

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-241C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	001
<b>AUTHOR:</b>	F. J. Bruns	<b>TYPIST:</b>	jav
<b>TITLE:</b>	MANUALLY CALCULATE DRYWELL BULK AVERAGE TEMPERATURE - ALTERNATE PATH (Failed Temperature Points)		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>		_____ Signature / Title	_____ Date
<b>EFFECTIVE DATE:</b> ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2880130201 / PLOR-241C

K/A: G2.1.45

URO: 4.3    SRO: 4.3

TASK DESCRIPTION: MANUALLY CALCULATE DRYWELL BULK AVERAGE  
TEMPERATURE - ALTERNATE PATH (Failed Temperature Points)

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

1. RT-O-40C-530-2, "Drywell Temperature Monitoring"
2. RT-O-40C-530-2, Data Sheet 1 with temperature values filled in with points 137 and 139 indicated as out of service and point 136 reading 132°F (AT2)

**C. REFERENCES**

1. RT-O-40C-530-2, Rev. 6, "Drywell Temperature Monitoring"

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when the operator has determined that Drywell Temperature requires entry into ON-120, High Drywell Temperature.
2. Estimated time to complete: 20 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to Monitor Drywell Temperatures using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Unit 2 is experiencing a small steam leak into primary containment.
2. TI-80146, the drywell bulk average temperature indication, has failed.
3. Another operator has completed taking the temperatures required for Data Sheet 1 of RT-O-40C-530-2, "Drywell Temperature Monitoring".

**G. INITIATING CUE**

The Control Room Supervisor directs you to perform RT-O-40C-530-2, "Drywell Temperature Monitoring", beginning with step 6.2.1 up through and including step 6.2.3, and report any required actions by documenting your results on the cue sheet in the space provided.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
*1	Review Data Sheet 1 and recognize that all of the temperature points in Zone Number 4 are out of service (Step 6.2.1).	P	Recognize that the calculation of Bulk Average temperature is INVALID. Place an N/A in step 6.2.1.
2	Record the instrument used on the blank provided in step 6.2.2.1.	P	Record "TI-2501, Point 136" in the "Instrument Used" blank provided in step 6.2.2.1, then initial the step in the SAT column.
*3	Record the value of TI-2501, Point 136 in the provided blanks in steps 6.2.2.1 and 6.2.2.2.	P	Record "132" in the blanks provided before the first "°F" in steps 6.2.2.1 and 6.2.2.2.
*4	Calculate approximate Drywell Bulk Average Temperature as indicated in step 6.2.2.2.	P	Calculate $132^{\circ}\text{F} + 10^{\circ}\text{F} = 142^{\circ}\text{F}$ . Record "142" in the blank provided in step 6.2.2.2, then initial the step in the SAT column.
*5	Complete verification of Drywell Bulk Average Temperature less than $140^{\circ}\text{F}$ .	P	Initial the UNSAT Black Box beside Step 6.2.3.
*6	Report ON-120 "High Drywell Temperature" entry condition.	P	Report to the CRS that ON-120 should be entered due to Approximate Drywell Bulk Average Temperature greater than $140^{\circ}\text{F}$ .
7	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

## I. TERMINATING CUE

When the candidate informs the Control Room Supervisor of the ON-120, "High Drywell Temperature", entry condition, the evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. Unit 2 is experiencing a small steam leak into primary containment.
2. TI-80146, the drywell bulk average temperature indication, has failed.
3. Another operator has completed taking the temperatures required for Data Sheet 1 of RT-O-40C-530-2, "Drywell Temperature Monitoring".

## INITIATING CUE

The Control Room Supervisor directs you to perform RT-O-40C-530-2, "Drywell Temperature Monitoring", beginning with step 6.2.1 up through and including step 6.2.3, and report any required actions by documenting your results on the cue sheet in the space provided.

RESULTS:

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Exelon Nuclear  
Peach Bottom  
Unit 2  
Routine Test

2

RT-O-40C-530-2  
Rev. 6  
Page 1 of 11  
JWL:jwl

**RT-O-40C-530-2 DRYWELL TEMPERATURE MONITORING**

TEST FREQUENCY: Once/31 days (See Section 1.0)

1	<b>CHECK</b> why this procedure is being performed: <input type="checkbox"/> Schedule <input type="checkbox"/> OVF <input type="checkbox"/> Retest Due To Unsat Test <input checked="" type="checkbox"/> Other Reason: <u>Failure of TI-80146</u> Approved By SMgt: <u>C.R. Supervisor</u> <u>Now</u> <u>Today</u> <u>C.R.S</u> Printed Name Time Date Initials
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2	<b>INITIAL</b> one of the following Test Results: A: All R steps are <b>SATISFACTORY</b> B: One or More R steps are <b>UNSATISFACTORY</b> Refer to Section 9.0 for Corrective Action Performed By: _____ RO/PRO Informed of Test Results: _____ SMgt Informed of Test Results: _____ UNSAT Notification: _____ SMgt Discretion: Plant Mgr or Others Notified By: _____
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3	<b>IF</b> other portions of the test did <b>NOT</b> function properly, <b>OR</b> other discrepancies were noted <b>THEN COMPLETE</b> the following:  <b>DESCRIBE</b> discrepancies/actions taken: AR/ETT No. <u>999999999</u> <u>Pts 137, 139 are Out of Service (OOS)</u>
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4	Reviewed/Approved Plant Staff: _____ D/W Chilled Water System Manager _____
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## 1.0 PURPOSE

This test checks the Drywell airspace for satisfactory operating temperature conditions as described in the PBAPS UFSAR, Sections 5.2.3.2 and 5.2.3.7. This procedure is performed once per day when Primary Containment is required **IF** TI-80146 "Drywell Bulk Average Temp Indicator" is out of service, and may be used in conjunction with ON-120 "High Drywell Temperature", T-223, "Drywell Cooler Fan Bypass", T-102 "Primary Containment Control", and SAMP-2 "Containment and Radioactivity Release Control". This procedure also records Drywell Chiller performance data.

## 2.0 TEST EQUIPMENT

None

## 3.0 PREREQUISITES

3.1 Test Initiation

Initial

3.1.1 **COMPLETE** Section 1 of cover page.

C.R.S

3.2 Document Review

3.2.1 **ENSURE** procedure is current revision.

C.R.S

3.3 Equipment Configuration

None

3.4 Required Redundant Safety Related Equipment

None

3.5 Approval to Start Test

3.5.1 **OBTAIN** RO Permission to  
begin.

Now  
Time

Today  
Date

R.O.  
RO

## 4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS

4.1 Plant Impact Statement

4.1.1 This test does not impact plant availability in any manner. This test may be performed in any Reactor Mode.

## 4.2 Precautions

- 4.2.1 **IF** all temperature points in a zone on TR-2501 or corresponding PMS computer points are out of service, **THEN** calculation of Drywell Bulk Average Temperature in Step 6.2.1 is INVALID.
- 4.2.2 **IF** calculation of Drywell Bulk Average Temperature is INVALID, **THEN**:
1. **FOR ENTRY INTO ON-120 OR T-102 (Step 6.2.2):**  
Use TI-2501 point 136 **OR** PR/TR-4805 to calculate APPROXIMATE Drywell Bulk Average Temperature.
  2. **TO DETERMINE WHEN TO INITIATE RPV BLOWDOWN:**  
Use hottest temperature of TI-2501 points 119 through 127 (excluding pt 125). **IF** TI-2501 is **NOT** available, **THEN** use PR/TR-4805. The hottest temperature on TI-2501 (or PR/TR-4805) is used in conjunction with T-102, "Primary Containment Control" direction to determine when RPV blowdown is required.
  3. **DO NOT SPRAY THE DRYWELL:**  
Without an accurate Drywell Bulk Average Temperature calculation **OR** Engineering evaluation verifying that plant conditions are on the safe side of Drywell Spray Initiation Limit Curve.
  4. **TO DETERMINE IF DWCW CAN BE RESTORED TO THE DRYWELL COOLER FAN UNITS PER T-223:**  
**IF** Drywell Bulk Average Temperature **CANNOT** be determined, **THEN** obtain Engineering evaluation prior to placing Drywell Cooler Fans in service.

## 4.3 Limitations

None

## 4.4 General Instructions

- 4.4.1 **IF** TI-80146 "Drywell Bulk Average Temp Indicator" is INOPERABLE, **THEN** Drywell temperature calculated in Step 6.2 determines entry conditions and/or action levels for ON-120 "High Drywell Temperature", T-102 "Primary Containment Control" and SAMP-2 "Containment and Radioactivity Release Control".
- 4.4.2 **IF** any procedure step can **NOT** be completed **OR** produces an unexpected response, **THEN** stop the test **AND** return the equipment to a safe condition **AND** notify the RO or SMgt.

- 4.4.3 **IF** any Black Box is initialed, **THEN** IMMEDIATELY return the equipment to a safe condition, notify Shift Management, and refer to Section 9, Corrective Actions.
- 4.4.4 **IF** procedure is aborted, **THEN** notify SMgt **AND** write **"TEST ABORTED"** in Section 3 of Cover Page.
- 4.4.5 All persons who initial steps in Sections 3.0, 6.0, or 7.0 are responsible for completing Section 10.0.
- 4.4.6 All applicable **R** steps are identified immediately in front of the initials.

## 5.0 ACCEPTANCE CRITERIA

Calculated Drywell Bulk Average Temperature is less than 140°F.

## 6.0 PERFORMANCE STEPS

Initial  
Sat UnSat

### NOTE

**IF** this procedure is being performed in accordance with ON-120 "High Drywell Temperature", T-223, "Drywell Cooler Fan Bypass", T-102 "Primary Containment Control" or SAMP-2 "Containment and Radioactivity Release Control", **THEN** only Sections 6.1 and 6.2 must be performed.

### 6.1 Drywell Temperature Data Acquisition

< At Control Room Panel 20C012 >

### NOTE

**IF** the "log" function is available on TI-2501 "Drywell Temperature Indicator", **THEN** required temperature points may be obtained by pressing "CLEAR, LOG, POINT, 119-166, RUN" to receive a printout of temperature points.

- 6.1.1 **RECORD** required Drywell temperature points from TI-2501 "Drywell Temperature Indicator" or points obtained from PMS computer on Data Sheet 1.

RO.

## 6.2 Drywell Temperature Calculations

### NOTE

**IF** all temperature points in a given zone on TI-2501 are out of service, **THEN** Drywell Bulk Average Temperature calculation on Data Sheet 1 will be **INVALID AND EITHER** TI-2501 Point 136 **OR** PR/TR-4805 must be used to calculate **APPROXIMATE** Drywell Bulk Average Temperature for entry into ON-120 and T-102. Refer to Precaution Step 4.2.2 for limitations on T-223, T-102 or SAMP-2 actions with Invalid Drywell Bulk Average Temperature.

- 6.2.1 **IF** TI-2501 or corresponding PMS computer points have at least 1 valid temperature point in each of Zones 1 through 5, **THEN CALCULATE** Drywell Bulk Average Temperature using calculation on Data Sheet 1. **OTHERWISE, N/A** this step.
- 6.2.2 **IF** TI-2501 or corresponding PMS computer points does **NOT** have at least 1 valid temperature point in each of Zones 1 through 5, **THEN CALCULATE** **APPROXIMATE** Drywell Bulk Average Temperature as follows. **OTHERWISE, N/A** this step:

1. **RECORD** temperature reading from **EITHER** TI-2501 Point 136 **OR** PR/TR-4805 "Containment Temp" at Panel 20C003-02.

\_\_\_\_\_ °F

Instrument Used \_\_\_\_\_

2. **ADD** 10°F to temperature recorded in substep 1 above to determine **APPROXIMATE** Drywell Bulk Average Temperature.

\_\_\_\_\_ °F + 10°F = \_\_\_\_\_ °F

- 6.2.3 **VERIFY** Drywell Bulk Average Temperature is less than 140°F.

R \_\_\_\_\_



### 6.3 Drywell Chiller Data Acquisition

- 6.3.1 **RECORD** Drywell Chiller data on Data Sheet 2 "DRYWELL CHILLER DATA". \_\_\_\_\_

## 7.0 PROCEDURE COMPLETION

### 7.1 Independent Verification

None

### 7.2 Records Completion

Initial

- 7.2.1 **COMPLETE** Section 2 of Cover Page (and Section 3 if applicable). \_\_\_\_\_

## 8.0 REFERENCES

### 8.1 Interfacing

- 8.1.1 ON-120, "High Drywell Temperature"
- 8.1.2 T-223, "Drywell Cooler Fan Bypass"
- 8.1.3 T-102, "Primary Containment Control"
- 8.1.4 SAMP-2, "Containment and Radioactivity Release Control"
- 8.1.5 ST-O-098-01N-2

### 8.2 Developmental

- 8.2.1 Prints
  - M-327, Chilled Water System - Drywell Cooling
  - M-382, Drywell Temperature Control Diagram
  - M-390, Drywell Ventilation Flow Diagram
- 8.2.2 PBAPS UFSAR, Section 5.2.3.2
- 8.2.3 PBAPS UFSAR, Section 5.2.3.7
- 8.2.4 EWR P-50870, Drywell Average Air Temperature Limit
- 8.2.5 EWR P-50717, Drywell Bulk Average Air Temperature
- 8.2.6 Calculation ME-457, Calculation Method to Determine the Drywell Average Space Temperature
- 8.2.7 ON-120 Bases, High Drywell Temperature - Bases

[illegible]

**DATA SHEET 1**  
**DRYWELL TEMPERATURE CALCULATIONS**

Date \_\_\_/\_\_\_/\_\_\_  
Time \_\_\_\_\_

PMS Computer Point ID	ZONE NO. (See Note 1)	TI-2501 POINT NO.	TEMP DEG °F	SUM VALID PTS.	DIVIDE BY NO. OF VALID PTS.	MULTIPLY BY VOLUME FRACTION	EQUALS TEMP FRACTION
R020 R021 R022 R023 R024 R025	1	119 120 121 122 123 124	<u>160°F</u> <u>175°F</u> <u>192°F</u> <u>210°F</u> <u>187°F</u> <u>205°F</u>	____ °F	÷ ____ = ____ °F	X .10	____ °F
R027 R028	2	126 127	<u>150°F</u> <u>146°F</u>	____ °F	÷ ____ = ____ °F	X .26	____ °F
M027 H010 or H011 R031 R032	3	135 136 137 138	<u>120°F</u> <u>132°F</u>  <u>OOS°F</u> <u>120°F</u>	____ °F	÷ ____ = ____ °F	X .57	____ °F
R033	4	139	<u>OOS°F</u>	____ °F	÷ ____ = ____ °F	X .05	____ °F
R034 R035 R036 R037	5	163 164 165 166	<u>231°F</u> <u>230°F</u> <u>235°F</u> <u>232°F</u>	____ °F	÷ ____ = ____ °F	X .02	____ °F
SUM OF TEMPERATURE FRACTIONS = CALCULATED DRYWELL BULK AVERAGE TEMPERATURE							____ °F

**Note 1:** IF all temperature points in a zone are out of service,  
THEN calculation of Drywell Bulk Average temperature is **INVALID**.

