB DANGER) AND 70B (RCP VIB/SYS ALERT) ARE LIT, AND ACKNOWLEDGES THEM. BOTH ARE UNEXPECTED.	<b>S      U</b>  Comments:
27. GO TO ANNUNCIATOR RESPONSE PROCEDURE 70A/B		OPERATOR RETRIEVED OTA FOR 70A and 70B.	<b>S      U</b>  Comments:
28. GO TO OTO-BB- 00002, RCP OFF- NORMAL       STEP 3.1		OTO 70A DIRECTED OPERATOR GO TO OTO-BB-00002, RCP OFF-NORMAL	<b>S      U</b>  Comments:
29. CHECK ALL RCPs – RUNNING       STEP 1	ALL RCPs RUNNING	OPERATOR VERIFIED ALL RCPs ARE RUNNING	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
30. GO TO ONE OF THE FOLLOWING ATTACHMENTS, AS APPLICABLE: ATTACHMENT A, RCP HIGH VIBRATION  STEP 2		OPERATOR WENT TO OTO-BB-00002 ATT. A	<b>S U</b> Comments:
31. NOTE: RCP VIBRATION SHOULD BE MONITORED AT RP312, BB YI-471  ATTACHMENT A		OPERATOR READS NOTE AND PROCEEDED TO RP312, BB YI-471  (BACKPANEL EASEL)	<b>S U</b> Comments:
32. CHECK RCP VIBRATION LEVEL:  ALL RCPs VIBRATION ON THE FRAME – LESS THAN 5 MILS  ALL RCPs VIBRATION ON THE SHAFT – LESS THAN 20 MILS  STEP A1	FRAME VIBRATION = 10 MILS  SHAFT VIBRATION = 30 MILS	OPERATOR READ VIBRATIONS ON THE FRAME AND SHAFT, ACKNOWLEDGES THEY ARE GREATER THAN THE LIMIT.	<b>S U</b> Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
33. PERFORM ONE OF THE FOLLOWING: IF REACTOR POWER IS LESS THAN 48% (P-8 EXTINGUISHED), THEN GO TO ATTACHMENT E, RCP TRIP LESS THAN 48%  STEP A1 RNO	REACTOR POWER IS LESS THAN 48%	OPERATOR WENT TO OTO-BB-00002 ATTACHMENT E.	<b>S      U</b>  Comments:
*34. TRIP THE AFFECTED RCP          STEP E1	AFTER OPERATING BB HIS-38, THE RED LIGHT IS OFF AND GREEN LIGHT IS ON	OPERATOR PLACED RCP "B" CONTROL SWITCH IN STOP	<b>S      U</b>  Comments:
THE JPM IS COMPLETE	<u><b>RECORD STOP TIME ON PAGE 1</b></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 3 at 557 deg F and 2235 psig. "B" Reactor Coolant Pump had been secured for maintenance on #1 seal leakoff isolation valve, BBHV8141B. CCW is in operation and is supplying cooling water to the Thermal Barrier Cooling Coils per OTN-EG-00001.

There are no personnel in Containment at this time.

Initiating Cues: Tags have been cleared on BBHV8141B and signed off.

The Control Room Supervisor has directed you to start "B" RCP per OTN-BB-00003, Section 5.2.

Inform the Control Room Supervisor when the "B" RCP has been started and the lift oil pump is secured.



# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: Sim D - CR  
JOB TITLE: RO / SROI  
DUTY: MAIN FEEDWATER  
TASK TITLE: FWIS Bypass Operation  
COMPLETION TIME: 10 MINUTES

KSA NO: 059A4.11  
KSA RATING: 3.1 / 3.3  
REVISION: 2010

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   X   SIMULATOR/LAB        PLANT        CLASSROOM       

METHOD OF PERFORMANCE: SIMULATED   X   PERFORMED       

REFERENCES: EOP Addendum 29, FWIS BYPASS OPERATION, Rev. 02

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 was in Mode 1 when an earthquake occurred causing a Reactor Trip and Loss of all Auxiliary Feedwater Pumps.

The crew has transitioned to FR-H.1, Response to Loss of Secondary Heat Sink, and is now Trying to Establish Main Feedwater Flow to at least One Steam Generator.

Initiating Cues: The Control Room Supervisor now directs you to BYPASS the FWIS for all of the FWIVs using EOP Addendum 29, FWIS Bypass Operation.

Task Standard: Upon completion of this JPM, the operator will have completed all steps of EOP Addendum 29 and informed the CRS. This will be Simulated at the Control Room Backpanels.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1. Obtain a Verified Working Copy of EOP Addendum 29, FWIS BYPASS OPERATION	Provide operator with procedure copy	Operator obtained procedure copy	<b>S U</b> Comments:
2. <u>CAUTION:</u> This procedure causes the FWIV(s) that are in bypass to be INOPERABLE.  CAUTION prior to Step 1		Operator reviewed the CAUTION  (should circle and slash the word CAUTION)	<b>S U</b> Comments:
3. <u>NOTES:</u>  • This procedure is entered from FR-H.1, Response To Loss Of Secondary Heat Sink, Step 5.d, when FWIV can NOT be opened.  • To open a FWIV, the toggle switches on both MSFIS Cabinets SA075A and SA075B must be selected to FWIS BYPASS  NOTE prior to Step 1		Operator reviewed the NOTES  (should circle and slash the word NOTES)	<b>S U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*4. BYPASS The FWIS:</p> <ul style="list-style-type: none"> <li>On Emergency Override Panel at MSFIS Cabinet SA075A, Place FWIV toggle switch(es) for desired FWIV(s) to FWIS BYPASS position:               <ul style="list-style-type: none"> <li>AE-FV-39 (SG A)</li> <li>AE-FV-40 (SG B)</li> <li>AE FV-41 (SG C)</li> <li>AE FV-42 (SG D)</li> </ul> </li> <li>On Emergency Override Panel at MSFIS Cabinet SA075B, Place FWIV toggle switch(es) for desired FWIV(s) to FWIS BYPASS position:               <ul style="list-style-type: none"> <li>AE-FV-39 (SG A)</li> <li>AE-FV-40 (SG B)</li> <li>AE FV-41 (SG C)</li> <li>AE FV-42 (SG D)</li> </ul> </li> </ul> <p>Step 1</p>	<p><b>As each toggle switch is Simulated to be operated - CUE the candidate that the toggle switch is moved to the “down position”</b></p> <p><b>(down is the FWIS position)</b></p>	<p>All FWIV toggle switches on both SA075A and SA075B have been moved to the FWIS BYPASS position</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*5. RESET the FWIV FAST CLOSE Output:</p> <ul style="list-style-type: none"> <li>On A7 Test Panel at MSFIS Cabinet SA075A, PRESS OP (open) button for FWIV(s) placed in FWIS BYPASS in Step 1:               <ul style="list-style-type: none"> <li>AE-FV-39 (SG A)</li> <li>AE-FV-40 (SG B)</li> <li>AE FV-41 (SG C)</li> <li>AE FV-42 (SG D)</li> </ul> </li> <li>On A7 Test Panel at MSFIS Cabinet SA075B, PRESS OP (open) button for FWIV(s) placed in FWIS BYPASS in Step 1:               <ul style="list-style-type: none"> <li>AE-FV-39 (SG A)</li> <li>AE-FV-40 (SG B)</li> <li>AE FV-41 (SG C)</li> <li>AE FV-42 (SG D)</li> </ul> </li> </ul> <p>Step 2</p>	<p>Note to examiner: Ensure the candidate is on the bottom section of the panel, since the top section is MSIVs and not FWIVs</p> <p><b>As each switch is Simulated to be PRESSED - CUE the candidate that the OP button has been depressed for each FWIV</b></p>	<p>Operator PRESSED Only the OP (open) button for each individual FWIV on both MSFIS Cabinets</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>6. NOTIFY SS/CRS of FWIS Bypass Status</p> <p>Step 3</p>	<p><b>The CRS acknowledges the FWIS is BYPASSED</b></p> <hr/> <p><b>The JPM is Complete</b></p> <p>Record Stop Time on Page 1</p>	<p>Operator Notified CRS of FWIS Bypass Status and completion of EOP Addendum 29</p>	<p><b>S      U</b></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: The Callaway Plant was in Mode 1 when an earthquake occurred causing a Reactor Trip and Loss of all Auxiliary Feedwater Pumps.

The crew has transitioned to FR-H.1, Response to Loss of Secondary Heat Sink, and is now Trying to Establish Main Feedwater Flow to at least One Steam Generator.

Initiating Cues: The Control Room Supervisor now directs you to BYPASS the FWIS for all of the FWIVs using EOP Addendum 29, FWIS Bypass Operation.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: SIM E KSA NO: 026 A4.01  
JOB TITLE: RO / SROI/ SROU KSA RATING: 4.5 / 4.3  
DUTY: Containment Integrity / Containment Spray  
TASK TITLE: Align Containment Spray for Recirculation  
COMPLETION TIME: 10 min

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: ES-1.3, Transfer to Cold Leg Recirculation

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: A Large Break LOCA has occurred inside Containment. The Crew has completed the actions of ES-1.3, Transfer to Cold Leg Recirculation, through step 5.

RWST Level has decreased to less than 12%.

Initiating Cues: You are directed to complete the actions of ES-1.3, Transfer to Cold Leg Recirculation, Step 6.

- Notes:
1. Initilize using any Mode 1 – 3 IC. (IC-9 preferred)
  3. Open the power supply breaker to BN HV-3, Containment Spray  
Insert Remote Function (NG) NG02ABF1, Value = OPEN  
Insert Override Light (BN) HWX17O100R, Value = TRUE  
Override BN HV-3 related lights on the “B” ESF Status Panel  
Override Crywolf Alarms (SA) SA066Y\_A10A, Value = Fail Off  
Override Crywolf Alarms (SA) SA066Y\_A11A, Value = Fail Off  
Override Crywolf Alarms (SA) SA066Y\_B10A, Value = Fail Off
  2. Insert a large break LOCA inside containment at a break size to initiate CSAS.  
Insert Malfunction (BB) BB001\_D, Value = 75,0000
- Perform actions of ERGs through step 5 of ES 1.3. Freeze simulator /make temporary IC with RWST level at 12% AND Annunciator 47B, RWST Lev LoLo 2  
Insert Plant Parameter (BN) TBN01TAZTLIL, Adjust the value until  $\leq$  12%

Task Standard: Train ‘A’ Containment Spray Pump is RUNNING in the RECIRCULATING LINEUP. Train ‘B’ Containment Spray Pump is stopped and EN HIS-7 (BN HV-3), Containment Recirc Sump to Contaiment Spray Pump is CLOSED.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1. OBTAIN A VERIFIED WORKING COPY OF ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.	PROVIDE OPERATOR WITH PROCEDURE COPY	OPERATOR OBTAINED PROCEDURE COPY	<b>S U</b> Comments:
2. VERIFY CONTAINMENT SPRAY PUMPS ARE RUNNING.  • EN HIS-3  • EN-HIS-9  Step 6.a	SIMULATOR INDICATION	OPERATOR VERIFIED BOTH CONTAINMENT SPRAY PUMPS ARE RUNNING.	<b>S U</b> Comments:
3. VERIFY RWST LEVEL IS LESS THAN 12%.  Step 6.b	RWST LEVEL INDICATORS AND/OR ANNUNCIATOR 47B, RWST LEVEL LOLO 2 is lit.	OPERATOR CHECKED RWST LEVEL IS <12%.	<b>S U</b> Comments

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
*4. RESET CSAS <ul style="list-style-type: none"> <li>• SB HS-51</li> <li>• SB HS-54</li> </ul>          Step 6.c	SIMULATOR INDICATION OF CSAS RESET.	OPERATOR RESET CSAS USING SB HS- 51 AND SB HS-54.	<b>S      U</b>  Comments
*5 OPEN CONTAINMENT SPRAY PUMP SUCTION VALVES HV-1 AND HV-7          Step 6.d	SIMULATOR INDICATION OF EN HIS-1 AND EN HIS-7 OPEN	OPERATOR OPENED EN HIS-1 AND EN HIS-7.	<b>S      U</b>  Comments
6. MONITOR CONTAINMENT SPRAY PUMP DISCHARGE FLOW          Step 6.e	SIMULATOR INDICATION OF CONTAINMENT SPRAY PUMP DISCHARGE FLOW.	OPERATOR VERIFIED CONTAINMENT SPRAY PUMP FLOWS USING FT-5 AND FT-11.	<b>S      U</b>  Comments

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
*7. CLOSE RWST TO CONTAINMENT SPRAY PUMP VALVES BN HIS-4 AND BN HIS-3.          Step 6.e	BN HIS-3 WILL NOT CLOSE ELECTRICALLY.  (Alternate Path)	OPERATOR OPENED BN HIS-4 AND ATTEMPTED TO OPEN BN HIS-3.	<b>S      U</b>  Comments
*8. STOP CONTAINMENT SPRAY PUMP 'B', EN HIS-9 (BN HV-3)       Step 6.e RNO 1)	SIMULATOR INDICATION OF CONTAINMENT SPRAY PUMP 'B' STOPPED.	EN-HIS-9 (BN HV-3), IN STOP OR PULL- TO-LOCK.	<b>S      U</b>  Comments
*9. CLOSE RECIRC SUMP TO CONTAINMENT SPRAY PUMP VALVE EN-HIS-7 (BN HV-3)       Step 6.e RNO 2)	SIMULATOR INDICATION OF EN- HIS-7 CLOSED	EN HIS-7 (BN HV-3) IS <b><u>CLOSED</u></b> AND EN HIS-9 (BN HV-3) <b><u>CONTAINMENT</u></b> <b><u>SPRAY PUMP 'B'</u></b> <b><u>NOT RESTARTED.</u></b>	<b>S      U</b>  Comments

\* 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: A Large Break LOCA has occurred inside Containment. The Crew has completed the actions of ES-1.3, Transfer to Cold Leg Recirculation, through step 5.

RWST Level has decreased to less than 12%.

Initiating Cues: You are directed to complete the actions of ES-1.3, Transfer to Cold Leg Recirculation, Step 6.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM No: Sim F  
Job Title: RO / SROI  
Duty: Safety Related Elec. Gen. & Dist.  
Task Title: Manually Start Diesel Generators  
Completion Time: 10 minutes

KSA No: 055 EA1.02  
KSA Rating: 4.3 / 4.4  
Revision: 2011, rev1

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: ECA-0.0, Loss of All AC Power, Rev. 12

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 was in Mode 3 at Normal Operating Pressure and Temperature when an improper switching order caused a loss of both NB buses.

The crew has completed ECA-0.0, Loss of All AC Power up to and including step 4

Initiating Cues: The Control Room Supervisor directs you to continue in the procedure by performing all applicable sections of step 5 of ECA-0.0

Inform the CRS when you have completed this step.

**SETUP:**

Using any IC with rods withdrawn while keeping the Simulator in FREEZE

- 1) Insert Remote Function (KJ) DGBLOCK\_1, Value = Defeat
- 2) Insert Remote Function (KJ) DGBLOCK\_2, Value = Defeat
- 3) Insert Remote Function (EF) JLOASBI8\_11, Value = Inhibit
- 4) Insert Remote Function (MD) N3PCB3B, Value = Open
- 5) Insert Remote Function (PA) LOAPA201, Value = Trip
- 6) GO TO RUN

Task Standard: Upon completion of this JPM, the operator will have manually started the "A" and "B" DGs, re-energized NB01 and NB02, then Manually Start ESW Pump "A".

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

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



<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1. Obtain a copy of ECA-0.0	Provide operator with procedure copy	Operator obtained procedure copy and went to Step 5 of the procedure	<b>S U</b> Comments:
2. TRY To Restore Power to Any AC Emergency Bus  Energize AC emergency bus with diesel generator:  Check Both DGs Running - NO  Step 5.a.1)		Operator observed that neither DG A nor DG B is running	<b>S U</b> Comments:
*3. Manually START DG(s)  Step 5.a RNO 1)	Alternate Path	Operator Started Both DG(s) by depressing start Pushbuttons:  KJ HS-8A  KJ HS-108A	<b>S U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4. ENERGIZE AC emergency bus with diesel generator</p> <p>CHECK AC emergency buses – AT LEAST ONE ENERGIZED</p> <ul style="list-style-type: none"> <li>• NB01 - YES</li> <li>• NB02 - YES</li> </ul> <p>Step 5.a 2)</p>		Operator observed that both NB Buses are energized	<p><b>S      U</b></p> <p>Comments:</p>
<p>5. CHECK AC emergency buses – AT LEAST ONE ENERGIZED</p> <p>NB01 – YES</p> <p><u>OR</u></p> <p>NB02 - YES</p> <p>Step 5.b</p>		Operator determined at Least ONE NB BUS is Energized	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>*6. CHECK ESW associated with energized AC emergency bus(es) - RUNNING</p> <p>EF HIS-55A NOT RUNNING</p> <p>EF HIS-56A RUNNING</p> <p>Step 5.c</p>	Alternate Path	<p>Operator verified:</p> <p>“A” ESW Pump IS NOT running</p> <p>“B” ESW Pump IS running</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*7. PERFORM the following:</p> <p>ENSURE ESW To UHS valves are OPEN</p> <ul style="list-style-type: none"> <li>• EF HIS-37</li> <li>• EF HIS-38</li> </ul> <p>Step 5.c RNO c.1)</p>		<p>Operator verified:</p> <p>ESW to UHS valve are OPEN</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*8. PERFORM the following:</p> <p>START ESW Pump(s) as necessary</p> <p>Step 5.c RNO c.2)</p>		<p>Operator started ESW Pump “A” using:</p> <p>EF HIS-55A</p>	<p><b>S      U</b></p> <p>Comments</p>

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>9. PERFORM the following:</p> <p>IF any DG is running with NO cooling water THEN STOP affected DG(s)</p> <p>Step 5.c RNO c.3)</p>		<p>Operator verified that both DGs are now running with appropriate cooling water</p> <p>Continued to next step</p>	<p><b>S      U</b></p> <p>Comments</p>
<p>10. Return To procedure and step in effect and IMPLEMENT Functional Restoration Procedures as necessary</p> <p>Step 5.d</p>	<p>Acknowledge as the CRS that Step 5 of ECA-0.0 is complete</p> <p><b>The JPM is Complete</b></p> <hr/> <p><b>Record Stop Time on Page 1</b></p>	<p>Operator Completed Step 5 of ECA-0,0 and reports to CRS actions that were necessary.</p>	<p><b>S      U</b></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 was in Mode 3 at Normal Operating Pressure and Temperature when an improper switching order caused a loss of both NB buses.

The crew has completed ECA-0.0, Loss of All AC Power up to and including step 4

Initiating Cues: The Control Room Supervisor directs you to continue in the procedure by performing all applicable sections of step 5 of ECA-0.0

Inform the CRS when you have completed this step.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: Sim G rev.1 KSA NO: 073 A4.03  
JOB TITLE: RO / SROI KSA RATING: 3.1/3.2  
DUTY: Instrumentation / Process Radiation Monitoring System  
TASK TITLE: Radiation Monitors Source Check  
COMPLETION TIME: 15 Mins

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-SP-00001, Radiation Monitors Source Check  
OTA-SP-RM011, Radiation Monitor Control Panel RM-11  
OOA-SP-00002, Process Monitor Tech Spec/ FSAR Actions  
FSAR Section 16

TOOLS/EQUIPMENT: Copy of OSP-SP-00001, Radiation Monitors Source Check

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.

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

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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**Notes: Inform the Candidate to disregard conditions in other areas of the Simulator and focus solely on RM-11, in the Initial Conditions stated by the JPM.**

Task Standard: The operator will have successfully source checked two (2) Radiation Monitors and responded to the failure of a source check of a third. All critical tasks evaluated as satisfactory.

This JPM can be run on any Mode 1 Initial Condition.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>1. Review Precautions and Limitations &amp; Prerequisites of OSP-SP-00001</p> <p>Sections 4.0 and 5.0</p>		<p>Precautions and Limitations reviewed by the Operator</p> <p>Prerequisites reviewed by the Operator.</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>2.Note: Source checks are performed on RM-11 computer console with a display and printer message.</p> <p>Monitors may be checked in any order as long as steps specific to performing a source check are performed in order.</p> <p>Note prior to Step 6.1</p>	<p><b>If asked</b>, cue the operator to perform the radiation monitor source checks in the order listed in the procedure.</p>	<p>Note was read by the Operator</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE S U
<p>3. <b>NOTE:</b> After one minute the source check test will end, the CHECK SOURCE indicating lights will go off, and the status display will clear the channel CHECK SOURCE ENERGIZED. The test is SAT unless the status display indicates channel CHECK SOURCE TEST FAILED. In addition to status display indication, failure of the test will be indicated by a printer message ALM CHECK SOURCE TEST FAILED.</p> <p>Note prior to Step 6.1.1</p>		<p>Note was read by the Operator</p>	<p>Comments:</p>
<p>4.* SELECT BM-RE-52, Channel 526 Steam Generator Blowdown Discharge Channel for display on RM-11</p> <p>Step 6.1.1.a</p>	<p><b>BM-RE-52 (526)</b></p>	<p>On RM-11 panel: 526 typed SELECT Pushed White box around BML526 observed</p>	<p>S U</p> <p>Comments:</p>

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>7*. Upon test sequence completion, CIRCLE SAT or UNSAT on Attachment 1</p> <p>If UNSAT Refer to OTA-SP-RM-11, Radiation monitor Control Panel RM-11</p> <p>Step 6.1.1.f and g</p>	<b>BM-RE-52 (526)</b>	<p>Operator observed that after one minute the CHECK SOURCE Indicating lights will go off, and the "Status Display" will clear the CHECK SOURCE ENERGIZED – the Normal Operating Condition Box is lit</p> <p>SAT circled on BM-RE-52 on Att. 1</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>8. <b>NOTE:</b> After one minute the source check test will end, the CHECK SOURCE indicating lights will go off, and the status display will clear the channel CHECK SOURCE ENERGIZED. The test is SAT unless the status display indicates channel CHECK SOURCE TEST FAILED. In addition to status display indication, failure of the test will be indicated by a printer message ALM CHECK SOURCE TEST FAILED.</p> <p>Note prior to Step 6.2.1</p>		<p>Note was read by the Operator</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>		<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
9.* SELECT GT-RE-21B, Channel 214 Unit Vent Lo Range, for display on RM-11  Step 6.2.1.a		<b>GT-RE-21B (214)</b>	On RM-11 panel:  214 typed  SELECT Pushed  White box around GTG214 observed	<b>S      U</b>  Comments:
10*.PRESS the STATUS key to display channel status  Step 6.2.1. b		<b>GT-RE-21B (214)</b>	Status Function Key – PRESSED  “Status Display” displayed on RM-11.	<b>S      U</b>  Comments:
11*.Press the CHECK SOURCE key and check the indicating lights are ON.  CHECK the RM-11 status display indicates channel CHECK SOURCE ENERGIZED  CHECK the printer message is CHECK SOURCE ENERGIZED  Step 6.2.1 c, d, e		<b>GT-RE-21B (214)</b>	CHECK SOURCE key pressed  Indicating lights lit  CHECK SOURCE ENERGIZED indicated    CHECK SOURCE ENERGIZED printed on printer	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>12*. Upon test sequence completion, CIRCLE SAT or UNSAT on Attachment 1</p> <p>If UNSAT Refer to OTA-SP-RM-11, Radiation monitor Control Panel RM-11</p> <p>Step 6.2.1.f and g</p>	<b>GT-RE-21B (214)</b>	<p>Operator observed that after one minute the CHECK SOURCE Indicating lights will go off, and the "Status Display" will clear the CHECK SOURCE ENERGIZED – the Normal Operating Condition Box is lit</p> <p>SAT circled on GT-RE-21B for Channel 214 on Att. 1</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>13.*SELECT GT-RE-21B, Channel 215 Unit Vent Mid Range, for display on RM-11</p> <p>Step 6.2.2.a</p>	<b>GT-RE-21B (215)</b>	<p>On RM-11 panel:</p> <p>215 typed</p> <p>SELECT Pushed</p> <p>White box around GTG215 observed</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>14*.PRESS the STATUS key to display channel status</p> <p>Step 6.2.2. b</p>	<b>GT-RE-21B (215)</b>	<p>Status Function Key – PRESSED</p> <p>"Status Display" displayed on RM-11.</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>15*. Press the CHECK SOURCE key and check the indicating lights are ON.</p> <p>CHECK the RM-11 status display indicates channel CHECK SOURCE ENERGIZED</p> <p>CHECK the printer message is CHECK SOURCE ENERGIZED</p> <p>Step 6.2.2 c, d, e</p>	<p><b>GT RE-21B (215)</b></p> <p><b>CUE – After 30 secs</b></p> <p><b>“Status Display” Screen indicates “Channel Check Source TEST Failed”</b></p> <p><b>Printer Message reads: “ALM CHECK SOURCE TEST FAILED”</b></p>	<p>CHECK SOURCE key pressed</p> <p>Indicating lights lit</p> <p>CHECK SOURCE ENERGIZED indicated</p> <p>CHECK SOURCE ENERGIZED printed on printer</p>	<p><b>S      U</b></p> <p>Comments:</p> <p><b>NOTE: The Simulator cannot simulate these conditions.</b></p> <p><b>Therefore, the examiner will need to impress upon the operator that these are the conditions that exist, and NOT those shown on the “Status Display”</b></p>
<p>16*. Upon test sequence completion, CIRCLE SAT or UNSAT on Attachment 1</p> <p>If UNSAT Refer to OTA-SP-RM-11, Radiation monitor Control Panel RM-11</p> <p>Step 6.2.2.f and g</p>	<p><b>ALTERNATE PATH</b></p> <p><b>Operator will address OTA-SP-RM011, Radiation Monitor Control Panel RM-11, which is located next to RM11 panel</b></p>	<p>Operator recognized that the source check for Channel 215 Unit Vent Mid Range has failed.</p> <p>UNSAT circled on GT-RE-21B for Channel 215 on Att. 1</p> <p>Operator determined the need to Refer to OTA-SP-RM011, Radiation Monitor Control Panel RM-11</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP



<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
18. If any condition makes the monitor inoperable, Refer to OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions.  OTO-SP-RM011, Att 16 Step 3g	<b>EXAMINER NOTE:</b>  <b>Operator will address OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions, which is located next to RM11 panel</b>	Operator recognized that GT-RE-21B Hi Range , has failed its Source Check and that OOA-SP-00002, Process Monitor Tech Spec/FSAR Actions, must be addressed	<b>S      U</b>  Comments:
19*. Referring to posted OOA-SP-00002 for GT-RE-21 (Gas) Tech Spec/ FSAR Actions  OOA-SP-00002, Page 1	<b>This JPM is complete</b>	Operator recognized that FSAR 16.11.2.4 Table 16.11-5 Item 1a, and 16.3.3.4, Table 16.3-7 item 3 needs to be addressed.	<b>S      U</b>  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.

