

# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A1RO	KSA NO:	G2.4.48
COMPLETION TIME:	10 MINUTES	KSA RATING:	3.5/3.8
JOB TITLE:	URO	REVISION:	000928
DUTY:	ADMINISTRATIVE		
TASK TITLE:	DETERMINE STATUS OF CONTROL ROOM ANNUNCIATORS		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

REFERENCES: OTO-RK-00001, LOSS OF CONTROL ROOM ALARMS, REV 10

TOOLS/EQUIPMENT: NONE

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

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

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1, 100% POWER, STEADY STATE CONDITIONS. YOU ARE THE EXTRA REACTOR OPERATOR ON SHIFT. A SEVERE THUNDERSTORM HAS MOVED THROUGH THE AREA. LIGHTNING STRIKES HAVE CAUSED NUMEROUS MAIN CONTROL BOARD ANNUNCIATORS AND SA066X WINDOW 21Q, RK ANN POWER SPLY FAILURE, TO ILLUMINATE. THE FOLLOWING INDICATIONS EXIST AT THE RK045 PANELS FOR THE ANNUNCIATORS:

- #1, 2, 3 & 4 Field Power Supplies – 130 VDC, 1.1 AMPS
- Power Supply Fuses – All 7 of the blown fuse indicators are NOT lit.
- Logic Power Supply's Power Monitor Board –6.3 VDC, -11VDC, and –12 VDC LEDs for E2-P.S.3 in RK045E2 are NOT lit.
- All other Logic Power Supply's Power Monitor Board LEDs are lit.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO DETERMINE THE STATUS OF THE MAIN CONTROL BOARD ANNUNCIATORS AND, IF REQUIRED, ANY COMPENSATORY, T/S OR FSAR ACTIONS. INFORM THE CONTROL ROOM SUPERVISOR IF ANY COMPENSATORY ACTIONS ARE REQUIRED.

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

TASK STANDARD: UPON COMPLETION OF THE TASK, THE CANDIDATE WILL HAVE DETERMINED LOGIC POWER SUPPLY POWER MONITOR BOARD FOR E2-P.S.3 IN RK045E2 HAS FAILED. CANDIDATE WILL HAVE DETERMINED THE REQUIRED COMPENSATORY ACTIONS PER PAGE 5 OF ATTACHMENT 9 OF OTO-RK-00001, LOSS OF CONTROL ROOM ALARMS.

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

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

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW HIM TO REVIEW WORK TO BE PERFORMED</p> <p><b>STEPS MAY BE PREFORMED IN ANY ORDER</b></p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>2.* IMPLEMENT OTO-RK-00001, LOSS OF CONTROL ROOM ALARMS</p>	<p>CANDIDATE SHOULD REVIEW OTO-RK-00001, LOSS OF CONTROL ROOM ALARMS</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>3. DETERMINE ANNUNCIATOR STATUS- FOUR FILED POWER SUPPLIES IN RK045D1 FOR VOLTAGE AND AMP INDICATIONS &gt; 105 V</p> <p>STEP 6.1/6.1.1</p>	<p>CANDIDATE SHOULD DETERMINE FIELD POWER SUPPLIES ARE NOT THE PROBLEM DUE TO VOLTAGE 130 VDC</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4.* DETERMINE POWER SUPPLIES FUSES TO THE MULTIPLEXER CHASSIS ADAPTER RACKS</p> <p>STEP 6.1/6.1.2</p>	<p>CANDIDATE SHOULD DETERMINE POWER SUPPLY FUSES TO THE MULTIPLEXER CHASSIS ADAPTER RACKS ARE NOT THE PROBLEM DUE TO NONE OF THE BLOWN FUSE INDICATORS IS ILLUMINATED</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5.* DETERMINE LOGIC POWER SUPPLY POWER MONITOR BOARD LED INDICATORS FOR NORMAL LIT INDICATION</p> <p>STEP 6.1/6.1.3</p>	<p>CANDIDATE SHOULD DETERMINE LOGIC POWER SUPPLY POWER MONITOR BOARD FOR E2-P.S.3 IN RK045E2 IS NOT LIT AND PROCEED TO STEP 6.4</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>6.* DETERMINE THAT COMPENSATORY ACTIONS ARE REQUIRED DUE TO E2-P.S.3 IN RK045E2 LED'S ARE LIT</p> <p>STEP 6.4.1</p>	<p>CANDIDATE SHOULD DETERMINE THAT A PROBLEM EXISTS WITH A LOGIC POWER SUPPLY AND PROCEED</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>7. REVIEW THAT ONLY E2-P.S.3 IN RK045E2 –12 VDC AND –6.3 VDC LEDS ARE LIT AND THAT CLASSIFICATION OF EMERGENCIES IS NOT REQUIRED</p> <p>STEP 6.4.2./6.4.2.1</p>	<p>CANDIDATE SHOULD DETERMINE THAT ONLY ONE LOGIC POWER SUPPLY IS AFFECTED AND THAT EIP-ZZ-00101, CLASSIFICATION OF EMERGENCIES DOES NOT APPLY</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>8. DETERMINE LOGIC SUPPLY POWER FAILURE EXIST IN E2-P.S.3 FOR RK045E2</p> <p>STEP 6.4.2.2</p>	<p>CANDIDATE SHOULD REVIEW TABLE AND DETERMINE ATTACHMENT 9 SHOULD BE IMPLEMENTED</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
9.* DETERMINE CONTROL ROOM SHOULD MONITOR EQUIPMENT	CANDIDATE SHOULD DETERMINE THE CONTROL ROOM SHOULD MONITOR:	S U Comments:
PAGE 5 OF ATTACH 9	<ul style="list-style-type: none"> <li>• CVCS CHARGING FLOW (CONTINUOUSLY)</li> <li>• VCT PRESS (CONTINUOUSLY)</li> <li>• RVLIS (CONTINUOUSLY)</li> <li>• SI ACCUMULATORS (CONTINUOUSLY)</li> <li>• NI (CONTINUOUSLY)</li> <li>• DRPI (CONTINUOUSLY)</li> <li>• RCP TEMPERATURE (CONTINUOUSLY)</li> <li>• RCP SEAL PARAMETERS (CONTINUOUSLY)</li> <li>• RCP VIBRATIONS (30 MIN)</li> <li>• LOOSE PARTS (30 MIN)</li> <li>• SSPS GENERAL WARNING (30 MIN)</li> </ul>	

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
10.* DETERMINE THE PRIMARY EQUIPMENT OPERATOR SHOULD MONITOR EQUIPMENT  PAGE 5 OF ATTACH 9	DETERMINE THE PRIMARY OPERATOR SHOULD MONITOR:  • SEAL INJ/RC FILTER D/P (AT LEAST ONCE PER HOUR)	S U  Comments:
11. DETERMINE COMPENSATORY ACTION MONITORING SHOULD START WITHIN ONE HOUR  STEP 6.4.2.3	CANDIDATE SHOULD DETERMINE THE MONITORING SHOULD START WITHIN ONE HOUR	S U  Comments:
12.	THIS ADMIN JPM IS COMPLETE  <u>RECORD STOP TIME ON PAGE 1</u>	S U  Comments:

\* CRITICAL STEP

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1, 100% POWER, STEADY STATE CONDITIONS. YOU ARE THE EXTRA REACTOR OPERATOR ON SHIFT. A SEVERE THUNDERSTORM HAS MOVED THROUGH THE AREA. LIGHTNING STRIKES HAVE CAUSED NUMEROUS MAIN CONTROL BOARD ANNUNCIATORS AND SA066X WINDOW 21Q, RK ANN POWER SPLY FAILURE, TO ILLUMINATE. THE FOLLOWING INDICATIONS EXIST AT THE RK045 PANELS FOR THE ANNUNCIATORS:

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Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO DETERMINE THE STATUS OF THE MAIN CONTROL BOARD ANNUNCIATORS AND, IF REQUIRED, ANY COMPENSATORY, T/S OR FSAR ACTIONS. INFORM THE CONTROL ROOM SUPERVISOR IF ANY COMPENSATORY ACTIONS ARE REQUIRED.

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





# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A1SRO	KSA NO:	G2.4.41
COMPLETION TIME:	15 MINUTES	KSA RATING:	2.3/4.1
JOB TITLE:	SRO	REVISION:	000922
DUTY:	RADIOLOGICAL EMERGENCY RESPONSE		
TASK TITLE:	CLASSIFY EMERGENCY EVENT PER EIP-ZZ-00101		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

REFERENCES: EIP-ZZ-00101, CLASSIFICATION OF EMERGENCIES, REV 24

TOOLS/EQUIPMENT: NONE

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

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

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ADMIN JPM NO: ILE-12/2000A1SRO

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

Initial Conditions: THE FOLLOWING PLANT CONDITIONS EXIST:

- CORE OFFLOAD COMPLETED
- NB01 AND NE01 ARE TAGGED OUT FOR BUS CLEANING
- EARTHQUAKE CAUSES LOSS OF NB02 AND NE02 AT 0905
- MAINTENANCE INFORMS YOU NB01 CAN BE RE-ENERGIZED AT 1300
- MAINTENANCE INFORMS YOU NB02 CAN BE RE-ENERGIZED AT 1115
- THE TIME IS NOW 0923

Initiating Cues: CLASSIFY THE EVENT BASED ON CURRENT CONDITIONS.

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

TASK STANDARD: UPON COMPLETION OF THIS TASK, THE CANDIDATE SHOULD DETERMINE AN ALERT EXISTS DUE TO GROUP 4K OR 3H EAL.

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

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

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. OBTAIN A COPY OF EIP-ZZ-00101, CLASSIFICATION OF EMERGENCIES	CANDIDATE SHOULD OBTAIN A COPY OF EIP-ZZ-00101  PROVIDE CANDIDATE A COPY OF EIP-ZZ-00101	S U  Comments:
2.* APPLY GROUP 4K EAL AND DECLARE AN ALERT  (APPLICABLE IN DEFUELED MODE)	CANDIDATE SHOULD DETERMINE THE FOLLOWING APPLY FROM GROUP 4K  1.a. LOSS OF OFFSITE POWER TO NB01  1.b. LOSS OF OFFSITE POWER TO NB02  1.c LOSS OF D/G NE01  1.d LOSS OF D/G NE02	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
3.* APPLY GROUP 3H EAL AND DECLARE AN ALERT  (APPLICABLE AT ALL TIMES)	CANDIDATE SHOULD DETERMINE THE FOLLOWING APPLY FROM GROUP 3H  2.a. REPORT OF A NATURAL OR DESTRUCTIVE PHENOMENA TO THE FOLLOWING SAFE SHUTDOWN AREAS: 5. DIESEL GENERATOR BUILDING 8. CONTROL BUILDING  2.b. THERE IS VISIBLE DAMAGE TO PERMANENT STRUCTURES OR EQUIPMENT, AFFECTING PLANT OPERATIONS.	S U  Comments:
4.	THE JPM IS COMPLETE  <u>RECORD STOP TIME ON PAGE 1</u>	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
5.	COMPARE CANDIDATE'S ANSWER WITH THE FOLLOWING:  <b>ALERT DECLARED</b>  <b>GROUP 4K OR 3H EAL</b>	<b>S U</b>  Comments:

\* CRITICAL STEP

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Initial Conditions: THE FOLLOWING PLANT CONDITIONS EXIST:

- CORE OFFLOAD COMPLETED
- NB01 AND NE01 ARE TAGGED OUT FOR BUS CLEANING
- EARTHQUAKE CAUSES LOSS OF NB02 AND NE02 AT 0905
- MAINTENANCE INFORMS YOU NB01 CAN BE RE-ENERGIZED AT 1300
- MAINTENANCE INFORMS YOU NB02 CAN BE RE-ENERGIZED AT 1115
- THE TIME IS NOW 0923

Initiating Cues: CLASSIFY THE EVENT BASED ON CURRENT CONDITIONS.

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





# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A2RO	KSA NO:	G2.1.18
COMPLETION TIME:	10 MINUTES	KSA RATING:	2.9/3.0
JOB TITLE:	URO	REVISION:	000922
DUTY:	ADMINISTRATIVE		
TASK TITLE:	PERFORM CHANNEL CHECKS ON MAIN CONTROL BOARD INDICATORS		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

REFERENCES: OSP-ZZ-00001, Control Room Shift and Daily Log Readings and Channel Checks, Rev 35  
ODP-ZZ-00020, Instrumentation Channel Deviations, Rev 11

TOOLS/EQUIPMENT: Page 5 and 6 of Attachment 1 of OSP-ZZ-00001

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

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

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. YOU ARE THE EXTRA REACTOR OPERATOR ON SHIFT.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO COMPLETE THE ATTACHED TWO PAGES OF OSP-ZZ-00001, CONTROL ROOM SHIFT AND DAILY READINGS AND CHANNEL CHECKS. SS/OS HAS GRANTED PERMISSION TO USE CRITERIA 2.

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

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

- (1) COMPLETED THE CHANNEL CHECKS,
- (2) DETERMINED OPΔT AND CTMT ATMOSPHERE PRESSURE ARE SAT BY CRITERIA 1,
- (3) OTΔT AND RCΔT LOOPS ARE SAT BY CRITERIA 2,
- (4) DETERMINED CONTAINMENT AIR COOLER TEMPERATURE TO BE 99°F.

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

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

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW HIM TO REVIEW WORK TO BE PERFORMED</p> <p><b>STEPS MAY BE PREFORMED IN ANY ORDER</b></p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>2.* DETERMINE OPΔT SETPOINTS WITHIN 6% OF EACH OTHER (CRITERIA 1)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD REVIEW OPΔT FOR ALL LOOPS AND DETERMINE THEY ARE WITHIN 6%. (112% HIGHEST, 109% LOWEST)</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>3.* DETERMINE RC LP ΔT SETPOINTS WITHIN 7% OF EACH OTHER (CRITERIA 1)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE RC LP ΔT SETPOINTS ARE NOT SAT BY CRITERIA 1 AND APPLY CRITERIA 2</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4.* DETERMINE RC LP <math>\Delta T</math> SETPOINTS WITHIN 7% OF AVERAGE (CRITERIA 2)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE RC LP <math>\Delta T</math> SETPOINTS ARE SAT BY CRITERIA 2</p> <p>AVERAGE = 102.5 °F</p> <p>ALL RC LP <math>\Delta T</math> SETPOINTS MUST BE <math>\pm 7\%</math> OF 102.5%</p> <p>RANGE 95.5% TO 109.5%</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>5. DETERMINE OT<math>\Delta T</math> SETPOINTS WITHIN 7% OF EACH OTHER (CRITERIA 1)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE OT<math>\Delta T</math> IS NOT SAT BY CRITERIA 1 AND APPLY CRITERIA 2</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>6.* DETERMINE OT<math>\Delta T</math> SETPOINTS WITHIN 7% OF AVERAGE (CRITERIA 2)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE OT<math>\Delta T</math> IS SAT BY CRITERIA 2</p> <p>AVERAGE = 120.5%</p> <p>ALL OT<math>\Delta T</math> SETPOINTS MUST BE <math>\pm 7\%</math> OF 120.5%</p> <p>RANGE 113.5% TO 127.5%</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
7. DETERMINE CTMT ATMOS PRESS SETPOINTS WITHIN 2.5 PSIG OF EACH OTHER (CRITERIA 1)  ODP-ZZ-00020, ATTACH 1, pg. 1	CANDIDATE SHOULD REVIEW ALL CTMT ATMOS PRESS AND DETERMINE THEY ARE WITHIN 2.5 PSIG. (2.8 PSIG HIGHEST, 1.0 PSIG LOWEST)	S U  Comments:
8. DETERMINE CTMT COOLER AVG AIR TEMP  T/S SR 3.6.5.1	CANDIDATE SHOULD DETERMINE THE PORTABLE AIR TEMPERATURE MUST BE USED  $106 + 90 + 98 + 102 = 396/4 =$ 99°F AVERAGE AIR TEMPERATURE	S U  Comments:
9.	THIS ADMIN JPM IS COMPLETE  <u>RECORD STOP TIME ON PAGE 1</u>	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
10.	<p>COMPARE CANDIDATE'S SHIFT AND READINGS:</p> <p><b>OPΔT: SAT CRITERIA #1</b></p> <p><b>OTΔT: SAT CRITERIA #2</b></p> <p><b>RC LP ΔT: SAT CRITERIA #2</b></p> <p><b>CTMT ATMOS PRESS: SAT CRITERIA #1</b></p> <p><b>CTMT COOLER INLET AIR TEMP DETERMINED TO 99°F</b></p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

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Initial Conditions: CALLAWAY PLANT IS IN MODE 1. YOU ARE THE EXTRA REACTOR OPERATOR ON SHIFT.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO COMPLETE THE ATTACHED TWO PAGES OF OSP-ZZ-00001, CONTROL ROOM SHIFT AND DAILY READINGS AND CHANNEL CHECKS. SS/OS HAS GRANTED PERMISSION TO USE CRITERIA 2.

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

**CONTROL ROOM SHIFT & DAILY READINGS AND CHANNEL CHECK**  
**MODES 1 – 4                      12 Hour Shift**

Date 12/20/2000

**OSP-ZZ-00001**  
**Rev. 6**

	<i>Mode</i>	<i>Tech. Spec./FSAR</i>	<i>I.D.</i>	<i>Acceptance Criteria</i>	<i>Units</i>	<i>00-02</i>	<i>12-14</i>	<i>CRI 1</i>
<b>T AVG AND ΔT (at RL004)</b>								
RC LP 1 OV Pwr ΔT Set Point	1-2		BB TI-411B		% FP	112		
RC LP 1 ΔT	1-2		BB TI-411A		% FP	100		
RC LP 1 OV Temp ΔT Set Point	1-2		BB TI-411C		% FP	122		
RC LP 1 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-412	551 ≤ T ≤ 592.6	°F	592		
RC LP 2 OV Pwr ΔT Set Point	1-2		BB TI-421B		% FP	109		
RC LP 2 ΔT	1-2		BB TI-421A		% FP	107		
RC LP 2 OV Temp ΔT Set Point	1-2		BB TI-421C		% FP	115		
RC LP 2 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-422	551 ≤ T ≤ 592.6	°F	588		
RC LP 3 OV Pwr ΔT Set Point	1-2		BB TI-431B		% FP	114		
RC LP 3 ΔT	1-2		BB TI-431A		% FP	99		
RC LP 3 OV Temp ΔT Set Point	1-2		BB TI-431C		% FP	122		
RC LP 3 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-432	551 ≤ T ≤ 592.6	°F	589		
RC LP 4 OV Pwr ΔT Set Point	1-2		BB TI-441B		% FP	110		
RC LP 4 ΔT	1-2		BB TI-441A		% FP	104		
RC LP 4 OV Temp ΔT Set Point	1-2		BB TI-441C		% FP	123		
RC LP 4 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-442	551 ≤ T ≤ 592.6	°F	585		
OPΔT Setpoint Channel Check	1-2	3.3.1-7#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat			6%
OTΔT Setpoint Channel Check	1-2	3.3.1-6#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat			7%
RC LP ΔT Channel Check	1-2	3.3.1-6#1, 3.3.1-7#1, 3.3.1-14.C.1#1, 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1, 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1 *, 3.3.2-6.D.3.B#1			Sat/Unsat			7%

\* Except when all MFIVs are CLOSED  
 \*\* Mode 2 with Keff ≥ 1.0

REMARKS:



**CONTROL ROOM SHIFT & DAILY READINGS AND CHANNEL CHECK**  
**MODES 1 – 4                      12 Hour Shift**

Date 12/20/2000

OSP-ZZ-00001  
Rev. 6

<i>Mode</i>	<i>Tech. Spec./FSAR</i>	<i>I.D.</i>	<i>Acceptance Criteria</i>	<i>Units</i>	<i>00-02</i>	<i>12-14</i>	<i>CRI 1</i>
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**AUXILIARY FEEDWATER (at RL005)**

Condensate Storage Tank Level	1-3	3.7.6.1	AP LI-4A	≥ 62	%	88	
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**FLOW RATE MEASUREMENT DEVICES \* (at RL014) FSAR 16.0.**

Cooling Tower B/D Disch	All	16.11.1.3.1-2.C	FI DB-1017	◆ Discharge Limit – 10, 160	1000 gpm	10.5	
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**CONTAINMENT (at RL018)**

CTMT Atmos Press	1-3		GN PI-934		PSIG	1.0		
CTMT Atmos Press	1-3		GN PI-936		PSIG	1.5		
CTMT Atmos Press	1-3		GN PI-935		PSIG	2.8		
CTMT Atmos Press	1-3		GN PI-937		PSIG	1.0		
CTMT Atmos Press Channel Check	1-3	3.3.2-1.C#1 3.3.2-2.C#1 3.3.1-14.D#1, 3.3.2-3.B.3#1, 3.3.2-4.D#1@@, 3.3.2-5.E.4#1@, 3.3.2-6.D.4#1			Sat / Unsat			2.5 psig

CTMT Cooler D Inlet Air Temp	1-4	3.6.5.1	GN TI-61 **		°F	Note (1)	
CTMT Cooler B Inlet Air Temp	1-4	3.6.5.1	GN TI-63 **		°F	90	
CTMT Cooler A Inlet Air Temp	1-4	3.6.5.1	GN TI-60 **		°F	98	
CTMT Cooler C Inlet Air Temp	1-4	3.6.5.1	GN TI-62 **		°F	102	
CTMT Avg Air Temp	1-4	3.6.5.1		≤120	°F		

**FLOW RATE MEASUREMENT DEVICES (at RL018)**

CTMT Normal Sump Level	1-4	3.4.15.A.1	LF-LI-10 ***	VAR	Inches	20	
CTMT Normal Sump Level	1-4	3.4.15.A.1	LF LI-9 ***	VAR	Inches	14	

- ◆ HTP-ZZ-02006 lists 10,160 gpm to ensure flow at manway 86-5 is not excessive.
- \* Channel Checks on Cooling Tower Blowdown limits SHALL consist of verifying indication of flow during periods of release, and SHALL be made at least once per 24 hours on days in continuous, periodic, or batch releases are made.
- \*\* If one or more of the four temperature indications used to determine the arithmetical average of the primary containment average air temperature fails, the instrument(s) should be declared inoperable and not used to satisfy the surveillance requirements of T/S SR 3.6.5.1
- If Local air temperature readings cannot be taken at the failed location(s) within the specified surveillance frequency requirements, then enter **T/S LCO 3.6.5** action statement.
- \*\*\* Acceptable discharge monitoring is indicated by a comparison of sump level changes since the previous shift.
- @ Mode 2 & 3 – Except when all MFIVs are closed.
- @@ Modes 2 & 3 – Except when all MSIVs are CLOSED.

REMARKS: (1) Portable air temperature monitor indicates 106°F. CN TI-61 WR'ed

	Mode	Tech. Spec./FSAR	I.D.	Acceptance Criteria	Units	00-02	12-14	CRI 1
<b>T AVG AND ΔT (at RL004)</b>								
RC LP 1 OV Pwr ΔT Set Point	1-2		BB TI-411B		% FP	112		
RC LP 1 ΔT	1-2		BB TI-411A		% FP	100		
RC LP 1 OV Temp ΔT Set Point	1-2		BB TI-411C		% FP	122		
RC LP 1 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-412	$551 \leq T \leq 592.6$	°F	592		
RC LP 2 OV Pwr ΔT Set Point	1-2		BB TI-421B		% FP	109		
RC LP 2 ΔT	1-2		BB TI-421A		% FP	107		
RC LP 2 OV Temp ΔT Set Point	1-2		BB TI-421C		% FP	115		
RC LP 2 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-422	$551 \leq T \leq 592.6$	°F	588		
RC LP 3 OV Pwr ΔT Set Point	1-2		BB TI-431B		% FP	114		
RC LP 3 ΔT	1-2		BB TI-431A		% FP	99		
RC LP 3 OV Temp ΔT Set Point	1-2		BB TI-431C		% FP	122		
RC LP 3 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-432	$551 \leq T \leq 592.6$	°F	589		
RC LP 4 OV Pwr ΔT Set Point	1-2		BB TI-441B		% FP	110		
RC LP 4 ΔT	1-2		BB TI-441A		% FP	104		
RC LP 4 OV Temp ΔT Set Point	1-2		BB TI-441C		% FP	123		
RC LP 4 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-442	$551 \leq T \leq 592.6$	°F	585		
OPΔT Setpoint Channel Check	1-2	3.3.1-7#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat	SAT		6%
OTΔT Setpoint Channel Check	1-2	3.3.1-6#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat	SAT*		7%
RC LP ΔT Channel Check	1-2	3.3.1-6#1, 3.3.1-7#1, 3.3.1-14.C.1#1, 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1, 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1 *, 3.3.2-6.D.3.B#1			Sat/Unsat	SAT*		7%

\* Except when all MFIVs are CLOSED

\*\* Mode 2 with  $K_{eff} \geq 1.0$

REMARKS: \* Should denote SAT by Criteria 2.

<i>Mode</i>	<i>Tech. Spec./FSAR</i>	<i>I.D.</i>	<i>Acceptance Criteria</i>	<i>Units</i>	<i>00-02</i>	<i>12-14</i>	<i>CRI 1</i>
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**AUXILIARY FEEDWATER (at RL005)**

Condensate Storage Tank Level	1-3	3.7.6.1	AP LI-4A	≥ 62	%	88	
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**FLOW RATE MEASUREMENT DEVICES \* (at RL014) FSAR 16.0.**

Cooling Tower B/D Disch	All	16.11.1.3.1-2.C	FI DB-1017	◆ Discharge Limit – 10, 160	1000 gpm	10.5	
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**CONTAINMENT (at RL018)**

CTMT Atmos Press	1-3		GN PI-934		PSIG	1.0		
CTMT Atmos Press	1-3		GN PI-936		PSIG	1.5		
CTMT Atmos Press	1-3		GN PI-935		PSIG	2.8		
CTMT Atmos Press	1-3		GN PI-937		PSIG	1.0		
CTMT Atmos Press Channel Check	1-3	3.3.2-1.C#1 3.3.2-2.C#1 3.3.1-14.D#1, 3.3.2-3.B.3#1,3.3.2-4.D#1@@, 3.3.2-5.E.4#1@, 3.3.2-6.D.4#1			Sat / Unsat	SAT		2.5 psig

CTMT Cooler D Inlet Air Temp	1-4	3.6.5.1	GN TI-61 **		°F	Note (1)	
CTMT Cooler B Inlet Air Temp	1-4	3.6.5.1	GN TI-63 **		°F	90	
CTMT Cooler A Inlet Air Temp	1-4	3.6.5.1	GN TI-60 **		°F	98	
CTMT Cooler C Inlet Air Temp	1-4	3.6.5.1	GN TI-62 **		°F	102	
CTMT Avg Air Temp	1-4	3.6.5.1		≤120	°F	99	

**FLOW RATE MEASUREMENT DEVICES (at RL018)**

CTMT Normal Sump Level	1-4	3.4.15.A.1	LF-LI-10 ***	VAR	Inches	20	
CTMT Normal Sump Level	1-4	3.4.15.A.1	LF LI-9 ***	VAR	Inches	14	

◆ HTP-ZZ-02006 lists 10,160 gpm to ensure flow at manway 86-5 is not excessive.

\* Channel Checks on Cooling Tower Blowdown limits SHALL consist of verifying indication of flow during periods of release, and SHALL be made at least once per 24 hours on days in continuous, periodic, or batch releases are made.

\*\* If one or more of the four temperature indications used to determine the arithmetical average of the primary containment average air temperature fails, the instrument(s) should be declared inoperable and not used to satisfy the surveillance requirements of T/S SR 3.6.5.1.

If Local air temperature readings cannot be taken at the failed location(s) within the specified surveillance frequency requirements, then enter **T/S LCO 3.6.5** action statement.

\*\*\* Acceptable discharge monitoring is indicated by a comparison of sump level changes since the previous shift.

@ Mode 2 & 3 – Except when all MFIVs are closed.

@@ Modes 2 & 3 – Except when all MSIVs are CLOSED.

REMARKS: (1) Portable air temperature monitor indicates 106°F. CN TI-61 WR'ed

# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A2SRO	KSA NO:	G2.1.25
COMPLETION TIME:	10 MINUTES	KSA RATING:	2.8/3.1
JOB TITLE:	SRO	REVISION:	000928
DUTY:	ADMINISTRATIVE		
TASK TITLE:	REVIEW CHANNEL CHECKS ON MAIN CONTROL BOARD INDICATORS		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

REFERENCES: OSP-ZZ-00001, Control Room Shift and Daily Log Readings and Channel Checks, Rev 35  
ODP-ZZ-00020, Instrumentation Channel Deviations, Rev 11

TOOLS/EQUIPMENT: Page 1 and 2 of Attachment 1 of OSP-ZZ-00001, Red ink pen

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

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

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. YOU ARE THE CONTROL ROOM SUPERVISOR.

Initiating Cues: PERFORM A REVIEW OF THE ATTACHED TWO PAGES OF OSP-ZZ-00001, CONTROL ROOM SHIFT AND DAILY READINGS AND CHANNEL CHECKS. BASED ON YOUR REVIEW, DETERMINE ANY REQUIRED ACTIONS FROM TECHNICAL SPECIFICATIONS.

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

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

- (1) OTΔT AND RC LP ΔT ARE SAT BY CRITERIA #2,
- (2) THE CST LEVEL IS BELOW T/S AND WILL HAVE APPLIED T/S 3.7.6.A,
- (3) CTMT COOLER AVERAGE IS CALCULATED INCORRECTLY.

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

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

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW HIM TO REVIEW WORK TO BE PERFORMED</p> <p><b>STEPS MAY BE PREFORMED IN ANY ORDER</b></p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>2. DETERMINE OPΔT SETPOINTS WITHIN 6% OF EACH OTHER (CRITERIA 1)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD REVIEW OPΔT FOR ALL LOOP AND DETERMINE THEY ARE WITHIN 6%. (112% HIGHEST, 109% LOWEST)</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>3. DETERMINE OTΔT SETPOINTS WITHIN 7% OF EACH OTHER (CRITERIA 1)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE OTΔT IS NOT SAT BY CRITERIA 1 AND APPLY CRITERIA 2</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4.* DETERMINE OTΔT SETPOINTS WITHIN 7% OF AVERAGE (CRITERIA 2)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE OTΔT IS SAT BY CRITERIA 2</p> <p>AVERAGE = 120.5%</p> <p>ALL OTΔT SETPOINTS MUST BE ± 7% OF 120.5%</p> <p>RANGE 113.5% TO 127.5%</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>5.* DETERMINE RC LP ΔT SETPOINTS WITHIN 7% OF EACH OTHER (CRITERIA 1)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE RC LP ΔT SETPOINTS IS NOT SAT BY CRITERIA 1 AND APPLY CRITERIA 2</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>6.* DETERMINE RC LP ΔT SETPOINTS WITHIN 7% OF AVERAGE (CRITERIA 2)</p> <p>ODP-ZZ-00020, ATTACH 1, pg. 1</p>	<p>CANDIDATE SHOULD DETERMINE RC LP ΔT SETPOINTS ARE SAT BY CRITERIA 2</p> <p>AVERAGE = 102.5 °F</p> <p>ALL RC LP ΔT SETPOINTS MUST BE ± 7% OF 102.5%</p> <p>RANGE 95.5% TO 109.5%</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
7.* DETERMINE CONDENSATE STORAGE TANK LEVEL ACCEPTABLE	CANDIDATE SHOULD DETERMINE CST LEVEL IS BELOW AMOUNT REQUIRED BY T/S 3.7.6.A  ESW VERIFIED OPERABLE WITHIN 4 HOURS AND ONCE PER 12 HOURS THEREAFTER AND CST RESTORED OPERABLE WITHIN 7 DAYS  CST LEVEL READING SHOULD BE CIRCLED IN RED INK. NOTE: NOT REQUIRED FOR CRITICAL TASK	S U  Comments:
8. DETERMINE CTMT ATMOS PRESS SETPOINTS WITHIN 2.5 PSIG OF EACH OTHER (CRITERIA 1)  ODP-ZZ-00020, ATTACH 1, pg. 1	CANDIDATE SHOULD REVIEW ALL CTMT ATMOS PRESS AND DETERMINE THEY ARE WITHIN 2.5 PSIG. (2.8 PSIG HIGHEST, 1.0 PSIG LOWEST)	S U  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	STANDARD	SCORE
9.* DETERMINE CTMT COOLER AVG AIR TEMP INCORRECTLY AVERAGED  T/S SR 3.6.5.1	CANDIDATE SHOULD DETERMINE THE PORTABLE AIR TEMPERATURE MUST BE USED  $106 + 90 + 98 + 102 = 396 / 4 =$ 99°F AVERAGE AIR TEMPERATURE	<b>S U</b>  Comments:
10.	<b>THIS ADMIN JPM IS COMPLETE</b>  <u><b>RECORD STOP TIME ON PAGE 1</b></u>	<b>S U</b>  Comments:
11.	COMPARE CANDIDATE'S SHIFT AND READINGS:  <b>OTΔT: SAT CRITERIA #2</b>  <b>RC LP ΔT: SAT CRITERIA #2</b>  <b>CST LVL: APPLY T/S 3.7.6.A</b>  <b>CTMT COOLER INLET AIR TEMP DETERMINED TO 99°F</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 cues. You may use any approved reference materials normally available to you, unless directed otherwise. Make all written reports, oral reports, and log entries as if the evolution was actually being performed. When you complete the task successfully, the objective for this Administrative Job Performance Measure will be satisfied.

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. YOU ARE THE CONTROL ROOM SUPERVISOR.

Initiating Cues: PERFORM A REVIEW OF THE ATTACHED TWO PAGES OF OSP-ZZ-00001, CONTROL ROOM SHIFT AND DAILY READINGS AND CHANNEL CHECKS. BASED ON YOUR REVIEW, DETERMINE ANY REQUIRED ACTIONS FROM TECHNICAL SPECIFICATIONS.

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

**CONTROL ROOM SHIFT & DAILY READINGS AND CHANNEL CHECK**  
**MODES 1 – 4                      12 Hour Shift**

Date 12/20/2000

**OSP-ZZ-00001**  
**Rev. 6**

	<i>Mode</i>	<i>Tech. Spec./FSAR</i>	<i>I.D.</i>	<i>Acceptance Criteria</i>	<i>Units</i>	<i>00-02</i>	<i>12-14</i>	<i>CRI 1</i>
<b>T AVG AND ΔT (at RL004)</b>								
RC LP 1 OV Pwr ΔT Set Point	1-2		BB TI-411B		% FP	112		
RC LP 1 ΔT	1-2		BB TI-411A		% FP	100		
RC LP 1 OV Temp ΔT Set Point	1-2		BB TI-411C		% FP	122		
RC LP 1 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-412	551 ≤ T ≤ 592.6	°F	592		
RC LP 2 OV Pwr ΔT Set Point	1-2		BB TI-421B		% FP	109		
RC LP 2 ΔT	1-2		BB TI-421A		% FP	107		
RC LP 2 OV Temp ΔT Set Point	1-2		BB TI-421C		% FP	115		
RC LP 2 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-422	551 ≤ T ≤ 592.6	°F	588		
RC LP 3 OV Pwr ΔT Set Point	1-2		BB TI-431B		% FP	114		
RC LP 3 ΔT	1-2		BB TI-431A		% FP	99		
RC LP 3 OV Temp ΔT Set Point	1-2		BB TI-431C		% FP	122		
RC LP 3 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-432	551 ≤ T ≤ 592.6	°F	589		
RC LP 4 OV Pwr ΔT Set Point	1-2		BB TI-441B		% FP	110		
RC LP 4 ΔT	1-2		BB TI-441A		% FP	104		
RC LP 4 OV Temp ΔT Set Point	1-2		BB TI-441C		% FP	123		
RC LP 4 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-442	551 ≤ T ≤ 592.6	°F	585		
OPΔT Setpoint Channel Check	1-2	3.3.1-7#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat			6%
OTΔT Setpoint Channel Check	1-2	3.3.1-6#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat			7%
RC LP ΔT Channel Check	1-2	3.3.1-6#1, 3.3.1-7#1, 3.3.1-14.C.1#1, 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1, 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1 *, 3.3.2-6.D.3.B#1			Sat/Unsat			7%

\* Except when all MFIVs are CLOSED  
 \*\* Mode 2 with Keff ≥ 1.0

REMARKS:

**CONTROL ROOM SHIFT & DAILY READINGS AND CHANNEL CHECK**  
**MODES 1 – 4                      12 Hour Shift**

Date 12/20/2000

OSP-ZZ-00001  
Rev. 6

<i>Mode</i>	<i>Tech. Spec./FSAR</i>	<i>I.D.</i>	<i>Acceptance Criteria</i>	<i>Units</i>	<i>00-02</i>	<i>12-14</i>	<i>CRI 1</i>
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**AUXILIARY FEEDWATER (at RL005)**

Condensate Storage Tank Level	1-3	3.7.6.1	AP LI-4A	≥ 62	%	56 *	
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**FLOW RATE MEASUREMENT DEVICES \* (at RL014) FSAR 16.0.**

Cooling Tower B/D Disch	All	16.11.1.3.1-2.C	FI DB-1017	◆ Discharge Limit – 10, 160	1000 gpm	10	
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**CONTAINMENT (at RL018)**

CTMT Atmos Press	1-3		GN PI-934		PSIG	1.0		
CTMT Atmos Press	1-3		GN PI-936		PSIG	1.5		
CTMT Atmos Press	1-3		GN PI-935		PSIG	2.8		
CTMT Atmos Press	1-3		GN PI-937		PSIG	1.0		
CTMT Atmos Press Channel Check	1-3	3.3.2-1.C#1 3.3.2-2.C#1 3.3.1-14.D#1, 3.3.2-3.B.3#1, 3.3.2-4.D#1@@, 3.3.2-5.E.4#1@, 3.3.2-6.D.4#1			Sat / Unsat	Sat		2.5 psig

CTMT Cooler D Inlet Air Temp	1-4	3.6.5.1	GN TI-61 **		°F	Note (1)	
CTMT Cooler B Inlet Air Temp	1-4	3.6.5.1	GN TI-63 **		°F	90	
CTMT Cooler A Inlet Air Temp	1-4	3.6.5.1	GN TI-60 **		°F	98	
CTMT Cooler C Inlet Air Temp	1-4	3.6.5.1	GN TI-62 **		°F	102	
CTMT Avg Air Temp	1-4	3.6.5.1		≤120	°F	96.7	

**FLOW RATE MEASUREMENT DEVICES (at RL018)**

CTMT Normal Sump Level	1-4	3.4.15.A.1	LF-LI-10 ***	VAR	Inches	20	
CTMT Normal Sump Level	1-4	3.4.15.A.1	LF LI-9 ***	VAR	Inches	14	

◆ HTP-ZZ-02006 lists 10,160 gpm to ensure flow at manway 86-5 is not excessive.

\* Channel Checks on Cooling Tower Blowdown limits SHALL consist of verifying indication of flow during periods of release, and SHALL be made at least once per 24 hours on days in continuous, periodic, or batch releases are made.

\*\* If one or more of the four temperature indications used to determine the arithmetical average of the primary containment average air temperature fails, the instrument(s) should be declared inoperable and not used to satisfy the surveillance requirements of T/S SR 3.6.5.1

If Local air temperature readings cannot be taken at the failed location(s) within the specified surveillance frequency requirements, then enter **T/S LCO 3.6.5** action statement.

\*\*\* Acceptable discharge monitoring is indicated by a comparison of sump level changes since the previous shift.

@ Mode 2 & 3 – Except when all MFIVs are closed.

@@ Modes 2 & 3 – Except when all MSIVs are CLOSED.

REMARKS: \* CST level low due to Hold off 00-0216 on CST Fill valve Level is below T/S. Apply 3.7.6.a and circle in red ink.

(1) CN TI-61 WR'ed. Local temperature reading is 106°F. Averaged CN TI-63, GN TI-60, GN TI-62

	Mode	Tech. Spec./FSAR	I.D.	Acceptance Criteria	Units	00-02	12-14	CRI 1
<b>T AVG AND ΔT (at RL004)</b>								
RC LP 1 OV Pwr ΔT Set Point	1-2		BB TI-411B		% FP	112		
RC LP 1 ΔT	1-2		BB TI-411A		% FP	100		
RC LP 1 OV Temp ΔT Set Point	1-2		BB TI-411C		% FP	122		
RC LP 1 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-412	$551 \leq T \leq 592.6$	°F	592		
RC LP 2 OV Pwr ΔT Set Point	1-2		BB TI-421B		% FP	109		
RC LP 2 ΔT	1-2		BB TI-421A		% FP	107		
RC LP 2 OV Temp ΔT Set Point	1-2		BB TI-421C		% FP	115		
RC LP 2 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-422	$551 \leq T \leq 592.6$	°F	588		
RC LP 3 OV Pwr ΔT Set Point	1-2		BB TI-431B		% FP	114		
RC LP 3 ΔT	1-2		BB TI-431A		% FP	99		
RC LP 3 OV Temp ΔT Set Point	1-2		BB TI-431C		% FP	122		
RC LP 3 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-432	$551 \leq T \leq 592.6$	°F	589		
RC LP 4 OV Pwr ΔT Set Point	1-2		BB TI-441B		% FP	110		
RC LP 4 ΔT	1-2		BB TI-441A		% FP	104		
RC LP 4 OV Temp ΔT Set Point	1-2		BB TI-441C		% FP	123		
RC LP 4 T AVG	1-2 **	3.4.1.2, 3.4.2.1	BB TI-442	$551 \leq T \leq 592.6$	°F	585		
OPΔT Setpoint Channel Check	1-2	3.3.1-7#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat	SAT		6%
OTΔT Setpoint Channel Check	1-2	3.3.1-6#1, 3.3.1-14.C.1#1 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1* 3.3.2-6.D.3.B#1			Sat/Unsat	SAT*		7%
RC LP ΔT Channel Check	1-2	3.3.1-6#1, 3.3.1-7#1, 3.3.1-14.C.1#1, 3.3.2-5.E.3.A#1, 3.3.2-6.D.3.A#1, 3.3.1-14.C.2#1, 3.3.2-5.E.3.B#1 *, 3.3.2-6.D.3.B#1			Sat/Unsat	SAT*		7%

\* Except when all MFIVs are CLOSED

\*\* Mode 2 with  $K_{eff} \geq 1.0$

REMARKS: \* Should denote SAT by Criteria 2.

Mode	Tech. Spec./FSAR	I.D.	Acceptance Criteria	Units	00-02	12-14	CRI 1
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**AUXILIARY FEEDWATER (at RL005)**

Condensate Storage Tank Level	1-3	3.7.6.1	AP LI-4A	≥ 62	%	56 *	
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**FLOW RATE MEASUREMENT DEVICES \* (at RL014) FSAR 16.0.**

Cooling Tower B/D Disch	All	16.11.1.3.1-2.C	FI DB-1017	◆ Discharge Limit – 10, 160	1000 gpm	10	
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**CONTAINMENT (at RL018)**

CTMT Atmos Press	1-3		GN PI-934		PSIG	1.0		
CTMT Atmos Press	1-3		GN PI-936		PSIG	1.5		
CTMT Atmos Press	1-3		GN PI-935		PSIG	2.8		
CTMT Atmos Press	1-3		GN PI-937		PSIG	1.0		
CTMT Atmos Press Channel Check	1-3	3.3.2-1.C#1 3.3.2-2.C#1 3.3.1-14.D#1, 3.3.2-3.B.3#1,3.3.2-4.D#1@@, 3.3.2-5.E.4#1@, 3.3.2-6.D.4#1			Sat / Unsat	SAT		2.5 psig

CTMT Cooler D Inlet Air Temp	1-4	3.6.5.1	GN TI-61 **		°F	Note (1)		
CTMT Cooler B Inlet Air Temp	1-4	3.6.5.1	GN TI-63 **		°F	90		
CTMT Cooler A Inlet Air Temp	1-4	3.6.5.1	GN TI-60 **		°F	98		
CTMT Cooler C Inlet Air Temp	1-4	3.6.5.1	GN TI-62 **		°F	102		
CTMT Avg Air Temp	1-4	3.6.5.1		≤120	°F	96.7		

**FLOW RATE MEASUREMENT DEVICES (at RL018)**

CTMT Normal Sump Level	1-4	3.4.15.A.1	LF-LI-10 ***	VAR	Inches	20		
CTMT Normal Sump Level	1-4	3.4.15.A.1	LF LI-9 ***	VAR	Inches	14		

- ◆ HTP-ZZ-02006 lists 10,160 gpm to ensure flow at manway 86-5 is not excessive.
- \* Channel Checks on Cooling Tower Blowdown limits SHALL consist of verifying indication of flow during periods of release, and SHALL be made at least once per 24 hours on days in continuous, periodic, or batch releases are made.
- \*\* If one or more of the four temperature indications used to determine the arithmetical average of the primary containment average air temperature fails, the instrument(s) should be declared inoperable and not used to satisfy the surveillance requirements of T/S SR 3.6.5.1.
- If Local air temperature readings cannot be taken at the failed location(s) within the specified surveillance frequency requirements, then enter **T/S LCO 3.6.5** action statement.
- \*\*\* Acceptable discharge monitoring is indicated by a comparison of sump level changes since the previous shift.
- @ Mode 2 & 3 – Except when all MFIVs are closed.
- @@ Modes 2 & 3 – Except when all MSIVs are CLOSED.

REMARKS: \* CST level low due to Hold off 00-0216 on CST fill valve.

(1) GN TI-61 WR'ed. Local temperature reading is 106°F. Averaged GN TI-63, GN TI-60, GN TI-62. Candidate should average to 99°F.

# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A3RO	KSA NO:	G2.2.13
COMPLETION TIME:	20 MINUTES	KSA RATING:	3.6/3.8
JOB TITLE:	URO	REVISION:	000928
DUTY:	ADMINISTRATIVE		
TASK TITLE:	TAG OUT 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B)		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

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

TOOLS/EQUIPMENT: TAGOUT CONTINUATION SHEET, MU2KS01, EU3KS01

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

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

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

Initial Conditions: THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) MUST BE TAGGED OUT TO REPLACE A BROKEN IMPELLER.

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

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

INFORM THE CONTROL ROOM SUPERVISOR WHEN DONE.

Notes: USE OF THE MAINFRAME COMPUTER IS NOT ALLOWED.

TASK STANDARD: UPON COMPLETION OF THE TASK, THE CANDIDATE WILL HAVE TAGGED OUT THE 'B' BULK CHEMICAL ACID TRANSFER PUMP WITH A HOLD OFF TAG ON THE MCC BREAKER (OFF/OPEN), SUCTION VALVE (CLOSED), AND DISCHARGE VALVE (CLOSED). TAG SEQUENCE IS NOT CRITICAL.

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

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



TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW HIM TO REVIEW WORK TO BE PERFORMED</p> <p><b>STEPS MAY BE PREFORMED IN ANY ORDER</b></p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>2.* DETERMINE TYPE OF WPA REQUIRED FOR TAGGING OUT 'B' BULK CHEMICAL ACID XFR PUMP (PKS02B) IS A HOLD OFF</p> <p>APA-ZZ-00310, STEP 2.19.3 OR 4.1.1</p>	<p>CANDIDATE MAY REVIEW APA-ZZ-00310 TO ENSURE TAGGING IS FOR HUMAN PROTECTION, AND THE EQUIPMENT WILL NOT BE OPERATED</p> <p>CANDIDATE SHOULD DETERMINE A HOLD OFF IS REQUIRED</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>3. DETERMINE LOCAL HANDSWITCH KSHS13, FOR 'B' BULK CHEMICAL ACID XFR PUMP MUST BE TAGGED TO THE NORMAL AFTER STOP POSITION</p> <p>PRINT EU3KS01 UNDER ACID PUMP PKS02B HS NUMBER</p>	<p>CANDIDATE SHOULD DETERMINE LOCAL HANDSWITCH IS REQUIRED TO BE TAGGED IN THE OFF POSITION</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4.* DETERMINE 'B' BULK CHEM ACID XFR PUMP BREAKER, PG14RDF5 SHOULD BE TAGGED TO THE OFF/OPEN POSITION</p> <p>PRINT EU3KS01 UNDER MCC LOCATION (ACID)</p>	<p>CANDIDATE SHOULD DETERMINE THE POWER SUPPLY FOR PKS02B IS PG14RDF5 AND IS REQUIRED TO BE TAGGED TO THE OFF/OPEN POSITION</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5.* DETERMINE 'B' BULK CHEM ACID XFR PUMP SUCTION VALVE, KSV0017, SHOULD BE TAGGED CLOSED</p> <p>PRINT MU2KS01, B4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0017, PKS02B SUCTION VALVE IS REQUIRED TO BE TAGGED CLOSED</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>6.* DETERMINE 'B' BULK CHEM ACID XFR PUMP DISCHARGE VALVE, KSV0019, SHOULD BE TAGGED CLOSED</p> <p>PRINT MU2KS01, B3</p>	<p>CANDIDATE SHOULD DETERMINE KS00V19, PKS02B DISCHARGE VALVE IS REQUIRED TO BE TAGGED CLOSED</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
7. DETERMINE 'B' BULK CHEM ACID XFR PUMP DISCHARGE DRAIN VALVE, KSV0058, SHOULD BE TAGGED OPEN  PRINT MU2KS01, C4	CANDIDATE MAY DETERMINE KSV0058, PKS02B DISCHARGE DRAIN VALVE, SHOULD BE TAGGED OPEN OR OPEN/CAP REMOVED  SHOULD ALSO DETERMINE HOSE SHOULD BE USED TO DRAIN SYSTEM	<b>S U</b>  Comments:
8. DETERMINE 'B' BULK CHEM ACID XFR PUMP CASING DRAIN VALVE, KSV0050 SHOULD BE TAGGED OPEN  PRINT MU2KS01, B4	CANDIDATE SHOULD DETERMINE KSV0050, PKS02B, PUMP CASING DRAIN VALVE SHOULD BE TAGGED OPEN OR OPEN/CAP REMOVED  SHOULD ALSO DETERMINE HOSE SHOULD BE USED TO DRAIN SYSTEM	<b>S U</b>  Comments:
9.* DETERMINE 'B' BULK CHEMICAL ACID XFR PUMP MINI FLOW ISO VALVE, KSV0022, SHOULD BE TAGGED CLOSED  PRINT MU2KS01, C4	CANDIDATE SHOULD DETERMINE KSV0022, PKS02B PUMP MINI FLOW ISO VALVE, SHOULD BE TAGGED CLOSED	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
10.* DETERMINE 'B' BULK CHEM ACID XFR PUMP MINI FLOW ISO VALVE, KSV0045, SHOULD BE TAGGED CLOSED  PRINT M22EB01, C4	CANDIDATE SHOULD DETERMINE KSV0045, PKS02B PUMP MINI FLOW ISO VALVE, SHOULD BE TAGGED CLOSED	S U  Comments:
11.	THIS ADMIN JPM IS COMPLETE  <u>RECORD STOP TIME ON PAGE 1</u>	S U  Comments:
12.	COMPARE CANDIDATE'S TAGOUT CONTINUATION SHEET TO THE ATTACHED. ENSURE THE FOLLOWING:  WPA TYPE: <b>HOLD OFF</b>  <b>PG14RDF5: OFF OR OPEN</b>  <b>KSV0017: CLOSED</b>  <b>KSV0019: CLOSED</b>  <b>KSV0022: CLOSED</b>  <b>KSV0045: CLOSED</b>  <b>TAG SEQUENCE IS <u>NOT</u> CRITICAL</b>	S U  Comments:

\* CRITICAL STEP

TAGOUT CONTINUATION SHEET

WPA TYPE: HOLD OFF

TAG SEQUENCE NUMBER	TAGGED COMPONENT	TAGGING POSITION
1	KSHS13	OFF
2	PG14RDF5	OFF
3	KSV0017	CLOSED
4	KSV0019	CLOSED
5	KSV0058	OPEN/CAP REMOVED
6	KSV0050	OPEN/CAP REMOVED
7	KSV0022	CLOSED
8	KSV0045	CLOSED

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

Initial Conditions: THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) MUST BE TAGGED OUT TO REPLACE A BROKEN IMPELLER.