- FOR ENTRY INTO ON-120 OR T-102**, use TI-2501 point 136 OR PR/TR-4805 to calculate APPROXIMATE Drywell Bulk Average Temperature (per step 6.2.2).
- TO DETERMINE WHEN TO INITIATE RPV BLOWDOWN**, use hottest temperature of TI-2501 points 119 through 127 (excluding pt 125) OR PR/TR-4805 (if TI-2501 is unavailable) in conjunction with T-102, "Primary Containment Control" direction to determine when RPV blowdown is required.
- DO NOT SPRAY THE DRYWELL**. Without an accurate bulk average calculation, OR Engineering evaluation verifying that plant conditions are on the safe side of Drywell Spray Initiation Limit Curve.
- TO DETERMINE IF DWCW CAN BE RESTORED TO THE DRYWELL COOLER FAN UNITS PER T-223**: IF Drywell Bulk Average Temperature **CANNOT** be determined, THEN obtain Engineering evaluation prior to placing Drywell Cooler Fans in service.

2

RT-O-40C-530-2

Rev. 6

Page 9 of 11

**DATA SHEET 2**  
**DRYWELL CHILLER DATA**

Date \_\_\_\_\_ Time \_\_\_\_\_

REACTOR CONDITIONS	RECIRCULATION PUMP SPEEDS
TEMPERATURE _____ °F	SPI-2-02-184-016A _____ %
PRESSURE _____ PSIG	SPI-2-02-184-016B _____ %
THERMAL PWR _____ MWT	DRYWELL CONDITIONS
ELECTRICAL PWR _____ MWE	TEMP. (PR/TR-4805) _____ °F

TI-2501 POINT #	TE NO.	DESCRIPTION	READING
125	TE-2501-25	DRYWELL ANNULUS, EL. 194'-AZ 180	_____ °F
128	TE-2501-28A	2AV026 DRYWELL DISCHARGE AREA TEMP, EL. 150'-AZ 345	_____ °F
129	TE-2501-29A	2BV026 DRYWELL DISCHARGE AREA TEMP, EL. 150'-AZ 230	_____ °F
130	TE-2501-30A	2CV026 DRYWELL DISCHARGE AREA TEMP, EL. 150'-AZ 85	_____ °F
131	TE-2501-31A	2DV026 DRYWELL DISCHARGE AREA TEMP, EL. 150'-AZ 290	_____ °F
132	TE-2501-32A	2EV026 DRYWELL DISCHARGE AREA TEMP, EL. 150'-AZ 25	_____ °F
133	TE-2501-33A	2FV026 DRYWELL DISCHARGE AREA TEMP, EL. 120'-AZ 225	_____ °F
134	TE-2501-34A	2GV026 DRYWELL DISCHARGE AREA TEMP, EL. 120'-AZ 210	_____ °F
161	TE-2501-61	RETURN WATER TEMP TO DRYWELL CHILLERS	_____ °F
162	TE-2501-62	CHILLED WATER TEMP TO DRYWELL	_____ °F

PARAMETER	INSTRUMENT NO.	READING
CHILLED WATER FLOW	FI-20243	_____ GPM

**DATA SHEET 2 (Continued)**  
**DRYWELL CHILLER DATA**

Date \_\_\_\_\_ Time \_\_\_\_\_

<b>DRYWELL COOLER FANS</b>	<b>IN SERVICE</b>	<b>STANDBY</b>	<b>OUT OF SERVICE FOR MAINTENANCE</b>
2AV026A			
2AV026B			
2BV026A			
2BV026B			
2CV026A			
2CV026B			
2DV026A			
2DV026B			
2EV026A			
2EV026B			
2FV026A			
2FV026B			
2GV026A			
2GV026B			

<b>DRYWELL RECIRC FANS</b>	<b>IN SERVICE</b>	<b>STANDBY</b>	<b>OUT OF SERVICE FOR MAINTENANCE</b>
2AV094A			
2AV094B			
2BV094A			
2BV094B			

**DATA SHEET 2 (Continued)**  
**DRYWELL CHILLER DATA**

Date \_\_\_\_\_ Time \_\_\_\_\_

<b>DRYWELL CHILLER UNITS</b>	<b>IN SERVICE</b>	<b>STANDBY</b>	<b>OUT OF SERVICE FOR MAINTENANCE</b>
A			
B			
C			

<b>DRYWELL CHILLED WATER PUMP</b>	<b>IN SERVICE</b>	<b>STANDBY</b>	<b>OUT OF SERVICE FOR MAINTENANCE</b>
A			
B			
C			

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> <b>X</b>	JPM	<input type="checkbox"/>	QUALIFICATION MANUAL	<input type="checkbox"/>	OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING				<b>CODE #:</b>	PLOR-244C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION				<b>REV #:</b>	001
<b>AUTHOR:</b>	M. J. Kelly				<b>TYPIST:</b>	jav
<b>TITLE:</b>	PERFORM REACTOR COOLANT LEAKAGE SURVEILLANCE					
<b>APPROVALS:</b>						
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
<b>APPROVED FOR USE:</b>						
			_____ Signature / Title		_____ Date	
<b>EFFECTIVE DATE:</b> ____/____/____						

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2690010201 / PLOR-244C

K/A: G2.1.25

URO: 2.8    SRO: 3.1

TASK DESCRIPTION: PERFORM REACTOR COOLANT LEAKAGE TEST

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. AT2 – In-progress ST-O-020-560-2, Rev. 12, "Reactor Coolant Leakage Test"
2. Calculator

C. REFERENCES

1. ST-O-020-560-2, Rev. 12, "Reactor Coolant Leakage Test"
2. AT3 – ST-O-020-560-2 Data Sheet 1 ANSWER KEY

D. TASK STANDARD

1. Satisfactory task completion is indicated when reactor coolant leakage has been calculated using Data Sheet 1 of ST-O-020-560-2 "Reactor Coolant Leakage Test".
2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to calculate reactor coolant leakage using ST-O-020-560-2 "Reactor Coolant Leakage Test". I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 is at 100% power.
2. The Unit 2 Drywell Sump Monitoring System is operable.
3. Unit 2 Drywell Floor Drain Sump valves and pumps are lined up in accordance with SO 20A.1.A, "Floor Drain Sumps Startup and Normal Operation".
4. Unit 2 Drywell Equipment Drain Sump valves and pumps are lined up in accordance with SO 20C.1.D, "Equipment Drain Sumps Startup and Normal Operation".
5. AO 2A.16-2 "Manual Adjustment of Recirculation Pump Seal Second Stage Pressure" has NOT been performed.
6. The previous week's flow data readings of Drywell Floor and Equipment Drain Sumps have been entered on Data Sheet 1 of ST-O-020-560-2, "Reactor Coolant Leakage Test".
7. The current 4-hour Drywell Floor Drain and Equipment Drain sump integrator readings have already been documented on Data Sheet 1 of ST-O-020-560-2, "Reactor Coolant Leakage Test".
8. All steps of ST-O-020-560-2, "Reactor Coolant Leakage Test", up to and including step 4.4.15, have been completed satisfactorily.

## G. INITIATING CUE

The Control Room Supervisor directs you to determine the Unit 2 reactor coolant leakage flow rate by performing steps 6.1 through 6.4 of ST-O-020-560-2, "Reactor Coolant Leakage Test".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	<b>Cue: Hand the Candidate AT2, in-progress ST-O-020-560-2,"Reactor Coolant Leakage Test" with some data recorded on Data Sheet 1</b>	P	
*2	Calculate and record Drywell Floor Drain 4-hour integrator difference.	P	Subtract the latest Floor Drain Sump Integrator reading from the previous 4-hour reading. Place a "0" in column (a) of Data Sheet 1.
*3	Calculate and record Drywell Floor Drain flow in gallons per minute.	P	Divide the number from column (a) of Data Sheet 1 by 12. Place a "0" in column (b) of Data Sheet 1.
*4	Calculate and record the Drywell Floor Drain 24-hour running average flow.	P	Add the six flow numbers from Column (b) and divide by 6. Place a "0" in column (c) of Data Sheet 1.
*5	Record 24 hour running average flow Drywell Floor Drain for 24 hour ago.	P	Record a "0" in column (d) of Data Sheet 1.
*6	Calculate and record the Drywell Floor Drain 24-hour running average difference.	P	Subtract column (d) from column (c) on Data Sheet 1. Place a "0" in column (e) on Data Sheet 1.
*7	Calculate and record Equipment Floor Drain 4-hour integrator difference.	P	Subtract the latest Equipment Drain Sump Integrator reading from the previous 4-hour reading. Place a "19" in column (f) of Data Sheet 1.
*8	Calculate and record Drywell Equipment Drain flow in gallons per minute.  <b>Cue: If examinee stalls here (step 6.2.3 of the surveillance test) state "You have adequate information on task conditions."</b>	P	Divide the number from column (f) of Data Sheet 1 by 12. Place a "1.58" in column (g) of Data Sheet 1.
*9	Calculate and record Total Drywell Leakage.	P	Add the six Floor Drain numbers from column (b) to the six Equipment Drain numbers from column (g) of Data Sheet 1.  Divide the above number by 6 and place a "1.38" in column (h) of Data Sheet 1.

STEP NO	STEP	ACT	STANDARD
*10	Verify the following data is acceptable:  Column (b) is $\leq$ 5.0 gpm  Column (e) is $\leq$ 2.0 gpm  Column (h) is $\leq$ 25.0 gpm	P	Verify all data is below the specified limits and initial "All Data Within Accep Crit" Column of Data Sheet1 as SAT.
11	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When step 6.4 of ST-O-020-560-2,"Reactor Coolant Leakage Test" has been completed the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 is at 100% power.**
- 2. The Unit 2 Drywell Sump Monitoring System is operable.**
- 3. Unit 2 Drywell Floor Drain Sump valves and pumps are lined up in accordance with SO 20A.1.A, "Floor Drain Sumps Startup and Normal Operation".**
- 4. Unit 2 Drywell Equipment Drain Sump valves and pumps are lined up in accordance with SO 20C.1.D, "Equipment Drain Sumps Startup and Normal Operation".**
- 5. AO 2A.16-2 "Manual Adjustment of Recirculation Pump Seal Second Stage Pressure" has NOT been performed.**
- 6. The previous week's flow data readings of Drywell Floor and Equipment Drain Sumps have been entered on Data Sheet 1 of ST-O-020-560-2,"Reactor Coolant Leakage Test".**
- 7. The current 4-hour Drywell Floor Drain and Equipment Drain sump integrator readings have already been documented on Data Sheet 1 of ST-O-020-560-2,"Reactor Coolant Leakage Test".**
- 8. All steps of ST-O-020-560-2,"Reactor Coolant Leakage Test", up to and including step 4.4.15, have been completed satisfactorily.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to determine the Unit 2 reactor coolant leakage flow rate by performing steps 6.1 through 6.4 of ST-O-020-560-2,"Reactor Coolant Leakage Test".**

Exelon Nuclear  
Peach Bottom  
Unit 2  
Surveillance Test

2

ST-O-020-560-2  
Rev. 12  
Page 1 of 25  
DCM: dcm

ST-O-020-560-2

REACTOR COOLANT LEAKAGE TEST

TEST FREQUENCY: Once/4 hours  
TECH SPEC: SR 3.4.4.1  
APPLICABILITY: Mode 1, 2, 3

1

**CHECK** why this procedure is being performed:

☒ Schedule ☐ OVF ☐ Retest Due To Unsat Test

☐ Other Reason: \_\_\_\_\_

Approved by SMgt: N/A \_\_\_\_\_ \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_\_  
Printed Name Time Date Initials

2

**INITIAL** one of the following Test Results:

A: All \* steps are **SATISFACTORY**

B: One or More \* steps are **UNSATISFACTORY**  
Refer to Section 9.0 for Tech Spec LCO's

Performed By: \_\_\_\_\_ \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_\_  
Printed Name Time Date Initials

RO/PRO Informed of  
Test Completion: N/A \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_\_

SMgt Informed of  
Test Results: \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_\_

UNSAT Notification: \_\_\_\_\_  
SMgt Discretion: Plant Mgr or Others

Notified By: \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_\_

3

**IF** other portions of the test did **NOT** function properly,  
**OR** other discrepancies were noted, **THEN COMPLETE** the following:

**DESCRIBE** discrepancies/actions taken: Issue#: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

4

Reviewed/Approved  
Plant Staff: \_\_\_\_\_ \_\_\_\_/\_\_\_\_/\_\_\_\_ \_\_\_\_\_  
Printed Name Time Date Initials

**1.0 PURPOSE**

This test provides indication of Reactor coolant leakage via the Drywell Sump Collection system. This test satisfies Tech Spec SR 3.4.4.1. **CM-2**

**2.0 TEST EQUIPMENT**

None

**3.0 PREREQUISITES**

Initial

**3.1 Test Initiation**

**3.1.1 COMPLETE** Section 1 of cover page.

N/A

**3.2 Document Review**

**3.2.1 ENSURE** procedure is current revision.

R.O.

**3.3 Setup/Check of Required Communications**

None

**3.4 Equipment Configuration**

**3.4.1 VERIFY** D/W Floor Drain Sump valves **AND** pumps are lined up in accordance with SO 20A.1.A **OR RECORD** A/R **OR** Clearance Number **IF** system is out of service.

R.O.