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

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: Sim H KSA NO: 029K4.03  
JOB TITLE: RO Only KSA RATING: 3.2 / 3.5  
DUTY: CONTAINMENT PURGE  
TASK TITLE: REINITIATE CTMT PURGE FOLLOWING CPIS  
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: OTN-GT-00001, CONTAINMENT PURGE SYSTEM, REV 26

TOOLS/EQUIPMENT: Copy of OTN-GT-00001 with Section 5.1 completed.

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 3. A CONTAINMENT MINI-PURGE WAS IN PROGRESS TO REDUCE NOBLE GAS CONCENTRATIONS PRIOR TO A CONTAINMENT ENTRY.

THIRTY MINUTES AGO, A CPIS OCCURRED DUE TO AN INSTRUMENT SPIKE ON GT RE-22, CTMT PURGE EXH GAS DETECTOR.

THE CAUSE OF THE SPIKE ON GT RE-22 HAS BEEN DETERMINED AND CORRECTED. **CONTROL BUILDING HVAC HAS BEEN REALIGNED.**

Initiating Cues: YOU HAVE BEEN DIRECTED TO **REINITIATE** CONTAINMENT MINI-PURGE PER OTN-GT-00001, SECTION 5.6.

INFORM THE CONTROL ROOM SUPERVISOR WHEN THE CTMT MINI PURGE SUPPLY DAMPERS ARE OPEN AND THE SUPPLY FAN IS RUNNING.

Notes: USE ANY MODE 3 IC.  
MANUALLY INITIATE A CPIS (BOTH TRAINS)

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE REINITIATED CONTAINMENT MINI-PURGE.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1. OBTAIN A VERIFIED WORKING COPY OF OTN-GT-00001	PROVIDE OPERATOR WITH PROCEDURE COPY	OPERATOR OBTAINED PROCEDURE COPY	<b>S      U</b> Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR REVIEWED PRECAUTIONS AND LIMITATIONS	<b>S      U</b> Comments:
SECTION 3			
3. REVIEW PREREQUISITES	OUTSIDE TEMPERATURE IS EXPECTED TO REMAIN GREATER THAN 50°F CHECKLIST 1, 2 AND 3 ARE COMPLETE	OPERATOR REVIEWED PREREQUISITES	<b>S      U</b> Comments:
SECTION 4			

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4. AS A NORMAL OPERATIONAL PRACTICE, A CONTAINMENT PURGE SHOULD NOT BE STOPPED AND RESTARTED W/O TERMINATING THE GASEOUS RW RELEASE PERMIT.</p> <p>HOWEVER, UNDER SPECIAL CONDITIONS AND AT SM DISCRETION, A CONTAINMENT PURGE MAY BE STOPPED AND RESTARTED W/O TERMINATING THE PERMIT.</p> <p>CAUTION BEFORE SECTION 5.6</p>	<p><b>SM AUTHORIZES RELEASE TO BE RECOMMENCED USING THE PREVIOUS RELEASE PERMIT</b></p>	<p>OPERATOR READ AND UNDERSTOOD CAUTION CONCERNING STOPPING AND STARTING RELEASE PERMIT</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5. ENSURE TIME BETWEEN STOPPING AND RESTARTING PURGE WILL NOT EXCEED TWO HOURS</p> <p>STEP 5.6.1</p>	<p>30 MINUTES HAVE ELAPSED SINCE THE PURGE WAS STOPPED (GIVEN IN INITIAL CONDITIONS)</p>	<p>OPERATOR SHOULD ENSURE LESS THAN TWO HOURS SINCE PURGE WAS STOPPED</p>	<p><b>S      U</b></p> <p>Comments:</p>

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>6. REQUEST RAD/CHEM TECHNICIAN (COUNT ROOM) ENSURE ALARM/TRIP SETPOINTS FOR THE FOLLOWING ARE CORRECT PER GASEOUS RADWASTE RELEASE PERMIT:</p> <p>GTRE0021B GTRE0022 GTRE0033</p> <p>STEP 5.6.2</p>	<p><b>THE COUNT ROOM TECHNICIAN HAS ENSURED SETPOINTS CORRECT PER THE RELEASE PERMIT</b></p>	<p>OPERATOR CONTACTED COUNT ROOM TECHNICIAN TO ENSURE SETPOINTS ARE CORRECT</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>7. IF READINGS ON ANY OF THE MONITORS IN STEP 5.6.2 ARE GREATER THAN HI-HI ALARM SETPOINT, REQUEST RAD/CHEM TECHNICIAN (COUNT ROOM) PERFORM THE FOLLOWING:</p> <p>CLOSE THE PERMIT</p> <p>RESAMPLE CTMT</p> <p>GENERATE A NEW PERMIT</p> <p>STEP 5.6.3</p>	<p>NO READINGS ON ANY OF THE MONITORS IN STEP 5.6.2 ARE GREATER THAN HI-HI ALARM SETPOINT</p>	<p>OPERATOR ENSURED NO READINGS ON ANY OF THE MONITORS IN STEP 5.6.2 ARE GREATER THAN HI- HI ALARM SETPOINT</p>	<p><b>S      U</b></p> <p>Comments:</p>

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>8. IF ANY BISTABLE TRIP LIGHTS ARE LIT ON SA036D OR SA036E, PERFORM THE FOLLOWING:</p> <p>RECORD WHICH TRIP LIGHTS LIT IN RO DAILY LOG</p> <p>DEPRESS AFFECTED TRIP LIGHTS TO RESET</p> <p>STEP 5.6.4</p>	<p>NO BISTABLE TRIP LIGHTS ARE LIT ON SA036D OR SA036E</p>	<p>OPERATOR ENSURED ALL BISTABLE TRIP LIGHTS RESET ON SA036D AND SA036E</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*9. IF CONTROL ROOM VENT ISOLATION OR CONTAINMENT PURGE ISOLATION ARE ACTUATED ON SA066X, OBTAIN SM/CRS PERMISSION AND PRESS APPLICABLE RESET:</p> <p>SA HS-9, CRVIS A SA HS-11, CPIS A</p> <p>STEP 5.6.5</p>	<p>CONTAINMENT PURGE ISOLATION IS ACTUATED ON SA066X</p> <p>CRS GRANTS PERMISSION TO RESET CPIS ON SA066X</p>	<p>OPERATOR PRESSED RESET ON SA HS-11</p>	<p><b>S      U</b></p> <p>Comments:</p>

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<p>*10. IF CONTROL ROOM VENT ISOLATION OR CONTAINMENT PURGE ISOLATION ARE ACTUATED ON SA066Y, OBTAIN SM/CRS PERMISSION AND PRESS APPLICABLE RESET:</p> <p>SA HS-13, CRVIS B SA HS-15, CPIS B</p> <p>STEP 5.6.6</p>	<p>CONTAINMENT PURGE ISOLATION IS ACTUATED ON SA066Y</p> <p>CRS GRANTS PERMISSION TO RESET CPIS ON SA066Y</p>	<p>OPERATOR PRESSED RESET ON SA HS-15</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>11. IF CPIS OR CRVIS LIGHTS ARE LIT ON ESFAS STATUS PANELS, RESET USING THE FOLLOWING:</p> <p>SA HS-23, SA066X SA HS-24, SA066Y</p> <p>STEP 5.6.7</p>	<p>CPIS LIGHTS ARE LIT ON ESFAS STATUS PANELS</p>	<p>OPERATOR RESET ESFAS STATUS PANEL LIGHTS USING SA HS-23 AND SA HS-24</p>	<p><b>S      U</b></p> <p>Comments:</p>





<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
15. ENSURE SECTION 5.1 HAS BEEN PERFORMED  STEP 5.2.1	SECTION 5.1 OF THIS PROCEDURE HAS BEEN PERFORMED AND DOES NOT NEED TO BE RE-PERFORMED	OPERATOR ENSURED SECTION 5.1 HAS BEEN PERFORMED  (COPY PROVIDED SHOULD HAVE SECTION 5.1 COMPLETED)	<b>S      U</b>  Comments:
16. ENSURE SHUTDOWN PURGE SYSTEM IS NOT IN SERVICE  STEP 5.2.2	SHUTDOWN PURGE SYSTEM IS NOT IN SERVICE	OPERATOR ENSURED SHUTDOWN PURGE SYSTEM IS NOT IN SERVICE	<b>S      U</b>  Comments:
17. MONITOR THE FOLLOWING INSTRUMENTATION  SDRE0041 (R0041H) SDRE0042 (R0042H) GT PDI-40 (GTD0040)  STEP 5.2.3	SDRE0041 (R0041H) SDRE0042 (R0042H) GT PDI-40 (GTD0040)  ARE ALL STABLE.	OPERATOR MONITORED:  SDRE0041 (R0041H) SDRE0042 (R0042H) GT PDI-40 (GTD0040)	<b>S      U</b>  Comments:

[illegible]

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
20. IF IN MODES 5 OR 6 AND NOT PREPARING FOR ENTRY INTO MODE 4, ENSURE THE FOLLOWING ARE IN BYPASS:  GTRT22 GTRT33  STEP 5.2.6	THE PLANT IS IN MODE 3	OPERATOR GOES TO STEP 5.2.7	<b>S      U</b>  Comments:
*21. USING GT HIS-20, CTMT MINI PURGE EXH FAN & DAMPER, START CGT02          STEP 5.2.7	CTMT MINI-PURGE EXH FAN INDICATES RUN AND DAMPER INDICATES OPEN	OPERATOR STARTED CGT02	<b>S      U</b>  Comments:
*22. USING GT HIS-11, CTMT MINI PURGE EXH INNER CTMT ISO, OPEN GTHZ0011          STEP 5.2.8	GT HIS-11 INDICATES OPEN	OPERATOR OPENED GTHZ0011	<b>S      U</b>  Comments:





TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE S U
*29. WHEN CTMT PRESSURE < 4.25", PERFORM THE FOLLOWING:  OPEN GT HIS-26 OPEN GT HIS-27          STEP 5.2.15	GT HIS-26 GT HIS-27 INDICATE OPEN	OPERATOR OPENED GT HIS-26 AND GT HIS-27	S U  Comments:
*30. USING GT HIS-23, CTMT MINI PURGE AIR SPLY UNIT, START SGT02          STEP 5.2.16	GT HIS-23 INDICATES RUN	OPERATOR STARTED SGT02	S U  Comments:
*31. USING GT HIS-5, CTMT MINI PURGE AIR SPLY CTMT ISO, OPEN GTHZ0005          STEP 5.2.17	GT HIS-5 INDICATES OPEN	OPERATOR OPENED GTHZ00005	S U  Comments:

[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 3. A CONTAINMENT MINI-PURGE WAS IN PROGRESS TO REDUCE NOBLE GAS CONCENTRATIONS PRIOR TO A CONTAINMENT ENTRY.

THIRTY MINUTES AGO, A CPIS OCCURRED DUE TO AN INSTRUMENT SPIKE ON GT RE-22, CTMT PURGE EXH GAS DETECTOR.

THE CAUSE OF THE SPIKE ON GT RE-22 HAS BEEN DETERMINED AND CORRECTED. **CONTROL BUILDING HVAC HAS BEEN REALIGNED.**

Initiating Cues: YOU HAVE BEEN DIRECTED TO **REINITIATE** CONTAINMENT MINI-PURGE PER OTN-GT-00001, SECTION 5.6.

INFORM THE CONTROL ROOM SUPERVISOR WHEN THE CTMT MINI PURGE SUPPLY DAMPERS ARE OPEN AND THE SUPPLY FAN IS RUNNING.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM No: In-Plant I KSA No: 061K4.07  
Job Title: RO/ SROI KSA Rating: 3.1 / 3.3  
Duty: Auxiliary Feedwater System (AL) Revision 2010  
Task Title: Reset TDAFP Mechanical Overspeed Trip  
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 \_\_\_\_\_ Plant   X   Classroom \_\_\_\_\_

Method of Performance: Simulated   X   Performed \_\_\_\_\_

References: OTN-AL-00001, Addendum 01, Turbine Driven Auxiliary Feedwater Pump Trip/Throttle Valve Trip Check and Reset, R002

Tools / Equipment: Personal Protective (Safety) Equipment

FACILITY REPRESENTATIVE: // \_\_\_\_\_ // DATE: \_\_\_\_\_

CHIEF EXAMINER: // \_\_\_\_\_ // DATE: \_\_\_\_\_

JPM NO: In Plant I

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.

Operations is performing the mechanical trip verification portion of OSP-AL-P0002, Turbine Driven Aux Feedwater Pump Inservice Test – Group B.

Initiating Cues: The Control Room Supervisor directs you to reset the mechanical overspeed trip per OTN-AL-00001, Addendum 01, Turbine Driven Auxiliary Feedwater Pump Trip/Throttle Valve Trip Check and Reset.

Notes: **All operator actions are to be simulated.**

Task Standard: Upon completion of this JPM, the operator will have demonstrated the ability to reset the TDAFP turbine mechanical overspeed trip.

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

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

[illegible]

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*4. MOVE linkage towards FCHV0312, AFP TURB MECH TRIP/THROT HV, and PUSH down on Tappet Nut to verify it is completely seated</p> <p>Step 3.2.1.a/b</p>	<p><b>The linkage has been moved towards FCHV0312 and the Tappet Nut has been pushed down to verify it is completely seated</b></p>	<p>Operator demonstrated the ability to move linkage towards FCHV0312 and push down on Tappet Nut to verify it is completely seated</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>*5. Slowly RELEASE FCHV0312 linkage so Head Lever rests against the flat side of Tappet Nut</p> <p>Step 3.2.1.c</p>	<p><b>FCHV0312 linkage has been released and Head Lever is resting against the flat side of Tappet Nut</b></p>	<p>Operator demonstrated the ability to slowly release FCHV0312 linkage so Head Lever rests against the flat side of Tappet Nut</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>6. ENSURE vertical face-to-face contact between Tappet Nut and Head Lever per Figure 2</p> <p>Step 3.2.2</p>	<p><b>There is vertical face-to-face contact between Tappet Nut and Head Lever per Figure 2</b></p>	<p>Operator demonstrated the ability to ensure vertical face-to-face contact between Tappet Nut and Head Lever per Figure 2</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* Critical Step

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7. CHECK FCZL0312DA, TDAFP MECHANICAL OVERSPEED RESET INDICATOR LIGHT, on RL005 is lit          Step 3.2.3	The Control Room Operator reports that FCZL0312DA is lit	Operator demonstrated the ability to check FCZL0312DA is lit	S U  Comments:
	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.

Initial Conditions: Callaway Plant is in Mode 1.

Operations is performing the mechanical trip verification portion of OSP-AL-P0002, Turbine Driven Aux Feedwater Pump Inservice Test – Group B.

Initiating Cues: The Control Room Supervisor directs you to reset the mechanical overspeed trip per OTN-AL-00001, Addendum 01, Turbine Driven Auxiliary Feedwater Pump Trip/Throttle Valve Trip Check and Reset.

Notes: **All operator actions are to be simulated.**

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: In Plant J (RCA) KSA NO: 068AK3.18  
REVISION: 20100423 KSA RATING: 4.2 / 4.5  
JOB TITLE: URO/ SROI/ SROU  
DUTY: EMERGENCY ACTIONS  
TASK TITLE: EVACUATION OF CONTROL ROOM - BOP  
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-ZZ-00001, CONTROL ROOM INACCESSIBILITY, ATT B, REV 33

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: THE CALLAWAY PLANT WAS AT 100% POWER WHEN THE SHIFT MANAGER DIRECTED A CONTROL ROOM EVACUATION DUE TO A FIRE. THE REACTOR WAS TRIPPED AND THE MSIV'S WERE CLOSED. YOU ARE THE BALANCE OF PLANT OPERATOR AND HAVE COMPLETED THE ACTIONS OUTSIDE OF THE RCA.

Initiating Cues: YOU HAVE BEEN DIRECTED TO CONTINUE THE ACTIONS OF OTO-ZZ-00001, ATTACHMENT B, STARTING WITH STEP B13.

NOTIFY THE SHIFT MANAGER WHEN STEP B19 IS COMPLETE

**ALL EQUIPMENT MANIPULATIONS ARE TO BE SIMULATED**

Task Standard: UPON COMPLETION OF THIS JPM, SG ATMOSPHERIC STEAM DUMPS A AND C, EGHV0061, AND BGHV8105 WILL BE CLOSED.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1. OBTAIN A VERIFIED WORKING COPY OF OTO-ZZ-00001, CONTROL ROOM INACCESSIBILITY, ATTACHMENT B	PROVIDE OPERATOR WITH PROCEDURE COPY	OPERATOR OBTAINED PROCEDURE COPY	<b>S U</b> Comments:
2. ENTER THE RCA AND PROCEED TO THE MSIV VALVE ROOM (AREA 5)  STEP B13.		OPERATOR ENTERED THE RCA AND PROCEEDED TO THE MSIV VALVE ROOM (AREA 5)	<b>S U</b> Comments:
*3. CLOSE ABPV0001, SG A ATMS STEAM DUMP BY PERFORMING THE FOLLOWING:  CLOSE MAN AIR/N2 ISO FOR MS LOOP 1 ABPV0001:  ABV0733  OPEN MAN AIR SPLY DRN VLV FOR MS LOOP 1 ABPV0001:  ABV0734  STEP B14.	ABV0733 IS CLOSED  ABV0734 IS OPEN	OPERATOR DEMONSTRATED ABILITY TO CLOSE ABV0733 AND OPEN ABV0734	<b>S U</b> Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*4. CLOSE ABPV0003, SG C ATMS STEAM DUMP BY PERFORMING THE FOLLOWING:</p> <p>CLOSE MAN AIR/N2 ISO FOR MS LOOP 3 ABPV0003:</p> <p>ABV0737</p> <p>OPEN MAN AIR SPLY DRN VLV FOR MS LOOP 3 ABPV0003:</p> <p>ABV0738</p> <p>STEP B15.</p>	<p>ABV0737 IS CLOSED</p> <p>ABV0738 IS OPEN</p>	<p>OPERATOR DEMONSTRATED ABILITY TO CLOSE ABV0737 AND OPEN ABV0738</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5. PROCEED TO NORTH PIPING PEN ROOM (AB 2000 RM 1323)</p> <p>STEP B16.</p>		<p>OPERATOR PROCEEDED TO NORTH PIPING PEN ROOM</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
*6. LOCALLY CLOSE CCW FROM RCP THRM BAR OUTER CTMT ISO: (PEN 76)  EGHV0061  STEP B17.	EGHV0061 IS CLOSED	OPERATOR DEMONSTRATED ABILITY TO CLOSE EGHV0061	<b>S      U</b>  Comments:
*7. LOCALLY CLOSE CVCS CHARGING HDR TO REGEN HX OUTER CTMT ISO VLV: (PEN 80)  BGHV8105  STEP B18.	BGHV8105 IS CLOSED	OPERATOR DEMONSTRATED ABILITY TO CLOSE BGHV8105	<b>S      U</b>  Comments:
9. NOTIFY SM AT THE ASP THAT BOP VALVE AND BREAKER ALIGNMENTS NECESSARY TO START THE FOLLOWING ARE COMPLETE:  CCW PUMP B CCW PUMP D  STEP B19.	SM ACKNOWLEDGES  ANOTHER OPERATOR WILL COMPLETE THE REMAINING STEPS OF OTO-ZZ-00001, ATTACHMENT B	OPERATOR DEMONSTRATED THE ABILITY TO NOTIFY SM AT THE ASP THAT BOP VALVE AND BREAKER ALIGNMENTS NECESSARY TO START THE FOLLOWING ARE COMPLETE:  CCW PUMP B CCW PUMP D	<b>S      U</b>  Comments:
10. JPM COMPLETE	<b><u>RECORD STOP TIME ON PAGE 1</u></b>		<b>S      U</b>  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 WAS AT 100% POWER WHEN THE SHIFT MANAGER DIRECTED A CONTROL ROOM EVACUATION DUE TO A FIRE. THE REACTOR WAS TRIPPED AND THE MSIV'S WERE CLOSED. YOU ARE THE BALANCE OF PLANT OPERATOR AND HAVE COMPLETED THE ACTIONS OUTSIDE OF THE RCA.

Initiating Cues: YOU HAVE BEEN DIRECTED TO CONTINUE THE ACTIONS OF OTO-ZZ-00001, ATTACHMENT B, STARTING WITH STEP B13.

NOTIFY THE SHIFT MANAGER WHEN STEP B19 IS COMPLETE

**ALL EQUIPMENT MANIPULATIONS ARE TO BE SIMULATED**

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

JPM NO: In-Plant K KSA NO: 062A2.10  
JOB TITLE: URO/SRO KSA RATING: 3.0 / 3.3  
DUTY: SAFETY RELATED ELEC GEN & DIST  
TASK TITLE: SWITCH FROM SWING CHARGER NK25 TO NORMAL CHARGER NK21  
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-NK-00001 ADD 01, 125 VDC BUS NK01 AND DIST SYSTEM, R002  
OTA-NK-00001, ANNUNCIATOR RESPONSE PROCEDURE 125 VDC CLASS 1E  
PANEL NK01

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: THE PLANT IS IN MODE 5 FOLLOWING A REFUELING OUTAGE.