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

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

INFORM THE CONTROL ROOM SUPERVISOR WHEN DONE.

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

ILE-7/2000-ADM3JPM

## TAGOUT CONTINUATION SHEET

WPA TYPE: \_\_\_\_\_

[illegible]

# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A3SRO	KSA NO:	G2.2.13
COMPLETION TIME:	15 MINUTES	KSA RATING:	3.6/3.8
JOB TITLE:	SRO	REVISION:	000928
DUTY:	ADMINISTRATIVE		
TASK TITLE:	REVIEW WPA FOR 'B' BULK CHEMICAL ACID TRANSFER PUMP		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

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

TOOLS/EQUIPMENT: COMPLETED TAGOUT CONTINUATION SHEET, MU2KS01, EU3KS01

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

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

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

Initial Conditions: THE REACTOR OPERATOR HAS PREPARED WPA TO REPLACE THE PUMP IMPELLER FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND HAS GIVEN THE WPA TO YOU FOR REVIEW.

Initiating Cues: YOU HAVE BEEN DIRECTED TO REVIEW THE WPA FOR 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) USING PRINTS PROVIDED ENSURE IT IS ADEQUATE TO PERFORM THE REQUIRED MAINTENANCE. INFORM THE SHIFT SUPERVISOR WHEN THE WPA REVIEW IS COMPLETE.

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

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

- (1) FOR TAG #2 PG13RDF1 IS AN INCORRECT COMPONENT, PG14RDF5 IS THE CORRECT COMPONENT,
- (2) FOR TAG #3 KSV0018 IS AN INCORRECT COMPONENT, KSV0017 IS THE CORRECT COMPONENT,
- (3) FOR TAG #7, OPEN IS AN INCORRECT TAGGING POSITION, CLOSED IS THE CORRECT TAGGING POSITION.

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

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

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>1. PROVIDE CANDIDATE WITH THE TAGOUT CONTINUATION SHEET AND ALLOW HIM TO REVIEW THE WORK TO BE PERFORMED</p> <p><b>STEPS MAY BE PREFORMED IN ANY ORDER</b></p>	<p>CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS, INITIATING CUES, AND TAGOUT CONTINUATION SHEET</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>2.* DETERMINE HOLD OFF IS THE CORRECT TYPE OF WPA</p> <p>APA-ZZ-00310, STEP 2.19.3 OR 4.1.1</p>	<p>CANDIDATE MAY REVIEW APA-ZZ-00310 TO ENSURE TAGGING IS FOR PERSONNEL PROTECTION, AND THE EQUIPMENT WILL NOT BE OPERATED</p> <p>CANDIDATE SHOULD DETERMINE A HOLD OFF IS REQUIRED</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>3. DETERMINE CORRECT HANDSWITCH TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT EU3KS01 UNDER HS NUMBER</p>	<p>CANDIDATE SHOULD DETERMINE THE LOCAL HANDSWITCH, KSHS13 SHOULD BE TAGGED TO OFF PER PRINT EU3KS01</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4.* DETERMINE CORRECT BREAKER TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) MOTOR AND IT'S REQUIRED POSITION</p> <p>PRINT EU3KS01 UNDER MCC LOCATION (ACID)</p>	<p>CANDIDATE SHOULD DETERMINE PG13RDF1 IS <u>INCORRECT</u> BREAKER FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP MOTOR</p> <p><b>NOTE:</b> MAY NEED TO ASK A FOLLOW UP QUESTION TO ENSURE CANDIDATE SUPPLIES EVALUATOR WITH CORRECT BREAKER</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>5.* DETERMINE CORRECT BREAKER TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) MOTOR AND IT'S REQUIRED POSITION</p> <p>PRINT EU3KS01 UNDER MCC LOCATION</p>	<p>CANDIDATE SHOULD DETERMINE THE POWER SUPPLY FOR PKS02B IS PG14RDF5 AND IS REQUIRED TO BE TAGGED TO THE OFF/OPEN POSITION</p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>6.* DETERMINE CORRECT SUCTION VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, B4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0018 IS <u>INCORRECT</u> VALVE FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP SUCTION VALVE</p> <p><b>NOTE:</b> MAY NEED TO ASK A FOLLOW UP QUESTION TO ENSURE CANDIDATE SUPPLIES EVALUATOR WITH CORRECT VALVE</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>7.* DETERMINE CORRECT SUCTION VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, B4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0017 IS THE <u>CORRECT</u> SUCTION VALVE AND IS REQUIRED TO BE TAGGED CLOSED</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>8. DETERMINE CORRECT DISCHARGE VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, B3</p>	<p>CANDIDATE SHOULD DETERMINE KSV0019 IS THE DISCHARGE VALVE AND IS REQUIRED TO BE TAGGED CLOSED</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>9. DETERMINE CORRECT PUMP DISCH DRAIN VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, C4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0058 IS THE PUMP DISCH DRAIN VALVE AND IS REQUIRED TO BE TAGGED OPEN OR OPEN/CAP REMOVED</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>10. DETERMINE CORRECT PUMP CASING DRAIN VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, B4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0050 IS THE PUMP CASING DRAIN VALVE AND IS REQUIRED TO BE TAGGED OPEN OR OPEN/CAP REMOVED</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>11. DETERMINE CORRECT PUMP MINI FLOW VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, C4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0022 IS THE CORRECT MINI FLOW VALVE AND IT IS REQUIRED TO BE TAGGED CLOSED</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>12. DETERMINE CORRECT PUMP MINI FLOW VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, C4</p>	<p>CANDIDATE SHOULD DETERMINE KSV0045 IS CORRECT VALVE FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP MINI FLOW, BUT OPEN IS AN INCORRECT POSITION</p> <p><b>NOTE:</b> MAY NEED TO ASK A FOLLOW UP QUESTION TO ENSURE CANDIDATE SUPPLIES EVALUATOR WITH CORRECT VALVE</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>13.* DETERMINE CORRECT PUMP MINI FLOW VALVE TO BE TAGGED FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND IT'S REQUIRED POSITION</p> <p>PRINT MU2KS01, C4</p>	<p>CANDIDATE SHOULD DETERMINE CLOSED IS THE CORRECT TAGGING POSITION FOR KSV0045</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>14.</p>	<p><b>THIS ADMIN JPM IS COMPLETE</b></p> <p><b><u>RECORD STOP TIME ON PAGE 1</u></b></p>	<p><b>S U</b></p> <p>Comments:</p>
	<p>COMPARE CANDIDATE'S TAGOUT CONTINUATION SHEET TO THE ATTACHED. ENSURE THE FOLLOWING:</p> <p><b>WPA WAS INCORRECT</b></p> <p><b>TAGS #2, #3, AND #8 HAVE BEEN CORRECTED.</b></p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TAGOUT CONTINUATION SHEET

WPA TYPE: HOLD OFF

TAG SEQUENCE NUMBER	TAGGED COMPONENT	TAGGING POSITION
1	KSHS13	OFF/STOP
2	<del>PG13RDF4</del> PG14RDF5	OFF
3	<del>KSV0018</del> KSV0017	CLOSED
4	KSV0019	CLOSED
5	KSV0058	OPEN/CAP REMOVED
6	KSV0050	OPEN/CAP REMOVED
7	KSV0022	CLOSED
8	KSV0045	<del>OPEN</del> CLOSED

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

Initial Conditions: THE REACTOR OPERATOR HAS PREPARED WPA TO REPLACE THE PUMP IMPELLER FOR THE 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) AND HAS GIVEN THE WPA TO YOU FOR REVIEW.

Initiating Cues: YOU HAVE BEEN DIRECTED TO REVIEW THE WPA FOR 'B' BULK CHEMICAL ACID TRANSFER PUMP (PKS02B) USING PRINTS PROVIDED ENSURE IT IS ADEQUATE TO PERFORM THE REQUIRED MAINTENANCE. INFORM THE SHIFT SUPERVISOR WHEN THE WPA REVIEW IS COMPLETE.

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



ILE-12/2000A3SRO

TAGOUT CONTINUATION SHEET

WPA TYPE: HOLD OFF

TAG SEQUENCE NUMBER	TAGGED COMPONENT	TAGGING POSITION
1	KSHS13	OFF/STOP
2	PG13RDF1	OFF
3	KSV0018	CLOSED
4	KSV0019	CLOSED
5	KSV0058	OPEN/CAP REMOVED
6	KSV0050	OPEN/CAP REMOVED
7	KSV0022	CLOSED
8	KSV0045	OPEN

## **MEMORY**

The following information exists:

- Callaway Plant is replacing Spent Fuel Pool Racks. The old racks must be cleaned prior to shipping.
- Dose rate at the Spent Fuel Pool rack is 75 mrem/hr.
- The old rack is drying out creating an Airborne Radioactivity Area.
- Internal dose if respirator is worn is 0 mrem.
- Internal dose if no respirator is worn is 42 mrem.
- Time to complete job while wearing a respirator is 4.5 hours.
- Time to complete job without wearing a respirator is 4 hours.

Evaluate if personnel working on the Spent Fuel Pool rack should wear a respirator.

## **REFERENCE USE**

The Callaway Plant is in a Refueling Outage with core offload in progress. Two I & C Technicians are in the Control Room and request authorization to enter the Seal Table area to perform a surveillance. A crew briefing is in progress for discussing the seal table entry.

QUESTION: Using plant procedures, evaluate if the entry should be allowed.

# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A5RO	KSA NO:	G2.1.33
COMPLETION TIME:	15 MINUTES	KSA RATING:	3.4/4.0
JOB TITLE:	URO	REVISION:	000928
DUTY:	ADMINISTRATIVE		
TASK TITLE:	PERFORM RCS INVENTORY BALANCE		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

REFERENCES: OSP-BB-00009, RCS INVENTORY BALANCE, REV. 9

TOOLS/EQUIPMENT: ATTACHMENTS 1, 2, 3, AND 6, OF OSP-BB-00009

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

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

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

Initial Conditions: CALLAWAY PLANT HAS BEEN OPERATING AT 100% STEADY-STATE POWER FOR THE LAST 100 DAYS. THE MAINFRAME COMPUTER IS NOT WORKING. SURVEILLANCE OSP-BB-00009, RCS INVENTORY BALANCE IS REQUIRED. ALL INFORMATION HAS BEEN RECORDED ON ATTACHMENTS 1, 2 AND 3. YOU ARE THE REACTOR OPERATOR.

Initiating Cues: THE CONTROL ROOM SUPERVISOR (CRS) HAS DIRECTED YOU TO DETERMINE THE RCS LEAKAGE USING OSP-BB-00009, RCS INVENTORY BALANCE. BEGINNING WITH STEP 6.1.4 AND USING ATTACHMENT 6, PERFORM THE INDICATED CALCULATIONS. INFORM THE CRS WHEN YOU HAVE COMPLETED THE ASSIGNED TASK.

Notes: **USE OF THE MAINFRAME COMPUTER AND A PERSONAL COMPUTER (PC) IS NOT ALLOWED.**

TASK STANDARD: UPON COMPLETION OF THE TASK THE CANDIADATE WILL HAVE DETERMINED TOTAL RCS LEAKAGE IS > 1.0 GPM, IDENTIFIED RCS LEAKAGE IS APPROXIMATELY 0.2 GPM AND UNIDENTIFIED RCS LEAKAGE IS APPROXIMATELY 0.98 GPM

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

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

1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW TIME TO REVIEW WORK TO BE PERFORMED	CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.	<b>S U</b> Comments:
2. DETERMINE RCS LEAKAGE BY PERFORMING THE INDICATED CALCULATIONS ON ATTACHMENT 6  STEP 6.1.4	CANDIDATE SHOULD DETERMINE RCS LEAKAGE PER ATTACHMENT 6 OF OSP-BB-00009	<b>S U</b> Comments:
3. DETERMINE CHANGE IN MASS OF WATER CONTAINED IN THE RCDT  ATTACH 6, STEP 1.0	CANDIDATE SHOULD DETERMINE THERE HAS BEEN NO CHANGE IN RCDT MASS AND MARK STEP N/A	<b>S U</b> Comments:

\* CRITICAL STEP

<p>4.* DETERMINE MASS OF WATER CONTAINED IN THE VCT</p> <p>ATTACH 6, STEP 2.0</p>	<p>CANDIDATE SHOULD USE ATTACHMENT 3 AND DETERMINE <math>L_i = 51\%</math> AND <math>L_f = 37\%</math> AND PERFORM THE FOLLOWING:</p> <p><math>51 - 37 = 14\%</math> LEVEL CHANGE</p> <p><math>14\% \times 2.73057 \text{ ft}^3/\% = 38.22798 \text{ ft}^3</math></p> <p><math>38.22798 \text{ ft}^3 \times 1/0.01605 = 2381.8056 \text{ lbm}</math></p>	<p><b>S U</b></p> <p>Comments:</p>
<p>5. DETERMINE CHANGE IN MASS OF WATER CONTAINED IN THE PZR:</p> <p>ATTACH 6, STEP 3.0</p>	<p>CANDIDATE SHOULD DETERMINE THERE HAS BEEN NO CHANGE IN MASS OF WATER IN THE PRESSURIZER USING ATTACHMENT 3</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>6. DETERMINE CHANGE IN MASS OF WATER CONTAINED IN THE PRT</p> <p>ATTACH 6, STEP 4.0</p>	<p>CANDIDATE SHOULD DETERMINE THERE HAS BEEN NO CHANGE IN MASS OF WATER CONTAINED IN THE PRT USING ATTACHMENT 3</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<p>7. DETERMINE CHANGE IN MASS OF WATER CONTAINED IN THE RCS LOOPS</p> <p>ATTACH 6, STEP 5.0</p>	<p>CANDIDATE SHOULD DETERMINE RCS TEMPERATURE HAS NOT CHANGED SO THERE IS NO CHANGE IN THE MASS OF WATER IN THE RCS LOOPS</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>8.* SUMMARIZE RCS LEAKAGE:</p> <p>ATTACH 6, STEP 6.1</p>	<p>CANDIDATE SHOULD DETERMINE A SUM OF ALL LEAKAGE AS FOLLOWS:</p> <p>DELTA M(vct) = 2381.8 LBM</p> <p>DELTA M(pzr) = 0 LBM</p> <p>DELTA M(rcs) = 0 LBM</p> <p>TOTAL RCS LEAKAGE = 2381.8 LBM</p> <p>CONVERT MASS TO GALLONS</p> <p><math>2381.8 \times 0.01605 \times 7.4805 = 286</math> GALLONS</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP



<p>9.* DETERMINE TOTAL RCS LEAKAGE</p> <p>ATTACH 6, STEP 6.1</p>	<p>CANDIDATE SHOULD USE ATTACHMENT 3 AND DETERMINE THERE HAS BEEN 0 GALLONS MAKEUP TO THE RCS AND NO CHEMICAL ADDITIONS HAVE BEEN MADE AND ADD TO THE LEAKAGE VALUE</p> <p>TOTAL LEAKAGE 286.0</p> <p>+ M/U GAL = 0 GALLONS</p> <p>+ CHEM ADD = 0 GALLONS</p> <p>TOTAL = 286.0 GALLONS</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>10.* CONVERT FROM GALLONS TO GPM</p> <p>ATTACH 6, STEP 6.1</p>	<p>CANDIDATE SHOULD CONVERT 286.0 TO GPM BY DETERMINING THE TEST DURATION WAS 240 MINUTES AND DIVIDE</p> <p><math>286.0/240 = 1.19 \text{ GPM}</math></p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<p>11.* DETERMINE IDENTIFIED RCS LEAKAGE</p> <p>ATTACH 6, STEP 6.2</p>	<p>CANDIDATE SHOULD DETERMINE RCS IDENTIFIED RCS LEAKAGE:</p> <p>DELTA-M(rcdt) = 0 GAL</p> <p>DELTA-M(prt) = 0 GAL</p> <p>DIVERTED = 0 GAL</p> <p>SAMPLES = 0 GAL</p> <p>PRI/SEC = 50 GAL</p> <p>RCDT = 0 GAL</p> <p>TOTAL = 50 GALLONS</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>12.* CONVERT IDENTIFIED RCS LEAKAGE GALLONS TO GPM</p> <p>ATTACH 6, STEP 6.2</p>	<p>DIVIDE TOTAL LEAKAGE 50 GALLONS BY 240 MINUTES</p> <p>50 GAL/ 240 MIN = <b>0.208</b> GPM</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>13.* DETERMINE UNIDENTIFIED RCS LEAKAGE</p> <p>ATTACH 6, STEP 6.3</p>	<p>CANDIDATE SHOULD SUBTRACT IDENTIFIED RCS LEAKAGE (0.208 GPM) FROM TOTAL RCS LEAKAGE (1.19 GPM)</p> <p>1.19 – 0.208 = <b>0.982</b> GPM</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

<p>14.*CANDIDATE SHOULD NOTIFY CONTROL ROOM SUPERVISOR OF UNIDENTIFIED RCS LEAKAGE</p>	<p>CANDIDATE SHOULD NOTIFY THE CONTROL ROOM SUPERVISOR THAT RCS UNIDENTIFIED RCS LEAKAGE IS 0.982 GPM</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>15.</p>	<p><b>THIS ADMIN JPM IS COMPLETE</b></p> <p><b><u>RECORD STOP TIME ON PAGE 1</u></b></p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

***RCS INVENTORY BALANCE PLANT STATUS***

PERFORMED BY: Edward B. Stewart

INITIALS: EBS

DATE: 12/19/2000

PERFORMED BY: Stanley M. Putthoff

INITIALS: SMP

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

Charging via NCP to RCS Loop 1Letdown 120 gpm from RCS loop 3

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

Counter Reading:  $\frac{00000}{\text{Final}} - \frac{0000}{\text{Initial}} = \frac{0}{\text{Total Make Up}}$  gal

6. Chemical Additions, including RCS ammonia addition (+) (For Step 6.1 on Attachment 6) :

0 gal Purpose N/A

7. Letdown divert calculations (for Step 6.2 on Attachment 6):

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

8. Samples taken (+) (For Step 6.2 on Attachment 6):

0 gal Purpose N/A

9. Primary to Secondary Leakage (For Step 6.2 on Attachment 6):

GEF0092 Computer Point  $\frac{300}{1440} \frac{\text{gpd}}{\text{min/day}} = 0.208$  gpm

NOTE: If the computer point is not available, contact Chemistry for a value IAW **CTP-ZZ-02590**

10. Other identified leakage (for Step 6.2 on Attachment 6) which has not gone to the RCDT, PRT, S/G's which has been properly quantified:

<i>Sources</i>	<i>Leakage (gpm)</i>
None	0

***NORMAL LEAKAGE - REQUIRED SYSTEMS  
LINEUP/RESTORATION (Section 6.1)***

## Section 6.1.2: Pre-Test Lineup

<i>Step</i>	<i>Component Switch</i>	<i>Panel</i>	<i>Required Position</i>	<i>Performed By (Initials)</i>
6.1.2.1	HB-HIS-7176	RL021	CLOSED	EBS
6.1.2.2	HB-HIS-7136	RL021	CLOSED	EBS
6.1.2.3	BG-HS-25	RL002	OFF	EBS
6.1.2.4	BG-FY-111B	RL002	RESET	EBS
	BG-FY-110B	RL002	RESET	EBS
6.1.2.5	BG-HIS-112A	RL001	Man. Divert to VCT	EBS

## Section 6.1.3: Data Acquisition per Attachment 3, 4, or 5

## Section 6.1.5: Post-Test Restoration

<i>Step</i>	<i>Component Switch</i>	<i>Panel</i>	<i>Required Position</i>	<i>Performed By</i>	<i>Verified By</i>
6.1.5.1	BG-HIS-112A	RL001	AUTO		
	BG-HS-25	RL002	AUTO		
6.1.5.3	HB-HIS-7176	RL021	As Required by Radwaste		
	HB-HIS-7136	RL021	As Required by Radwaste		

**LEAKAGE DATA SHEET - PREFERRED METHOD*****Always record the following data:***

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
Time	N/A (HH:MM)	0100	0200	0300	0400	0500
RCDT Level (HB115)	HB-LI-1003	40%	40%	40%	40%	40%
VCT Level	REL0112M	51%	48%	43%	40%	37%
PZR Level Avg.	REU0483M	58%	58%	58%	58%	58%
PRT Level	REL0485M	75%	75%	75%	75%	75%
PRT Temperature	RET0485M	90°F	90°F	90°F	90°F	90°F

***For RCS pressure greater than 1700 psig, record the following data:***

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCS Avg. TAVG*	REU0484M	588.4°F	588.4°F	588.4°F	588.4°F	588.4°F
PZR Press. Avg.	REU0482M	2235 psig	2235 psig	2235 psig	2235 psig	2235 psig

***For RCS pressure less than 1700 psig, record the following data:***

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

EBS  
12/19/00***If required due to rapid RCDT level increases, record the following:***

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCDT Totalizer	HB-FQI-1014	gal	gal	gal	gal	gal

\* If temperature is less than 212°F, then the Limitations of Step 3.9 apply.

***RCS INVENTORY BALANCE CALCULATIONS***

**NOTE:** Calculation of specific volumes is not required, **if** the input data is **identical** for initial and final conditions, since the resultant Delta-M value will be zero for identical initial and final values.

**1. CHANGE IN MASS OF WATER CONTAINED IN THE RCDT:**

1.1 SPECIFIC VOLUME:  $v = .01605 \text{ ft}^3/\text{Lbm}$  (Assumes 35 psig, 100°F)

1.2  $\text{Delta-M} = (V_f - V_i) \times (1/v)$

$V_f$  and  $V_i$  are volumes in cubic feet corresponding to the final and initial levels in the RCDT, as per Attachment 7, "RCDT Volume Vs. Indicated Level".

$$\text{Delta-M(rcdt)} = \left( \frac{\text{ } (\text{ft}^3)}{V_f} - \frac{\text{ } (\text{ft}^3)}{V_i} \right) \times \left( 1 / \frac{\text{ } }{v} \right)$$

$$\text{Delta-M(rcdt)} = (+) \text{ } \text{Lbm}$$

**2. CHANGE IN MASS OF WATER CONTAINED IN THE VCT:**

2.1 SPECIFIC VOLUME:  $v = .01605 \text{ ft}^3/\text{Lbm}$  (Assumes 35 psig, 100°F)

2.2  $\text{Delta-M} = (2.73057 \text{ ft}^3/\%) \times (L_i - L_f) \times (1/v)$

$L_f$  and  $L_i$  are VCT levels in % recorded on Attachment 3, or the averaged final and initial levels in % from Attachment 4 or Attachment 5, depending on plant conditions.

$$\text{Delta-M(vct)} = (2.73057) \times \left( \frac{\text{ } \%}{L_i} - \frac{\text{ } \%}{L_f} \right) \times \left( 1 / \frac{\text{ } }{v} \right)$$

$$\text{Delta-M(vct)} = (+ \text{ or } -) \text{ } \text{Lbm}$$

### 3. CHANGE IN MASS OF WATER CONTAINED IN THE PZR:

- 3.1 SPECIFIC VOLUME: Calculate the specific volumes for saturated liquid ( $V_1$ ) and saturated vapor ( $V_v$ ), as interpolated from the ASME Steam Tables or Attachment 9. The interpolations are to be performed using the AVERAGE of the initial and final PZR or RCS WR PRESSURE data (from Attachment 3, 4, or 5), corrected to psia.

NOTE: If data is recorded on Attachment 4 or 5, the average of all data recorded MUST be computed and used to obtain the average pressure for specific volume determination.

PZR or RCS WR Pressure Data				Averaged Specific Volumes (ft <sup>3</sup> /Lbm)	
	(PSIG)#		(PSIA)*		
Final =				$V_1$ =	
Initial =				$V_v$ =	
Averaged =		+14.7 =			

# = Use for Attachment 9

\* = Use for ASME Steam Tables

- 3.2  $\Delta M = (16.8921 \text{ ft}^3/\%) \times (L_i - L_f) \times (1/V_1 - 1/V_v)$

$L_f$  and  $L_i$  are final and initial PZR levels in % recorded on Attachment 3, or the AVERAGED levels in % computed from all recorded data from Attachment 4 or Attachment 5, depending on plant conditions.  $V_1$  and  $V_v$  are specific volumes for saturated liquid and saturated vapor, respectively, calculated per Step 3.1.

$$\Delta M(\text{pZR}) = (16.8921) \times \left( \frac{\text{ } \%}{L_i} - \frac{\text{ } \%}{L_f} \right) \times \left( \frac{1}{V_1} - \frac{1}{V_v} \right)$$

$$\Delta M(\text{pZR}) = (+ \text{ or } -) \text{ } \text{Lbm}$$



#### 4. CHANGE IN MASS OF WATER CONTAINED IN THE PRT:

- 4.1 SPECIFIC VOLUME: Calculate the specific volume for saturated liquid ( $V_1$ ), as interpolated from the ASME Steam Tables or Attachment 10. The interpolations are to be performed using the PRT TEMPERATURE data recorded on Attachment 3, 4, or 5.

NOTE: PRT PRESSURE is assumed to be at 6 psig or 20.7 psia. Specific volumes computed at any pressure within 1 psi of this value will be accurate enough for this procedure.

$$V_1 = \text{___} (\text{ft}^3/\text{Lbm})$$

- 4.2  $\Delta M = (V_f - V_i) \times (1/v_1)$

$V_f$  and  $V_i$  are volumes in cubic feet corresponding to the final and initial levels in the PRT, as per Attachment 8, "PRT Volume Vs. Indicated Level".  $v_1$  is the specific volume computed per Step 4.1.

$$\Delta M(\text{prt}) = \left( \frac{\text{___} (\text{ft}^3)}{V_f} - \frac{\text{___} (\text{ft}^3)}{V_i} \right) \times \left( \frac{1}{\text{___}} \right) \frac{1}{v_1}$$

$$\Delta M(\text{prt}) = (+) \text{___} \text{ Lbm}$$

#### 5. CHANGE IN MASS OF WATER CONTAINED IN THE RCS LOOPS:

- 5.1 SPECIFIC VOLUME: Calculate the specific volumes for subcooled liquid ( $V_1$ ), as interpolated from the ASME Steam Tables or Attachment 11. The interpolations are to be performed for the initial and final PZR or RCS WR PRESSURE data, (corrected to psia), using the RCS AVG TAVG or RCS WR T-HOT TEMPERATURE data, from Attachment 3, 4, or 5.

NOTE: If data is recorded on Attachment 4 or 5, the average of all data recorded MUST be computed and used to obtain the initial and final average pressures and average temperatures for specific volume determination.

NOTE: If  $T_{\text{HOT}}$  is less than 212°F, the Limitations of Section 3.9 apply

PZR or RCS WR Pressure Data				TAVG or T-HOT Temperature (°F)	
	(PSIG)		(PSIA)		
Final =		+14.7 =		Final =	
Initial =		+14.7 =		Initial =	
Initial (V <sub>li</sub> ) =			Final (V <sub>lf</sub> ) =		

5.2  $\Delta M = (10,313 \text{ ft}^3) \times (1/V_{li} - 1/V_{lf})$

$V_{li}$  and  $V_{lf}$  are specific volumes for subcooled liquid, at initial and final conditions, respectively, calculated per step 5.1.

$$\Delta M(\text{rcs}) = (10,313) \times (1/\underline{\hspace{1cm}} - 1/\underline{\hspace{1cm}})$$

$V_{li} \qquad V_{lf}$

$$\Delta M(\text{rcs}) = (+ \text{ or } -) \underline{\hspace{2cm}} \text{ Lbm}$$

## 6. SUMMARIZE RCS LEAKAGES:

### 6.1 TOTAL RCS LEAKAGE:

$$\Delta M(\text{vct}) = \underline{\hspace{2cm}} \text{ Lbm (per Step 2.2)}$$

$$+ \Delta M(\text{pZR}) = \underline{\hspace{2cm}} \text{ Lbm (per Step 3.2)}$$

$$+ \Delta M(\text{rcs}) = \underline{\hspace{2cm}} \text{ Lbm (per Step 5.2)}$$

$$\textbf{Total RCS Leakage} = \underline{\hspace{2cm}} \text{ Lbm} \times .01605 \times 7.4805 =$$

$$= \underline{\hspace{2cm}} \text{ gal}$$

$$+ \underline{\hspace{2cm}} \text{ gal (Makeup)}$$

$$+ \underline{\hspace{2cm}} \text{ gal (Chemicals Added)*}$$

$$= \underline{\hspace{2cm}} \text{ gal} \quad / \quad \underline{\hspace{2cm}} \text{ Test Duration (Minutes)}$$

$$= \underline{\hspace{2cm}} \textbf{ GPM Total RCS Leakage}$$

\*Include ammonia injected into RCS from the ammonia addition Panel.

## 6.2 IDENTIFIED RCS LEAKAGE:

$$\begin{aligned}
 &\text{Delta-M(rcdt)} &&= \text{_____ Lbm (per Step 1.2)} \\
 &+ \text{Delta-M(prt)} &&= \text{_____ Lbm (per Step 4.2)} \\
 &\textbf{Identified RCS Leakage} &&= \text{_____ Lbm} \times 0.01605 \times 7.4805 = \\
 &&&= \text{_____ gal} \\
 &&&+ \text{_____ gal (Diverted)} \\
 &&&+ \text{_____ gal (SI Test Hdr flow)} \\
 &&&+ \text{_____ gal (Samples Taken)} \\
 &&&+ \text{_____ gal (Primary/Secondary)} \\
 &&&+ \text{_____ gal (RCDT Totalizer)} \\
 &= \text{_____ gal} &&/ \text{_____ Test Duration (Minutes)} \\
 &= \text{_____ GPM} &&+ \text{_____ GPM (per Attachment 1)} \\
 &&&(\text{Any other properly quantified leakage}) \\
 &= \text{_____ GPM Total Identified RCS Leakage}
 \end{aligned}$$

MUST be less than 10.0 GPM to meet acceptance criteria
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## 6.3 UNIDENTIFIED RCS LEAKAGE:

$$\begin{aligned}
 \textbf{Total RCS Leakage} &= \text{_____ GPM (per Step 6.1)} \\
 - \textbf{Identified RCS Leakage} &= \text{_____ GPM (per Step 6.2)} \\
 \textbf{Unidentified RCS Leakage} &= \text{_____ GPM}
 \end{aligned}$$

MUST be less than 1.0 GPM to meet acceptance criteria
---

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

Initial Conditions: CALLAWAY PLANT HAS BEEN OPERATING AT 100% STEADY-STATE POWER FOR THE LAST 100 DAYS. THE MAINFRAME COMPUTER IS NOT WORKING. SURVEILLANCE OSP-BB-00009, RCS INVENTORY BALANCE IS REQUIRED. ALL INFORMATION HAS BEEN RECORDED ON ATTACHMENTS 1, 2 AND 3. YOU ARE THE REACTOR OPERATOR.

Initiating Cues: THE CONTROL ROOM SUPERVISOR (CRS) HAS DIRECTED YOU TO DETERMINE THE RCS LEAKAGE USING OSP-BB-00009, RCS INVENTORY BALANCE. BEGINNING WITH STEP 6.1.4 AND USING ATTACHMENT 6, PERFORM THE INDICATED CALCULATIONS. INFORM THE RCS WHEN YOU HAVE COMPLETED THE ASSIGNED TASK.

Notes: **USE OF THE MAINFRAME COMPUTER AND A PERSONAL COMPUTER (PC) IS NOT ALLOWED.**

# CALLAWAY PLANT

## ADMINISTRATIVE JOB PERFORMANCE MEASURE

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ADMIN JPM NO:	ILE-12/2000A5SRO	KSA NO:	G2.1.33
COMPLETION TIME:	15 MINUTES	KSA RATING:	3.4/4.0
JOB TITLE:	URO	REVISION:	000928
DUTY:	ADMINISTRATIVE		
TASK TITLE:	REVIEW RCS INVENTORY BALANCE		

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

☐ SATISFACTORY

☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

REFERENCES: OSP-BB-00009, RCS INVENTORY BALANCE, REV 9

TOOLS/EQUIPMENT: ATTACHMENTS 1, 2, 3, AND 6 OF OSP-BB-00009

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

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

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ADMIN JPM NO: ILE-12/2000A5SRO

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

Initial Conditions: CALLAWAY PLANT HAS BEEN OPERATING AT 100% STEADY-STATE POWER FOR THE LAST 100 DAYS. THE MAINFRAME COMPUTER IS NOT WORKING. SURVEILLANCE OSP-BB-00009, RCS INVENTORY BALANCE HAS BEEN PERFORMED PER STEP 6.1.4 OF OSP-BB-00009.

Initiating Cues: YOU ARE REQUIRED TO PERFORM THE REVIEW OF THE OSP-BB-00009, RCS INVENTORY BALANCE AND DETERMINE T/S APPLICABILITY PER THE OUTCOME OF THE REVIEW.

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

TASK STANDARD: UPON COMPLETION OF THE TASK THE CANDIDATE WILL HAVE DETERMINED TOTAL RCS LEAKAGE IS > 1.0 GPM, IDENTIFIED RCS LEAKAGE IS APPROXIMATELY 0.02 GPM AND UNIDENTIFIED RCS LEAKAGE IS APPROXIMATELY 1.169 GPM AND APPLY T/S 3.4.13.

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

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

TASK NUMBER - ELEMENT	STANDARD	SCORE
1. PROVIDE CANDIDATE WITH MATERIAL AND ALLOW HIM TO REVIEW WORK TO BE PERFORMED	CANDIDATE SHOULD REVIEW ADMIN JPM INITIAL CONDITIONS AND INITIATING CUES.	S U  Comments:
2. REVIEW RCS LEAKAGE DETERMINATION BY USING CALCULATIONS ON ATTACHMENT 6  STEP 6.1.4	CANDIDATE SHOULD DETERMINE RCS LEAKAGE PER ATTACHMENT 6 OF OSP-BB-00009	S U  Comments:
3. REVIEW CHANGE IN MASS OF WATER CONTAINED IN THE RCDT  ATTACH 6, STEP 1.0	CANDIDATE SHOULD DETERMINE THERE HAS BEEN NO CHANGE IN RCDT MASS AND THE STEP HAS BEEN DONE CORRECTLY	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
<p>4. REVIEW MASS OF WATER CONTAINED IN THE VCT CALCULATION</p> <p>ATTACH 6, STEP 2.0</p>	<p>CANDIDATE SHOULD REVIEW ATTACHMENT 3 AND DETERMINE CALCULATION WAS PERFORMED CORRECTLY <math>L_i = 51\%</math> AND <math>L_f = 37\%</math> AND PERFORM THE FOLLOWING:</p> <p><math>51 - 37 = 14\%</math> LEVEL CHANGE</p> <p><math>14\% \times 2.73057 \text{ ft}/\% = 38.22798 \text{ ft}</math></p> <p><math>38.22798 \text{ ft} \times 1/0.01605 = 2381.8056 \text{ lbm}</math></p>	<p><b>S U</b></p> <p>Comments:</p>
<p>5. REVIEW CHANGE IN MASS OF WATER CONTAINED IN THE PZR DETERMINATION:</p> <p>ATTACH 6, STEP 3</p>	<p>CANDIDATE SHOULD REVIEW THERE HAS BEEN NO CHANGE IN MASS OF WATER IN THE PRESSURIZER USING ATTACHMENT 3 AND THE STEP HAS BEEN DONE CORRECTLY</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP



TASK NUMBER - ELEMENT	STANDARD	SCORE
6. REVIEW CHANGE IN MASS OF WATER CONTAINED IN THE PRT DETERMINATION  ATTACH 6, STEP 4.0	CANDIDATE SHOULD REVIEW THERE HAS BEEN NO CHANGE IN MASS OF WATER CONTAINED IN THE PRT USING ATTACHMENT 3 AND THE STEP HAS BEEN DONE CORRECTLY	S U  Comments:
7. REVIEW CHANGE IN MASS OF WATER CONTAINED IN THE RCS LOOPS DETERMINATION  ATTACH 6, STEP 5.0	CANDIDATE SHOULD REVIEW RCS TEMPERATURE HAS NOT CHANGED SO THERE IS NO CHANGE IN THE MASS OF WATER IN THE RCS LOOPS AND THE STEP HAS BEEN DONE CORRECTLY	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
8. REVIEW SUMMARIZATION OF RCS LEAKAGE:  ATTACH 6, STEP 6.1	CANDIDATE SHOULD REVIEW THE SUM OF ALL LEAKAGE AS FOLLOWS:  DELTA M(vct) = 2381.8  DELTA M(pzr) = 0 LBM  DELTA M(rcs) = 0 LBM  TOTAL RCS LEAKAGE = 2381.8  CONVERT MASS TO GALLONS  $2381.8 \times 0.01605 \times 7.4805 = 286$ GALLONS  AND DETERMINE STEP WAS DONE CORRECTLY	S U  Comments:
9. REVIEW TOTAL RCS LEAKAGE  ATTACH 6, STEP 6.0	CANDIDATE SHOULD REVIEW THERE HAS BEEN 0 GALLONS MAKEUP TO THE RCS FROM ATTACHMENT 3 AND NO CHEMICAL ADDITIONS MADE AND ADD TO THE LEAKAGE  TOTAL LEAKAGE 286.0  + M/U GAL 0 GALLONS  + CHEM ADD 0 GALLONS  TOTAL = 286.0 GALLONS  AND STEP HAS BEEN DONE CORRECTLY	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
10. CONVERT FROM GALLONS TO GPM  ATTACH 6, STEP 6.0	CANDIDATE SHOULD CONVERT 286.0 TO GPM BY DETERMINING THE TEST LASTED 240 MINUTES AND DIVIDE  $286.0/240 = 1.19 \text{ GPM}$	<b>S      U</b>  Comments:
11.*REVIEW DETERMINATION IDENTIFIED RCS LEAKAGE  ATTACH 6, STEP 6.2	CANDIDATE SHOULD REVIEW RCS IDENTIFIED RCS LEAKAGE DETERMINATION:  DELTA-M(rcdt) = 0 GAL  DELTA-M(prt) = 0 GAL  DIVERTED = 0 GAL  SAMPLES = 0 GAL  PRI/SEC = 50 GAL  RCDT = 0 GAL  TOTAL = 50 GALLONS  <b>AND DETERMINE STEP WAS DONE INCORRECTLY THE PRI/SEC AND TOTAL LEAKAGE SHOULD BE 5.0 GALLONS</b>	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	STANDARD	SCORE
12.* REVIEW CONVERSION OF IDENTIFIED RCS LEAKAGE GALLONS TO GPM  ATTACH 6, STEP 6.2	DIVIDE TOTAL LEAKAGE 50 GALLONS BY 240 MINUTES  50 GAL/ 240 MIN = 0.208 GPM  <b>CANDIDATE SHOULD DETERMINE THIS STEP WAS DONE WRONG AND THE CORRECT ANSWER IS 0.0208 GPM</b>	<b>S U</b>  Comments:
13.* DETERMINE UNIDENTIFIED RCS LEAKAGE  ATTACH 6, STEP 6.0	CANDIDATE SHOULD DETERMINE SUBTRACTION OF IDENTIFIED RCS LEAKAGE (0.208 GPM) FROM TOTAL RCS LEAKAGE (1.10 GPM) WAS DONE INCORRECTLY AND DETERMINE LEAKAGE AS FOLLOWS:  1.19 – 0.0208 = 1.169 GPM	<b>S U</b>  Comments:
14.* CANDIDATE SHOULD REVIEW T/S	CANDIDATE SHOULD DETERMINE RCS UNIDENTIFIED RCS LEAKAGE HAS EXCEEDED T/S AND <b>APPLY T/S 3.4.13:</b>  <b>REDUCE LEAKAGE WITHIN LIMITS WITHIN 4 HOURS</b>	<b>S U</b>  Comments:

\* CRITICAL STEP

ADMIN JPM NO: ILE-12/2000A5SRO

TASK NUMBER - ELEMENT	STANDARD	SCORE
15.	THIS ADMIN JPM IS COMPLETE  <u>RECORD STOP TIME ON PAGE 1</u>	S U  Comments:

\* CRITICAL STEP

***RCS INVENTORY BALANCE PLANT STATUS***

PERFORMED BY: Edward B. Steward

INITIALS: EBS

DATE: 12/19/2000

PERFORMED BY: Stanley M. Putthoff

INITIALS: SMP

1. Enter the Plant Mode: 1 (1 - 5)2. Enter the number of RCPs in operation: 4 (1 - 4)3. Circle appropriate PZR Spray Source: RCS CVCS

4. Enter brief description of flow path(s) and flow rate established for letdown and charging. (i.e., Letdown via RHR Train A to CVCS through BG-HCV-128 at 75 gpm. Charging via NCP to RCS Loop 1.)

Charging via NCP to RCS Loop 1Letdown RCS 3 to CVCS 120 gpm

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

Counter Reading:  $\frac{0}{\text{Final}} - \frac{0}{\text{Initial}} = \frac{0}{\text{Total Make Up}}$  gal

6. Chemical Additions, including RCS ammonia addition (+) (For Step 6.1 on Attachment 6) :

0 gal Purpose N/A

7. Letdown divert calculations (for Step 6.2 on Attachment 6):

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

8. Samples taken (+) (For Step 6.2 on Attachment 6):

0 gal Purpose N/A

9. Primary to Secondary Leakage (For Step 6.2 on Attachment 6):

GEF0092 Computer Point  $\frac{30}{1440} \frac{\text{gpd}}{\text{min/day}} = \frac{0.0208}{\text{gpm}}$ NOTE: If the computer point is not available, contact Chemistry for a value IAW **CTP-ZZ-02590**

10. Other identified leakage (for Step 6.2 on Attachment 6) which has not gone to the RCDT, PRT, S/G's which has been properly quantified:

<i>Sources</i>	<i>Leakage (gpm)</i>
None	0

## ***NORMAL LEAKAGE - REQUIRED SYSTEMS LINEUP/RESTORATION (Section 6.1)***

### Section 6.1.2: Pre-Test Lineup

<i>Step</i>	<i>Component Switch</i>	<i>Panel</i>	<i>Required Position</i>	<i>Performed By (Initials)</i>
6.1.2.1	HB-HIS-7176	RL021	CLOSED	EBS
6.1.2.2	HB-HIS-7136	RL021	CLOSED	EBS
6.1.2.3	BG-HS-25	RL002	OFF	EBS
6.1.2.4	BG-FY-111B	RL002	RESET	EBS
	BG-FY-110B	RL002	RESET	EBS
6.1.2.5	BG-HIS-112A	RL001	Man. Divert to VCT	EBS

### Section 6.1.3: Data Acquisition per Attachment 3, 4, or 5

### Section 6.1.5: Post-Test Restoration

<i>Step</i>	<i>Component Switch</i>	<i>Panel</i>	<i>Required Position</i>	<i>Performed By</i>	<i>Verified By</i>
6.1.5.1	BG-HIS-112A	RL001	AUTO	EBS	SMP
	BG-HS-25	RL002	AUTO	EBS	SMP
6.1.5.3	HB-HIS-7176	RL021	As Required by Radwaste	EBS	SMP
	HB-HIS-7136	RL021	As Required by Radwaste	EBS	SMP

***LEAKAGE DATA SHEET - PREFERRED METHOD******Always record the following data:***

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
Time	N/A (HH:MM)	0100	0200	0300	0400	0500
RCDT Level (HB115)	HB-LI-1003	40%	40%	40%	40%	40%
VCT Level	REL0112M	51%	48%	43%	40%	37%
PZR Level Avg.	REU0483M	58%	58%	58%	58%	58%
PRT Level	REL0485M	75%	75%	75%	75%	75%
PRT Temperature	RET0485M	90°F	90°F	90°F	90°F	90°F

***For RCS pressure greater than 1700 psig, record the following data:***

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCS Avg. TAVG*	REU0484M	588.4°F	588.4°F	588.4°F	588.4°F	588.4°F
PZR Press. Avg.	REU0482M	2235 psig	2235 psig	2235 psig	2235 psig	2235 psig

***For RCS pressure less than 1700 psig, record the following data:***

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

N/A  
EBS  
12/19/00

***If required due to rapid RCDT level increases, record the following:***

<i>Parameter</i>	<i>Instrument or Computer Point</i>	<i>Initial</i>	<i>1 Hour</i>	<i>2 Hours</i>	<i>3 Hours</i>	<i>Final</i>
RCDT Totalizer	HB-FQI-1014	gal	gal	gal	gal	gal

\* If temperature is less than 212°F, then the Limitations of Step 3.9 apply.



***RCS INVENTORY BALANCE CALCULATIONS***

NOTE: Calculation of specific volumes is not required, **if** the input data is **identical** for initial and final conditions, since the resultant Delta-M value will be zero for identical initial and final values.

**1. CHANGE IN MASS OF WATER CONTAINED IN THE RCDT:**

1.1 SPECIFIC VOLUME:  $v = .01605 \text{ ft}^3/\text{Lbm}$  (Assumes 35 psig, 100°F)

1.2  $\text{Delta-M} = (V_f - V_i) \times (1/v)$

$V_f$  and  $V_i$  are volumes in cubic feet corresponding to the final and initial levels in the RCDT, as per Attachment 7, "RCDT Volume Vs. Indicated Level".

$$\text{Delta-M(rcdt)} = \left( \frac{\text{ } (\text{ft}^3)}{V_f} - \frac{\text{ } (\text{ft}^3)}{V_i} \right) \times \left( 1 / \frac{\text{ } }{v} \right)$$

$$\text{Delta-M(rcdt)} = (+) \underline{0} \text{ Lbm}$$

**2. CHANGE IN MASS OF WATER CONTAINED IN THE VCT:**

2.1 SPECIFIC VOLUME:  $v = .01605 \text{ ft}^3/\text{Lbm}$  (Assumes 35 psig, 100°F)

2.2  $\text{Delta-M} = (2.73057 \text{ ft}^3/\%) \times (L_i - L_f) \times (1/v)$

$L_f$  and  $L_i$  are VCT levels in % recorded on Attachment 3, or the averaged final and initial levels in % from Attachment 4 or Attachment 5, depending on plant conditions.

$$\text{Delta-M(vct)} = (2.73057) \times \left( \frac{51}{L_i} \% - \frac{37}{L_f} \% \right) \times \left( 1 / \frac{0.01605}{v} \right)$$

$$\text{Delta-M(vct)} = (+ \text{ or } -) \underline{2381.8} \text{ Lbm}$$

### 3. CHANGE IN MASS OF WATER CONTAINED IN THE PZR:

- 3.1 **SPECIFIC VOLUME:** Calculate the specific volumes for saturated liquid ( $V_l$ ) and saturated vapor ( $V_v$ ), as interpolated from the ASME Steam Tables or Attachment 9. The interpolations are to be performed using the AVERAGE of the initial and final PZR or RCS WR PRESSURE data (from Attachment 3, 4, or 5), corrected to psia.

**NOTE:** If data is recorded on Attachment 4 or 5, the average of all data recorded MUST be computed and used to obtain the average pressure for specific volume determination.

PZR or RCS WR Pressure Data				Averaged Specific Volumes (ft <sup>3</sup> /Lbm)	
	(PSIG)#		(PSIA)*		
Final =	2235		2249.7	$V_l$ =	0.026978
Initial =	2235		2249.7	$V_v$ =	0.157059
Averaged =	2235	+14.7 =	2249.7		

# = Use for Attachment 9

\* = Use for ASME Steam Tables

- 3.2  $\Delta M = (16.8921 \text{ ft}^3/\%) \times (L_i - L_f) \times (1/V_l - 1/V_v)$

$L_f$  and  $L_i$  are final and initial PZR levels in % recorded on Attachment 3, or the AVERAGED levels in % computed from all recorded data from Attachment 4 or Attachment 5, depending on plant conditions.  $V_l$  and  $V_v$  are specific volumes for saturated liquid and saturated vapor, respectively, calculated per Step 3.1.

$$\Delta M(\text{pZR}) = (16.8921) \times \left( \frac{\text{ } \%}{L_i} - \frac{\text{ } \%}{L_f} \right) \times \left( \frac{1}{V_l} - \frac{1}{V_v} \right)$$

$$\Delta M(\text{pZR}) = (+ \text{ or } -) \text{ } 0 \text{ } \text{Lbm}$$

#### 4. CHANGE IN MASS OF WATER CONTAINED IN THE PRT:

- 4.1 SPECIFIC VOLUME: Calculate the specific volume for saturated liquid ( $V_1$ ), as interpolated from the ASME Steam Tables or Attachment 10. The interpolations are to be performed using the PRT TEMPERATURE data recorded on Attachment 3, 4, or 5.

NOTE: PRT PRESSURE is assumed to be at 6 psig or 20.7 psia. Specific volumes computed at any pressure within 1 psi of this value will be accurate enough for this procedure.

$$V_1 = \underline{0.01610} \text{ (ft}^3\text{/Lbm)}$$

- 4.2  $\text{Delta-M} = (V_f - V_i) \times (1/v_1)$

$V_f$  and  $V_i$  are volumes in cubic feet corresponding to the final and initial levels in the PRT, as per Attachment 8, "PRT Volume Vs. Indicated Level".  $v_1$  is the specific volume computed per Step 4.1.

$$\text{Delta-M(prt)} = \left( \frac{\text{ } (\text{ft}^3)}{V_f} - \frac{\text{ } (\text{ft}^3)}{V_i} \right) \times \left( 1 / \frac{\text{ }}{v_1} \right)$$

$$\text{Delta-M(prt)} = (+) \underline{0} \text{ Lbm}$$

#### 5. CHANGE IN MASS OF WATER CONTAINED IN THE RCS LOOPS:

- 5.1 SPECIFIC VOLUME: Calculate the specific volumes for subcooled liquid ( $V_1$ ), as interpolated from the ASME Steam Tables or Attachment 11. The interpolations are to be performed for the initial and final PZR or RCS WR PRESSURE data, (corrected to psia), using the RCS AVG TAVG or RCS WR T-HOT TEMPERATURE data, from Attachment 3, 4, or 5.