**3.4.2 VERIFY** D/W Equipment Drain Sump valves **AND** pumps are lined up in accordance with SO 20C.1.D **OR RECORD** A/R **OR** Clearance Number **IF** system is out of service.

R.O.

**3.5 Required Redundant Safety Related Equipment**

None

**3.6 Other Prerequisite Activities**

**3.6.1 ENSURE** required previous weeks last six 4 hour flow data readings of Drywell Floor and Equipment Drain Sumps on Data Sheet 1 have been entered.

R.O.

**3.7 Approval to Start Test**

None

## ~~4.0~~ PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS

### ~~4.1~~ Plant Impact Statement

~~4.1.1~~ This test does not impact plant availability in any manner. This test is **NOT** required when Reactor is in Mode 4 **OR** 5.

### ~~4.2~~ Precautions

None

### ~~4.3~~ Limitations

None

### ~~4.4~~ General Instructions

~~4.4.1~~ **IF** any of the following occur **REQUEST** Chemistry to initiate ST-C-095-819-2, Drywell Atmosphere Radiation Monitor Operational and Surveillance Log. **CM-1**

#### **NOTE**

The Drywell Sump Monitoring System is defined as the D/W Floor Drain **OR** D/W Equipment Drain System, but only **IF** the D/W Floor Drain Sump is overflowing.

~~1.~~ The Drywell Sump Monitoring System is declared inoperable. (Verify compliance with Tech Spec 3.4.4 **AND** 3.4.5).

~~2.~~ **WHEN** floor drain leakage has risen by 1.5 gpm from the corresponding 24 hour running average on the previous day. (At the same time 24 hours ago).

**4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS (Continued)****NOTE**

With minimal inleakage to the sumps, there may be insufficient level for the sump pumps to operate.

**4.4.2 IF** there is an unexpected change **OR** trend in the integrator 4 hour difference reading, (column a or f), **THEN** notify Shift Management **AND** consider the following:

1. **OBTAIN** current sump pump run time from pump breaker, (Ref. NOM-C-6.3 RWE0 round sheets), **AND** review for any abnormal run times.
2. **REVIEW** flow recorder, FR-2-20-528, for any abnormal flow conditions.
3. **PERFORM** RT-O-020-100-2, "Determination Of Rate And Location Of Drywell Leakage".

**NOTE**

**IF** a sump pump low flow condition exists, **THEN** the flow integrater FQ-2-20-527(530) may **NOT** be accurately monitoring flow rate.

**4.4.3 IF** it has been determined that a pump low flow condition exists, (ie., stuck open check valve, low capacity pump), **THEN CREATE** an Issue **AND NOTIFY** Shift Management. (Verify compliance with Tech Spec. 3.4.4 **AND** 3.4.5)

**4.4.4** Test frequency is every 4 hrs but sumps may fill and pump out every 2 to 3 hrs, there will be 4 hr periods pumps may operate and some periods they may operate twice. **IF** a flow calculation appears to be 1/2 previous reading, this may be due to the sump being pumped once during one period and twice during another. This can cause flow to appear to be twice that of previous period. In this case, flow can be compared to that calculated 8 hrs before to determine if flow has changed significantly.

**4.4.5** D/W Floor Drain Leakage is considered unidentified leakage and D/W Equipment Drain Leakage is considered identified leakage in normal line-up.

**4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS (Continued)**~~4.4.6~~

D/W Floor Drain Sump capacity is 500 gallons. D/W Equipment Drain Sump capacity is 500 gallons. (Actual volume of the Equipment Drain Sump is less due to the volume of cooling coils contained in the Equipment Drain Sump. For details see print M-519.) **CM-3**

~~4.4.7~~

**IF** the D/W Floor Drain System **OR** D/W Equipment Drain System is out of service, **THEN** all leakage (with the exception of Recirc Pump seal vent flow) is considered unidentified. (Verify compliance with Tech Spec. 3.4.4 **AND** 3.4.5)

~~4.4.8~~

**IF** the D/W Floor Drain Sump is out of service, **AND** the D/W Equipment Sump is to be used to monitor unidentified leakage, **THEN** both D/W Floor Drain and Equipment Drain Sump HI-HI Level Alarms need to be operable.

~~4.4.9~~

**IF** leak rates over periods other than 4 hrs are needed use Data Sheet 2.

~~4.4.10~~

**IF** any procedure step can **NOT** be completed **OR** produces an unexpected response **THEN STOP** the test **AND NOTIFY** the RO **AND** SMgt.

~~4.4.11~~

**IF** any Black Box is initialed **THEN STOP** the test **AND NOTIFY** the RO **AND** SMgt.

~~4.4.12~~

**IF** procedure is aborted, **THEN NOTIFY** SMgt **AND WRITE "TEST ABORTED"** in Section 3 of Cover Page.

~~4.4.13~~

All persons who initial steps in Sections 3.0, 6.0, or 7.0 are responsible for completing Section 10.0.

~~4.4.14~~

Initial blanks designated as IV are provided for Independent Verification.

~~4.4.15~~

All applicable \* steps are identified immediately in front of the initials.

5.0 ACCEPTANCE CRITERIA

The following have **NOT** been exceeded on Data Sheet 1:

- 1. Drywell Floor Drain Leakage less than or equal to 5.0 gpm (b).
- 2. Total Leakage less than or equal to 25.0 gpm (Averaged over any 24 hr period) (h).
- 3. Drywell Floor Drain 24 hr running average difference less than or equal to 2.0 gpm in Mode 1 (e).

6.0 PERFORMANCE STEPS

NOTES

1.

IF the D/W Floor Drain **AND** D/W Equipment Drain Systems are in normal line up, **THEN** perform Sections 6.1 through 6.4.

2.

IF the D/W Floor Drain System is out of service, **THEN** perform Section 6.5 **AND** determine if a Tech Spec Action (TSA) entry is required. (Refer to Tech Spec 3.4.4 and 3.4.5)

3.

IF the D/W Equipment Drain System is out of service, **THEN** the Equipment Sump will overflow, as designed, to the Floor Drain Sump. All leakage (with the exception of Recirc Pump seal vent flow) will be considered unidentified leakage.

6.1 Obtaining D/W Floor Drain System Readings

NOTE

The following steps are performed every four hours and data is recorded on Data Sheet 1. Data for columns on Data Sheets are indicated by small letters.

< At Control Room Panel 20C004A >

6.1.1 **RECORD** indication of FQ-2-20-527 "D/W Floor Drain" in "Flow Integ Reading" column on Data Sheet 1.

6.1.2 **CALCULATE AND RECORD** (a) "4 hr Integrator difference" as follows:

Flow  
Integ  
Reading

-

Previous  
4 hr  
Integ  
Reading

=

4 hr  
(a) Integ  
Diff

**6.0 PERFORMANCE STEPS** (Continued)

- 6.1.3 **CALCULATE AND RECORD** "Flow gpm" as follows (b):  
( Accep Crit: less than or equal to 5.0 gpm )

$$\text{Flow gpm (b)} = \frac{\text{Present 4 hr Integ Diff (a)}}{12}$$

- 6.1.4 **CALCULATE AND RECORD** "24 hr Runn Avg Flow" as follows (c):

$$\begin{array}{l} 24 \text{ hr} \\ \text{Runn} \\ \text{Avg (c)} = \frac{\text{Present Flow (b)} + \text{Previous 5 Flows(b)}}{6} \\ \text{Flow} \end{array}$$

- 6.1.5 **RECORD** "24 hr Runn Avg Flow for 24 hrs ago" (d) from "24 hr Runn Avg Flow" (c) corresponding to 24 hours previously.

- 6.1.6 **CALCULATE AND RECORD** "24 hr runn avg Diff" (e) as follows:  
( Accep Crit: IN Mode 1 ONLY less than or equal to 2.0 gpm )

$$\begin{array}{lll} 24 \text{ hr} & 24 \text{ hr} & \\ \text{Runn} & \text{Runn} & 24 \text{ hr} \\ \text{Avg (c) -} & \text{Avg (d) =} & \text{Runn (e)} \\ \text{Flow} & \text{Flow} & \text{Avg} \\ & 24 \text{ hrs} & \text{Diff} \\ & \text{ago} & \end{array}$$

**NOTE**

Steps 6.2, 6.3 and 6.4 are performed every four hours and data is recorded on Data Sheet 1. Data for columns on Data Sheets are indicated by small letters.

**6.2 Obtaining D/W Equipment Drain System Readings**

< At Control Room Panel 20C004A >

- 6.2.1 **RECORD** indication of FQ-2-20-530 "D/W Equip Drain" in "Flow Integ Reading" column on Data Sheet 1.

- 6.2.2 **CALCULATE AND RECORD** "4 hr Integ Diff" (f) as follows:

$$\begin{array}{lll} \text{Integ} & & \text{Previous} \\ \text{Reading} & - & 4 \text{ hr} \\ & & \text{Integ} \\ & & \text{Reading} \end{array} = \begin{array}{l} 4 \text{ hr} \\ \text{Integ (f)} \\ \text{Diff} \end{array}$$

**6.0 PERFORMANCE STEPS (Continued)****NOTES**

1. 3.0 gpm shall be added to the D/W Equipment Drain Reading value when ONE Recirc Pump seal is vented to CRW in accordance with AO 2A.16-2, "Manual Adjustment Of Recirculating Pump Seal Second Stage Pressure".
2. 6.0 gpm shall be added to the D/W Equipment Drain Reading value when TWO Recirc Pump seals are vented to CRW in accordance with AO 2A.16-2, "Manual Adjustment Of Recirculating Pump Seal Second Stage Pressure".
3. **IF** D/W Equipment Drain Monitoring is out of service, the above input values will still be considered identified leakage **AND** calculated accordingly.

6.2.3 **CALCULATE AND RECORD** "Flow gpm" (g) as follows:

$$\text{Flow gpm (g)} = \frac{\text{Present 4 hr Integ Diff (f)}}{12} + 3.0 \text{ gpm (6.0) gpm}$$

**6.3 Total Leakage Calculation**

6.3.1 **CALCULATE AND RECORD** "Total Leakage" (h) as follows:  
( Accep Crit: less than or equal to 25.0 gpm )

$$\frac{A + B}{6} = C$$

Where: A = Present + previous 5 Floor Drain Flows (b)

B = Present + previous 5 Equip Drain Flows (g)

C = Total Average Flow (h)

**6.4 Acceptance Criteria Verification**

6.4.1 **VERIFY** data in the following columns are within Acceptance Criteria limits **AND INITIAL** Data Sheet 1, **THEN** proceed to Section 7.0.

1. (b) less than or equal to 5.0 gpm
2. (e) less than or equal to 2.0 gpm
3. (h) less than or equal to 25.0 gpm

**6.0 PERFORMANCE STEPS** (Continued)**NOTES**

1. **IF** the D/W Floor Drain System **AND** D/W Equipment Drain System are in normal line up, **THEN** Step 6.5 does **NOT** apply.
2. Step 6.5 is performed if the D/W Floor Drain System is expected to be out of service for greater than 4 hours. Otherwise, Step 6.5 is N/A.
3. **IF** the D/W Equipment Drain System is out of service, **THEN** the Equipment Sump will overflow, as designed, to the Floor Drain Sump. All leakage (with the exception of Recirc Pump seal vent flow) will be considered unidentified leakage.

**6.5 Leakage Detection When D/W Floor Drain System is Out of Service****NOTE**

The following shall be considered, when performing this section:

A Tech Spec Action (TSA) entry is required. (Refer to Tech Spec. 3.4.4 **AND** 3.4.5).

The HI-HI Alarms for both D/W Floor Drain **AND** Equipment Drain Sumps need to be operable.

The HI-HI Alarms are being used as indication that RCS unidentified leakage, total leakage and unidentified leakage are within limits. This is being accomplished by calculated values based on previous flow rates to determine when the HI-HI Alarms will occur. (Ref. SR 3.4.4.1 Bases B3.4-23 **AND** Reg. Guide 1.45)

**IF** a HI-HI Alarm occurs outside the estimated/calculated values, **THEN** the potential exists that leakage has changed **AND** Shift Management shall be notified.

< At Control Room Panel 20C004A >

- 6.5.1 **PLACE** 2A/BP097 Drywell Floor Drain Sump Pump Control Switches to the "OFF" position.

**6.0 PERFORMANCE STEPS (Continued)**6.5.2 **RECORD** the following:

Date/Time (OFF) \_\_\_\_\_/\_\_\_\_\_

FQ-2-20-527 Reading \_\_\_\_\_

**NOTE**

The following steps are an attempt to bring the Drywell Floor Drain Sumps to an overflow condition by using the D/W Equipment Drain Sump Input. This is being done so the D/W Equipment Drain Sump monitoring system can be used to monitor unidentified leakage. (Refer to Tech Spec Bases Background Section B-3.4-24)

6.5.3 **PLACE** the 2A/BP098 D/W Equipment Drain Sump Pump Control Switches to the "OFF" position.6.5.4 **RECORD** the following:Date/Time (OFF)  $T_1$  = \_\_\_\_\_/\_\_\_\_\_

FQ-2-20-530 Reading \_\_\_\_\_

6.5.5 **CALCULATE AND RECORD** the following:  
(For Equipment Drain Sump HI-HI Level Alarm)

440 Gallons ÷	Avg. of 6	Est. Time for
	Previous 4 hr	= HI-HI Level
	Flow (g)	Alarm
		( $T_2$ ) = _____
		Min.

6.5.6 **CALCULATE AND RECORD** the estimated time ( $T_{EST1}$ ) for the D/W Equipment Drain Sump HI-HI Level Alarm to be reached. $T_1 + T_2 = T_{EST1}$  \_\_\_\_\_/\_\_\_\_\_ Time/Date**NOTE**

**IF** the D/W Equipment Drain Sump HI-HI Level Alarm did **NOT** occur during the estimated time, **THEN** contact Shift Management for further direction.