SWING CHARGER NK25 IS SUPPLYING DC BUS NK01 WHILE NORMAL CHARGER NK21 IS OUT OF SERVICE FOR SCHEDULED MAINTENANCE.

NK77 IS CURRENTLY BEING SUPPLIED FROM NG0109

Initiating Cues: MAINTENANCE IS COMPLETE ON NORMAL BATTERY CHARGER NK21. YOU HAVE BEEN DIRECTED TO SWITCH DISTRIBUTION SWITCHBOARD NK01 FROM SWING CHARGER NK25 TO NORMAL CHARGER NK21 PER OTN-NK-00001, ADDENDUM 1. INFORM THE CONTROL ROOM SUPERVISOR WHEN NK01 IS BEING SUPPLIED BY NK21.

Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED.

Task Standard: UPON COMPLETION OF THIS JPM, BATTERY CHARGER NK25 WILL BE BACK IN SERVICE TO DISTRIBUTION SWITCHBOARD NK01, DUE TO CHARGER NK21 OUTPUT BREAKER TRIPPING OPEN.

START TIME: \_\_\_\_\_

STOP TIME: \_\_\_\_\_

<b>TASK NUMBER - ELEMENT</b>		<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
1.	OBTAIN A VERIFIED WORKING COPY OF OTN-NK-00001, ADDENDUM 01	PROVIDE OPERATOR WITH PROCEDURE	OPERATOR OBTAINED PROCEDURE COPY	<b>S      U</b> Comments:
2.	REVIEW PRECAUTIONS AND LIMITATIONS	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR REVIEWED THE PRECAUTIONS AND LIMITATIONS	<b>S      U</b> Comments:
SECTION 3				
3.	REVIEW THE PREREQUISITES	THERE ARE NO PREREQUISITES	OPERATOR DETERMINED THAT THERE ARE NO PREREQUISITES	<b>S      U</b> Comments:
SECTION 4				

\* CRITICAL STEP



TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
4. OBTAIN THE TRAIN A KEYSWITCH (KEY #137) FROM THE CONTROL ROOM		<b>YOU HAVE POSSESSION OF KEY #137</b>	OPERATOR DEMONSTRATED THE ABILITY TO OBTAIN KEY #137	<b>S U</b> Comments:
STEP 5.2.1				
5. <u>NOTE</u> : ONE KEY FITS ALL THE TRAIN A KEYSWITCHES. THE HANDSWITCHES AND KEYSWITCHES SPRING RETURN TO NEUTRAL. SWITCH POSITION IS VERIFIED BY INDICATING LIGHTS.			OPERATOR READ NOTE	<b>S U</b> Comments:
6. RECORD CHARGER CURRENT AT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, (CB2000).  _____ AMPS		<b>CHARGER CURRENT AT NK25 IS 38 AMPS</b>	OPERATOR RECORDED CHARGER CURRENT AT NK25 GIVEN AS 38 AMPS	<b>S U</b> Comments:
STEP 5.2.2				

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*7. PERFORM THE FOLLOWING TO ENERGIZE NK21, 125 VDC VITAL BATT CHG #1:</p> <p>CLOSE NG0103, FDR BKR TO NK21 125 VDC VITAL BATTERY CHARGER.</p> <p>STEP 5.2.3.a</p>	<p><b>BREAKER NG0103, INDICATES CLOSED</b></p>	<p>OPERATOR CLOSED NG0103</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>8. AT NK21:</p> <p>ENSURE THE EQUALIZE TIMER IS SET TO ZERO</p> <p>STEP 5.2.3.b.1</p>	<p><b>THE EQUALIZE TIMER IS SET TO ZERO</b></p>	<p>OPERATOR ENSURED THE EQUALIZE TIMER IS SET TO ZERO</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>9. AT NK21:</p> <p>ENSURE THE FLOAT/EQUALIZE SWITCH IS SELECTED TO FLOAT</p> <p>STEP 5.2.3.b.2</p>	<p><b>THE FLOAT/EQUALIZE SWITCH IS SELECTED TO FLOAT</b></p>	<p>OPERATOR ENSURED THE FLOAT/EQUALIZE SWITCH IS SELECTED TO FLOAT</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
<b>*10. AT NK21:</b>  CLOSE CB2, DC POWER          STEP 5.2.3.b.3	<b>CB2 IS CLOSED</b>	OPERATOR CLOSED CB2	<b>S      U</b>  Comments:
<b>*11. AT NK21:</b>  CLOSE CB1, AC POWER          STEP 5.2.3.b.4	<b>CB1 IS CLOSED</b>	OPERATOR CLOSED CB1	<b>S      U</b>  Comments:
<b>12. AT NK21:</b>  AFTER 5 MINUTES, CHECK NK21 FLOAT VOLTAGE IS 134 TO 136 VDC          STEP 5.2.3.b.5	<b>5 MINUTES HAS ELAPSED</b>  <b>NK21 FLOAT VOLTAGE IS 135 VDC</b>	OPERATOR WAITED 5 MINUTES AND READ NK21 FLOAT VOLTAGE GIVEN AS 135 VDC	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
13. AT NK21:  IF VOLTAGE ADJUSTMENT IS NECESSARY, NOTIFY THE SYSTEM ENGINEER VIA SS/CRS   STEP 5.2.3.b.6		<b>NK21 FLOAT VOLTAGE IS 135 VDC</b>	OPERATOR DETERMINED NO ADJUSTMENT IS NECESSARY AND PROCEEDED TO STEP 5.2.3.b.7	<b>S      U</b>  Comments:
14. AT NK21:  WHEN VOLTAGE ADJUSTMENT HAS BEEN PERFORMED, CHECK NK21 FLOAT VOLTAGE IS 134 TO 136 VDC   STEP 5.2.3.b.7		NO VOLTAGE ADJUSTMENT WAS NECESSARY,	OPERATOR DETERMINED NO ADJUSTMENT WAS NECESSARY AND PROCEEDED TO STEP 5.2.4	<b>S      U</b>  Comments:
15. <u>NOTE</u> :IF BATTERY NK11 IS NOT CONNECTED TO BUS NK01, NK01 WILL BE MOMENTARILY DEENERGIZED DURING THE TRANSFER			OPERATOR READS NOTE	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
16. CHECK BATTERY NK11 IS CONNECTED TO BUS NK01 AS FOLLOWS:  ENSURE NK0109, TO RESISTIVE LOAD FOR DISCH TEST OF BATT NK11, IS OFF  STEP 5.2.4		NK0109 IS OFF	OPERATOR CHECKED NK0109 OFF	Comments:
17. CHECK BATTERY NK11 IS CONNECTED TO BUS NK01 AS FOLLOWS:  ENSURE NK0101, ALT FDR BKR TO NK01 FROM NK11 FULS, IS ON  STEP 5.2.4		NK0101 IS ON	OPERATOR CHECKED NK0101 ON	Comments:
18. <u>NOTE:</u> THE FOLLOWING STEP DISCONNECTS NK25 AND LEAVES IT IN THE NORMAL STANDBY LINEUP.			OPERATOR READS NOTE	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>*19. AT NK71, DC TRANSFER SWITCH NK21/NK25 TO NK01(CB 2016):</p> <p>PLACE NKHS0011, HANDSWITCH TO CONTROL NK71 TRANSFER SWITCH, TO NK21</p> <p>STEP 5.2.5.a</p>	<p>NKHS0011 IS IN THE NK21 POSITION</p> <p><b><u>ALT PATH:</u></b></p> <p><b>NK01 ANNUNCIATOR 4B, “CHARGER DC BREAKER OPEN,” ALARMS</b></p> <p>IF ASKED, NK01 VOLTAGE = 125VDC.</p> <p>IF ASKED, NK11 BATT CURRENT = 38 AMPS</p>	<p>OPERATOR PLACED NKHS0011 TO THE NK21 POSITION</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>20. OBTAIN A COPY OF OTA-NK-00001 Add 4B, “CHARGER DC BREAKER OPEN”</p>	<p>ANNUNCIATOR RESPONSE PROCEDURE SHOULD BE ON STATION.</p> <p><b>PROVIDE COPY OF OTA-NK-00001</b></p>	<p>OPERATOR OBTAINED ANNUNCIATOR RESPONSE PROCEDURE.</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
21. ON THE IN-SERVICE CHARGER, CHECK THE FOLLOWING CLOSED:  NK21 CB2, BATTERY CHARGER NK21 DC OUTPUT CIRCUIT BREAKER  STEP 3.1		<b>NK21 CB2 IS MID-POSITION</b>  IF OPERATOR ASKS, NK25 CB2 IS CLOSED.	OPERATOR CHECKS NK21 CB2 CLOSED AND DISCOVERED IT IS OPEN.	<b>S U</b>  Comments:
22. IF REQUIRED, PLACE THE ALTERNATE BATTERY CHARGER IN SERVICE PER OTN-NK-00001, CLASS 1E 125 VDC ELECTRICAL SYSTEM.  STEP 3.2		<b>THE CRS DIRECTS YOU TO PLACE SWING CHARGER NK25 BACK IN SERVICE PER OTN-NK-00001 ADD. 1</b>	OPERATOR IS REQUESTED TO PLACE SWING CHARGER NK25 BACK IN SERVICE.	<b>S U</b>  Comments:
23. REFER TO OTN-NK-00001 Add 1, Sect 5.1, "SWITCHING DIST SWBD NK01 FROM NORMAL CHARGER NK21 TO SWING CHARGER NK25"			OPERATOR REFERS TO OTN-NK-00001 ADD 1.	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
24. OBTAIN THE TRAIN A KEYSWITCH (#137) FROM THE CONTROL ROOM		OPERATOR ALREADY HAS KEY #137	OPERATOR RECOGNIZES HE IS ALREADY IN POSSESSION OF KEY #137	Comments:
STEP 5.1.1				
25. ENSURE THAT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, IS AVAILABLE FOR SERVICE PER THE FOLLOWING:  AT NK77, NK25 AC POWER SOURCE TRANSFER SWITCH (CB2000):  CHECK THE RED LIGHT AT NKHS0109, HANDSWITCH FOR LOAD CENTER BREAKER NG0109, IS ON.		<b>NK25 IS POWERED FROM NG0109</b>  <b>NKHS0109 RED LIGHT IS ON.</b>	OPERATOR VERIFIED NKHS0109 RED LIGHT IS ON.	Comments:
STEP 5.1.2.a				

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
26. AT NK77, NK25 AC POWER SOURCE TRANSFER SWITCH (CB2000):  CHECK THE NK25 POWERED FROM NG0109 LIGHT ON.   STEP 5.1.2.a	<b>NK25 POWERED FROM NG0109 LIGHT ON.</b>	OPERATOR CHECKED NK25 POWERED FROM NG0109 LIGHT ON.	<b>S      U</b>  Comments:
27. AT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, CHECK THE FOLLOWING: (CB2000)  CB1, AC POWER IS ON   STEP 5.1.2.c	<b>CB1, AC POWER IS ON</b>	OPERATOR CHECKED CB1, AC POWER IS ON	<b>S      U</b>  Comments:
28. AT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, CHECK THE FOLLOWING: (CB2000)  CB2, DC POWER IS ON   STEP 5.1.2.c	<b>CB2, DC POWER IS ON</b>	OPERATOR CHECKED CB2, AC POWER IS ON	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>		<b>SCORE</b>	
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	
29. AT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, CHECK THE FOLLOWING: (CB2000)  VOLTAGE IS APPROX. 135 VDC  STEP 5.1.2.c	<b>VOLTAGE IS 135 VDC</b>	OPERATOR CHECKS VOLTAGE IS APPROX. 135 VDC	<b>S      U</b>  Comments:
30. AT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, CHECK THE FOLLOWING: (CB2000)  RED AC ON LIGHT IS ENERGIZED  STEP 5.1.2.c	<b>RED AC ON LIGHT INDICATES ENERGIZED</b>	OPERATOR CHECKED AC ON LIGHT ENERGIZED	<b>S      U</b>  Comments:
31. AT NK25, SWING BATTERY CHARGER FOR 125 VDC GROUPS 1 AND 3, CHECK THE FOLLOWING: (CB2000)  EQUALIZE TIMER IS SET TO ZERO  STEP 5.1.2.b	<b>EQUALIZE TIMER IS SET TO ZERO</b>	OPERATOR CHECKED NK25 EQUALIZE TIMER IS SET TO ZERO	<b>S      U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
35. ENSURE BATTERY NK11 IS CONNECTED TO BUS NK01 BY CHECKING THE FOLLOWING:  ENSURE NK0109, TO RESISTIVE LOAD FOR DISCH TEST OF BATT NK11, IS OFF  STEP 5.1.4		NK0109 IS OFF	OPERATOR CHECKED NK0109 OFF	S U  Comments:
36. ENSURE BATTERY NK11 IS CONNECTED TO BUS NK01 BY CHECKING THE FOLLOWING:  ENSURE NK0101, ALT FDR BKR TO NK01 FROM NK11 FULS, IS ON  STEP 5.1.4		NK0101 IS ON	OPERATOR CHECKED NK0101 IS ON	S U  Comments:
37. RECORD CHARGER CURRENT AT NK21, 125 VDC VITAL BATT CHG #1 (CB2016):  _____ AMPS  STEP 5.1.5		CURRENT = 0 AMPS.  OPERATOR MAY RECOGNIZE THAT WITH NK21 NOT SUPPLYING NK01, BATT CURRENT BETTER MEETS THE INTENTION OF THIS STEP.  IF ASKED, NK11 BATT CURRENT = 38 AMPS	OPERATOR CHECKED NK21 CURRENT AND RECORDED IT	S U  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
38. AT NK71, DC TRANSFER SWITCH NK21/NK25 TO NK01(CB 2016):  CHECK THE WHITE NK25 ENERGIZED LIGHT ON.  STEP 5.1.6.a	<b>NK25 ENERGIZED LIGHT ON.</b>	OPERATOR CHECKED WHITE NK25 ENERGIZED LIGHT ON.	<b>S      U</b>  Comments:
39. AT NK71, DC TRANSFER SWITCH NK21/NK25 TO NK01(CB 2016):  CHECK THE NK03 TIED TO NK23 LIGHT ON.  STEP 5.1.6.b	<b>NK03 TIED TO NK23 LIGHT ON.</b>	OPERATOR CHECKED NK03 TIED TO NK23 LIGHT ON.	<b>S      U</b>  Comments:
40. AT NK71, DC TRANSFER SWITCH NK21/NK25 TO NK01(CB 2016):  CHECK THE NK25 ALIGNED TO NK01 LIGHT ON.  STEP 5.1.6.c	<b>NK25 ALIGNED TO NK01 LIGHT ON.</b>	OPERATOR CHECKED NK25 ALIGNED TO NK01 LIGHT ON.	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
*41. AT NK71, DC TRANSFER SWITCH NK21/NK25 TO NK01(CB 2016):  PLACE NKHS0011, HANDSWITCH TO CONTROL NK71 TRANSFER SWITCH, TO NK25.  STEP 5.1.6.d	<b>NKHS0011 HANDSWITCH IS ON NK25.</b>	OPERATOR PLACED NKHS0011 HANDSWITCH TO “NK25” POSITION	<b>S      U</b>  Comments:
42. AT NK71, DC TRANSFER SWITCH NK21/NK25 TO NK01(CB 2016):  CHECK THE NK01 TIED TO NK25 LIGHT ON.  STEP 5.1.6.e	<b>NK01 TIED TO NK25 LIGHT ON.</b>	OPERATOR CHECKED NK01 TIED TO NK25 LIGHT ON.	<b>S      U</b>  Comments:
43. AT NK01,CHECK ANNUNCIATOR 5B, SWING CHGR IN USE, IS ON  STEP 5.1.7	<b>ANNUNCIATOR 5B, SWING CHGR IN USE, IS ON</b>	OPERATOR CHECKED ANNUNCIATOR 5B, SWING CHGR IN USE, IS ON	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
44. AT RL016,CHECK ANNUNCIATOR 20F, SWING CHGR NK25 IN SERVICE, IS ON		ANNUNCIATOR 20F, SWING CHGR NK25 IN SERVICE, IS ON	OPERATOR CHECKED ANNUNCIATOR 20F, SWING CHGR NK25 IN SERVICE, IS ON	S U Comments:
STEP 5.1.8				
45. CHECK THE NK01 BUS VOLTAGE IS BETWEEN 131 AND 140 VDC ON BOTH THE LOCAL AND CONTROL ROOM VOLTMETERS		NK01 BUS VOLTAGE IS 137 VDC ON THE LOCAL AND CONTROL ROOM METERS	OPERATOR CHECKED THE NK01 BUS VOLTAGE IS BETWEEN 131 AND 140 VDC ON BOTH THE LOCAL AND CONTROL ROOM VOLTMETERS	S U Comments:
STEP 5.1.9				
46. IF NK21 IS TO BE DE-ENERGIZED, PERFORM THE FOLLOWING:  OPEN CB1, AC BREAKER, AT NK21		CB1 IS OPEN	OPERATOR OPENED CB1	S U Comments:
STEP 5.1.10.a				

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
47. IF NK21 IS TO BE DE-ENERGIZED, PERFORM THE FOLLOWING:  OPEN CB2, DC BREAKER, AT NK21          STEP 5.1.10.b	<b>CB2 IS ALREADY OPEN</b>	OPERATOR CHECKED CB2 ALREADY OPEN	<b>S      U</b>  Comments:
48. IF NK21 IS TO BE DE-ENERGIZED, PERFORM THE FOLLOWING:  OPEN NG0103, FDR BKR TO NK21 125VDC VITAL BATTERY CHARGER          STEP 5.1.10.c	<b>NG0103 IS OPEN</b>	OPERATOR OPENED NG0103	<b>S      U</b>  Comments:
49. <u>NOTE:</u> THE AMPERAGE READINGS IN STEPS 5.1.5 AND 5.1.11 MAY NOT NECESSARILY BE THE SAME DUE TO METER TOLERANCES.		OPERATOR READS NOTE	<b>S      U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
50. COMPARE THE AMPERAGE ON THE LOCAL AMP METER AT NK25, TO THAT RECORDED IN STEP 5.1.5 TO CHECK THAT NK25 HAS PICKED UP THE LOAD.	STEP 5.1.11	<b>LOCAL AMP METER AT NK25 INDICATES 38 AMPS. WILL NOT MATCH STEP 5.1.5 UNLESS NK11 BATT CURRENT WAS RECORDED.</b>	OPERATOR COMPARED THE AMPERAGE ON THE LOCAL AMP METER AT NK21, TO THAT RECORDED IN STEP 5.1.5	<b>S      U</b>
				Comments:
51. RETURN THE KEYSWITCH TO THE CONTROL ROOM	STEP 5.1.12	<b>THE KEYSWITCH HAS BEEN RETURNED TO THE CONTROL ROOM</b>	OPERATOR RETURNED THE KEYSWITCH TO THE CONTROL ROOM	<b>S      U</b>
				Comments:
52. THE JPM IS COMPLETE		<b><u>RECORD STOP TIME ON PAGE 1</u></b>		<b>S      U</b>
				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 PLANT IS IN MODE 5 FOLLOWING A REFUELING OUTAGE.

SWING CHARGER NK25 IS SUPPLYING DC BUS NK01 WHILE NORMAL CHARGER NK21 IS OUT OF SERVICE FOR SCHEDULED MAINTENANCE.

NK77 IS CURRENTLY BEING SUPPLIED FROM NG0109

Initiating Cues: MAINTENANCE IS COMPLETE ON NORMAL BATTERY CHARGER NK21. YOU HAVE BEEN DIRECTED TO SWITCH DISTRIBUTION SWITCHBOARD NK01 FROM SWING CHARGER NK25 TO NORMAL CHARGER NK21 PER OTN-NK-00001, ADDENDUM 1. INFORM THE CONTROL ROOM SUPERVISOR WHEN NK01 IS BEING SUPPLIED BY NK21.

Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED.

Facility: Callaway	Scenario No.: 1 rev. 1	Op Test No.: 2011301
Examiners: _____	Operators: _____	
_____	_____	
_____	_____	
Initial Conditions:	100% Power, steady state, Middle of Core Life	
Turnover:	Turnover: The Turbine Driven Auxiliary Feedpump has been out of service for 1 hour. Work is scheduled to complete next shift. Lower letdown flow to minimum for ALARA concerns due to maintenance planning walkdown near letdown line.	

Event No.	Malfunction No.	Event Type*	Event Description
1	N/A	SRO (N) RO (N)	Lower letdown flow to minimum.
2 15 min	BGLT0149 TVSP	RO (I) SRO (I)	VCT Level Channel BG LT-149 fails high
3 25 min	AELT0539	SRO (I) (TS) BOP(I)	SG "C" Controlling Level Channel fails low (Tech Spec)
4 35 min	ACPT0505 TVSP	SRO (I) (TS) RO (I) BOP(I)	Turbine Impulse Pressure Channel PT-505 Fails Low (Tech Spec)
5 45 min	EAD05	SRO (C) RO (R) BOP (C)	Loss of Main Condenser Vacuum at a rate requiring rapid controlled shutdown (provide cues as necessary for downpower)
6 60 min	AB003 LOASAS 9XX_2 & 6	SRO (M) RO (M) BOP(M)	Large Steam Line Rupture in Turbine Building with "B" MSIV failing open.
7 N/A	JLOASBI8_2	SRO (C) BOP (C)	Failure of AL HIS-22A, MD AFP B, to automatically start (Integral to scenario)

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	7
2. Malfunctions after EOP entry (1-2)	2
3. Abnormal events (2-4)	4
4. Major transients (1-2)	1
5. EOPs entered/requiring substantive actions (1-2)	2
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical tasks (2-3)	3

**Callaway 2011 NRC Scenario #1**

The plant is operating at 100%, steady state power. The Turbine Driven Auxiliary Feedpump is tagged out for maintenance and will not be returned until next shift. During Turnover the crew is informed they will need to lower letdown flow to minimum for ALARA concerns. Once the crew takes the watch efforts should be made to reduce the amount of letdown flow to 45 gpm in accordance with OTN-BG-00001, Add 4, Operation of CVCS Letdown.

Once Letdown has been lowered, VCT Level Transmitter BG LT-149 fails High, causing the VCT Inlet, BG HV 0112A to Divert to the RHUT. The crew will enter OTO-BG-00004, VCT Level Channel Failures, and place Letdown Divert to VCT position. VCT Level will have to be controlled manually. No Tech Specs apply.

Once VCT Level addressed, Steam Generator "C" Controlling Channel, AE LI-553 fails low. The crew recognizes the failure and selects to an operable channel in accordance with OTO-AE-00002, Steam Generator Water Level Control Malfunctions. Tech Specs 3.3.1 and 3.3.2 apply.

After Tech Specs have been addressed by the SRO, AB PT-505 fails low. The crew should respond per OTO-AC-00003, Turbine Impulse Pressure Channel Failure, place rod control in Manual and Select HP Turbine First Stage Pressure Selector to Operable. Tech Spec 3.3.1 applies.

Once Tech Specs have been addressed and maintenance contacted to repair the failed channels, a Main Condenser Vacuum Leak occurs. The crew observes the degrading vacuum on the Main Control Board and enters OTO-AD-00001, Loss of Condenser Vacuum. The crew sees that vacuum is degrading at a slow continuous rate and starts to reduce turbine load.

Once Turbine Load is reduced to 1200 MWe, a steam Line develops in the Turbine Building which will be seen by the crew as RCS pressure and temperature rapidly lower. The crew will Manually trip the reactor based on these plant conditions. The crew should enter E-0, Reactor Trip or Safety Injection.

The "B" Main Steamline Isolation Valve fails to close in response to the Low Steam Line Pressure. The crew should make efforts to manually isolate the Main Steamlines and complete the isolation of SG 'B' in accordance with E-2, Faulted S/G Isolation, but the "B" SG cannot be isolated.