NOTE: If data is recorded on Attachment 4 or 5, the average of all data recorded MUST be computed and used to obtain the initial and final average pressures and average temperatures for specific volume determination.

NOTE: If  $T_{\text{HOT}}$  is less than 212°F, the Limitations of Section 3.9 apply

PZR or RCS WR Pressure Data				TAVG or T-HOT Temperature (°F)	
	(PSIG)		(PSIA)		
Final =	2235	+14.7 =	2249.7	Final =	588.4
Initial =	2235	+14.7 =	2249.7	Initial =	588.4
Initial (V <sub>li</sub> ) =	0.022662		Final (V <sub>lf</sub> ) =	0.022662	

5.2  $\Delta M = (10,313 \text{ ft}^3) \times (1/V_{li} - 1/V_{lf})$

V<sub>li</sub> and V<sub>lf</sub> are specific volumes for subcooled liquid, at initial and final conditions, respectively, calculated per step 5.1.

$$\Delta M(\text{rcs}) = (10,313) \times (1/\underline{\hspace{1cm}}_{V_{li}} - 1/\underline{\hspace{1cm}}_{V_{lf}})$$

$$\Delta M(\text{rcs}) = (+ \text{ or } -) \underline{\hspace{1cm}} 0 \underline{\hspace{1cm}} \text{ Lbm}$$

## 6. SUMMARIZE RCS LEAKAGES:

### 6.1 TOTAL RCS LEAKAGE:

$$\Delta M(\text{vct}) = \underline{2381.8} \text{ Lbm (per Step 2.2)}$$

$$+ \Delta M(\text{pZR}) = \underline{0} \text{ Lbm (per Step 3.2)}$$

$$+ \Delta M(\text{rcs}) = \underline{0} \text{ Lbm (per Step 5.2)}$$

$$\text{Total RCS Leakage} = \underline{2381.8} \text{ Lbm} \times .01605 \times 7.4805 =$$

$$= \underline{286.0} \text{ gal}$$

$$+ \underline{0} \text{ gal (Makeup)}$$

$$+ \underline{0} \text{ gal (Chemicals Added)*}$$

$$= \underline{286.0} \text{ gal} \quad / \quad \underline{240} \text{ Test Duration (Minutes)}$$

$$= \underline{1.19} \text{ GPM Total RCS Leakage}$$

\*Include ammonia injected into RCS from the ammonia addition Panel.

## 6.2 IDENTIFIED RCS LEAKAGE:

$$\begin{aligned}\text{Delta-M(rcdt)} &= \underline{0} \text{ Lbm (per Step 1.2)} \\ + \text{Delta-M(prt)} &= \underline{0} \text{ Lbm (per Step 4.2)} \\ \textbf{Identified RCS Leakage} &= \underline{0} \text{ Lbm} \times 0.01605 \times 7.4805 = \\ &= \underline{0} \text{ gal} \\ &+ \underline{0} \text{ gal (Diverted)} \\ &+ \underline{0} \text{ gal (SI Test Hdr flow)} \\ &+ \underline{0} \text{ gal (Samples Taken)} \\ &+ \underline{50} \text{ gal (Primary/Secondary)} \\ &+ \underline{0} \text{ gal (RCDT Totalizer)} \\ &= \underline{50} \text{ gal} \quad / \quad \underline{240} \text{ Test Duration (Minutes)} \\ &= \underline{0.208} \text{ GPM} \quad + \underline{0} \text{ GPM (per Attachment 1)} \\ &(\text{Any other properly quantified leakage}) \\ &= \underline{0.208} \text{ GPM Total Identified RCS Leakage}\end{aligned}$$

MUST be less than 10.0 GPM to meet acceptance criteria
--

## 6.3 UNIDENTIFIED RCS LEAKAGE:

$$\begin{aligned}\textbf{Total RCS Leakage} &= \underline{1.19} \text{ GPM (per Step 6.1)} \\ - \textbf{Identified RCS Leakage} &= \underline{0.208} \text{ GPM (per Step 6.2)} \\ \textbf{Unidentified RCS Leakage} &= \underline{0.982} \text{ GPM}\end{aligned}$$

MUST be less than 1.0 GPM to meet acceptance criteria
---

## 6.2 IDENTIFIED RCS LEAKAGE:

Delta-M(rcdt) = 0 Lbm (per Step 1.2)+ Delta-M(prt) = 0 Lbm (per Step 4.2)**Identified RCS Leakage** = 0 Lbm  $\times 0.01605 \times 7.4805 =$ = 0 gal+ 0 gal (Diverted)+ 0 gal (SI Test Hdr flow)+ 0 gal (Samples Taken)**5.0** + 50 gal (Primary/Secondary)+ 0 gal (RCDT Totalizer)**5.0** = 50 gal / 240 Test Duration (Minutes)**0.0208** = 0.0208 GPM + 0 GPM (per Attachment 1)

(Any other properly quantified leakage)

**0.0208** = 0.0208 **GPM Total Identified RCS Leakage**

MUST be less than 10.0 GPM to meet acceptance criteria

## 6.3 UNIDENTIFIED RCS LEAKAGE:

**Total RCS Leakage** = 1.19 GPM (per Step 6.1)– **Identified RCS Leakage** = 0.0208 GPM (per Step 6.2) **0.0208****Unidentified RCS Leakage** = 0.982 GPM **1.169**

MUST be less than 1.0 GPM to meet acceptance criteria

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

Initial Conditions: CALLAWAY PLANT HAS BEEN OPERATING AT 100% STEADY-STATE POWER FOR THE LAST 100 DAYS. THE MAINFRAME COMPUTER IS NOT WORKING. SURVEILLANCE OSP-BB-00009, RCS INVENTORY BALANCE HAS BEEN PERFORMED PER STEP 6.1.4 OF OSP-BB-00009.

Initiating Cues: YOU ARE REQUIRED TO PERFORM THE REVIEW OF THE OSP-BB-00009, RCS INVENTORY BALANCE AND DETERMINE T/S APPLICABILITY PER THE OUTCOME OF THE REVIEW.

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





# CALLAWAY PLANT TRAINING DEPARTMENT

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## *DYNAMIC SIMULATOR SCENARIO*

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SIMULATOR SCENARIO: ILE-12/2000-DS1

REVISION DATE: 20000928

**SCENARIO TITLE:**  
EARTHQUAKE WITH LOCA OUTSIDE CTMT

**EXAM #:**  
ILE-12/2000-DS1

**INITIAL CONDITIONS:**

80% Reactor Power, Reducing Load to Repair MFP. CR Pressurization Fan OOS for PMs.

<b>Event TITLE</b>	<b>KSA #</b>	<b>(RATING)</b>
A) Reduce Reactor Power	004A4.01	3.8/3.9
B) SR HI Voltage Failure	032AA2.05	2.9/3.2
C) Feed Flow Channel Failure	059A2.11	3.0/3.3
D) Loss of Instrument Air	078K1.03	3.3/3.4
E) Place Excess Letdown in Service	011A2.07	3.0/3.3
F) Earthquake Causes Inter System LOCA RCS/RHR/Aux Bldg (IPE/PRA)	009EA2.02	3.5/3.8
G) Failure of the Reactor to Auto Trip	029EA1.08	4.5/4.5
H) CRVIS Auto Actuation Failure	013A4.01	4.5/4.8

**SCENARIO LENGTH:**

Approximately 60 minutes.

**SCENARIO COMPLETION CRITERIA:**

This scenario is complete when the crew transitions to ES-1.1, SI Termination.

<b>SCENARIO OVERVIEW</b>	<b>EXAM #:</b> ILE-12/2000-DS1
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The plant is operating at 80% power. Power is being reduced at 10% per hour in preparation for maintenance on 'B' MFP. 'A' Control Room Pressurization fan is OOS for preplanned preventative maintenance. A pre-evolution briefing has been conducted for W647661 and SOS 99-3249. During the crew briefing, the crew should discuss SOS 96-1614 where the 2-PHI power supply was replaced without QC hold. W647661 will not be worked. I&C will only open N32 drawer for verification of serial numbers on the 2-PHI power supply.

Five (5) minutes into the scenario, Source Range N32 High Voltage power will inadvertently be restored. The crew should respond per OTO-SE-00001, "Source Range Nuclear Channel Failure," and remove the instrument power fuses.

The controlling feed flow channel on 'B' S/G, AE-FT-520, fails low. This results in an increase in feed flow to the 'B' S/G and a subsequent increase in level. The crew should respond per OTO-AE-00002, "Feedwater Flow Channel Failure," identifying the failed channel, selecting the alternate feedwater flow channel, and then stabilize S/G level at program 50%.

Fifteen (15) minutes into the scenario, the crew will experience a failure of instrument air in CTMT. Letdown and charging will isolate. Pressurizer spray valves will not be available. The crew will need to reduce charging flow to only RCP seals and de-energize PZR heaters. OTO-KA-00001, "Partial or Total Loss of Instrument Air, should be entered and Excess Letdown should be established to the PRT.

Twenty-five (25) minutes into the scenario, an earthquake occurs. The earthquake unseats check valves in the ECCS system and RCS pressure is backfed to the RHR system. The pressure causes a break in the RHR piping resulting in an ISLOCA to Auxiliary Building.

The ISLOCA leads to a Reactor Trip and Safety Injection. The Reactor fails to auto trip. The crew should manually trip the Reactor. The crew should respond per E-0, "Reactor Trip or Safety Injection." The crew should manually actuate 'B' Train CRVIS.

The crew should transition to ECA-1.2, "LOCA Outside Containment" at step 31 of E-0. The ISLOCA should be isolated at step 2 of ECA-1.2 when EJ-HV-8809A, RHR Train 'A' Accumulator Injection Supply Isolation Valve, is closed. This action will cause RCS pressure to increase and a transition to E-1, "Loss of Reactor or Secondary Coolant," should be made.

The scenario is complete when the transition to ES-1.1 is performed.

- 1) Initialize at IC-19 or IC-161 (Password LANTZ)
- 2) Run Batch File "ILED1.txt". This will perform the following
  - a) Remove 'A' CR Pressurization Fan from service
  - b) Will preload event B, SR HI VOLTAGE Failure
  - c) Will preload event C, Feed Flow Channel Failure
  - d) Will preload event D, Loss of Instrument Air to CTMT
  - e) Will preload event G, Failure of the Reactor to Auto Trip
  - f) Will preload event H, Failure of CRVIS 'B' Train to Auto Actuate
- 3) Ensure Reactor Trip Switch indicates "RED"
- 4) Ensure "Decrease Loading Rate" is illuminated.
- 5) Update Status Board for 'A' train week
  - a) 'A' CR PZR Fan CGK04A  
T/S 3.7.10 Condition A  
ALLOWED 7 DAYS  
'A' CCP 5 days ago 1177 ppm  
'B' CCP 2 weeks ago 1193 ppm
- 6) Ensure audio count rate is selected to N-32
- 7) Hang a "HOLD OFF" tag on GKHIS-75
- 8) Ensure the digital display is selected to PZR and auctioneered Hi  $T_{ave}$
- 9) Ensure RM-11 is on training system
- 10) Microphones available for each person evaluated
- 11) Ensure NIS indicates 80% power

**SCENARIO SEQUENCE OF EVENTS GUIDE****EXAM #:**

ILE-12/2000-DS1

INSERTTIMEEVENTMALFDESCRIPTION

5

B

NIS05b

Failure of S.R. N32 High Volt to Disconnect

- Trigger #1

10

C

FWM04b

'B' S/G Feed Flow Channel Failure

- Trigger #2
- Delay 0
- Ramp 15 seconds
- Value of 0%

15

D

(Remote)  
KAV002

Loss of Instrument Air to CTMT

- Trigger #3
- Delay 0
- Ramp 10
- Value 0

(Override)  
KAHIS29\_OR

- Trigger #3
- Value OFF

(Override)  
KAHIS29\_OG

- Trigger #3
- Value OFF

(Override)  
SA066X\_I09

- Trigger #3
- Value 1

25

F

ISLOCADS1

Batch File for Intersystems LOCA

- PHD
- BAT ISLOCADS1.txt
- ENTER

P

G

CFR13

Protective Systems Failure

- AUTO

(Override)  
SBHS1\_ITFAILURE of SBHS1 HAND SWITCH  
TO MANUALLY TRIP THE REACTOR

- OFF

**SCENARIO SEQUENCE OF EVENTS GUIDE****EXAM #:**

ILE-12/2000-DS1

P

H

(Remote)  
SBI004

Failure of CRVIS 'B' Train

- Trn-b

**EVENT**     **INITIATING CUE (Instructor enters times ACTUATED)**

Start		Time 0	Completion of Shift turnover and commencement of evaluations
	_____		
B		Time 5	Five (5) minutes into the scenario SR N32 Fails
	_____		
C		Time 10	Ten (10) minutes into the scenario AEFT520 Fails
	_____		
D		Time 15	Fifteen (15) minutes into the scenario KAPV0029 Fails
	_____		
E		Time	Time that Excess Letdown is established to the PRT.
	_____		
F		Time	Time ISLOCADS1 is initiated
	_____		
G		Time	Time of manual reactor trip
	_____		
H		Time	Time of manual CRVIS 'B' Train
	_____		
End		Time	
	_____		

<b>INSTRUCTOR TURNOVER INFORMATION</b>	<b>EXAM #:</b> ILE-12/2000-DS1
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**PRESENT CONDITIONS:**

80% Reactor Power  
986 MWe  
1171 RCS Boron concentration  
190 steps Bank 'D'

**POWER HISTORY:**

Power decrease initiated 2 hours ago at 10%/hour to repair an oil leak on 'B' MFP.

**EQUIPMENT STATUS:**

'A' CR Pressurization Fan OOS for preplanned preventative maintenance. PM expected to be finished by 2300 today

**ABNORMAL CONDITIONS:**

None

**SURVEILLANCES DUE/IN PROGRESS:**

None

**ADDITIONAL INSTRUCTIONS:**

Crew briefing for I&C Engineering and QC to inspect the TWO-PHI power supply in N32.

**EVENT****ADDITIONAL INFORMATION**

- B Act as I&C, if requested, and report that N32 is energized and the instrument power fuses should be removed.
- C Act as I&C, if requested, and investigate the failure of AE-FT-520.
- D/E Act as PEO, FS, HP, if contacted, and perform requested functions
- F Inform the operator, when requested, that the seismic monitor has been actuated, the trigger light is ON, lights OSG AE-1 and OSG AE-2 are on, and the tapes have advanced and recorded.

As Equipment operators, if requested, report that you will inspect your respective watchstations for damage.

Two (2) to five (5) minutes later:

- Primary Operator – No apparent damage within the RCA
- Secondary Operator – Some leaks in secondary systems, no severe damage yet discovered
- Inside Operator – Some leaks, no severe damage
- Outside Operator – No damage, but will continue to investigate

Act as Emergency Duty Officer, if contacted, and acknowledge SSE.



<b>EVENT:</b>	<b>A</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:**    **Reduce Reactor Power**

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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ANNUNCIATORS:

NONE

- 1) Refer to OTG-ZZ-00004, "Power Operations", and perform the following: \_\_\_\_\_
- Begin the load DECREASE at the rate directed by Control Room Supervisor using the EHC LOAD DECREASE pushbutton or if the EHC control is in standby, using the Standby Load Set potentiometer. \_\_\_\_\_
  - The Operator should maintain programmed  $T_{AVG}$  within  $\pm 0.3$  Deg F. It is permissible to expand this band to  $\pm 1.5$  Deg F for short periods of time. \_\_\_\_\_
  - ADJUST RCS boron concentration sufficient to maintain  $T_{AVG}$  within  $\pm 0.3$  degrees F of  $T_{REF}$  \_\_\_\_\_
  - MONITOR  $\Delta I$  and POSITION Control Rods as necessary to maintain  $\Delta I$  near the target ( $\pm 1\%$ ). \_\_\_\_\_
  - MAINTAIN the rods above their insertion limits \_\_\_\_\_

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	<b>A</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
<b>BRIEF DESCRIPTION:</b> <b>Reduce Reactor Power</b>				
<b>EXPECTED OPERATOR / PLANT RESPONSE</b>			<b>RO</b>	<b>BOP</b> <b>CRS</b>

- MAINTAIN Generator MEGAVARS in accordance with the Transmission Dispatchers instructions and within the limits of CURVE FIGURE 10-1. \_\_\_\_\_
- When load DECREASES below 80% REDUCE the number of online Demineralizers to four per OTN-AK-00001, "Condensate Demineralizer System Normal Operating and Alignment Procedure". \_\_\_\_\_

COMMENTS:

\* Denotes Critical Task

<b>EVENT:</b>	<b>B</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** SR HI Voltage Failure

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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ANNUNCIATORS:

SR HI FLUX AT S/D BLOC 65B

- |  |       |       |       |
|--|-------|-------|-------|
| 1) Implement OTA-RL-0065B, "Annunciator Response Procedure Windows 65A Through 65F". | _____ | _____ | _____ |
| • Contact I&C to investigate   | _____ | _____ | _____ |
| 2) Implement OTO-SE-00001, "Source Range Nuclear Channel Failure"                    | _____ | _____ | _____ |
| • Identify N32 as the failed channel   | _____ | _____ | _____ |
| • IMMEDIATELY REMOVE N32 instrument power fuses                                      | _____ | _____ | _____ |
| • Place N32 'LEVEL TRIP" switch in the BYPASS position.                              | _____ | _____ | _____ |
| • Select Source Range Channel N31 for audible indications at the NIS cabinet.        | _____ | _____ | _____ |
| 3) Notify EDO upon entering off-normal procedure.                                    | _____ | _____ | _____ |
| 4) TS should be reviewed for applicability.  | _____ | _____ | _____ |

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	<b>C</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** 'B' S/G Feed Flow Channel Failure

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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ANNUNCIATORS:

S/G 'B' LVL DEV	109C
S/G 'B' FLOW MISMATCH	109D

- |   |       |
|---|-------|
| 1) Implement actions of OTO-AE-00002, "Feedwater Flow Channel Failure".   | _____ |
| <ul style="list-style-type: none"> <li>Identify the failure of AE-FT-520</li> </ul>   | _____ |
| <ul style="list-style-type: none"> <li>Select alternate feedwater flow channel or take manual control of S/G Level to prevent a Turbine Trip (and subsequent Rx Trip) on HIHI S/G Level (Select Channel F521 with switch AE-FS-520C)</li> </ul> | _____ |
| <ul style="list-style-type: none"> <li>Stabilize S/G level at program 50%</li> </ul>  | _____ |
| <ul style="list-style-type: none"> <li>Return Feedwater control to auto, if manual control was selected</li> </ul>  | _____ |
| <ul style="list-style-type: none"> <li>Initiate actions to repair the failed channel</li> </ul>   | _____ |
| 2) Notify EDO upon entering off-normal procedure.   | _____ |

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	<b>D</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:**    **Loss of Instrument Air**

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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ANNUNCIATORS:

LTDN HX DISCH FLOW HI/LO                      39E

- 1) Ensure implementations of OTO-BG-00001, "Loss of Letdown". \_\_\_\_\_
  - Reduce charging flow to minimum required for RCP seal injection as follows: \_\_\_\_\_
  - If the NCP is in service, SLOWLY CLOSE BGHCV0182 while reducing charging flow using BG FK-124. Maintain approximately 8 GPM to each RCP seal. \_\_\_\_\_
  - ENSURE BG HC-182 is FULL CLOSED. \_\_\_\_\_
  - Verify Reactor Makeup Control System is set in automatic for the correct boron concentrations and is maintaining VCT level. \_\_\_\_\_
- 2) STABILIZE pressure level as follows:
  - Restore normal letdown per OTN-BG-00001, "Chemical and Volume Control System, or \_\_\_\_\_

COMMENTS: \* Denotes Critical Task

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<b>EVENT:</b>	<b>D</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
<b>BRIEF DESCRIPTION:</b> <b>Loss of Instrument Air</b>				
<b>EXPECTED OPERATOR / PLANT RESPONSE</b>			<b>RO</b>	<b>BOP</b>
<b>CRS</b>				
2) Continued				
<ul style="list-style-type: none"> <li>PLACE excess letdown in service per OTN-BG-00001, "Chemical and Volume Control System".</li> </ul>				
<p>NOTE:    The crew should determine these actions cannot be completed due to loss of air to CTMT and go to OTO-KA-00001.</p>				
3) Ensure implementation of OTO-KA-00001, "Partial or Total Loss of Instrument Air"				
<ul style="list-style-type: none"> <li>Announce to the plant that a Partial Loss of Instrument Air has occurred.</li> </ul>				
<ul style="list-style-type: none"> <li>Dispatch the PEO and Field Supervisor to investigate.</li> </ul>				
<ul style="list-style-type: none"> <li>If CVCS Letdown has isolated, REDUCE charging flow to only the Reactor Coolant Pump (RCP) seals as follows;</li> </ul>				
<ul style="list-style-type: none"> <li>ENSURE 'A' or 'B' CCP is in service supplying charging flow in accordance with OTN-BG-00001, Chemical and Volume Control System".</li> </ul>				
<p>NOTE:    The crew may decide the NCP satisfies this requirement.</p>				
<b>COMMENTS:</b>			<b>* Denotes Critical Task</b>	

<b>EVENT:</b>	<b>D</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
<b>BRIEF DESCRIPTION:</b> <b>Loss of Instrument Air</b>				
<b>EXPECTED OPERATOR / PLANT RESPONSE</b>		<b>RO</b>	<b>BOP</b>	<b>CRS</b>
<ul style="list-style-type: none"> <li>INITIATE the alternate charging path to the RCP Seals as follows; <ul style="list-style-type: none"> <li>a) If 'A' CCP is in service, OPEN BG HIS-8357A. _____  BG HIS-8357A, CCP A to RCP Seal Flow Hand Ctrl, RL001</li> <li>b) If 'B' CCP is in service, OPEN BG HIS-357B. _____  BG HIS-8357B, CCP B to RCP Seal Flow Hand Ctrl, RL001</li> <li>c) CONTACT the Primary EO (PEO) to ISOLATE the normal charging and seal injection line by UNLOCKING and CLOSING BG8483B. _____  BG8483B, CCP A &amp; B Disch BGFCV0121 Dnstrm Iso, AB-1974-RM-1115 SE Side of Room</li> <li>d) ENTER BG8483B into the Locked Component Deviation Log and initiate an EOSL entry to track the isolation of this boron injection flow path. _____</li> <li>e) THROTTLE BG HIS-8357A or BG HIS-8357B to MAINTAIN approximately 8 gpm to each RCP Seal. _____</li> </ul> </li> </ul>				
<b>COMMENTS:</b>		* Denotes Critical Task		

<b>EVENT:</b>	<b>E</b>	<b>POSITION:</b>		<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:**    **Place Excess Letdown in Service**

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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- |  |   |   |   |
|--|---|---|---|
| <p>1) If necessary to control Pressurizer level, PLACE Excess Letdown in service to the PRT as follows;</p> <ul style="list-style-type: none"> <li>• Instrument Air must be available to the Auxiliary Building to allow cycling of LFFV0096, Ctmt Norm Smp Pmps Disch Hdr Aux Bld FCV. This will prevent overflowing the containment normal sumps when the PRT is drained.</li> <li>• ENSURE CCW flow to Containment as indicated on EG FI-128 or EG FI-129.</li> </ul> <p style="margin-left: 40px;">EG FI-128, CCW to RCS Prot A Flow Ind, RL020<br/>EG FI-129, CCW to RCS Prot B Flow Ind, RL020</p> <ul style="list-style-type: none"> <li>• OPEN one of the following pairs of valves,</li> </ul> <p style="margin-left: 40px;">(1)    BG HIS-8154A, RCS to Ex Ltdn Hx Upstrm<br/>         BG-HV-8154 A Prot A Hand Ind Sw – RL001,<br/>         and<br/>         BG HIS-8153A, RCS To Ex Ltdn Hx Dnstrm<br/>         BG-HV-8153A Prot A Hand Ind Sw – RL001.</p> <p style="margin-left: 40px;">or</p> | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> |
|--|---|---|---|

**COMMENTS:** \* Denotes Critical Task




<b>EVENT:</b>	<b>E</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:**    **Place Excess Letdown in Service**

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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(2)    BG HIS-8154B, RCS To Ex Ltdn Hx Upstrm  
          BG-HV-8154B Prot B Hand Ind Sw – RL001,  
          and  
          BG HIS-8153B, RCS To Ex Ltdn Hx Dnstrm  
          BG-HV-8153B Prot B Hand Ind Sw – RL001

\_\_\_\_\_

- MONITOR Excess Letdown Heat Exchange outlet temperature on BG TI-137A or BG TI-137B, and do not exceed 175°F.

\_\_\_\_\_

         BG TI-137A/B, Excess Ltdn Hx Outlet Temp Ind, RL001

- OPEN BBHV8157A or BBHV8157B to ESTABLISH Excess Letdown flow to the PRT.

\_\_\_\_\_

         BB HC-8157A, RCS Prt Ex Ltdn Hx Sply  
          BB-HV-8157A Prot A Hand Ctrl, RL001

         BB HC-1857B, RCS Prt Ex Ltdn Hx Sply  
          BB-HV-8157B Prot B Hand Ctrl, RL001

**COMMENTS:**

\* Denotes Critical Task

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<b>EVENT:</b>	<b>E</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** Place Excess Letdown in Service

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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- MONITOR PRT Level on BB LI-470 to ENSURE the PRT is not overfilled.

\_\_\_\_\_

BB LI-470, RCS Pressurizer Relief Tank Level Ind, RL021

- MAINTAIN a normal PRT level of 64 to 88% by cycling BBHV8037A or BBHV8037B.

\_\_\_\_\_

- LIMIT the operating duty of BBHV8037A and BBHV8037B to one cycle per 15 minutes per SOS 98-0555.

\_\_\_\_\_

BB HIS-8037A, RCS Prt Out To Ctmt Norm Smp  
BB-HV-8037A Prot A Hand Ind Sw, RL021

BB HIS-8037B, RCS Prt Out To Ctmt Norm Smp  
BB-HV-8037B Prot B Hand Ind Sw, RL021

- 5) If a leak is suspected in the Instrument Air system, PERFORM the following diagnostic steps to determine its location.

\_\_\_\_\_

**COMMENTS:**

\* Denotes Critical Task

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<b>EVENT:</b>	<b>E</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** Place Excess Letdown in Service

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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- If an Instrument Air system leak is suspected in the Containment Building, REFER to OTG-ZZ-00004, "Power Operation" in preparation for a plant shutdown and;

- ENSURE KAFV0029 is CLOSED to limit the Containment Building pressure rise.

KA HIS-29, Reactor Bld Inst Air Sply  
KAFV0029 Hand Ind Sw, RL024

NOTE: The crew should recognize KAPV0029 has lost position indications and appears to be closed.

2) Notify EDO upon entering off-normal procedure.

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	<b>F, G, H</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** Earthquake with ISLOCA on 'A' Train RHR

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<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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ANNUNCIATORS:

SEISMIC RECORDER ON	98E
SSE	98B
PZR PRESS LO RX TRIP	87A

1) Identify failure of reactor trip and implement E-0, "Reactor Trip or Safety Injection" \_\_\_\_\_

• Verify reactor trip  
\* a) **Manually trip the Rx from RL006** \_\_\_\_\_

• Verify turbine trip \_\_\_\_\_

• Verify NB01 and NB02 energized \_\_\_\_\_

• Check if SI is actuated or required \_\_\_\_\_

• Ensure Feedwater Isolation \_\_\_\_\_

• Ensure CIS A \_\_\_\_\_

• Ensure AFW Actuation \_\_\_\_\_

• Ensure SI Initiation \_\_\_\_\_

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	<b>F, G, H</b>	<b>POSITION:</b>	<b>EXAM # ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** Earthquake with ISLOCA on 'A' Train RHR

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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1) Continued

• Ensure CCW Running	_____	_____	_____
• Ensure ESW Running	_____	_____	_____
• Ensure CTMT Coolers Running in Slow	_____	_____	_____
• Ensure CPIS	_____	_____	_____
• Check Main Steamlines Isolated	_____	_____	_____
• Check CTMT Spray Not Required	_____	_____	_____
• Ensure CRVIS	_____	_____	_____
<b>* a) Manually actuate CRVIS using SA-HS-13 or by aligning components using Attachment 11.</b>			
• Ensure ECCS Flow	_____	_____	_____
• Ensure Total AFW Flow >300,000 lbm	_____	_____	_____
• Ensure AFW Valve Alignment	_____	_____	_____
• Ensure SI Valve Alignment	_____	_____	_____

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	<b>F, G, H</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** Earthquake with ISLOCA on 'A' Train RHR

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<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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1) Continued

- |   |       |       |                |
|---|-------|-------|----------------|
| • Check RCS Temperatures                | _____ | _____ | _____          |
| • Check PZR PORV's and PZR Spray Valves | _____ | _____ | _____          |
| • Check if RCPs should be Stopped       | _____ | _____ | _____          |
| • Check if SG's are not Faulted         | _____ | _____ | _____          |
| • Check if SG Tubes are not Ruptured    | _____ | _____ | _____          |
| • Check if RCS is Intact                | _____ | _____ | _____          |
| • Check if SI flow should be reduced    | _____ | _____ | _____          |
| • Implement CSF-1                       |       |       | _____<br>_____ |
| • Check S/G levels                      | _____ | _____ | _____          |
| • Check secondary radiation levels      | _____ | _____ | _____          |

COMMENTS:

\* Denotes Critical Task

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<b>EVENT:</b>	F, G, H	<b>POSITION:</b>	<b>EXAM #</b> ILE-12/2000-DS1
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**BRIEF DESCRIPTION:** Earthquake with ISLOCA on 'A' Train RHR

<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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1) Continued

- Check Auxiliary Building Radiation – NORMAL \_\_\_\_\_
- a) Ensure transition to ECA-1.2, "LOCA Outside Containment" at step 31 of E-0 based on high Aux Bldg radiation levels

2) Continue with actions of ECA-1.2

- Ensure the following valves – CLOSED \_\_\_\_\_
- Try to identify and isolate break

**\* a) Isolate the ISLOCA by closing EJHV8809A prior to exiting ECA-1.2** \_\_\_\_\_

- Check if break is isolated

3) Ensure transition to E-1, "Loss of Primary or Secondary Coolant" at step 3 of ECA-1.2 \_\_\_\_\_

- Check if RCPs should be stopped \_\_\_\_\_
- Check if SGs are not faulted \_\_\_\_\_

**COMMENTS:**

\* Denotes Critical Task

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<b>EVENT:</b>	<b>F, G, H</b>	<b>POSITION:</b>	<b>EXAM #</b>	<b>ILE-12/2000-DS1</b>
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**BRIEF DESCRIPTION:** Earthquake with ISLOCA on 'A' Train RHR

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<b>EXPECTED OPERATOR / PLANT RESPONSE</b>	<b>RO</b>	<b>BOP</b>	<b>CRS</b>
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3) Continued

- |   |       |       |       |
|---|-------|-------|-------|
| • Check intact SG levels                    | _____ | _____ | _____ |
| • Check Secondary Radiation – Normal        | _____ | _____ | _____ |
| • Check PZR PORVs and PZR PORV block valves | _____ | _____ | _____ |
| • Check if SI flow should be reduced        | _____ | _____ | _____ |
| • Go to ES-1.1 (SI Termination) step 1      |       |       | _____ |

4) Ensure transition to ES-1.1, "SI Termination". \_\_\_\_\_

**COMMENTS:** \_\_\_\_\_ \* Denotes Critical Task

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<b>Callaway Plant Initial License Exam – December 2000</b>	
	<b>SCENARIO # ILE-12/2000-DS 2</b>
<b>EXAMINERS:</b>	<b>APPLICANTS:</b>
<b>INITIAL CONDITIONS:</b>	<b>10-8 amps ready to increase power</b>
<b>TURNOVER:</b>	<b>See Turnover Sheet</b>

Event No.	Event Type *	Event Description	KA Number
A	R	Raise Reactor Power	001A1.06 (4.1/4.4)
B	I	Pressurizer Level Channel Failure Low	011A2.11 (3.4/3.6)
C	N	Restore Normal Letdown	004A2.02 (3.9/4.2)
D	I	Steam Dump Failure	041A2.02 (3.6/3.9)
E	C	Loss of Plant Computer	G2.4.48 (3.5/3.8)
F	C	Dropped Control Rod	014A2.03 (3.6/4.1)
G	M	Feed break Inside CTMT (IPE/PRA)	054AK1.01 (4.1/4.3)
H	C	CCW Pump Trip with Auto Start Failure of Stby CCW Pump	006A3.04 (3.8/3.8)
I	C	CPIS Failure	103A3.01 (3.9/4.2)

\* (N) Normal (R) Reactivity (I) Instrument (C) Component (M) Major

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

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

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMB/U	KSA NO:	004A4.08
COMPLETION TIME:	10 MINUTES	KSA RATING:	3.8/3.4
JOB TITLE:	URO/SRO	REVISION:	000922
TASK TITLE:	SWAP FROM THE NCP TO 'B' CCP		
DUTY:	CVCS		

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

☐ SATISFACTORY      ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

LOCATION OF PERFORMANCE:

CONTROL ROOM \_\_\_\_\_ SIMULATOR/LAB   X   PLANT \_\_\_\_\_ CLASSROOM \_\_\_\_\_

METHOD OF PERFORMANCE: SIMULATED \_\_\_\_\_ PERFORMED   X  

REFERENCES: OTN-BG-00001, CHEMICAL AND VOLUME CONTROL SYSTEM, REV 24

TOOLS/EQUIPMENT: NONE

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

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

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. THE NCP IS RUNNING, WITH 120 GPM LETDOWN FLOW. PREPARATIONS HAVE BEEN MADE TO TAG OUT THE NCP.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PLACE THE 'B' CCP IN SERVICE AND SECURE THE NCP PER OTN-BG-00001, CHEMICAL AND VOLUME CONTROL, SECTION 5.1. INFORM THE CONTROL ROOM SUPERVISOR WHEN DONE. THE BORON CONCENTRATION IN THE 'B' CCP HAS BEEN VERIFIED 20 PPM HIGHER THAN THE RCS.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: ENSURE THE NCP AND 'B' CCW TRAIN IS RUNNING. ENSURE LETDOWN FLOW IS 120 GPM AND BG HV-8111 IS OPEN ('B' CCP MINIFLOW)

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE 'B' CCP IN SERVICE WITH THE NCP SECURED.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OTN-BG-00001, CHEMICAL AND VOLUME CONTROL SYSTEM		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS OF OTN-BG-00001, CHEMICAL AND VOLUME CONTROL SYSTEM  STEP 2.0	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS AND LIMITATIONS	S U  Comments:
3. REVIEW NOTES AND GENERAL INFORMATION  STEP 3.0		OPERATOR SHOULD REVIEW APPLICABLE NOTES AND GENERAL INFORMATION	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
4. REVIEW INITIAL CONDITIONS  STEP 4.0		ALL INITIAL CONDITIONS ARE SATISFIED	OPERATOR SHOULD REVIEW INITIAL CONDITIONS	Comments:
5. IF THE DIFFERENCE IN BORON CONCENTRATION FOR THE CCP TO BE STARTED AND THE RCS IS > 500 PPM, PERFORM FLUSH PER 6.11  STEP 5.1.1		DIFFERENCE IN CONCENTRATION IS 20 PPM.  <b>NOTE:</b> GIVEN IN INITIAL CONDITIONS	OPERATOR SHOULD REALIZE FLUSH IS NOT REQUIRED	Comments:
6. NOTIFY HP THAT 'B' CCP WILL BE STARTED AND THE NCP WILL BE SECURED. AREA RADIATION LEVELS WILL CHANGE IN THE AFFECTED PUMP ROOMS  STEP 5.1.2		<b>HP ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM HP THAT 'B' CCP WILL BE STARTED AND NCP WILL BE SECURED	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
7. ENSURE 'B' CCP IS SUPPLIED BY 'B' CCW TRAIN  STEP 5.1.3		'B' CCW TRAIN IS IN SERVICE	OPERATOR SHOULD VERIFY 'B' CCW TRAIN IS IN SERVICE	Comments:
8. PLACE CCP FLOW CONTROLLER, BG FK-121, IN "MANUAL" AND SET AT MINIMUM FLOW  STEP 5.1.4		BG FK-121 "MANUAL" LIGHT ILLUMINATES AND "AUTO" LIGHT GOES OUT	OPERATOR SHOULD PLACE BG FK-121 IN "MANUAL" AND SET TO MINIMUM FLOW	Comments:
9. ENSURE 'B' CCP MINIMUM FLOW VALVE, BG HV-8111 IS OPEN WITH HANDSWITCH BG HIS-8111  STEP 5.1.5		BG HIS-8111 RED LIGHT IS ILLUMINATED AND GREEN LIGHT IS OUT	OPERATOR SHOULD VERIFY BG HV-8111 IS OPEN	Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
10. VERIFY 'B' CCP AUXILIARY LUBE OIL PUMP IS RUNNING USING BG HIS-2AX  STEP 5.1.6	BG HIS-2AX RED LIGHT IS ILLUMINATED AND GREEN LIGHT IS OUT	OPERATOR SHOULD VERIFY 'B' CCP AUXILIARY LUBE OIL PUMP IS RUNNING WITH BG HIS-2AX	<b>S      U</b>  Comments:
11. *START 'B' CCP USING BG HIS-2A  STEP 5.1.7	BG HIS-2A RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT	OPERATOR SHOULD START 'B' CCP USING BG HIS-2A	<b>S      U</b>  Comments:
12. PLACE THE NCP FLOW CONTROLLER, BG FK-124 IN "MANUAL"  STEP 5.1.8	BG FK-124 "MANUAL" LIGHT ILLUMINATES AND "AUTO" LIGHT GOES OUT	OPERATOR SHOULD PLACE BG FK-124 IN "MANUAL"	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. WHEN NCP FLOW IS <100 GPM OPEN BGHV8109, CVCS NCP RECIRC HV, USING BG HIS-8109  STEP 5.1.9	BG HIS-8109 RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT	OPERATOR SHOULD OPEN BGHV8109 WHEN NCP FLOW DECREASE TO <100 GPM	<b>S      U</b>  Comments:
14. INCREASE 'B' CCP FLOW WITH BG FK- 121, WHILE LOWERING NCP FLOW USING BG FK- 124 TO MAINTAIN A CONSTANT CHARGING FLOW  STEP 5.1.10	CHARGING FLOW INDICATED ON BG FI- 121A MAINTAINS CONSTANT	OPERATOR SHOULD INCREASE 'B' CCP FLOW WITH BG FK- 121 AND DECREASE NCP FLOW USING BG FK-124	<b>S      U</b>  Comments:
15. *WHEN BG FK-124 INDICATES 0% STOP THE NCP USING SWITCH BG HIS-3  STEP 5.1.11	BG HIS-3 GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT	OPERATOR SHOULD STOP THE NCP USING BG HIS-3	<b>S      U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16. VERIFY RCP SEAL WATER INJECTION FLOW IS APPROXIMATELY 8 GPM PER PUMP AS INDICATED BY THE FLOW RECORDERS ON RL022  STEP 5.1.12	ALL RCP SEAL WATER INJECTION FLOW RECORDERS INDICATE 8 GPM	OPERATOR SHOULD VERIFY THAT ALL RCPs HAVE 8 GPM SEAL WATER INJECTION FLOW OR ADJUST AS NECESSARY	<b>S      U</b>  Comments:
17. *VERIFY PZR LEVEL IS STABLE AND PLACE BG FK-121 IN "AUTO"  STEP 5.1.13	BG FK-121 "AUTO" LIGHT ILLUMINATES AND "MANUAL" LIGHT GOES OUT	OPERATOR SHOULD PLACE BG FK-121 IN "AUTO"	<b>S      U</b>  Comments:
18. INFORM THE CONTROL ROOM SUPERVISOR THAT "B" CCP IS RUNNING AND THE NCP IS SECURED	<b>THE CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL ROOM SUPERVISOR THE ASSIGNED TASK HAS BEEN COMPLETED	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
	<p>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:** CALLAWAY PLANT IS IN MODE 1. THE NCP IS RUNNING, WITH 120 GPM LETDOWN FLOW. PREPARATIONS HAVE BEEN MADE TO TAG OUT THE NCP.

**Initiating Cues:** THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PLACE THE 'B' CCP IN SERVICE AND SECURE THE NCP PER OTN-BG-00001, CHEMICAL AND VOLUME CONTROL, SECTION 5.1. INFORM THE CONTROL ROOM SUPERVISOR WHEN DONE. THE BORON CONCENTRATION IN THE 'B' CCP HAS BEEN VERIFIED 20 PPM HIGHER THAN THE RCS.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMC1	KSA NO:	013A4.01
COMPLETION TIME:	10 MINUTES	KSA RATING:	4.5/4.8
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	ISOLATE A RUPTURED STEAM GENERATOR		
DUTY:	ESFAS		

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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 \_\_\_\_\_

METHOD OF PERFORMANCE: SIMULATED ☒ PERFORMED \_\_\_\_\_

REFERENCES: E-3, STEAM GENERATOR TUBE RUPTURE, REV 1B2  
OOA-SA-0001A/B, REV 1

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. A STEAM GENERATOR TUBE RUPTURE EXISTS ON S/G 'D'.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM STEP 3 OF E-3, STEAM GENERATOR TUBE RUPTURE. INFORM THE CONTROL ROOM SUPERVISOR WHEN S/G 'D' LOW POINT DRAIN HAS BEEN VERIFIED CLOSED.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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## **ALL OPERATOR ACTIONS ARE TO BE SIMULATED.**

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE ISOLATED 'D' STEAM GENERATOR FROM FEEDWATER, STEAM AND DRAINS.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF E-3, STEAM GENERATOR TUBE RUPTURE		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. ADJUST AB PIC-4A, SG 'D' ATMOSPHERIC STEAM DUMP CONTROLLER TO 1125 PSIG  STEP 3.a	<b>AB PIC-4A PRESSURE INDICATOR IS POINTING TO 1125 PSIG</b>	OPERATOR SHOULD ENSURE AB PIC-4A, SG 'D' ATMOSPHERIC STEAM DUMP CONTROLLER IS SET TO 1125 PSIG	S U  Comments:
3. CHECK SG 'D' ATMOSPHERIC STEAM DUMP CLOSED  STEP 3.b	<b>AB PIC-4A POSITIONER INDICATES 0% OPEN</b>  <b>AB PIC-4A GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>	OPERATOR SHOULD VERIFY AB PIC-4A, SG 'D' ATMOSPHERIC STEAM DUMP IS CLOSED	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
4.	VERIFY LOOP STEAM SUPPLY VALVES FROM SG 'D' TO AFP TURBINE IS MANUALLY ISOLATED  STEP 3.c		OPERATOR SHOULD REALIZE SG 'D' DOES NOT FEED THE AFP TURBINE	Comments:
5.	ENSURE SG BLOWDOWN CTMT ISO VALVES FROM 'D' SG IS CLOSED  STEP 3.d	<b>BM HIS-38 GREEN            LIGHT IS LIT AND            RED LIGHT IS OUT</b>	OPERATOR SHOULD VERIFY BM HIS-38, SG 'D' BLOWDOWN CTMT ISO VALVE IS CLOSED	Comments:
6.	SLOW CLOSE AB HV-11, SG 'D' MSIV WITH AB HIS-11  AND ALL MSIV BYPASS VALVES USING AB-HIK-15  STEP 3.e	<b>AB-HIS-11 RED            LIGHT REMAINS            ILLUMINATED AND            GREEN LIGHT            REMAINS OUT</b>  <b>ALL MSIV BYPASS            VALVES INDICATE            CLOSED</b>	OPERATOR SHOULD ATTEMPT TO SLOW CLOSE SG 'D' MSIV WITH AB HIS-11 AND ALL MSIV BYPASS VALVES WITH AB- HIK-15	Comments:

\* CRITICAL STEP



<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
7. USE OPERATOR AID OOA-SA-0001A/B LOCATED AT SA075A AND SA075B TO CLOSE 'D' MSIV  STEP RNO3.e		OPERATOR SHOULD USE RNO TO ATTEMPT TO SLOW CLOSE ABHV11 MSIV AND IMPLEMENT OOA-SA-0001A/B  <b>OPERATOR SHOULD USE THE OOA LOCATED AT SA075A/B CABINET</b>	<b>S U</b>  Comments:
8.		GO TO SA075A OR SA075B TO FAST CLOSE ABHV11, 'D' SG MSIV	<b>S U</b>  Comments:
9.* PLACE LOGIC CHANNEL 1 SWITCH TO OFF  OOA-SA-0001A STEP 1.1.1	<b>LOGIC CH 1 SWITCH IS IN THE OFF POSITION</b>	OPERATOR SHOULD PLACE LOGIC CHANNEL SWITCH #1 TO THE OFF POSITION	<b>S U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>		<b>SCORE</b>	
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	
10.* PLACE LOGIC CHANNEL 2 SWITCH TO OFF  OOA-SA-0001A STEP 1.1.2	<b>LOGIC CH 2 SWITCH IS IN THE OFF POSITION</b>	OPERATOR SHOULD PLACE LOGIC CHANNEL SWITCH #2 TO THE OFF POSITION	<b>S      U</b>  Comments:
11.* PLACE LOGIC CHANNEL 3 SWITCH TO OFF  OOA-SA-0001A STEP 1.1.3	<b>LOGIC CH 3 SWITCH IS IN THE OFF POSITION</b>	OPERATOR SHOULD PLACE LOGIC CHANNEL SWITCH #3 TO THE OFF POSITION	<b>S      U</b>  Comments:
12.* PLACE THE MSIV ENABLE SWITCH TO THE ENABLE POSITION  OOA-SA-0001A STEP 1.2	<b>MSIV ENABLE SWITCH IS IN THE ENABLE POSITION</b>	OPERATOR SHOULD PLACE THE MSIV ENABLE SWITCH TO THE ENABLE POSITION	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
13.*FAST CLOSE 'D' MSIV BY PLACING 'D' MSIV TOGGLE SWITCH TO THE FC POSITION  OOA-SA-0001A STEP 1.3		<b>'D' MSIV TOGGLE SWITCH IS IN THE FAST CLOSE POSITION  AB HIS-11 GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT</b>	OPERATOR SHOULD PLACE 'D' MSIV TOGGLE SWITCH TO THE FC POSITION  NOTE: OPERATOR SHOULD ONLY CLOSE 'D' MSIV	<b>S      U</b>  Comments:
14. VERIFY 'D' MSIV IS CLOSED  OOA-SA-0001A STEP 1.4		AB HIS-11 GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR SHOULD VERIFY ABHV11, SG 'D' MSIV IS CLOSED	<b>S      U</b>  Comments:
15.			RETURN TO E-3, STEAM GENERATOR TUBE RUPTURE STEP 3.e	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16. CLOSE SG 'D' LOW POINT DRAIN USING AB HIS-10  STEP 3.f	<b>AB HIS-10 GREEN LIGHT IS LIGHT AND RED LIGHT IS OUT</b>	OPERATOR SHOULD CLOSE ABHV10, SG 'D' LOW POINT DRAIN	<b>S      U</b>  Comments:
17. INFORM THE CONTROL ROOM SUPERVISOR STEAM GENERATOR 'D' HAS BEEN ISOLATED	<b>CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL SUPERVISOR STEP 3 OF E-3 HAS BEEN COMPLETED	<b>S      U</b>  Comments:
	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: CALLAWAY PLANT IS IN MODE 3. A STEAM GENERATOR TUBE RUPTURE EXISTS ON S/G 'D'.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM STEP 3 OF E-3, STEAM GENERATOR TUBE RUPTURE. INFORM THE CONTROL ROOM SUPERVISOR WHEN S/G 'D' LOW POINT DRAIN HAS BEEN VERIFIED CLOSED.

**ALL OPERATOR ACTIONS ARE TO BE SIMULATED.**

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMP1	KSA NO:	064A4.01
COMPLETION TIME:	17 MINUTES	KSA RATING:	4.0/4.3
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	LOCALLY START NE02		
DUTY:	EMERGENCY DIESEL GENERATOR SYSTEM		

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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 EVACUATION WITH FIRE, REV 17,  
ATTACHMENT 3 AND 10  
IPE/PRA

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 CONTROL ROOM IS BEING EVACUATED DUE TO A FIRE. YOU ARE THE REACTOR OPERATOR.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM ATTACHMENT 3 OF OTO-ZZ-00001, CONTROL ROOM EVACUATION WITH FIRE.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: START THIS JPM OUTSIDE THE CONTROL ROOM.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE LOCALLY STARTED 'B' EMERGENCY DIESEL GENERATOR.