6.5.7 **RECORD** the actual time that the HI-HI Level Alarm was reached.  $T_3$  = \_\_\_\_\_/\_\_\_\_\_ Time/Date

**6.0 PERFORMANCE STEPS (Continued)**

- 6.5.8 **CALCULATE AND RECORD** the following:  
(For Floor Drain HI-HI Level Alarm)

$$528 \text{ Gallons} \div \left| \begin{array}{cc} \text{Avg. of 6} & \text{Avg. of 6} \\ \text{Previous} & \text{Previous 24} \\ \text{4 Hr Flow +} & \text{Hr Runn Avg} \\ \text{(g)} & \text{Flow (c)} \end{array} \right| = \frac{T_4}{\text{Mins.}}$$

- 6.5.9 **CALCULATE AND RECORD** the estimated time ( $T_{EST2}$ ) for the D/W Floor Drain Sump HI-HI Alarm to be reached.

$$T_4 + T_3 = T_{EST2} \text{ _____/_____ Time/Date}$$

**NOTE**

**WHEN** the D/W Floor Drain Sump HI-HI alarm occurs, the sump level is approximately 2" from top of overflow.

- 6.5.10 **RECORD** the actual time that the Floor Drain HI-HI level occurs.  $T_5 = \text{_____/_____ Time/Date}$
- 6.5.11 **CALCULATE AND RECORD** the following:

$$88 \text{ Gallons} \div \left| \begin{array}{cc} \text{Avg. of 6} & \text{Avg. of 6} \\ \text{Previous} & \text{Previous 24} \\ \text{4 Hr Flow +} & \text{Hr Runn Avg} \\ \text{(g)} & \text{Flow (c)} \end{array} \right| = \frac{T_6}{\text{Mins.}}$$

- 6.5.12 **RECORD** calculated time when overflow of both D/W Equipment Drain Sump and D/W Floor Drain Sump will occur.

$$T_5 + T_6 = T_7 \text{ _____/_____ Time/Date}$$

**NOTE**

Once  $T_7$  has been reached, the D/W Equipment Drain Sump System is now monitoring all D/W leakage (with the exception of Recirc Pump seal vent flow) as unidentified leakage.

- 6.5.13 **WHEN**  $T_7$  has been reached, **THEN RECORD** integrator reading from FQ-2-20-530 **AND PLACE** in column on Data Sheet 1, for approximate date and time.
- 6.5.14 **PLACE** 2A/BP098 D/W Equipment Drain Sump Pump Control Switches to the "AUTO" position.

**6.0 PERFORMANCE STEPS** (Continued)

- 6.5.15 **VERIFY** both pumps start **AND** D/W Equipment Drain flow is indicated on FR-2-20-528 (red pen).
- 6.5.16 **VERIFY** both pumps "AUTO" stop **AND** HI-HI alarm is clear.

**NOTE**

Steps 6.5.17 through 6.5.28 are performed every four hours and recorded on Data Sheet 1.

- 6.5.17 **RECORD** indication of FQ-2-20-527 "D/W Floor Drain" in "Flow Integ Reading" column on Data Sheet 1.
- 6.5.18 **RECORD** indication of FQ-2-20-530 "D/W Equip Drain" in "Flow Integ Reading" column on Data Sheet 1.

**NOTE**

While the Equipment Sump is monitoring ALL leakage (with the exception of Recirc Pump seal vent flow) as "Unidentified", columns (f) and (g) are applicable ONLY for calculating Recirc Pump seal vent flow.

- 6.5.19 **CALCULATE** "4 hr Integ Diff" as follows:

Flow		Previous		4 hr
Integ	-	4 hr	=	Integ
Reading		Integ		Diff
(Equip)		Reading		
		(Equip)		

- 6.5.20 **RECORD** "4 hr Integ Diff" into "4 hr Integ Diff" (a) column.

## 6.0 PERFORMANCE STEPS (Continued)

### NOTES

1. 3.0 gpm shall be added to the D/W Equipment Drain Reading value when ONE Recirc Pump seal is vented to CRW in accordance with AO 2A.16-2, "Manual Adjustment Of Recirculating Pump Seal Second Stage Pressure".
2. 6.0 gpm shall be added to the D/W Equipment Drain Reading value when TWO Recirc Pump seals are vented to CRW in accordance with AO 2A.16-2, "Manual Adjustment Of Recirculating Pump Seal Second Stage Pressure".
3. **IF** D/W Equipment Drain Monitoring is out of service, the above input values will still be considered identified leakage **AND** calculated accordingly.

- 6.5.21 **IF** any Recirc Pump seals are being vented to CRW, **THEN RECORD** appropriate value as identified leakage in column (f). **OTHERWISE, N/A** column (f).

### NOTE

Due to the pumping down of the D/W Equipment Drain Sumps from the HI-HI level, an initial flow of greater than 5.0 gpm for the first 4 hr reading may be recorded after returning the sump pumps to operation.

- 6.5.22 **CALCULATE AND RECORD** "Flow gpm" as follows (b):  
(Accep Crit: less than or equal to 5.0 gpm)

$$\text{Flow gpm (b)} = \frac{\text{Present 4 hr Integ Diff (a)}}{12}$$

**6.0 PERFORMANCE STEPS** (Continued)**NOTE**

In an effort to obtain accurate values for the following calculations, it may be necessary to use data that was obtained prior to the systems being removed from service. (I.E. prior to the TSA when calculating average flows.)

- 6.5.23 **CALCULATE AND RECORD** "24 Hr Runn Avg Flow" as follows (c):

24 hr

Runn

Avg (c) =  $\frac{\text{Present Flow (b)} + \text{Previous 5 Flows (b)}}{6}$

- 6.5.24 **RECORD** "24 Hr Runn Avg Flow for 24 hrs ago" (d) from "24 hr Run Avg Flow" (c) corresponding to 24 hours previously.

- 6.5.25 **CALCULATE AND RECORD** "24 hr Runn Avg Diff" (e) as follows:  
( Accep Crit: IN Mode 1 ONLY less than or equal to 2.0 gpm )

24 hr

Runn

Avg (c) -

Flow

24 hr

Runn

Avg (d) =

Flow

24 hrs  
ago

24 hr

Runn (e)

Avg  
Diff

**6.0 PERFORMANCE STEPS (Continued)****NOTES**

1. 3.0 gpm shall be added to the D/W Equipment Drain Reading value when ONE Recirc Pump seal is vented to CRW in accordance with AO 2A.16-2, "Manual Adjustment Of Recirculating Pump Seal Second Stage Pressure".
2. 6.0 gpm shall be added to the D/W Equipment Drain Reading value when TWO Recirc Pump seals are vented to CRW in accordance with AO 2A.16-2, "Manual Adjustment Of Recirculating Pump Seal Second Stage Pressure".
3. **IF** D/W Equipment Drain Monitoring is out of service, the above input values will still be considered identified leakage **AND** calculated accordingly.

6.5.26 **IF** any Recirc Pump seals are being **OR** have been vented to CRW within the last 24 hours, **THEN RECORD** appropriate value as identified leakage in column (g). **OTHERWISE, N/A** column (g).

6.5.27 **CALCULATE AND RECORD** "Total Leakage" (h) as follows:  
( Accep Crit: less than or equal to 25.0 gpm )

$$\frac{A + B}{6} = C$$

Where: A = Present + previous 5 Floor Drain Flows (b)

B = Present + previous 5 Equip Drain Flows (g)

C = Total Average Flow (h)

6.5.28 **VERIFY DATA** in the following columns are within Acceptance Criteria limits **AND INITIAL** Data Sheet 1.

1. (b) less than or equal to 5.0 gpm
2. (e) less than or equal to 2.0 gpm
3. (h) less than or equal to 25.0 gpm

**6.0 PERFORMANCE STEPS** (Continued)

- 6.5.29 **IF** D/W Floor Drain Sump Pumps are to be returned to service, **THEN** perform the following:

**NOTE**

Due to the pumping down of the D/W Floor Drain Sumps from the HI-HI level, an initial flow of greater than 5.0 gpm for the first 4 hr reading may be recorded after returning the sump pumps to operation.

1. **RECORD** integrator reading from FQ-2-20-527 **AND** place in column on Data Sheet 1, for approximate data and time.
2. **PLACE** 2A/BP097 Drywell Floor Drain Sump Pump Control Switches to the "AUTO" position.
3. **VERIFY** both pumps start **AND** Drywell Floor Drain Sump flow is indicated on FR-2-20-528 (black pen).
4. **VERIFY** both pumps "AUTO" stop **AND** HI-HI alarm is clear.

**7.0 PROCEDURE COMPLETION**

## 7.1 Independent Verification

- 7.1.1 **VERIFY** ALL Floor Drain and Equipment Drain calculations **CORRECT AND INITIAL** Data Sheet 1.

## 7.2 Records Completion

Initial

- 7.2.1 **TRANSCRIBE** last six 4 hour flow data readings of D/W Floor Drain and Equipment Drain Sumps onto Data Sheet 1 for next weeks Surveillance Test.

- 7.2.2 **COMPLETE** Section 2 of Cover Page (and Section 3 if applicable).

## 8.0 REFERENCES

### 8.1 Governing

- 8.1.1 Tech Spec SR 3.4.4.1
- 8.1.2 CM-1, NRC Inspection Report 50-277/88-13;  
50-278/88-13, Closeout of Unresolved Item  
50-277/84-23-01; 50-278/84-18-01 (T01737)
- 8.1.3 CM-2, Letter to NRC from G. A. Hunger, Jr. dated  
Sept. 29, 1994 transmitting TSCR 93-16 (T03736)
- 8.1.4 CM-3, Response to NRC violation 95-26-02 (T03837)

### 8.2 Interfacing

- 8.2.1 ST-C-095-819-2, Drywell Atmosphere Radiation Monitor  
Operational and Surveillance Log
- 8.2.2 RT-O-020-100-2, Determination Of Rate And Location  
Of Drywell Leakage

### 8.3 Developmental







- 8.3.1 M-368, Radwaste Liquid Collection System
- 8.3.2 M-519, Plumbing and Drainage Print (D/W Sump Detail)
- 8.3.3 NRC Licensing IE Bulletin 78-10B
- 8.3.4 This procedure supersedes ST 9.17-2
- 8.3.5 Attachment 1, Simplified Drawing of Sump Pump Pit  
and Level Probe Arrangement

## 9.0 TECH SPEC LIMITING CONDITIONS FOR OPERATION (LCOs)

Section 3.4.4



**DATA SHEET 1**  
**DRYWELL FLOOR AND EQUIPMENT DRAIN SUMP LEAKAGE**

Date	Day / time	Floor Drain Sump  Flow Integ Reading	(a) 4 hr Integ Diff	(b) Flow gpm * ≤ 5 gpm	(c) 24 Hr Runn Avg. Flow	(d) 24 Hrs Runn Avg. Flow for 24 Hrs Ago	(e) 24 hr Runn avg Diff * ≤ 2 gpm	Equip Drain Sump  Flow Integ Reading	(f) 4 hr Integ Diff	(g) Flow gpm	(h) Total Leakage 24 hr avg * ≤ 25 gpm	All Data Within Accep Crit (Initial) <u>Sat</u> <u>unsat</u>	All Calcs Verif Correct  (Initial)
_/_/_	Sat/0000	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sat/0400	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.42	N/A	N/A	N/A
	Sat/0800	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.33	N/A	N/A	N/A
	Sat/1200	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.42	N/A	N/A	N/A
	Sat/1600	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.67	N/A	N/A	N/A
	Sat/2000	904078	N/A	0	0	N/A	N/A	1400761	N/A	0.83	N/A	N/A	N/A
_/_/_	Sun/0000	904078						1400780				* ____ 	____ IV
	Sun/0400											* ____ 	____ IV
	Sun/0800											* ____ 	____ IV
	Sun/1200											* ____ 	____ IV
	Sun/1600											* ____ 	____ IV
	Sun/2000											* ____ 	____ IV

**DATA SHEET 1 (Continued)**  
**DRYWELL FLOOR AND EQUIPMENT DRAIN SUMP LEAKAGE**

Date	Day / time	Floor Drain Sump  Flow Integ Reading	(a) 4 hr Integ Diff	(b) Flow gpm  • ≤ 5 gpm	(c) 24 Hr Runn Avg. Flow	(d) 24 hr Runn Avg. Flow For 24 Hrs Ago	(e) 24 hr Runn avg Diff • ≤ 2 gpm	Equip Drain Sump  Flow Integ Reading	(f) 4 hr Integ Diff	(g) Flow gpm	(h) Total Leakage 24 hr avg • ≤ 25 gpm	All Data Within Accep Crit (Initial) <u>Sat unsat</u>	All Calcs Verif Correct  (Initial)
_/_/_	Mon/0000											* _ <input type="checkbox"/>	____ IV
	Mon/0400											* _ <input type="checkbox"/>	____ IV
	Mon/0800											* _ <input type="checkbox"/>	____ IV
	Mon/1200											* _ <input type="checkbox"/>	____ IV
	Mon/1600											* _ <input type="checkbox"/>	____ IV
	Mon/2000											* _ <input type="checkbox"/>	____ IV
_/_/_	Tue/0000											* _ <input type="checkbox"/>	____ IV
	Tue/0400											* _ <input type="checkbox"/>	____ IV
	Tue/0800											* _ <input type="checkbox"/>	____ IV










**DATA SHEET 1 (Continued)**  
**DRYWELL FLOOR AND EQUIPMENT DRAIN SUMP LEAKAGE**

Date	Day / time	Floor Drain Sump  Flow Integ Reading	(a) 4 hr Integ Diff	(b) Flow gpm  * ≤ 5 gpm	(c) 24 Hr Runn Avg. Flow	(d) 24 hr Runn Avg. Flow for 24 Hrs Ago	(e) 24 hr Runn avg Diff * ≤ 2 gpm	Equip Drain Sump  Flow Integ Reading	(f) 4 hr Integ Diff	(g) Flow gpm	(h) Total Leakage 24 hr avg * ≤ 25 gpm	All Data Within Accep Crit (Initial) <u>Sat unsat</u>	All Calcs Verif Correct (Initial)
_/_/_	Tue/1200											* _ <input type="checkbox"/>	IV
	Tue/1600											* _ <input type="checkbox"/>	IV
	Tue/2000											* _ <input type="checkbox"/>	IV
_/_/_	Wed/0000											* _ <input type="checkbox"/>	IV
	Wed/0400											* _ <input type="checkbox"/>	IV
	Wed/0800											* _ <input type="checkbox"/>	IV
	Wed/1200											* _ <input type="checkbox"/>	IV
	Wed/1600											* _ <input type="checkbox"/>	IV
	Wed/2000											* _ <input type="checkbox"/>	IV