The "A" MDAFP starts normally, but the "B" MDAFP must be started manually due to malfunction inserted during the setup. The crew will then restore adequate feed to the intact Steam Generators

The scenario will end when the crew gets to the final step of E-2 and starts to transition to ES-1.1, SI Termination

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## Scenario Event Description

NRC Scenario 1 rev. 1

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### Critical Tasks:

Event #2 CT – SG level channel failed low – Select away prior to reactor trip

Event #5 CT – Isolate SG B before a transition out of E-2  
Auxiliary Feedwater Flow supply  
TDAFP steam supply Isolated from SG B

Event #6 CT – Start the MDAFP “B” to establish AFW flow rate greater than 355,000 lbm/hr to the intact SGs before transition out of E-0.

References
OTN-BG-00001, Add 4
OTO-AE-00002
OTO-AC-00003
OTO-AD-00001
OTO-BG-00004
E-0
E-2
ES-1.1

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## Scenario Event Description

NRC Scenario 1 rev. 1

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### **Scenario Setup Guide:**

Establish the initial conditions of IC-161, MOL 100% power:

- RCS boron concentration 960 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

**ENSURE AE LS-539C is selected to L539 for Control**

**ENSURE AC PS-505Z is selected to P505 for Control**

### **=====SCENARIO PRELOADS / SETUP ITEMS=====**

Remove from Service and then place a Tags on Turbine Driven Auxiliary Feedwater Pump

- Run Lesson "AL01TD.Isn"

Steam Line Break outside containment when Load is reduced to less than 1000 MW

- Insert Malfunction (AB) AB003, Value = 2000000, ramp = 60 secs, condition = "sac le 1100"

'B' Main Steam Line Isolation Failure to CLOSE in AUTO or MANUAL

- Insert Remote Function (SA) LOASAS9XX\_2
- Insert Remote Function (SA) LOASAS9XX\_6
- Insert Remote Function (AB) ABHV0017\_AuxM, Value = Connected

Motor Driven Aux Feed Pump 'B' fails to start in Auto

- Insert Remote Function (AL) JLOASBI8\_2, Value = inhibit

### **===== EVENT 2 =====**

VCT Level Channel BG LT-149 fails High

- Insert Malfunction (BG) BGLT0149TVSP, Value = 1.0

### **===== EVENT 3 =====**

SG "C" Controlling Level Channel, AELT539, fails to 0% over 15 sec

- Insert Malfunction (AE) AELT0539, Value = 0, ramp = 15 secs

### **=====EVENT 4=====**

HP Turbine First Pressure Channel PT-505 fails Low over 15 secs

- Insert Malfunction (AC) ACPT0505TVSP, value = 0, ramp = 15 secs

### **=====EVENT 5=====**

Loss of Condenser Vacuum requiring Rapid Plant Shutdown

- Insert Malfunction (AD) EAD05, value = 75

### **=====EVENT 6 PRELOADED=====**

Large Steam Line Rupture in Turbine Building with 'B' MSIV failing OPEN  
SEE PRELOADS ABOVE

### **=====EVENT 7 PRELOADED=====**

Failure of Motor Driven Aux Feed Pump to Start Automatically  
SEE PRELOADS ABOVE

Op Test No.:	2011301	Scenario #	1 rev.1	Event #	1	Page	5	of	25
Event Description: Lower Letdown flow to minimum (45 GPM)									
Time	Position	Applicant's Actions or Behavior							

<b>Booth Operator Instructions</b>		
<ul style="list-style-type: none"> <li>When contacted, respond as Chemistry. Acknowledge that letdown will be lowered to 45 GPM.</li> </ul>		
<b>OTN-BG-00001 Add 4, Operation of CVCS Letdown</b>		
<b>T=0</b>	<b>CRS</b>	(Step 5.7.1) Inform Chemistry letdown is being changed
	<b>RO</b>	(Step 5.7.2) Place BG PK-131, LTDN HX OUTLET PRESS CTRL, in MANUAL and SET Output to control pressure on BG PI-131, LTDN HX OUTLET PRESS, at 400 psig.
	<b>RO</b>	(Step 5.7.3) Close valves below as required to obtain 45 GPM letdown flow rate: <ul style="list-style-type: none"> <li>BG HIS-8149BA, LTDN Orifice B Vlv</li> <li>BG HIS-8149CA, LTDN Orifice C Vlv</li> </ul>
	<b>RO</b>	(Step 5.7.4) Monitor BG PI-131 and Manually control BG PK-131, LTDN HX OUTLET PRESS CTRL, to control Letdown system pressure at approximately 350 psig.
	<b>RO</b>	(Step 5.7.5) When flow and pressure have stabilized, ENSURE BG PI-131 is reading 350 psig, then PLACE BG PK-131 in AUTO
	<b>RO</b>	(Step 5.7.6) MONITOR BG TI-130, LTDN HX OUTLET TEMP, and SLOWLY adjust potentiometer on BG TK-130, LTDN HX OUTLET TEMP CTRL, (3.0 to 4.3 turns) to control Letdown Hx Disch Temp at 95°F to 115°F
		<b>Note:</b> Desired charging flow rate should match letdown flow rate plus total RCP Seal leakoff flow rate.

Op Test No.:	2011301	Scenario #	1 rev.1	Event #	1	Page	6	of	25
Event Description:		Lower Letdown flow to minimum (45 GPM)							
Time	Position	Applicant's Actions or Behavior							

	RO	(Step 5.7.7) LOWER Charging flow to desired flow rate using the NCP controller <ul style="list-style-type: none"> <li>ADJUST BG FK-124, NCP DISCH FLOW CTRL</li> </ul>
	RO	(Step 5.7.8) If NCP is in service, WHEN NCP flow is less than 100 gpm, OPEN BGHV8109 using BG HIS-8109, CVCS NCP RECIRC HV
	RO	(Step 5.7.9) ADJUST BG HC-182, CHG HDR BACK PRESS CTRL, to maintain seal injection flow of approximately 8 gpm per pump as indicated on BG FR-154 thru BG FR-157
	RO	(Step 5.7.10) PLACE in MANUAL and ADJUST BB LK-459, PZR LEV MASTER CTRL, to obtain desired setpoint: <ul style="list-style-type: none"> <li>For 57 gpm charging flow, setpoint is 26 to 30%</li> </ul>
	RO	(Step 5.7.11) IF NCP is in service, PLACE BG FK-121, CCP DISCH FLOW CTRL, in MANUAL and ADJUST to 25% demand.
	RO	(Step 5.7.12) WHEN pressurizer level is being maintained at program level, PLACE the following in AUTO as required: <ul style="list-style-type: none"> <li>BG FK-124, NCP DISCH FLOW CTRL</li> <li>BG LK-459, PZR LEV MASTER CTRL</li> </ul>
At the Discretion of the Lead Examiner Move to Event #2.		



Op Test No.:	2011301	Scenario #	1 rev.1	Event #	2	Page	7	of	25
Event Description:		VCT Level Transmitter BG LT-149 fails High							
Time	Position	Applicant's Actions or Behavior							

<b>Booth Operator Instructions</b> <ul style="list-style-type: none"> <li>T = 15 minutes or at the discretion of the Lead Examiner</li> <li>VCT Level Channel BG LT-149 fails High <ul style="list-style-type: none"> <li>Insert Malfunction (BG) BGLT0149TVSP, Value = 1.0</li> </ul> </li> <li>When contacted, respond as I&amp;C. Acknowledge the request to investigate the instrument/channel failure.</li> <li>When contacted, respond as EDO. Acknowledge entry into the OTO</li> </ul>		
<b>Indications Available:</b>		
<b>T= 15</b>		ANN 42B, VCT LEV HILO ANN 42D, VCT DIVERT TO RHT
<b>OTO-BG-00004, VCT Level Channel Failures</b>		
	<b>CRS</b>	Implement OTO-BG-00004, VCT Level Channel Failures
	<b>RO</b>	(Step 1) Identify Failed VCT Level Channel <ul style="list-style-type: none"> <li>BG LT-149 (BGL0149)</li> </ul>
	<b>CRS/RO</b>	(Step 2) Check Failed VCT Level Channel Identified As – BG LI-112 OR BG LI-185 - NO RNO – GO TO STEP 14
	<b>CRS/RO</b>	(Step 14) Check VCT Level Channel Failed – LOW – NO <ul style="list-style-type: none"> <li>REL0112A</li> <li>BG LI-149 (local)</li> </ul> RNO – Perform the following: <ul style="list-style-type: none"> <li>Place Letdown Flow Divert to VCT &amp; RHT to VCT position</li> <li>Initiate actions to repair the failed component</li> <li>GO TO Step 16</li> </ul>

Op Test No.:	<u>2011301</u>	Scenario #	<u>1 rev.1</u>	Event #	<u>2</u>	Page	<u>8</u>	of	<u>25</u>
Event Description:		VCT Level Transmitter BG LT-149 fails High							
Time	Position	Applicant's Actions or Behavior							

	<b>RO</b>	(Step 16) MAINTAIN VCT level as necessary by cycling BG HIS-112A and initiating manual makeup per OTN-BG-00002, Reactor Makeup Control And Boron Thermal Regeneration System
	<b>CRS</b>	(Step 17) Perform Notifications per ODP-ZZ-00001 Add 13, Shift Manager Communications
<b>At the Discretion of the Lead Examiner Move to Event #3.</b>		

Op Test No.:	2011301	Scenario #	1 rev. 1	Event #	3	Page	9	of	25
Event Description: SG "C" Controlling Level Channel fails low (Tech Spec)									
Time	Position	Applicant's Actions or Behavior							

**Booth Operator Instructions**

- T = 10 minutes or at the discretion of the Lead Examiner
- SG "C" Controlling Level Channel, AELT539, fails to 0% over 15 sec
  - Insert Malfunction (AE) AELT0539, 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 and Tech Spec entry

**Indications Available:**

<b>T= 25</b>		ANN 110C, SG C LEV DEV ANN 110D, SG C FLOW MISMATCH
<b>OTO-AE-00002, Steam Generator Water Level Control Malfunctions</b>		
	<b>CRS</b>	Implement OTO-AE-00002, Steam Generator Water Level Control Malfunctions
	<b>BOP</b>	(Step 1) Check SG Feedwater Flow Instrument Indications – Normal
	<b>BOP</b>	(Step 2) Check SG Steam Flow Instrument Indications - Normal
	<b>BOP</b>	(Step 3) Check SG Level Instrument Indications – Normal – NO <ul style="list-style-type: none"> <li>• SG C – AE LI-539</li> </ul> RNO – Select SG Level Channel Selector to an operable channel: <ul style="list-style-type: none"> <li>• SG C – AE LS-539C</li> </ul>
<b>Critical Task</b>	<b>CREW</b>	<b>SG level channel failed low – Select away prior to reactor trip</b>
	<b>RO</b>	(Step 4) Check Steam Generator NR Level Trending to and/or between 45% to 55%

Op Test No.:	2011301	Scenario #	1 rev. 1	Event #	3	Page	10	of	25
Event Description:		SG "C" Controlling Level Channel fails low (Tech Spec)							
Time	Position	Applicant's Actions or Behavior							

	<b>CRS</b>	(Step 6) Review Attachment A, Effects of Instrument Failure
	<b>CRS</b>	(Step 7) Review Applicable Tech Specs in Attachment F <ul style="list-style-type: none"> <li>• 3.3.1, Table 3.3.1-1, Items 14.a and 14.b, Condition E, 72 hours to trip</li> <li>• 3.3.2, Table 3.3.2-1, Item 5.c and 5.e, Condition I and Condition D, 72 hours to trip</li> <li>• 3.3.2, Table 3.3.2-1, Item 6.d, Condition D, 72 hours to trip</li> </ul>
	<b>CRS</b>	(Step 8) Perform Notifications per ODP-ZZ-00001 Add 13, Shift Manager Communications
<b>At the Discretion of the Lead Examiner Move to Event #4.</b>		

Op Test No.: 2011301 Scenario # 1 rev. 1 Event # 4 Page 11 of 25

Event Description: Turbine Impulse Pressure Channel PT-505 Fails Low (Tech Spec)

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

- HP Turbine First Pressure Channel PT-505 fails Low over 15 secs
  - Insert Malfunction (AC) ACPT0505TVSP, value = 0, ramp = 15 secs
- When contacted, respond as I&C. Acknowledge the request to investigate the instrument/channel failure.
- When contacted as EDO. Acknowledge entry into the OTO and Tech Spec entry.

**Indications Available:**

<b>T= 35</b>		<b>SC0066W WINDOWS LIT (NO AUDIBLE ALARM)</b> <b>ANN 65E, TREF/ TAUCT LO</b>
<b>OTO-AC-00003, Turbine Impulse Pressure Channel Failure</b>		
	<b>CRS</b>	Implement OTO-AC-00003, Turbine Impulse Pressure Channel failure
	<b>RO</b>	(Step 1) Place Rod Control in Manual using SE HS-9
	<b>BOP</b>	(Step 2) Check HP Turbine First Stage Pressure Indicator – FAILED <ul style="list-style-type: none"> <li>• AC PI-505</li> </ul>
	<b>BOP</b>	(Step 3) SELECT HP Turbine First Stage Pressure to Operable Channel <ul style="list-style-type: none"> <li>• AC PS-505Z</li> </ul>
	<b>RO</b>	(Step 4) CHECK RCS Tav <sub>g</sub> within 1.5 °F of Tref If not - restore using rods/ turbine load/ adjust Boron
	<b>CRS/RO</b>	(Step 5) Check Rod Control – IN AUTO RNO - When RCS Tav <sub>g</sub> /Tref are equal AND CRS Concurs, place Rod control in AUTO

Op Test No.: 2011301 Scenario # 1 rev. 1 Event # 4 Page 12 of 25

Event Description: Turbine Impulse Pressure Channel PT-505 Fails Low (Tech Spec)

Time	Position	Applicant's Actions or Behavior
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<i>Note:</i>		<i>The crew may restore rods to previous level at this time</i>
	<b>BOP</b>	(Step 6) Place Steam Dump Bypass Interlock Switches to OFF/RESET <ul style="list-style-type: none"> <li>• AB HS-63</li> <li>• AB HS-64</li> </ul>
	<b>BOP</b>	(Step 7) CHECK the Following Permissives in the Correct State within one hour of the Channel Failure <ul style="list-style-type: none"> <li>• P-7</li> <li>• P-13</li> </ul>
	<b>CRS</b>	(Step 8) Review Applicable Tech Specs. Refer to Att. C <ul style="list-style-type: none"> <li>• 3.3.1, Table 3.3.1-1Item 18.b, Cond T – N/A</li> <li>• 3.3.1, Table 3.3.1-1Item 18.f, Cond T – 1 hour</li> </ul>
	<b>CRS</b>	(Step 9) Review Att A Effects of Turbine Impulse Press Inst Failure
<b>At the Discretion of the Lead Examiner Move to Event #5.</b>		

Op Test No.: 2011301 Scenario # 1 rev. 1 Event # 5 Page 13 of 25

Event Description: Loss of Condenser Vacuum Requiring Rapid Load Reduction

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

- Insert Malfunction(AD) EAD05, Value = 75
- When contacted, respond as Operations Tech to investigate the cause of the Loss of Vacuum.

**Indications Available:**

<b>T=45</b>		<b>Automatic Starting of Standby Condenser Vacuum Pump</b>
		<b>Rising Main Condenser Backpressure</b>
		<b>Unexplained lowering in Main Turbine Load</b>
<b>OTO-AD-00001, Loss of Condenser Vacuum</b>		
	<b>CRS</b>	Implement OTO-AD-00001, Loss of Condenser Vacuum
	<b>BOP</b>	(Step 1) Check Main Condenser Backpressure – LESS THAN 7.5 inches HGA – YES
		<b>Note:</b> Attachment A, Diagnostic Actions, contains actions which may be performed for slow moving events.
	<b>BOP</b>	(Step 2) Refer to Attachment A, Diagnostic Actions, As Time permits to Perform Actions
	<b>BOP</b>	(Step 3) Check Main Condenser Backpressure – Deteriorating or Stable
	<b>RO</b>	Place Rod Control in AUTO
	<b>CREW</b>	Manage Reactivity Perform a Reactivity Management Brief
	<b>CREW</b>	Reduce Turbine Load at Less than or Equal 5% per min using: %/ Min Loading Rate OR Load Limit Potentiometer

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 14 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

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

When Turbine Load is reduced to less than 1100 MW Steam break occurs and **the following PRELOADS WILL activate**

Large Steamline Break in the Turbine Building

- Insert Malf (AB) AB003, Value = 2E6, ramp = 60 secs, condition = "sac le 1100"

'B' Main Steam Line Isolation Failure to CLOSE in AUTO or MANUAL

- Insert Remote Function (SA) LOASAS9XX\_2
- Insert Remote Function (SA) LOASAS9XX\_6
- Insert Remote Function (AB) ABHV0017\_AuxM, Value = Connected

Motor Driven Aux Feed Pump 'B' fails to start in Auto

- Insert Remote Function (AL) JLOASBI8\_2, Value = inhibit

When contacted, respond as EDO to acknowledge plant trip.

**Indications Available:**

<b>T=60</b>		<b>STEAM FLOW FEED FLOW MISMATCH RISING REACTOR POWER AND LOWERING TAVG</b>
	<b>CREW</b>	Observes Indications of Steam Line Break and Trips Reactor RCS Temperature Lowering RCS Pressure Lowering
<b>E-0, Reactor Trip or Safety Injection</b>		
	<b>CRS</b>	Implement E-0, Reactor Trip or Safety Injection
		<b>NOTE</b> Steps 1 through 4 are immediate actions
<b>E-0</b>	<b>RO</b>	(Step 1) Check Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux - Lowering
	<b>BOP</b>	(Step 2) Check Turbine Trip Turbine Stop Valves - Closed



Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 15 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
	<b>BOP</b>	(Step 3) Check Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized
	<b>RO</b>	(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
	<b>RO/BOP</b>	(Step 5) Perform Attachment A, Automatic Action Verification, while continuing with this procedure
<b>E-0 Att A</b>	<b>RO/BOP</b>	(Step A1) Check Charging Pumps – Both CCPs running
	<b>RO/BOP</b>	(Step A2) Check SI and RHR Pumps – All running
	<b>RO/BOP</b>	(Step A3) Check ECCS Flow – BIH flow indicated
	<b>RO/BOP</b>	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		• EF HIS-55A
		• EF HIS-56A
	<b>RO/BOP</b>	(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

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 16 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN</li> </ul>
		<ul style="list-style-type: none"> <li>EG ZL-15 AND EG ZL-53</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>EG ZL-16 AND EG ZL-54</li> </ul>
		<ul style="list-style-type: none"> <li>OPEN CCSW To RHR HX valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-101</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-102</li> </ul>
		<ul style="list-style-type: none"> <li>CLOSE Spent Fuel Pool HX CCW Outlet Valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-101</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-102</li> </ul>
		<ul style="list-style-type: none"> <li>CLOSE Spent Fuel Pool HX CCW Outlet Valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-11</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-12</li> </ul>
		<ul style="list-style-type: none"> <li>STOP Spent Fuel Pool Cooling Pump(s):</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-27</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-28</li> </ul>
		<ul style="list-style-type: none"> <li>RECORD The Time Spent Fuel Pool Cooling Pump Secured</li> </ul>
		<ul style="list-style-type: none"> <li>MONITOR Time Since CCW Flow Isolated to SFP HX LESS THAN 4 HOURS</li> </ul>
	<b>RO/BOP</b>	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> <li>GN HIS-9</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-17</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-5</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-13</li> </ul>

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 17 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
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	<b>RO/BOP</b>	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> <li>GN HIS-2</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-4</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-1</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-3</li> </ul>
	<b>RO/BOP</b>	(Step A8) CHECK If Containment Spray should Be Actuated:
		<ul style="list-style-type: none"> <li>CHECK the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Containment pressure – GREATER THAN 27 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Annunciator 59A CSAS LIT</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Annunciator 59B CISB – LIT</li> </ul>
		<ul style="list-style-type: none"> <li>Containment Spray Pumps -</li> </ul>
		<ul style="list-style-type: none"> <li>EN HIS-3</li> </ul>
		<ul style="list-style-type: none"> <li>EN HIS-9</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CSAS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CISB sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CISB sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 18 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> <li>STOP all RCPs</li> </ul>
	<b>RO/BOP</b>	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> <li>CHECK for any of the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Containment pressure – GREATER THAN 17 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Steamline pressure – LESS THAN 615 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>AB PR-514 or AB PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG</li> </ul>
		<ul style="list-style-type: none"> <li>CHECK MSIVs and Bypass valves - CLOSED</li> </ul>
	<b>RO/BOP</b>	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> <li>ESFAS status panels SIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A11) CHECK Containment Isolation Phase A:
		<ul style="list-style-type: none"> <li>ESFAS status panels CISA sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A12) CHECK SG Blowdown Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels SGBSIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 19 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
	<b>RO/BOP</b>	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels CRVIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A14) CHECK Containment Purge Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels CPIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A14 RNO) Manually ACTUATE CPIS:
		<ul style="list-style-type: none"> <li>SA HS-11</li> </ul>
		<ul style="list-style-type: none"> <li>SA HS-15</li> </ul>
		IF CPIS damper(s) are NOT closed, THEN manually CLOSE damper(s) as necessary
	<b>RO/BOP</b>	(Step A15) NOTIFY CRS of the following:
		<ul style="list-style-type: none"> <li>Unanticipated Manual actions taken.</li> </ul>
		<ul style="list-style-type: none"> <li>Failed Equipment status</li> </ul>
		<ul style="list-style-type: none"> <li>Attachment A, Automatic Action Verification, completed.</li> </ul>
<b>E-0, REACTOR TRIP OR SAFETY INJECTION</b>		
<b>E-0</b>		
	<b>BOP</b>	(Step 6) Check Generator Output Breakers – Open

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 20 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
	<b>BOP</b>	(Step 7) Check Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves – Closed Feedwater Isolation Valves – Closed
	<b>BOP</b>	(Step 8) Check AFW Pumps MD AFW Pumps – Both Running - NO TD AFW Pump – Running if Necessary
<b>Critical Task</b>	<b>CREW</b>	<b>Start the MDAFP “B” to establish AFW flow rate greater than 355,000 lbm/hr to the intact SGs before transition out of E-0.</b>
	<b>BOP</b>	(Step 9) Check AFW Valves – Proper Alignment MD AFW Flow Control Valves – Throttled TD AFW Flow Control Valves – Full Open  (AFW may be isolated to SG B per foldout page)
	<b>BOP</b>	(Step 10) Check Total AFW Flow > 355,000 lbm/hr
	<b>RO</b>	(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
	<b>RO</b>	(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

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 21 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 13) Check RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F
	<b>RO/BOP</b>	(Step 14) Check if any SG is Faulted Any SG pressure lowering uncontrollably Any SG completely depressurized <b>Go To E-2, Faulted SG Isolation</b>
<b>E-2, FAULTED STEAM GENERATOR ISOLATION</b>		
		Initiate CSF Monitoring  <b>CAUTION</b> At least one SG must be maintained available for RCS cooldown  <b>CAUTION</b> Any faulted SG or secondary break should remain isolated during subsequent recovery unless needed for RCS cooldown
<b>E-2</b>	<b>BOP/RO</b>	(Step 1) CHECK MSIVs and Bypass Valves – CLOSED
	<b>BOP/RO</b>	(Step 2) CHECK If Any SG Secondary Pressure Boundary Is Intact:  • CHECK pressures in all SGs – ANY STABLE OR RISING
	<b>BOP/RO</b>	(Step 3) Identify Faulted Steam Generator:  • Check Pressures in all SGs:  • ANY SG PRESSURE LOWERING IN AN UNCONTROLLED MANNER  OR  • ANY SG COMPLETELY DEPRESSURIZED
	<b>BOP/RO</b>	(Step 4) ISOLATE Faulted SG(s):  • ISOLATE AFW flow to faulted SG(s):  • CLOSE associated MD AFP Flow Control Valve(s)