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

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



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF ATTACHMENT 3, RO-CONTROL ROOM EVACUATION WITH FIRE	PROVIDE OPERATOR WITH PROCEDURE COPY	OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. GET RO EQUIPMENT BAG AND RADIO  STEP 1	<b>OPERATOR HAS EQUIPMENT BAG AND RADIO</b>	OPERATOR SHOULD PROCEED TO CONTROL ROOM TO GET EQUIPMENT BAG AND THEN TO THE FIELD OFFICE TO GET THE RADIO  THEN PROCEED IMMEDIATELY TO THE SOUTH ESF SWITCHGEAR ROOM	S U  Comments:
3. TRIP NB0209, NB02 NORM AND NB0212, NB02 ALT SPLY BREAKERS  STEP 1.1	<b>NB0209 BREAKER GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>  <b>NB0212 BREAKER GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>	OPERATOR SHOULD TRIP NB02 NORMAL AND ALTERNATE FEEDER BREAKERS WITH HANDSWITCHES NB0209 AND NB0212	S U  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
4. VERIFY 'B' D/G STARTS AND NB0211 CLOSES  STEP 1.2	<b>'B' D/G DID NOT START</b>  <b>NB0211 BREAKER GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>	OPERATOR SHOULD VERIFY 'B' D/G STARTED AND NB0211 CLOSED	<b>S      U</b>  Comments:
5. VERIFY NB02 BUS VOLTAGE ON NB0201 INDICATES APPROXIMATELY 4160 VAC  STEP 1.3	<b>VOLTMETER ON BKR NB0201 INDICATES 0 VOLTS</b>	OPERATOR SHOULD VERIFY VOLTAGE ON NB0201	<b>S      U</b>  Comments:
6. CONTINUE WITH THIS ATTACHMENT WHETHER NE02 HAS STARTED OR NOT  STEP 1.4		OPERATOR SHOULD CONTINUE WITH STEP 1.5	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
7. PLACE NB-HS-0014 IN THE ISOLATE POSITION  STEP 1.5	<b>NB-HS-0014 IS IN THE ISOLATE POSITION</b>	OPERATOR SHOULD PLACE NB-HS-0014 IN THE ISOLATE POSITION.  <b>LOCATION: NB0201</b>	<b>S U</b>  Comments:
8. PLACE NORMAL/ISOLATE SWITCH ON NG04 IN THE ISOLATE POSITION  STEP 1.5	<b>NG04 NORMAL/ISOLATE SWITCH IS IN THE ISOLATE POSITION</b>	OPERATOR SHOULD PLACE THE NORMAL/ISOLATE SWITCH ON NG04 TO THE ISOLATE POSITION  <b>LOCATION: NG04</b>	<b>S U</b>  Comments:
9. PLACE NORMAL/ISOLATE SWITCH ON NG02 IN THE ISOLATE POSITION  STEP 1.5	<b>NG02 NORMAL/ISOLATE SWITCH IS IN THE ISOLATE POSITION</b>	OPERATOR SHOULD PLACE THE NORMAL/ISOLATE SWITCH ON NG02 TO THE ISOLATE POSITION  <b>LOCATION: NG02</b>	<b>S U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
10. PLACE GDHS11 TO ISO/RUN GDHS61 TO ISO/RUN GDHS11A TO ISO/OPEN  STEP 1.5	<b>GDHS11, GDHS61  ARE IN ISO/RUN</b>  <b>GDHS11A IS IN THE  ISO/OPEN POSITION</b>	OPERATOR SHOULD PLACE GDHS11 AND GDHS61 TO ISO/RUN, AND GDHS11A TO ISO/OPEN  <b>LOCATION: EAST  WALL</b>	<b>S      U</b>  Comments:
11. AT NB02 OPEN BREAKER COMPONENT DOOR AND PULL CONTROL POWER FUSE BLOCKS (UC) AND VERIFY THE BREAKER IS OPEN FOR THE FOLLOWING:  NB0201 ('B' CCP) NB0202 ('B' SI PMP) NB0203 (CTMT SPRAY) NB0204 ('B' RHR) NB0207 ('D' CCW) NB0206 ('B' CCW) NB0217 (NG08)  STEP 1.6	<b>BREAKER DOORS  HAVE BEEN  OPENED AND UC  FUSES HAVE BEEN  PULLED. BREAKER  HAS BEEN VERIFIED  OPEN</b>	OPERATOR SHOULD PULL UC FUSES AND ENSURE NB02 BREAKERS ARE OPEN	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12. ON NB02 CHECK CLOSED:  NB0210 NG04 FEEDER  NB0213 NG02 FEEDER  NB0216 NG06E FEEDER  STEP 1.7	<b>NB0210, NB0213 AND NB0216 RED LIGHTS ARE LIT AND GREEN LIGHTS ARE OUT</b>	OPERATOR SHOULD VERIFY NB0210, NB0213 AND NB0216 ARE CLOSED	<b>S      U</b>  Comments:
13. VERIFY 'B' ESW PUMP IS RUNNING. IF NOT, THEN ATTEMPT TO START 'B' ESW PUMP WITH HANDSWITCH NB0215  STEP 1.8	<b>NB0215 GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>  <b>NB0215 BREAKER IS CLOSED</b>	OPERATOR SHOULD OBSERVE 'B' ESW PUMP NOT RUNNING (NO POWER) AND CLOSE NB0215	<b>S      U</b>  Comments:
14.* IF THE DIESEL GENERATOR NE02 FAILED TO START PERFORM ATTACHMENT 10  STEP 1.8.1		OPERATOR SHOULD PERFORM ATTACHMENT 10  <b>GIVE OPERATOR ATTACHMENT 10 OF OTO-ZZ-00001</b>	<b>S      U</b>  Comments:

\* CRITICAL STEP

[illegible]

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
18. ENSURE NB0209, NB02 MN FDR BKR FROM XNB02 IS OPEN  STEP 1.1.4 (ATT 10)	<b>NB0209 BREAKER GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>	OPERATOR SHOULD VERIFY NB0209, MN FDR BKR FROM XNB02 IS OPEN	<b>S      U</b>  Comments:
19. ENSURE NB0210, NB02 ALT FEED FROM XFMR XNB01 IS OPEN  STEP 1.1.5 (ATT 10)	<b>NB0210 BREAKER GREEN LIGHT IS LIT AND RED LIGHT IS OUT</b>	OPERATOR SHOULD VERIFY NB0210, NB02 ALT FEED FROM XFMR XNB01 IS OPEN	<b>S      U</b>  Comments:
20. BREAK GLASS ON KJ-HS101D AND OBSERVE DIESEL STARTS  STEP 1.2.1 (ATT 10)	<b>BUTTON POPS OUT WHEN GLASS IS BROKEN ON KJ- HS101D  NE02 DID NOT START</b>	OPERATOR SHOULD BREAK GLASS ON KJ- HS101D CHECK NE02 DID NOT START AND PROCEED TO STEP 1.2.3.1	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
21.* PLACE KJ HS-109, LOCAL MASTER TRANSFER SWITCH, TO THE LOCAL/ MANUAL POSITION  STEP 1.2.3.1 (ATT 10)	<b>KJ HS-109 IS IN THE            LOCAL/MANUAL            POSITION</b>	OPERATOR SHOULD PLACE KJ HS-109 IN THE LOCAL/MANUAL POSITION	<b>S      U</b>  Comments:
22.* PRESS AND HOLD KJ HS-101C, DG 'B' LOCAL START PB, UNTIL THE DIESEL STARTS  STEP 1.2.3.2 (ATT 10)	<b>KJ HS-101C HAS            BEEN PRESSED             NE02 STARTS,            REACHES 514 RPM</b>	OPERATOR SHOULD PRESS KJ HS-101C, DG 'B' LOCAL START PB, VERIFY NE02 STARTS	<b>S      U</b>  Comments:
23. PLACE KJ HS-109 LOCAL MASTER TRANSFER SWITCH, TO THE AUTO POSITION  STEP 1.2.3.3 (ATT 10)	<b>KJ HS-109 IS IN THE            AUTO POSITION</b>	OPERATOR SHOULD PLACE KJ HS-109, LOCAL MASTER TRANSFER SWITCH TO THE AUTO POSITION AND CONTINUE WITH STEP 1.3	<b>S      U</b>  Comments:

\* CRITICAL STEP



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

\* CRITICAL STEP

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

Initial Conditions: THE CONTROL ROOM IS BEING EVACUATED DUE TO A FIRE. YOU ARE THE REACTOR OPERATOR.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM ATTACHMENT 3 OF OTO-ZZ-00001, CONTROL ROOM EVACUATION WITH FIRE.

**ALL OPERATOR ACTIONS ARE TO BE SIMULATED.**

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMP2	KSA NO:	059A2.11
COMPLETION TIME:	12 MINUTES	KSA RATING:	3.0/3.3
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	LOCALLY OPERATE A MFRV		
DUTY:	MAIN FEEDWATER SYSTEM		

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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: OOA-AE-00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV). REV 006

TOOLS/EQUIPMENT: NONE

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

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



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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. I & C IS REQUIRED TO ADJUST MAIN FEEDWATER REGULATION VALVE, AEFCV0530, DUE TO IMPROPER OPERATION. A PRE-EVOLUTION BRIEF HAS BEEN CONDUCTED. OOA-AE-00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV), WILL BE USED TO CONTROL FEEDWATER TO 'C' STEAM GENERATOR WHILE I & C IS WORKING ON AEFCV0530. ALL REQUIRED EQUIPMENT IS AT THE VALVE, AND I & C AND THE FIELD SUPERVISOR ARE READY. YOU ARE AN EXTRA EQUIPMENT OPERATOR ON SHIFT.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO WORK WITH THE BOP OPERATOR TO TAKE MANUAL CONTROL OF AEFCV0530 AND CONTROL FEEDWATER TO 'C' STEAM GENERATOR. START WITH STEP 1.3 OF OOA-AE-00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV). INFORM THE CONTROL ROOM SUPERVISOR WHEN THE MFRV IS MECHANICALLY ALIGNED TO THE HANDWHEEL AND THE MFRV CAN ONLY BE OPERATED BY THE LOCAL OPERATOR USING THE HANDWHEEL.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: ALL OPERATOR ACTIONS ARE TO BE SIMULATED.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE PLACED AEFCV530 IN MANUAL AND CONTROLLED FEEDWATER TO 'C' STEAM GENERATOR.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OOA-AE-00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV)		OPERATOR SHOULD OBTAIN PROCEDURE COPY	<b>S U</b>  Comments:
2. REVIEW OOA-AE- 00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV)		OPERATOR SHOULD REVIEW OOA-AE- 00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV)	<b>S U</b>  Comments:
3. CLOSE AEV0264 OR AEV0263, S/G 'C' UPSTREAM/ DNSTREAM ISO VALVE  STEP 1.3.1	<b>AEV0264/AEV0263 IS CLOSED</b>	OPERATOR SHOULD CLOSE EITHER AEV0264 OR AEV0263	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
4.	INFORM THE BOP WHEN AEV0264/AEV0263 IS CLOSED  STEP 1.3.2	<b>THE BOP ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM BOP OPERATOR OF 'C' S/G ISO VALVE BEING CLOSED	<b>S      U</b>
				Comments:
5.	FULLY OPEN THE AEFCV0570, S/G 'C' BYPASS FRV  STEP 1.3.3	<b>AEFCV0570 HAS BEEN FULLY OPENED</b>	OPERATOR SHOULD LOCALLY VERIFY AEFCV0570 HAS BEEN OPENED	<b>S      U</b>
				Comments:
6.	FULLY CLOSE AEFCV0570, S/G 'C' BYPASS FRV  STEP 1.3.4	<b>AEFCV0570 HAS BEEN CLOSED</b>	OPERATOR SHOULD LOCALLY VERIFY AEFCV570 HAS BEEN CLOSED	<b>S      U</b>
				Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE
7.* RE-OPEN AEV0264/AEV0263, UPSTREAM/ DNSTREAM ISO VALVE CLOSED  STEP 1.4		<b>AEV0264/AEV0263 HAS BEEN OPENED</b>	OPERATOR SHOULD OPEN AEV0264/AEV0263, UPSTREAM/ DNSTREAM ISO VALVE CLOSED IN STEP 3	<b>S      U</b>
				Comments:
8. OPEN AEFCV0570, S/G 'C' BYPASS FRV TO 60% USING THE BYPASS FRV CONTROLLER  STEP 1.5		<b>THE BOP REPORTS AEFCV0570 IS 60% OPEN</b>	THE BOP OPERATOR OPENS AEFCV0570 FROM THE CONTROL ROOM	<b>S      U</b>
				Comments:
9. ENSURE S/G 'C' PARAMETERS ARE RELATIVELY STABLE BEFORE PROCEEDING.  STEP 1.6		<b>THE BOP OPERATOR REPORTS S/G 'C' LEVEL IS STABLE AT 50%. ALL OTHER PARAMETERS ARE STABLE</b>	OPERATOR SHOULD VERIFY CONDITIONS ARE STABLE IN S/G 'C'	<b>S      U</b>
				Comments:

\* CRITICAL STEP



<b>TASK NUMBER - ELEMENT</b>		<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
10. RECORD LOCAL MFRV POSITION AS INDICATED BY THE LCD DISPLAY ON THE POSITIONER FOR AEFCV0530  STEP 1.7		<b>THE LOCAL LCD DISPLAY IS 80%</b>	OPERATOR SHOULD RECORD POSITION OF AEFCV0530 FROM THE LCD DISPLAY	<b>S      U</b>  Comments:
11. RECORD THE MCB CONTROLLER POSITION FOR AEFCV0530  STEP 1.8		<b>BOP OPERATOR REPORTS AEFCV0530 POSITION RECORDED</b>	OPERATOR SHOULD WAIT FOR BOP OPERATOR TO RECORD AEFCV0530 POSITION	<b>S      U</b>  Comments:
12. SET AEFCV0530, S/G 'C' MFRV MCB CONTROLLER IN MANUAL  STEP 2.1.1		<b>BOP OPERATOR REPORTS AEFCV0530 IS IN MANUAL</b>	THE BOP SHOULD PLACE AEFCV0530 IN MANUAL	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. MAINTAIN S/G 'C' LEVEL USING AEFCV0570, BYPASS FRV  STEP 2.1.2	<b>BOP REPORTS S/G LEVEL IS STABLE AT 50%</b>	THE BOP SHOULD STABILIZE PLANT PARAMETERS PRIOR TO PROCEEDING	<b>S U</b>  Comments:
14.* ROTATE AEFCV0530 TO ALIGN THE HANDWHEEL ENGAGING MECHANISM TO THE STEM ENGAGING MECHANISM  STEP 2.1.3	<b>HANDWHEEL ENGAGING MECHANISM AND STEM ENGAGING MECHANISM ARE ALIGNED</b>	OPERATOR SHOULD DEMONSTRATE HOW TO ALIGN HANDWHEEL ENGAGING MECHANISM AND STEM ENGAGING MECHANISM	<b>S U</b>  Comments:
15.* PLACE THE T- HANDLE IN THE ALIGNMENT HOLES  STEP 2.1.4	<b>T-HANDLE HAS BEEN PLACED IN THE ALIGNMENT HOLES</b>	OPERATOR SHOULD PLACE THE T- HANDLE IN THE ALIGNMENT HOLES	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16. CLOSE AEFCV0530V4, THE 3-WAY ISO/BLEED INSTR AIR VALVE TO BLEED THE AIR FROM THE TOP AND BOTTOM OF THE ACTUATOR  STEP 2.1.5	<b>AEFCV0530V4 HAS  BEEN CLOSED</b>	OPERATOR SHOULD CLOSE AEFCV0530V4, 3-WAY ISO/BLEED INSTR AIR VALVE	<b>S      U</b>  Comments:
17. INFORM CONTROL ROOM SUPERVISOR THAT AEFCV0530 IS MECHANICALLY ALIGNED AND CAN ONLY BE OPERATED LOCALLY  STEP 2.1.6	<b>CONTROL ROOM  SUPERVISOR  ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL ROOM THAT AEFCV0530, IS NOW IN LOCAL OPERATION ONLY	<b>S      U</b>  Comments:
	THE 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: CALLAWAY PLANT IS IN MODE 1. I & C IS REQUIRED TO ADJUST MAIN FEEDWATER REGULATION VALVE, AEFCV0530, DUE TO IMPROPER OPERATION. A PRE-EVOLUTION BRIEF HAS BEEN CONDUCTED. OOA-AE-00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV), WILL BE USED TO CONTROL FEEDWATER TO 'C' STEAM GENERATOR WHILE I & C IS WORKING ON AEFCV0530. ALL REQUIRED EQUIPMENT IS AT THE VALVE, AND I & C AND THE FIELD SUPERVISOR ARE READY. YOU ARE AN EXTRA EQUIPMENT OPERATOR ON SHIFT.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO WORK WITH THE BOP OPERATOR TO TAKE MANUAL CONTROL OF AEFCV0530 AND CONTROL FEEDWATER TO 'C' STEAM GENERATOR. START WITH STEP 1.3 OF OOA-AE-00001, OPERATOR AID FOR LOCAL OPERATION OF SG MAIN FEED REGULATION VALVE (MFRV). INFORM THE CONTROL ROOM SUPERVISOR WHEN THE MFRV IS MECHANICALLY ALIGNED TO THE HANDWHEEL AND THE MFRV CAN ONLY BE OPERATED BY THE LOCAL OPERATOR USING THE HANDWHEEL.

**ALL OPERATOR ACTIONS ARE TO BE SIMULATED.**

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMP3	KSA NO:	033A2.03
COMPLETION TIME:	12 MINUTES	KSA RATING:	3.1/3.5
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	PLACE RWST IN RECIRC		
DUTY:	SPENT FUEL POOL COOLING SYSTEM		

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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-EC-00001, FUEL POOL COOLING AND CLEANUP SYSTEM, REV 17  
SOS 94-1449, 95-1172, 99-2599

TOOLS/EQUIPMENT: NONE

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

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



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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. CHEMISTRY HAS REQUESTED TO HAVE THE RWST PLACED IN RECIRC. THE RWST IS LINED UP PER OTN-BN-00001, BORATED REFUELING WATER STORAGE SYSTEM. THE FUEL POOL COOLING AND CLEANUP SYSTEM IS LINED UP PER SECTION 4.1 OF OTN-EC-00001, FUEL POOL COOLING AND CLEANUP SYSTEM. THE FUEL POOL SKIMMER SYSTEM IS SHUTDOWN PER SECTION 4.5 AND FUEL POOL CLEAN UP HAS BEEN SECURED PER SECTION 4.6 OF OTN-EC-00001. THE RESIN IN THE FUEL POOL CLEANUP DEMINERALIZER HAS BEEN VERIFIED TO BE BORATED TO 2400 PPM. A BRIEF HAS BEEN CONDUCTED AND YOU HAVE BEEN GIVEN THE EQUIPMENT WARNING SIGNS.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PLACE THE RWST IN RECIRC USING THE 'A' FUEL POOL CLEANUP PUMP PER SECTION 5.1 OF OTN-EC-00001, FUEL POOL COOLING AND CLEANUP. INFORM HIM WHEN THE RWST IS IN RECIRC.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: **ALL OPERATOR ACTIONS ARE TO BE SIMULATED.**

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE PLACED THE RWST IN RECIRC USING 'A' FUEL POOL CLEANUP PUMP.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OTN-EC-00001, FUEL POOL COOLING AND CLEANUP SYSTEM		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS OF OTN-EC-00001, FUEL POOL COOLING AND CLEAN UP SYSTEM  STEP 2.0	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS AND LIMITATIONS	S U Comments:
3. ENSURE RESIN IN THE FUEL POOL CLEANUP DEMIN IS BORATED TO $\geq 2350$ PPM.  STEP 5.1.1	GIVEN IN INITIAL CONDITIONS	OPERATOR SHOULD ENSURE THE FUEL POOL CLEANUP DEMIN RESIN IS BORATED TO $\geq 2350$ PPM	S U Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
4.	ENSURE THE RWST IS LINED UP PER OTN-BN-00001, BORATED REFUELING WATER STORAGE SYSTEM  STEP 5.1.2	GIVEN IN INITIAL CONDITIONS	OPERATOR SHOULD ENSURE THE RWST IS LINED UP PER OTN-BN-00001, BORATED REFUELING WATER STORAGE SYSTEM	Comments:
5.	ENSURE FUEL POOL SKIMMER SYSTEM IS SHUTDOWN PER SECTION 4.5 OR 5.4  STEP 5.1.3.1	GIVEN IN INITIAL CONDITIONS	OPERATOR SHOULD ENSURE THE FUEL POOL SKIMMER SYSTEM IS SHUTDOWN	Comments:
6.	ENSURE THE FUEL POOL CLEANUP PUMPS ARE SHUTDOWN PER SECTION 4.6 OR 5.4  STEP 5.1.3.2	GIVEN IN INITIAL CONDITIONS	OPERATOR SHOULD ENSURE THE FUEL POOL CLEANUP PUMPS ARE SHUTDOWN	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
7.	ENSURE THE FUEL POOL COOLING AND CLEANUP SYSTEM IS LINED UP PER SECTION 4.1, AS APPLICABLE  STEP 5.1.3.3	GIVEN IN INITIAL CONDITIONS	OPERATOR SHOULD ENSURE THE FUEL POOL COOLING AND CLEANUP SYSTEM IS LINED UP PER SECTION 4.1	Comments:
8.	HANG EQUIPMENT WARNING SIGNS ON ECV0099, SPENT FUEL POOL SOUTH SKIMMER VALVE  STEP 5.1.3.4	<b>"THE RWST IS IN CLEANUP/ RECIRCULATION. DO NOT PLACE THE SFP SKIMMERS IN SERVICE" SIGN HAS BEEN PLACED</b>	OPERATOR SHOULD LOCATE ECV0099, SPENT FUEL POOL SOUTH SKIMMER ISOLATION VALVE  <b>LOCATION: FB2026 ROOM 6203</b>	Comments:
9.	HANG EQUIPMENT WARNING SIGNS ON ECV0100, SPENT FUEL POOL WEST SKIMMER VALVE  STEP 5.1.3.4	<b>"THE RWST IS IN CLEANUP/ RECIRCULATION. DO NOT PLACE THE SFP SKIMMERS IN SERVICE" SIGN HAS BEEN PLACED</b>	OPERATOR SHOULD LOCATE ECV0100, SPENT FUEL POOL WEST SKIMMER ISOLATION VALVE  <b>LOCATION: FB2026 ROOM 6203</b>	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10. HANG EQUIPMENT WARNING SIGNS ON ECV0101, FUEL TRANSFER CANAL SKIMMER VALVE  STEP 5.1.3.4	<b>"THE RWST IS IN CLEANUP/ RECIRCULATION. DO NOT PLACE THE SFP SKIMMERS IN SERVICE" SIGN HAS BEEN PLACED</b>	OPERATOR SHOULD LOCATE ECV0101, FUEL POOL TRANSFER CANAL ISOLATION VALVE  <b>LOCATION: FB2026 ROOM 6203</b>	<b>S U</b>  Comments:
11. START A TREND GRAPH TO MONITOR THE FLUID INVENTORY WITHIN THE RWST, SFP, AND/OR REFUELING POOL  STEP 5.1.4	<b>TIME TREND HAS BEEN STARTED FOR THE RWST AND SFP</b>	OPERATOR SHOULD CONTACT THE CONTROL ROOM TO START A TREND GRAPH OF THE RWST AND SFP USING TIME TREND SFP OR RWST	<b>S U</b>  Comments:
12. ENSURE CLOSED ECV0025 AND ECV0033, FUEL POOL COOLING HX OUTLET TO FUEL POOL CLEANUP PUMP ISO VLV  STEP 5.1.5	<b>ECV0025 AND ECV0033 ARE CLOSED</b>	OPERATOR SHOULD ENSURE ECV0025 AND ECV0033, FUEL POOL COOLING HX OUTLET TO FUEL POOL CLEANUP PUMP ISO VALVES ARE CLOSED  <b>LOCATION: FB2000 RM 6104 AND 6105</b>	<b>S U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
13. ENSURE ECV0076, FUEL POOL CLEANUP DEMIN TO SFP ISO VLV, IS CLOSED  STEP 5.1.6	<b>ECV0076 IS CLOSED</b>	OPERATOR SHOULD ENSURE ECV0076, FUEL POOL CLEANUP DEMIN TO SFP ISO VLV IS CLOSED  <b>LOCATION: FB2000 RM 6105</b>	<b>S      U</b>  Comments:
14.* OPEN BNV0002, FUEL POOL CLEANUP DEMIN TO RWST ISO VLV  STEP 5.1.7	<b>BNV0002 IS OPEN</b>	OPERATOR SHOULD CONTACT THE INSIDE OPERATOR TO OPEN BNV0002, FUEL POOL CLEANUP DEMIN TO RWST ISO VLV  <b>LOCATION: RWST VLV ROOM (OUTSIDE AUX BLDG)</b>	<b>S      U</b>  Comments:
15. PLACE THE MAGNETIC CAUTION SIGN RWST RECIRC ON THE MCB AND UPDATE THE PLANT STATUS BOARD  STEP 5.1.8	<b>CAUTION SIGN HAS BEEN HUNG AND MCB STATUS BOARD HAS BEEN UPDATED</b>	OPERATOR SHOULD CONTACT THE CONTROL ROOM TO PLACE CAUTION SIGN AND UPDATE THE STATUS BOARD	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16.* OPEN RWST TO FUEL POOL CLEANUP PUMPS ISO VALVES, BNHCV8800A AND BNHCV8800B  STEP 5.1.9	<b>BNHCV8800A AND BNHCV8800B ARE OPEN</b>	OPERATOR SHOULD CONTACT THE CONTROL ROOM TO OPEN BNHCV8800A AND BNHCV8800B FROM RL017	<b>S U</b>  Comments:
17.* START 'A' FUEL POOL CLEANUP PUMP WITH HANDSWITCH ECHS0023  STEP 5.1.10	<b>ECHS0023 HAS BEEN PLACED IN "RUN"</b>	OPERATOR SHOULD START 'A' FUEL POOL CLEANUP PUMP WITH HANDSWITCH ECHS0023  <b>LOCATION: FB2000 RM 6104</b>	<b>S U</b>  Comments:
18. THROTTLE 'A' FUEL POOL CLEANUP PUMP DISCHARGE VALVE, ECV0038, TO OBTAIN 70,000 TO 75,000 LBM/HR AS INDICATED ON ECFI0044  STEP 5.1.11	<b>ECV0038 HAS BEEN THROTTLED</b>  <b>ECFI0044 INDICATES 73,000 LBM/HR</b>	OPERATOR SHOULD THROTTLE ECV0038, 'A' FUEL POOL CLEANUP PUMP DISCHARGE VLV TO MAINTAIN 70,000 TO 75,000 LBM/HR  <b>LOCATION: FB2000 RM 6104</b>	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
19. CONTACT RADWASTE CONTROL ROOM TO VERIFY FUEL POOL CLEANUP FILTER D/P IS < 20 PSID  STEP 5.1.12	<b>RADWASTE REPORTS ECPDI0025 INDICATE 13 PSID</b>	OPERATOR SHOULD CONTACT RADWASTE TO VERIFY FUEL POOL CLEANUP FILTER D/P < 20 PSID	<b>S      U</b>  Comments:
20. NOTIFY CHEMISTRY THAT THE RWST IS NOW IN RECIRC  STEP 5.1.12.1	<b>CHEMISTRY ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM CHEMISTRY THAT THE RWST IS NOW IN THE RECIRC MODE	<b>S      U</b>  Comments:
21. NOTIFY THE CONTROL ROOM SUPERVISOR THAT THE RWST IS IN RECIRC WITH 'A' FUEL POOL CLEANUP PUMP	<b>CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL ROOM SUPERVISOR THAT THE RWST HAS BEEN PLACED IN THE RECIRC MODE	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
	<p>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: CALLAWAY PLANT IS IN MODE 1. CHEMISTRY HAS REQUESTED TO HAVE THE RWST PLACED IN RECIRC. THE RWST IS LINED UP PER OTN-BN-00001, BORATED REFUELING WATER STORAGE SYSTEM. THE FUEL POOL COOLING AND CLEANUP SYSTEM IS LINED UP PER SECTION 4.1 OF OTN-EC-00001, FUEL POOL COOLING AND CLEANUP SYSTEM. THE FUEL POOL SKIMMER SYSTEM IS SHUTDOWN PER SECTION 4.5 AND FUEL POOL CLEAN UP HAS BEEN SECURED PER SECTION 4.6 OF OTN-EC-00001. THE RESIN IN THE FUEL POOL CLEANUP DEMINERALIZER HAS BEEN VERIFIED TO BE BORATED TO 2400 PPM. A BRIEF HAS BEEN CONDUCTED AND YOU HAVE BEEN GIVEN THE EQUIPMENT WARNING SIGNS.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PLACE THE RWST IN RECIRC USING THE 'A' FUEL POOL CLEANUP PUMP PER SECTION 5.1 OF OTN-EC-00001, FUEL POOL COOLING AND CLEANUP. INFORM HIM WHEN THE RWST IS IN RECIRC.

**ALL OPERATOR ACTIONS ARE TO BE SIMULATED.**



# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMS1	KSA NO:	045A2.17
COMPLETION TIME:	12 MINUTES	KSA RATING:	2.7/2.9
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	MAIN TURBINE MECHANICAL O/S TRIP TEST		
DUTY:	MAIN TURBINE		

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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-AC-00004, MAIN TURBINE TRIP TEST, REV 13

TOOLS/EQUIPMENT: NONE

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

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

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. SECTION 6.3 OF OSP-AC-00004, MAIN TURBINE TRIP TESTS, IS REQUIRED. A BRIEF HAS BEEN CONDUCTED AND THE SECONDARY EQUIPMENT OPERATOR HAS OBTAINED KEY 91 FROM THE SS. THE SS HAS GIVEN PERMISSION TO PERFORM THE MECHANICAL OVERSPEED TRIP TEST. YOU ARE THE BOP REACTOR OPERATOR.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM THE MECHANICAL OVERSPEED TRIP TEST ON THE MAIN TURBINE PER SECTION 6.3 OF OSP-AC-00004, MAIN TURBINE TRIP TESTS. SECTIONS 6.1 AND 6.2 HAVE BEEN PERFORMED PREVIOUSLY. INFORM THE CONTROL ROOM SUPERVISOR WHEN SECTION 6.3 HAS BEEN COMPLETED.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: STEPS 7, 9 AND 11 REQUIRE USING REMOTE MODE CHS005 TO ETTB OR MTTB POSITION.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE DETERMINED KEY 91 WAS PLACED IN THE WRONG POSITION, HALTED THE TEST, HAD KEY 91 PLACED IN THE CORRECT POSITION AND PERFORMED THE MECHANICAL OVERSPEED TRIP TEST.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OSP-AC-00004, MAIN TURBINE TRIP TESTS		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. REVIEW ACCEPTANCE CRITERIA OF OSP- AC-00004, MAIN TURBINE TRIP TESTS  STEP 2.0		OPERATOR SHOULD REVIEW ACCEPTANCE CRITERIA OF OSP-AC- 00004, MAIN TURBINE TRIP TESTS	S U  Comments:
3. REVIEW PRECAUTIONS AND LIMITATIONS OF OSP-AC-00004, MAIN TURBINE TRIP TESTS  STEP 3.0	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS AND LIMITATIONS	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
4.	REVIEW INITIAL CONDITIONS OF OSP-AC-00004, MAIN TURBINE TRIP TESTS  STEP 4.0	ALL INITIAL CONDITIONS ARE SATISFIED	OPERATOR SHOULD REVIEW INITIAL CONDITIONS	Comments:
5.	REVIEW NOTES, CAUTIONS AND MECHANICAL OVERSPEED TRIP TEST PROCEDURE  STEP 6.3		OPERATOR SHOULD REVIEW NOTES, CAUTION AND MECHANICAL OVERSPEED TEST PROCEDURE	Comments:
6.	OBTAIN THE SHIFT SUPERVISOR'S PERMISSION TO OPERATE THE BYPASS SWITCH  STEP 6.3.1	<b>THE SS HAS GIVEN PERMISSION TO OPERATE THE BYPASS SWITCH</b>  NOTE: GIVEN IN INITIATING CUES	OPERATOR MAY OBTAIN THE SS's PERMISSION TO OPERATE THE BYPASS SWITCH	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7.* OPERATOR SHOULD CONTACT SECONDARY EO TO INSERT BYPASS KEY 91 INTO ACHS0001 AND TURN TO THE MECHANICAL TRIP TEST BYPASS POSITION  STEP 6.3.2	<b>KEY 91 HAS BEEN INSERTED IN THE BYPASS SWITCH AND TURNED TO THE BYPASS POSITION</b>	OPERATOR SHOULD CONTACT THE SECONDARY OPERATOR TO PLACE KEY 91 TO THE MTTB POSITION  <b>NOTE: REMOTE MODE CHS005 TO ETTB</b>	<b>S U</b>  Comments:
8.* VERIFY "LOCKED OUT" LIGHT IS ILLUMINATED  STEP 6.3.2.1	<b>"LOCKED OUT" LIGHT IS NOT ILLUMINATED</b>	OPERATOR SHOULD FIND THE "LOCKED OUT LIGHT IS NOT ILLUMINATED, STOP THE TEST AND CONTACT OS/SS	<b>S U</b>  Comments:
9.		OPERATOR SHOULD DETERMINE KEY 91 HAS BEEN TURNED TO THE ETTB POSITION AND RESTORE TO NORMAL  <b>REMOTE MODE DELETE CHS005</b>	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10.	<p><b>KEY 91 HAS BEEN RETURNED TO THE NORMAL POSITION</b></p> <p><b>THE SS HAS DETERMINED TO CONTINUE WITH THE MECHANICAL TRIP THROTTLE TEST</b></p>		<p><b>S      U</b></p> <p>Comments:</p>
<p>11.*CONTACT SECONDARY EO TO INSERT BYPASS KEY IN ACHS0001 AND TURN KEY TO THE MTTB POSITION</p> <p>STEP 6.3.2.</p>	<p><b>KEY HAS BEEN INSERTED IN BYPASS SWITCH ACHS0001 AND TURNED TO THE MTTB POSITION</b></p>	<p>OPERATOR SHOULD CONTACT THE SECONDARY TO HAVE KEY 91 INSERTED INTO ACHS0001 AND TURNED TO THE MTTB POSITION</p> <p><b>REMOTE MODE CHS005 TO MTTB</b></p>	<p><b>S      U</b></p> <p>Comments:</p>
<p>12. VERIFY THAT THE "LOCKED OUT" LIGHT IS ENERGIZED</p> <p>STEP 6.3.2.1</p>	<p>"LOCKED OUT" LIGHT IS ENERGIZED</p>	<p>OPERATOR SHOULD VERIFY THE "LOCKED OUT" LIGHT IS ENERGIZED</p>	<p><b>S      U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. VERIFY THE "NORMAL" LIGHT IS DEENERGIZED  STEP 6.3.2.2	"NORMAL" LIGHT IS DEENERGIZED	OPERATOR SHOULD VERIFY THE "NORMAL" LIGHT IS NOT ILLUMINATED	S U  Comments:
14. OBSERVE THAT THE MECHANICAL O/S RESET AND THE TRIP PISTON RESET LIGHTS ARE ENERGIZED  STEP 6.3.3	"MECHANICAL O/S RESET" LIGHT IS ENERGIZED  "TRIP PISTON RESET" LIGHT IS ENERGIZED	OPERATOR SHOULD VERIFY THE "MECHANICAL O/S RESET" AND "TRIP PISTON" LIGHTS ARE ENERGIZED	S U  Comments:
15. VERIFY ALL OTHER LIGHTS IN THIS GROUP EXCEPT THE "LOCKED OUT" LIGHT ARE DEENERGIZED  STEP 6.3.4	"LOCKED OUT" LIGHT IS THE ONLY LIGHT ENERGIZED IN THE GROUP	OPERATOR SHOULD VERIFY ONLY THE "LOCKED OUT" LIGHT IS ENERGIZED IN THE GROUP	S U  Comments:

\* CRITICAL STEP

<b>TASK</b>		<b>SCORE</b>	
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	
16.* DEPRESS AND HOLD THE START MECH O/S TRIP TEST PUSHBUTTON AND VERIFY THE PUSHBUTTON LIGHT ENERGIZES  STEP 6.3.5	"START MECH O/S TRIP TEST" BUTTON HAS BEEN PRESSED AND IS NOW ILLUMINATED	OPERATOR SHOULD PRESS AND HOLD THE "START MECH O/S TRIP TEST" PUSHBUTTON AND VERIFY THAT THE PUSHBUTTON LIGHT ENERGIZES	<b>S      U</b>  Comments:
17.* RELEASE THE START MECH O/S TRIP TEST PUSHBUTTON  STEP 6.3.6	"START MECH O/S TRIP TEST" BUTTON HAS BEEN RELEASED	OPERATOR SHOULD RELEASE THE "START MECH O/S TRIP TEST" PUSHBUTTON	<b>S      U</b>  Comments:
18. OBSERVE THAT THE "MECH O/S RESET" LIGHT DEENERGIZES AND THE "TRIPPED" LIGHT ENERGIZES  STEP 6.3.6.1	"MECH O/S RESET" LIGHT DEENERGIZES  "TRIPPED" LIGHT ENERGIZES	OPERATOR SHOULD VERIFY THE "MECH O/S RESET" LIGHT DEENERGIZES AND THE "TRIPPED" LIGHT ENERGIZES	<b>S      U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
19. VERIFY ANNUNICATOR 112B, MECH O/S TURB TRIP ALARMS  STEP 6.3.6.2	ANNUNICATOR 112B, MECH O/S TURB TRIP IS IN ALARM	OPERATOR SHOULD VERIFY ANNUNICATOR 112B, MECH O/S TURB TRIP IS IN ALARM	S U  Comments:
20. VERIFY ANNUNICATOR 122F, TURB ELECT MALF ALARMS  STEP 6.3.6.3	ANNUNCIATOR 122F, TURB ELECT MALF IS IN ALARM	OPERATOR SHOULD VERIFY ANNUNICATOR 122F ELECT MALF IS IN ALARM	S U  Comments:
21. OBSERVE THE "RESETTING" LIGHT ENERGIZES  STEP 6.3.6.4	"RESETTING" LIGHT ENERGIZES	OPERATOR SHOULD VERIFY THE "RESETTING" LIGHT ENERGIZES	S U  Comments:

\* CRITICAL STEP

<b>TASK</b>		<b>SCORE</b>	
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	
22. OBSERVE THE MECH O/S TRIPPED LIGHT DEENERGIZES AND THE RESET LIGHT ENERGIZES  STEP 6.3.6.5	"MECH O/S TRIPPED" LIGHT DEENERGIZES  "RESET" LIGHT ENERGIZES	OPERATOR SHOULD VERIFY THE "MECH O/S TRIPPED" LIGHT DEENERGIZES AND THE "RESET" LIGHT ENERGIZES	<b>S      U</b>  Comments:
23. OBSERVE THE START MECH O/S TRIP TEST LIGHT DEENERGIZES  STEP 6.3.6.6	"START MECH O/S TRIP TEST" LIGHT DEENERGIZES	OPERATOR SHOULD VERIFY THE "START MECH O/S TRIP TEST" LIGHT DEENERGIZES	<b>S      U</b>  Comments:
24. OBSERVE THAT THE RESETTING LIGHT IS DEENERGIZED  STEP 6.3.6.7	"RESETTING" LIGHT IS DEENERGIZED	OPERATOR SHOULD VERIFY THE "RESETTING" LIGHT IS DEENERGIZED	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
25. RESET ANNUNCIATOR 112B MECH O/S TURB TRIP  STEP 6.3.12	ANNUNICATOR 112B, MECH O/S TURB TRIP LIGHT GOES OUT	OPERATOR SHOULD RESET ANNUNICATOR 112B, MECH O/S TURB TRIP, WITH THE ANNUNICATOR RESET PUSHBUTTON	S      U  Comments:
26. INFORM THE CONTROL ROOM SUPERVISOR THAT SECTION 6.3. OF OSP-AC-00004 HAS BEEN COMPLETED	<b>THE CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL ROOM SUPERVISOR THE MECH TRIP TEST HAS BEEN COMPLETED	S      U  Comments:
	THE JPM IS COMPLETE  <b><u>RECORD STOP TIME ON PAGE 1</u></b>		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. SECTION 6.3 OF OSP-AC-00004, MAIN TURBINE TRIP TESTS, IS REQUIRED. A BRIEF HAS BEEN CONDUCTED AND THE SECONDARY EQUIPMENT OPERATOR HAS OBTAINED KEY 91 FROM THE SS. THE SS HAS GIVEN PERMISSION TO PERFORM THE MECHANICAL OVERSPEED TRIP TEST. YOU ARE THE BOP REACTOR OPERATOR.

**Initiating Cues:** THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM THE MECHANICAL OVERSPEED TRIP TEST ON THE MAIN TURBINE PER SECTION 6.3 OF OSP-AC-00004, MAIN TURBINE TRIP TESTS. SECTIONS 6.1 AND 6.2 HAVE BEEN PERFORMED PREVIOUSLY. INFORM THE CONTROL ROOM SUPERVISOR WHEN SECTION 6.3 HAS BEEN COMPLETED.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPM <b>S2</b>	KSA NO:	012A4.05
COMPLETION TIME:	MINUTES	KSA RATING:	3.6/3.6
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	RESPOND TO A FAILED POWER RANGE INSTRUMENT		
DUTY:	RPS		

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

☐ SATISFACTORY      ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

LOCATION OF PERFORMANCE:

CONTROL ROOM \_\_\_\_\_ SIMULATOR/LAB   X   PLANT \_\_\_\_\_ CLASSROOM \_\_\_\_\_

METHOD OF PERFORMANCE: SIMULATED \_\_\_\_\_ PERFORMED   X  

REFERENCES: OTO-SE-00003, POWER RANGE NUCLEAR CHANNEL FAILURE, REVISION 9

TOOLS/EQUIPMENT: ATTACHMENT 2 OF OTO-SE-00003

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. THE PLANT HAS EXPERIENCED A FAILURE OF POWER RANGE CHANNEL N42. ALL IMMEDIATE OPERATOR ACTIONS HAVE BEEN COMPLETED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM POWER RANGE CHANNEL N42 TRIP INITIATION PER OTO-SE-00003, "POWER RANGE NUCLEAR CHANNEL FAILURE", USING ATTACHMENT 2. INFORM THE CONTROL ROOM SUPERVISOR WHEN YOU HAVE VERIFIED THE PROPER BISTABLE LIGHTS ARE LIT ON SC066W.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: USE MALFUNCTION NIS03b, CHANNEL N42, 200% POWER; 10 SECOND RAMP.

Task Standard: UPON COMPLETION OF THIS JPM, POWER RANGE NUCLEAR INSTRUMENT CHANNEL N42 WILL HAVE ITS INPUTS TO CHANNEL COMPARATORS AND ROD STOP DEFEATED, REACTOR PROTECTION BISTABLES TRIPPED, AND CONTROL POWER FUSES REMOVED.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OTO-SE-00003, POWER RANGE NUCLEAR CHANNEL FAILURE, ATTACHMENT 2	PROVIDE OPERATOR WITH ATTACHMENT 2 OF PROCEDURE	OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2.* ON THE DETECTOR CURRENT COMPARATOR DRAWER, SELECT THE "UPPER SECTION" SWITCH TO THE PR N42 POSITION AND ANN78B PR UPPER DETECTOR FLUX DEV ALARM IS CLEAR	THE "UPPER SECTION" SWITCH IS SELECTED TO THE PR N42 POSITION AND THE CHANNEL DEFEAT" LIGHT IS ON  ANN 78B PR UPPER DETECTOR FLUX DEV CLEARS	OPERATOR SHOULD SELECT PR N42 ON THE "DETECTOR CURRENT COMPARATOR" DRAWER "UPPER SECTIONS" ON SE054D AND 78B PR UPPER DETECTOR FLUX DEV ALARM IS CLEAR	S U Comments:
3.* ON THE DETECTOR CURRENT COMPARATOR DRAWER, SELECT THE "LOWER SECTION" SWITCH TO THE PR N42 POSITION AND THAT ANN 78C PR LOWER DETECTOR FLUX DEV IS CLEAR	THE "LOWER SECTION" SWITCH IS IN THE PR N42 POSITION AND THE "CHANNEL DEFEAT" LIGHT IS ON  ANN 78C, PR LOWER DETECTOR FLUX DEV CLEARS	OPERATOR SHOULD SELECT PR N42 ON THE "DETECTOR CURRENT COMPARATOR" DRAWER "LOWER SECTIONS" ON SE054D AND ANN 78C PR LOWER DETECTOR FLUX DEV CLEARS	S U Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
4.* ON THE DETECTOR CURRENT COMPARATOR DRAWER, SELECT THE "ROD STOP BYPASS" SWITCH TO BYPASS PR N42 POSITION AND VERIFY ANN 82A, PR OVER PWR ROD STOP CLEARS	BYPASS PR N42 SELECTED WITH THE "ROD STOP BYPASS" SWITCH  ANN 82A, PR OVER PWR ROD STOP CLEARS	OPERATOR SHOULD BYPASS PR N42 WITH THE "ROD STOP BYPASS" SWITCH ON SE054D AND ANN 82A, PR OVER PWR ROD STOP IS CLEAR	S U  Comments:
5.* ON THE DETECTOR CURRENT COMPARATOR DRAWER, SELECT THE "POWER MISMATCH BYPASS" SWITCH TO THE BYPASS PR N42 POSITION	BYPASS PR N42 SELECTED BY THE "POWER MISMATCH BYPASS" SELECTOR SWITCH	OPERATOR SHOULD SELECT BYPASS PR N42 WITH THE "POWER MISMATCH BYPASS" SWITCH ON SE054D	S U  Comments:
6. ON COMPARATOR AND RATE DRAWER, SELECT CHANNEL N42 WITH THE "COMPARATOR CHANNEL DEFEAT" SWITCH AND VERIFY ANN 78A, PR CHANNEL DEV CLEARS	N42 IS SELECTED BY THE "COMPARATOR CHANNEL DEFEAT" SWITCH AND COMPARATOR DEFEAT LIGHT IS ON  ANN 78A, PR CHANNEL DEV CLEARS	OPERATOR SHOULD SELECT N42 WITH THE "COMPARATOR CHANNEL DEFEAT" SWITCH ON SE054D AND VERIFY ANN 78A, PR CHANNEL DEV CLEARS	S U  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7.* REMOVE CONTROL POWER FUSES FOR CHANNEL N42	POWER RANGE CHANNEL N42 CONTROL POWER FUSES ARE REMOVED AND THE FOLLOWING LIGHTS ARE LIT; OVERPOWER TRIP HIGH RANGE, OVERPOWER TRIP LOW RANGE, NEGATIVE RATE TRIP, AND POSITIVE RATE TRIP	OPERATOR SHOULD PUSH AND TURN THE CONTROL POWER FUSES FOR N42 ON CABINET SE054D AND THEN REMOVE THE FUSES FROM THE DRAWER	S U  Comments:
8. REQUEST RO/SRO TO INDEPENDENTLY VERIFY CONTROL POWER FUSES REMOVED FOR N42	<b>OS/STA HAS INDEPENDENTLY VERIFIED THE REMOVAL OF POWER RANGE CHANNEL N42 CONTROL POWER FUSES</b>	OPERATOR SHOULD REQUEST RO/SRO TO INDEPENDENTLY VERIFY CONTROL POWER FUSES REMOVED FOR N42	S U  Comments:
9. INFORM THE SS AND URO OF THE REMOVAL OF CONTROL POWER FUSES N42	<b>SS ACKNOWLEDGES AND HAS THE OS ENTER IT IN THE SS LOGS</b>  <b>URO ACKNOWLEDGES AND ENTERS IT IN THE URO LOGS</b>	OPERATOR SHOULD INFORM THE SS AND URO N42 CONTROL POWER FUSES HAVE BEEN REMOVED	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10. CALL AN I&C TECHNICIAN TO PLACE BS-3 AND BS-4 ON SB042 TEST CARD TS/421C/D IN THE TEST POSITION	<b>I&amp;C TECH ACKNOWLEDGES</b>  NOTE: SIMULATOR OPERATOR SHOULD TRIP BISTABLES	OPERATOR SHOULD CONTACT AN I&C TECHNICIAN TO PLACE BS-3 AND BS-4 IN THE TEST POSITION IN CABINET SB042 TEST CARDS  <b>BAT FILE SE022.txt</b>	<b>S      U</b>  Comments:
11.	<b>I&amp;C TECH HAS PLACED BS-3 AND BS-4 IN "TEST" ON TEST CARD TS/421C/D IN CABINET SB042</b>		<b>S      U</b>  Comments:
12. ON PANEL SB069 VERIFY OT T L2 TB421C PR HI SETPT NC42R PR HI FLUX NC 42U PR LO SETPT NC42P STATUS LIGHTS ARE LIT	OT T L2 TB421C PR HI SETPT NC42R PR HI FLUX NC42U PR LO SETPT NC42P LIGHTS ARE LIT ON SB069	OPERATOR SHOULD VERIFY OT T L2 TB421C PR HI SETPT NC42R PR HI FLUX NC42U PR LO SETPT NC42P LIGHTS ARE LIT ON SB069 PANEL	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
13. VERIFY ON PANEL SC066W THAT THE STATUS LIGHTS FOR OTDT CHAN II INPUT TO C-3 AND N42 BYP C-2 OVER PWR ROD STOP ARE LIT	OTDT CH II INPUT TO C-3 ON SC066W IS LIT  N42 BYP C-2 OVER PWR ROD STOP IS LIT	OPERATOR SHOULD VERIFY OTDT CH II INPUT TO C-3 AND N42 BYP C-2 OVER PWR ROD STOP ARE LIT ON SC066W, MISC BISTABLES, ON RL024	<b>S U</b>  Comments:
14. INFORM THE CONTROL ROOM SUPERVISOR ATTACHMENT 2 OF OTO-SE-00003 HAD BEEN COMPLETED	<b>CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL ROOM SUPERVISOR THE ASSIGNED TASK HAS BEEN COMPLETED.	<b>S U</b>  Comments:
	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: CALLAWAY PLANT IS IN MODE 1. THE PLANT HAS EXPERIENCED A FAILURE OF POWER RANGE CHANNEL N42. ALL IMMEDIATE OPERATOR ACTIONS HAVE BEEN COMPLETED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM POWER RANGE CHANNEL N42 TRIP INITIATION PER OTO-SE-00003, "POWER RANGE NUCLEAR CHANNEL FAILURE", USING ATTACHMENT 2. INFORM THE CONTROL ROOM SUPERVISOR WHEN YOU HAVE VERIFIED THE PROPER BISTABLE LIGHTS ARE LIT ON SC066W.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPM <b>S3</b>	KSA NO:	001A2.03
COMPLETION TIME:	MINUTES	KSA RATING:	3.5/4.2
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	MISALIGNED CONTROL ROD		
DUTY:	ROD CONTROL		

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

☐ SATISFACTORY      ☐ UNSATISFACTORY

Reason, if UNSATISFACTORY:

EVALUATORS SIGNATURE: \_\_\_\_\_ DATE: \_\_\_\_\_

TASK PERFORMER: \_\_\_\_\_

LOCATION OF PERFORMANCE:

CONTROL ROOM \_\_\_\_\_ SIMULATOR/LAB   X   PLANT \_\_\_\_\_ CLASSROOM \_\_\_\_\_

METHOD OF PERFORMANCE: SIMULATED \_\_\_\_\_ PERFORMED   X  

REFERENCES: OTO-SF-00004, MISALIGNMENT OF CONTROL RODS, REVISION 7

TOOLS/EQUIPMENT: URO LOG SHEET

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. TWO (2) HOURS AGO, ROD P-8 WAS DISCOVERED MISALIGNED DURING A POWER INCREASE. A FLUX MAP DETERMINED ROD P-8 IS 15 STEPS LOWER THAN ITS BANK. ROD P-8 WAS DECLARED INOPERABLE AND THE REQUIREMENTS OF T/S 3.1.4, 3.1.5 AND 3.1.6 WERE SATISFIED. A QPTR HAS BEEN PERFORMED SATISFACTORILY. THE EDO AND REACTOR ENGINEER HAVE AGREED THE PROBLEM IS CORRECTED AND THE PLAN IS TO REALIGN CONTROL BANK C.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO REALIGN ROD P-8 WITH CONTROL BANK 'C' PER OTO-SF-00004, "MISALIGNMENT OF CONTROL RODS". STARTING WITH STEP 6.7, WITHDRAW ROD P-8 15 STEPS PER SUBSEQUENT OPERATOR ACTIONS. INFORM THE CONTROL ROOM SUPERVISOR WHEN THE NSSS COMPUTER (ROD BANK UPDATE) HAS BEEN PERFORMED.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: SET CONTROL BANK C STEP COUNTERS TO 228 STEPS. SET MCRFNS(44) = 213 TO SET CONTROL ROD P-8 TO 213 STEPS. MONITOR ROD P-8 USING MCRFNS(44).