**DATA SHEET 1 (Continued)**  
**DRYWELL FLOOR AND EQUIPMENT DRAIN SUMP LEAKAGE**

Date	Day / time	Floor Drain Sump  Flow Integ Reading	(a) 4 hr Integ Diff	(b) Flow gpm  * ≤ 5 gpm	(c) 24 Hr Runn Avg. Flow	(d) 24 hr Runn Avg. Flow for 24 Hrs Ago	(e) 24 hr Runn avg Diff * ≤ 2 gpm	Equip Drain Sump  Flow Integ Reading	(f) 4 hr Integ Diff	(g) Flow gpm	(h) Total Leakage 24 hr avg * ≤ 25 gpm	All Data Within Accep Crit (Initial) <u>Sat unsat</u>	All Calcs Verif Correct  (Initial)
_/_/_	Thu/0000											* _ _ _ □ □	— IV
	Thu/0400											* _ _ _ □ □	— IV
	Thu/0800											* _ _ _ □ □	— IV
	Thu/1200											* _ _ _ □ □	— IV
	Thu/1600											* _ _ _ □ □	— IV
	Thu/2000											* _ _ _ □ □	— IV
_/_/_	Fri/0000											* _ _ _ □ □	— IV
	Fri/0400											* _ _ _ □ □	— IV
	Fri/0800											* _ _ _ □ □	— IV

**DATA SHEET 1 (Continued)**  
**DRYWELL FLOOR AND EQUIPMENT DRAIN SUMP LEAKAGE**

Date	Day / time	Floor Drain Sump  Flow Integ Reading	(a) 4 hr Integ Diff	(b) Flow gpm  * ≤ 5 gpm	(c) 24 Hr Runn Avg. Flow	(d) 24 hr Runn Avg. Flow for 24 Hrs Ago	(e) 24 hr Runn avg Diff * ≤ 2 gpm	Equip Drain Sump  Flow Integ Reading	(f) 4 hr Integ Diff	(g) Flow gpm	(h) Total Leakage 24 hr avg * ≤ 25 gpm	All Data Within Accep Crit (Initial) <u>Sat unsat</u>	All Calcs Verif Correct  (Initial)
_/_/_	Fri/1200											* _ 	____ IV
	Fri/1600											* _ 	____ IV
	Fri/2000											* _ 	____ IV
_/_/_	Sat/0000											* _ 	____ IV
	Sat/0400											* _ 	____ IV
	Sat/0800											* _ 	____ IV
	Sat/1200											* _ 	____ IV
	Sat/1600											* _ 	____ IV
	Sat/2000											* _ 	____ IV

**DATA SHEET 2**  
**DRYWELL FLOOR OR EQUIPMENT DRAIN SUMP LEAKAGE**

## Leakage Calculation

$$\text{GPM} = \frac{\text{Integrator Difference}}{3 \times \text{hours}} \quad \text{OR} \quad \text{GPM} = \frac{\text{Integrator Difference} \times 20}{\text{Minutes}}$$

[illegible]

SIMPLIFIED DRAWING OF SUMP PUMP PIT AND LEVEL PROBE ARRANGEMENT.

**SUMP PUMP (2) @ 50 GPM (RATED)**

**EL. 120'-6"**

**DRYWELL FIN. FL. EL. 119'-11"**

**HI-HI Alarm and Dual Pump Start EL. 119'-4"**

**SINGLE PUMP START "HI" 119'-0"**

**PUMP(S) STOP STOP 118'-6"**

**GROUND PROBE EL. 117'-6"**

**BOTTOM OF PIT EL. 117'-3"**

**3" Between**

**SUMP PUMP PIT CAPACITY 75 GALLONS**

**DRYWELL FIN. FL.**

**EQUIPMENT DRAIN RECEPTACLE**

**OVERFLOW EL. 119'-6"**

**EL. 118'-5"**

**EL. 118'-6"**

**4"**

**SHORT RADIUS ELBOW**

**BOL. EL. 117'-9 3/4"**

**BOL. EL. 117'-10 3/4"**

**SUBPILE ROOM SUMP CAPACITY 500 GALLONS EACH**

**FLOOR DRAIN RECEPTACLE**

# ANSWER KEY – DO NOT HAND OUT TO CANDIDATE

**DATA SHEET 1**  
**DRYWELL FLOOR AND EQUIPMENT DRAIN SUMP LEAKAGE**

Date	Day / time	Floor Drain Sump  Flow Integ Reading	(a) 4 hr Integ Diff	(b) Flow gpm  * ≤ 5 gpm	(c) 24 Hr Runn Avg. Flow	(d) 24 Hrs Runn Avg. Flow for 24 Hrs Ago	(e) 24 hr Runn avg Diff * ≤ 2 gpm	Equip Drain Sump  Flow Integ Reading	(f) 4 hr Integ Diff	(g) Flow gpm	(h) Total Leakage 24 hr avg * ≤ 25 gpm	All Data Within Accep Crit (Initial) <u>Sat unsat</u>	All Calcs Verif Correct  (Initial)
_/_/_	Sat/0000	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sat/0400	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.42	N/A	N/A	N/A
	Sat/0800	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.33	N/A	N/A	N/A
	Sat/1200	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.42	N/A	N/A	N/A
	Sat/1600	N/A	N/A	0	0	N/A	N/A	N/A	N/A	1.67	N/A	N/A	N/A
	Sat/2000	904078	N/A	0	0	N/A	N/A	1400761	N/A	0.83	N/A	N/A	N/A
TODAY	Sun/0000	904078	0	0	0	0	0	1400780	19	1.58	1.38	* INT	IV
	Sun/0400											*	IV
	Sun/0800											*	IV
	Sun/1200											*	IV
	Sun/1600											*	IV
	Sun/2000											*	IV

**ANSWER KEY – DO NOT HAND OUT TO CANDIDATE**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
----------	---------------------	--------------------------	-----------------	--------------------------	---------------

<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-258C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	001
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	PRO DUTIES FOR A LIQUID RADWASTE DISCHARGE		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>			
		_____ Signature / Title	_____ Date
EFFECTIVE DATE: ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID#:</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2730130202 / PLOR-258C

K/A: 2.3.11

URO: 3.8      SRO: 4.3

TASK DESCRIPTION: Ability to control radiation releases.

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. AT2 – In progress ST-C-095-805-2, Rev. 13, completed through step 6.12.8.

C. REFERENCES

1. ST-C-095-805-2, Rev. 13, "Liquid Radwaste Discharge".

D. TASK STANDARD

1. Satisfactory task completion is indicated when section 6.13 has been completed in its entirety.
2. Estimated time to complete: 12 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform the necessary steps to set-up the plant in preparation for a Liquid Radwaste discharge. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Both units are operating at 100% power.
2. The Floor Drain Sample Tank (FDST) needs to be discharged.
3. Chemistry and Shift Management have completed ST-C-095-805-2, "Liquid Radwaste Discharge" through step 6.12.8.
4. Six Circulating Water Pumps are in operation.
5. The discharge Canal-To-Intake Pond crosstie gate is closed.
6. The PRO review and set-up has not been completed.

G. INITIATING CUE

You are the PRO. Complete section 6.13 of ST-C-095-805-2 "Liquid Radwaste Discharge" in preparation for a liquid radwaste discharge.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Record actual number of operating Circulating Pumps.	P	Verifies six Circulating Pumps are operating from Task Conditions/Prerequisite information, record and initial step 6.13.1.
*2	Set the HI Trip Setpoint.	P	Manually adjust the HI Setpoint Pot setting for RIS-0-17-350 to $\leq 3.81$ , and record and initial step 6.13.2.
*3	Set the HI HI Trip Setpoint.	P	Manually adjust the HI HI Setpoint Pot setting for RIS-0-17-350 to $\leq 3.84$ , and record and initial step 6.13.3.
4	Mark step 6.13.4 "N/A"	P	Step 6.13.4 is reviewed and marked "N/A".
5	Review PRO steps.	P	Visually verify all the PRO steps in section 6.13 are complete, and initial step 6.13.5 SAT.
6	Record your name and initials.	P	Print your name and initials in Section 10.0.
7	Inform Control Room Supervision of completion of task.	P	Inform Control Room Supervision of completion of section 6.13 of ST-C-095-805-2 "Liquid Radwaste Discharge".
8	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

## I. TERMINATING CUE

When Section 6.13 of ST-C-095-805-2 has been completed, terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Both units are operating at 100% power.**
- 2. The Floor Drain Sample Tank (FDST) needs to be discharged.**
- 3. Chemistry and Shift Management have completed ST-C-095-805-2, "Liquid Radwaste Discharge" through step 6.12.8.**
- 4. Six Circulating Water Pumps are in operation.**
- 5. The discharge Canal-To-Intake Pond crosstie gate is closed.**
- 6. The PRO review and set-up has not been completed.**

## **INITIATING CUE**

**You are the PRO. Complete section 6.13 of ST-C-095-805-2 "Liquid Radwaste Discharge" in preparation for a liquid radwaste discharge.**

Exelon Nuclear  
Peach Bottom  
Unit 2 & 3  
Surveillance Test

2

ST-C-095-805-2  
Rev. 13  
Page 1 of 27  
RLA:rla

**ST-C-095-805-2 LIQUID RADWASTE DISCHARGE**

TEST FREQUENCY: Unscheduled (See Section 1.0)  
TECH SPEC: 5.5.1 **AND** ODCMS Sections 4.8.B.1.1, 4.8.B.1.2,  
4.8.B.1.3, 4.8.B.3.1, 4.8.B.3.2,  
Table 4.8.B.1. Func. 1 **AND** Func. 4, 4.8.B.4.3,  
4.8.B.4.4, **AND** 4.8.B.4.5  
APPLICABILITY: At all times

1	TANK To Be DISCHARGED:	SOURCE: <u><i>FDST</i></u> CSAR No: <u><i>176-10</i></u>
Approved By SMgt: <u><i>N/A</i></u> <u>          </u> <u>      </u> <u>      </u> <u>      </u>		
Printed Name Time Date Initials		

2	<b>INITIAL</b> one of the following Test Results:			
A: All * steps are		<b>SATISFACTORY</b>		_____
B: One <b>OR</b> More * steps are		<b>UNSATISFACTORY</b>		<div style="border: 2px solid black; width: 100px; height: 20px;"></div>
Refer to Section 9.0 for Tech Spec LCO's				
Performed By: (CT)	<u><i>Chem Tech</i></u>	<u><i>Current</i></u>	<u><i>Today</i></u>	<u><i>C.T.</i></u>
	Printed Name	Time	Date	Initials
Reviewed By: (SMgt)	_____	_____	_____	_____
	Printed Name	Time	Date	Initials
Completed By: (CTR)	_____	_____	_____	_____
	Printed Name	Time	Date	Initials
UNSAT Notification: ( <b>N/A IF SAT</b> )	SMgt Discretion: Plant Mgr <b>OR</b> Others			
Notified By: ( <b>N/A IF SAT</b> )	_____			

3	<b>IF</b> other portions of the test did <b>NOT</b> function properly, <b>OR</b> other discrepancies were noted, <b>THEN COMPLETE</b> the following:
DESCRIBE discrepancies/actions taken: A/R <b>OR</b> ETT #: _____	
_____	

4	Reviewed/Approved CHEM Staff: _____
	Printed Name Time Date Initials

## ~~1.0~~ PURPOSE

This procedure prescribes normal methods to be used for the discharge of planned batch releases of liquid radioactive waste to the discharge canal. Also provided is the mechanism to verify initial conditions, complete required calculations **AND** record specified data associated with radioactive liquid effluents. This procedure satisfies Offsite Dose Calculation Manual (ODCM) surveillance requirements for 4.8.B.1.1, 4.8.B.1.2, 4.8.B.1.3, 4.8.B.3.1, 4.8.B.3.2, Table 4.8.B.1.Func. 1 **AND** Func. 4, 4.8.B.4.3, 4.8.B.4.4, **AND** 4.8.B.4.5. This procedure may be TC'ed. However, a thorough review of the UFSAR (for example, Section 9.2, Liquid Radioactive Waste System) must be completed as part of the TC process. **WHEN** TCing **OR** revising this document, **THEN** ensure that the requirements of the procedure, as described in the UFSAR, are satisfied.

## ~~2.0~~ TEST EQUIPMENT

None.

## ~~3.0~~ PREREQUISITES

Initial

### ~~3.1~~ Document Review

~~3.1.1~~ **ENSURE** procedure is current revision.

C.T.

CT

~~3.1.2~~ **OBTAIN** CY-PB-120-401 " Liquid Radioactive Waste" for tank to be released.

C.T.

CT

### ~~3.2~~ Other Prerequisite Activities

~~3.2.1~~ **RECORD** the tank to be discharged Source **AND** CSAR No. in Section 1 of this test's cover sheet.

C.T.

CT

### ~~3.3~~ Test Initiation

~~3.3.1~~ This test has been initiated in accordance with CY-PB-120-401.

### ~~3.4~~ Equipment Configuration

None.

### ~~3.5~~ Required Redundant Safety Related Equipment

None.

### ~~3.6~~ Approval to Start Test

None.

## ~~4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS~~

### ~~4.1 Plant Impact Statement~~

- ~~4.1.1~~ This procedure does **NOT** impact plant availability in any manner **AND** may be performed in any Reactor Mode.

### ~~4.2 Precautions~~

None.

### ~~4.3 Limitations~~

- ~~4.3.1~~ **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** the following alarms shall be clear prior to **AND** during release:

~~1.~~ Alarm Panel 204 Window F-4 "OUTER SCREEN  
STRUCTURE HI HI DIFF WTR LVL"

~~2.~~ Alarm Panel 304 Window F-4 "OUTER SCREEN  
STRUCTURE HI HI DIFF WTR LVL"

- ~~4.3.2~~ **IF** the discharge Canal-To-Intake pond Crosstie is OPEN, **THEN** a minimum of three circulating water pumps must be in operation during the release of radioactive liquid to the discharge canal.

- ~~4.3.3~~ **IF** the release is terminated for lack of dilution flow, **THEN** it only may be restarted **WHEN** the calculated release conditions are reestablished.