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 22 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
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		<ul style="list-style-type: none"> <li>AL HK-8A (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>AL HK-10A (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>AL HK-12A (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>AL HK-6A (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>CHECK ASD from faulted SG(s) - CLOSED</li> </ul>
		<ul style="list-style-type: none"> <li>AB PIC-1A (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>AB PIC-2A (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>AB PIC-3A (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>AB PIC-4A (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>Locally CLOSE TDAFP Steam Supply From Main Steam Loop Manual Isolation valve from Faulted SG:</li> </ul>
		<ul style="list-style-type: none"> <li>ABV0085 (SG B)</li> </ul>
<b>BOOTH INSTRUCTOR NOTE: When directed by operator, Use Remote Function (AB) ABV0085TASTEM to close ABV0085.</b>		
	<b>BOP/RO</b>	<ul style="list-style-type: none"> <li>CHECK Main Feedwater valves to faulted SG(s) – CLOSED</li> </ul>
	<b>BOP/RO</b>	CHECK Main Feedwater valves to faulted SG(s) CLOSED
		<ul style="list-style-type: none"> <li>Main Feedwater Reg Valve:</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-510 (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-520 (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-530 (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-540 (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>Main Feedwater Reg Bypass valve:</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-550 (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-560 (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>AE ZL-570 (SG C)</li> </ul>



Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 23 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>• AE ZL-580 (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>• Feedwater Isolation Valve:</li> </ul>
		<ul style="list-style-type: none"> <li>• AE HIS-39(SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>• AE HIS-40 (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>• AE HIS-41 (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>• AE HIS-42 (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>• CHECK SG Blowdown Containment Isolation Valve from faulted SG(s) - CLOSED</li> </ul>
		<ul style="list-style-type: none"> <li>• BM HIS-1A (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>• BM HIS-2A (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>• BM HIS-3A (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>• BM HIS-4A (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>• CLOSE Steamline Low Point Drain valve from faulted SG(s):</li> </ul>
		<ul style="list-style-type: none"> <li>• AB HIS-9 (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>• AB HIS-8 (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>• AB HIS-7 (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>• AB HIS-10 (SG D)</li> </ul>
<b>Critical Task</b>	<b>CREW</b>	<b>Isolate SG B before a transition out of E-2 Auxiliary Feedwater Flow supply TDAFP steam supply Isolated from SG B</b>
	<b>BOP/RO</b>	(Step 5) CHECK CST To AFP Suction Header Pressure – GREATER THAN 2.75 PSIG
		<b>NOTE</b> 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.
	<b>BOP/RO</b>	(Step 6) CHECK Secondary Radiation:

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 24 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>PERFORM the following:</li> </ul>
		<ul style="list-style-type: none"> <li>PERFORM EOP Addendum 11, Restoring SG Sampling After SI Actuation</li> </ul>
		<ul style="list-style-type: none"> <li>DIRECT Chemistry to periodically sample all SGs for activity</li> </ul>
		<ul style="list-style-type: none"> <li>DIRECT Radiation Protection to survey steamlines in Auxiliary Building Area 5 as necessary.</li> </ul>
		<ul style="list-style-type: none"> <li>CHECK unisolated secondary radiation monitors:</li> </ul>
		<ul style="list-style-type: none"> <li>SG Sample radiation:</li> </ul>
		<ul style="list-style-type: none"> <li>SJL 026</li> </ul>
		<ul style="list-style-type: none"> <li>SG ASD radiation:</li> </ul>
		<ul style="list-style-type: none"> <li>AB RIC-111 (SG A)</li> </ul>
		<ul style="list-style-type: none"> <li>AB RIC-112 (SG B)</li> </ul>
		<ul style="list-style-type: none"> <li>AB RIC-113 (SG C)</li> </ul>
		<ul style="list-style-type: none"> <li>AB RIC-114 (SG D)</li> </ul>
		<ul style="list-style-type: none"> <li>Turbine Driven Auxiliary Feedwater Pump Exhaust radiation:</li> </ul>
		<ul style="list-style-type: none"> <li>FC RIC-385</li> </ul>
		<ul style="list-style-type: none"> <li>Secondary radiation - NORMAL</li> </ul>
	<b>RO</b>	(Step 7) Check if ECCS Flow Should Be reduced:
		<ul style="list-style-type: none"> <li>RCS Subcooling – Greater Than 30°F.</li> </ul>
		<ul style="list-style-type: none"> <li>Secondary Heat Sink:</li> </ul>
		<ul style="list-style-type: none"> <li>NR Level in at least One SG &gt; 7%</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Total Feedflow to intact SGs &gt; 355,000 lbm/hr.</li> </ul>
		<ul style="list-style-type: none"> <li>RCS Pressure – Stable or Rising.</li> </ul>
		<ul style="list-style-type: none"> <li>Pzr Level &gt; 9%.</li> </ul>

Op Test No: 2011301 Scenario # 1 rev. 1 Event # 6, 7 Page 25 of 25

Event Description: Steamline Break, MSIV fails to close, MDAFP B start failure

Time	Position	Applicant's Actions or Behavior
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		<b>CAUTION</b> If offsite power is lost after SI reset, manual actions may be required to restart safeguards equipment
	<b>RO</b>	(Step 8) Reset SI
		<ul style="list-style-type: none"> <li>SB HS-42A and SB HS43A</li> </ul>
	<b>RO</b>	(Step 9) Stop all but one CCP:
		<ul style="list-style-type: none"> <li>BG HIS-1A OR BG HIS 2A</li> </ul>
	<b>CRS</b>	Go to ES-1.1, SI Termination, Step 3.
<b>ES-1.1, SI Termination</b>		
<b>ES-1.1</b>	<b>RO</b>	(Step 3) Reset CIS-A and CIS-B
	<b>BOP</b>	(Step 4) Establish Instrument Air to Containment
	<b>RO</b>	(Step 5) Check RCS Pressure – Stable or Rising
	<b>RO</b>	(Step 6) Isolate Boron Injection Header CCP – Suction aligned to RWST Reset CCP Recirc Valves (BG HS-8110 and 8111) Check CCP Recirc Valves Open (BG HIS-8110 & 8111) Close BIH Inlet Valves (EM HIS-8803A and 8803B) Close BIH Outlet Valves (EM HIS-8801A and 8801B)
<b>Once the crew enters ES-1.1 or at the Lead Examiner's discretion, the scenario is complete. - Freeze the Simulator</b>		

Facility: Callaway		Scenario No.: 2 rev. 1		Op Test No.: 2011301	
Examiners: _____		Operators: _____			
_____		_____			
_____		_____			
Initial Conditions:		100% Power, steady state, Middle of Core Life			
Turnover:		Centrifugal Charging Pump "A", was taken Out of Service 12 hours ago to replace a shaft seal (TS 3.5.2 A, 72 hours). The crew will shift the Component Cooling Water (CCW) service loop from the "B" Train to the "A" Train as part of normal equipment rotation.			

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	RO (N)	Shift CCW service loop from "B" Train to "A" Train
2 10 min	ABPT0545	SRO (I) BOP (I)	SG "D" Controlling Pressure Channel Fails Low (Tech Spec)
3 20 min	BBPCV 0455B_1	SRO (C) RO (C)	Pressurizer Spray Valve Drifts Open
4 35 min	EBB01D	SRO (C) RO (R) (C) BOP (C)	Steam Generator "D" Tube Leak Requiring Load Reduction (Tech Spec)
5 50 min	EBB01D	SRO (M) RO (M) BOP (M)	Steam Generator "D" Tube Rupture after downpower started which results in a Reactor Trip / Safety Injection
6 (N/A)	ABPV0004_2	SRO (C) BOP (C)	Atmospheric Steam Dump "D" Fails Open, Manual Closure available from OT in the field
7 (N/A)	JLOASBI8_4	RO (C)	"B" Centrifugal Charging Pump Fails to Start Automatically

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	5
2. Malfunctions after EOP entry (1-2)	2
3. Abnormal events (2-4)	4
4. Major transients (1-2)	1
5. EOPs entered/requiring substantive actions (1-2)	2
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical tasks (2-3)	3

**Callaway 2011 NRC Scenario #2**

The plant is stable at 100%. Safety Injection Pump “B” was taken Out of Service 12 hours ago to replace a shaft seal. The applicable Tech Spec is 3.5.2 A (72 hours). The Balance of Plant (BOP) is directed to shift the CCW service loop from “B” Train to “A” Train.

After the CCW service loop has been swapped, SG “D” controlling pressure channel fails low. The crew enters OTO-AE-00002, Steam Generator Water Level Control Malfunctions, and selects an operable steam flow channel. Tech Spec 3.3.2 is applicable.

After the plant has been stabilized, a single Pressurizer Spray Valve fails/drifts open. This causes pressurizer pressure to lower. The crew should enter OTO-BB-00006, Pressurizer Pressure Control Malfunction, to manually operate the pressurizer spray loop controller affected. Tech Spec 3.4.1 may be entered to address RCS DNB conditions.

Once the failed pressurizer spray valve has been closed and the plant is stable, a steam generator tube leak of 30 gpm on “D” Steam Generator occurs causing the crew to address the problem using OTO-BB-00001, Steam Generator Tube Leak. The crew will identify the source of the leak using the radiation monitoring system and quantify the leak using plant parameters to determine a rapid load reduction is required using OTO-MA-00008, Rapid Load Reduction. The SRO will address Tech Spec 3.4.13 for RCS Operational Leakage.

Once the crew has completed lowering power 5%, the “D” Steam Generator tube leak degrades into an 800 gpm tube rupture over 10 minutes, which requires the crew to initiate a manual reactor trip and enter E-0, Reactor Trip or Safety Injection, and perform the appropriate actions.

Once the reactor trips, the tube degradation continues resulting in a Safety Injection. The “B” Centrifugal Charging Pump will fail to start in Auto and must be started manually. The crew will continue in E-0 and transition to E-3, Steam Generator Tube Rupture.

Two (2) minutes following the reactor trip, the Atmospheric Steam Dump (ASD) on “D” Steam Generator fails open allowing a direct release path to the atmosphere. An OT is sent to manually isolate the ASD and is successful in closing the failed ASD.

The scenario is complete when the crew commences a depressurization of the RCS to minimize break flow at Step 16 of E-3 or at the discretion of the Lead Examiner.

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## Scenario Event Description

NRC Scenario 2 rev. 1

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### Critical Tasks:

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

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

References
OTO-AE-00002
OTO-BB-00001
OTO-BB-00006
OTO-MA-00008
E-0
E-3

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## Scenario Event Description

NRC Scenario 2 rev. 1

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### **Scenario Setup Guide:**

Establish the initial conditions of IC-161, MOL 100% power:

- RCS boron concentration 960 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

**ENSURE AE FS-542C is selected to F543 for Control**  
**ENSURE CCW Service Loop is aligned to "B" CCW Train**

### **=====SCENARIO PRELOADS / SETUP ITEMS=====**

Place a Tag on BG HIS-2A and then Insert the following:

- Execute Lesson ALL/OOS/pbg05b.lsn

Centrifugal Charging Pump "B" fails to start in Auto

- Insert Remote Function (BG) JLOASBI8\_4, Value = inhibit

SG "D" ASD fails Open

- Insert Malfunction (AB) ABPV0004\_2, Value = 1, ramp = 15 secs  
delay = 2 mins, conditional = "jcrftr eq true"

### **===== EVENT 2 =====**

SG "D" Controlling Pressure Channel, ABPT545, fails to 0% over 15 sec

- Insert Malfunction (AB) ABPT0545, Value = 0, ramp = 15 secs

### **=====EVENT 3 =====**

PZR Spray Valve, BBPCV0455B, fails open over 2 mins

- Insert Malfunction (BB) BBPCV0455B\_1, value = 1, ramp = 2 mins

### **=====EVENT 4 =====**

Steam Generator "D" Tube Leak requiring Rapid Plant Shutdown

- Insert Malfunction (BB) EBB01D, value = 30, ramp = 90 secs

### **=====EVENT 5 =====**

Steam Generator "D" Tube Rupture resulting in Reactor Trip and Safety Injection

Insert after power reduction of ~5% in response to the SG tube leak

- Modify Malfunction (BB) EBB01D to, value = 800, ramp = 1 min

### **=====EVENT 6 PRELOADED=====**

SG "D" ASD fails open 5 mins after reactor trip

SEE PRELOADS ABOVE

### **=====EVENT 7 PRELOADED=====**

Failure of CCP "B" to Start Automatically

SEE PRELOADS ABOVE

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 1 Page 5 of 22

Event Description: Shift CCW Service Loop From "B" Train to "A" Train

Time	Position	Applicant's Actions or Behavior
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**Shift CCW service loop IAW OTN-EG-00001**

**Indications Available:**

**OTN-EG-00001, Section 5.7**

	<b>BOP</b>	(Step 5.7.1) Ensure SW/ESW is in service to the A CCW HEX with EF HIS-51 open
	<b>BOP</b>	(Step 5.7.2) Ensure A CCW surge tank level is > 50%
	<b>BOP</b>	(Step 5.7.5) Start CCW pump A using EG HIS-21
	<b>BOP</b>	(Step 5.7.6) a. Close EGRV9 using EG HIS-9 b. Close EGRV10 using EG HIS-10 c. Open EGHV15 and 53 using EG HS-15 d. Close EGHV16 and 54 using EG HS-16 e. Open EGRV9 using EG HIS-9 f. Open EGRV10 using EG HIS-10
	<b>BOP</b>	(Step 5.7.10) Inform Chemistry that CCW Train A is in service



Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 2 Page 6 of 22

Event Description: SG "D" Pressure Channel Failure Low

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

- Insert Malfunction (AB) ABPT0545, 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:**

<b>T = 10</b>		<b>ANN 111D, SG D FLOW MISMATCH</b>
<b>OTO-AE-00002, Steam Generator Water Level Control Malfunctions</b>		
	<b>CRS</b>	Implement OTO-AE-00002, SG Water Level Control Malfunctions
	<b>BOP</b>	(Step 1) Check SG FW Flow Channels Normal
	<b>BOP</b>	(Step 2) Check SG Steam Flow Channels Normal – NO RNO – Select operable steam flow channel on SG "D" using AB FS-542C
	<b>BOP</b>	(Step 3) Check SG Level Channels Normal
	<b>BOP</b>	(Step 4) Check SG Pressure Channels Normal – NO RNO - Select operable steam flow channel on SG "D" using AB FS-542C
	<b>BOP</b>	(Step 5) Check SG NR level within one of the following: Trending to 45-55% or between 45-55%
	<b>BOP/RO</b>	(Step 6) Review Attachment A, Effects of Instrument Failure
	<b>CRS</b>	(Step 7) Review Applicable Tech Specs-Refer to Attachment F TS 3.3.2, Item 1.e, Condition D, 72 hours TS 3.3.2, Item 4.e, Condition D, 72 hours

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 2 Page 7 of 22

Event Description: SG "D" Pressure Channel Failure Low

Time	Position	Applicant's Actions or Behavior
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	<b>CRS</b>	(Step 8) Perform Notifications per ODP-ZZ-00001 Addendum 13
	<b>CRS</b>	(Step 9) Direct I&C to trip bistables for failed channel
	<b>CRS</b>	(Step 10) Place inoperable channel in EOSL
	<b>CRS</b>	(Step 11) Initiate actions to repair failed channel
<b>At the Discretion of the Lead Examiner Move to Event #3.</b>		

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 3 Page 8 of 22

Event Description: Pressurizer Spray Valve Drifts Open

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

- Insert Malfunction (BB) BBPCV0455B\_1, value = 1, ramp = 2 mins
- If Work Control is contacted, report investigation and repair of BB PCV-455B will be initiated.
- When contacted as EDO, acknowledge entry into the OTO.

**Indications Available:**

<b>T = 20</b>	<b>ANN 33C, PZR PRESS LO HTRS ON</b>
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**OTO-BB-00006, Pressurizer Pressure Control Malfunction**

	<b>CRS</b>	Implement OTO-BB-00006, PZR Pressure Cont Malfunction
	<b>RO</b>	(Step 1) Check PZR Pressure Indicator – Failed - NO RNO – Go to Step 17
	<b>RO</b>	(Step 17) Check PZR Pressure less than 2235
	<b>RO</b>	(Step 18) Check Both PZR Spray Valves – Closed – NO RNO: Place affected PZR Spray Loop Controller in Manual and Close the Valve: BB PK-455B Energize PZR Backup Heaters as necessary
	<b>RO</b>	(Step 19) Check PZR Pressure Greater than 2250 – NO RNO – Go to Step 21
	<b>RO</b>	(Step 21) Check PZR Pressure Between 2225 and 2250 – Continue with next Step when pressure is between 2225 and 2250
	<b>RO</b>	(Step 22) Check PZR Pressure Master Controller – Controlling in Auto

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 3 Page 9 of 22

Event Description: Pressurizer Spray Valve Drifts Open

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 23) Check PZR Heaters – Aligned for Automatic Control
	<b>RO</b>	(Step 24) Check PZR Spray Loop Controllers – in Auto (Note – BB PK-455B will be left in manual due to failure)
	<b>RO/BOP</b>	(Step 25) Check PZR PORVs – in Auto
	<b>RO/BOP</b>	(Step 26) Check Both PZR PORV Block Valves - Open
	<b>CRS</b>	(Step 27) Review Applicable Tech Specs Refer to Attachment J
		TS 3.4.1, Condition A, 2 hours (DNB <2223 psig)
<b>At the Discretion of the Lead Examiner Move to Event #4.</b>		

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 4 Page 10 of 22

Event Description: SG "D" Tube Leak Requiring Plant Shutdown

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

- Insert Malfunction (BB) EBB01D, value = 30, ramp = 90 secs
- When contacted, respond as EDO to acknowledge the plant shutdown.
- If contacted as Chemistry acknowledge sampling SGs.

**Indications Available:****T = 35**

**ANN 61A, PROCESS RAD HIHI**  
**ANN 61B, PROCESS RAD HI**

**OTO-BB-00001, Steam Generator Tube Leak****CRS**

Implement OTO-BB-00001, Steam Generator Tube Leak

**RO**

(Step 1) Check if PZR Level can be Maintained – Level Stable or Rising  
 RNO – If not able to maintain PZR level, control charging and reduce letdown as necessary

**RO**

(Step 2) Check if VCT Level can be Maintained - &gt;5%

**CRS**

(Step 3) Notify Chemistry to Perform CTP-ZZ-02590, Primary To Secondary Leakrate Determination

**BOP**

(Step 4) Try to Identify Affected SG:  
 Unexpected rise in any SG NR level  
 Reduced SG FW flow with stable SG level  
 High radiation from any SG sample  
 N16 monitor RM-11 channels 161-164 using 10 minute trend  
 RM-11 printer for N16 channels  
 High radiation from any SG blowdown line sample

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 4 Page 11 of 22

Event Description: SG "D" Tube Leak Requiring Plant Shutdown

Time	Position	Applicant's Actions or Behavior
	<b>RO/BOP</b>	(Step 5) Determine SG Tube Leak Rate: Use trends of VCT level and PZR level Compare charging and letdown flows Utilize GD SGTL or T4 SGTL Utilize GD SG17 or T4 SG17 Leak Rate – Less Than 50 gpm - YES
	<b>CRS</b>	(Step 6) Check if Plant Should be Shutdown: Perform appropriate actions from table – if >150 gpd, perform actions in Attachment D
<b>Attach D</b>	<b>CRS</b>	(Step D2) If leakage is $\geq 150$ gpd, then perform the following: Go to Step 7 and commence a controlled shutdown to be in Mode 3 within 6 hours
<b>OTO-MA-00008, Rapid Load Reduction</b>		
	<b>CRS</b>	Implement OTO-MA-00008, Rapid Load Reduction
	<b>RO</b>	(Step 1) Place Rod Control in AUTO
Note:		The absence of a designated Reactivity Management SRO shall delay emergency or Technical Specification required load reductions.
	<b>CRS/ RO</b>	(Step 2) Perform Reactivity Management Brief
	<b>BOP</b>	(Step 3) Reduce Turbine Load At Less than or Equal to 5% Per Minute Using: <ul style="list-style-type: none"> <li>• The % / min Loading Rate <u>OR</u></li> <li>• The Load Limit Potentiometer</li> </ul>
	<b>RO</b>	(Step 4) Borate From the BAST using OTN-BG-00002, Attachment 8 – Provided on Laminated Pages
<b>Once a Plant Shutdown has been started or at the Discretion of the Lead Examiner Move to Events #5, 6 and 7.</b>		

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 12 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

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

- Modify Malfunction (BB) EBB01D to, value = 800, ramp = 1 min
- Insert Malfunction (AB) ABPV0004\_2, Value = 1, ramp = 15 secs  
delay = 2 mins, conditional = "jcrftr eq true" (PRELOADED)
- Insert Remote Function (BG) JLOASBI8\_4, Value = inhibit (PRELOADED)
- When contacted as Primary OT to locally close "D" Atmospheric Steam Dump, wait 2 minutes and close the valve  
To close, use Remote Function RABV007, Value = 0, ramp = 1 min

**Indications Available:**

		<b>ANN 33C, PZR PRESS LO HTRS ON</b> <b>ANN 32C, PZR LO LEV DEV</b> <b>Pressurizer Level Lowering</b>
<b>OTO-BB-00001, SG Tube Leak</b>		
	<b>CRS/RO</b>	Implement OTO-BB-00001 SG Tube Leak (Foldout Page Criteria)
	<b>CRS/RO</b>	(Foldout Page Step 1) Normal charging is maximized from one pump Letdown is isolated Pressurizer level is lowering THEN, Trip the Reactor, Initiate Safety Injection and Go To E-0, Reactor Trip or Safety Injection
<b>E-0, Reactor Trip or Safety Injection</b>		
	<b>CRS</b>	Implement E-0, Reactor Trip or Safety Injection

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 13 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 1) Check Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux – Lowering
	<b>BOP</b>	(Step 2) Check Turbine Trip Turbine Stop Valves – Closed
	<b>BOP</b>	(Step 3) Check Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized
	<b>RO</b>	(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
	<b>RO/BOP</b>	(Step 5) Perform Attachment A, Automatic Action Verification, while continuing with this procedure
<b>E-0 Att A</b>	<b>RO/BOP</b>	(Step A1) Check Charging Pumps – Both CCPs running – NO RNO – Start CCP "B"
<b>Critical Task</b>	<b>CREW</b>	<b>Establish flow from at least one high head ECCS pump before a transition out of E-0.</b>
	<b>RO/BOP</b>	(Step A2) Check SI and RHR Pumps – All running
	<b>RO/BOP</b>	(Step A3) Check ECCS Flow – BIH flow indicated
	<b>RO/BOP</b>	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> <li>• EF HIS-55A</li> </ul>
		<ul style="list-style-type: none"> <li>• EF HIS-56A</li> </ul>



Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 14 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
	<b>RO/BOP</b>	(Step A5) CHECK CCW Alignment:
		<ul style="list-style-type: none"> <li>CCW Pumps – ONE RUNNING IN EACH TRAIN</li> </ul>
		<ul style="list-style-type: none"> <li>Red Train:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-21 or EG HIS-23</li> </ul>
		<ul style="list-style-type: none"> <li>Yellow Train:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-22 or EG HIS-24</li> </ul>
		<ul style="list-style-type: none"> <li>CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN</li> </ul>
		<ul style="list-style-type: none"> <li>EG ZL-15 AND EG ZL-53</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>EG ZL-16 AND EG ZL-54</li> </ul>
		<ul style="list-style-type: none"> <li>OPEN CCSW To RHR HX valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-101</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-102</li> </ul>
		<ul style="list-style-type: none"> <li>CLOSE Spent Fuel Pool HX CCW Outlet Valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-101</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-102</li> </ul>
		<ul style="list-style-type: none"> <li>CLOSE Spent Fuel Pool HX CCW Outlet Valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-11</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-12</li> </ul>
		<ul style="list-style-type: none"> <li>STOP Spent Fuel Pool Cooling Pump(s):</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-27</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-28</li> </ul>
		<ul style="list-style-type: none"> <li>RECORD The Time Spent Fuel Pool Cooling Pump Secured</li> </ul>
		<ul style="list-style-type: none"> <li>MONITOR Time Since CCW Flow Isolated to SFP HX LESS THAN 4 HOURS</li> </ul>