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE ALIGNED ROD P-8 WITHIN  $\pm 4$  STEPS OF BANK C.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OTO-SF-00004, MISALIGNMENT OF CONTROL RODS		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. LOCATE LIFT COIL DISCONNECT PANEL		OPERATOR SHOULD GO TO THE NIS CABINET IN THE BACK OF THE SIMULATOR	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
3.* PLACE CONTROL RODS H-2 B-8 H-14 F-6 F-10 K-10 K-6 TO THE DISCONNECT POSITION  STEP 6.7.1	ROD IS IN THE DISCONNECTED POSITIONS	WITH THE EXCEPTION OF ROD P-8, THE OPERATOR SHOULD PLACE ALL CONTROL BANK 'C' RODS TO THE DISCONNECTED POSITION  H-2 _____ B-8 _____ H-14 _____ F-6 _____ F-10 _____ K-10 _____ K-6 _____	S      U  Comments:
4. RECORD IN THE URO LOG THE READING OF THE GROUP STEP COUNTER FOR THE ASSOCIATED ROD  STEP 6.7.2		OPERATOR SHOULD RECORD 228 STEPS	S      U  Comments:
5. AT THE PULSE-TO-ANALOG CONVERTER CABINET, HOLD THE "AUTO-MANUAL" SWITCH IN THE <u>MANUAL</u> POSITION  STEP 6.7.3	<b>PRIMARY EO IS HOLDING THE AUTO-MANUAL SWITCH IN MANUAL AT THE PULSE-TO-ANALOG CONVERTER CABINET</b>	OPERATOR SHOULD CONTACT THE PRIMARY EO TO HOLD SWITCH  NOTE: <b>ACTION MODE, REMOTE SFS001</b> SHOULD BE USED	S      U  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
6.* PLACE SE HS-9 BANK SELECTOR SWITCH, TO CBC  STEP 6.7.4	CBC IS SELECTED WITH SE HS-9	OPERATOR SHOULD SELECT CBC WITH THE BANK SELECTOR SWITCH SE HS-9	S U  Comments:
7. ENSURE THAT THE PROPER GROUP SELECT LIGHT IS LIT ON THE POWER CABINET FOR CONTROL BANK 'C'  STEP 6.7.4.1	<b>GROUP SELECT LIGHT B IS ILLUMINATED FOR POWER CABINET 1AC AND 2AC</b>	OPERATOR SHOULD DETERMINE POWER CABINET 1AC AND 2AC SHOULD HAVE GROUP SELECT LIGHT 'B' ILLUMINATED	S U  Comments:
8.* WITHDRAW ROD P-8 UNTIL ALIGNMENT IS ACHIEVED  STEP 6.7.4.2	ROD P-8 IS READING THE DESIRED STEP COUNTER POSITION	WITHDRAW ROD P-8 TO DESIRED POSITION AS READ ON SC-CB-C1  NOTE: ROD P-8 SHOULD BE WITHDRAWN $15 \pm 4$ STEPS	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
9. ADJUST TURBINE LOAD AND/OR BORON CONCENTRATION AS NECESSARY TO CONTROL Tave  STEP 6.7.4.2.1		OPERATOR MAY ADJUST TURBINE LOAD OR BORON CONCENTRATION AS ROD P-8 IS ALIGNED WITH CONTROL BANK 'C'	<b>S U</b>  Comments:
10. IF THE MISALIGNED ROD DOES NOT RESPOND, PROCEED WITH STEP 6.8  STEP 6.7.4.2.2		OPERATOR SHOULD REALIZE ROD P-8 HAS ALIGNED PROPERLY AND CONTINUE TO STEP 6.7.5	<b>S U</b>  Comments:
11. RELEASE THE "AUTO-MANUAL" SWITCH AT THE PULSE-TO-ANALOG CONVERTER CABINET  STEP 6.7.5	<b>THE "AUTO- MANUAL" SWITCH IS IN AUTOMATIC</b>	OPERATOR SHOULD CONTACT THE PRIMARY EO AND INSTRUCT HIM TO RELEASE THE "AUTO-MANUAL" SWITCH	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12.* PLACE CONTROL ROD H-2 B-8 H-14 F-6 F-10 K-10 K-6 TO THE CONNECTED POSITION  STEP 6.7.6	ROD IS IN THE CONNECTED POSITION	OPERATOR SHOULD PLACE ALL CONTROL BANK 'C' RODS TO THE CONNECTED POSITION  H-2    _____ B-8    _____ H-14    _____ F-6    _____ F-10    _____ K-10    _____ K-6    _____	<b>S      U</b>  Comments:
13. RESET THE GROUP STEP COUNTER TO THE RECORDED POSITION  STEP 6.7.7	STEP COUNTER SC-SB-C1 IS READING THE SAME AS SC-CB-C2	OPERATOR SHOULD RESET STEP COUNTER SC-CB-C1 TO THE RECORDED POSITION	<b>S      U</b>  Comments:
14. RESET THE ROD CONTROL URGENT FAILURE ALARM USING SF HS-4  STEP 6.7.8	ROD CONTROL URGENT FAILURE ALARM HAS BEEN RESET	OPERATOR SHOULD RESET THE ROD CONTROL URGENT FAILURE ALARM BY PRESSING SF HS-4	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. RETURN THE BANK SELECTOR SWITCH SE HS-9 TO THE 'AUTO' OR 'MANUAL' POSITION AS REQUIRED BY THE SS  STEP 6.7.9	THE SS DIRECTS YOU TO RETURN RODS TO THE 'MANUAL' POSITION	OPERATOR SHOULD RETURN THE BANK SELECTOR SWITCH, SE HS-9 TO THE 'MANUAL' POSITION AS REQUIRED BY THE SS	<b>S      U</b>  Comments:
16. IF ROD MISALIGNMENT CANNOT BE CORRECTED, REFER TO TECH SPEC SECTION 3.1.4  STEP 6.8	ROD P-8 WAS ALIGNED CORRECTLY	OPERATOR SHOULD UNDERSTAND THAT ROD P-8 WAS ALIGNED CORRECTLY AND GO TO STEP 6.9	<b>S      U</b>  Comments:
17. INVESTIGATE THE CAUSE OF THE MALFUNCTION  STEP 6.9	<b>THE CAUSE OF ROD P-8 MISALIGNMENT IS UNDER INVESTIGATION</b>	OPERATOR MAY ASK IF ROD P-8 IS UNDER INVESTIGATION	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
18. SELECT ROD BANK UPDATE FROM THE NSSS SCREEN  STEP 6.10.1	ROD BANK UPDATE HAS BEEN SELECTED FROM THE NSSS COMPUTER SCREEN	OPERATOR SHOULD SELECT THE ROD BANK UPDATE FROM THE NSSS COMPUTER	S      U  Comments:
19. UPDATE THE STATUS OF ALL CONTROL ROD BANKS TO REFLECT CURRENT CONDITIONS  STEP 6.10.2	NSSS COMPUTER ROD BANK UPDATE HAS BEEN PERFORMED, ALL RODS SHOW CURRENT STATUS		S      U  Comments:
20. IF A GROUP IS SPLIT, ENTER THE GROUP 1 POSITION ONLY  STEP 6.10.2.1	CONTROL BANK 'C' GROUP 1 AND 2 ARE AT THE SAME NUMBER OF STEPS	OPERATOR SHOULD ENTER BOTH GROUP 1 AND 2 STEPS FOR CONTROL BANK 'C'	S      U  Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
21. PRESS F3 TO SAVE UPDATED DATA  STEP 6.10.3	F3 HAS BEEN PRESSED	OPERATOR SHOULD PRESS F3 TO SAVE THE DATA ENTERED FOR CONTROL BANK 'C'	<b>S      U</b>  Comments:
22. INFORM THE OPERATING SUPERVISOR ROD P- 8 HAS BEEN ALIGNED WITH CONTROL BANK 'C' AND THE ROD BANK UPDATE HAD BEEN COMPLETED	<b>THE OPERATING SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE OS ROD P-8 HAS BEEN ALIGNED WITH CONTROL BANK 'C' AND THE ROD BANK UPDATE HAS BEEN COMPLETED.	<b>S      U</b>  Comments:
	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: CALLAWAY PLANT IS IN MODE 1. TWO (2) HOURS AGO, ROD P-8 WAS DISCOVERED MISALIGNED DURING A POWER INCREASE. A FLUX MAP DETERMINED ROD P-8 IS 15 STEPS LOWER THAN ITS BANK. ROD P-8 WAS DECLARED INOPERABLE AND THE REQUIREMENTS OF T/S 3.1.4, 3.1.5 AND 3.1.6 WERE SATISFIED. A QPTR HAS BEEN PERFORMED SATISFACTORILY. THE EDO AND REACTOR ENGINEER HAVE AGREED THE PROBLEM IS CORRECTED AND THE PLAN IS TO REALIGN CONTROL BANK C.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO REALIGN ROD P-8 WITH CONTROL BANK 'C' PER OTO-SF-00004, "MISALIGNMENT OF CONTROL RODS". STARTING WITH STEP 6.7, WITHDRAW ROD P-8 15 STEPS PER SUBSEQUENT OPERATOR ACTIONS. INFORM THE CONTROL ROOM SUPERVISOR WHEN THE NSSS COMPUTER (ROD BANK UPDATE) HAS BEEN PERFORMED.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPMS4	KSA NO:	029A3.01
COMPLETION TIME:	MINUTES	KSA RATING:	3.8/4.0
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	REINITIATE CTMT PURGE		
DUTY:	CONTAINMENT PURGE		

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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 16. SOS 93-1739

TOOLS/EQUIPMENT: NONE

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

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



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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. A CONTAINMENT MINI-PURGE WAS IN PROGRESS TO PREPARE FOR A CONTAINMENT ENTRY. ONE HOUR AGO, A CPIS/CRVIS OCCURRED DUE TO A SPIKE ON GT-RE-22. REPAIRS HAVE BEEN MADE TO GT-RE-22 AND IT IS NOT OPERABLE.  
OUTSIDE AIR TEMPERATURE IS EXPECTED TO BE >50°F.  
AIRBORNE CONTAMINATION REDUCTION IS NOT REQUIRED, HOWEVER NOBLE GASES NEED TO BE REDUCED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PLACE THE CONTAINMENT MINI-PURGE SYSTEM IN SERVICE PER OTN-GT-00001, CONTAINMENT PURGE SYSTEM, SECTION 4.7. THE CONTROL ROOM SUPERVISOR HAS DETERMINED AT THIS TIME NOT TO REALIGN THE CONTROL BUILDING HVAC. THE SS HAS AUTHORIZED REINITIATING PURGE. INFORM THE CONTROL ROOM SUPERVISOR WHEN THE MINI-PURGE HAS BEEN REINITIATED.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: MANUALLY INITIATE A CPIS AND CRVIS (BOTH TRAINS). TO SET CONTAINMENT PRESSURE AS REQUIRED IF PROBLEMS ARE ENCOUNTERED, USE ACTION, METERS, SET GTPDI40 TO 5, RAMP OVER 5 SECONDS.

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

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OTN-GT-00001, CONTAINMENT PURGE SYSTEM		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS OF OTN-GT-00001, CONTAINMENT PURGE SYSTEM	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS AND LIMITATIONS	S U  Comments:
3. REVIEW INITIAL CONDITIONS OF OTN-GT-00001, CONTAINMENT PURGE SYSTEM	OUTSIDE TEMPERATURE IS EXPECTED TO REMAIN GREATER THAN 50°F AND CTMT AIRBORNE ACTIVITY DOES NOT NEED TO BE REDUCED  CHECKLIST 1, 2 AND 3 ARE COMPLETE	OPERATOR SHOULD REVIEW INITIAL CONDITIONS	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
<p>4. ENSURE THE REQUIREMENTS OF CAUTION PRIOR TO STEP 4.7.1 CAN BE MET PRIOR TO CTMT PURGE REINITIATION</p> <p>CAUTION PRIOR TO STEP 4.7.1</p>		<p>OPERATOR SHOULD REALIZE PURGE WAS ONLY SECURED FOR ONE HOUR AND SS HAS GIVEN PERMISSION TO REINITIATE PURGE</p>	<p><b>S U</b></p> <p>Comments:</p>
<p>5. HAVE THE COUNT ROOM TECHNICIAN VERIFY ALARM/TRIP SETPOINTS FOR GTRE21, GTRE22, AND GTRE33 ARE CORRECT PER THE RELEASE PERMIT</p> <p>STEP 4.7.1</p>	<p><b>THE COUNT ROOM TECHNICIAN HAS VERIFIED SETPOINTS CORRECT PER THE RELEASE PERMIT</b></p>	<p>OPERATOR SHOULD CONTACT THE COUNT ROOM TECHNICIAN TO VERIFY SETPOINTS FOR GTRE21, 22 AND 33 PER RELEASE</p>	<p><b>S U</b></p> <p>Comments:</p>

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
6. IF MONITOR READINGS ARE $\geq$ THE HIGH ALARM SETPOINT, CLOSE THE PERMIT, RESAMPLE, AND GENERATE A NEW PERMIT  STEP 4.7.1.1	RM 11 CHANNELS 211, 212, 221, 222, 223, 331, 332, AND 333 ARE LIT GREEN	OPERATOR SHOULD USE THE RM11 CONSOLE TO DETERMINE THE COLOR OF CHANNELS 211, 212, 221, 222, 223, 331, 332, AND 333 ARE NOT LIT RED	<b>S U</b>  Comments:
7. CHECK SA036D AND SA036E HAVE NO BISTABLES LIT. RECORD ON THE URO LOG AND RESET THE BISTABLE LIGHTS  STEP 4.7.2	<b>NO BISTABLE LIGHTS ARE LIT ON SA036D AND SA036E</b>	OPERATOR SHOULD GO TO THE SA036D AND SA036E PANEL IN THE BACK OF THE CONTROL ROOM AND VERIFY NO BISTABLE LIGHTS LIT	<b>S U</b>  Comments:
8. IF REQUIRED, WITH SS/CRS PERMISSION, RESET THE FOLLOWING:  STEP 4.7.3	<b>NOTE: THE SS HAS AUTHORIZED RESETTING SWITCHES</b>	OPERATOR SHOULD REALIZE SS HAS GIVEN PERMISSION	<b>S U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
9.* RESET CPIS BY DEPRESSING SA HS-15, CTMT PURGE TRN 'B' ISO ON RL018  STEP 4.7.3	TRAIN 'B' CPIS HAS BEEN RESET	OPERATOR SHOULD DEPRESS THE RESET BUTTON ON SA HS-15, CTMT PURGE TRN 'B' ISO ON RL018	<b>S      U</b>  Comments:
10.* RESET CRVIS BY DEPRESSING SA HS-13, CTRL BLDG VENT TRN 'B' ISO  STEP 4.7.3	TRAIN 'B' CRVIS HAS BEEN RESET	OPERATOR SHOULD DEPRESS THE RESET BUTTON ON SA HS-13, CTRL BLDG VENT TRN 'B' ISO ON RL018	<b>S      U</b>  Comments:
11.* RESET CPIS BY DEPRESSING SA HS-11, CTMT PURGE TRN 'A' ISO ON RL018  STEP 4.7.3	TRAIN 'A' CPIS HAS BEEN RESET	OPERATOR SHOULD DEPRESS THE RESET BUTTON ON SA HS-11, CTMT PURGE TRN 'A' ISO ON RL018	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
12.* RESET CRVIS BY DEPRESSING SA HS-9, CTRL BLDG VENT TRN 'A' ISO ON RL018  STEP 4.7.3	TRAIN 'A' CRVIS HAS BEEN RESET	OPERATOR SHOULD DEPRESS THE RESET BUTTON ON SA HS-9, CTRL BLDG VENT TRN 'A' ISO ON RL018	<b>S      U</b>  Comments:
13. ENSURE CPIS AND CRVIS LIGHTS OUT ON ESFAS STATUS PANELS; IF REQUIRED USE SA HS-24 AND/OR SA HS-23, ESF PANEL MODE SEL SWITCHES, TO RESET  STEP 4.7.3.1	CPIS AND CRVIS LIGHTS ON 'B' ESFAS STATUS PANEL ARE OUT	OPERATOR SHOULD OBSERVE THE "CTRL RM VENT ISO SYS" LABEL BACKLIGHT GOES OUT ON SA066Y	<b>S      U</b>  Comments:
14. ENSURE CPIS AND CRVIS LIGHTS OUT ON ESFAS STATUS PANELS; IF REQUIRED USE SA HS-24 AND/OR SA HS-23, ESF PANEL MODE SEL SWITCHES, TO RESET  STEP 4.7.3.1	CPIS AND CRVIS LIGHTS ON 'A' ESFAS STATUS PANEL ARE OUT	OPERATOR SHOULD OBSERVE THE "CTRL RM VENT ISO SYS" LABEL BACKLIGHT GOES OUT ON SA066X	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
15. ENSURE MCB ANNUNCIATORS 59D (CPIS) AND 63A (CRVIS) ARE CLEAR.  STEP 4.7.3.2	MCB ANNUNCIATORS 59D AND 63A ARE CLEAR.	OPERATOR SHOULD VERIFY MCB ANNUNCIATORS 59D AND 63A ARE CLEAR.	<b>S      U</b>  Comments:
16. IF REQUIRED, REALIGN THE CONTROL BUILDING HVAC PER OTN-GK-00001  STEP 4.7.4	THE O.S. HAS DETERMINED TO ALIGN MINI-PURGE PRIOR TO REALIGNING THE CONTROL BUILDING HVAC	THE OPERATOR SHOULD CONTINUE WITH STEP 4.7.5 AND NOT ALIGN CONTROL BUILDING HVAC AT THIS TIME  <b>GIVEN IN INITIAL CONDITIONS</b>	<b>S      U</b>  Comments:
17. PLACE MINI-PURGE IN SERVICE PER SECTION 4.3 OF THIS PROCEDURE  STEP 4.7.5		OPERATOR SHOULD GO TO SECTION 4.3	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
18. ENSURE GASEOUS RADWASTE RELEASE PERMIT IS APPROVED PER SECTION 4.2 OF THIS PROCEDURE  STEP 4.3.1	<b>RELEASE PERMIT HAS BEEN APPROVED PER SECTION 4.2</b>	OPERATOR SHOULD VERIFY RELEASE PERMIT HAS BEEN APPROVED	<b>S      U</b>  Comments:
19. MONITOR OR TREND SDRE41, SDRE42, AND GTPDI040  STEP 4.3.2	SDRE41, SDRE42, AND GT-PDI-040 ARE ALL STABLE	OPERATOR SHOULD MONITOR SDRE41, SDRE42, AND GTPDI040 OR MAY USE TRENDS. OPERATOR MAY USE COMPUTER TIME TREND SCREEN AND USE 'MINIVENT'	<b>S      U</b>  Comments:
20. RECORD CONTAINMENT, GTPDI0040 OR GTD0040, PRESSURE ON THE GASEOUS RADWASTE PERMIT.  STEP 4.3.2.1	<b>CONTAINMENT PRESSURE HAS BEEN RECORDED</b>	OPERATOR SHOULD RECORD CONTAINMENT PRESSURE, GTPDI0040 OR GTD0040, ON THE GASEOUS RADWASTE PERMIT	<b>S      U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
21. VERIFY THE "CONTAINMENT PURGE IN PROGRESS DO NOT BYPASS" COVERS OVER THE ESFAS SWITCHES FOR GTRE22 AND 33  STEP 4.3.3	<b>COVERS HAVE BEEN PLACED OVER GTRE22 AND GTRE33 ESFAS SWITCHES</b>	OPERATOR SHOULD VERIFY THE COVERS ON GTRE22 AND GTRE33 ESFAS SWITCHES	<b>S      U</b>  Comments:
22. INITIAL/DATE/TIME ON SP010 FOR GT RR-21B AND GT RR-58  STEP 4.3.4	<b>INITIALS HAVE BEEN MADE ON GT RR-21B AND GT RR-58</b>	HAVE OPERATOR SHOW LOCATION OF GT RR-21B AND GT RR-58	<b>S      U</b>  Comments:
23.* START CGT02 CONTAINMENT MINI PURGE EXHAUST FAN USING GT HIS-20  STEP 4.3.5	GT HIS-20 RED LIGHTS ILLUMINATE AND GREEN LIGHTS GO OUT	OPERATOR SHOULD SELECT RUN FOR GT HIS-20, CTMT MINI-PURGE EXH FAN AND DAMPER, ON RL020	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
24.* OPEN GTHZ0011 USING GT HIS-11, CTMT PURGE ISO DAMPER  STEP 4.3.5.1	GT HIS-11 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-11	<b>S      U</b>  Comments:
25.* OPEN GTHZ0012 USING GT HIS-12, CTMT PURGE ISO DAMPER  STEP 4.3.5.1	GT HIS-12 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-12	<b>S      U</b>  Comments:
26.* OPEN GTHZ0028 USING GT HIS-28, CTMT PURGE ISO DAMPER  STEP 4.3.5.1	GT HIS-28 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-28	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
27.* OPEN GTHZ0029 USING GT HIS-29, CTMT PURGE ISO DAMPER  STEP 4.3.5.1	GT HIS-29 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-29	<b>S      U</b>  Comments:
28. INFORM COUNT ROOM TECHNICIAN WHEN PURGE INITIATED  STEP 4.3.5.2	<b>COUNT ROOM TECHNICIAN ACKNOWLEDGES</b>	OPERATOR SHOULD NOTIFY THE COUNT ROOM TECHNICIAN OF THE TIME THE PURGE WAS INITIATED	<b>S      U</b>  Comments:
29. MONITOR CTMT PRESSURE TO BE LESS THAN 10" WG  STEP 4.3.6	<b>CTMT PRESSURE IS LESS THAN 10" WG</b>	OPERATOR SHOULD DETERMINE CTMT PRESSURE FROM GTPDI40, CTMT DP, ON RL020	<b>S      U</b>  Comments:

\* CRITICAL STEP

<b>TASK</b>			
<b>NUMBER - ELEMENT</b>	<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
30. OPEN GTHZ0041 AND GTHZ0042 USING GT HIS-41, CTMT MINI-PURGE SPLY/EXH DAMPERS  STEP 4.3.6	GT HIS-41 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-41, CTMT MINI-PURGE SPLY / EXH DAMPERS, ON RL020	<b>S      U</b>  Comments:
31. MONITOR CTMT PRESSURE TO BE LESS THAN 4.25" WG  STEP 4.3.7	<b>CTMT PRESSURE IS NOW 2.5" WG</b>	OPERATOR SHOULD DETERMINE CTMT PRESSURE FROM GTPDI40, CTMT DP, ON RL020	<b>S      U</b>  Comments:
32.* OPEN GTHZ0026 USING GT HIS-26, CTMT PURGE SYS AIR SPLY DAMPER  STEP 4.3.7	GT HIS-26 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-26, CTMT PURGE SYS AIR SPLY DAMPER, ON RL020	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
33.* OPEN GTHZ0027 USING GT HIS-27, CTMT PURGE SYS AIR SPLY DAMPER  STEP 4.3.7	GT HIS-27 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-27, CTMT PURGE SYS AIR SPLY DAMPER, ON RL020	<b>S U</b>  Comments:
34.* START CONTAINMENT MINI PURGE SUPPLY AIR UNIT, SGT02, USING GT HIS-23  STEP 4.3.8	GT HIS-23 RED LIGHT ILLUMINATES AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD SELECT RUN FOR GT HIS-23, CTMT MINI-PURGE AIR SUPPLY UNIT, ON RL020	<b>S U</b>  Comments:
35.* OPEN GTHZ0005 USING GT HIS-5, CTMT MINI-PURGE AIR SPLY CTMT ISO  STEP 4.3.8.1	GT HIS-5 RED LIGHT IS LIT AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-5, CTMT MINI-PURGE AIR SPLY CTMT ISO, ON RL020	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
36.* OPEN GTHZ0004 USING GT HIS-4, CTMT MINI-PURGE AIR SPLY CTMT ISO  STEP 4.3.8.1	GT HIS-4 RED LIGHT IS LIT AND THE GREEN LIGHT GOES OUT	OPERATOR SHOULD DEPRESS AND HOLD THE OPEN PUSHBUTTON FOR GT HIS-4, CTMT MINI-PURGE AIR SPLY CTMT ISO, ON RL020	<b>S U</b>  Comments:
37. NOTIFY THE CONTROL ROOM SUPERVISOR THAT CTMT MINI-PURGE HAS BEEN RE-INITIATED	CONTROL ROOM SUPERVISOR ACKNOWLEDGES	OPERATOR SHOULD INFORM THE CONTROL ROOM SUPERVISOR THAT CTMT MINI-PURGE HAS BEEN RE-INITIATED	<b>S U</b>  Comments:
	THE JPM IS COMPLETE  <b><u>RECORD STOP TIME ON PAGE 2</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 1. A CONTAINMENT MINI-PURGE WAS IN PROGRESS TO PREPARE FOR A CONTAINMENT ENTRY. ONE HOUR AGO, A CPIS/CRVIS OCCURRED DUE TO A SPIKE ON GT-RE-22. REPAIRS HAVE BEEN MADE TO GT-RE-22 AND IT IS NOT OPERABLE.  
OUTSIDE AIR TEMPERATURE IS EXPECTED TO BE >50°F.  
AIRBORNE CONTAMINATION REDUCTION IS NOT REQUIRED, HOWEVER NOBLE GASES NEED TO BE REDUCED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PLACE THE CONTAINMENT MINI-PURGE SYSTEM IN SERVICE PER OTN-GT-00001, CONTAINMENT PURGE SYSTEM, SECTION 4.7. THE CONTROL ROOM SUPERVISOR HAS DETERMINED AT THIS TIME NOT TO REALIGN THE CONTROL BUILDING HVAC. THE SS HAS AUTHORIZED REINITIATING PURGE. INFORM THE CONTROL ROOM SUPERVISOR WHEN THE MINI-PURGE HAS BEEN REINITIATED.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPM <b>S5</b>	KSA NO:	026A4.01
COMPLETION TIME:	MINUTES	KSA RATING:	4.5/4.3
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	CONTAINMENT SPRAY SYSTEM OPERATION		
DUTY:	CONTAINMENT SPRAY SYSTEM		

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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-EN-V001A, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE  
OPERABILITY, REV 14

TOOLS/EQUIPMENT: CALIBRATED STOP WATCH

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. THIS IS AN 'A' TRAIN OUTAGE WEEK. MAINTENANCE HAS BEEN PERFORMED ON ENHV0006, CONTAINMENT SPRAY PUMP 'A' DISCHARGE ISOLATION VALVE.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM THE VALVE STROKE TEST ON ENHV0006, CONTAINMENT SPRAY PUMP "A" DISCHARGE ISOLATION VALVE PER SECTION 6.2 OF OSP-EN-V001A, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE OPERABILITY. A BRIEF HAS BEEN CONDUCTED. THE PRIMARY EQUIPMENT OPERATOR IS AT ENHV0006, AND HAS A RULER AND THE DRAIN RIG, READY FOR THE SURVEILLANCE TEST. INFORM THE CONTROL ROOM SUPERVISOR WHEN SECTION 6.2 HAS BEEN COMPLETED.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: USE EXPERT MODE / SET VI013SEC= 0.015 TO HAVE ENHV0006 EXCEED THE MAXIMUM STROKE TIME OF 15 SECONDS.

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE PREFORMED A STROKE TEST OF ENHV0006 AND DETERMINED THAT IT HAS EXCEEDED THE MAXIMUM ALLOWABLE STROKE TIME (15 SECONDS). THE OPERATOR SHOULD DETERMINE ENHV0006 SHOULD BE DECLARED INOPERABLE.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OSP-EN-V001A, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE OPERABILITY		OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U  Comments:
2. REVIEW ACCEPTANCE CRITERIA OF OSP- EN-V001A, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE OPERABILITY  STEP 2.0		OPERATOR SHOULD REVIEW ACCEPTANCE CRITERIA	S U  Comments:
3. REVIEW PRECAUTIONS AND LIMITATIONS OF OSP-EN-V001A, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE OPERABILITY  STEP 3.0	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS AND LIMITATIONS	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
4.	REVIEW INITIAL CONDITIONS OF OSP-EN-V001, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE OPERABILITY  STEP 4.0	ALL INITIAL CONDITIONS ARE SATISFIED	OPERATOR SHOULD REVIEW INITIAL CONDITIONS	Comments:
5.	ENSURE 'A' CONTAINMENT SPRAY PUMP IS IN PULL TO LOCK USING EN HIS-3  STEP 6.2.1	EN HIS-3 IS IN THE NORMAL POSITION	OPERATOR SHOULD PLACE 'A' CONTAINMENT SPRAY PUMP IN PULL TO LOCK WITH EN HIS-3	Comments:
		EN HIS-3 IS IN THE PULL TO LOCK POSITION		
6.*	ENSURE 'A' CONTAINMENT SPRAY PUMP SUCTION VALVE, BNHV0004, IS CLOSED USING BN HIS-4  STEP 6.2.2	BN HIS-4 GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT	OPERATOR SHOULD CLOSE BNHV0004, 'A' CONTAINMENT SPRAY PUMP SUCTION VALVE, WITH BN HIS-4	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
7. VERIFY CLOSED ENHV0006, USING EN HIS-6. RECORD THIS INITIAL POS ON ATTACHMENT 1  STEP 6.2.3	EN HIS-6 GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR SHOULD VERIFY EN HIS-6 'A CONTAINMENT SPRAY PUMP DISCHARGE ISO VALVE IS CLOSED, AND RECORD THE INITIAL POSITION ON ATTACHMENT 1	<b>S      U</b>  Comments:
8. REMOVE THE VALVE DUST COVER FROM ENHV0006  STEP 6.2.4	<b>PRIMARY EO REPORTS THE VALVE DUST COVER HAS BEEN REMOVED FROM ENHV0006</b>	OPERATOR SHOULD CONTACT PERSONNEL AT ENHV0006 TO HAVE THE DUST COVER REMOVED	<b>S      U</b>  Comments:
9. MEASURE THE HEIGHT OF THE STEM ABOVE THE ACTUATOR  STEP 6.2.5	<b>PRIMARY EO REPORTS THE HEIGHT OF THE STEM ABOVE THE ACTUATOR IS 1.5 INCHES</b>	OPERATOR SHOULD CONTACT PERSONNEL AT ENHV0006 TO HAVE THE HEIGHT OF THE STEM ABOVE ENHV0006 ACTUATOR MEASURED	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
10. RECORD 1.5 INCHES AS THE INITIAL LOCAL POSITION ON ATTACHMENT 1  STEP 6.2.6			OPERATOR SHOULD RECORD 1.5 INCHES ON ATTACHMENT 1 UNDER INIT LOCAL POS	Comments:
11.* OPEN ENHV0006 USING EN HIS-6. MEASURE ELAPSED TIME BETWEEN ACTUATION OF THE SWITCH AND GREEN LIGHT GOING OUT  STEP 6.2.7	THE SWITCH HAS BEEN ACTUATED AND 17 SECONDS LATER THE GREEN LIGHT GOES OUT  <b>IF ASKED, INFORM THE OPERATOR TO COMPLETE THE SURVEILLANCE</b>		OPERATOR SHOULD MEASURE STROKE TIME TO BE APPROXIMATELY 17 SECONDS  <b>NOTE: OPERATOR MAY DETERMINE ENHV0006 IS INOPERABLE AT THIS TIME</b>	Comments:
12. MEASURE THE HEIGHT OF THE STEM ABOVE THE ACTUATOR ON ENHV0006  STEP 6.2.8	<b>PRIMARY EO REPORTS THE STEM MEASUREMENT FOR ENHV0006 IS 10 INCHES</b>		OPERATOR SHOULD CONTACT PERSONNEL AT ENHV0006 TO DETERMINE THE HEIGHT OF THE STEM ABOVE THE ACTUATOR ON ENHV0006	Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
13. RECORD 10 INCHES AS THE FULL STROKE LOCAL POSITION ON ATTACHMENT 1  STEP 6.2.9		OPERATOR SHOULD RECORD 10 INCHES AS THE FULL STROKE LOCAL POS ON ATTACHMENT 1	<b>S      U</b>  Comments:
14. REPLACE THE VALVE DUST COVER ON ENHV0006  STEP 6.2.10	<b>PRIMARY EO REPORTS THE DUST COVER HAS BEEN REPLACED ON ENHV0006</b>	OPERATOR SHOULD CONTACT PERSONNEL AT ENHV0006 TO HAVE DUST COVER REPLACED	<b>S      U</b>  Comments:
15.* CLOSE ENHV006, CONTAINMENT SPRAY PUMP 'A' DISCHARGE ISO VLV WITH EN HIS-6  STEP 6.2.11	EN HIS-6 GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT	OPERATOR SHOULD CLOSE ENHV0006, CTMT SPRAY PUMP 'A' DISCHARGE ISO VLV WITH EN HIS-6	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
16. OPEN BNHV0004, 'A' CONTAINMENT SPRAY PUMP SUCTION VALVE WITH BN HIS-4  STEP 6.2.12	BN HIS-4 RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT	OPERATOR SHOULD OPEN BNHV0004, 'A' CTMT SPRAY PMP SUCTION VALVE WITH BN HIS-4	<b>S      U</b>  Comments:
17. USING THE MEASUREMENT TAKEN, VERIFY THAT STEM MOVEMENT IS GREATER THAN THE VALUE LISTED FOR VALVE STROKE IN ATTACHMENT 1  STEP 6.2.13		OPERATOR SHOULD VERIFY VALVE STROKE FOR BNHV0006 (10"-1.5" =8.5") IS GREATER THAN VALVE STROKE DISTANCE (8.3") FROM ATTACHMENT 1	<b>S      U</b>  Comments:
18. INFORM HP RWST WATER IS GOING TO BE DRAINED FROM THE CONTAINMENT SPRAY SYSTEM  STEP 6.2.14.1	<b>HP ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM HP THAT RWST WATER IS GOING TO BE DRAINED FROM 'A' CTMT SPRAY DISCHARGE HEADER	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
19. HAVE THE PRIMARY EO CONNECT A HOSE TO ENV0076 AND ROUTE TO A FLOOR DRAIN, UNLOCK AND OPEN ENV0076, DRAIN WATER AND THEN CLOSE AND LOCK ENV0076  STEPS 6.2.14.2/3/4	<b>THE PRIMARY EO REPORTS ALL WATER HAS BEEN DRAINED FROM ENV0076 AND ENV0076 IS CLOSED AND LOCKED</b>	OPERATOR SHOULD CONTACT THE PRIMARY EO TO HAVE ENV0076 OPENED TO DRAIN RWST WATER FROM 'A' CTMT SPRAY DISCH HEADER, THEN CLOSED AND LOCKED	<b>S      U</b>  Comments:
20. PLACE 'A' CONTAINMENT SPRAY PUMP HANDSWITCH EN HIS-3 IN NORMAL  STEP 6.2.15	EN HIS-3 HAS BEEN TAKEN FROM PULL TO LOCK TO THE NORMAL POSITION	OPERATOR SHOULD RETURN 'A' CTMT SPRAY PMP HANDSWITCH EN HIS-3 TO THE NORMAL POSITION	<b>S      U</b>  Comments:
21.* INFORM THE CONTROL ROOM SUPERVISOR ENHV0006 HAS FAILED THE SURVEILLANCE TEST	<b>THE CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD NOTIFY THE CONTROL ROOM SUPERVISOR ENHV0006 EXCEEDED IT MAX ALLOWABLE STROKE TIME PER 6.2 OF OSP-EN-V001A	<b>S      U</b>  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
	<p>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:** CALLAWAY PLANT IS IN MODE 1. THIS IS AN 'A' TRAIN OUTAGE WEEK. MAINTENANCE HAS BEEN PERFORMED ON ENHV0006, CONTAINMENT SPRAY PUMP 'A' DISCHARGE ISOLATION VALVE.

**Initiating Cues:** THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO PERFORM THE VALVE STROKE TEST ON ENHV0006, CONTAINMENT SPRAY PUMP "A" DISCHARGE ISOLATION VALVE PER SECTION 6.2 OF OSP-EN-V001A, SECTION XI TRAIN 'A' CONTAINMENT SPRAY VALVE OPERABILITY. A BRIEF HAS BEEN CONDUCTED. THE PRIMARY EQUIPMENT OPERATOR IS AT ENHV0006, AND HAS A RULER AND THE DRAIN RIG, READY FOR THE SURVEILLANCE TEST. INFORM THE CONTROL ROOM SUPERVISOR WHEN SECTION 6.2 HAS BEEN COMPLETED.

# CALLAWAY PLANT

## JOB PERFORMANCE MEASURE

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JPM NO:	ILE-12/2000-JPM <b>S6</b>	KSA NO:	006A4.07
COMPLETION TIME:	12 MINUTES	KSA RATING:	4.4/4.4
JOB TITLE:	URO/SRO	REVISION:	000928
TASK TITLE:	RAISE ACCUMULATOR LEVEL		
DUTY:	ECCS		

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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, REV 17

TOOLS/EQUIPMENT: NONE

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

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

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

Initial Conditions: CALLAWAY PLANT IS IN MODE 1. THE 'B' SAFETY INJECTION ACCUMULATOR IS LOW AT 26% DUE TO CHEMISTRY SAMPLES. 'B' CCW TRAIN IS IN SERVICE. SAFETY INJECTION SYSTEM AND RWST ARE ALIGNED PER OTN-EM-00001, "SAFETY INJECTION SYSTEM". EP HCV-943 ACCUMULATOR VENT VALVE IS CAPPED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO RAISE LEVEL IN 'B' SAFETY INJECTION ACCUMULATOR TO 50% USING 'B' SAFETY INJECTION PUMP PER OTN-EP-00001, "ACCUMULATOR SAFETY INJECTION SYSTEM", SECTION 4.2. IF REQUIRED TO LOWER ACCUMULATOR PRESSURE, SECTION 5.3 IS TO BE USED. THERE ARE NO PERSONNEL IN CONTAINMENT.

<b>ASK IF THE OPERATOR UNDERSTANDS THE INITIATING CUES.</b>
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Notes: ENSURE 'B' CCW TRAIN IS IN SERVICE.  
SET ASISAL(2)=51600.0 TO LOWER 'B' SI ACCUMULATOR TO 26%  
SET CSIS8950=1.25E-3 FOR ACCUMULATOR VENT RATE  
ENSURE 'B' ACCUMULATOR PRESSURE IS > 635 PSIG

Task Standard: UPON COMPLETION OF THIS JPM, THE OPERATOR WILL HAVE FILLED 'B' SI ACCUMULATOR TO APPROXIMATELY 50% (BUT LESS THAN 85%) USING 'B' SI PUMP, WITH PRESSURE IN THE GREEN BAND. THE 'B' SI PUMP WILL BE SECURED.

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

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

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
1. OBTAIN A COPY OF OTN-EP-00001, ACCUMULATOR SAFETY INJECTION SYSTEM	PROVIDE OPERATOR WITH PROCEDURE	OPERATOR SHOULD OBTAIN PROCEDURE COPY	S U Comments:
2. REVIEW PRECAUTIONS AND LIMITATIONS OF OTN-EP-00001, SAFETY INJECTION SYSTEM  STEP 2.0	ALL PRECAUTIONS AND LIMITATIONS ARE SATISFIED	OPERATOR SHOULD REVIEW PRECAUTIONS AND LIMITATIONS	S U Comments:
3. ENSURE SAFETY INJECTION SYSTEM AND RWST ARE ALIGNED PER OTN-EM-00001, SAFETY INJECTION SYSTEM  STEP 4.2.1	GIVEN IN THE INITIAL CONDITIONS	OPERATOR MAY VERIFY SAFETY INJECTION AND RWST ARE ALIGNED PER OTN-EM-00001	S U Comments:

\* CRITICAL STEP

<b>TASK NUMBER - ELEMENT</b>		<b>CUE</b>	<b>STANDARD</b>	<b>SCORE</b>
4. CLOSE EMHV8823 USING EM HIS-8823  STEP 4.2.2.1		EM HIS-8823 GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR SHOULD VERIFY EMHV8823 IS CLOSED USING EM HIS-8823 ON RL017	<b>S U</b>  Comments:
5. CLOSE EMHV8871 USING EM HIS-8871  STEP 4.2.2.1		EM HIS-8871 GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR SHOULD VERIFY EMHV8871 IS CLOSED USING EM HIS-8871 ON RL017	<b>S U</b>  Comments:
6. CLOSE EMHV8964 USING EM HIS-8964  STEP 4.2.2.3		EM HIS-8964 GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR SHOULD VERIFY EMHV8964 IS CLOSED USING EM HIS-8964 ON RL017	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT		CUE	STANDARD	SCORE S U
7.* OPEN EMHV8888, ACCUMULATOR FILL LINE ISO VALVE WITH EM HIS-8888  STEP 4.2.3		EM HIS-8888 RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT	OPERATOR SHOULD OPEN EMHV8888, ACCUMULATOR FILL LINE ISOLATION VALVE, WITH EM HIS-8888	S U  Comments:
8. ENSURE EMHV8802A, SI PMP A DISCH TO HOT LEG INJ ISO, IS CLOSED USING EM HIS-8802A  STEP 4.2.5		EM HIS-8802A GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR SHOULD VERIFY EMHV8802A IS CLOSED WITH EM HIS-8802A	S U  Comments:
9.* START 'B' SAFETY INJECTION PUMP WITH EM HIS-0005 AND VERIFY DISCHARGE PRESSURE IS > 1500 PSIG  STEP 4.2.7.1		EM HIS-0005 RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT  EMPI0923 INDICATES 1520 PSIG	OPERATOR SHOULD START 'B' SI PUMP AND VERIFY DISCHARGE PRESSURE > 1500 PSIG	S U  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
10.*OPEN EPHV8878B, 'B' ACCUMULATOR FILL LINE ISO VALVE, WITH EP HIS-8878B  STEP 4.2.8	EP HIS-8878B RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT.  LEVEL IN 'B' ACCUMULATOR IS INCREASING.  ANNUNCIATOR 44C 'ACC B LEV HILO' CLEARS	OPERATOR SHOULD OPEN EPHV8878B, 'B' ACCUMULATOR FILL LINE ISO VALVE WITH EP HIS-8878B	S U  Comments:
	NOTE: OPERATOR MAY VENT AS NECESSARY PER SECTION 5.3		S U  Comments:
11.* WHEN 'B' ACCUMULATOR REACHES 50% CLOSE EPHV8878B, 'B' ACCUMULATOR FILL LINE ISO VALVE WITH EP HIS-8878B  STEP 4.2.8.1	EP HIS-8878B GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT	OPERATOR SHOULD CLOSE EPHV8878B, 'B' ACCUMULATOR FILL LINE ISO VALVE, WITH EP HIS-8878B PRIOR TO EXCEEDING 85%	S U  Comments:

\* CRITICAL STEP



TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
12.* STOP 'B' SI PUMP WITH EM HIS-0005  STEP 4.2.9	EM HIS-0005 GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT  DISCHARGE PRESSURE DECREASED TO 300 PSIG	OPERATOR SHOULD STOP 'B' SI PUMP WITH EM HIS-0005	<b>S      U</b>  Comments:
13. IF 'B' SI PUMP DISCHARGE PRESSURE <600 PSIG PROCEED TO STEP 4.2.11  CAUTION AFTER STEP 4.2.9		OPERATOR SHOULD PROCEED TO STEP 4.2.11	<b>S      U</b>  Comments:
14. CLOSE EMHV8888, ACCUMULATOR FILL LINE ISO VALVE WITH EM HIS-8888  STEP 4.2.11	EM HIS-8888 GREEN LIGHT ILLUMINATES AND RED LIGHT GOES OUT	OPERATOR SHOULD CLOSE EMHV8888 ACCUMULATOR TANK FILL LINE ISO VALVE WITH EM HIS- 8888	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
15. NOTIFY CHEMISTRY TO SAMPLE 'B' ACCUMULATOR BORON CONCENTRATION WITHIN 6 HOURS  STEP 4.2.12.1	<b>CHEMISTRY ACKNOWLEDGES</b>	OPERATOR SHOULD NOTIFY CHEMISTRY TO SAMPLE 'B' ACCUMULATOR	<b>S      U</b>  Comments:
16. ADJUST 'B' ACCUMULATOR N2 PRESSURE ACCORDING TO SECTION 5.3  STEP 4.2.13		OPERATOR SHOULD LOWER 'B' ACCUMULATOR WITH SECTION 5.3	<b>S      U</b>  Comments:
17. VERIFY CONTAINMENT NITROGEN SUPPLY ISOLATION VALVE EPHV8880 IS CLOSED USING EP HIS-8880  STEP 5.3.1	EP HIS-8880 GREEN LIGHT IS LIT AND RED LIGHT IS OUT	OPERATOR MAY VERIFY EPHV8880 CONTAINMENT NITROGEN SUPPLY ISOLATOR VALVE, IS CLOSED USING EP HIS-8880	<b>S      U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
18.* OPEN EPHV8950B OR C, 'B' ACCUMULATOR VENT VALVE  STEP 5.3.3	EPHV8950B OR C RED LIGHT ILLUMINATES AND GREEN LIGHT GOES OUT	OPERATOR SHOULD OPEN EPHV8950B OR C TO VENT 'B' ACCUMULATOR	<b>S U</b>  Comments:
19.* WHEN 'B' ACCUMULATOR PRESSURE DECREASED TO THE NORMAL BAND CLOSE EPHV8950B/C  STEP 5.3.3	ANNUNCIATOR 44B, ACC TK 'B' PRESS HILO HAS CLEARED, PRESSURE IN 'B' ACCUMULATOR IS IN THE GREEN BAND	OPERATOR SHOULD CLOSE EPHV8950B/C WHEN PRESSURE IN 'B' ACCUMULATOR IS IN THE GREEN BAND	<b>S U</b>  Comments:
20. INFORM THE CONTROL ROOM SUPERVISOR 'B' SI ACCUMULATOR HAS BEEN FILLED TO 50%	<b>THE CONTROL ROOM SUPERVISOR ACKNOWLEDGES</b>	OPERATOR SHOULD INFORM THE CONTROL ROOM SUPERVISOR THE ASSIGNED TASK HAS BEEN COMPLETED	<b>S U</b>  Comments:

\* CRITICAL STEP

TASK NUMBER - ELEMENT	CUE	STANDARD	SCORE
	<p>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: CALLAWAY PLANT IS IN MODE 1. THE 'B' SAFETY INJECTION ACCUMULATOR IS LOW AT 26% DUE TO CHEMISTRY SAMPLES. 'B' CCW TRAIN IS IN SERVICE. SAFETY INJECTION SYSTEM AND RWST ARE ALIGNED PER OTN-EM-00001, "SAFETY INJECTION SYSTEM". EP HCV-943 ACCUMULATOR VENT VALVE IS CAPPED.

Initiating Cues: THE CONTROL ROOM SUPERVISOR HAS DIRECTED YOU TO RAISE LEVEL IN 'B' SAFETY INJECTION ACCUMULATOR TO 50% USING 'B' SAFETY INJECTION PUMP PER OTN-EP-00001, "ACCUMULATOR SAFETY INJECTION SYSTEM", SECTION 4.2. IF REQUIRED TO LOWER ACCUMULATOR PRESSURE, SECTION 5.3 IS TO BE USED. THERE ARE NO PERSONNEL IN CONTAINMENT.

SORT BY  
**RO QUESTION NUMBER**

RO Exam Question Number	R Number
001	R096
002	R045
003	R090
004	R039
005	R084
006	R033
007	R078
008	R027
009	R071
010	R072
011	R021
012	R065
013	R015
014	R059
015	R009
016	R053
017	R003
018	R097
019	R050
020	R046
021	R091
022	R040
023	R085
024	R034
025	R079
026	R028
027	R073
028	R022
029	R066
030	R016
031	R060
032	R010
033	R054
034	R004
035	R098
036	R049
037	R047
038	R092
039	R041
040	R086
041	R035
042	R080
043	R029
044	R074
045	R023
046	R067
047	R017
048	R061
049	R011
050	R055

RO Exam Question Number	R Number
051	R005
052	R095
053	R044
054	R089
055	R038
056	R083
057	R032
058	R077
059	R026
060	R070
061	R020
062	R064
063	R014
064	R058
065	R008
066	R052
067	R002
068	R100
069	R094
070	R043
071	R088
072	R037
073	R082
074	R031
075	R076
076	R025
077	R069
078	R019
079	R063
080	R013
081	R057
082	R007
083	R051
084	R001
085	R099
086	R048
087	R093
088	R042
089	R087
090	R036
091	R081
092	R030
093	R075
094	R024
095	R068
096	R018
097	R062
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099	R056
100	R006

SORT BY  
**SRO QUESTION NUMBER**

SRO Exam Question Number	R/S Number
001	R004
002	S010
003	S005
004	R029
005	S019
006	R011
007	S013
008	R021
009	R045
010	R013
011	R036
012	S025
013	R086
014	R054
015	R059
016	R073
017	R077
018	R064
019	S006
020	R030
021	S020
022	R012
023	S014
024	R005
025	R022
026	R046
027	R014
028	R038
029	S026
030	R088
031	R061
032	R066
033	S003
034	R027
035	S017
036	R009
037	S011
038	R002
039	R018
040	R043
041	R020
042	R097
043	S023
044	R081
045	R056
046	R071
047	R053
048	R078
049	S008
050	R033

SRO Exam Question Number	R/S Number
051	R032
052	S002
053	R026
054	S016
055	R008
056	R025
057	R049
058	R016
059	R041
060	R001
061	R095
062	S022
063	R087
064	R074
065	R070
066	S007
067	R035
068	R031
069	S001
070	R006
071	S015
072	R007
073	R024
074	R048
075	R015
076	R039
077	R017
078	R094
079	S021
080	R079
081	R055
082	R068
083	S009
084	R075
085	S004
086	R028
087	S018
088	R010
089	S012
090	R003
091	R019
092	R044
093	R023
094	R100
095	S024
096	R084
097	R058
098	R072
099	R076
100	R063

SORT BY  
**SRO QUESTION NUMBER**



SORT BY  
**R/S NUMBER**

R Number	RO Exam Question Number
R001	084
R002	067
R003	017
R004	034
R005	051
R006	100
R007	082
R008	065
R009	015
R010	032
R011	049
R012	098
R013	080
R014	063
R015	013
R016	030
R017	047
R018	096
R019	078
R020	061
R021	011
R022	028
R023	045
R024	094
R025	076
R026	059
R027	008
R028	026
R029	043
R030	092
R031	074
R032	057
R033	006
R034	024
R035	041
R036	090
R037	072
R038	055
R039	004
R040	022
R041	039
R042	088
R043	070
R044	053
R045	002
R046	020
R047	037
R048	086
R049	036
R050	019

R Number	RO Exam Question Number
R051	083
R052	066
R053	016
R054	033
R055	050
R056	099
R057	081
R058	064
R059	014
R060	031
R061	048
R062	097
R063	079
R064	062
R065	012
R066	029
R067	046
R068	095
R069	077
R070	060
R071	009
R072	010
R073	027
R074	044
R075	093
R076	075
R077	058
R078	007
R079	025
R080	042
R081	091
R082	073
R083	056
R084	005
R085	023
R086	040
R087	089
R088	071
R089	054
R090	003
R091	021
R092	038
R093	087
R094	069
R095	052
R096	001
R097	018
R098	035
R099	085
R100	068

SORT BY  
**R/S NUMBER**

R/S Number	SRO Exam Question Number
R001	060
R002	038
R003	090
R004	001
R005	024
R006	070
R007	072
R008	055
R009	036
R010	088
R011	006
R012	022
R013	010
R014	027
R015	075
R016	058
R017	077
R018	039
R019	091
R020	041
R021	008
R022	025
R023	093
R024	073
R025	056
R026	053
R027	034
R028	086
R029	004
R030	020
R031	068
R032	051
R033	050
R035	067
R036	011
R038	028
R039	076
R041	059
R043	040
R044	092
R045	009
R046	026
R048	074
R049	057
R053	047
R054	014
R055	081
R056	045
R058	097
R059	015

R/S Number	SRO Exam Question Number
R061	031
R063	100
R064	018
R066	032
R068	082
R070	065
R071	046
R072	098
R073	016
R074	064
R075	084
R076	099
R077	017
R078	044
R079	080
R081	044
R084	096
R086	013
R087	063
R088	030
R094	078
R095	061
R097	042
R100	094
S001	069
S002	052
S003	033
S004	085
S005	003
S006	019
S007	066
S008	049
S009	083
S010	002
S011	037
S012	089
S013	007
S014	023
S015	071
S016	054
S017	035
S018	087
S019	005
S020	021
S021	079
S022	062
S023	043
S024	095
S025	012
S026	029

SORT BY  
**R/S NUMBER**

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>005AK1.05</u>	
	<b>Importance Rating</b>	<u>3.3</u>	<u>4.1</u>

**Proposed Question:**

Which ONE of the following plant conditions would require verification that Shutdown Margin exists?