### ~~4.4 General Instructions~~

- ~~4.4.1~~ The Chemistry Technician (CT) initiates this test as required by CY-PB-120-401 criteria **AND** performs all CT initialed steps. The CT forwards this test to Shift Supervisor (SMgt) for review **AND** approval; completing all SMgt initialed steps. SMgt **THEN** forwards test to Plant Reactor Operator (PRO). The PRO performs all PRO initial steps **AND** forwards to Radwaste Operator (RWO). The RWO **THEN** performs all RWO initialed steps **AND** forwards this test to SMgt for review of all Operations' responsible steps. The SMgt places this test in the Chemistry bin in the Main Control Room for retrieval **AND** review by Chemistry Technician Reviewer (CTR).

#### ~~4.0~~ PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS (Continued)

- ~~4.4.2~~ IF any procedure step **CANNOT** be completed **OR** produces an unexpected response, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO **OR** SMgt **AND** Chemistry Supervision.
- ~~4.4.3~~ IF any Black Box is initialed, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO **OR** SMgt **AND** Chemistry Supervision.
- ~~4.4.4~~ This procedure shall be aborted **WHEN** it is discovered that a Tank is **NOT** going to be released.
- ~~4.4.5~~ IF procedure is aborted, **THEN NOTIFY** SMgt **AND WRITE** "TEST ABORTED" in Section 3 of Cover Page.
- ~~4.4.6~~ All persons who initial steps in Sections 3.0, 6.0, **OR** 7.0 are responsible for completing Section 10.0.
- ~~4.4.7~~ All applicable \* steps are identified immediately in front of the initials.

#### ~~5.0~~ ACCEPTANCE CRITERIA

The following conditions must be met:

- ~~1.~~ Copy of Gamma Isotopic Analysis Report attached to this procedure.
- ~~2.~~ Tank to be released has been processed through one **OR** more of these systems: Waste Collector Filter **AND** Demineralizer, Floor Drain Filter, Fuel Pool Filter Demineralizer, Chemical/Oily Waste Cleanup. (Epicore oil/water emulsion), Laundry Drain Filter **OR** Projected Body Dose for Month is less than 0.12 mRem **AND** Projected Organ Dose for Month is less than 0.40 mRem.
- ~~3.~~ RIS-0-17-350 "Rad Waste Effluent" Rad Monitor operable.
- ~~4.~~ FR-0-20-441 "RWS Low Purity Waste" Flow Recorder/Monitor operable.
- ~~5.~~ FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot **AND** associated Flow Control Valve are operable.
- ~~6.~~ Actual No. of Circ Pumps Providing Dilution is greater than **OR** equal to the Required No. of Circ Pumps Providing Dilution.
- ~~7.~~ RIS-0-17-350 HI Trip Setpoint is less than **OR** equal to Required HI Trip CPS.

**5.0 ACCEPTANCE CRITERIA (Continued)**

8. RIS-0-17-350 HI HI Trip Setpoint is less than **OR** equal to Required HI HI Trip CPS.
9. Actual Maximum Release Rate GPM is less than **OR** equal to the Required Maximum Release Rate value.
10. Actual % Setting for Discharge is less than **OR** equal to the Required Maximum % Setting for Discharge.
11. Sample retained for Monthly Composite.
12. Every release Start **AND** Stop Time has been recorded on the appropriate data chart.

**6.0 PERFORMANCE STEPS**

Initial  
Sat UnSat

**NOTE**

Steps 6.1 and 6.2 may be performed in any order or concurrently.

- 6.1 **RECORD** chemistry data obtained in the performance of CY-PB-120-401, the tank source **AND** the associated CSAR No. on Data Sheet 1 below. **CM-1**

C.T. \_\_\_\_\_  
CT

- 6.2 **RECORD** the tank source **AND** its associated CSAR No. on all other applicable data sheets. **CM-1**

C.T. \_\_\_\_\_  
CT

~~6.0~~ PERFORMANCE STEPS (Continued)Initial  
Sat Unsat~~NOTE~~

- ~~1. IF~~ the water placed in 0BT061 is to be considered "Processed", **THEN** an RW-PB-625, Attachment 4, (as directed from RW-PB-591) will be given to Chemistry for attachment to ST-C-095-805-2.
- ~~2. IF~~ the water placed in 0BT061 is considered "Unprocessed", **THEN** an RW-592, Exhibit 9.1 will be given to Chemistry for attachment to ST-C-095-805-2.
- ~~3. IF~~ the water placed in 0BT061 is "Post Flush" demineralized water, **THEN** no further documentation will be given to Chemistry for ST-C-095-805-2, since the contents of the tank will be processed by the Laundry Drain Tank filter.
- ~~4. Laundry Drain Tank water that is NOT~~ processed by the Epicore Water Emulsion System shall be dispositioned in accordance with RW-592, "Transfer of Unprocessed Waste Water to the "B" Laundry Drain Tank". In this case, the Laundry Drain Tank contents will either be considered "Unprocessed" water or will be considered "Processed" by the Laundry Drain Filter, as determined by Chemistry/Radwaste Management.

- ~~6.3~~ IF tank to be discharged has **NOT** been processed through a Radwaste system, as specified in ODCMS 3.8.B.4, **THEN CALCULATE AND RECORD** Projected Body Dose **AND** Projected Organ Dose for Month on Data Sheet 1. **OTHERWISE, N/A** the applicable blocks for this step **AND** on Data Sheet 1. (ODCMS 3.8.B.4)

C.T.

CT

- ~~6.3.1~~ **VERIFY** Projected Organ Dose is less than 0.40 mRem.

\* N/A

CT



- ~~6.3.2~~ **VERIFY** Projected Body Dose is less than 0.12 mRem.

\* N/A

CT



## DATA SHEET 1

TANK TO BE DISCHARGED SOURCE: FDST CSAR No. 176 - 10

REASON FOR DISCHARGE Water Inventory Control -  
high silica

RECIRCULATION TIME (minutes) 45

ANALYSIS	ANALYSIS RESULT	LIMIT FOR DISCHARGE	REMARKS
CONDUCTIVITY	<u>0.91</u> uS/cm	< 2500 uS/cm [V]	✓
pH	<u>NR</u>	4.0 - 10.0 [A]	✓
TEMPERATURE	<u>24.5</u> C	AS READ <sup>1</sup>	✓
TURBIDITY	<u>0.861</u> NTU	< 30 NTU [V]	✓
GAMMA SCAN TOTAL ACTIVITY	<u>4.85 n 7</u> µCi/mL	<1 E-4 µCi/mL [F]	✓
ESTIMATED BODY DOSE	<u>0</u> mRem	0.05 mRem [V]	✓
ESTIMATED ORGAN DOSE	<u>0</u> mRem	0.15 mRem [V]	✓
THE FOLLOWING IS REQUIRED FOR RELEASE OF UNPROCESSED TANKS ONLY (ODCM ACCEPTANCE CRITERIA)			
PROJECTED BODY DOSE FOR MONTH	<u>N/A</u> mRem	0.12 mRem [D]	✓
PROJECTED ORGAN DOSE FOR MONTH	<u>N/A</u> mRem	0.40 mRem [D]	✓

- [F] = IF THE ACTIVITY IS LESS THAN OR EQUAL TO 1.0E-3, THEN A VARIANCE MAY BE GRANTED, OTHERWISE IF THE ACTIVITY IS GREATER THAN 1.0E-3, THEN A VARIANCE MAY NOT BE GRANTED UNLESS A PROJECTED DOSE IS CALCULATED, COMPARED TO THE REGULATORY LIMITS, AND COMMUNICATED TO THE CONTROL ROOM.
- [V] = AN ADMINISTRATIVE LIMIT FOR WHICH A VARIANCE MAY BE OBTAINED FROM CHEMISTRY SUPERVISION OR ON-CALL INDIVIDUAL.
- [A] = CORRECTION OF pH FOR RELEASES MAY BE MADE BY DILUTION. pH IS NOT REQUIRED AND pH LIMIT DOES NOT APPLY IF CONDUCTIVITY OF TANK IS LESS THAN 2.5 µS/cm.
- [D] = THIS LIMIT APPLIES ONLY TO RELEASES WHEN THE SAMPLED TANK'S CONTENTS HAVE NOT BEEN PROCESSED THROUGH AT LEAST ONE RADWASTE SUBSYSTEM OR EQUIVALENT PER ODCMS BASES B 3.8.  
(See CY-PB-120-401)

<sup>1</sup> Required on tanks to be released WHEN the conductivity is greater than OR equal to 2.5 µS/cm

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat

**6.4** **VERIFY** tank sample results recorded on Data Sheet 1 are Satisfactory for release to discharge canal per CY-PB-120-401.

*C.T.*

CT

**NOTE**

1. Variances may **NOT** be granted for any projected dose limit which has been exceeded.

2. **IF** a Variance is Required **AND NOT** granted, **THEN** this test should be aborted.

**6.5** **IF** any chemical analysis exceeds its Limit For Discharge, **THEN RECORD** "Variance Required" in remarks section of Data Sheet 1 **AND** obtain approval for Discharge with a "Variance". **OTHERWISE, N/A** this Step. **CM-2**

*N/A*

CT

**6.5.1** **IF** a "Variance" was required for discharge, **THEN CONTACT** Chemistry Supervision **OR** on-call individual for Variance **AND RECORD** Name of Chemistry Supervisor **OR** responsible Staff person granting "Variance(s)" below:

(**IF** a Variance is **NOT** required, **THEN N/A** these spaces for this step.)

*N/A*

Name

Time

Date

*N/A*

CT

**6.6** **ATTACH** a copy of the Gamma Isotopic Analysis Report to this test. (ODCMS 4.8.B.1.1, 4.8.B.1.2, 4.8.B.1.3, Table 4.8.B.1 Func. 1 & 4)

*\*C.T.*

CT



**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat**6.7 VERIFY** a portion of sample (approx 1 Liter)  
retained for Monthly composite.C.T.CT**NOTE**

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow setpoints (Section 6.10).

**6.8 OBTAIN** the Background Count Rate for  
RIS-0-17-350 in counts per second (CPS) from  
the PRO **AND CALCULATE** RIS-0-17-350 "Rad Waste  
Effluent" Monitor HI Trip **AND** HI HI Trip  
Settings using formulas below. (Calculations  
are in accordance with ODCM.)**6.8.1 CALCULATE** Monitor Net CPS.

$$0.532 \times \frac{6}{\text{Well Counter net cpm/mL}} = \frac{3.19}{\text{Monitor Net CPS}}$$

C.T.CT**6.8.2 CALCULATE** Gross CPS

$$\frac{50}{\text{RIS-0-17-350 CPS Background Count Rate}} + \frac{3.19}{\text{Monitor Net CPS}} = \frac{53.19}{\text{Gross CPS}}$$

C.T.CT**6.8.3 DETERMINE** log CPS from Gross CPS.

$$\log \left( \frac{53.19}{\text{Gross CPS}} \right) = \frac{1.73}{\log \text{ CPS}}$$

C.T.CT

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat~~6.8.4~~**CALCULATE** Adjusted Log CPS

$$1.37 \times \frac{1.73}{\text{Log CPS}} = \frac{2.37}{\text{Adjusted Log CPS}}$$

*C.T.*CT~~6.8.5~~

**CALCULATE** RIS-0-17-350 HI Trip Setpoint **AND RECORD** results as Required RIS-0-17-350 HI Trip Value on Data Sheet 3. (ODCMS 3.8.B.3.C)

$$1.44 + \frac{2.37}{\text{Adjustment Log CPS}} = \frac{3.81}{\text{Hi Trip Setting}}$$

*C.T.*CT~~6.8.6~~

**CALCULATE** RIS-0-17-350 HI HI Trip Setpoint **AND RECORD** results as Required RIS-0-17-350 HI HI Trip Value on Data Sheet 3. (ODCMS 3.8.B.3.C)

$$1.47 + \frac{2.37}{\text{Adjustment Log CPS}} = \frac{3.84}{\text{Hi Hi Trip Setting}}$$

*C.T.*CT**NOTE**

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow set points (Section 6.10).

~~6.8.7~~

**PERFORM** a Worker Verification of calculations made in Section 6.8. Any discrepancies between the results of section 6.8 **AND** the worker verification shall be resolved prior to the release of the affected tank.

*O.T.*CT

~~6.0~~ **PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat~~6.9~~ **CALCULATE** the Maximum Allowed Tank Release Rate as follows: (ODCMS 4.8.B.1.1)~~6.9.1~~ **OBTAIN** position of Discharge Canal-To-Intake crosstie gate from the PRO **AND CIRCLE** the position (OPEN OR CLOSED) in Section 1.0 of Data Sheet 2.C.T.

CT

~~1.~~ **IF** Crosstie Gate is CLOSED, **THEN PERFORM** the following to complete Data Sheet 2 **AND** Data Sheet 3, **OTHERWISE, N/A** the spaces in this step.~~a.~~ **RECORD "N/A"** in spaces of Section 2.0 of Data Sheet 2.C.T.

CT

~~b.~~ **OBTAIN** the Actual Number of Circ Pumps Operating from the PRO **AND RECORD** this number in Sections 3.0 **AND** 5.0 of Data Sheet 2 **AND ENTER** "1" for the "Required No. of Circ Pumps Operating" on Data Sheet 3.C.T.

CT

~~2.~~ **IF** the Crosstie Gate is OPEN, **THEN PERFORM** the following to complete Data Sheet 2 **AND** Data Sheet 3, **OTHERWISE, N/A** the spaces in this step.~~a.~~ **OBTAIN** the River-To-Intake Pond Differential Level Readings from the PRO **AND RECORD** in Section 2.0 of Data Sheet 2.N/A.

CT

~~6.0~~ **PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat

~~b.~~ **OBTAIN** the Actual Number of Circ Pumps Operating from the PRO **AND RECORD** in Section 3.0 of Data Sheet 2. Also **RECORD** "3" for the "Required No. of Circ. Pumps Operating" on Data Sheet 3. (A minimum of three circ pumps must be operating.)

N/A \_\_\_\_\_  
CT

~~c.~~ Using Section 4.0 of Data Sheet 2, **DETERMINE** the No. Of Circ. Pumps Providing Dilution **AND RECORD** this value in Section 5.0.