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 15 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
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	<b>RO/BOP</b>	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> <li>GN HIS-9</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-17</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-5</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-13</li> </ul>
	<b>RO/BOP</b>	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> <li>GN HIS-2</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-4</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-1</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-3</li> </ul>
	<b>RO/BOP</b>	(Step A8) CHECK If Containment Spray should Be Actuated:
		<ul style="list-style-type: none"> <li>CHECK the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Containment pressure – GREATER THAN 27 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Annunciator 59A CSAS LIT</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Annunciator 59B CISB – LIT</li> </ul>
		<ul style="list-style-type: none"> <li>Containment Spray Pumps -</li> </ul>
		<ul style="list-style-type: none"> <li>EN HIS-3</li> </ul>
		<ul style="list-style-type: none"> <li>EN HIS-9</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CSAS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 16 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>ESFAS status panels CISB sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CISB sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>STOP all RCPs</li> </ul>
	<b>RO/BOP</b>	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> <li>CHECK for any of the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Containment pressure – GREATER THAN 17 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Steamline pressure – LESS THAN 615 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>AB PR-514 or AB PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG</li> </ul>
		<ul style="list-style-type: none"> <li>CHECK MSIVs and Bypass valves – CLOSED</li> </ul>
	<b>RO/BOP</b>	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> <li>ESFAS status panels SIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A11) CHECK Containment Isolation Phase A:
		<ul style="list-style-type: none"> <li>ESFAS status panels CISA sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 17 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A12) CHECK SG Blowdown Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels SGBSIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels CRVIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A14) CHECK Containment Purge Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels CPIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A14 RNO) Manually ACTUATE CPIS:
		<ul style="list-style-type: none"> <li>SA HS-11</li> </ul>
		<ul style="list-style-type: none"> <li>SA HS-15</li> </ul>
		IF CPIS damper(s) are NOT closed, THEN manually CLOSE damper(s) as necessary
	<b>RO/BOP</b>	(Step A15) NOTIFY CRS of the following:
		<ul style="list-style-type: none"> <li>Unanticipated Manual actions taken.</li> </ul>
		<ul style="list-style-type: none"> <li>Failed Equipment status</li> </ul>
		<ul style="list-style-type: none"> <li>Attachment A, Automatic Action Verification, completed.</li> </ul>

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 18 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
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<b>E-0</b>	<b>BOP</b>	(Step 6) Check Generator Output Breakers – Open
	<b>BOP</b>	(Step 7) Check Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves – Closed Feedwater Isolation Valves – Closed
	<b>BOP</b>	(Step 8) Check AFW Pumps MD AFW Pumps – Both Running TD AFW Pump – Running if Necessary
	<b>BOP</b>	(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)
	<b>BOP</b>	(Step 10) Check Total AFW Flow > 355,000 lbm/hr
	<b>RO</b>	(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
	<b>RO</b>	(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
	<b>RO</b>	(Step 13) Check RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 19 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
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<b>NOTE:</b>		<b>The crew should have found the OPEN ASD by now and had the operator in the field isolate it using item #2 of the foldout page in E-0, thus avoiding transition to E-2 as seen in the next step.</b>
	<b>RO/BOP</b>	(Step 14) Check if any SG is Faulted Any SG pressure lowering uncontrollably Any SG completely depressurized
	<b>BOP</b>	(Step 15) CHECK if SG Tubes are Intact: <ul style="list-style-type: none"> <li>• Level in All SGs – Not rising in uncontrolled manner - NO</li> <li>• SG Steamline – N-16 Normal – NO</li> <li>• Condenser Air Removal – Normal before Isolation</li> <li>• SG Blowdown and Sample radiation</li> <li>• SG ASD radiation – Normal</li> <li>• Turbine Driven Aux Feed pump radiation Normal</li> </ul> <b>GO TO E-3, Steam Generator Tube Rupture, Step 1</b>
<b>E-3, Steam Generator Tube Rupture</b>		
		<b>NOTE</b> Personnel should be available for sampling during this procedure.  <b>NOTE</b> Seal injection flow should be maintained to all RCPs  <b>NOTE</b> Step 1 criteria applies until an operator controlled RCS cooldown is initiated
<b>E-3</b>	<b>BOP/RO</b>	(Step 1) Check if RCPs Should be Stopped - NO
		RNO – Go to Step 2
	<b>BOP</b>	(Step 2) Identify Ruptured SG:
		<ul style="list-style-type: none"> <li>• Unexpected rise in any SG narrow range level</li> </ul>
		<ul style="list-style-type: none"> <li>• High radiation from any SG sample</li> </ul>

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 20 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
<b>E-3</b>		<ul style="list-style-type: none"> <li>High radiation from any SG steamline</li> </ul>
		<ul style="list-style-type: none"> <li>High radiation from any SG blowdown line sample</li> </ul>
	<b>BOP</b>	(Step 3) Isolate Flow From Ruptured SG:
		<ul style="list-style-type: none"> <li>Adjusted ruptured SG ASD controller setpoint to 1160 psig AB PIC-4A</li> </ul>
		<ul style="list-style-type: none"> <li>Check ruptured SG ASD closed AB PIC-4A – NO RNO – ASD should have been closed during implementation of E-2</li> </ul>
		<ul style="list-style-type: none"> <li>Locally close TDAFP steam supply from main steam loop manual isolation valve from ruptured SG (Action is N/A for SG "D")</li> </ul>
		<ul style="list-style-type: none"> <li>Check SG blowdown containment isolation valve from ruptured SG BM HIS-4A</li> </ul>
		<ul style="list-style-type: none"> <li>Close steamline low point drain valve from ruptured SG AB HIS-10</li> </ul>
		<ul style="list-style-type: none"> <li>Check if C-9 interlocks lit - YES</li> </ul>
		<ul style="list-style-type: none"> <li>Close MSIV and MSIV bypass valve from ruptured SG AB HIS-11 AB HIK-15, Bypass Valves Controller</li> </ul>
<b>Critical Task</b>	<b>CREW</b>	<b>Isolate feedwater flow into and steam flow from the ruptured SG before a transition to ECA-3.1 occurs.</b>
	<b>BOP</b>	(Step 4) Check Ruptured SG Level >7% - YES – Stop feed flow to ruptured SG:
		<ul style="list-style-type: none"> <li>AL HK-5A</li> </ul>
		<ul style="list-style-type: none"> <li>AL HK-6A</li> </ul>
	<b>BOP</b>	(Step 5) Check Ruptured SG pressure >340 psig - YES

Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 21 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
<b>E-3</b>	<b>CRS/BOP</b>	(Step 6) Initiate RCS Cooldown
		<ul style="list-style-type: none"> <li>• Check RCS pressure &lt;1970 psig</li> </ul>
		<ul style="list-style-type: none"> <li>• Block steamline pressure</li> </ul>
		<ul style="list-style-type: none"> <li>• Determine required core exit temperature</li> </ul>
		<ul style="list-style-type: none"> <li>• Dump steam to condenser from intact SGs at maximum rate</li> </ul>
		<ul style="list-style-type: none"> <li>• Core exit TCs &lt; required temperature (Continue with Steps 7-12 while continuing cooldown)</li> </ul>
		<ul style="list-style-type: none"> <li>• Stop RCS cooldown</li> </ul>
		<ul style="list-style-type: none"> <li>• Maintain core exit TCs &lt; required temperature</li> </ul>
		<ul style="list-style-type: none"> <li>• AL HK-6A</li> </ul>
	<b>BOP</b>	(Step 7) Check intact SG levels
	<b>BOP</b>	(Step 8) Check PZR PORVs and Block Valves
	<b>RO</b>	(Step 9) Reset SI (SB HS-42A and SB HS-43A)
	<b>RO/BOP</b>	(Step 10) Reset CIS A and B
	<b>RO/BOP</b>	(Step 11) Establish Instrument Air to Containment
	<b>RO/BOP</b>	(Step 12) Check if RHR Pumps should be stopped
	<b>BOP</b>	(Step 13) Check if RCS Cooldown should be stopped
	<b>CRS/BOP</b>	(Step 14) Check Ruptured SG Pressure – stable or rising – YES
	<b>CRS/RO</b>	(Step 15) Check RCS Subcooling Greater than 50°F – YES



Op Test No.: 2011301 Scenario # 2 rev. 1 Event # 5, 6, 7 Page 22 of 22

Event Description: SG Tube Rupture with ASD Failure and CCP "B" Auto Start Failure

Time	Position	Applicant's Actions or Behavior
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<b>E-3</b>	<b>CRS/RO</b>	<p>(Step 16) DEPRESSURIZE RCS to Minimize Break Flow and Refill PZR:</p> <p>Normal PZR spray – Available</p> <p>SPRAY PZR with maximum available spray until any of the following conditions are satisfied:</p> <ul style="list-style-type: none"><li>• Both of the following:<ul style="list-style-type: none"><li>○ RCS press &lt; Ruptured SG Press</li><li>○ PZR level &gt; 9%</li></ul></li><li>• PZR level - &gt; 74%</li><li>• RCS subcooling - &lt; 30°F</li></ul> <p>CLOSE spray valves</p> <p>GO TO Step 19</p>
<b>At the discretion of the Lead Examiner <u>OR</u> once the crew starts the depressurization, the scenario can be terminated.</b>		

Facility: Callaway

Scenario No.: 3 rev.1

Op-Test No.: 2011301

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

Initial Conditions: 100% Power, steady state, Middle of Core Life

Turnover: 'B' RHR Pump is out of Service for a breaker inspection. The 'B' RHR Pump should be returned to service in 8 hours. This is the 'A' Train Protected week. The crew is directed to maintain the current power level.

Event No.	Malf. No.	Event Type*	Event Description
1	BBLT0459 BGLCV 0459	SRO (I,C) RO (I,C)	Pressurizer Level Channel fails Low, Letdown cannot be restored (Tech Spec)
2		RO (N) SRO (N)	Establish Excess Letdown
3 (25 min)	SEN0042	SRO (I) BOP (I)	Power Range Excore instrument N42 Fails Low (Tech Spec)
4 (50 min)	Quakey09 NE02	SRO (M) RO (M) BOP (M)	Earthquake / Loss of Off Site Power and Trip of Emergency Diesel Generator 'B' (IPE/PRA).
5 (N/A)	SF006	SRO (C) RO (C)	Reactor Auto Trip Failure
6 (N/A)	JINHBFC	SRO (C) BOP (C)	TDAPW Pump Auto Start Failure
7 (N/A)	NE01	SRO (M) RO (M) BOP (M)	DG"A" Failure / Loss of all AC

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	7
2. Malfunctions after EOP entry (1-2)	3
3. Abnormal events (2-4)	2
4. Major transients (1-2)	2
5. EOPs entered/requiring substantive actions (1-2)	2
6. EOP contingencies requiring substantive actions (0-2)	1
7. Critical tasks (2-3)	2

**Callaway 2011 NRC Scenario #3**

The plant is stable at 100%. RHR Pump “B” was taken Out of Service for a breaker inspection and should be returned to service in 8 hours. The crew is requested to maintain power at 100%.

Pressurizer Level Channel BB LT-459 fails low, causing a loss of CVCS Letdown. The crew should respond per OTO-BG-00001, “Pressurizer Level Control Malfunction”, and refer to Technical Specification 3.3.1. When letdown restoration is attempted, BG LCV-0459 will not open. The crew will place excess letdown in service per OTN-BG-00001, Add 4, Operation of CVCS Letdown as a Normal Evolution.

Once Excess Letdown is in Service, Power Range Excore Nuclear Instrument N42 fails Low. The crew enters OTO-SE-00001, Nuclear Instrument Malfunction and takes action to Bypass the failed channel at the NI Back Panel. The BOP Operator will take these actions due to the RO monitoring Excess Letdown. Tech Spec 3.3.1 will be referenced due to the failed channel.

A major earthquake causes a loss of off-site power. The reactor fails to automatically trip. The crew must manually trip the reactor. Once the reactor trips the ‘B’ Emergency Diesel Generator will trip, leaving the crew with only one emergency bus. The crew should respond to the reactor trip per E-0, Reactor Trip or Safety Injection.

The Turbine Driven Auxiliary Feed Pump (TDAFP) fails to automatically start. The crew must manually start the TDAFP.

At the completion of Step 8 of ES-0.1, Reactor Trip Response, the 'A' Diesel Generator will be tripped causing a Loss of All AC Power. The crew will transition to ECA-0.0, Loss of All AC Power.

The scenario is complete when the crew initiates ECA-0.0 step 16, Depressurize Intact SGs to 260 PSIG OR at the discretion of the Chief Examiner.

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## Scenario Event Description

NRC Scenario 3 rev. 1

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### Critical Tasks:

Event #5 CT – Manually Trip the reactor from the control room following failure to Auto trip.

Event #6 CT – Establish a > 355,000 lbm/hr Auxiliary Feedwater flow rate to the Steam Generators before SG dryout occurs.

References
OTG-ZZ-00004
OTO-BG-00001
OTN-BG-00001, Addendum 4
OTN-BB-00005
OTO-SE-00001
E-0
ES-0.1
ECA-0.0

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## Scenario Event Description

NRC Scenario 3 rev. 1

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### Simulator Set Up

Establish the initial conditions of **IC-161, MOL 100%**:

- Rod Control Bank D 215 steps, Other banks 228 steps
- RCS boron concentration 960 ppm
- CCP A 976 ppm minus 5 days
- CCP B 986 ppm minus 15 days
- Place tag on EJ HIS-2, and place in Pull to Lock
- RHR Pump 'B' inoperable, TS 3.5.2.A, 72 Hours, OOS at 0500, this date
- **Ensure PZR Level channel 459 is selected for control on BOTH BB LS-459D and BB LS-459E**

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

RHR Pump 'B' Out of Service

Run Lesson "pej01b.lsn"

Reactor fails to trip Automatically, but can be tripped manually (Event #5)

Insert Malfunction (SF) SF006, Value = Auto Mode

Insert Malfunction (NE) NE02, value = True, with conditional = jcrftr eq true

Turbine Driven AFW Pump Auto Start Failure (Event #6)

Insert Remote Function (AL) JINHBFC, Value = Inhibit

### =====EVENT 1 =====

Pressurizer Level Channel 459 fails low and BG LCV-459 cannot be opened

Insert Malfunction (BB) BBLT0459\_1, Value = 0

Letdown Control Valve BG LCV Fails closed

Insert Malfunction (BG) BGLCV0459, Value = True

### =====EVENT 3 =====

Power Range Excore Nuclear Instrument N42 fails Low

Insert Malfunction (SE) SEN0042, Value = 0

### =====EVENT 4 =====

Earth quake causes a Loss of Offsite power and trip of NB02

Run Lesson "Quakey09.lsn"

Insert Malfunction (NE) NE02, Value = True on Reactor Trip - PRELOADED

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

Reactor Trip Auto Failure - PRELOADED

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

Turbine Driven Auxiliary Feed Pump Auto start Failure - PRELOADED

### =====EVENT 7 =====

DG "A" Failure / Loss of All AC

Insert Malfunction (NE) NE01, Value = True

Op Test No.:	2011301	Scenario #	3 rev. 1	Event #	1	Page	5	of	21
Event Description: Pressurizer Level Instrument fails low, Letdown Isolation fails closed									
Time	Position	Applicant's Actions or Behavior							

**Booth Operator Instructions:**

- Insert Malfunction (BB) BBLT0459\_1, Value = 0
- Insert Malfunction (BG) BGLCV0459, Value = True
- When contacted, respond as I&C to investigate and repair the failed channel
- When contacted, respond as EDO. Acknowledge the failed channel.

**Indications Available:**

T=0 min		<b>Annunciator 32B, PZR 17% HTRS OFF LTDN ISO</b> <b>Annunciator 39E, LTDN HX DISCH FLOW HILO</b>
<b>OTO-BG-00001, Pressurizer Level Control Malfunction</b>		
	<b>CRS</b>	Implement OTO-BG-00001, Pzr Level Control Malfunction
		<b>Notes:</b> 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.
	<b>RO</b>	(Step 1) Check Charging Pumps – At least ONE Running-YES NCP is Running (BG HIS-3)
		<b>Note:</b> Letdown isolates and Pressurizer control heaters will deenergize if the controlling level channel fails low.
	<b>RO</b>	(Step 2) Check for failed Pressurizer Level Indicator – YES <ul style="list-style-type: none"> <li>• BB LI-459A</li> </ul>
	<b>RO</b>	(Step 3) TRANSFER Pressurizer Level Control Selector to Remove Failed Channel From Control <ul style="list-style-type: none"> <li>• BB LS-459D</li> </ul>

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 1 Page 6 of 21

Event Description: Pressurizer Level Instrument fails low, Letdown Isolation fails closed

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 4) CHECK Letdown- IN SERVICE – RNO 4a – 4c - Perform the Following: <ul style="list-style-type: none"> <li>• Slowly close BG HC-182</li> <li>• Throttle BG FK-124 for 8-13gpm seal injection</li> <li>• Ensure BG HC-182 is full closed</li> <li>• Ensure BG HIS-8152 and 8160 are open</li> <li>• Ensure BG HIS-459 and 460 are open               <ul style="list-style-type: none"> <li>○ BG HIS-459 will NOT Open</li> </ul> </li> </ul>
	<b>RO</b>	(Step 4) CHECK Letdown- IN SERVICE – NO RNO 4d – If letdown can NOT be established, THEN perform the following while attempting to restore normal letdown: <ul style="list-style-type: none"> <li>• Ensure Orifice Isolation Valves(s) closed               <ul style="list-style-type: none"> <li>○ BG HIS-8149AA, BA, and CA</li> </ul> </li> <li>• Adjust seal injection to minimum required for RCP seal                cooling to stabilize pressurizer level as necessary.</li> <li>• Establish excess letdown per OTN-BG-00001,                Chemical and Volume Control System</li> <li>• Ensure BG HC-182 is full closed</li> </ul>
	<b>RO</b>	(Step 5) CHECK Pressurizer Heater Control Group C – ON <ul style="list-style-type: none"> <li>• BB HIS-50</li> </ul>
	<b>RO/BOP</b>	(Step 6) CHECK Pressurizer Level at or trending to program Level
	<b>RO/BOP</b>	(Step 7) CHECK Operable Pressurizer Level Channel – USED FOR RECORDER <ul style="list-style-type: none"> <li>• BB LS-459E</li> </ul>

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 1 Page 7 of 21

Event Description: Pressurizer Level Instrument fails low, Letdown Isolation fails closed

Time	Position	Applicant's Actions or Behavior
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	<b>CRS</b>	(Step 8) Review Applicable Tech Specs TS 3.3.1, Table 3.3.1-1, Item 9 Condition M, M.1 Place channel in trip – 72 hrs TS 3.3.3, Table 3.3.3-1, Item 11 Condition A, Restore to Operable – 30 days



Op Test No.: 2011301 Scenario # 3 rev.1 Event # 2 Page 8 of 21

Event Description: Place Excess Letdown In Service

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

- When contacted, respond as RP and Chemistry to acknowledge that Excess Letdown will be placed in Service.
- When contacted, respond as Radwaste to support placing Excess Letdown in Service.

**OTN-BG-00001, ADD 4, Operation of CVCS Letdown**

<b>OTN-BG-00001, ADD 4</b>	<b>CRS</b>	(Step 5.2.1 & 5.2.2) Inform RP and Chemistry that Excess Letdown is being placed in Service
	<b>RO</b>	(Step 5.2.3) ENSURE Pressurizer Backup Heaters are in Manual Heater Operation per OTN-BB-00005, Pressurizer Pressure Control
	<b>CRS</b>	(Step 5.2.4) NOTIFY Radwaste Excess Letdown will be directed to RCDT for approximately two (2) minutes to flush piping.
	<b>CRS</b>	(Step 5.2.5 & 5.2.6) REQUEST Radwaste Operator place RCDT in recirculation per RTN-HB-00100, Reactor Coolant Drain Tank Operation and maintain RCDT Level 22 -25%
	<b>RO</b>	(Step 5.2.7) Ensure Excess Letdown Heat Exchanger is supplied with CCW as indicated on either: <ul style="list-style-type: none"> <li>• EG FI-128, CCW TO RCS FLOW</li> <li>• EG FI-128, CCW TO RCS FLOW</li> </ul>
	<b>RO</b>	(Step 5.2.8) Ensure BG HIC-123, Excess LDHX Outlet Flow Ctrl, is CLOSED
	5.2.9	Perform the following to equalize boron concentration in Excess Letdown header and RCS:
	<b>CRS</b>	(Step 5.2.9.a and b.) ENSURE Radwaste Operator is ready to receive Excess Letdown flow with sufficient volume in the RCDT.
<b>OTN-BG-00001, ADD 4</b>	<b>RO</b>	(Step 5.2.9.c) PLACE BG HIS-8143, Excess LDHX to RCDT/Seal Water HX, in RCDT.

Op Test No.: 2011301 Scenario # 3 rev.1 Event # 2 Page 9 of 21

Event Description: Place Excess Letdown In Service

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 5.2.9.d) Open Either set of Reactor Coolant to Excess Letdown Hx valves with applicable control switches. <ul style="list-style-type: none"> <li>• Train A: BG HIS-8153A and BG HIS 8154A</li> <li>• Train B: BG HIS-8153B and BG HIS 8154B</li> </ul>
		<b>Note:</b> Excess Letdown temperature should remain less than 175°F
		<b>Caution:</b> Initially opening BG HC-123 further than 20% in the following step could result in a sudden RCS pressure drop and subsequent adjustments to greater than 45% could result in temperature control problems.
	<b>RO</b>	(Step 5.2.9.e) Slowly Turn BG HC-123, Excess LDHX Outlet Flow Ctrl, to 20% Open to establish excess letdown flow.
	<b>RO</b>	(Step 5.2.9.f) Ensure BG TI-122, Excess LTDN HX Outlet Temp, does not exceed 175°F
	<b>RO</b>	(Step 5.2.9.f) ENSURE Radwaste Operator maintains RCDT pressure less than 75 psig by controlling level
	<b>BOP</b>	(Step 5.2.9.h) ENSURE RCP Seal Leak-Off is 1 to 5 gpm
	<b>BOP</b>	(Step 5.2.9.i) ENSURE RCP seal water leak-off flow is acceptable per RCP Seal Leak-Off curve in OTN-BB-00003
	<b>RO</b>	(Step 5.2.10) After approximately two (2) minutes, DIRECT Excess Letdown flow to VCT as follows:
	<b>RO</b>	(Step 5.2.10.a) SLOWLY Turn BG HC-123, Excess LTDN HX Outlet Flow CTRL, to CLOSED to secure Excess Letdown flow.
	<b>RO</b>	(Step 5.2.10.b) ENSURE BG HC-123 is CLOSED
	<b>CRS</b>	(Step 5.2.10.c) Select VCT on BG HIS-8143, Excess LTDN HX to RCDT/Seal WTR HX.