- A. One Control Bank 'C' rod is misaligned by 13 steps and cannot be moved.
- B. MTC is not within its upper limit while in Mode 1.
- C. Control Bank 'A' step counters and DRPI indication deviate by 11 steps.
- D.  $T_{ave}$  is 550°F in all loops while in Mode 2.

**Proposed Answer:** A

**Distracter Explanation:**

- A. T/S 3.1.4 requires SDM to be performed within 1 hour.
- B. T/S 3.1.3 requires administrative withdrawal limits to be established.
- C. T/S 3.1.7, 12 steps is limit, flux map required not SDM verification.
- D. T/S 3.4.2 requires  $K_{eff} < 1.0$  with  $T_{ave} < 551^\circ\text{F}$ .

**Technical Reference(s):** T/S 3.1.4

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** U T61.003A.6 LP #26, Rod Control

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 10

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

**Outline #:** R001

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>015/017AA1.22</u>	
	<b>Importance Rating</b>	<u>4.0</u>	<u>4.2</u>

**Proposed Question:**

Callaway Plant is operating at 100% power when annunciator 72B, RCP #1 SEAL FLOW LOW, alarms. Seal leakoff for 'A' RCP #1 seal leakoff flow indicates 0.8 gpm. No other annunciators are in alarm.

Which ONE of the following is the probable cause for seal leakoff flow alarm?

- A. Excessive #2 seal leakage.
- B. High seal water injection temperature.
- C. Low VCT press.
- D. Loss of seal injection flow.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Candidate will have to analyze alarm and indication to determine #2 seal has failed.
- B. No effect or slight increase in #1 seal leakoff flow.
- C. Low VCT pressure will cause seal leakoff flow to increase.
- D. Loss of seal injection will cause seal leakoff flow to increase.

**Technical Reference(s):** OTO-BB-00002, "Reactor Coolant Pump Off-Normal"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** G T61.0110.6 LP #9, Reactor Coolant System

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 3

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

**Outline #:** R002

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>WE09/WE10EK2.2</u>	
	<b>Importance Rating</b>	<u>3.6</u>	<u>3.9</u>

**Proposed Question:**

The plant was operating at 98% power when a loss of off-site power caused a reactor trip. Twenty minutes after the trip the following plant conditions exist:

- RCS pressure is 2235 psig and slowly increasing.
- RCS Loop T<sub>HOT</sub> is 564°F in all 4 loops and trending down slowly.
- RCS Loop T<sub>COLD</sub> is 560°F in all 4 loops and stable.
- Core exit TCs indicate approximately 580°F and stable.
- Pressure is approximately 1136 psig in all steam generators.

Which ONE of the following describes plant conditions?

- A. Heat removal is being maintained by condenser steam dumps. Natural circulation exists.
- B. Heat removal may be established by opening the condenser steam dumps. Natural circulation does not exist.
- C. Heat removal is being maintained by atmospheric steam dumps. Natural circulation exists.
- D. Heat removal may be established by opening the atmospheric steam dumps. Natural circulation does not exist.

**Proposed Answer:**     C    

**Distracter Explanation:**

- A. Condenser steam dumps are closed due to loss of circ pumps.
- B. Condenser steam dumps will not open, natural circulation exists.
- C. Correct. Candidate will analyze loss of off-site power to determine this will cause a loss of circ pumps as well as S/G PORVs are removing heat and natural circulation exist.
- D. Atmospheric steam dumps are open, natural circulation exists.

**Technical Reference(s):** ES-0.2, NATURAL CIRCULATION COOLDOWN

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** \_\_\_\_\_

**Learning Objectives:**

F	T61.0110.6 LP #20, Main Steam
M	T61.003D.6 LP #7, Natural Circulation

**Question Source:**

**Bank**

**Modified Bank**

\_\_\_\_\_  
(Note changes or attach parent)

**New**

X

**Question History:**

**Previous NRC Exam**

No

**Previous Quiz / Test**

No

**Question Cognitive Level:** **Memory or Fundamental Knowledge**

**Comprehension or Analysis**

X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R003

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>024AA1.20</u>	
	<b>Importance Rating</b>	<u>3.2</u>	<u>3.3</u>

**Proposed Question:**

The following plant conditions exist ten minutes after a reactor trip from full power:

- Shutdown Bank 'E' rods H12 and M8 remain at 228 steps.
- Reactor power is  $1 \times 10^{-6}$  amps and slowly decreasing.
- Indicated startup rate is  $-0.25$  dpm.
- Reactor trip breakers indicate open.

Which ONE of the following actions is required?

- A. Actuate Safety Injection.
- B. Immediate borate with charging pumps or NCP.
- C. Immediate borate with charging pumps only.
- D. Actuate Containment Purge Isolation.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Safety injection is not required for this event.
- B. Candidate must determine that a red or orange path does not exist and boration with the CCP/NCP is required.
- C. Either CCP or NCP is allowed.
- D. CPIS not required.



**Technical Reference(s):** ES-0.1, "Reactor Trip Response"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.003D.6, LP #6, Reactor Trip Response

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 5

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

**Outline #:** R004 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>026AA1.03</u>	
	<b>Importance Rating</b>	<u>3.6</u>	<u>3.6</u>

**Proposed Question:**

In the CCW system, a leak exists larger than the capacity of makeup from the demineralized water system.

Which ONE of the following is the source of additional makeup to the CCW system?

- A. Fire water
- B. Service water
- C. Circulating water
- D. ESW

**Proposed Answer:** D

**Distracter Explanation:**

- A. Fire water is not connected to CCW.
- B. Service water is not connected to CCW.
- C. Circulating water is not connected to CCW.
- D. Correct. Candidate must remember ESW is connected to CCW.

**Technical Reference(s):** OTO-EG-00001, CCW Train Malfunction  
 (Attach if not previously provided) Attachment 1

**Proposed references provided to applicants during examination:** \_\_\_\_\_

**Learning Objective:** E T61.0110.6 LP #10, Component Cooling Water

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

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

**Outline #:** R005

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>2</u>
	<b>K/A #</b>	<u>027AA2.10</u>	
	<b>Importance Rating</b>	<u>3.3</u>	<u>3.6</u>

**Proposed Question:**

While at full power, the selected pressurizer channel fails. Assuming no operator action, which ONE of the following will cause a Safety Injection Actuation?

- A. PZR pressure channel 455 fails high.
- B. PZR pressure channel 455 fails low.
- C. PZR level channel 459 fails high.
- D. PZR level channel 459 fails low.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Candidate must realize PZR pressure channel will affect PZR sprays and PORV455. PORV 455 will close at 2185 psig, but sprays will stay open until closed by CIS 'A' isolating instrument air.
- B. PZR sprays closed, control RCS pressure with PZR PORVs.
- C. Charging goes to minimum, letdown isolates, reactor trip at high PZR level only.
- D. Charging goes to maximum, reactor trip at high PZR level only.

**Technical Reference(s):** T61.0110.6 LP #30, Reactor Instrumentation  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** J T61.0110.6 LP #30, Reactor Instrumentation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 8

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

**Outline #:** R006

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>WE12EK1.2</u>	
	<b>Importance Rating</b>	<u>3.5</u>	<u>3.8</u>

**Proposed Question:**

The crew is currently in ECA-2.1, "Uncontrolled Depressurization of All Steam Generators," step 4, due to a steam line break affecting all steam generators. Auxiliary feedwater has been throttled to 15,000 lbm/hr to each steam generator. The following conditions exist:

<u>SG</u>	<u>LEVEL</u>	<u>PRESSURE</u>
A	31% WR	400 psig stable
B	29% WR	390 psig decreasing
C	20% WR	395 psig decreasing
D	32% WR	420 psig increasing

Which ONE of the following describes actions that should be taken and explains the reason?

- A. Continue with ECA-2.1, "Uncontrolled Depressurization of All Steam Generators," because SI accumulators have not actuated.
- B. Transition to E-2, "Faulted Steam Generator," because there is an intact steam generator.
- C. Transition to FR-S.1, "Response to Nuclear Power Generation," due to positive reactivity added by the cooldown.
- D. Transition to FR-H.1, "Loss of Secondary Heat Sink," because total auxiliary feed flow is less than required.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Steam pressure in 'D' S/G is increasing, transition to E-2 required.
- B. Correct. Candidate is required to analyze plant conditions, determine an intact S/G exists. He is also required to determine a transition should be made to E-2.
- C. The immediate boration from SI would maintain adequate SDM.
- D. Transition to FR-H.1 required only if AVAILABLE feedwater is <300,000 lbm/hr. Auxiliary feed was manually throttled.

**Technical Reference(s):** ECA-2.1, "Uncontrolled Depressurization of All Steam Generators)

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objectives:** C, D T61.003D.6 LP #16, Uncontrolled Depressurization of all Steam Generators

**Question Source:** Bank \_\_\_\_\_  
Modified Bank \_\_\_\_\_ (Note changes or attach parent)  
New X

**Question History:** Previous NRC Exam No  
Previous Quiz / Test No

**Question Cognitive Level:** Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

**10 CFR Part 55 Content:** 55.43(b) 5 55.41(b) 8

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

**Outline #:** R007

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>WE08EK3.1</u>	
	<b>Importance Rating</b>	<u>3.4</u>	<u>3.9</u>

**Proposed Question:**

Which ONE of the following events would require entry into FR-P.1, "Response to Pressurized Thermal Shock"?

- A. Rapid RCS heatup followed by rapid RCS cooldown.
- B. Rapid RCS cooldown followed by RCS pressure decrease.
- C. Rapid RCS heatup followed by rapid RCS pressure decrease.
- D. Rapid RCS cooldown followed by RCS pressure increase.

**Proposed Answer:** D

**Distracter Explanation:**

- A. RCS cooldown required, then RC pressure increase.
- B. RCS pressure increase required.
- C. RCS cooldown required, then RCS pressure increase.
- D. Correct. Candidate is required to analyze plant conditions and determine entry into FR-P.1 requires a rapid cooldown with high RCS pressure or a repressurization event.

**Technical Reference(s):** Mitigating Core Damage Mod-C LP #9, Integrity  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A T61.003C.6 LP #9, Integrity

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 2

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

**Outline #:** R008

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>051AK3.01</u>	
	<b>Importance Rating</b>	<u>2.8</u>	<u>3.1</u>

**Proposed Question:**

A circ water pump tripped while at full power three minutes ago. The following plant conditions exist:

- Auct High T<sub>ave</sub> 590°F
- Reactor Power 75%
- Turbine Load 880 MWe
- LP 'A' Cond Press 5.9 Hga
- LP 'B' Cond Press 6.2 Hga
- LP 'C' Cond Press 6.5 Hga

Which ONE of the following describes the expected condenser steam dump automatic operations?

- A. All 12 condenser steam dumps are available and all are fully open.
- B. All 12 condenser steam dumps are available and some are open.
- C. Fewer than 12 steam dumps are available and all available dumps are open.
- D. Fewer than 12 steam dumps are available and all are closed.

**Proposed Answer:**     C    

**Distracter Explanation:**

- A. Fewer than 12 steam dumps available, not all dumps are open.
- B. Fewer than 12 steam dumps area available.
- C. Correct. Candidate is required to calculate plant conditions, require steam dumps to be open, combined with condenser vacuum. Determine fewer than 12 steam dumps meet the conditions to open.
- D. Not all steam dumps are closed.

**Technical Reference(s):** OTO-AD-00001, "Loss of Condenser Vacuum" - Automatic  
(Attach if not previously provided) Actions

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A T61.003B.6 LP #9, Loss of Condenser Vacuum

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	X
<b>Comprehension or Analysis</b>	

<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>55.41(b)</b>	<b>7</b>
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**Comments:**

**Outline #:** R009 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>055EK3.02</u>	
	<b>Importance Rating</b>	<u>4.3</u>	<u>4.6</u>

**Proposed Question:**

A loss of all AC power has occurred. Actions contained in ECA-0.0, "Loss of All AC Power" are being performed. The crew has commenced dumping steam from all steam generators to minimize RCS leakage.

Which ONE of the following describes the reason that steam generator depressurization should be limited to > 120 psig?

- A. To prevent injection of SI accumulator nitrogen into the RCS.
- B. To minimize potential for a pressurized thermal shock induced LOCA.
- C. To ensure turbine driven auxiliary feed pump can maintain steam generator inventory.
- D. To reduce possibility of cooldown causing a recriticality event.

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct. Candidate will have to recall that the cooldown will also lower RCS pressure and allow SI Accumulators to inject. He will also have to recall that if RCS pressure continued to decrease Nitrogen would inject into the RCS.
- B. The resultant RCS cold leg temperatures should not approach the temperature limit at which a challenge will exist.
- C. TD AFP will maintain S/G level as low as 80 psig header pressure.
- D. Cooldown will cause RCS pressure decrease and allow SI accumulators to inject.

**Technical Reference(s):** ECA-0.0, "Loss of All AC Power"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** Q T61.003D.6 LP #22, ECA-0.0 Loss of All AC Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

**Comments:** IPE/PRA

**Outline #:** R010 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>067G2.4.26</u>	
	<b>Importance Rating</b>	<u>2.9</u>	<u>3.3</u>

### Proposed Question:

A fast spreading fire exists in the main turbine lube oil reservoir.

Which ONE of the following fire suppression systems will actuate or need to be actuated?

- A. Wet pipe sprinkler system.
- B. Preaction sprinkler system.
- C. Manual sprinkler system.
- D. Deluge sprinkler system.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Candidate will recall only wet pipe sprinkler system protects the main turbine reservoir.
- B, C & D are incorrect because none are located in the main turbine lube oil reservoir.

**Technical Reference(s):** T61.0110.6 LP #35, Fire Protection System  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.0110.6 LP #35, Fire Protection System

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	<u>X</u>
<b>Comprehension or Analysis</b>	_____

<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>55.41(b)</b>	<b>8</b>
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**Comments:**

**Outline #:** R012 **Author:** SMP

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>068AK2.07</u>	
	<b>Importance Rating</b>	<u>3.3</u>	<u>3.4</u>

**Proposed Question:**

A control room evacuation is being performed per OTO-ZZ-00001, "Control Room Inaccessibility." The reactor operator arrives at NB02 and finds that NE02, 'B' D/G, IS NOT running and NB0211, NB02 emergency feed from 'B' standby DG NE02, is open.

Which ONE of the following describes the actions to be taken?

- A. Locally start 'A' emergency diesel generator, commence required actions with 'A' train equipment.
- B. Locally start 'B' emergency diesel generator and manually close NB0211, NB02 emergency feed from 'B' standby DG NE02.
- C. Trip NB0209 and NB0212, NB02 norm and alt supply breakers, verify 'B' emergency diesel generator starts.
- D. Place all NB02 breakers in Pull-To-Lock, verify 'B' emergency diesel generator starts.

**Proposed Answer:** C

**Distracter Explanation:**

- A. 'A' train equipment is not used during control room evacuation.
- B. NB0209 and NB0212 must be verified open before locally starting NE02.
- C. Correct, candidate must recall the Safeguards power drawing and realize that undervoltage is an auto start for NE02.
- D. Breakers for 'B' D/G (NB0211) and 'B' ESW pump (NB0215) are not placed in P-T-L.

**Technical Reference(s):** Attachment 3 of OTO-ZZ-00001, "Control Room Inaccessibility"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C.3 T61.003B.6 LP #B-59, Control Room Inaccessibility

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 7

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

**Outline #:** R013

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #**11**Group #**11**K/A #**069AA2.01**Importance Rating**3.74.3**Proposed Question:**

The following plant conditions exist:

- RCS temperature is 185°F.
- Reactor vessel head installed and bolts fully tensioned.
- 'A' & 'D' S/G WR levels indicate 68%.
- 'A' CCW heat exchanger is tagged out to replace relief valve.
- 'B' RHR train is providing RCS cooling.
- 'B' RCP motor is being moved through the equipment hatch.

The 'B' train RHR pump seizes and becomes inoperable. RCS temperatures is rising at 15°F/hr.

Which ONE of the following actions is required?

- A. Cross connect CCW trains and provide 'A' RHR train cooling with 'B' CCW pump and heat exchanger.
- B. Use spent fuel pool cooling pumps and heat exchanger to provide cooling to RCS.
- C. Set containment closure before RCS temperature is greater than 200°F.
- D. Set containment closure before RCS temperature is greater than 350°F.

**Proposed Answer:**C**Distracter Explanation:**

- A. CCW trains cannot be cross-connected to provide RHR cooling.
- B. Spent fuel pool cooling system can only provide cooling during Mode 6 with reactor vessel head off and pool flooded.
- C. Correct. Candidate is required to analyze plant conditions, determine Mode 5 exists and CTMT closure must be achieved by Mode 4.
- D. Containment closure required prior to Mode 4 (>200°F).

**Technical Reference(s):** T/S 3.6.1  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** F1 T61.003A.6 LP #A-6, Containment

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 9

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

**Outline #:** R014 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>074EK2.1</u>	
	<b>Importance Rating</b>	<u>3.6</u>	<u>3.8</u>

**Proposed Question:**

The following plant conditions exist:

- Core exit thermocouples indicate 788°F and slowly increasing
- RVLIS indicates 38% and slowly decreasing
- 'A' CCP is tagged out for impeller replacement
- NB02 tripped due to a bus lockout
- A safety injection was manually actuated and all AVAILABLE ECCS equipment functioned per design
- Crew is current in FR-C.1, "Response to Inadequate Core Cooling"

Which ONE of the following actions should the crew initially take to establish some form of injection flow?

- A. Depressurize all steam generators to 120 psig.
- B. Start one RCP to collapse voids in RCS to allow injection flow.
- C. Open one PZR PORV to depressurize RCS and allow SI Pumps to inject.
- D. Start the NCP and open BG-FK-124 to establish injection flow.

**Proposed Answer:**     D    

**Distracter Explanation:**

- A. Depressurization of steam generators is used to establish a heat sink, but is not the preferred method.
- B. RCP are not started unless core exit TC > 1200°F.
- C. Opening a PZR PORV does not conserve RCS inventory and is not the preferred method.
- D. Correct. Candidate must determine plant conditions still meet FR-C.1 requirements and actions for FR-C.1.

**Technical Reference(s):** FR-C.1, "Response to Inadequate Core Cooling"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.003C.6 LP #7, Core Cooling

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 3

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

**Outline #:** R015 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>076G2.2.25</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>3.7</u>

**Proposed Question:**

Which ONE of the following is the basis for reducing  $T_{ave}$  to  $<500^{\circ}\text{F}$  when gross specific activity of the RCS is  $>100/\bar{E}$   $\mu\text{Ci/gm}$ ?

- A. Eliminates radiation hazards due to CRUD burst.
- B. Eliminates of fuel damage by iodine spiking.
- C. Prevents personnel overexposure in auxiliary building during LOCA event.
- D. Reduces dose exposure at site boundary in a SGTR event.

**Proposed Answer:** D

**Distracter Explanation:**

- A. CRUD burst would be contained on site.
- B. Fuel would not be damaged by iodine spiking.
- C. LOCA event is not a concern for reducing  $T_{ave}$ .
- D. Correct. Candidate must recall T/S 3.4.16 Basis.

**Technical Reference(s):** T/S 3.4.16 Bases

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B.9 T61.003A.6 LP #A-21, Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 2

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

**Outline #:** R016

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>003G2.4.47</u>	
	<b>Importance Rating</b>	<u>3.4</u>	<u>3.7</u>

**Proposed Question:**

An event caused the following:

- Reactor power to change from 96% to 93%
- $T_{ave}$  to decrease 3°F

Which ONE of the following events would cause the above indications?

- A. A steam generator PORV inadvertently opened.
- B. A main turbine control valve inadvertently closed.
- C. A control rod dropped.
- D. A control rod inadvertently withdrew.

**Proposed Answer:** C

**Distracter Explanation:**

- A. Power would increase.
- B. Temperature would increase.
- C. Correct. Candidate will have to analyze plant conditions and determine a dropped rod is the cause.
- D. Power would increase, temperature would increase.

**Technical Reference(s):** OTO-SF-00003, "Dropped Control Rod – Symptoms"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** J T61.003D.6 LP #SD2, Power Ops with Off-Normals

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 1

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

**Outline #:** R017

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>007EA2.06</u>	
	<b>Importance Rating</b>	<u>4.3</u>	<u>4.5</u>

**Proposed Question:**

The plant was at 100% power when an earthquake caused several breaker faults and a loss of the switchyard. The reactor was tripped. E-0, "Reactor Trip or Safety Injection" was entered. While verifying the reactor trip, the RO reports:

- No rod bottom lights are lit. All DRPI indication is lost.
- Reactor trip breakers are open.
- Intermediate range flux is decreasing on all channels.
- NR-45 recorder has no indication.

Which ONE of the following describes condition of the plant and actions that should be taken?

- A. The reactor is tripped. Manually trip reactor, verify using power range NIs.
- B. The reactor is tripped. Boration is required until DRPI is available to verify no more than 1 stuck control rod.
- C. The reactor trip cannot be verified. Transition to FR-S.1, "Response to Nuclear Power Generation" should be made.
- D. The reactor trip cannot be verified. Immediate boration should begin and continue until the reactor trip can be verified.

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct. Candidate will have to analyze given plant conditions is due to loss of power, and determine tripping reactor is still required per E-0, Reactor Trip or Safety Injection."
- B. Boration not required.
- C. Reactor trip can be verified by trip breakers open, decreasing flux.
- D. Reactor trip can be verified, immediate boration not required.

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.003D.6 LP #4, Reactor Trip or SI

**Question Source:**      **Bank**      \_\_\_\_\_  
**Modified Bank**      \_\_\_\_\_ (Note changes or attach parent)  
**New**      X

<b>Question History:</b>	<b>Previous NRC Exam</b>	<u>No</u>
	<b>Previous Quiz / Test</b>	<u>No</u>

<b>Question Cognitive Level:</b>	<b>Memory or Fundamental Knowledge</b>	<u>X</u>
	<b>Comprehension or Analysis</b>	

**10 CFR Part 55 Content:**    55.43(b)    6    55.41(b)    2

**Comments:**

**Outline #:** R018

**Author:** EBS

**Examination Outline Cross-reference:****Level****Tier #****Group #****K/A #****Importance Rating****RO**12008AK1.013.2**SRO**123.7**Proposed Question:**

The following plant conditions exist:

- Plant tripped 20 minutes ago from full power.
- A pressurizer safety valve is partially open.
- Pressurizer pressure is 1900 psia.
- Pressurizer level is 34% and stable.
- PRT rupture disk has ruptured.
- Containment pressure is 2.0 psig.

Which ONE of the following describes the expected temperature in the tailpipe downstream of the safety valve and ECCS equipment status?

TemperatureAuto SI Actuated

- |    |       |     |
|----|-------|-----|
| A. | 215°F | Yes |
| B. | 215°F | No  |
| C. | 300°F | Yes |
| D. | 300°F | No  |

**Proposed Answer:**B**Distracter Explanation:**

- A. 215°F is the correct temperature. Auto SI has not occurred.
- B. Using steam table the candidate must determine 215°F is correct for plant conditions and the CTMT pressure of 3.5 psig and PZR pressure of 1849 psig has not been exceeded.
- C. 300°F is not correct; auto SI has not occurred.
- D. Correct. Candidate will use Steam Tables to determine temperature and convert psia to psig to determine tailpipe temperature. Plant conditions will have to be reviewed to determine that a safety injection does not exist.

**Technical Reference(s):** E-0, "Reactor Trip and Safety Injection"

(Attach if not previously provided)

Attachment 1

**Proposed references provided to applicants during examination:** Steam Tables

**Learning Objective:** D T61.0100.6 LP #17, Safety Injection System

**Question Source:** Bank

**Modified Bank** (Note changes or attach parent)

## New

X

Question History:	Previous NRC Exam	No
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Previous Quiz / Test No

**Question Cognitive Level: Memory or Fundamental Knowledge**

### Comprehension or Analysis

X

**10 CFR Part 55 Content:**    **55.43(b)**                  **55.41(b)**    14

**Comments:**

**Outline #:** R019

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>011EA1.11</u>	
	<b>Importance Rating</b>	<u>4.2</u>	<u>4.2</u>

**Proposed Question:**

The following plant conditions exist:

- 1 hour has passed from a trip from Mode 1
- Large break LOCA in progress
- SIS, CSAS, CIS 'A', CIS 'B' actuated

Which ONE of the following will have the greatest impact on long term core heat removal?

- A. 'A' RHR pump failure.
- B. 'A' SI pump failure.
- C. 'A' Charging pump failure.
- D. NE01 failure.

**Proposed Answer:** A

**Distracter Explanation:**

- A. RHR is required for cold leg recirc to provide NPSH to the SI and CCPs.
- B. 'A' SI pump does not supply 'A' CCP.
- C. 'A' CCP does not supply 'A' SI pump.
- D. NB01 is supplied by off-site power.

**Technical Reference(s):** T61.003D.6 LP #1, ES-1.3, "Transfer to Cold Leg Recirc"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.0110.6 LP #7, RHR

**Question Source:** **Bank**             
**Modified Bank**            (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge**             
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)**        **55.41(b)** 8

**Comments:** IPE/PRA

**Outline #:** R020

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>WE03EK3.3</u>	
	<b>Importance Rating</b>	<u>3.9</u>	<u>3.9</u>

**Proposed Question:**

Which ONE of the following describes the preferred method of operating RCPs during ES-1.2, "Post LOCA Cooldown and Depressurization"?

- A. Starting any RCP is undesirable because starting an RCP during ECCS induced natural circulation may cause PTS concerns.
- B. Start 'D' RCP if possible to provide normal pressurizer spray flow and allow for normal RCS cooldown.
- C. Starting any RCP is undesirable because the additional heat input may inhibit RCS cooldown.
- D. Start 'A' and 'B' RCPs if possible to provide maximum pressurizer spray flow and RCS fluid mixing.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. It is desirable to start a RCP; PTS is not a concern because RCS pressure is also reduced.
- B. 'D' is the preferred RCP to start for better spray flow.
- C. While heat input is a concern it is preferred to start a RCP for RCS cooldown and pressure reduction.
- D. If all RCPs were running, then all but one is stopped to minimize heat input to the RCS. Therefore, starting two RCPs is incorrect.

**Technical Reference(s):** ES-1.2, "Post LOCA Cooldown and Depressurization"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** M T61.003D.6 LP #10, ES-1.2, "Post LOCA Cooldown and Depressurization"

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 3

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

**Outline #:** R021 **Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #**11**Group #**22**K/A #**WE11EK1.1**Importance Rating**3.74.0**Proposed Question:**

The following plant conditions exist:

- A LOCA outside containment has occurred
- RWST is empty
- ECCS pumps have been secured

Which ONE of the following can be used to provide water to the ECCS pumps per ECA-1.1, "Loss of Emergency Recirculation"?

- A. Condensate storage tank.
- B. Spent fuel pool.
- C. Recycle holdup tanks.
- D. Discharge monitor tank.

**Proposed Answer:**C**Distracter Explanation:**

- A. RCS dilution.
- B. Loss of SFP cooling and shielding.
- C. Correct. Candidate will recall recycle holdup tanks are the only possible source.
- D. RCS dilution.

**Technical Reference(s):** ECA-1.1, "Loss of Emergency Coolant Recirculation"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** K T61.003D.6 LP #13, Loss of Emergency Coolant Recirculation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 7

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

**Outline #:** R022 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>WE02G2.4.12</u>	
	<b>Importance Rating</b>	3.4	3.9

**Proposed Question:**

An inadvertent safety injection has occurred. Operators are currently performing ES-1.1, "SI Termination" preparing to reset the SI in order to start an RCP.

Which ONE of the following describes indications that only one SI train was reset?

- SI actuate light on SB069 would blink since reset switches are train specific.
- SI actuate light on SB069 would blink and automatic SI would reinitiate after 60 seconds.
- SI actuate light would extinguish and automatic SI would reinitiate after 60 seconds.
- SI actuate light would extinguish since either switch will reset the SI actuate light.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Candidate will analyze plant conditions to determine SB069 should blink and that reset switches are train specific.
- B. Auto SI cannot occur unless reactor trip breakers are closed.
- C. SI actuate light will blink, auto SI will not occur.
- D. SI actuate light will blink.

<b>Technical Reference(s):</b> (Attach if not previously provided)	E-0, "Reactor Trip or Safety Injection" T61.003B.6 LP-B1, Intro to Off-Normal Operating Procedures
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(Attach if not previously provided)

T61.003B.6 LP-B1, Intro to Off-Normal Operating Procedures

**Proposed references provided to applicants during examination:** None

<b>Learning Objectives:</b>	B	T61.003D.6 LP #4, Reactor Trip or Safety Injection
	I	T61.003D.6 LP #9, SI Termination

1

### T61.003D.6 LP #9. SI Termination

**Question Source:**

<b>Bank</b>	<b>Modified Bank</b>	<b>New</b>
_____	_____	X

(Note changes or attach parent)

### Modified Bank

(Note changes or attach parent)

## New

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X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

## Previous Quiz / Test

No

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	X
<b>Comprehension or Analysis</b>	

### Comprehension or Analysis

X

**10 CFR Part 55 Content:**      **55.43(b)**                      **55.41(b)**      **8**

**Comments:**

**Outline #:** R023

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #**11**Group #**22**K/A #**022AA1.08**Importance Rating**3.43.3**Proposed Question:**

The following conditions exist:

- Mode 2
- VCT level 50% and stable
- 120 gpm letdown
- All control systems in automatic

VCT level transmitter BG-LT-149 fails low.

Which ONE of the following describes the affect this event has on the reactor makeup control system?

- A. No effect on automatic makeup. Charging pump suction will swap to the RWST.
- B. No effect on automatic makeup. Letdown will divert to recycle holdup tank.
- C. Automatic makeup initiated. Makeup will not automatically terminate.
- D. Automatic makeup initiated. Makeup will be terminated by VCT high level at 97%.

**Proposed Answer:**C**Distracter Explanation:**

- A. Auto makeup will occur. CCP suction swap is a function of BGLT112 and 185.
- B. Auto makeup will occur. Letdown will not divert.
- C. Correct. Candidate will determine that transmitter BG-LT-149 will cause M/U to start and continue.
- D. Makeup will not terminate.





<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>025G2.4.24</u>	
	<b>Importance Rating</b>	<u>3.3</u>	<u>3.7</u>

**Proposed Question:**

A loss of RHR has occurred during Mode 6 with the RCS at mid-loop.

Which ONE of the following would cause an increase in T-BOIL (time to boil)?

- A. More effective full power days (EFPD).
- B. Longer time since shutdown.
- C. Lower RCS loop level.
- D. Lower steam generator level.

**Proposed Answer:** B

**Distracter Explanation:**

- A. More EFPD will increase decay heat and reduce T-BOIL.
- B. Correct. Candidate will recall a longer time since S/D will cause an increase in T-BOIL.
- C. Lower RCS loop level will reduce inventory/mass and reduce T-BOIL.
- D. Steam generator level will have no affect.

**Technical Reference(s):** T61.003E.6 LP #E3, Loss of RHR Flow

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.003E.6 LP #E3, Loss of RHR

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 2

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

**Outline #:** R025

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>032AK2.01</u>	
	<b>Importance Rating</b>	<u>2.7</u>	<u>3.1</u>

**Proposed Question:**

A reactor startup is in progress. The reactor operator is verifying overlap between the source range and intermediate range NIs.

Which ONE of the following describes the effect on the reactor protection system if a control power fuse on SR32 is blown?

SR32 Level Trip Bypass Switch NORMAL    SR32 Level Trip Bypass Switch BYPASS

- |    |                 |                 |
|----|-----------------|-----------------|
| A. | No Reactor Trip | No Reactor Trip |
| B. | Reactor Trip    | Reactor Trip    |
| C. | No Reactor Trip | Reactor Trip    |
| D. | Reactor Trip    | No Reactor Trip |

**Proposed Answer:**              B  

**Distracter Explanation:**

A, C & D are incorrect because there would be a reactor trip with the N32 bypass switch in normal and in bypass.

B. Correct. Candidate will analyze each condition separately and determine a reactor trip will result in each.

**Technical Reference(s):**    T61.0110.6 LP #28, Excore NI

(Attach if not previously provided)

**Proposed references provided to applicants during examination:**    None

**Learning Objective:**              D      T61.0110.6 LP #28, Excore NI

**Question Source:**            **Bank**            \_\_\_\_\_  
                                  **Modified Bank**            \_\_\_\_\_ (Note changes or attach parent)  
                                  **New**                                          X  

**Question History:**            **Previous NRC Exam**      No    
                                  **Previous Quiz / Test**      No  

**Question Cognitive Level:**    **Memory or Fundamental Knowledge**    \_\_\_\_\_  
                                  **Comprehension or Analysis**                                          X  

**10 CFR Part 55 Content:**    **55.43(b)**    \_\_\_\_\_ **55.41(b)**      6  

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

**Outline #:**    R026

**Author:**    EBS

**Examination Outline Cross-reference:****Level****Tier #****Group #****K/A #****Importance Rating****RO**12033AA2.113.1**SRO**123.4**Proposed Question:**

The following plant conditions exist:

- Reactor startup in progress
- P-6 has just energized
- Source range channel N31 indicates  $4 \times 10^3$  CPS
- Source range channel N32 indicates  $3 \times 10^3$  CPS
- Intermediate range channel N35 indicates  $3 \times 10^{-10}$  Amps
- Intermediate range channel N36 indicates  $2 \times 10^{-11}$  Amps

Which ONE of the following is the cause of the above readings?

- A. Intermediate range channel N35 is undercompensated.
- B. Intermediate range channel N35 is overcompensated.
- C. Intermediate range channel N36 is undercompensated.
- D. Intermediate range channel N36 is overcompensated.

**Proposed Answer:**A**Distracter Explanation:**

- A. Correct because an undercompensated channel will read higher. P-6 ( $10^{-10}$  Amps) should energize when source ranges indicate approximately  $3 \times 10^3$  CPS.
- B. N35 would read lower.
- C. N36 is consistent with indication provided by source range N1.
- D. N36 would read lower.

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>054AK1.01</u>	
	<b>Importance Rating</b>	<u>4.1</u>	<u>4.3</u>

**Proposed Question:**

The plant has sustained a feedline break downstream of the feed line check valves inside containment.

Which ONE of the following parameters is used to determine the difference between a feedline break and steamline break inside containment?

- A. Steam generator level prior to reactor trip.
- B. Containment pressure after reactor trip.
- C. Containment humidity prior to reactor trip.
- D. Pressurizer level after reactor trip.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct, a steam break will cause S/G level to increase, where a feed break will rob the SG and level will decrease.
- B. Both will cause containment pressure to increase.
- C. Both will cause containment humidity to increase.
- D. PZR level will decrease because of reactor trip.

**Technical Reference(s):** T61.003D.6 LP #3, Accident Analysis

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** K T61.003D.6 LP #3, Accident Analysis

**Question Source:**

**Bank**

**Modified Bank**

**New**

(Note changes or attach parent)

X

**Question History:**

**Previous NRC Exam**

**Previous Quiz / Test**

No

No

**Question Cognitive Level:**

**Memory or Fundamental Knowledge**

**Comprehension or Analysis**

X

**10 CFR Part 55 Content:**

**55.43(b)**

**55.41(b)**

4

**Comments:**

**Outline #:** R029

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>WE05EK2.2</u>	
	<b>Importance Rating</b>	<u>3.9</u>	<u>4.2</u>

**Proposed Question:**

The plant was in Mode 1 when all 4 MSIVs fast closed and WILL NOT re-open. All auxiliary feedwater has been lost and cannot be restored.

Present plant conditions are CTMT parameters normal with RCS  $T_{avg}$  557°F. S/G levels are 41% wide range and slowly going down. SI HAS NOT been actuated.

Which ONE of the following methods should be used to recover the RCS Heat Removal Safety Function?

- A. Initiate SI to establish flow to the cold legs.
- B. Establish Main FW flow to at least one S/G.
- C. Initiate SI to establish Feed and Bleed.
- D. Establish Condensate FW flow to at least one S/G.

**Proposed Answer:** D

**Distracter Explanation:**

A and C are incorrect because SI initiation criteria has not been satisfied.

B is incorrect because there is no steam supply for the MFPs.

D. Correct. Candidate will determine steam generator levels are above required SI setpoint (24% WR) and the preferred option is condensate.

**Technical Reference(s):** T61.003D.6 LP #26, FRG Heat Sink Series  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** T T61.003D.6 LP #26, FRG Heat Sink Series

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

**Comments:** IPE/PRA

**Outline #:** R030

**Author:** SMP

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>058AK3.01</u>	
	<b>Importance Rating</b>	<u>3.4</u>	<u>3.7</u>

**Proposed Question:**

Which ONE of the following would be affected by a loss of NK04, 125 VDC bus?

- A. 'A' condensate pump breaker control.
- B. 'B' condensate pump breaker control.
- C. NE01 field flashing.
- D. NE02 field flashing.

**Proposed Answer:** D

**Distracter Explanation:**

- A. Affected by PK01 loss.
- B. Affected by PK01 loss.
- C. NE01 Field flashing power is from NK01.
- D. NE02 Field flashing power is from NK04.

**Technical Reference(s):** T61.0110.6 LP #3, Safeguards Power

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.0110.6 LP #3, Safeguards Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 8

**Comments:** IPE/PRA

**Outline #:** R031

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>061AK2.01</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>2.6</u>

**Proposed Question:**

SDRE009, RW Bldg Valve Rm Corridor, area radiation monitor is in ALERT alarm on radiation monitoring panel SD055 (in the Control Room).

Which ONE of the following accurately describes indication available at the local unit in the Hot Machine Shop?

- A. An elevated meter reading only.
- B. An activated audible alarm only.
- C. An elevated meter reading and an illuminated red alarm light.
- D. An elevated meter reading, an activated audible alarm and an illuminated red alarm light.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Candidate will recall only elevated meter reading is the response.  
 B, C, and D are incorrect because they only function upon activation of the "High Alarm".

**Technical Reference(s):** T61.0110.6 LP #36, Process Rad and Area Rad Mon  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #36, Process Rad and Area Rad Mon

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 11

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

**Outline #:** R032

**Author:** SMP

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>WE16EA2.2</u>	
	<b>Importance Rating</b>	<u>3.0</u>	<u>3.3</u>

**Proposed Question:**

Callaway Plant has experienced a large LOCA.

Which ONE of the following would require adverse containment conditions to be observed?

- A. Containment pressure decreased from 21 psig to 8 psig.
- B. Containment temperature decreased from 192°F to 148°F.
- C. Containment radiation decreased from  $2 \times 10^5$  Rem/hr to 740 Rem.
- D. Containment recirc sump levels decreased from 138 inches to 40 inches.

**Proposed Answer:** C

**Distracter Explanation:**

- A. Containment pressure has no affect on adverse CTMT conditions.
- B. Adverse CTMT conditions apply only while temperature is  $>160^\circ\text{F}$ .
- C. Once CTMT radiation is  $> 10^5$  Rem/hr, adverse CTMT conditions apply until Engineering performs an evolution.
- D. CTMT recirc sump levels have no affect on adverse CTMT.

**Technical Reference(s):** E-1, "Loss of Reactor or Secondary Coolant"  
 (Attach if not previously provided) T61.003D.6 LP #1, CBC – Mod D

**Proposed references provided to applicants during examination:** None

**Learning Objective:** R T61.003D.6 LP #4, Reactor Trip or SI

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 9

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

**Outline #:** R033 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>036AK3.03</u>	
	<b>Importance Rating</b>	<u>3.7</u>	<u>4.1</u>

**Proposed Question:**

While moving a fuel assembly from the core to the upender, you notice the following:

- Increased bubbling from the fuel bundle
- Fuel pellets dropping from fuel rods
- Increased radiation indicated at the refueling machine area radiation monitor.

Which ONE of the following summarizes the immediate operator actions required in this event?

- A. Contact Reactor Engineering, place damaged fuel assembly in change fixture, notify HP.
- B. Contact Reactor Engineering, initiate Containment Purge Isolation Signal, evacuate all personnel from containment.
- C. Return fuel assembly to reactor vessel, evacuate unnecessary personnel from containment, close one air lock door.
- D. Return fuel assembly to reactor vessel, initiate Containment Purge Isolation Signal, place both RHR trains in service.

**Proposed Answer:**     C    

**Distracter Explanation:**

- A. Change fixture is not a safe storage location, notify HP is a subsequent action.
- B. Initiate CPIS is a subsequent action, only unnecessary personnel are evacuated.
- C. Correct all immediate operator actions.
- D. Initiate CPIS is a subsequent action. Additional RHR trains not required.

**Technical Reference(s):** OTO-KE-00001, "Fuel Handling Equipment"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** I.4 T61.003E.6, LP #5, Fuel Handling Equipment

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 7 **55.41(b)** 5

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

**Outline #:** R035 **Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****1****1****Group #****3****3****K/A #****WE15EA1.1****Importance Rating****2.9****3.0****Proposed Question:**

The following plant conditions exist:

- Large break LOCA has occurred
- Rx trip, SIS, CSAS have actuated
- ESW pipe rupture has flooded recirculation sumps to 142 inches
- Currently performing E-1, "Loss of Reactor or Secondary Coolant"
- Crew is currently in the process of isolating SI accumulators.

Which ONE of the following is the preferred order of isolating 'A' SI accumulator?

- A. Close isolation valve, open one vent valve, open second vent valve.
- B. Open first vent valve, open second vent valve, close isolation valve.
- C. Close isolation valve, open the vent valve.
- D. Open the vent valve, close isolation valve.

**Proposed Answer:**C**Distracter Explanation:**

- A. 'A' SI accumulator has only 1 vent valve.
- B. Isolation valve closed first, 'A' SI accumulator has only 1 vent valve.
- C. Correct per E-1 step 15c.
- D. Wrong order.

**Technical Reference(s):** E-1, "Loss of Reactor or Secondary Coolant"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.0110.6 LP #19, SI Accumulators

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 9

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

**Outline #:** R036 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>001K2.02</u>	
	<b>Importance Rating</b>	3.6	3.7

**Proposed Question:**

Which ONE of the following correctly delineates the order of power train components to the rod control drive mechanism?

- 480 VAC, motor generator, logic cabinets, trip breakers, rod control drive mechanism.
- 480 VAC, trip breakers, motor generator, logic cabinet, rod control drive mechanism.
- 480 VAC, trip breakers, power cabinet, motor generator, rod control drive mechanism.
- 480 VAC, motor generator, trip breakers, power cabinets, rod control drive mechanism.

**Proposed Answer:** D

**Distracter Explanation:**

- A & B incorrect because logic cabinet is not part of the power train.  
C is in the incorrect order.  
D. Correct. Candidate will have to determine components and place in proper order.

**Technical Reference(s):** T61.0110.6 LP #26, Rod Control  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** H T61.0110.6 LP #26, Rod Control

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	X
<b>Comprehension or Analysis</b>	

<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>6</b>	<b>55.41(b)</b>	<b>6</b>
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**Comments:**

**Outline #:** R037 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>001G2.2.1</u>	
	<b>Importance Rating</b>	<u>3.7</u>	<u>3.6</u>

**Proposed Question:**

While performing a reactor startup, criticality was achieved with control bank below the rod insertion limit.

Which ONE of the following describes actions that must be taken?

- A. Fully insert all control banks, contact Reactor Engineering.
- B. Fully insert all control banks, begin immediate boration.
- C. Stop all further outward rod motion, contact Reactor Engineering.
- D. Stop all further outward rod motion, begin immediate boration.

**Proposed Answer:** B

**Distracter Explanation:**

- A. Must begin immediate boration.
- B. Candidate must recall the proper actions are to fully insert all control banks and immediate borate.
- C. Control banks must be fully inserted, immediate boration should begin.
- D. Control banks must be fully inserted.

**Technical Reference(s):** OTG-ZZ-00002, "Reactor Startup"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.5.b T61.003A.6 LP #A-23, Rx Startup

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 1

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

**Outline #:** R038

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>003K6.02</u>	
	<b>Importance Rating</b>	<u>2.7</u>	<u>3.1</u>

**Proposed Question:**

All reactor coolant pumps are secured with the following plant conditions:

- RCS wide range pressure (BBPI-405) indicates 500 psig
- RCS narrow range pressure (BBPI-406) indicates 540 psig
- Charging header pressure (BGPI-120A) indicates 590 psig
- VCT pressure (BGPI-115) indicates 40 psig

Using the attached graph, which ONE of the #1 seal leak-off flowrates below is the minimum flow that would allow starting a reactor coolant pump?

- A. 0.2 gpm
- B. 0.5 gpm
- C. 0.8 gpm
- D. 1.1 gpm

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. 0.2 gpm is below minimum flow allowed.
- B. Candidate must subtract VCT pressure from charging pressure then use graph to determine flow required.
- C. 0.8 is not the minimum.
- D. 1.1 is not the minimum.

**Technical Reference(s):** OTN-BB-00003, "Reactor Coolant Pumps"

(Attach if not previously provided)

Page 4 of Attachment 1

**Proposed references provided to applicants during examination:** OTN-BB-00003, Att. 1, Pg 4 of 4

**Learning Objective:** C.1.d T61.003A.6 LP #A20, CBC – Mod A

**Question Source:** Bank

Modified Bank

(Note changes or attach parent)

New

X

**Question History:**

Previous NRC Exam

No

Previous Quiz / Test

No

**Question Cognitive Level:** Memory or Fundamental Knowledge

Comprehension or Analysis

X

**10 CFR Part 55 Content:** 55.43(b) 55.41(b) 3

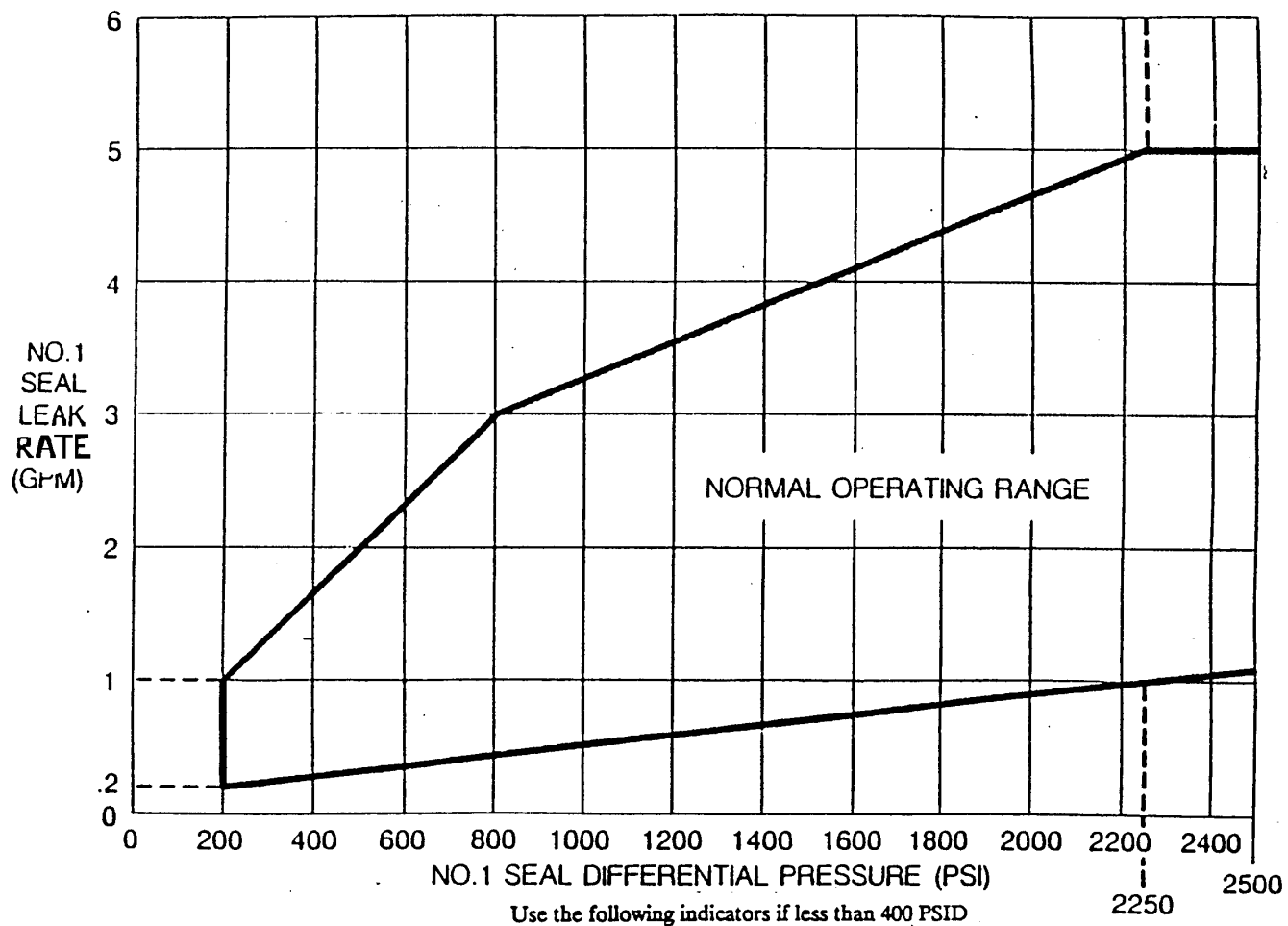
**Comments:**

**Outline #:** R039

**Author:** EBS

OTN-BB-00003

Rev. 13

FIGURE 1**NO.1 SEAL NORMAL OPERATING RANGE**

RCP Seal Differential Press. Indicator

A BB PI - 153A

B BB PI - 152A

C BB PI - 151A

D BB PI - 150A

Otherwise use BG PI - 120A - BG PI - 115

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>003A4.03</u>	
	<b>Importance Rating</b>	<u>2.8</u>	<u>2.5</u>

**Proposed Question:**

Callaway Plant is in Mode 3.