N/A \_\_\_\_\_  
CT

2

ST-C-095-805-2

Rev. 13

Page 13 of 27

**DATA SHEET 2**  
**CALCULATION OF NUMBER OF CIRC PUMPS PROVIDING DILUTION**  
**(PRE-RELEASE DATA)**

**TANK TO BE**  
**DISCHARGE SOURCE:** FDSI

**CSAR No.** 176 - 10

**1.0 Discharge Canal-To-Intake**  
**crosstie gate**

**POSITION: OPEN OR CLOSED**  
 (Circle current position)

Traveling Screens Outer Screens  $\Delta L$

**2.0 RIVER-TO-INTAKE POND**  
**DIFFERENTIAL LEVEL**  
**READINGS**

< At Control Room >

DLI-2207 @  
 Console 20C007A  
N/A  
 "H<sub>2</sub>O

DLI-3207 @  
 Console 30C007A  
N/A  
 "H<sub>2</sub>O

**3.0 NUMBER OF CIRC PUMPS OPERATING**

6

**4.0 USING THE CHART BELOW DETERMINE THE NUMBER OF PUMPS PROVIDING DILUTION FOR THIS RELEASE. TAKE THE ACTUAL NUMBER OF CIRC PUMPS OPERATING FROM SECTION 3.0 OF THIS DATA SHEET, READ DOWN THE COLUMN TO THE HIGHEST DIFFERENTIAL LEVEL RECORDED IN SECTION 2.0 OF THIS DATA SHEET, MOVE ACROSS THE ROW AND FIND THE NUMBER OF CIRC PUMPS PROVIDING DILUTION. IF EITHER DLI-2207 OR DLI-3207 ARE INOPERABLE, THEN TAKE THE NUMBER OF CIRC PUMPS OPERATING FROM SECTION 3.0 AND SUBTRACT 2.**

	ACTUAL NUMBER OF CIRC PUMPS OPERATING				No. OF CIRC PUMPS PROVIDING DILUTION
	3	4	5	6	
$\Delta$ LEVEL " WATER	----	----	----	0 - 1.8	5
	----	----	0 - 2.4	1.8 - 10	4
	----	0 - 2.7	2.4 - 10	----	3
	0 - 3.1	2.7 - 10	----	----	2
	3.1 - 10	----	----	----	1

**5.0 No. OF CIRC PUMPS PROVIDING DILUTION**

6

**6.0 PERFORMANCE STEPS (Continued)**Initial  
Sat UnSat

~~6.9.2~~ **OBTAIN** the Max Discharge Flow (gpm) from the Gamma Isotopic Analysis Report **AND ENTER** for maximum rate to discharge canal on Data Sheet 4.

C.T. \_\_\_\_\_  
CT

~~6.10~~ **CALCULATE** the High **AND** Low Flow Set Points as directed below: (Calculations are in accordance with the ODCM.)

**NOTE**

**IF** the calculated value is greater than 100%, **THEN RECORD** 100% for the setting values.

~~6.10.1~~ **DETERMINE** Maximum Allowable discharge settings as follows **AND RECORD** as "High Flow" **AND** "Low Flow" in applicable spaces on Data Sheet 4. (ODCMS 3.8.B.3c)

~~1.~~ High Flow Discharge

$$\frac{1.2 \times \text{Max Release Rate } 300 \text{ GPM}}{3.0} = \frac{100}{\text{Setting}} \%$$

C.T. \_\_\_\_\_  
CT

~~2.~~ Low Flow Discharge

$$\frac{1.2 \times \text{Max Release Rate } 300 \text{ GPM}}{0.15} = \frac{100}{\text{Setting}} \%$$

C.T. \_\_\_\_\_  
CT

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat**NOTE**

Chemistry Management approved computer programs may be used, **AND** is the preferred method, to perform the worker verification for the calculation of the values for the alarm setpoints (Section 6.8) **AND** the radwaste discharge pump high **AND** low flow set points (Section 6.10).

**6.10.2 PERFORM** a Worker Verification of calculations made in Section 6.10. Any discrepancies between the results of section 6.10 **AND** the worker verification shall be resolved prior to the release of the affected tanks.

O.T.

CT

**6.11 REVIEW** all CT responsible steps in Sections 6.1 through 6.10 for completeness, **RECORD** name **AND** initials in Section 10.0, Participants Record, **SIGN** cover sheet of this test at "Performed By:" **AND FORWARD** this procedure to SMgt.

C.T.

CT

**6.12 SMgt Review AND Signature**

**6.12.1 VERIFY** all CT steps to this point have been Initialed **AND** completed Satisfactorily.

S.M.

SMgt

**6.12.2 VERIFY**, using an appropriate calculating device, the calculations performed in Section 6.8 **AND** Section 6.10 by the CT are correct **AND** that the correct results have been recorded on Data Sheet 3 **AND** Data Sheet 4.

S.M.

SMgt

**6.12.3 VERIFY** that the sample tank named on the cover sheet of this test is intended to be released.

S.M.

SMgt

**6.12.4 GRANT** Permission to operate HV-0-20C-144 "Waste Sample PP Disch To Pond" **AND** HV-0-20C-146 "Outer Block Valve for Waste Sample Tank Disch to River". **OTHERWISE, N/A** this step.

S.M.

SMgt

## 6.0 PERFORMANCE STEPS (Continued)

Initial  
Sat UnSat

~~6.12.5~~ **VERIFY** RIS-0-17-350 "Rad Waste Effluent" Rad Monitor is operable. (ODCMS 3.8.B.3a)

\* S.M. ☐  
SMgt

~~6.12.6~~ **VERIFY** FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot **AND** associated Flow Control Valve are operable (This means that there are **NO** ETTs **OR** A/Rs against this equipment). (ODCMS 3.8.B.3c)

\* S.M. ☐  
SMgt

~~6.12.7~~ **RECORD** name **AND** initials in Section 10.0, Participants Record.

S.M. \_\_\_\_\_  
SMgt

~~6.12.8~~ **FORWARD** this test to the PRO.

S.M. \_\_\_\_\_  
SMgt

## DATA SHEET 3

TANK TO BE

DISCHARGED SOURCE: *FDST*CSAR No. *176-10*PLANT SYSTEM REQUIRED PARAMETERS FOR LIQUID  
RADWASTE RELEASE

REQUIRED VALUE

Required No. of Circ. Pumps Operating

*1* PUMPS

Required RIS-0-17-350 HI Trip Setpoint

*3.81* POT  
SETTING

Required RIS-0-17-350 HI HI Trip Setpoint

*3.84* POT  
SETTING

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat**6.13 PRO Review AND set-up of Plant in Preparation For Discharge**


- 6.13.1 **RECORD** the Actual No. of Circ. Pumps Operating below **AND VERIFY** the Actual No. of Circ. Pumps Operating is greater than **OR** equal to the required No. of Circ. Pumps as recorded on Data Sheet 3. (ODCMS 4.8.B.1.1)

Actual No. of Circ. Pumps Operating \_\_\_\_\_

\* \_\_\_\_\_   
PRO


- 6.13.2 **SET** RIS-0-17-350 HI Trip Setpoint to less than **OR** equal to Required value from Data Sheet 3 **AND RECORD** Actual Setpoint POT value below: (ODCMS 3.8.B.3.c)

Actual HI Trip Pot Setting \_\_\_\_\_

\* \_\_\_\_\_   
PRO

- 6.13.3 **SET** RIS-0-17-350 HI HI Trip Setpoint to less than **OR** equal to Required value **AND RECORD** the Actual HI HI Setpoint Pot value below: (ODCMS 3.8.B.3.c)

Actual HI HI Trip Pot Setting \_\_\_\_\_

\* \_\_\_\_\_   
PRO

- 6.13.4 **IF** the discharge Canal-To-Intake Pond crosstie gate is OPEN, **THEN VERIFY** the following. **OTHERWISE, N/A** the spaces in this step.

1. Alarm Panel 204 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL" is CLEAR.

\_\_\_\_\_  
PRO

2. Alarm Panel 304 Window F-4 "OUTER SCREEN STRUCTURE HI HI DIFF WTR LVL" is CLEAR.

\_\_\_\_\_  
PRO

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat

6.13.5 **REVIEW** all PRO steps, to this point, in Section 6.13 for completeness.

\_\_\_\_\_  
PRO

6.13.6 **RECORD** name **AND** initials in Section 10.0, Participants Record, **AND FORWARD** this test to the Radwaste Operator (RWO).

\_\_\_\_\_  
PRO**DATA SHEET 4****TANK TO BE****DISCHARGED SOURCE:** FDST**CSAR No.** 176-10

RADWASTE SYSTEM REQUIRED PARAMETERS PRIOR TO LIQUID RADWASTE RELEASE	REQUIRED VALUE
FS-0-20-493 "RWS Low Purity Waste" High Flow Trip Set Pot	<b>100 %</b>
FS-0-20-493 "RWS Low Purity Waste" Low Flow Trip Set Pot	<b>100 %</b>
MAXIMUM Release Rate to Discharge Canal	<b>300 GPM</b>

6.14 RWO ESTABLISHMENT OF RADWASTE DISCHARGE  
(At Radwaste Control Room Panel 00C077)

6.14.1 **VERIFY** tank to be discharged, as written in Section 1 of the coversheet, is the same tank intended to be released.

\* \_\_\_\_\_

RWO

6.14.2 **VERIFY** tank to be discharged has been processed through one **OR** more of these systems: Waste Collector Filter **AND** Demineralizer, Floor Drain Filter, Fuel Pool Filter Demineralizer, **AND** Chemical/Oily Waste Cleanup (EPICORE Oil/Water Emulsion), Laundry Drain Filter **OR** Projected Body Dose **AND** Projected Organ Dose for the Month have been recorded on Data Sheet 1.  
(ODCMS 3.8.B.4)

\* \_\_\_\_\_

## 6.0 PERFORMANCE STEPS (Continued)

Initial  
Sat UnSat

RWO

- 6.14.3 **SET** FS-0-20-493 "RWS Low Purity Waste"  
 High Flow Trip Set Pot to less than **OR**  
 equal to Required Maximum % Setting for  
 High Flow Discharge as found on Data  
 Sheet 4 above, **AND RECORD** the Actual  
 Setting below:

Actual FS-0-20-493 High Flow Trip  
 Set Pot Setting \_\_\_\_\_

\*

RWO

- 6.14.4 **SET** FS-0-20-493 "RWS Low Purity Waste"  
 Low Flow Trip Set Pot to less than **OR**  
 equal to Required Maximum % Setting for  
 Low Flow Discharge, as found on Data  
 Sheet 4 above, **AND RECORD** the Actual  
 Setting below:

Actual FS-0-20-493 Low Flow Trip  
 Set Pot Setting \_\_\_\_\_

\*

RWO

- 6.14.5 **RECORD** RR-0-17-337 **OR** RIS-0-17-350  
 before Discharge CPS below:

\_\_\_\_\_ CPS

RWO

- 6.14.6 **COMMENCE** release of the sampled **AND**  
 analyzed tank as follows:

- 6.14.6.1 If Sampled and analyzed  
 tank was the Floor Drain  
 Sample Tank, perform SO  
 20A.1.E and perform a  
 concurrent verification  
 that AO-0-20-227, "Floor  
 Drain Sample Pumps Disch  
 Valve to River" is opened  
 in step 4.20. **Otherwise,**  
**N/A this step.**

RWO

CV

**6.0 PERFORMANCE STEPS (Continued)**

Initial  
Sat UnSat

6.14.6.2 If Sampled and analyzed tank was the 'A' Waste Sample Tank, perform SO 20C.7.N and perform a concurrent verification that AO-0-20-142A, "Discharge Valve for 'A' Waste Sample Pump" is opened in step 4.20. **Otherwise, N/A this step.**

\_\_\_\_\_  
 RWO

\_\_\_\_\_  
 CV

6.14.6.3 If Sampled and analyzed tank was the 'B' Waste Sample Tank, perform SO 20C.7.N and perform a concurrent verification that AO-0-20-142B, "Discharge Valve for 'B' Waste Sample Pump" is opened in step 4.20. **Otherwise, N/A this step.**

\_\_\_\_\_  
 RWO

\_\_\_\_\_  
 CV

6.14.6.4 If Sampled and analyzed tank was 'B' Laundry Drain Tank, perform SO 20B.7.A and perform a concurrent verification that AO-0-20-191, "Laundry Dr Tk Pumps Disch to Laundry Drain Filter" is opened in step 4.3.11. **Otherwise, N/A this step.**

\_\_\_\_\_  
 RWO

\_\_\_\_\_  
 CV

## 6.0 PERFORMANCE STEPS (Continued)

Initial  
Sat UnSat**NOTE**

1. Portions of the following Section must be completed during the release.
2. **IF** the release is terminated early for lack of dilution flow, **THEN** it may only be restarted **WHEN** the original release conditions are re-established.
3. The following Steps may be repeated, as applicable, for each release start **AND** stop time.
4. The RIS-0-17-350 Trip Setpoints recorded on Data Sheet 3 correspond to 125% (HI) **AND** 135% (HI-HI) of the radiation monitor reading expected during the release. Typically, any appreciable change in the radiation monitor readings during the release is unusual **AND** should be reported to SMgt.

- 6.14.7 **RECORD** each release Start Time, Start Date, Stop Time, Stop Date, Start Tank %, Stop Tank %, the FR-0-20-441 Flow (GPM) reading **AND** the RR-0-17-337 (CPS) **OR** RIS-0-17-350 (CPS) as required in chart below: (**N/A** spaces **NOT** used.) (ODCMS 4.8.B.2.1, 4.8.B.3.1, 4.8.B.3.2)

	TIME	DATE	TANK LEVEL	FR-0-20-441	RR-0-17-337 OR RIS-0-17-350
START			%	GPM	CPS
STOP			%		

\*

RWO

## 6.0 PERFORMANCE STEPS (Continued)

Initial  
Sat UnSat

	TIME	DATE	TANK LEVEL	FR-0-20-441	RR-0-17-337 OR RIS-0-17-350
START			%	GPM	CPS
STOP			%		

\*   
RWO

	TIME	DATE	TANK LEVEL	FR-0-20-441	RR-0-17-337 OR RIS-0-17-350
START			%	GPM	CPS
STOP			%		

\*   
RWO

- 6.14.8 **RECORD** below the actual maximum Release Rate GPM value from FR-0-20-441 observed during the release **AND VERIFY** the actual Release Rate is less than **OR** equal to the value recorded on Data Sheet 4. (ODCMS 3.8.B.3.C)

Actual Maximum Release Rate FR-0-20-441

\_\_\_\_\_ GPM \*   
RWO

- 6.14.9 **IF** this release is **NOT** immediately followed by another discharge, **THEN PERFORM** the following post release steps. **OTHERWISE, N/A** these Steps.