Op Test No.: 2011301 Scenario # 3 rev.1 Event # 2 Page 10 of 21

Event Description: Place Excess Letdown In Service

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 5.2.10.d) ENSURE OPEN either set of RCS to Excess letdown <ul style="list-style-type: none"> <li>• Train A: BG HIS-8153A and BG HIS 8154A</li> <li>• Train B: BG HIS-8153B and BG HIS 8154B</li> </ul>
	<b>RO</b>	(Step 5.2.11) NOTIFY Radwaste Excess Letdown flow is directed to the VCT
	<b>RO</b>	(Step 5.2.12) Request Radwaste to secure recirculation of the RCDT per RTN-HB-00100, RCDT Operations.
	<b>RO</b>	(Step 5.2.13) Ensure Excess Letdown Temp does not exceed 175° on BG TI-122
	<b>BOP</b>	(Step 5.2.14) ENSURE RCP Seal Leak-Off is 1 to 5 gpm
	<b>BOP</b>	(Step 5.2.15) ENSURE RCP seal water leak-off flow is acceptable per RCP Seal Leak-Off curve in OTN-BB-00003
	<b>RO SIM OPS</b>	(Step 5.2.16) UNLOCK and OPEN BG8482, CVCS VCT Seal Water IN ISO. When contacted OPEN BG8482 <b>Insert Remote Function (BG) BG8482TASTEM, Value = 100</b>
	<b>RO SIM OPS</b>	(Step 5.2.17) UNLOCK and CLOSE BG8484, CVCS Seal Water Hx Out Dnstrm ISO. When contacted CLOSE BG8484 <b>Insert Remote Function (BG) BG8484TASTEM, Value = 0</b>
	<b>RO</b>	(Steps 5.2.18 & 5.2.19) Log Valves in the Locked Component Deviation List of ODP-ZZ-00004, Locked Component Control

Op Test No.: 2011301 Scenario # 3 rev.1 Event # 2 Page 11 of 21

Event Description: Place Excess Letdown In Service

Time	Position	Applicant's Actions or Behavior
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	<b>RO</b>	(Step 5.2.20) Restore Pressurizer Backup Heaters to AUTO
	<b>RO</b>	(Step 5.2.21) NOTIFY RP Excess Letdown is in service and its flowpath.
<b>At the Discretion of the Lead Examiner Move to Event #3.</b>		

Op Test No.: 2011301 Scenario # 3 rev.1 Event # 3 Page 12 of 21

Event Description: Power Range Channel Fails Low

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

Power Range Channel Fails Low

- Insert Malfunction (SE) SEN0042, Value=0
- Respond as the WWM and/ or EDO if contacted about the failed instrument
- Respond as I&C if contacted about the failed instrument

**Indications Available:**

		<b>78 A PR CHANNEL DEV</b> <b>78 B PR UPPER DETECTOR FLUX DEV</b> <b>78 C PR LOWER DETECTOR FLUX DEV</b> <b>82 A PR OVER PWR ROD STOP</b>
<b>OTO-SE-00001, Nuclear Instrument Malfunction</b>		
T= 25 min		
	<b>CRS</b>	Implement OTO-SE-00001, Nuclear Instrument Malfunction
	<b>RO/BOP</b>	(Step 1) Check Power Range Nuclear Instruments - NORMAL <u>RNO</u> <ol style="list-style-type: none"> <li>Ensure Rod Control in MANUAL</li> <li>If any MFW Reg valves in being used, place in MANUAL and Control SG Levels – NO</li> <li>GO to Attachment A, Power Range Instrument Malfunction</li> </ol>
<b>Att. A</b>	<b>CRS/BO P</b>	(Step A1) Stop Any Main Turbine Load Changes
	<b>RO</b>	(Step A2) Maintain RCS Tavg within 1.5°F of Tref Using Manual Control Rods
	<b>BOP</b>	(Step A3) Check the following permissives in the correct state <ul style="list-style-type: none"> <li>• P-7, P-8, P-9, P-10</li> </ul>
	<b>RO</b>	(Step A4) SELECT an Operable Channel on NIS Recorder <ul style="list-style-type: none"> <li>• SE NR-45</li> </ul>

Op Test No.: 2011301 Scenario # 3 rev.1 Event # 3 Page 13 of 21

Event Description: Power Range Channel Fails Low

Time	Position	Applicant's Actions or Behavior
	<b>BOP</b>	<p>(Step A5) BYPASS the malfunctioning Power Range Channel by selecting the Affected Channel at the NI Backpanels</p> <ol style="list-style-type: none"> <li>On the Detector Current Comparator drawer <ul style="list-style-type: none"> <li>PLACE Upper Section switch to failed channel</li> <li>PLACE Lower Section switch to failed channel</li> <li>PLACE Rod Stop Bypass switch to failed channel</li> <li>Place Power Mismatch Byp switch to failed channel</li> </ul> </li> <li>On the Comparator and Rate drawer, PLACE Comparator Channel Defeat switch to the failed channel</li> <li>Ensure the following Annunciators are extinguished: <ul style="list-style-type: none"> <li>78A, 78B, 78C, 82A</li> </ul> </li> </ol>
	<b>CRS/RO</b>	<p>(Step A6) Check Rod Control – IN AUTO <u>RNO</u> When RCS Tav<sub>g</sub>/Tref are equal AND rods werer in AUTO prior to the event, THEN PLACE Rod Control in AUTO</p>
	<b>BOP</b>	<p>(Step A7) CHECK any Steam Generator Level Being – Controlled by the MFW Reg Valve Bypass Valves - NO</p>
	<b>CRS/RO</b>	<p>(Step A8) Check Reactor Power – GREATER Than 10%</p>
	<b>BOP</b>	<p>(Step A9) Trip the Protective Bistable for the Failed Channel Per Attachment D</p> <ul style="list-style-type: none"> <li>Remove Control Power Fuses for the Failed channel</li> </ul>
	<b>RO</b>	<p>(Step A10) Check Reactor Power Greater the 75% - YES</p>
	<b>CRS/RO</b>	<p>(Step A11) Verify QPTR Every 12 Hours Per OSP-SE-0003, Quadrant Power Tilt Ratio</p>

Op Test No.: 2011301 Scenario # 3 rev.1 Event # 3 Page 14 of 21

Event Description: Power Range Channel Fails Low

Time	Position	Applicant's Actions or Behavior
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	<b>CRS/BO P</b>	(Step A12) Record Any of the Following in the Control Room Log: <ul style="list-style-type: none"> <li>• Permissives are in the correct state</li> <li>• Any fuses that have been pulled</li> </ul>
	<b>CRS</b>	(Step A13) Place Inoperable Power Range Channel in the EOSL
	<b>CRS</b>	(Step A14) Review Applicable Tech Specs TS 3.3.1, Table 3.3.1-1, Item 2.a Condition D, Trip w/i 72 hours TS 3.3.1, Table 3.3.1-1, Item 2.b Condition V, Trip w/i 72 hours TS 3.3.1, Table 3.3.1-1, Item 3 Condition E, Trip w/i 72 hours TS 3.3.1, Table 3.3.1-1, Item 6 Condition E, Trip w/i 72 hours TS 3.3.1, Table 3.3.1-1, Item 18. b,c,d,e, Condition S and T, verify interlock in correct state for existing conditions in 1 hour
	<b>CRS</b>	(Step A15) Direct I& C to Repair Failed Channel
<b>At the Discretion of the Lead Examiner Move to Event #4.</b>		

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 4, 5, and 6 Page 15 of 21

Event Description: Earthquake/ Loss of Offsite Power/ NB02 Trip/ ATWS / TDAFP fails to start

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

#### When directed by the Lead Examiner enter **EVENT #4, "Quakey 09.Isn"**

- Respond as the EDO and Power System Supervisor if contacted about the Loss of Offsite Power. Inform the crew that due to a fault on the grid, offsite power will not be available for the next 4 hours.
- IF contacted, respond as secondary operator and investigate the TDAFP not starting and after 5 minutes report no obvious problems with the TDAFP.

#### Indications Available:

T=50		<b>86 A LO FLOW &amp; P8 RX TRIP</b> <b>98 A R SPCTRM SSE EXCEED</b>
<b>E-0, Reactor Trip or Safety Injection</b>		
	<b>CRS</b>	Implement E-0, Reactor Trip or Safety Injection
		(Steps 1-4 are immediate action steps)
<b>Critical Task</b>	<b>CREW</b>	<b>Manually Trip the reactor from the control room following failure to Auto trip.</b>
<b>E-0</b>	<b>RO</b>	(Step 1) Check Reactor Trip Rod Bottom Lights – NO Reactor Trip and Bypass Breakers – NO Neutron Flux – Lowering RNO – MANUALLY TRIP REACTOR – Reactor Trips
	<b>BOP</b>	(Step 2) Check Turbine Trip Turbine Stop Valves - Closed
	<b>BOP</b>	(Step 3) Check Power to AC Emergency Buses At least One Emergency Bus - Energized Both Emergency Buses – Energized – NO RNO – Try to restore power to deenergized AC emergency bus <b>The "B" DG Tripped following the Reactor Trip</b>
	<b>RO</b>	(Step 4) Check SI Status Actuated or Required - NO <b>If SI is NOT required, THEN Go To ES-0.1, Reactor Trip Response, Step 1</b>



Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 4, 5, and 6 Page 16 of 21

Event Description: Earthquake/ Loss of Offsite Power/ NB02 Trip/ ATWS / TDAFP fails to start

Time	Position	Applicant's Actions or Behavior
<b>ES-0.1, Reactor Trip Reactor Trip Response</b>		
<b>ES-0.1</b>	<b>CRS</b>	Implement ES-0.1, Reactor Trip Response
	<b>RO</b>	(Step 1) Check RCS Temperatures: <ul style="list-style-type: none"> <li>No RCPs running – RCS Cold Leg Temperatures Stable at 557°F OR Trending to 557°F</li> </ul>
	<b>BOP</b>	(Step 2) Check Status of AC Buses: <ul style="list-style-type: none"> <li>Check Generator Output Breakers – OPEN - YES</li> </ul> <b>Check All AC Buses Energized by Offsite Power – NO</b>
	<b>RO</b>	<b><u>(Step 2b RNO) – Perform the following:</u></b>
	<b>RO</b>	(Step 2b RNO 1) Ensure both PZR PORVs are in AUTO unless closed due to low PZR Pressure: <ul style="list-style-type: none"> <li>BB HIS-455A</li> <li>BB-HIS-456A</li> </ul>
	<b>RO</b>	(Step 2b RNO 2) Ensure both PORV Block Valves are energized and OPEN unless closed to isolate an open PORV <ul style="list-style-type: none"> <li>BB HIS-8000A</li> <li>BB HIS -8000B</li> </ul>
	<b>BOP</b>	(Step 2b RNO 3) If any AC emergency bus(es) are NOT energized by offsite power, THEN ensure DGs have assumed essential loads
	<b>BOP</b>	(Step 2b RNO 4) If any DG is running with NO cooling water, THEN stop the affected DG(s) “B” DG has tripped and “A” DG running supplying NB01
	<b>BOP</b>	(Step 2b RNO 5) Try to restore offsite power using EOP Addendum 7, Restoring Offsite Power

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 4, 5, and 6 Page 17 of 21

Event Description: Earthquake/ Loss of Offsite Power/ NB02 Trip/ ATWS / TDAFP fails to start

Time	Position	Applicant's Actions or Behavior
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<b>ES-0.1</b>		
	<b>BOP</b>	(Step 2b RNO 6) If necessary, THEN Load equipment on AC emergency bus(es) using EOP Addendum 8, Loading Equipment on AC Emergency Buses
	<b>RO</b>	(Step 3) Check PZR Pressure Control: a. Pressure – Greater than 1849 PSIG b. Pressure - Stable at or Trending to 2235 PSIG
	<b>RO</b>	(Step 4) Check PZR Level Control: a. PZR Level – Greater than 17% b. Check Instrument Air Supply Containment isolation valve – OPEN – KA HIS-29 c. CHECK charging – IN SERVICE d. CHECK Letdown – IN Service e. PZR level – Trending to 25%
	<b>RO</b>	(Step 5) Check Shutdown Reactivity Status: a. Check all control rods - FULLY INSERTED b. CHECK if uncontrolled RCS dilution – IN Progress c. Align Charging Pump suction to RWST
	<b>BOP</b>	(Step 6) Check Feedwater Status: a. Check RCS Tavg – LESS THAN 564°F b. Main Feedwater Pumps – TRIPPED c. Check Main Feed Reg Valves – CLOSED d. Check Main Feed Reg Bypass Valves – CLOSED e. Check total feed flow to SGs – Greater than 355,000 lbm/hr - NO
	<b>BOP</b>	(Step 6.e. RNO) Establish feed flow to SG(s) as necessary using AFW

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 4, 5, and 6 Page 18 of 21

Event Description: Earthquake/ Loss of Offsite Power/ NB02 Trip/ ATWS / TDAFP fails to start

Time	Position	Applicant's Actions or Behavior
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Critical Task	CREW	Establish a > 355,000 lbm/hr Auxiliary Feedwater flow rate to the Steam Generators before SG dryout occurs.
ES-0.1		
	BOP	(Step 7) Check SG Levels a. Narrow range levels – Greater than 7% b. Control feed flow to maintain narrow range levels between levels 7% and 52%
	BOP	(Step 8) Transfer Condenser Steam Dump to Steam Pressure Mode: a. Check condenser available b. Place Seam Header Pressure Controller in Manual and Zero Output c. Place Steam Dump Select switch in STM PRESS position d. Place Steam Header Pressure Controller in AUTO
		<b>At Step 8 or the Discretion of the Lead Examiner Move to Event #7</b>

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 7 Page 19 of 21

Event Description: Loss of All AC

Time	Position	Applicant's Actions or Behavior
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SIM	SIM	Simulator Operator: Enter Loss of the "A" DG (NE01)
<b>ECA-0.0, Loss of All AC Power</b>		
<b>ECA-0.0</b>	<b>CRS</b>	Implements ECA-0.0 Loss of All AC Power
	<b>RO</b>	(Step 1) Check Reactor Trip Reactor Trip and Bypass Breakers – NO Neutron Flux – Lowering
	<b>BOP</b>	(Step 2) Check Turbine Trip All Turbine Stop valves - CLOSED
	<b>RO</b>	(Step 3) Check if RCS is Isolated <ul style="list-style-type: none"> <li>• PZR PORVs –CLOSED</li> <li>• Letdown Isolation valves – CLOSED</li> <li>• RCS to Excess Letdown HX valves – CLOSED</li> <li>• Reactor Head Vent valves - CLOSED</li> </ul>
	<b>BOP</b>	(Step 4) Check AFW Flow – Greater than 355,000 LBM/HR
	<b>BOP</b>	(Step 5) Try to restore Power to Any AC Emergency Bus <ul style="list-style-type: none"> <li>• Both DGs Tripped and Loss of Offsite Power</li> <li>• Check AC emergency Buses – AT LEAST ONE ENERGIZED – NO</li> <li>• <u>RNO</u> – OPEN Control Room Cabinet doors using EOP Add 20, Control Room Cabinet Door List (<b>this will require a CUE from instructor informing "Another operator will perform EOP Add 20"</b>)</li> <li>• <u>RNO</u> – GO TO Step 6</li> </ul>

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 7 Page 20 of 21

Event Description: Loss of All AC

Time	Position	Applicant's Actions or Behavior
<b>ECA-0.0</b>	<b>RO</b>	(Step 6) Place the Following Equipment Switches in Pull-to-Lock: <ul style="list-style-type: none"> <li>• CCPs</li> <li>• SI Pumps</li> <li>• RHR Pumps</li> <li>• Containment Spray Pumps</li> <li>• CCW Pumps</li> <li>• Containment Cooler Fans</li> <li>• Motor Driven AFW Pumps</li> <li>• Control Room AC Unit</li> <li>• Class 1E Electrical Equipment Room AC</li> </ul>
	<b>CRS/BOP</b>	(Step 7) RESTORE AC Power <ul style="list-style-type: none"> <li>• All sources to restore power from offsite or Emergency Diesels are not available</li> </ul>
	<b>RO</b>	(Step 8) Locally Isolate RCP Seals using EOP Add 22, Local RCP Seal Isolation
<b>SIM</b>	<b>SIM</b>	Run Lesson "RCP Seal Isolation.lsn"
	<b>BOP</b>	(Step 9) Check if CST is Isolated from HOTWELL <ul style="list-style-type: none"> <li>• Place Hotwell Level Controllers in MANUAL and Zero OUTPUT</li> <li>• Locally Close CST Makeup To Hotwell Isolation</li> </ul>
<b>SIM</b>	<b>SIM</b>	<b>Insert Remote Function (AP) APV012TASTEM, Value =0</b>
	<b>BOP</b>	Step 10) Check SG Status <ul style="list-style-type: none"> <li>• MSIVs and Bypass Valves – CLOSED</li> <li>• Main Feedwater Reg Valves- CLOSED</li> <li>• Main Feedwater Reg Bypass Valves – CLOSED</li> <li>• Feedwater Isolation Valves – CLOSED</li> <li>• SG Blowdown Isolation Valves – CLOSED</li> </ul>

Op Test No.: 2011301 Scenario # 3 rev. 1 Event # 7 Page 21 of 21

Event Description: Loss of All AC

Time	Position	Applicant's Actions or Behavior
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<b>ECA-0.0</b>	<b>BOP</b>	(Step 11) Check if Any SG is Faulted – NO <ul style="list-style-type: none"> <li>GO To Step 12</li> </ul>
	<b>BOP</b>	(Step 12) Check if SG Tubes are Intact – YES
	<b>BOP</b>	(Step 13) Check Intact SG Levels <ul style="list-style-type: none"> <li>Narrow range levels - &gt; 7%</li> <li>Control AFW flow to maintain narrow levels between 7% and 52%</li> </ul>
<b>SIM OP Resp</b>	<b>RO</b>	(Step 14) Check DC Bus Loads <ul style="list-style-type: none"> <li>Voltages and amps normal on all DC buses</li> <li>Engineering Consulted</li> <li>Locally Check Security DG – RUNNING</li> </ul>
	<b>BOP</b>	(Step 15) Check CST to AFP Suction Header Pressure – GREATER than 2.75 PSIG YES
	<b>BOP</b>	(Step 16) Depressurize Intact SGs to 260 PSIG <ul style="list-style-type: none"> <li>Check SG narrow range levels &gt; 7% in at least 1 SG</li> <li>Dump Steam using SG ASDs in MANUAL to maintain cooldown rate in RCS Cold legs &lt; 100 °F/HR</li> <li>Check RCS Cold leg temperatures &gt; 275 °F</li> <li>Check SG pressures &lt; 260 PSIG</li> <li>Manually Control SG ASDs to maintain SG pressures at 260 PSIG</li> </ul>
<b>Once the crew has commenced a Cooldown <u>or</u> at the Discretion of the Lead Examiner – Terminate Scenario</b>		

Facility: Callaway

Scenario No.: 4 rev 1(Backup)

Op-Test No.: 2011301

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

Initial Conditions: 100% Power, steady state, Middle of Core Life

Turnover: The plant has been at the current power level for two (2) months. The crew has been requested to reduce Reactor Power to 90% to remove the "A" Condensate Pump from service due to problems with the suction strainer.

Event No.	Malf. No.	Event Type*	Event Description
1 (10 min)	N/A	SRO (N) RO (R) BOP (N)	Reduce Power to 90% to remove Condensate Pump "A" from service
2 (25 min)	ABPV 0001_1	SRO (C) BOP (C)	Atmospheric Steam Dump "A" Fails Open (Tech Spec)
3 (35 min)	BB 002_A	SRO (C) RO/BOP (C)	Small Break LOCA Requiring Reactor Trip (Tech Spec)
4 (50 min)	BB 002_A	SRO (M) RO (M) BOP (M)	Large Break LOCA of 10000 gpm following Reactor Trip, requiring Safety Injection
5 (N/A)	JINHBSI NF039B	SRO (I) RO (I)	Safety Injection fails to actuate Automatically, so Manual initiation required and then "B" Train LOCA Sequencer Fails to actuate components
6 (N/A)	NG02B EF2	SRO (C) RO (C)	Upon receipt if SI Signal, EJ HV8811B loses power (integral to Loss of Emergency Recirc Capability)
7 (N/A)	PEJ01A	SRO (C) RO (C)	Upon receipt of SI Signal, "A" RHR Pump Trips (integral to Loss of Emergency Recirc Capability)

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	6
2. Malfunctions after EOP entry (1-2)	4
3. Abnormal events (2-4)	2
4. Major transients (1-2)	1
5. EOPs entered/requiring substantive actions (1-2)	2
6. EOP contingencies requiring substantive actions (0-2)	1
7. Critical tasks (2-3)	3

## Scenario Event Description

NRC Scenario 4 rev. 1

### **Callaway 2011 NRC Scenario #4(Backup)**

The plant has been at the current power level for two (2) months. The crew is directed to lower Reactor Power to 90% to remove Condensate Pump “A” from service.

After a power reduction has been observed, AB PV-0001, Atmospheric Steam Dump “A” fails open. The crew will enter OTO-AB-00001, Steam Dump Malfunction. The crew will be able to close the failed steam dump from the Control Room. Tech Spec 3.7.4 should be reviewed for the failed valve.

After Maintenance has been contacted to repair AB PV-0001, a small break LOCA of approximately 80 gpm initiates. The crew enters OTO-BB-00003, Excessive RCS Leakage, and maximizes charging to offset the leakage. The crew should determine that the leak rate is greater than 50 gpm and initiate a reactor trip. The CRS should determine that leakage is in excess of allowed per Tech Spec 3.4.13, RCS operational Leakage.

The crew enters E-0, Reactor Trip or Safety Injection. When the reactor is tripped the leak continues to increase to 10000 gpm causing a Safety Injection Signal. The Automatic Safety Injection Signal (SIS) is overridden forcing the crew to manually actuate Safety Injection. Train “B” components will fail to actuate due to failure of the “B” LOCA Sequencer. The crew will continue in E-0 and transition to E-1, Loss of Primary or Secondary Coolant.

Upon receipt of the SIS, EJ HV-8811B loses power and RHR pump “A” trips causing a loss of Emergency Recirculation capability. This will cause the crew to transition to ECA-1.1, Loss of Emergency Coolant Recirculation.

The scenario can be terminated when the crew completes Step 7 of ECA-1.1, Loss of Emergency Coolant Recirculation, or at the discretion of the Chief Examiner.



Scenario Event Description  
NRC Scenario 4 rev. 1

**Critical Tasks:**

Event #3 CT – Manually Trip the Reactor from the control room when it is determined that RCS leakage is > 50 gpm

Event #4 CT – Trip all RCPs such that the core does not uncover (RVLIS<55%) AND prior to commencing an operator controlled cooldown.

Event #5 CT – Manually actuate a Safety Injection before transitioning from E-0.

References
OTG-ZZ-00004
OTG-ZZ-00004, Addendum 03
OTO-AB-00001
OTO-BB-00003
OTO-MA-00008
E-0
E-1
ECA-1.1

Scenario Event Description  
NRC Scenario 4 rev. 1

**Scenario Setup Guide:**

Establish the initial conditions of IC-161, MOL 100% power:

- RCS boron concentration 960 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

=====SCENARIO PRELOADS / SETUP ITEMS=====

RCS Large Break LOCA resulting in Safety Injection after reactor Trip

- Insert Malfunction (BB) BB002\_A to, Value = 10000, ramp = 1 min, conditional = jcrftr eq true

Safety Injection Fails to Actuate in Auto

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

Sequencer 'B' fails to actuate equipment as required

- Insert Malfunction (NF) NF039B\_1, value = step 0

Loss of power to EJ HV8811B following SI

- Insert Remote Function (NG) NG02BEF2, Value = Open, conditional = "jpplsia eq true"

RHR Pump "A" Trip

- Insert Malfunction (EJ) PEJ01A, Value = True, delay = 5 minutes, conditional = "jpplsia eq true"

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

"A" Atmospheric Steam Dump, AB PV-0001, fails open over 2 mins

- Insert Malfunction (AB) ABPV0001\_1, Value = 1, ramp = 2 mins

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

RCS Small Break LOCA requiring a Reactor Trip

- Insert Malfunction (BB) BB002\_A, Value = 80, ramp = 1 min

=====EVENT 4 PRELOADED=====

RCS Large Break LOCA resulting in Safety Injection

Insert after reactor is tripped

SEE PRELOADS ABOVE

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

Safety Injection Fails to Actuate Automatically and sequencer fails to actuate

SEE PRELOADS ABOVE

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

Loss of Power to EJ HV8811B following SI

SEE PRELOADS ABOVE

=====EVENT 8 PRELOADED=====

"A" RHR Pump Trip

SEE PRELOADS ABOVE

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 1 Page 5 of 22

Event Description: Reduce Power to 90% to remove "A" Condensate Pump From Service

Time	Position	Applicant's Actions or Behavior
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Upon Lead Examiner Cue		
<b>Booth Operator Instructions</b>		
<b>Reduce Power to 90% to Remove "A" Condensate Pump from service</b>		
<b>Indications Available:</b>		
<b>OTG-ZZ-00004, Power Operation, Addendum 03</b>		
<b>Reduce Power</b>	<b>CRS</b>	(Step 5.2) Direct the power reduction in Section 5.2
	<b>RO</b>	(Step 5.2.1) Perform the following in any order to prepare for lowering power:
	<b>CRS/RO</b>	(Step 5.2.1a) If needed, prior to beginning a load reduction, request I&C adjust NIS power coarse gains.  STEP HAS BEEN COMPLETED
	<b>CRS</b>	(Step 5.2.1b) Initiate Additional Actions Section 5.4 to prepare for reducing power
<b>Add'l Actions</b>	<b>CRS</b>	Section 5.4 items are complete through Step 5.4.1g
	<b>RO</b>	(Step 5.4.1e) Perform a Dilution/Boration Calculation for the anticipated change in power ( <b>Should be performed during turnover</b> ).
<b>Reduce Power</b>	<b>CRS/RO</b>	(Step 5.2.2) Initiate Power Reduction as follows
	<b>RO</b>	(Step 5.2.2.a) BORATE the RCS as required to support lowering power to the desired final load.