Which ONE of the following parameters would prevent an RCP from starting?

- A. Lift oil pump sump level is +1".
- B. Lift oil system pressure is 500 psig.
- C. Lift oil system temperature is 95°F.
- D. Lift oil system flow is 15 gpm.

**Proposed Answer:** B

**Distracter Explanation:**

- A, C & D are incorrect because they are not inputs into RCP start interlocks.  
 B. Only interlock to start an RCP is lift oil pressure > 600 psig.

**Technical Reference(s):** T61.0110.6 LP #9, RCS

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C.3 T61.0110.6 LP #9, RCS

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 3

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

**Outline #:** R040

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	004K3.02	
	<b>Importance Rating</b>	<u>3.7</u>	<u>4.1</u>

### Proposed Question:

The following plant conditions exist:

- 80% power
- 'A' CCP running
- Letdown @ 75gpm
- NB0101, CCP 'A' breaker trips open

Assuming no operator action, which ONE of the following will occur for this event?

- A. 'B' CCP will immediately start.
- B. NCP will automatically start.
- C. Letdown will isolate at 17% pressurizer level.
- D. Letdown will isolate on high temperature.

**Proposed Answer:** C

**Distracter Explanation:**

- A. There is no interlock between CCPs.
- B. There is no interlock between CCPs and the NCP.
- C. PZR level will decrease due to loss of charging and isolate.
- D. Letdown will divert to RHUT on high temperature but will not isolate.

**Technical Reference(s):** T61.0110.6 LP #11, CVCS  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** P T61.0110.6 LP #11, CVCS

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

Memory or Fundamental Knowledge	<u>        </u>
Comprehension or Analysis	X

**10 CFR Part 55 Content:**      **55.43(b)**                      **55.41(b)**      **3**

**Comments:**

**Outline #:** R041 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>004K6.01</u>	
	<b>Importance Rating</b>	<u>3.1</u>	<u>3.3</u>

**Proposed Question:**

Callaway Plant is increasing power from 30% to 100% power at 10%/hr.

Which ONE of the following describes why pressurizer backup heaters should be placed in manual?

- A. Maintain PZR pressure within the normal operating band for the expected PZR insurge as power is increased.
- B. Equalize the reactor coolant system and PZR boron concentration.
- C. Allow for an increased ramp rate for the power increase.
- D. Ensure positive pressure control is established prior to starting the power increase.

**Proposed Answer:** B

**Distracter Explanation:**

- A. PZR pressure is controlled in auto.
- B. Correct PZR heaters are turned on to ensure the boron difference remains less than 50 ppm.
- C. 10% power increase is not considered an increased ramp rate.
- D. Positive pressure control is maintained by heaters and sprays in auto.

**Technical Reference(s):** OTN-BG-00002, "Reactor Makeup Control and BTRS"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B.1.a T61.003A.6 LP #A-4, OTN Procedures

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 5

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

**Outline #:** R042

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>013A4.03</u>	
	<b>Importance Rating</b>	<u>4.5</u>	<u>4.7</u>

**Proposed Question:**

Annunciator window 61D, SG Blowdown Samp Iso, has alarmed.

BMHV0001, 2, 3 and 4, S/G B/D Isolation Valves, are closed. BMHV0019, 20, 21 and 22, S/G B/D Nuclear Sample System Upper Line Isolation Control Valves, are closed. BMHV0035, 36, 37 and 38, Nuclear Sample System Lower Line Isolation Control Valves, are closed. BMHV0065, 66, 67 and 68, S/G B/D Nuclear Sample System Line Isolation Upstream HV, are closed.

Which ONE of the following events could be the cause?

- A. TD AFAS.
- B. MD AFAS.
- C. CISA.
- D. CISB.

**Proposed Answer:**     B    

**Distracter Explanation:**

A is incorrect because while an UV on NB01 or NB02 will cause the valves to close, a TD AFAS is not a direct input to close these valves.

B. Correct Candidate must determine that a BPSIS signal exist, and that MD AFAS is the only item that could have caused only the above valves to close.

C is incorrect because only BMHV0001, 2, 3 and 4 would have closed.

D is incorrect because CISB is not an input to close these valves.



**Author:** SMP

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****1****1****K/A #****013A1.02****Importance Rating****3.9****4.2****Proposed Question:**

The following plant conditions exist:

- 75% power and increasing
- All steam generator pressures decreasing slowly
- Containment temperature, pressure and humidity increasing
- $T_{ave}$  decreasing

Which ONE of the following actions is designed to prevent the containment from exceeding its design pressure limit?

- A. Safety Injection
- B. Main Steam Line Isolation
- C. Containment Isolation Phase 'A'
- D. Containment Isolation Phase 'B'

**Proposed Answer:****B****Distracter Explanation:**

- A. Safety injection is required for maintaining SDM.
- B. Correct. Candidate must determine a steam leak exist and a SLIS is required to isolate S/Gs.
- C. CIS 'A' is designed to prevent fission product release from containment.
- D. CIS 'B' is designed to isolate CCW only. This will prevent a breach in CTMT due to the CCW system.

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>015K1.01</u>	
	<b>Importance Rating</b>	<u>4.1</u>	<u>4.2</u>

**Proposed Question:**

The plant is at 4% power during a plant startup. Intermediate range channel N36 fails high.

Which ONE of the following describes the effect of the IR N36 failure?

- A. The reactor will trip on high intermediate range flux.
- B. Power must be reduced <P-6 within 2 hours.
- C. Power must be reduced <P-6 or increase power >P-10 within 6 hours.
- D. The startup may continue after bypassing C-1, intermediate range rod stop for N36.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Candidate will have to determine that at 4% power the IR NI high trip @ current = 25% power is not blocked and will cause a Reactor Trip.
- B. Correct action for 2 inoperable IRs.
- C. This would be the correct T/S action if plant would not trip.
- D. C-1 cannot be bypassed <P-10.

**Technical Reference(s):** OTO-SE-00002, "IR Range Channel Failure"  
 (Attach if not previously provided) E-0, "Reactor Trip or Safety Injection," Attachment 1

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #27, Reactor Protection

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 6

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

**Outline #:** R045

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****1****1****K/A #****015K5.10****Importance Rating****2.8****3.0****Proposed Question:**

The following plant conditions exist:

- Large LOCA has occurred
- All RCPs have been tripped
- Single train of ECCS flow available
- Reactor coolant is at saturated conditions

Which ONE of the following describes the expected response of the source range NIs with RVLIS decreasing as coolant in the core continues to boil away?

- A. Count rate rises because the level in the downcomer drops.
- B. Count rate lowers because the level in the downcomer rises.
- C. Count rate lowers because there are fewer neutrons generated.
- D. Count rate rises because there are more neutrons generated.

**Proposed Answer:**A**Distracter Explanation:**

- A. Correct. Candidate will determine that as level in the downcomer decreases this will allow more neutrons to leak out and count rate will increase.
- B. Level in downcomer lowers as water is lost.
- C. Count rate rises.
- D. There are fewer neutrons generated as leakage factor increases.

**Technical Reference(s):** T61.003C.6 LP #30, Accident Response of Instrumentation  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.003C.6 LP #30, Accident Response of Instrumentation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 3

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

**Outline #:** R046

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****1****1****K/A #****017K5.03****Importance Rating****3.7****4.1****Proposed Question:**

The following plant conditions exist:

- A small break LOCA has occurred.
- RCPs were secured.
- RCS pressure is stable at 1400 psig.
- Core exit thermocouples indicate 550°F.
- RCS wide range  $T_h$  indicates 520°F.

Which ONE of the following describes the condition of the RCS?

- A. 46°F Subcooled
- B. 46°F Superheated
- C. 38°F Subcooled
- D. 38°F Superheated

**Proposed Answer:**C**Distracter Explanation:**

A & B are incorrect because core exit TCs are more conservative (higher value).

C Correct. Candidate must convert psig to psia and determine the core exit TCs are most conservative.

D answer is subcooled.

**Technical Reference(s):** T61.0070.6 LP #13, Characteristics of Steam Tables  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** Steam Tables

**Learning Objective:** B T61.0070.6 LP #13, Characteristic of Steam Tables

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 14

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

**Outline #:** R047 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>017G2.1.27</u>	
	<b>Importance Rating</b>	<u>2.8</u>	<u>2.9</u>

**Proposed Question:**

The plant is in Mode 1.

Which ONE of the following events would cause the greatest change in RCS subcooling indication?

- A. Pressurizer pressure channel fails low.
- B. Pressurizer pressure channel fails high.
- C. RCS narrow range  $T_h$  fails high.
- D. RCS narrow range  $T_h$  fails low.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Core subcooling monitor uses lowest pressure between PZR and wide range.
- B. Minimal affect lowest pressure is used.
- C. RCS wide range auctioneered high temperature is used.
- D. RCS wide range auctioneered high temperature is used.

**Technical Reference(s):** T61.0110.6 LP #30, Reactor Instrumentation  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** J T61.0110.6 LP #30, Reactor Instrumentation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 2

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

**Outline #:** R048

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>022A1.04</u>	
	<b>Importance Rating</b>	<u>3.2</u>	<u>3.3</u>

**Proposed Question:**

The plant is in Mode 1, 100% power with all systems in their normal alignment. Service water temperature was observed to be 58°F.

Which ONE of the following is the required configuration for the CTMT Cooling Fans?

	<u>FAN A</u>	<u>FAN B</u>	<u>FAN C</u>	<u>FAN D</u>
A.	Fast	Fast	Fast	Fast
B.	Fast	Fast	Slow	Slow
C.	Slow	Slow	Fast	Fast
D.	Slow	Slow	Slow	Slow

**Proposed Answer:** D

**Distracter Explanation:**

A, B, C are incorrect because the fans would be operating near their thermal overload setpoint.

D. Correct. Candidate will analyze plant conditions and determine all CTMT cooler fans should be in the slow speed.

**Technical Reference(s):** OTN-GN-00001 precautions and limitations

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.3 T61.003A.6 LP #A20, CBC – Mod A

**Question Source:**

**Bank**

**Modified Bank**

**New**

(Note changes or attach parent)

X

**Question History:**

**Previous NRC Exam**

**Previous Quiz / Test**

No

No

**Question Cognitive Level:**

**Memory or Fundamental Knowledge**

**Comprehension or Analysis**

X

**10 CFR Part 55 Content:** 55.43(b) 5 55.41(b) 10

**Comments:**

**Outline #:** R049

**Author:** SMP

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>022A3.01</u>	
	<b>Importance Rating</b>	<u>4.1</u>	<u>4.3</u>

**Proposed Question:**

'A' containment cooler fan is running in fast speed when a safety injection occurs.

Which ONE of the following describes the response of 'A' containment cooler to the safety injection?

- A. It will continue to run in fast speed.
- B. It will trip and start in slow speed when the LOCA sequencer times out (60 seconds).
- C. It will shift to slow speed when the LOCA sequencer reaches 35 seconds.
- D. It will trip and restart in fast speed if containment pressure reaches 17 psig.

**Proposed Answer:** C

**Distracter Explanation:**

- A. 'A' CTMT cooler fan shifts to slow speed at 35 seconds on LOCA sequencer.
- B. This is correct for a hydrogen mixing fan.
- C. Correct. Candidate is required to recall that a LOCA sequencer will cause the CTMT cooler fans to shift to slow speed.
- D. 'A' CTMT cooler fan shifts to slow speed at 35 seconds on LOCA sequencer.

**Technical Reference(s):** T61.0110.6 LP #40, Containment Ventilation  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #40, Containment Ventilation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 8

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

**Outline #:** R050

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>056A2.04</u>	
	<b>Importance Rating</b>	<u>2.6</u>	<u>2.8</u>

**Proposed Question:**

The following plant conditions exist:

- 7% reactor power
- 'B' condensate pump running
- All controls are in automatic
- Condensate pump 'B' trips

Which ONE of the following conditions will occur due to 'B' condensate pump tripping?

- A. 'A' condensate will auto start.
- B. Running main feed pump will trip.
- C. Running heater drain pump will trip.
- D. 'C' condensate pump will auto start.

**Proposed Answer:** B

**Distracter Explanation:**

- A. & D. There is no auto start feature between condensate pumps.
- B. Correct. Candidate is required to remember all condensate pump breakers in the trip position will generate a MFP trip signal.
- C. Heater drain pump trips only due to low heater drain tank level.

**Technical Reference(s):** T61.0110.6 LP #23, Main Feedwater  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #23, Main Feedwater

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 4

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

**Outline #:** R051

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>059K3.03</u>	
	<b>Importance Rating</b>	<u>3.5</u>	<u>3.7</u>

**Proposed Question:**

Callaway Plant was at 5% power when 'B' steam generator level decreased to 10% level generating a feedwater isolation signal.

Which ONE of the following must be performed to open the bypass feed reg valves?

- A. Depress SB HS-17 and 18, FWIS reset pushbutton only.
- B. Close SB HS-1, reactor trip breakers.
- C. Feed all steam generators to normal band, close reactor trip breakers.
- D. Feed all steam generators to normal band. No reset necessary.

**Proposed Answer:** D

**Distracter Explanation:**

- A. SB-HS-17 and 18 not required. S/G level must be above FWIS setpoint.
- B. Reactor trip breakers are not required to be closed, S/G level must be above FWIS.
- C. Reactor trip breakers are not required to be closed.
- D. Correct no reset required. Valves will open once S/G level has been restored.

**Technical Reference(s):** OTO-SA-00001, "ESFAS and Restoration"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.0110.6 LP #23, Main Feedwater

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 4

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

**Outline #:** R052

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>059K1.03</u>	
	<b>Importance Rating</b>	<u>3.1</u>	<u>3.3</u>

**Proposed Question:**

Callaway Plant was at 88% power when #5A HP feedwater heater was required to be tagged out.

Consider only main turbine loading and feedwater temperature to steam generators.

Which ONE of the following describes the plant response to tagging out #5A HP feedwater heater?

	<u>MWe</u>	<u>Feed Temp</u>
A.	Decrease	Decrease
B.	Increase	Decrease
C.	Decrease	Increase
D.	Increase	Increase

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct, for the highest pressure heater MWe↑, + feed temp ↓, all others MWe↓ and feed temp ↓.
- B. MWe would decrease.
- C. Feedwater temperature would decrease slightly.
- D. Feedwater temperature would decrease slightly, turbine MWe will decrease.

**Technical Reference(s):** OTN-AF-00001, "High Pressure and Low Pressure Feedwater System"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.1.d T61.003A.6 LP #A-7, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	<u>No</u>
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

Memory or Fundamental Knowledge	X
Comprehension or Analysis	

**10 CFR Part 55 Content:**     55.43(b)     55.41(b)     5

**Comments:**

**Outline #:** R053

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>061K2.02</u>	
	<b>Importance Rating</b>	<u>3.7</u>	<u>3.7</u>

**Proposed Question:**

Callaway Plant is in Mode 2 when the Reactor Operator inadvertently opens the normal feeder breaker to NB01. All equipment operates per design.

Which ONE of the following is correct for the auxiliary feedwater system?

- A. TD AFP starts immediately, 'A' MD AFP starts at time 30 seconds on the S/D sequencer.
- B. Both TD AFP and 'A' MD AFP start at time 20 seconds on the S/D sequencer.
- C. Only 'A' MD AFP starts at time 30 seconds on the S/D sequencer.
- D. Only TD AFP starts at time 20 seconds on the S/D sequencer.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Candidate must realize the TD AFP starts on the undervoltage on NB01. The 'A' MD AFP will start on the S/D sequencer at time 30 seconds.
- B. TD AFP starts immediately.
- C. TD AFP starts on NB01 UV signal.
- D. TD AFP starts on NB01 UV signal.

**Technical Reference(s):** T61.0110.6 LP #6, Safeguards Power

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** F T61.0110.6 LP #6, Safeguards Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R054

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>061K4.02</u>	
	<b>Importance Rating</b>	<u>4.5</u>	<u>4.6</u>

**Proposed Question:**

Which ONE of the following will cause the auto start of both motor driven auxiliary feedwater pumps but WILL NOT start the turbine driven aux feed pump?

- A. Undervoltage NB02.
- B. AMSAC.
- C. Trip of both MFW pumps.
- D. LoLo level on two S/Gs.

**Proposed Answer:** C

**Distracter Explanation:**

- A. Will start TD AFP and 'B' MD AFP at step 30 of the S/D sequencer.
- B. Will start both MD AFPs and TD AFP.
- C. Correct.
- D. Will start MD AFPs and TD AFP.

**Technical Reference(s):** T61.0110.6 LP #25, Aux Feedwater

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** H T61.0110.6 LP #25, Aux Feedwater

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 4

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

**Outline #:** R055

**Author:** EBS

### 3.6

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>071K4.04</u>	
	<b>Importance Rating</b>	<u>2.9</u>	<u>3.4</u>

**Proposed Question:**

The following plant conditions exist:

- Mode 1.
- Gas decay tank discharge is in progress.
- HA-PCV-7896, Gas Decay Flow Control Valve fails from 15 psid to 25 psid.

Which ONE of the following describes the effect on the GDT discharge for the event?

- A. GDT discharge will continue. Dilution flow will automatically increase to compensate for higher discharge flow.
- B. GDT discharge will continue. Radiation vent monitor indications will be inaccurate.
- C. The discharge will automatically terminate on high discharge flow.
- D. The discharge will automatically terminate on high discharge header pressure.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Dilution flow would not change.
- B. Correct. HA-PCV-7896 maintains a constant 15 psid across the flow path to ensure accurate reading. Candidate will have to evaluate the effect this will have on the GDT discharge.
- C. Discharge flow will not terminate the release.
- D. High discharge header pressure will not terminate the release.

**Technical Reference(s):** T61.0110.6 LP #16, Radwaste Systems

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.4 T61.0110.6 LP #16, Radwaste Systems

**Question Source:** Bank

**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)

New	X
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Question History:	Previous NRC Exam	No
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Previous Quiz / Test     No

**Question Cognitive Level: Memory or Fundamental Knowledge**

<b>Comprehension or Analysis</b>	<b>X</b>
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**10 CFR Part 55 Content:**    **55.43(b)**    4    **55.41(b)**    11

**Comments:**

**Outline #:** R057

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****1****1****K/A #****071A2.09****Importance Rating****3.0****3.5****Proposed Question:**

The following plant conditions exist:

- VCT is lined up to radwaste.
- VCT pressure is 26 psig.
- VCT level is 40%.
- Radwaste gas system is lined up in HIGH PRESSURE MODE to GDT 'A'.
- GDT 'A' relief valve (HA7821A) fails open.

Which ONE of the following describes how an overexposure event is prevented in the radwaste building?

- A. 'A' Gas Decay Tank relief is directed to 'D' Gas Decay Tank.
- B. 'A' Gas Decay Tank relief is directed to the unit vent.
- C. VCT relief valve opens and relieves to the waste hold up tanks.
- D. VCT purge valve (BG-PCV-115), to the waste gas compressor, closes on high radiation.

**Proposed Answer:**A**Distracter Explanation:**

- A. Correct. Candidate will recall the method for preventing a release to the Radwaste building is for the Normal Gas Decay Tanks to relieve to the Shutdown Gas Decay Tanks.
- B. 'A' GDT is directed to 'D' GDT, not unit vent.
- C. VCT relief valve will not open. VCT relief valve discharges to RHUT, not to waste hold up tank.
- D. BG-PCV-15 does not isolate on high radiation.

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>072A1.01</u>	
	<b>Importance Rating</b>	<u>3.4</u>	<u>3.6</u>

**Proposed Question:**

The plant is in Mode 5 with new fuel receipt in progress. Annunciator 62B, AREA RAD HI, has alarmed. The computer display for AREA RADIATION MONITORS has the following indications:

- SDRE0035, FB-2026 New Fuel Storage Area, reads 1 mr/hr with a green numerical display.
- SDRE0041, RB-2047, Manipulator Crane, reads 17 mr/hr with a green numerical display.
- SDRE0018, AB-2000, Aux Bldg Vlv Room Corridor, reads 8.7 mr/hr with a yellow numerical display.

Which ONE of the following events could be the cause?

- A. LOCA inside CTMT.
- B. LOCA outside CTMT.
- C. Fuel handling accident inside CTMT.
- D. Fuel handling accident outside CTMT.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Incorrect because SDRE0041 is not in alarm.
- B. Correct. Candidate must apply plant conditions to determine a LOCA exists outside CTMT.
- C. Incorrect because fuel handling inside CTMT is not allowed in Mode 5.
- D. Incorrect because SDRE0035 is not in alarm.

**Technical Reference(s):** T61.003D.6 LP #4, E-0

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None**Learning Objective:** CC T61.003D.6 LP #4, E-0**Question Source:** Bank**Modified Bank**        (Note changes or attach parent)**New** X**Question History:** **Previous NRC Exam** No**Previous Quiz / Test** No**Question Cognitive Level:** **Memory or Fundamental Knowledge****Comprehension or Analysis** X**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 11**Comments:** \_\_\_\_\_**Outline #:** R059**Author:** SMP



**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****2****2****K/A #****002K5.17****Importance Rating****3.8****4.2****Proposed Question:**

The following plant conditions exist:

- Small break LOCA is in progress.
- RCS pressure is 1400 psig.
- CTMT temperature is 166 °F.

A manual determination of RCS conditions is being performed.

Which ONE of the following would be used to determine if the RCS is superheated, saturated or subcooled?

- A. Pressurizer pressure, RCS NR temperature.
- B. Pressurizer pressure, RCS WR temperature.
- C. RCS WR pressure, RCS WR temperature.
- D. RCS WR pressure, RCS NR temperature.

**Proposed Answer:**C**Distracter Explanation:**

A & B. PZR pressure instruments lowest reading capability is 1700 psig.

C. Correct. Candidate must determine wide range pressure must be used due to RCS pressure < 1700 psig and that NR temperature cannot be used.

D. RCS NR temperatures are not used for subcooling determination.

**Technical Reference(s):** ES-1.2, "Post LOCA Cooldown and Depressurization"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** N T61.003D.6 LP #4, Rx Trip or SI

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 8

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

**Outline #:** R060 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>006K2.01</u>	
	<b>Importance Rating</b>	<u>3.6</u>	<u>3.9</u>

**Proposed Question:**

Callaway Plant was at full power when the main turbine tripped. The reactor failed to trip, operators entered FR-S.1, "Response to Nuclear Power Generation." The following plant conditions exist:

- CTMT pressure 0.7 psig.
- Reactor trip breakers closed.
- RCS Tave - 568°F.
- RCS pressure – 1830 psig.
- S/G pressure – 1150 psig.

The Reactor Operator noticed that both SI pumps discharge pressure indicating 0 psig.

Which ONE of the following is the cause?

- A. PG19 and PG20 are de-energized, removing power to the indicators.
- B. No auto start signal exists to the SI pumps.
- C. A S/D sequencer signal exists, blocking the SI pump auto start.
- D. NB01 is de-energized, removing power to the indicators.

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct. Candidate must synthesize the relationship between SI actuations at 1849 psig and PG-19 & 20 in P-T-L for FR-S.1.
- B. Pressurizer pressure of 1849 psig causes a SI and LOCA sequencer to start the SI pumps.
- C. The LOCA sequencer blocks the S/D sequencer.
- D. NB01 does not supply power to the indicators.

**Technical Reference(s):** FR-S.1, "Response to Nuclear Power Generation"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.003D.6 LP #29, FRG Subcriticality

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 8

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

**Outline #:** R061 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	010K6.02	
	<b>Importance Rating</b>	3.2	3.5

### Proposed Question:

The pressurizer pressure control system is in automatic with BBPT-455 and BBPT-458 selected as the controlling and backup channels, respectively.

Which ONE of the following describes the immediate effect of BBPT-458 failing to 2500 psig?

- A. PZR variable heaters go to zero (0) voltage.
- B. PZR backup heaters de-energize.
- C. PZR PORV BB-PCV-455 opens.
- D. PZR PORV BB-PCV-456 opens.

**Proposed Answer:** D

**Distracter Explanation:**

- A. Variable heaters are controlled by upper selected channel (455).
- B. B/U heaters are controlled by upper selected channel.
- C. BB-PCV-455 is controlled by upper selected channel.
- D. Candidate must determine PT-458 is the lower channel and it will only affect PZR PORV 456.

**Technical Reference(s):** OTA-RL-RK035, "Window Number 35B"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** J T61.0110.6 LP #30, Reactor Instrumentation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

[illegible]

**10 CFR Part 55 Content:**      **55.43(b)**                      **55.41(b)**      **2**

**Comments:**

**Outline #:** R062 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>011K6.01</u>	
	<b>Importance Rating</b>	<u>2.8</u>	<u>3.2</u>

**Proposed Question:**

The plant is in Mode 1, 100% reactor power, all systems are in their normal alignment and the NCP is in service.

CVCS letdown flow was 75 gpm and has been increased to 120 gpm. BGHV8109, CVCS NCP RECIRC HV, is open and WILL NOT close. One CCP was started and the NCP was secured.

Which ONE of the following best explains the basis for this action?

- A. To prevent automatic letdown isolation.
- B. To prevent NCP damage from high flow.
- C. To prevent a reactor trip on low pressurizer level.
- D. To prevent RCP seal damage from inadequate seal injection flow.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Letdown could have been reduced to 75 gpm.
- B. Correct. Candidate must analyze plant conditions and determine the NCP would reach runout conditions and be damaged by high flow.
- C. Adequate charging flow was available from the NCP.
- D. Seal injection flow is not affected.

**Technical Reference(s):** OTN-BG-00001, "Chemical and Volume Control System"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.1 T61.003A.6 LP #A4, CBC – Mod A

**Question Source:** Bank

**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)

New	X
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**Question History:**                      **Previous NRC Exam**      No  

Previous Quiz / Test	No
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**Question Cognitive Level: Memory or Fundamental Knowledge**

Comprehension or Analysis	X
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<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>5</b>	<b>55.41(b)</b>	<b>10</b>
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**Comments:**

**Outline #:** R063

**Author:** SMP

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>012K5.02</u>	
	<b>Importance Rating</b>	<u>3.1</u>	<u>3.3</u>

**Proposed Question:**

Which ONE of the following reactor trips provides backup protection for the power range high neutron flux trip?

- A. Overtemperature  $\Delta T$ .
- B. Overpower  $\Delta T$ .
- C. Power range neutron flux high positive rate.
- D. Intermediate range high neutron flux.

**Proposed Answer:** B

**Distracter Explanation:**

- A. Protection for DNB, also limits range OP $\Delta T$  must provide protection.
- B. Correct. Primary protection fuel integrity, B/U PR high neutron flux.
- C. Protection for ejected rod.
- D. Protection RCCA bank withdrawal accident.

**Technical Reference(s):** T/S 3.3.1 Bases

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #27, Reactor Protection

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 6

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

**Outline #:** R064

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>014A2.01</u>	
	<b>Importance Rating</b>	<u>2.8</u>	<u>3.3</u>

**Proposed Question:**

A loss of all AC power has occurred. The crew has entered ECA-0.0, "Loss of All AC Power."

Which ONE of the following sets of parameters is used to verify the reactor is tripped?

- A. Reactor trip breakers and NIS indicators.
- B. NR-45 recorder and rod bottom lights.
- C. Reactor trip breakers and rod bottom lights.
- D. NR-45 recorder and NIS indicators.

**Proposed Answer:** A

**Distracter Explanation:**

- A. The candidate must determine reactor trip, reactor trip bypass breakers and NIS indicators are used for reactor trip verification when all AC power is lost.
- B. DRPI has lost power.
- C. DRPI has lost power.
- D. NR-45 has lost power.

**Technical Reference(s):** ECA-0.0, "Loss of All AC Power"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.003D.6 LP #22, Loss of All AC Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 6

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

**Outline #:** R065

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>016G2.1.31</u>	
	<b>Importance Rating</b>	<u>4.2</u>	<u>3.9</u>

**Proposed Question:**

The following plant conditions exist:

- Mode 1.
- 600 MWe.
- ACPT505, Main Turbine Impulse Channel, indicates 200 psig.
- ACPT506, Main Turbine Impulse Channel, indicates 350 psig.
- ABPT507, Steam Header Pressure Channel, indicates 950 psig.
- AEPT508, Main Feedwater Pressure channel, indicates 1050 psig.

Which ONE of the following instruments has failed?

- A. ACPT-505 failed low.
- B. ACPT-506 failed high.
- C. ABPT-507 failed low.
- D. AEPT-508 failed high.

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct. ACPT505 should be indicating closer to 325 for plant conditions.
- B. Normal pump at 100% is  $\approx 700$  psig. At 600 MWe the reading should be  $\approx 325$  psig.
- C & D. Normal difference between main feed and main feed and main steam pressure is 100 psi. Therefore, these readings are normal for plant conditions.

**Technical Reference(s):** T61.0110.6 LP #23, Main Feedwater

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:**                    B                    T61.003B.6 LP-SB8, Plant C/D with Off-normals

**Question Source:** Bank

**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)

**New** X

**Question History:**                      **Previous NRC Exam**      No  

Previous Quiz / Test	No
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**Question Cognitive Level: Memory or Fundamental Knowledge**

Comprehension or Analysis	X
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<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>55.41(b)</b>	<b>4</b>
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**Comments:**

**Outline #:** R066

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****2****1****K/A #****026A3.01****Importance Rating****4.3****4.5****Proposed Question:**

The following plant conditions exist:

- Mode 2.
- 3% reactor power.
- All equipment in automatic control.
- No T/S action statements in effect.

A large break LOCA occurs.

Which ONE of the following sets of valves will OPEN due to the containment spray actuation signal (CSAS)?

- A. CTMT Spray Pump test line to RWST iso valves ENV0024 and ENV0025.
- B. RWST to CTMT Spray Pump BNHV0003 and BNHV0004.
- C. CTMT Spray Pump Discharge ENHV0006 and ENHV0012.
- D. CTMT Recirc Sump to CTMT Spray Pump ENHV0001 and ENHV0007.

**Proposed Answer:**C**Distracter Explanation:**

- A. Manual valves that are not affected by any signal.
- B. Valves receive an open signal, but are normally open valves.
- C. Candidate must realize these valves receive an open signal from a CSAS and are normally closed.
- D. Only receive a closed signal from a CIS 'A'.

**Technical Reference(s):** T61.0110.6 LP #18, Containment Spray

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** H T61.0110.6 LP #18, Containment Spray

**Question Source:** Bank

**Modified Bank** (Note changes or attach parent)

**New** X

Question History:	Previous NRC Exam	No
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Previous Quiz / Test     No

**Question Cognitive Level: Memory or Fundamental Knowledge**

<b>Comprehension or Analysis</b>	<b>X</b>
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**10 CFR Part 55 Content:**    55.43(b)    \_\_\_\_\_    55.41(b)    9

**Comments:**

**Outline #:** R067

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>029K4.03</u>	
	<b>Importance Rating</b>	<u>3.2</u>	<u>3.5</u>

**Proposed Question:**

Callaway Plant is in Mode 5. Preparations for CTMT entry are in progress with the S/D purge system in service.

Which ONE of the following describes the response of the containment S/D purge system if a manual CPIS is initiated on 'B' train?

- A. Containment S/D purge supply air unit fan remains running, S/D purge exhaust fan remains running.
- B. Containment S/D purge supply air unit fan trips, S/D purge exhaust fan trips.
- C. Containment S/D purge supply air unit fan trips, S/D purge exhaust fan remains running.
- D. Containment S/D purge supply air unit fan remains running, S/D purge exhaust fan trips.

**Proposed Answer:**     D    

**Distracter Explanation:**

- A. Containment supply air unit fan does not trip.
- B. Containment supply air unit fan does not trip.
- C. Supply air unit does not trip. Purge exhaust unit does trip.
- D. Candidate must determine manual is not a cross-trip and evaluate which components are 'B' train.

**Technical Reference(s):** OTO-SA-00001, "ESFAS Verification and Restoration"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** M T61.0110.6 LP #40, CTMT Vent

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 9

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

**Outline #:** R068 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	033A1.01	
	<b>Importance Rating</b>	2.7	3.3

### Proposed Question:

Callaway Plant has a sustained loss of all AC power.

Which ONE of the following would be used to provide makeup to the spent fuel pool?

- A. Deep well pump #6 and potable water connections.
- B. Gravity drain the reactor water storage tank.
- C. Diesel fire pump and fire hose.
- D. Reactor makeup water storage tank and potable pump.

**Proposed Answer:** C

**Distracter Explanation:**

- A. Deep well pump #6 is normal makeup to demin building, loses power.
- B. Not enough height differential or proceduralized.
- C. Correct. See ECA-0.0 step 24.
- D. Not proceduralized.

**Technical Reference(s):** ECA-0.0, "Loss of All AC Power"  
(Attach if not previously provided)

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

<b>Learning Objective:</b>	D	T61.003D.6 LP #SD12, Power Increase with Off-normals and Emergency Conditions
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**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	<u>X</u>
<b>Comprehension or Analysis</b>	

<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>5</b>	<b>55.41(b)</b>	<b>10</b>
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**Comments:**

**Outline #:** R069 **Author:** EBS



**Examination Outline Cross-reference:****Level****Tier #****Group #****K/A #****Importance Rating****RO**22035A4.084.1**SRO**124.4**Proposed Question:**

The following are radiation readings from the RM-11 console:

<u>Monitor</u>	<u>Location</u>	<u>Reading at 0700</u>	<u>Reading at 0800</u>
AB-RE-16A	S/G A N-16	0 GPD	0 GPD
AB-RE-16B	S/G B N-16	8 GPD	58 GPD
AB-RE-16C	S/G C N-16	40 GPD	240 GPD
AB-RE-16D	S/G D N-16	0 GPD	0 GPD
BM-RE-25	S/G B/D	9E-6 C/ml	8E-5 C/ml
GE-RE-92	Condenser Air Discharge	7E-5 C/ml	4E-4 C/ml

Which ONE of the following actions is required?

- A. 'B' SGTL > 50 GPM, Trip Rx, Enter E-0.
- B. 'C' SGTL > 50 GPM, Trip Rx, Enter E-0.
- C. 'B' SGTL > 30 GPD/Hr, be in Mode 3 in 6 hours.
- D. 'C' SGTL > 150 GPD, be in Mode 3 in 6 hours.

**Proposed Answer:**D**Distracter Explanation:**

- A & B are incorrect because the leakage is less than 50 GPM.
- C is incorrect because the leakage must be greater than 75 GPD and the shutdown requirements are Mode 3 in 3 hours.
- D. Correct. Candidate must determine 'C' S/G has had an increase of 200 gpd in one hour and determine this exceeds limits in APA-ZZ-01023.

**Technical Reference(s):** OTO-BB-00001, "Steam Generator Tube Leak"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.003B.6 LP #SB14, CBC – Mod B

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

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

**Outline #:** R070 **Author:** SMP

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	039K1.07	
	<b>Importance Rating</b>	3.4	3.4

### Proposed Question:

Callaway Plant was at 50% power when a large steam break occurred in containment on the 'A' steam generator. Containment pressure has increased to 19 psig.

Which ONE of the following sets of valves would have received a signal to close due to this event?

- A. AB-HV-14 ('A' MSIV) and AL-HV-8 (TD AFP Discharge to 'A' S/G).
- B. AB-HV-20 ('C' MSIV) and AB-HV-6 (TD AFP Steam Supply from 'B' S/G).
- C. AB-HV-12 ('D' MSIV Bypass) and AB-HV-49 (TD AFP Warmup Steam Supply 'C' S/G).
- D. AB-HV-18 ('B' MSIV Bypass) and AL-HV-12 (TD AFP Discharge to 'C' S/G).

**Proposed Answer:** C

**Distracter Explanation:**

- A. 'A' MSIV closes on SLIS, AL-HV-8 does not receive a signal.
- B. 'C' MSIV closes, AB-HV-6 would receive open signal on TD AFAS.
- C. Both valves receive a close signal on the SLIS. Candidate must realize 19 psig exceeds the SLIS setpoint.
- D. 'B' MSIV bypass receives a closed signal, AL-HV-8 does not.

**Technical Reference(s):** OTO-SA-00001, "ESFAS Verification and Restoration"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** H T61.0110.6 LP #20, Main Steam

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	X
<b>Comprehension or Analysis</b>	

**10 CFR Part 55 Content:**      **55.43(b)**                      **55.41(b)**      **8**

**Comments:**

**Outline #:** R071 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>055A3.03</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>2.7</u>

**Proposed Question:**

A 600 gpm tube rupture occurred in 'A' S/G during Mode 1 operations. During the recovery phase, the BOP RO notices the condenser air removal vacuum pumps have tripped with the discharge dampers closed.

Which ONE of the following is cause for the condenser air removal system being secured?

- A. SGBSIS
- B. SIS
- C. CIS 'B'
- D. CIS 'A'

**Proposed Answer:** B

**Distracter Explanation:**

A, C & D incorrect because the safety injection causes dampers to close and the interlock causes pumps to trip.

B is correct because SIS closes the discharge dampers which are interlocked to trip the pumps.

**Technical Reference(s):** T61.0110.6 LP #22, Condensate System  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** N T61.0110.6 LP #22, Condensate System

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R072

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>062A2.01</u>	
	<b>Importance Rating</b>	<u>3.4</u>	<u>3.9</u>

**Proposed Question:**

Callaway Plant is at 25% power.

Which ONE of the following will result in a reactor trip on RCP UV?

- A. Undervoltage on PA01.
- B. Undervoltage on PA02.
- C. Undervoltage on RCP 'A' and 'B'.
- D. Undervoltage on RCP 'A' and 'D'.

**Proposed Answer:** D

**Distracter Explanation:**

- A. Incorrect. Will cause reactor trip on RCP loop low flow.
- B. Incorrect. Will cause reactor trip on RCP loop low flow.
- C. Will cause reactor trip on low flow, but RCPs are power from same bus.
- D. Correct. Candidate must realize power is >P-7 (10%) and trip is active.

**Technical Reference(s):** E-0, "Rx Trip and SI"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #27, Reactor Protection

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R073

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>063K3.02</u>	
	<b>Importance Rating</b>	<u>3.5</u>	<u>3.7</u>

**Proposed Question:**

The following plant conditions exist:

- 2% reactor power.
- NK01, 125 VDC power fails to 'A' MD AFP breaker.
- 'A' and 'B' MD AFP supplying feedwater to S/Gs.

Which ONE of the following describes how the loss of DC control power affects the 'A' MD AFP breaker?

- A. 'A' MD AFP breaker will trip, and cannot be closed from the MCB.
- B. 'A' MD AFP breaker will trip, but can be reclosed from the MCB.
- C. 'A' MD AFP breaker will fail in its current position, but can be tripped from the MCB.
- D. 'A' MD AFP breaker will fail in its current position, and cannot be tripped from the MCB.

**Proposed Answer:** D

**Distracter Explanation:**

- A. Breaker will not trip.
- B. Breaker will not trip.
- C. Breaker cannot be tripped from MCB.
- D. Correct. All BKR control is lost when DC control power is lost.

**Technical Reference(s):** T61.0110.6 LP #6, Safeguards Power  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.0110.6 LP #6, Safeguards Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R074

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>064A4.01</u>	
	<b>Importance Rating</b>	<u>4.0</u>	<u>4.3</u>

**Proposed Question:**

NE01 has been paralleled with 4160V bus NB01 and is carrying 5 MWe of load. A large break loss of coolant accident occurs and containment pressure increases to 19 psig.

Which ONE of the following describes the response of the 'A' train safeguards power system?

- A. NB01 Normal Feeder Breaker will remain closed, NE01 will remain running, 'A' train LOCA sequencer will start.
- B. NB01 Normal Feeder Breaker will open, NE01 will remain running, 'A' train S/D sequencer will start.
- C. NB01 Normal Feeder Breaker will remain closed, NE01 will trip, 'A' train LOCA sequencer will start.
- D. NB01 Normal Feeder Breaker will open, NE01 will trip and will restart on 'A' train S/D sequencer.

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct. Candidate is required to determine NE01 running will have no effect on NB01 Normal Feeder Breaker, and that the LOCA sequencer will block the S/D sequencer.
- B. NB01 Feeder Breaker will not open.
- C. NE01 will not trip.
- D. NB01 Feeder Breaker will not open, NE01 will not trip.

**Technical Reference(s):** T61.0110.6 LP #6, Safeguards Power  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** J T61.0110.6 LP #6, Safeguards Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 8

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

**Outline #:** R075 **Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	073A1.01	
	<b>Importance Rating</b>	3.2	3.5

**Proposed Question:**

Which ONE of the following radiation monitor alarm will result in the automatic isolation of both the shutdown purge and mini-purge isolation dampers?

- A. GT-RE-22 CTMT Purge Gas Channel High (red).
- B. GT-RE-31 CTMT Atmosphere Gas Channel High (red).
- C. GT-RE-33 CTMT Purge Particulate High (red).
- D. GT-RE-32 CTMT Atmosphere Particulate High (red).

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. See attached.  
B. CTMT atmosphere is an alarm only.  
C. Particulate is an alarm function only.  
D. CTMT atmosphere is an alarm only.

**Technical Reference(s):** OTA-SP-RM011, "CTMT Purge Exhaust Monitors and CTMT Atmosphere Monitors"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.0110.6 LP #52, ESFAS

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**    Memory or Fundamental Knowledge     X  
                                     Comprehension or Analysis

**10 CFR Part 55 Content:**    **55.43(b)**    4    **55.41(b)**    11

**Comments:**

**Outline #:** R076 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>075K4.01</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>2.8</u>

**Proposed Question:**

Callaway Plant is at 60% power.

Which ONE of the following will cause a loss of the Main Turbine within 5 minutes?

- A. Trip of all condenser vacuum pumps.
- B. Loss of PB04.
- C. Service water pressure at 45 psig.
- D. High condenser pit level.

**Proposed Answer:**     D    

**Distracter Explanation:**

- A. Losing all condenser vacuum pumps will cause a loss of vacuum and a turbine trip but not for 24 hours – a common misconception.
- B. Losing PB04 will cause a trip of 'B' condensate pump and 'B' heater drain pump, but at 60% power should not cause a turbine trip.
- C. Normal service water pressure is ~65 psig. Decreasing pressure may reduce flow and cause overheating in lube oil coolers for the main turbine and feed pump as well as for the generator. These actions will not happen for a least one hour.
- D. Correct. High condenser pit level will cause all circ pumps to trip, and a loss of heat sink is almost immediate. A turbine trip will follow.

**Technical Reference(s):** OTN-DA-00001, "Circ Water System"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.0110.6 LP #4, Circ & Service Water Systems

**Question Source:** Bank

**Modified Bank** (Note changes or attach parent)

**New** X

Question History:	Previous NRC Exam	No
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Previous Quiz / Test     No

**Question Cognitive Level: Memory or Fundamental Knowledge**

<b>Comprehension or Analysis</b>	<b>X</b>
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**10 CFR Part 55 Content:**    **55.43(b)**                  **55.41(b)**    5

**Comments:**

**Outline #:** R077

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>079K1.01</u>	
	<b>Importance Rating</b>	<u>3.0</u>	<u>3.1</u>

**Proposed Question:**

A hose connected to the service air system has ruptured.

Which ONE of the following will prevent a total loss of the instrument air system?

- A. Orifices installed in the service air lines will restrict flow to within the capacity of one air compressor.
- B. Nitrogen backup is available to the instrument air system.
- C. KAPV0011, Compress Air Sys Service Air Supply Valve, closes.
- D. KAFV0029, Reactor Building Instrument Air Supply Flow Control Valve, closes.

**Proposed Answer:** C

**Distracter Explanation:**

- A. Orifices are installed in the instrument air lines, not service air.
- B. N<sub>2</sub> backup will not prevent a loss of the instrument air system.
- C. Correct. Candidate must determine service air will isolate from instrument air as pressure decreases.
- D. KAFV29 will drift close < 70 psig header pressure and isolation the Rx building only.

**Technical Reference(s):** T61.0110.6 LP #14, IAS

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C.2.f T61.0110.6 LP #14, IAS

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R078

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>086G2.4.27</u>	
	<b>Importance Rating</b>	<u>3.0</u>	<u>3.5</u>

**Proposed Question:**

The following plant conditions exist:

- Mode 6.
- NE01 ('A' D/G) is running for a surveillance.
- A fire occurs in NE01, 'A' D/G room.

Which ONE of the following describes the response of NE01 fuel oil transfer pump?

- A. NE01 fuel oil transfer pump will trip.
- B. NE01 fuel oil transfer pump will continue to run.
- C. NE01 fuel oil transfer pump will divert and recirc the fuel oil storage tank.
- D. NE01 fuel oil transfer pump will trip once the fuel oil day tank reaches the high level alarm.

**Proposed Answer:** B

**Distracter Explanation:**

- A. Fuel oil transfer pump will continue to run.
- B. Correct. Fuel oil transfer pump will trip only if D/G is not running.
- C. Fuel oil transfer pump will not divert flow.
- D. Fuel oil transfer pump will continue to run, high level trip is bypassed.

**Technical Reference(s):** T61.0110.6 LP #3, Standby Generation  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C.6 T61.0110.6 LP #3, Standby Generation

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 8

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

**Outline #:** R079

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>005K4.07</u>	
	<b>Importance Rating</b>	<u>3.2</u>	<u>3.5</u>

### Proposed Question:

Callaway Plant is in Mode 5 preparing for Refuel 11.

Which ONE of the following conditions would prevent 'A' RHR suction valve, BBPV8702A, from opening when the pushbutton was pressed?

- A. RCS wide range pressure at 355 psig.
- B. RCS wide range temperature at 360°F.
- C. EJHV8811A, CTMT sump to 'A' RHR pump closed.
- D. EJHV8804A, RHR pump discharge to CCP open.

**Proposed Answer:** D

**Distracter Explanation:**

- A. Wide range pressure is interlocked to 360 psig.
- B. Wide range temperature is a T/S limitation not interlocked.
- C. 8811A is interlocked to be closed.
- D. Correct. Candidate will recall interlock is to prevent overpressurization of suction piping.

**Technical Reference(s):** OTN-EJ-00001, "RHR"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B.3 T61.010.6 LP #7, RHR

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

[illegible]

**10 CFR Part 55 Content:**      **55.43(b)**              **55.41(b)**      **3**

**Comments:**

**Outline #:** R080 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>008K1.02</u>	
	<b>Importance Rating</b>	<u>3.3</u>	<u>3.4</u>

**Proposed Question:**

Callaway Plant is at full power when operators note that CCW surge tank level is decreasing.

Which ONE of the following could be the cause of this event?

- A. RCP thermal barrier heat exchanger.
- B. Seal water heat exchanger.
- C. BTRS moderating heat exchanger.
- D. Letdown heat exchanger.

**Proposed Answer:** B

**Distracter Explanation:**

- A. Incorrect. RCS pressure is higher than CCW pressure.
- B. Correct. CCW pressure is higher than CVCS pressure.
- C. Incorrect. RCS pressure would be higher than CCW pressure.
- D. Incorrect. RCS pressure would be higher than CCW pressure.

**Technical Reference(s):** OTO-BB-00003, "RCS System Excessive Leakage"  
 (Attach if not previously provided) OTA-RL-RK054, "Window 54F"

**Proposed references provided to applicants during examination:** None

**Learning Objective:** H T61.0110.6 LP #10, CCW

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R081

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>1</u>
	<b>K/A #</b>	<u>027K5.01</u>	
	<b>Importance Rating</b>	<u>3.1</u>	<u>3.4</u>

**Proposed Question:**

Charcoal filters in the containment purge filter adsorber units primary purpose is to remove which ONE of the following?

- A. Removes radioiodine
- B. Removes Xenon
- C. Removes ultra-fine particles
- D. Removes N-16

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Candidate should remember purpose is to prevent the release of radioiodine to the atmosphere.
- B. Xenon is a gas and the filter adsorber units will have no affect.
- C. HEPA filters remove these.
- D. N-16 is a gas and the filter adsorber units will have no affect.

**Technical Reference(s):** T61.0110.6 LP #40, CTMT Ventilation

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** M.3 T61.0110.6 LP #40, CTMT Ventilation.

**Question Source:**

<b>Bank</b>	<u>      </u>
<b>Modified Bank</b>	<u>      </u> (Note changes or attach parent)
<b>New</b>	<u>X</u>

**Question History:**

<b>Previous NRC Exam</b>	<u>No</u>
<b>Previous Quiz / Test</b>	<u>No</u>

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	<u>X</u>
<b>Comprehension or Analysis</b>	<u>      </u>

**10 CFR Part 55 Content:** 55.43(b) 4 55.41(b) 13

**Comments:**       

**Outline #:** R082

**Author:** EBS



Revision 8

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****2****2****Group #****3****3****K/A #****041K3.04****Importance Rating****3.5****3.4****Proposed Question:**

The following plant conditions exist:

- Control rods in manual.
- 6% reactor power.
- IR SUR 0.0 DPM indicated.
- Steam pressure mode for steam dumps controlling pressure at 1092 psig.
- RCS boron 400 ppm.
- All other systems in automatic.

Which ONE of the following describes how the plant would respond by changing ABPT-507, steam header pressure setting to 7.0 turns?

- A.  $T_{ave}$  would decrease and reactor power would increase.
- B.  $T_{ave}$  would increase and reactor power would remain the same.
- C.  $T_{ave}$  would remain the same and reactor power would increase.
- D.  $T_{ave}$  and reactor power would remain the same.

**Proposed Answer:**A**Distracter Explanation:**

- A. Changing the pot setting to 7.0 turn (150 psig/turn) would cause steam pressure to control at 1050 psig. The candidate has to combine this with negative MTC and realize  $T_{ave}$  would decrease and reactor power would increase.
- B.  $T_{ave}$  will decrease, power will increase.
- C.  $T_{ave}$  will decrease.
- D.  $T_{ave}$  will decrease, reactor power will increase.

**Technical Reference(s):** OOA-RL-00004, "MCB Controllers and Potentiometers"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** F T61.003A.6 LP #SA13, Plant S/D MOL

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 4

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

**Outline #:** R084 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>045A4.02</u>	
	<b>Importance Rating</b>	<u>2.7</u>	<u>2.6</u>

**Proposed Question:**

Which ONE of the following is the correct sequence for synchronizing the main generator to the grid?