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 1 Page 6 of 22

Event Description: Reduce Power to 90% to remove "A" Condensate Pump From Service

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 5.2.2.b) ENSURE SE HS-9, ROD BANK AUTO/MAN SEL, is in MAN.
	<b>BOP</b>	(Step 5.2.2.c) IF using MANUAL turbine control, INITIATE load reduction by slowly turning LOAD LIMIT SET potentiometer counter-clockwise.
	<b>BOP</b>	<p>(Step 5.2.2.d) IF using AUTOMATIC turbine control, PERFORM the following:</p> <p>Using EHC Panel DECREASE LOAD pushbutton, SLOWLY LOWER load until the following conditions are met:</p> <ul style="list-style-type: none"> <li>· LOAD LIMIT LIMITING light OFF</li> <li>· DECREASE LOADING RATE "OFF" light LIT</li> <li>· LOADING RATE LIMIT %/MIN "1/2" light LIT</li> </ul> <p>TURN LOAD LIMIT SET potentiometer fully clockwise.</p> <p>SELECT DECREASE LOADING RATE "ON"</p> <p>SELECT desired loading rate.</p> <ul style="list-style-type: none"> <li>· Use 0.05 for 3%/hr.</li> <li>· Use 0.166 for 10%/hr.</li> <li>· Use 1/2 for 30%/hr.</li> </ul> <p>Using EHC Panel DECREASE LOAD pushbutton, INITIATE load reduction.</p>
	<b>CREW</b>	<p>(Step 5.2.3) WHEN the desired power level is achieved PERFORM the following:</p> <ul style="list-style-type: none"> <li>· Set Turbine Controls for steady state operation</li> <li>· Borate/Dilute as needed to maintain power level</li> <li>· Insert/withdraw rods as needed to maintain power level</li> </ul>
	<b>RO</b>	(Step 5.2.4) ENSURE annunciator 77A, REACT DEV, setpoint is 1.0°F.
		(Step 5.4.1.h) If directed by the SRO to energize Pressurizer Heaters

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 1 Page 7 of 22

Event Description: Reduce Power to 90% to remove "A" Condensate Pump From Service

Time	Position	Applicant's Actions or Behavior
	<b>RO</b>	(Step 5.4.1.h1) 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
	<b>RO</b>	(Step 5.4.1.h2) PLACE BB PK-455A, PZR PRESS MASTER CTRL, in MANUAL and LOWER to 40%.
	<b>RO</b>	(Step 5.4.1.h3) PLACE BB PK-455A, PZR PRESS MASTER CTRL, in AUTO.
<b>At the Discretion of the Lead Examiner Move to the next Event</b>		

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 2 Page 8 of 22

Event Description: Atmospheric Steam Dump "A" Fails Open

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

- Insert Malfunction (AB) ABPV0001\_1, value = 1, ramp = 2 mins
- If Work Control is contacted, report investigation and repair of AB PV-0001 will be initiated.
- When contacted as EDO, acknowledge entry into the OTO.
- When contacted as Count Room Tech, acknowledge opening and closing of ASD.

**Indications Available:**

T= 25		<b>ANN 109F, SG PORV OPEN</b>
<b>OTO-AB-00001, STEAM DUMP MALFUNCTION</b>		
	<b>CRS</b>	Implement OTO-AB-00001, Steam Dump Malfunction
	<b>RO</b>	(Step 1) Check Reactor Power – Less Than 100% RNO – Reduce Main Turbine load to maintain less than 100% Reactor Power
	<b>BOP</b>	(Step 2) Check at least one SG ASD – Failed Open
	<b>BOP</b>	(Step 3) Place the affected SG ASD controller in manual and close the valve: AB PIC-1A (SG A)
	<b>CRS/BOP</b>	(Step 4) Notify Count Room Tech of opening and closing times of the SG ASD
	<b>CRS</b>	(Step 5) Go to Step 12
	<b>CRS</b>	(Step 12) Initiate actions to repair the failed ASD

Op Test No.: <u>2011301</u> Scenario # <u>4 rev. 1</u> Event # <u>2</u> Page <u>9</u> of <u>22</u>		
Event Description: Atmospheric Steam Dump "A" Fails Open		
Time	Position	Applicant's Actions or Behavior

	<b>CRS</b>	(Step 13) Review Tech Spec 3.7.4 Action A, Restore Operable within 7 days
<b>At the Discretion of the Lead Examiner Move to Event #3.</b>		

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4 Page 10 of 22

Event Description: RCS Small Break LOCA Requiring Plant Shutdown

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

- Insert Malfunction (BB) BB002\_A, value = 80, ramp = 1 min

**Indications Available:**

T = 35 min		<b>ANN 61A, PROCESS RAD HIHI</b> <b>ANN 61B, PROCESS RAD HI</b>

**OTO-BB-00003, RCS EXCESSIVE LEAKAGE**

	<b>CRS</b>	Implement OTO-BB-00003, RCS Excessive Leakage
	<b>RO</b>	(Step 1) Check if PZR Level can be Maintained – Level Stable or Rising RNO – If not able to maintain PZR level, control charging and reduce letdown as necessary
	<b>RO</b>	(Step 2) Check Pressurizer Level – stable or rising
	<b>CRS/RO</b>	(Step 3) Evacuate non-essential personnel in Containment
	<b>RO</b>	(Step 4) Check if VCT level can be maintained
	<b>RO/BOP</b>	(Step 5) Determine if Plant Trip is required: Determine leak size and rate of change using any of the following: <ul style="list-style-type: none"> <li>• Use trends of VCT level and PZR level</li> <li>• Compare charging and letdown flows</li> <li>• Utilize “GD SG17 or “T4 SG17</li> </ul>
		Leak rate – less than 50 GPM – NO <u>RNO</u> – Manually trip the Reactor and go to E-0, Reactor Trip or Safety Injection
<b>Critical Task</b>	<b>CREW</b>	<b>Manually Trip the Reactor from the control room when it is determined that RCS leakage is &gt; 50 gpm</b>

**Once the reactor is tripped Events #4, 5, 6 and 7 will be initiated.**



Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 11 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
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**Booth Operator Instructions-ensure the following initiate after reactor is tripped.**

- Insert Malfunction (BB) BB002\_A to, value = 10000, ramp = 1 min, conditional = jcrftr eq true (PRELOADED)
- Insert Remote Function (SB) JINHBSI, Value = Both (Auto SI Failure) (PRELOADED)
- Insert Malfunction (NF) NF039B\_1, value = step 0 (PRELOADED)
- Insert Remote Function (NG) NG02BEF2, Value = Open, conditional = "jpplsia eq true" (PRELOADED)
- Insert Malfunction (EJ) PEJ01A, Value = True, delay = 5 mins, conditional = "jpplsia eq true" (PRELOADED)
- If contacted as Primary OT to locally check breaker for EJ HV8811B (NG02BEF2), inform CR that breaker is tripped. If asked to close breaker, report that breaker will not close.
- If contacted as Secondary OT to check "A" RHR pump breaker (NB0101), inform CR that breaker has an instantaneous OC lockout relay dropped.

**E-0, Reactor Trip or Safety Injection**

	<b>CRS</b>	Implement E-0, Reactor Trip or Safety Injection
	<b>RO</b>	(Step 1) Check Reactor Trip Rod Bottom Lights – All Lit Reactor Trip and Bypass Breakers – Open Neutron Flux - Lowering
	<b>BOP</b>	(Step 2) Check Turbine Trip Turbine Stop Valves - Closed

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 12 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
	<b>BOP</b>	(Step 3) Check Power to AC Emergency Buses At Least One Emergency Bus – Energized Both Emergency Buses – Energized
	<b>RO</b>	(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
		RNO – Check if SI is required – YES Auto SI is inhibited, SI must be manually initiated
<b>Critical Task</b>	<b>CREW</b>	<b>Manually actuate a Safety Injection before transitioning from E-0.</b>
	<b>RO/BOP</b>	(Step 5) Perform Attachment A, Automatic Action Verification, while continuing with this procedure
<b>E-0 Att A</b>	<b>RO/BOP</b>	(Step A1) Check Charging Pumps – Both CCPs running
	<b>RO/BOP</b>	(Step A2) Check SI and RHR Pumps – All running
		<b>NOTE:</b> "A" RHR pump trips 5 minutes after SI – may not be tripped when Step A2 is performed. If not caught at this time, it should be identified later.
	<b>RO/BOP</b>	(Step A3) Check ECCS Flow – BIH flow indicated
	<b>RO/BOP</b>	(Step A4) CHECK ESW Pumps – BOTH RUNNING
		<ul style="list-style-type: none"> <li>EF HIS-55A</li> </ul>
		<ul style="list-style-type: none"> <li>EF HIS-56A</li> </ul>

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 13 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
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<b>E-0 Att A</b>	<b>RO/BOP</b>	(Step A5) CHECK CCW Alignment:
		<ul style="list-style-type: none"> <li>CCW Pumps – ONE RUNNING IN EACH TRAIN</li> </ul>
		<ul style="list-style-type: none"> <li>Red Train:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-21 or EG HIS-23</li> </ul>
		<ul style="list-style-type: none"> <li>Yellow Train:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-22 or EG HIS-24</li> </ul>
		<ul style="list-style-type: none"> <li>CCW Service Loop Supply and Return valves for one operating CCW pump – OPEN</li> </ul>
		<ul style="list-style-type: none"> <li>EG ZL-15 AND EG ZL-53</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>EG ZL-16 AND EG ZL-54</li> </ul>
		<ul style="list-style-type: none"> <li>OPEN CCSW To RHR HX valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-101</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-102</li> </ul>
		<ul style="list-style-type: none"> <li>CLOSE Spent Fuel Pool HX CCW Outlet Valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-101</li> </ul>
		<ul style="list-style-type: none"> <li>EG HIS-102</li> </ul>
		<ul style="list-style-type: none"> <li>CLOSE Spent Fuel Pool HX CCW Outlet Valves:</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-11</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-12</li> </ul>
		<ul style="list-style-type: none"> <li>STOP Spent Fuel Pool Cooling Pump(s):</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-27</li> </ul>
		<ul style="list-style-type: none"> <li>EC HIS-28</li> </ul>
		<ul style="list-style-type: none"> <li>RECORD The Time Spent Fuel Pool Cooling Pump Secured</li> </ul>
		<ul style="list-style-type: none"> <li>MONITOR Time Since CCW Flow Isolated to SFP HX LESS THAN 4 HOURS</li> </ul>
	<b>RO/BOP</b>	(Step A6) CHECK Containment Cooler Fans – RUNNING IN SLOW SPEED

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 14 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
<b>E-0 Att A</b>		<ul style="list-style-type: none"> <li>GN HIS-9</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-17</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-5</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-13</li> </ul>
	<b>RO/BOP</b>	(Step A7) CHECK Containment Hydrogen Mixing Fans – RUNNING IN SLOW SPEED
		<ul style="list-style-type: none"> <li>GN HIS-2</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-4</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-1</li> </ul>
		<ul style="list-style-type: none"> <li>GN HIS-3</li> </ul>
	<b>RO/BOP</b>	(Step A8) CHECK If Containment Spray should Be Actuated:
		<ul style="list-style-type: none"> <li>CHECK the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Containment pressure – GREATER THAN 27 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 27 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Annunciator 59A CSAS LIT</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Annunciator 59B CISB – LIT</li> </ul>
		<ul style="list-style-type: none"> <li>Containment Spray Pumps -</li> </ul>
		<ul style="list-style-type: none"> <li>EN HIS-3</li> </ul>
		<ul style="list-style-type: none"> <li>EN HIS-9</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CSAS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CISB sections:</li> </ul>

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 15 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
<b>E-0 Att A</b>		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>ESFAS status panels CISB sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>STOP all RCPs</li> </ul>
	<b>RO/BOP</b>	(Step A9) CHECK If Main Steamlines Should Be Isolated:
		<ul style="list-style-type: none"> <li>CHECK for any of the following:</li> </ul>
		<ul style="list-style-type: none"> <li>Containment pressure – GREATER THAN 17 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>GN PR-934 indicates containment pressure – HAS BEEN GREATER THAN 17 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>Steamline pressure – LESS THAN 615 PSIG</li> </ul>
		OR
		<ul style="list-style-type: none"> <li>AB PR-514 or AB PR-535 indicates steamline pressure – HAS BEEN LESS THAN 615 PSIG</li> </ul>
		<ul style="list-style-type: none"> <li>CHECK MSIVs and Bypass valves - CLOSED</li> </ul>
	<b>RO/BOP</b>	(Step A10) CHECK ECCS Valves – PROPER EMERGENCY ALIGNMENT
		<ul style="list-style-type: none"> <li>ESFAS status panels SIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A11) CHECK Containment Isolation Phase A:
		<ul style="list-style-type: none"> <li>ESFAS status panels CISA sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 16 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
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<b>E-0 Att A</b>		
	<b>RO/BOP</b>	(Step A12) CHECK SG Blowdown Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels SGBSIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A13) CHECK Both Trains of Control Room Ventilation Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels CRVIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A14) CHECK Containment Purge Isolation:
		<ul style="list-style-type: none"> <li>ESFAS status panels CPIS sections:</li> </ul>
		<ul style="list-style-type: none"> <li>SA066X WHITE lights – ALL LIT</li> </ul>
		<ul style="list-style-type: none"> <li>SA066Y WHITE light – ALL LIT</li> </ul>
	<b>RO/BOP</b>	(Step A14 RNO) Manually ACTUATE CPIS:
		<ul style="list-style-type: none"> <li>SA HS-11</li> </ul>
		<ul style="list-style-type: none"> <li>SA HS-15</li> </ul>
		IF CPIS damper(s) are NOT closed, THEN manually CLOSE damper(s) as necessary
	<b>RO/BOP</b>	(Step A15) NOTIFY CRS of the following:
		<ul style="list-style-type: none"> <li>Unanticipated Manual actions taken.</li> </ul>
		<ul style="list-style-type: none"> <li>Failed Equipment status</li> </ul>
		<ul style="list-style-type: none"> <li>Attachment A, Automatic Action Verification, completed.</li> </ul>

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 17 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
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### E-0, REACTOR TRIP OR SAFETY INJECTION

<b>E-0</b>		
	<b>BOP</b>	(Step 6) Check Generator Output Breakers – Open
	<b>BOP</b>	(Step 7) Check Feedwater Isolation Main Feedwater Pumps – Tripped Main Feedwater Reg Valves – Closed Main Feedwater Reg Bypass Valves – Closed Feedwater Isolation Valves – Closed
	<b>BOP</b>	(Step 8) Check AFW Pumps MD AFW Pumps – Both Running TD AFW Pump – Running if Necessary
	<b>BOP</b>	(Step 9) Check AFW Valves – Proper Alignment MD AFP Flow Control Valves – Throttled TD AFP Flow Control Valves – Full Open
	<b>BOP</b>	(Step 10) Check Total AFW Flow > 355,000 lbm/hr
	<b>RO</b>	(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
	<b>RO</b>	(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
<b>Critical Task</b>	<b>CREW</b>	<b>Trip all RCPs such that the core does not uncover (RVLIS&lt;55%) AND prior to commencing an operator controlled cooldown.</b>

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 18 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
<b>E-0</b>		
	<b>RO</b>	(Step 13) Check RCS Temperatures RCPs Running – Tavg 557 Deg F No RCPs Running – Tcold 557 Deg F
	<b>RO/BOP</b>	(Step 14) Check if any SG is Faulted: Any SG pressure lowering uncontrollably Any SG completely depressurized
	<b>BOP</b>	(Step 15) Check if SG Tubes are intact: <ul style="list-style-type: none"> <li>• Levels in all SGs – none rising in uncontrolled manner</li> <li>• SG Steamline N16 radiation – Normal</li> <li>• Condenser air removal radiation – Normal</li> <li>• SG blowdown and sample radiation – Normal</li> <li>• SG ASD radiation - Normal</li> <li>• TDAFW pump exhaust radiation - Normal</li> </ul>
	<b>RO/BOP</b>	(Step 16) Check if RCS is Intact <ul style="list-style-type: none"> <li>• Containment pressure – Normal - NO</li> <li>• Containment normal sump level – Normal - NO</li> <li>• Containment radiation – Normal – NO</li> </ul> RNO – Go to E-1, Loss of Reactor or Secondary Coolant
<b>E-1, LOSS OF REACTOR OR SECONDARY COOLANT</b>		
		Initiate CSF Monitoring
<b>E-1</b>	<b>RO/BOP</b>	(Step 1) Check if RCPs should be stopped: Any running ECCS pumps – at least one running RCS pressure – less than 1425 psig Stop all RCPs
	<b>BOP</b>	(Step 2) Check if any SG is Faulted - NO
	<b>BOP</b>	(Step 3) Check intact SG levels



Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 19 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> <li>Narrow range levels greater than 7% [25%]</li> </ul>
		<ul style="list-style-type: none"> <li>Control feed flow to maintain levels between 7% and 52%</li> </ul>
	<b>BOP</b>	(Step 4) Check secondary radiation - Normal
		<ul style="list-style-type: none"> <li>Perform the following: Perform EOP Addendum 11 Direct Chem to periodically sample all SGs for activity Direct RP to survey steamlines in Area 5 as necessary</li> </ul>
		<ul style="list-style-type: none"> <li>Check unisolated secondary radiation monitors: SG sample radiation SG ASD radiation TDAFW pump exhaust radiation</li> </ul>
		<ul style="list-style-type: none"> <li>Secondary radiation - Normal</li> </ul>
	<b>BOP/RO</b>	(Step 5) Check PZR PORVs and block valves:
		<ul style="list-style-type: none"> <li>Power to block valves - Available</li> </ul>
		<ul style="list-style-type: none"> <li>PZR PORVs - Closed</li> </ul>
		<ul style="list-style-type: none"> <li>Block valves – Both Open</li> </ul>
	<b>BOP/RO</b>	(Step 6) Check if ECCS flow should be reduced:
		<ul style="list-style-type: none"> <li>RCS subcooling – greater than 30°</li> </ul>
		<ul style="list-style-type: none"> <li>Secondary heat sink: Narrow range level in at least on SG greater than 7% Total feed flow to SGs greater than 355,000 lbm/hr</li> </ul>
		<ul style="list-style-type: none"> <li>RCS pressure – stable or rising</li> </ul>
		<ul style="list-style-type: none"> <li>PZR level – greater than 9%</li> </ul>
		RNO – Go to Step 7
	<b>BOP/RO</b>	(Step 7) Check if Containment Spray should be stopped:
		(NOT IN SERVICE)
		RNO – Go to Step 8

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 20 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
	<b>BOP/RO</b>	(Step 8) Check if RHR pumps should be stopped:
		<ul style="list-style-type: none"> <li>Check RCS pressure: Greater than 325 psig Stable or rising</li> </ul>
		<ul style="list-style-type: none"> <li>Any running with suction aligned to RWST</li> </ul>
		<ul style="list-style-type: none"> <li>Reset SI if necessary</li> </ul>
		<ul style="list-style-type: none"> <li>Stop RHR pumps and place in standby</li> </ul>
	<b>BOP/RO</b>	(Step 9) Check SG and RCS pressures:
		<ul style="list-style-type: none"> <li>Check pressure in all SGs – stable or rising</li> </ul>
		<ul style="list-style-type: none"> <li>Check RCS pressure – stable or lowering</li> </ul>
	<b>BOP/RO</b>	(Step 10) Check if Diesel Generators should be stopped:
		<ul style="list-style-type: none"> <li>AC emergency buses – energized by offsite power</li> </ul>
		<ul style="list-style-type: none"> <li>Reset SI if necessary</li> </ul>
		<ul style="list-style-type: none"> <li>Perform EOP Addendum 8</li> </ul>
<b>NOTE: Add 08 Actions</b>		<b>BOOTH OPERATOR: Use the following to complete Addendum 8</b> <b>Use the following to close the Boric Acid Transfer Pump / BGHV8104 / CRDM Cooling Fans B&amp;D breakers:</b> Insert Remote Function (NG) KNG1AHF4, Value = Closed Insert Remote Function (NG) KNG2AAF4, Value = Closed Insert Remote Function (NG) KNG4CPF2, Value = Closed Insert Remote Function (NG) JGNC01B, Value = Closed Insert Remote Function (NG) JGNC01D, Value = Closed
		<ul style="list-style-type: none"> <li>Stop any unloaded DG and place in standby</li> </ul>
	<b>BOP/RO</b>	(Step 11) Check Ultimate Heat Sink – Normal - YES
	<b>BOP/RO</b>	(Step 12) Initiate evaluation of plant status
		<ul style="list-style-type: none"> <li>Check Cold Leg recirculation capability</li> </ul>

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 21 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
		Train A – Available – NO (RHR pump tripped)
		Train B – Available – NO (No power to EJ HV8811B)
		RNO – If at least one train of cold leg recirculation capability can not be verified, Go to ECA-1.1, Loss of Emergency Coolant Recirculation
<b>ECA-1.1, Loss of Emergency Coolant Recirculation</b>		
		NOTE: Plant Computer System TOC SUMPBLK is available for indication of sump blockage.
<b>ECA-1.1</b>	<b>BOP/RO</b>	(Step 1) Check ECCS pumps – not affected by sump blockage:
		• CCPs
		• SI Pumps
		• RHR Pumps
	<b>BOP/RO</b>	(Step 2) Check emergency coolant recirculation equipment – Available - NO
		RNO – Try to restore at least one train while continuing with subsequent actions.
	<b>BOP/RO</b>	(Step 3) Reset SI if necessary
	<b>BOP/RO</b>	(Step 4) Reset SI (RWST) switchover signal
	<b>BOP/RO</b>	(Step 5) Check containment cooler fans – Running in slow speed: GN HIS-9 GN HIS 17 GN HIS 5 GN HIS-13
	<b>BOP/RO</b>	(Step 6) Check RWST level – greater than 6%

Op Test No.: 2011301 Scenario # 4 rev. 1 Event # 4, 5, 6, 7 Page 22 of 22

Event Description: Large Break LOCA with Auto SI and 'B' Sequencer Failure  
Loss of Power to EJ HV8811B and "A" RHR Pump Trip

Time	Position	Applicant's Actions or Behavior
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<b>ECA-1.1</b>		
	<b>BOP/RO</b>	(Step 7) Determine Containment Spray requirements (suction from RWST)
<b>The scenario can be terminated at the discretion of the Lead Examiner</b>		