- A.
  1. Adjust main turbine speed as necessary with load selection to ensure synchroscope revolving slowly in the fast direction.
  2. Adjust generator voltage so generator is slightly higher than switchyard.
  3. Close the generator exciter field breaker.
  4. Close selected switchyard breaker.
- B.
  1. Close the generator exciter field breaker.
  2. Adjust main turbine speed as necessary with load selection to ensure synchroscope revolving slowly in the fast direction.
  3. Adjust generator voltage so generator is slightly higher than switchyard.
  4. Close selected switchyard breaker.
- C.
  1. Close the generator exciter field breaker.
  2. Adjust generator voltage so generator is slightly higher than switchyard.
  3. Adjust main turbine speed as necessary with load selection to ensure synchroscope revolving slowly in the fast direction.
  4. Close selected switchyard breaker.
- D.
  1. Adjust main turbine speed as necessary with load selection to ensure synchroscope revolving slowly in the fast direction.
  3. Close the generator exciter field breaker.
  2. Adjust generator voltage so generator is slightly higher than switchyard.
  4. Close selected switchyard breaker.

**Proposed Answer:**     C    

**Distracter Explanation:**

- A. Incorrect because the exciter field breaker must be closed before turbine speed is adjusted.
- B. Incorrect because generator voltage must be adjusted before turbine speed is adjusted.
- C. Correct. Candidate will determine the generator field breaker must be closed so the generator voltage can be adjusted. He will have to determine the main turbine speed is adjusted just prior to closing the switchyard breaker.
- D. Incorrect because adjusting turbine speed must be performed after adjusting generator voltage.

**Technical Reference(s):** OTN-AC-00001, "Main Turbine and Generator System"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** G T61.003A.6 LP #SA25, Plant S/U BOL

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 5

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

**Outline #:** R085 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>078K2.01</u>	
	<b>Importance Rating</b>	<u>2.7</u>	<u>2.9</u>

**Proposed Question:**

Which ONE of the following is correct for 'B' service air compressor?

	<u>Power Supply</u>	<u>Trip</u>
A.	PG 15	CIS 'A' trip
B.	PG 15	SIS load shed
C.	NG04	CIS 'A' trip
D.	NG04	SIS load shed

**Proposed Answer:** D

**Distracter Explanation:**

- A. PG 15 is the power supply for 'C' air compressor, CIS 'A' affects KAPV-29 only.
- B. PG 15 is the power supply for 'C' air compressor.
- C. CIS 'A' affects KAPV29 only.
- D. Candidate determines proper power supply and the air compressor is tripped by the non-safety load shed.

**Technical Reference(s):** OTO-SA-00001, "ESFAS and Restoration"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.0110.6 LP #14, Service/Instrument Air

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** \_\_\_\_\_ **55.41(b)** 7

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

**Outline #:** R086

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>2</u>
	<b>K/A #</b>	<u>103A3.01</u>	
	<b>Importance Rating</b>	<u>3.9</u>	<u>4.2</u>

**Proposed Question:**

Which ONE of the following describes the containment atmosphere radiation monitors GT-RE-31 and GT-RE-32?

- A. Both radiation monitor sample containment via the hydrogen control system and are isolated from containment by a CIS 'A' actuation.
- B. Both radiation monitor sample containment via shutdown purge exhaust system and are isolated by a CSAS actuation.
- C. Both radiation monitor sample between the containment isolation valves on the mini-purge exhaust line and initiate a CPIS on high high activity.
- D. Both radiation monitor sample from the containment purge exhaust line outside containment and initiate a CPIS on high high activity.

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct.
- B. GTRE22/33 sample off S/D purge exhaust line, CSAS does not isolate.
- C. Do not sample between CTMT iso valves, does not generate a CPIS.
- D. They do not generate a CPIS.

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>G2.1.12</u>	
	<b>Importance Rating</b>	<u>2.9</u>	<u>4.0</u>

**Proposed Question:**

Callaway Plant is at 55% power. Both control room pressurization units are declared inoperable due to a common mode failure.

Which ONE of the following describes the required actions?

- A. Within 7 days restore both trains to operable status or be in HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours.
- B. Within 7 days restore at least one train to operable status or be in HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours.
- C. Within 24 hours restore at least one train to operable status or be in HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours.
- D. Within 1 hour initiate actions to place the plant in HOT STANDBY within 7 hours, HOT SHUTDOWN within 13 hours and COLD SHUTDOWN within 37 hours.

**Proposed Answer:** D

**Distracter Explanation:**

- A./B./C. Incorrect. T/S 3.7.10 required action F gives direction to enter T/S 3.0.3.
- D. Correct. T/S 3.7.10 gives direction to enter T/S 3.0.3.

**Technical Reference(s):** T/S 3.7.10  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** F.1.c T61.003A.6 LP #A12, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 10

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

**Outline #:** R088

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>G2.1.1</u>	
	<b>Importance Rating</b>	<u>3.7</u>	<u>3.8</u>

**Proposed Question:**

The plant is at 50% power. The second main feed pump is being placed in service by the BOP operator. The Reactor Operator is going to dilute 25 gallons to maintain  $T_{ave}$  matched with  $T_{ref}$ .

Which ONE of the following must be done prior to performing the dilution?

- A. The RO must attend a pre-job brief.
- B. The RO must notify the BOP operator and STA.
- C. The RO must have another licensed operator perform a peer check.
- D. The RO may have any individual in the control room verify the control board manipulation.

**Proposed Answer:** C

**Distracter Explanation:**

- A. A pre-job brief is for a task with a frequency less frequent than monthly.
- B. This is a requirement for transient operations only.
- C. Correct. This is a routine operation and requires peer check, touch star, and notification of the CRS.
- D. Reactivity manipulations require peer check by an RO or SRO.

**Technical Reference(s):** ODP-ZZ-00001, "Operations Department – Code of Conduct"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.003A.6 LP #SA4, CBC – Mod A

**Question Source:**

<b>Bank</b>	<u>          </u>
<b>Modified Bank</b>	<u>          </u> (Note changes or attach parent)
<b>New</b>	<u>X</u>

**Question History:**

<b>Previous NRC Exam</b>	<u>No</u>
<b>Previous Quiz / Test</b>	<u>No</u>

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	<u>X</u>
<b>Comprehension or Analysis</b>	<u>          </u>

**10 CFR Part 55 Content:** 55.43(b)            55.41(b) 10

**Comments:** Reference is from Rev. 11 which will be issued prior to exam.

**Outline #:** R089

**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #**33**Group #**11**K/A #**

G2.1.2

**Importance Rating**3.04.0**Proposed Question:**

The plant is in Mode 5.

Which ONE of the following satisfies personnel staffing requirements per the FSAR?

	<u>RO</u>	<u>SROs</u>	<u>Fire Brigade</u>
A.	1	1	4
B.	1	1	5
C.	0	2	5
D.	2	0	4

**Proposed Answer:**B**Distracter Explanation:**

A. Need 1 additional Fire Brigade member.

B. Correct. Answer directly from FSAR Table 16.12-11 and 16.12.1.b.

C. Need 1 RO.

D. Need 1 SRO and 1 additional Fire Brigade member.

**Technical Reference(s):**FSAR Table 16.12-11

(Attach if not previously provided)

**Proposed references provided to applicants during examination:**None**Learning Objective:**B.5.aT61.003A.6 LP-A29 CBC – MOD A**Question Source:****Bank****Modified Bank**           (Note changes or attach parent)**New**X**Question History:****Previous NRC Exam**No**Previous Quiz / Test**No**Question Cognitive Level:****Memory or Fundamental Knowledge**X**Comprehension or Analysis**          **10 CFR Part 55 Content:****55.43(b)**          **55.41(b)**10**Comments:****Outline #:** R090**Author:** EBS

**Examination Outline Cross-reference:****Level****RO****SRO****Tier #****3****3****Group #****1****1****K/A #****G2.1.23****Importance Rating****3.9****4.0****Proposed Question:**

The following plant conditions exist:

- Mode 5.
- RCS temperature is 165°F.
- The pressurizer is solid.
- RCS pressure is being maintained between 260 and 285 psig.
- The RHR system is in service.

Which ONE of the following describes the system response to an RCS heatup of 10°F?

- A. Letdown pressure control valve, BG-PCV-131, opens to maintain RCS pressure constant. Letdown flow through BG-HV-128 will decrease.
- B. Letdown pressure control valve, BG-PCV-131, closes to maintain RCS pressure constant. Letdown flow through BG-HCV-128 will decrease.
- C. Letdown pressure control valve, BG-PCV-131, opens to maintain RCS pressure constant. Letdown flow through BG-HCV-128 will increase.
- D. Letdown pressure control valve, BG-PCV-131, closes to maintain RCS pressure constant. Letdown flow through BG-HCV-128 will increase.

**Proposed Answer:**    C    **Distracter Explanation:**

- A & B. Letdown flow through BG-HCV-128 increases.
- C. Correct. Candidate is required to determine to 10°F heatup will cause a pressure increase and flow will increase through BG-HCV-128 because BG-PCV-131 will open.
- D. Letdown pressure control valve, PCV-131, opens.

**Technical Reference(s):** T61.0110.6 LP #7 (RHR) & 11 (CVCS)

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.003A.6 LP #SA18, CBC – Mod A

**Question Source:** Bank

**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)

New	X
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Question History:	Previous NRC Exam	No
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Previous Quiz / Test     No

**Question Cognitive Level: Memory or Fundamental Knowledge**

<b>Comprehension or Analysis</b>	<b>X</b>
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**10 CFR Part 55 Content:**    55.43(b)                  55.41(b)    5

**Comments:**

**Outline #:** R091

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>G2.2.11</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>3.4</u>

**Proposed Question:**

Which ONE of the following is considered a temporary modification per APA-ZZ-00605, "Temporary System Modifications?"

- A. Non-safety related temporary power for a load center controlled by a hold off.
- B. Placing a clamp-on current probe on a piece of equipment for 24 hour surveillance.
- C. Placing temporary lead shielding on the refueling machine for the duration of the outage.
- D. Using a pipe clamp on a main steam line to stop a leak in the turbine building.

**Proposed Answer:** D

**Distracter Explanation:**

- A. WPA controlled items are excluded (Step 3.15).
- B. The installation of non-intrusive equipment are excluded (step 3.17).
- C. Temporary lead shielding is excluded (step 3.22).
- D. Main steam exceeds 400 psig and 200°F (step 3.4).

**Technical Reference(s):** APA-ZZ-00605, "Temporary System Modifications"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** H.2 T61.003A.6 LP #a29, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 3 **55.41(b)** 10

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

**Outline #:** R092

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>G2.2.13</u>	
	<b>Importance Rating</b>	<u>3.6</u>	<u>3.8</u>

**Proposed Question:**

Which ONE of the following is a violation of APA-ZZ-00310, "Workman's Protection Assurance Program and Caution Tagging?"

- A. Placing 2 hold off tags on a valve, both requiring the valve tagged closed.
- B. Placing 2 local control tags on a valve, both requiring the valve tagged closed.
- C. Placing a white pull-snug seal on a breaker that has a hold off tag on it.
- D. Placing a personal hold off device on a component that has a local control tag on it.

**Proposed Answer:** B

**Distracter Explanation:**

- A. Placing more than 1 hold off tag is allowed as long as they require the component to be tagged the same.
- B. Having 2 local control tags on a valve would allow more than 1 person to operate the valve, causing a potential dangerous situation.
- C. White pull snug seals are required on breakers.
- D. A personal hold off device is allowed.

**Technical Reference(s):** APA-ZZ-00310, WPA  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.2 T61.003A.6 LP #A33, WPA

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 1 **55.41(b)** 10

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

**Outline #:** R093

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>G2.2.22</u>	
	<b>Importance Rating</b>	<u>3.4</u>	<u>4.1</u>

**Proposed Question:**

Which ONE of the following conditions violates a safety limit as defined by Technical Specifications?

- A. Mode 2, 3% power, RCS pressure is 2300 psig and highest loop  $T_{ave}$  is 595°F.
- B. Mode 5, RCS pressure exceeds 1700 psig.
- C. Mode 5, RCS  $T_{ave}$  exceeds 200°F.
- D. Mode 1, 100% power, RCS pressure is 2850 psig and highest loop  $T_{ave}$  is 640°F.

**Proposed Answer:** D

**Distracter Explanation:**

- A. Incorrect.  $T_{ave}$  would have to exceed 655°F to be a SL violation.
- B. This would be a T/S violation, but pressure would have to exceed 2735 psig.
- C. This would be a mode change and T/S violation but not a SL violation.
- D. Correct. Places plant in unacceptable region of operation.

**Technical Reference(s):** T/S 2.1 and 2.2

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B & C T61.003A.6 LP #A36, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 10

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

**Outline #:** R094

**Author:** EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>G2.3.2</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>2.9</u>

**Proposed Question:**

Which ONE of the following represents the Callaway Plant employee administrative limit for total effective dose equivalent (TEDE) exposure and the individual who can authorize exceeding this limit?

	<u>Dose</u>	<u>Authority</u>
A.	500 mr/yr	HP Supervisor
B.	1000 mr/yr	Shift Supervisor
C.	2000 mr/yr	Chief Nuclear Officer
D.	5000 mr/yr	Recovery Manager

**Proposed Answer:** C

**Distracter Explanation:**

- A. Limit is 2000 mr/yr; CNO approval needed.
- B. 2000 limit, the SS can authorize only if acting as the EC.
- C. Correct.
- D. Limit 2000 mr/yr, RM can authorize only during emergencies.

**Technical Reference(s):** APA-ZZ-01000, "Callaway Health Physics Program"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B.8.a T61.003A.6 LP #A31, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 1 **55.41(b)** 12

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

**Outline #:** R095

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>G2.3.10</u>	
	<b>Importance Rating</b>	<u>2.9</u>	<u>3.3</u>

**Proposed Question:**

Callaway Plant is in Mode 6. Core off-load is in progress. The reactor operator has been relieved as the refueling machine operator.

Which ONE of the following should the reactor operator remove first when wearing single Anti-Cs and exiting the aux building?

- A. Dosimetry.
- B. Wrist cuffs.
- C. Hood.
- D. Rubber shoes.

**Proposed Answer:** B

**Distracter Explanation:**

The candidate must recall the proper method to remove Anti-Cs to prevent spread of contamination

**Technical Reference(s):** HDP-ZZ-06000, "Contamination Control Program"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T68.0410.6, Radworker II

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 12

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

**Outline #:** R096

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>G2.3.1</u>	
	<b>Importance Rating</b>	<u>2.6</u>	<u>3.0</u>

**Proposed Question:**

A surveillance is to be performed on a piece of equipment with the following conditions:

- Contact radiation on equipment is 5 R/hr.
- Radiation level is 500 mrem/hr at 12 inches from equipment.
- General area radiation for the room is 125 mrem/hr.

Which ONE of the following is the proper classification for the room?

- A. Radiation Area (RA).
- B. High Radiation Area (CHRA).
- C. Danger High Radiation Area (DHRA).
- D. Danger High Radiation Area – No Entry (DHRA-NE).

**Proposed Answer:** B

**Distracter Explanation:**

- A. RA is > 5 mrem; < 100 mrem/hr and 12 inches.
- B. Correct. Procedure uses this term, student may know it as Caution High Rad Area.
- C. DHRA is >1000 mrem/hr at 12 inches.
- D. DHRA-NE, no survey exists.

**Technical Reference(s):** HDP-ZZ-01500, "Radiological Posting"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D.1.b T61.003A.6 LP #A31, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 11

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

**Outline #:** R097

**Author:** EBS

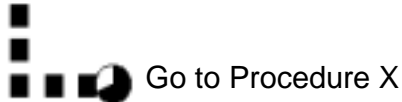
Revision 8

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>4</u>	<u>4</u>
	<b>K/A #</b>	<u>G2.4.19</u>	
	<b>Importance Rating</b>	<u>2.7</u>	<u>3.7</u>

**Proposed Question:**

You have been directed to scan the critical safety functions (CSFs). While scanning you observe the following:

Yes



Which ONE of the following is the correct color coding scene?

- A. Red path
- B. Orange path
- C. Yellow path
- D. Green path

**Proposed Answer:** B

**Distracter Explanation:**

- A. Red paths are solid lines with the pie full.
- B. Orange path is a dashed line with the pie 2/3 full.
- C. Yellow paths are dotted lines with the pie 1/3 full.
- D. Green paths are outlined in black with the pie 0% filled.

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>4</u>	<u>4</u>
	<b>K/A #</b>	<u>G.2.4.29</u>	
	<b>Importance Rating</b>	<u>2.6</u>	<u>4.0</u>

**Proposed Question:**

Which ONE of the following meets the RERP definition of essential personnel?

- A. Emergency response personnel who are filling an RERP position.
- B. Personnel not trained for an RERP emergency response position but are on-site.
- C. Personnel trained to assume an RERP position in an emergency response organization.
- D. Management personnel who are not sick, on vacation or on-shift.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct.
- B. Definition of non-emergency response personnel.
- C. Definition of emergency response personnel.
- D. Does not meet the requirement for essential personnel.

**Technical Reference(s):** RERP Fundamental  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T68.RERP.6, Emergency Response Personnel

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 1 **55.41(b)** 10

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

**Outline #:** R100

**Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>1</u>	<u>1</u>
<b>Group #</b>	<u>2</u>	<u>1</u>
<b>K/A #</b>	<u>001AA2.05</u>	
<b>Importance Rating</b>	<u>4.4</u>	<u>4.4</u>

**Proposed Question:**

The following plant conditions exist:

- 45% reactor power.
- Control rod selector switch in manual.
- All other systems in auto.
- All control bank 'D' rods start withdrawing with no operator action.

Which ONE of the following describes the required sequence of immediate operator actions for the above event?

- Place rod bank selector switch (SE-HS-9) in auto. If rods continue to withdraw immediately borate and trip the reactor.
- Insert the control rods with rod control switch (SF-HS-2) as required to match  $T_{ave}$  to  $T_{ref}$ . If rods continue to withdraw, trip reactor and manually safety inject.
- Place rod bank selector switch (SE-HS-9) in auto. If rods continue to withdraw, raise turbine load to match  $T_{ref}$  with  $T_{ave}$ .
- Insert the control rods with rod control switch (SF-HS-2) as required to match  $T_{ave}$  with  $T_{ref}$ . If rods continue to withdraw, trip the reactor.

**Proposed Answer:**     D    

**Distracter Explanation:**

- No immediate borate required within immediate operator actions.
- No SI required.
- Control rods are not required to be placed in auto.
- Correct. Candidate is required to recall Immediate Operator actions of OTO-SF-00002, Continuous control rod withdrawal.



**Technical Reference(s):** OTO-SF-00002, "Continuous Control Rod Withdrawal Immediate  
(Attach if not previously provided) Operator Actions"

**Proposed references provided to applicants during examination:** \_\_\_\_\_

**Learning Objective:** B T61.003B.6 LP #B53, Continuous Control Rod  
Withdrawal

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 6 **55.41(b)** 6

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

**Outline #:** S001

**Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>1</u>	<u>1</u>
<b>Group #</b>	<u>2</u>	<u>1</u>
<b>K/A #</b>	<u>WE04EA2.1</u>	
<b>Importance Rating</b>	<u>3.4</u>	<u>4.3</u>

**Proposed Question:**

The following plant conditions exist:

- Reactor trip and safety injection have occurred.
- Aux building has high radiation.
- All CTMT parameters are normal.
- ECA-1.2, "LOCA Outside CTMT," has been entered.

After closing EM-HV-8835, SI pumps to COLD LEG INJECTION, the reactor operator notices RCS pressure is 1850 psig and increasing with ECCS flow decreasing.

Which ONE of the following describes the status of the LOCA and required transition?

- A. The LOCA is isolated. Transition will be made to E-1, "Loss of Reactor or Secondary Coolant."
- B. The LOCA is isolated. Transition will be made to ECA-1.1, "Loss of Emergency Coolant Recirculation."
- C. The LOCA is isolated. Transition will be made to E-0, "Reactor Trip or Safety Injection."
- D. The LOCA is isolated. Transition will be made to ES-1.1, "SI Termination."

**Proposed Answer:**     A    

**Distracter Explanation:**

- A. Correct. Candidate will determine leak is isolated due to RCS pressure increasing and ECCS flow decreasing after closing EM-HV-8835. He then must determine the correct transition is to E-1, "Loss of Reactor or Secondary Coolant."
- B. ECA-1.1 transition is made only if LOCA is not isolated.
- C. ECA-1.2 does not transition to procedure and step in effect.
- D. ECA-1.2 directs operators to E-1; E-1 will direct operators to ES-1.1.

**Technical Reference(s):** ECA-1.2, "LOCA Outside CTMT"

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.003D.6, ECA-1.2, "LOCA Outside CTMT"

**Question Source:** Bank

## Modified Bank

(Note changes or attach parent)

## New

X

Question History:	Previous NRC Exam	No
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Previous Quiz / Test No

**Question Cognitive Level: Memory or Fundamental Knowledge**

### Comprehension or Analysis

X

**10 CFR Part 55 Content:**    **55.43(b)**    5    **55.41(b)**    10

**Comments:**

**Outline #:** S002

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>059AK3.01</u>	
	<b>Importance Rating</b>	<u>3.5</u>	<u>3.9</u>

**Proposed Question:**

The liquid radwaste discharge monitor, HB-RE-18, has been declared inoperable.

Which ONE of the following describes the actions that will permit discharging a DMT?

- A. Liquid waste discharge will not be permitted until the discharge radiation monitor, HB-RE-18, is returned to operable.
- B. A temporary monitor may be used, provided its alarm setpoint is more conservative than the HB-RE-18 setpoint to allow the operator sufficient time to manually secure the discharge.
- C. Two independent samples of the DMT must be analyzed, and two technically qualified staff members must independently verify the release rate calculation and discharge valve line up.
- D. Samples must be taken every 30 minutes while the discharge is in progress to verify the effluent is within FSAR requirements.

**Proposed Answer:**     C    

**Distracter Explanation:**

- A. Discharge can continue.
- B. No temporary monitors are mentioned.
- C. Correct. Candidate must recall FSAR Table 16.11-2 requirements that 2 samples must be taken and reviewed.
- D. No frequency of sampling mentioned.

**Technical Reference(s):** FSAR Table 16.11-2  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** A.1 T61.003A.6 LP #A34, Discharge Regulations

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 1 **55.41(b)** 13

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

**Outline #:** S003 **Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>1</u>	<u>1</u>
<b>Group #</b>	<u>1</u>	<u>1</u>
<b>K/A #</b>	<u>062AA1.03</u>	
<b>Importance Rating</b>	<u>3.6</u>	<u>3.6</u>

**Proposed Question:**

The following plant conditions exist:

- 35% power.
- NE01, 'A' D/G tagged out for preplanned maintenance.
- NB0111, NB01 Normal Feeder Breaker, trips open on a bus lockout.

Which ONE of the following describes the status of 'A' train ESW?

- A. Operable, flow thru 'A' ESW train is provided by service water.
- B. Inoperable, flow thru 'A' ESW train is provided by service water.
- C. Operable, service water is isolated to 'A' ESW train.
- D. Inoperable, service water is isolated to 'A' ESW train.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. 'A' ESW train cannot perform its safeguard function so it is inoperable.
- B. Candidate must determine if the support system causes the supported system to be inoperable, that a loss of power will not allow the 'A' train ESW valves to realign, and there is no swap feature for the 'B' train valves in 'A' train. Common confusion is that 'B' train will start, but a low flow condition exists.
- C. 'A' ESW train is inoperable.
- D. 'Service water is not isolated.

**Technical Reference(s):** ODP-ZZ-00027, "Safety Function Determination Program"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.0110.6 LP #5, ESW

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 10

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

**Outline #:** S004 **Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>1</u>	<u>1</u>
<b>Group #</b>	<u>1</u>	<u>1</u>
<b>K/A #</b>	<u>WE06/WE07EK1.02</u>	
<b>Importance Rating</b>	<u>4.6</u>	<u>4.8</u>

**Proposed Question:**

Under which ONE of the following sets of conditions requires entry into FR-C.1, "Response to Inadequate Core Cooling?"

- A. No RCPs are running, RVLIS (pumps off) indicates 44%, the 5 highest reading core exit TCs are between 750°F and 800°F.
- B. No RCPs are running, RVLIS (pumps off) indicates 35%, the 5 highest reading core exit TCs are between 700°F and 750°F.
- C. One RCP is running, RVLIS (pumps on) indicates 45%, the 5 highest reading core exit TCs are between 850°F and 900°F.
- D. One RCP is running, RVLIS (pumps on) indicates 95%, the 5 highest reading core exit TCs are between 1100°F and 1150°F.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Requires RVLIS (pumps off)  $\leq 40\%$ .
- B. Correct. The candidate must determine RVLIS is  $< 40\%$  combines with core exit TCs  $> 700^\circ\text{F}$ . Candidate must also determine that FR-C.1, "Response to Inadequate Core Cooling" is a red path.
- C & D. Requires no RCPs, or core exit TC  $> 1200^\circ\text{F}$ .



**Technical Reference(s):** CSF-1, "Critical Safety Function"

(Attach if not previously provided)

Attachment 2**Proposed references provided to applicants during examination:** \_\_\_\_\_**Learning Objective:**LT61.003D.6 LP #1, ERG Intro**Question Source:****Bank** \_\_\_\_\_**Modified Bank** \_\_\_\_\_

(Note changes or attach parent)

**New** \_\_\_\_\_X**Question History:****Previous NRC Exam** \_\_\_\_\_No**Previous Quiz / Test** \_\_\_\_\_No**Question Cognitive Level:****Memory or Fundamental Knowledge** \_\_\_\_\_**Comprehension or Analysis** \_\_\_\_\_X**10 CFR Part 55 Content:****55.43(b)** \_\_\_\_\_5**55.41(b)** \_\_\_\_\_10**Comments:** \_\_\_\_\_**Outline #:**S005**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>038G2.3.11</u>	
	<b>Importance Rating</b>	<u>2.7</u>	<u>3.2</u>

**Proposed Question:**

The plant has sustained a Steam Generator tube rupture concurrent with a loss of off-site power. All safeguards systems functioned as designed.

Actions of E-3, "Steam Generator Tube Rupture," have been performed. The crew is preparing to cool down and depressurize the RCS to Mode 5.

Based on current plant conditions, which ONE of the following cooldown methods is preferred?

- A. ES-3.1, "Post SGTR Cooldown Using Backfill," because it minimizes radiological release.
- B. ES-3.2, "Post SGTR Cooldown Using Blowdown," because it minimizes the spread of contamination to secondary plant components.
- C. ES-3.3, "Post SGTR Cooldown Using Steam Dump," because it is the fastest method of cooldown.
- D. ES-3.3, "Post SGTR Cooldown Using Steam Dump," because it conserves CST inventory.

**Proposed Answer:**          A  

**Distracter Explanation:**

- A. Candidate must determine ES-3.1 can still be used with a loss of off-site power and reason is correct.
- B. Does not minimize spread to secondary plan.
- C & D. ES-3.3 is not the preferred method.

**Technical Reference(s):** E-3, "Steam Generator Tube Rupture"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** BB T61.003D.6 LP #17, SGTR

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 13

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

**Outline #:** S006 **Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>1</u>	<u>1</u>
<b>Group #</b>	<u>3</u>	<u>3</u>
<b>K/A #</b>	<u>056AA1.12</u>	
<b>Importance Rating</b>	<u>3.2</u>	<u>3.3</u>

**Proposed Question:**

The following plant conditions exist:

- Plant tripped from 100% due to a grid fault.
- Loss of off-site power still exists.
- All emergency equipment functioned per design.
- Operators are currently in ES-0.2, "Natural Circulation Cooldown," preparing to cooldown to Mode 5.

Which ONE of the following is the correct configuration of operating CRDM fans and required subcooling?

- A. A & C CRDM fans running, 100°F more subcooled than instrument error.
- B. B & D CRDM fans running, 100°F more subcooled than instrument error.
- C. All CRDM fans running, 50°F more subcooled than instrument error.
- D. All CRDM fans running, 100°F more subcooled than instrument error.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. A & C CRDM fans are powered from PG19 and PG20 and would be de-energized.
- B. Correct. Candidate is required to determine only B & D CRDM fans are running and evaluate subcooling.
- C. Only B & D are running, correct subcooling for all CRDM fans running.
- D. Only B & D fans running.

**Technical Reference(s):** ES-0.2, "Natural Circulation Cooldown"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** S T61.003D.6 LP #7, ES-0.2 thru ES-0.4

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 9

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

**Outline #:** S007 **Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>2</u>	<u>2</u>
<b>Group #</b>	<u>2</u>	<u>1</u>
<b>K/A #</b>	<u>014K5.02</u>	
<b>Importance Rating</b>	<u>2.8</u>	<u>3.3</u>

**Proposed Question:**

Callaway Plant was at full power with Control Bank 'D' step counters indicating 215 steps. In response to a failure in data 'B', the accuracy mode select switch was placed in the data 'A' position.

Which ONE of the following describes the operability and accuracy of rod position indication system?

- A. Rod position indication is INOPERABLE. Thermal power must be reduced <50% of rated thermal power within 8 hours.
- B. Rod position indication is OPERABLE and capable of determining rod position within  $\pm 12$  steps.
- C. Rod position indication is INOPERABLE. Power operations may continue if a flux map is performed every 8 hours.
- D. Rod position indication is OPERABLE and capable of determining rod position with  $\pm 6$  steps.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. DRPI is operable (actions per T/S 3.1.7 for 1 rod per group inoperable).
- B. Correct. Accuracy is 010, +4. Candidate must determine half accuracy applies.
- C. DRPI is operable.
- D. DRPI accuracy is now 010, +4 with data 'B' failure.

**Technical Reference(s):** T/S 3.1.7

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:**      S, U      T61.0110.6 LP#26, Rod Control

**Question Source:** Bank

## Modified Bank

(Note changes or attach parent)

## New

**X**

Question History:	Previous NRC Exam	No
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Previous Quiz / Test     No

**Question Cognitive Level: Memory or Fundamental Knowledge**

## Comprehension or Analysis

X

**10 CFR Part 55 Content:**    55.43(b)    6    55.41(b)    6

**Comments:**

**Outline #:** S008

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>1</u>
	<b>K/A #</b>	<u>026K3.02</u>	
	<b>Importance Rating</b>	<u>4.2</u>	<u>4.3</u>

**Proposed Question:**

Callaway Plant has sustained a large break LOCA. The following plant conditions exist:

- RWST level at minimum allowed per T/S.
- 'A' and 'B' RHR pumps are injecting 3,500 gpm each.
- 'A' and 'B' SI pumps are injecting 550 gpm each.
- 'A' and 'B' CCPs are injecting 400 gpm each.
- 'A' and 'B' CTMT spray pumps are injecting 2000 gpm each.
- 'B' CTMT spray pump suction valve from containment sump is inoperable and WILL NOT open.

(RWST Lo-Lo 1 Alarm, 36%, 162,982 gallons)

(RWST Lo-Lo 2 Alarm, 11.7%, 65,604 gallons)

(RWST EMPTY Alarm, 5.6%, 41,345 gallons).

Which ONE of the following is the correct time before initiation of swapover to COLD LEG RECIRC and what actions should then be taken with 'B' CTMT spray pump?

- A. 18 minutes, place 'B' CTMT spray pump in P-T-L at RWST Lo-Lo 1 alarm.
- B. 18 minutes, place 'B' CTMT spray pump in P-T-L at RWST EMPTY alarm.
- C. 25 minutes, place 'B' CTMT spray pump in P-T-L at RWST Lo-Lo 1 alarm.
- D. 25 minutes, place 'B' CTMT spray pump in P-T-L at RWST EMPTY alarm.

**Proposed Answer:**     B    

**Distracter Explanation:**

Minimum T/S level = 394,000 gallons.

RWST swapover 162, 982 gallons.

Total usage 12,900 gpm.

$231,018/12,900 = 17.91$  minutes



**Technical Reference(s):** Tank Data Book TBN01  
(Attach if not previously provided) ES-1.3, "Transfer to Cold Leg Recirc"

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D T61.003D.6 LP #11, CBC – Mod D

**Question Source:** Bank \_\_\_\_\_  
Modified Bank \_\_\_\_\_ (Note changes or attach parent)  
New X

**Question History:** Previous NRC Exam No  
Previous Quiz / Test No

**Question Cognitive Level:** Memory or Fundamental Knowledge \_\_\_\_\_  
Comprehension or Analysis X

**10 CFR Part 55 Content:** 55.43(b) 5 55.41(b) 10

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

**Outline #:** S009 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>056A2.04</u>	
	<b>Importance Rating</b>	<u>2.6</u>	<u>2.8</u>

**Proposed Question:**

Callaway Plant is at 97% power. All control systems are in automatic. A fault causes bus PB03 to trip.

Which ONE of the following actions should the control room supervisor direct the panel operators to perform?

- A. Verify 'A' D/G has started and is supplying power to PB03.
- B. Verify the alternate supply breaker for PB03 closes.
- C. Manually trip the reactor before it auto trips on low S/G level.
- D. Manually trip the reactor before it auto trips on loss of RCS flow.

**Proposed Answer:** C

**Distracter Explanation:**

- A. 'A' D/G do not supply power to PB03.
- B. PB04 feed should not be closed until the cause of PB03 feeder breaker trip is determined.
- C. The candidate must determine that PB03 supplies power to 'A' and 'C' condensate pumps and 'A' heater drain pump. At this power level 1 condensate and 1 heater drain pump will not maintain S/G levels. Direction should be given to trip the reactor.
- D. The reactor will not trip on low RCS flow.

**Technical Reference(s):** T61.0110.6 LP #2, Service Power  
 (Attach if not previously provided) ODP-ZZ-00025, "Emergency Operator Procedure"

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.0110.6 LP #2, Service Power

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 5

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

**Outline #:** S010

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>002K3.02</u>	
	<b>Importance Rating</b>	<u>4.2</u>	<u>4.5</u>

**Proposed Question:**

Callaway Plant is in Mode 2.

Which ONE of the following is the correct minimum temperature for criticality per T/S and the bases?

- A. 550°F, fuel integrity.
- B. 551°F, neutron fast leakage factor remains constant.
- C. 550°F, brittle fracture of reactor vessel.
- D. 551°F, MTC within analyzed range.

**Proposed Answer:** D

**Distracter Explanation:**

- A. 550°F is the P-12 steam dump interlock number.
- B. Fast leakage factor is not a concern.
- C. 550°F is not correct.
- D. Candidate must determine 551°F is correct and the moderator temperature coefficient is the first concern.

**Technical Reference(s):** T/S 3.4.2 and bases  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B.3.a T61.003A.6 LP #A23, Reactor S/U

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 10

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

**Outline #:** S011

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>010A1.03</u>	
	<b>Importance Rating</b>	<u>2.9</u>	<u>3.2</u>

**Proposed Question:**

Callaway Plant is at full power. The following data has been gathered concerning RCS leakage:

- 3.5 gpm leakage into the PRT from PZR PORV BBPCV456.
- 12 gph leakage from all RCP #2 seals to RCDT.
- 1.8 gpm leakage from RCS valve packing.
- 112 gpd primary to secondary leakage 'A' S/G.
- 450 gpd primary to secondary leakage for B, C, and D S/G.

Which ONE of the following is correct concerning the RCS leakage per T/S?

- A. Unidentified leakage has exceeded the limit.
- B. Identified leakage has exceeded the limit.
- C. No technical specification entry required.
- D. Primary to secondary leakage has exceeded the limit.

**Proposed Answer:**     C    

**Distracter Explanation:**

- A. No unidentified leakage exit. RCP seal leakage is excluded.
- B. Identified leakage is 3.5 to 1.8 = 5.3 < 10 gpm limit.
- C. Candidate must determine types of leakage and amounts.
- D. Primary to secondary leakage limits are 1 S/G < 150 gpd; all <600 gpd.

**Technical Reference(s):** T/S 3.4.13

(Attach if not previously provided)

Proposed references provided to applicants during examination: None

**Learning Objective:** I.3 T61.003A.6 LP #A2, CBC – Mod A

**Question Source:** Bank

### Modified Bank

(Note changes or attach parent)

## New

X

**Question History:**                      **Previous NRC Exam**      No  

Previous Quiz / Test	No
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**Question Cognitive Level: Memory or Fundamental Knowledge**

### Comprehension or Analysis

X

<b>10 CFR Part 55 Content:</b>	<b>55.43(b)</b>	<b>2</b>	<b>55.41(b)</b>	<b>10</b>
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**Comments:**

**Outline #:** S012

**Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>2</u>	<u>2</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>007G.2.25</u>	
	<b>Importance Rating</b>	<u>2.5</u>	<u>3.7</u>

**Proposed Question:**

Power is removed to the accumulator isolation valves, EPHV8808A, B, C, and D while operating in Modes 1, 2 and 3.

Which ONE of the following statements describes the Technical Specifications basis for this action?

- A. The isolation valve motor operators have a history of overheating.
- B. Ensures an active failure could not result in the undetected closure of an isolation valve.
- C. The isolation valve stroking time exceeds LOCA accident analysis requirements.
- D. Ensures the safety analysis assumptions used for accumulator pressure and volume are met.

**Proposed Answer:** B

**Distracter Explanation:**

- A. There is no history of motor overheating.
- B. Correct. Candidate must remember bases for T/S 3.5.1.
- C. Valve stroke times are within accident analysis.
- D. Valve position is independent of accumulator pressure and volume.

**Technical Reference(s):** T/S Bases for 3.5.1  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** B T61.003A.6 LP #A8,CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 10

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

**Outline #:** S013 **Author:** EBS

**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>3</u>	<u>3</u>
<b>Group #</b>	<u>1</u>	<u>1</u>
<b>K/A #</b>	G2.1.5	
<b>Importance Rating</b>	<u>2.3</u>	<u>3.4</u>

**Proposed Question:**

Callaway Plant has implemented 12 hour shifts for EOs and ROs. During the implementation, a reactor operator worked the following hours:

<b><u>Date</u></b>	<b><u>Hours Worked</u></b>
11/13/00	0700 to 1900
11/14/00	0700 to 1800
11/15/00	0700 to 2200
11/16/00	0700 to 2200
11/17/00	0700 to 1900

On which ONE of the following dates did the reactor operator first exceed working hour limitations?

- A. 11/13/00
- B. 11/14/00
- C. 11/15/00
- D. 11/16/00

**Proposed Answer:**     C    

**Distracter Explanation:**

Candidate must recall APA-ZZ-00905, "Limitations of Callaway Plant Staff Working Hours" and determine when the RO exceeded hours. On 11/15/00 the RO would have exceeded 24 hours in a 48 hour period at 2100 hours.

**Technical Reference(s):** APA-ZZ-00905, "Limitation of Callaway Plant Staff Working Hours"  
(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** E T61.003A.6 LP #A29, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

**Question Cognitive Level:**    **Memory or Fundamental Knowledge**     \_\_\_\_\_  
   **Comprehension or Analysis**                  X

**10 CFR Part 55 Content:**    **55.43(b)**    1    **55.41(b)**    10

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

**Outline #:** S014 **Author:** EBS



**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>3</u>	<u>3</u>
<b>Group #</b>	<u>1</u>	<u>1</u>
<b>K/A #</b>	G2.1.7	
<b>Importance Rating</b>	<u>3.7</u>	<u>4.4</u>

**Proposed Question:**

A steam line break has occurred on 'B' main steam line inside containment. The crew has completed actions in E-2, "Faulted S/G Isolation," and is performing actions of E-1, "Loss of Reactor or Secondary Coolant." The following conditions exist:

- Containment temperature is 140°F and stable.
- Containment pressure is 5 psig and stable.
- RCS pressure is 1770 psig and slowly increasing.
- RCS subcooling is 40°F and slowly increasing.
- Total AFW flow is 240,000 lbm/hr.
- Wide range level in A, C and D S/Gs is 55% and increasing.
- Narrow range level in all S/Gs is offscale low.
- Pressurizer level is 9% and stable.

Which ONE of the following conditions must be changed to allow transition to ES-1.1, "SI Termination?"

- A. RCS subcooling must be increased.
- B. Pressurizer level must be increased.
- C. AFW flow must be increased.
- D. RCS pressure must be increased.

**Proposed Answer:**     C    

**Distracter Explanation:**

Candidate must determine adverse CTMT conditions do not apply. Also, that subcooling is adequate for plant conditions (23°F required). The candidate must recall secondary heat sink requires 4% NR level in 1 S/G or >300,000 lbm/hr AFW flow.

**Technical Reference(s):** E-1, "Loss of Reactor or Secondary Coolant"  
(Attach if not previously provided)

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

<b>Learning Objective:</b>	P	T61.003D.6 LP#8, E-1, "Loss of Reactor or Secondary Coolant"
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**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

<b>Question History:</b>	<b>Previous NRC Exam</b>	No
	<b>Previous Quiz / Test</b>	No

<b>Question Cognitive Level:</b>	Memory or Fundamental Knowledge		<u>X</u>
	Comprehension or Analysis		

**10 CFR Part 55 Content:**    **55.43(b)**    5    **55.41(b)**    10

**Comments:**

**Outline #:** S015 **Author:** EBS





<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	<u>G.2.29</u>	
	<b>Importance Rating</b>	<u>1.6</u>	<u>3.8</u>

**Proposed Question:**

Callaway Plant is in Mode 6 with the core reload in progress. You have 10 fuel assemblies remaining for reload when source range channel N31 becomes inoperable.

Which ONE of the following describes actions allowed by Technical Specifications?

- A. Suspend core reload until a IR channel can be verified operable.
- B. Continue core reload, only one source range channel is required.
- C. Suspend core reload until portable neutron measuring equipment is available at N31 location.
- D. Continue core reload, gamma metrics can be used in place on N31.

**Proposed Answer:**   D  

**Distracter Explanation:**

- A. Gamma metric can be used.
- B. Both source ranges are required.
- C. No provision for portable equipment.
- D. Correct. Candidate must determine a gamma metric can be used if the core is "coupled" to gamma metrics. With 10 fuel assemblies remaining, they would have to be coupled with the reload pattern used at Callaway.

**Technical Reference(s):**   T/S 3.9.3  

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** \_\_\_\_\_

**Learning Objective:**   A/B     T61.003E.6 LP #E4, Refueling T/S  

**Question Source:**

<b>Bank</b>	<u>          </u>	(Note changes or attach parent)
<b>Modified Bank</b>	<u>          </u>	
<b>New</b>	<u>  X  </u>	

**Question History:**

<b>Previous NRC Exam</b>	<u>  No  </u>
<b>Previous Quiz / Test</b>	<u>  No  </u>

**Question Cognitive Level:**

<b>Memory or Fundamental Knowledge</b>	<u>          </u>
<b>Comprehension or Analysis</b>	<u>  X  </u>

**10 CFR Part 55 Content:**   55.43(b)     2     55.41(b)     11  

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

**Outline #:**   S018  

**Author:**   EBS



<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>2</u>	<u>2</u>
	<b>K/A #</b>	G.2.24	
	<b>Importance Rating</b>	<u>2.6</u>	<u>3.8</u>

**Proposed Question:**

Which ONE of the following conditions represents a violation of "Containment Systems" as described in Technical Specifications?

- A. While in Mode 1, EP-HV-8880, N<sub>2</sub> supply to SI Accumulators Isolation, fails its required stroke time, and is presently closed.
- B. While in Mode 2, the outer air lock door fails its leak rate test and has to be opened to facilitate repairs that will take 2 hours.
- C. While in Mode 3, SJ-HV-12, PZR Vapor Space Inner Sample Iso Vlv, fails to close completely and SJ-HV-13, PZR Vapor Space Outer Iso Valve, is closed.
- D. While in Mode 4, a mechanic opens the outer door to perform maintenance activities on the inoperable inner CTMT door.

**Proposed Answer:**     D    

**Distracter Explanation:**

Candidate must recall T/S for CTMT operability and apply to stated conditions.

- A. EP-HV-8893 may be closed.
- B. Does not become inoperable for 7 days.
- C. SJ-HV-13 in the closed position isolates CTMT.
- D. Correct. Candidate is required to analyze plant conditions and determine the containment system is required operable in Mode 4 and having both CTMT doors open is a violation.

**Technical Reference(s):** T/S 3.6.2 and 3.6.1

(Attach if not previously provided)

**Proposed references provided to applicants during examination:** \_\_\_\_\_**Learning Objective:** F.1 T61.003A.6 LP #A6, CBC – Mod A**Question Source:** **Bank** \_\_\_\_\_**Modified Bank** \_\_\_\_\_

(Note changes or attach parent)

**New** \_\_\_\_\_X**Question History:** **Previous NRC Exam** No**Previous Quiz / Test** No**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_**Comprehension or Analysis** \_\_\_\_\_X**10 CFR Part 55 Content:** **55.43(b)** 2 **55.41(b)** 10**Comments:** \_\_\_\_\_**Outline #:** S020**Author:** EBS





<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>3</u>	<u>3</u>
	<b>K/A #</b>	<u>G2.3.7</u>	
	<b>Importance Rating</b>	<u>2.0</u>	<u>3.3</u>

**Proposed Question:**

Which ONE of the following conditions requires posting as a Contamination Area?

- A. Removable surface contamination 1500 dpm/100 cm<sup>2</sup> beta.
- B. Fixed surface contamination 2500 dpm/100 cm<sup>2</sup> gamma.
- C. Removable surface contamination 15 dpm/100 cm<sup>2</sup>.
- D. Fixed surface contamination 100 dpm/100 cm<sup>2</sup>.

**Proposed Answer:** A

**Distracter Explanation:**

- A. Correct. Meets requirements of HDP-ZZ-01500, step 2.6.
- B. Fixed surface contamination does not qualify.
- C. Must be >20 dpm/100 cm<sup>2</sup>.
- D. Fixed surface does not qualify.

**Technical Reference(s):** HDP-ZZ-01500, "Radiological Posting"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** D.1.d T61.003A.6 LP #A31, CBC – Mod A

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 4 **55.41(b)** 12

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

**Outline #:** S022 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>3</u>	<u>3</u>
	<b>Group #</b>	<u>4</u>	<u>4</u>
	<b>K/A #</b>	<u>G2.4.6</u>	
	<b>Importance Rating</b>	<u>3.1</u>	<u>4.0</u>

**Proposed Question:**

The Emergency Response Guideline (ERG) network for E-0, "Reactor Trip or Safety Injection," assumes the plant is in Modes 1 thru 3.

Which ONE of the following describes the applicability of E-0, "Reactor Trip or Safety Injection," while in Mode 4?

- A. E-0 cannot be used in Mode 4, therefore procedure ES-0.1, "Reactor Trip Response," must be used.
- B. E-0 can be used in Mode 4 since all OTOs still apply in Mode 4.
- C. E-0 can only be used in Mode 4 if directed by a ECA procedure.
- D. E-0 can be used if a step by step evaluation is made to determine if the action still applies.

**Proposed Answer:**     D    

**Distracter Explanation:**

Candidate must recall E-0, "Reactor Trip or Safety Injection" applicability for Mode 4-6.

- A. E-0 can be used.
- B. Not all OTOs apply.
- C. E-0 can be used, but not directed by ECA-0.0 only.
- D. Correct. Candidate is required to recall E-0 can be used as long as each step is reviewed before implementing.

**Technical Reference(s):** T61.003D.6 LP#1, ERG Intro & User Guide  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** Y T61.003D.6 LP#1, ERG Intro & User Guide

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

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

**Outline #:** S023 **Author:** EBS



**Examination Outline Cross-reference:**

<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
<b>Tier #</b>	<u>3</u>	<u>3</u>
<b>Group #</b>	<u>4</u>	<u>4</u>
<b>K/A #</b>	<u>G2.4.28</u>	
<b>Importance Rating</b>	<u>2.3</u>	<u>3.3</u>

**Proposed Question:**

Callaway Plant is at full power when the SS is notified by the Security Shift Supervisor that a confirmed penetration has occurred by unauthorized personnel into NB02 switchgear room. The plant emergency alarm is sounded and a code red is announced over the gaitronics.

Which ONE of the following includes actions the control room personnel should take?

- A. Trip the reactor, start 'A' train equipment, secure all 'B' train equipment, and direct EOs to take shelter.
- B. Shut the control room missile door, trip the reactor, and commence an RCS cooldown.
- C. Shut the control room missile door, trip the reactor, increase monitoring of MCB indications, and have all EOs report to the field office.
- D. Trip the reactor, perform control room evacuation, and commence RCS cooldown from the ASP.

**Proposed Answer:**     B    

**Distracter Explanation:**

- A. Operating ECCS equipment is not a direction given by OTO-SK-00001.
- B. Correct. Candidate must determine a threat exists to Callaway Plant and the missile door must be shut and actions that could be taken to place the plant in a safe condition.
- C & D. Personnel should not be directed to move during a code red.

**Technical Reference(s):** OTO-SK-00001, "Plant Security Event"  
(Attach if not previously provided) \_\_\_\_\_

**Proposed references provided to applicants during examination:** None

**Learning Objective:** C T61.003B.6 LP #B28, Plant Security Event

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** \_\_\_\_\_  
**Comprehension or Analysis** X

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

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

**Outline #:** S025 **Author:** EBS

<b>Examination Outline Cross-reference:</b>	<b>Level</b>	<b><u>RO</u></b>	<b><u>SRO</u></b>
	<b>Tier #</b>	<u>1</u>	<u>1</u>
	<b>Group #</b>	<u>1</u>	<u>1</u>
	<b>K/A #</b>	<u>029EK2.06</u>	
	<b>Importance Rating</b>	<u>2.9</u>	<u>3.1</u>

**Proposed Question:**

The reactor has failed to trip and safety injection IS NOT required. FR-S.1, "Response to Nuclear Power Generation" requires initiation of immediate boration. Emergency borate to charging pumps suction valve, BGHV8104 has failed to open.

Which ONE of the following is the direction that the CRS should give to the panel operators?

- A. Manually initiate safety injection.
- B. Manually shift CCP suction to RWST.
- C. Initiate normal boration at maximum rate using two CCPs.
- D. Send an equipment operator to manually open BGV0177, Alternate Immediate Boration Valve.

**Proposed Answer:** B

**Distracter Explanation:**

- A. Last of the preferred methods.
- B. Correct. Candidate must recall the order of immediate boration Attachment 1 of FR-S.1 gives.
- C. Not a method in FR-S.1.
- D. Second method allowed by FR-S.1

**Technical Reference(s):** FR-S.1, "Response to Nuclear Power Generation"  
 (Attach if not previously provided)

**Proposed references provided to applicants during examination:** None

**Learning Objective:** U T61.003D.6 LP #29, FRG Subcriticality

**Question Source:** **Bank** \_\_\_\_\_  
**Modified Bank** \_\_\_\_\_ (Note changes or attach parent)  
**New** X

**Question History:** **Previous NRC Exam** No  
**Previous Quiz / Test** No

**Question Cognitive Level:** **Memory or Fundamental Knowledge** X  
**Comprehension or Analysis** \_\_\_\_\_

**10 CFR Part 55 Content:** **55.43(b)** 5 **55.41(b)** 10

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

**Outline #:** S026

**Author:** EBS