1. **RECORD** RR-0-17-337 recorder CPS Reading BEFORE FLUSH.

\_\_\_\_\_ CPS \_\_\_\_\_  
RWO

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat

2. **PERFORM** SO 20C.5.B "Liquid Radwaste Discharge Radiation Monitor Flushing."  
\_\_\_\_\_ RWO
3. **RECORD** RR-0-17-337 recorder CPS Reading after flush.  
\_\_\_\_\_ CPS \_\_\_\_\_ RWO
- 6.14.10 **IF** a Waste Sample Tank was Released, **THEN PERFORM** the following. **OTHERWISE N/A** these Steps:
1. **CLOSE** HV-0-20C-144 "Waste Sample PP DISCH To Pond".  
\_\_\_\_\_ RWO
2. **CLOSE** HV-0-20C-146 "Outer Block Valve For Waste Sample Tank Disch To River".  
\_\_\_\_\_ RWO
- 6.14.11 **REVIEW** all RWO Steps, to this step, in Section 6.14 for accuracy **AND** completeness.  
\_\_\_\_\_ RWO
- 6.14.12 **RECORD** name **AND** initials in Section 10.0, Participants Record, **AND FORWARD** this test to SMgt for review.  
\_\_\_\_\_ RWO
- 6.15 SMgt REVIEW OF OPERATIONS' PERFORMANCE AFTER DISCHARGE
- 6.15.1 **REVIEW** this test to this point for completeness paying attention to the Steps requiring PRO **AND** RWO data entry **AND** initials.  
\_\_\_\_\_ SMgt
- 6.15.2 **SIGN** coversheet of this test at "Reviewed By:"  
\_\_\_\_\_ SMgt
- 6.15.3 **PLACE** this test in the Chemistry bin located in the Main Control Room.  
\_\_\_\_\_ SMgt

**6.0 PERFORMANCE STEPS** (Continued)Initial  
Sat UnSat6.16 CHEMISTRY TECHNICIAN REVIEWER (CTR) COMPLETE  
THE TEST.

- 6.16.1 **VERIFY** sample Retained (approximately 1 Liter) for Monthly Radwaste Composite per ST-C-095-833-2, "P-32, FE-55, SR-89 and SR-90, and Tritium Analysis in Liquid Radwaste". (ODCMS Table 4.8.1)

\*              
CTR**NOTE**

AWST or BWST volume is 25488 gallons. FDST volume is 19844 gallons. BLDT volume is 1072 gallons.

- 6.16.2 **USE** data from this release, as applicable, to update OpenEMS records in the computer.

            
CTR

- 6.16.3 **ENSURE** all data for the applicable waste tank has been entered into the Chemistry Data Management System (DMS).

            
CTR**7.0 PROCEDURE COMPLETION**Initial

## 7.1 Independent Verification

None.

## 7.2 Records Completion

- 7.2.1 **REVIEW** all Sections of this test **AND VERIFY** these are complete.

            
CTR

- 7.2.2 **VERIFY** copy of the Gamma Isotopic Analysis Report attached to this test.

            
CTR

- 7.2.3 **COMPLETE** Section 2 of this test's coversheet by signing at "Completed By:" (**AND** Section 3 **IF** applicable) **AND FORWARD** this test to Chemistry Supervision **OR** Staff for review.

            
CTR

---

## 8.0 REFERENCES

### 8.1 Governing

- 8.1.1 ODCMS 3.8.B.3
- 8.1.2 ODCMS 3.8.B.4
- 8.1.3 ODCMS 4.8.B.1.1
- 8.1.4 ODCMS 4.8.B.1.2
- 8.1.5 ODCMS 4.8.B.1.3
- 8.1.6 ODCMS 4.8.B.3.1
- 8.1.7 ODCMS 4.8.B.3.2
- 8.1.8 ODCMS Table 4.8.B.1
- 8.1.9 ODCMS 4.8.B.4.3
- 8.1.10 ODCMS 4.2.B.4.4
- 8.1.11 ODCMS 4.8.B.4.5
- 8.1.12 ODCMS Bases B 3.8
- 8.1.13 CM-1, Licensed Event Report 2-91-036
- 8.1.14 CM-2, NRC Inspection Report Doc No. 76070103

### 8.2 Interfacing

- 8.2.1 PBAPS Offsite Dose Calculation Manual (ODCM)
- 8.2.2 CY-PB-120-401, Liquid Radioactive Waste |
- 8.2.3 ST-C-095-833-2, P-32, FE-55, SR-89 and 90, and Tritium Analysis in Liquid Radwaste
- 8.2.4 SO 20A.1.E, Floor Drain Sample Tank Release to the Conowingo Pond
- 8.2.5 SO 20C.7.N, Waste Sample Tank Release to Conowingo Pond
- 8.2.6 SO 20B.7.A Laundry Drain Tank Release to Conowingo Pond
- 8.2.7 RW-PB-591, Transfer of Processed Waste Water to the "B" Laundry Drain Tank |
- 8.2.8 RW-PB-592, Transfer of Unprocessed Waste Water to the "B" Laundry Drain Tank |

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**8.0 REFERENCES** (Continued)

8.2.9 SO 20C.5.B, Liquid Radwaste Discharge Radiation  
Monitor Flushing

8.3 Developmental

8.3.1 CH-600, Determination of Gamma Isotopic Activity  
with the Canberra Gamma Spectrometers

8.3.2 10 CFR 20 Appendix B, Table 2, Column 2

8.3.3 10 CFR 50

8.3.4 LS-AA-104, "Exelon 50.59 Review Process" |

8.3.5 NPDES Permit No. PA0009733

8.3.6 UFSAR Section 9.2.4.2.4

8.3.7 UFSAR Section 9.2.4.3

8.3.8 UFSAR Section 9.2.5

8.3.9 UFSAR Section 9.2.7

8.3.10 Prints

E-540-55, Sht.1, Console 20C007A Condensate  
Enhancement Arrangement

M-370, Shts. 1, 2, & 3, Radwaste Process & Disposal  
System-Liquid

M-371, Sht 5, Radwaste Process and Disposal-Solid

**9.0 ODCMS LIMITING CONDITIONS FOR OPERATION (LCOs)**

Section 3.8.B



**EXELON NUCLEAR**  
**Nuclear Generation Group**  
**OJT/TPE MATERIAL COVERSHEET**

<b>TYPE:</b>	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-351C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	000
<b>AUTHOR:</b>	J. A. Verbillis	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Take Actions for Accidents Involving the Transportation of Radioactive Material		

<b>APPROVALS:</b>	<hr/> Signature / Title	<hr/> Date
	<hr/> Signature / Title	<hr/> Date
	<hr/> Signature / Title	<hr/> Date
	<hr/> Signature / Title	<hr/> Date

<b>APPROVED FOR USE:</b>	<hr/> Signature / Title	<hr/> Date
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<b>EFFECTIVE DATE:</b> ____/____/____
---------------------------------------

<b>NAME:</b> _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Last</span> <span>First</span> <span>M.I.</span> </div>	<b>ISSUE DATE:</b> _____
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____
<b>COMMENTS:</b>	

<b>Training Review for Completeness:</b>  <hr/> <div style="text-align: center;">Signature/Date</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>LMS CODE:</b></td> <td style="width: 50%;"></td> </tr> <tr> <td><b>LMS ENTRY:</b></td> <td></td> </tr> </table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2991880102 PLOR 351 C

K/A: G 2.1.18

SRO: 3.8

TASK DESCRIPTION: Take Actions for Accidents Involving the Transportation of Radioactive Material

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

1. OP-AA-106-102, Rev 4 "Accidents Involving the Transportation of Rad Materials"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the candidate has correctly identified the MINIMUM required notifications based on conditions provided.
2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to complete Attachment 1 of OP-AA-106-102 and identify the minimum required notifications for the accident/incident using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A phone notification has been received regarding a Transportation event involving a shipment of Radioactive Materials which originated at the station.
2. The shipper's vehicle inadvertently forced a Maryland resident's vehicle to exit the highway at high speed, where upon the resident's vehicle impacted a large tree.
3. The Maryland resident was transported to the Upper Chesapeake Regional Hospital with life-threatening injuries sustained when their vehicle impacted the tree.
4. NO damage to the shipper's vehicle.
5. NO damage to the Radioactive material in transient.
6. Detailed notes have been recorded by the Shift Manager from which you are to complete Attachment 1 of OP-AA-106-102.
7. The Shift Manager will complete the required notifications for an Event of Potential Public Interest.

## G. INITIATING CUE

The Shift Manager provides you with the detailed notes and directs you to (1) complete Attachment 1 of OP-AA-106-102, (2) determine if the event is a Transportation Accident or Incident, and (3) identify the MINIMUM required notifications required by OP-AA-106-102. In addition to completing Attachment 1, document your determinations on the CUE SHEET provided unless otherwise specified by your evaluator.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Use the provided notes to complete OP-AA-106-102 Attachment 1.	P	Candidate completes OP-AA-106-102 Attachment 1. Refer to JPM Att 2 for an example.
*2	Determine that the situation is a TRANSPORTATION INCIDENT.	P	Candidate determines event to be TRANSPORTATION INCIDENT based on OP-AA-106-102 Para 2.2.
*3	Determine that the Duty Station Manager is to be NOTIFIED.	P	Candidate determines Station Duty Manager notification required by OP-AA-106-102 Para 4.3.1.
*4	Determine that the Nuclear Duty Officer is to be NOTIFIED.	P	Candidate determines NDO notification required by OP-AA-106-102 Para 4.3.2.
*5	Determine that the Station Radiation Protection Manager or designee is to be NOTIFIED.	P	Candidate determines RPM or designee notification required by OP-AA-106-102 Para 4.3.3.
<p align="center"><b>*** NOTE to EVALUATOR ***</b></p> <p><b>Candidate may engage in discussion/speculation re: Exelon Nuclear Response Team. If so, inform candidate that this is NOT required. Likewise, notification of agencies listed in Attachment 2 is NOT REQUIRED. IF candidate identifies that the additional notifications are REQUIRED, this should be critiqued as being ABOVE THE MINIMUM.</b></p>			
6	Determine that the Station AND Corporate Communications Departments are to be NOTIFIED.	P	<p>Candidate determines Station AND Corporate Communications Departments are to be NOTIFIED as indicated in OP-AA-106-102 Para 4.3.5.1.</p> <p>Note that this is NOT a critical step, as the procedure indicates that a response <i>may</i> be required.</p>
7	As an evaluator, ensure you have positive control of all exam material provided to the examinee (Task Conditions / Prerequisites) <u>AND</u> procedures <u>AND</u> any Data Sheets or scrap paper used for calculations.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

## I. TERMINATING CUE

When the required notifications have been determined and documented, the evaluator will terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. A phone notification has been received regarding a Transportation event involving a shipment of Radioactive Materials which originated at the station.**
- 2. The shipper's vehicle inadvertently forced a Maryland resident's vehicle to exit the highway at high speed, where upon the resident's vehicle impacted a large tree.**
- 3. The Maryland resident was transported to the Upper Chesapeake Regional Hospital with life-threatening injuries sustained when their vehicle impacted the tree.**
- 4. NO damage to the shipper's vehicle.**
- 5. NO damage to the radioactive material in transient.**
- 6. Detailed notes have been recorded by the Shift Manager from which you are to complete Attachment 1 of OP-AA-106-102.**
- 7. The Shift Manager will complete the required notifications for an Event of Potential Public Interest.**

[illegible]

## INITIATING CUE

The Shift Manager provides you with the detailed notes and directs you to (1) complete Attachment 1 of OP-AA-106-102, (2) determine if the event is a Transportation Accident or Incident, and (3) identify the MINIMUM required notifications required by OP-AA-106-102. In addition to completing Attachment 1, document your determinations on the CUE SHEET provided unless otherwise specified by your evaluator.

**Document Here:**

**YOUR NAME:** \_\_\_\_\_

(1) Circle:     **ACCIDENT** or **INCIDENT**

(2) REQUIRED Notifications:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

[illegible][illegible][illegible][illegible][illegible]

The following information was relayed by Tom Hall, calling from the ChemTrec Emergency Center (1300 Wilson Blvd. Arlington Va. (800) 262 8200). Call was received today at 10:15 AM.

There has been a transportation event involving a truck that is transporting Hazardous Material (Low-level Radioactive Waste) from the Peach Bottom APS.

The event occurred today at 08:15 AM in the town of Bel Air, Maryland (Harford County) near the intersection of Rt 1 Bypass and Business Rt 1.

The event involves a Transport Truck and a passenger car. There is serious injury to the driver of the car, who has been transported by the Bel Air Volunteer Fire Company to the Upper Chesapeake Regional Hospital in Bel Air. The injuries are life-threatening, and the individual is not expected to survive. The individual was NOT contaminated with radioactive material. The driver of the truck is uninjured.

The accident occurred when the truck slid sideways due to road conditions, and bumped the car, which then exited the highway at a high rate of speed and hit a tree. The driver of the automobile was ejected from the car. The driver of the truck immediately stopped to render aide and call 9-1-1. There was no damage to the truck or the materials being shipped. The truck and driver are still on the scene at the request of the local authorities.

Weather conditions at the time of the accident were light snow and 32 °F air temperature.

First responders were the Bel Air Volunteer Fire Company and the Harford County Sheriff's Department; the Maryland State Police are now also on the scene.

Particulars about the shipment include:

Exelon Nuclear Shipment Number is PW-10-456.

This is NOT a RAMQC shipment.

The material is Low Level RAM Waste

The UN ID number is UN-3321.

There was NO damage to the shipment.

There was NO release of radioactivity.

There was NO impact to any member of the public in any way associated with the shipment.

**Attachment 1**  
**Transportation Accident / Incident Notification Form**  
**Page 1 of 2**

Date / Time Of This Call.	<i>Current Date / Time = 1015</i>
Date / Time of the Event.	<i>Current Date / Time = 0815</i>
Name of Caller.	<i>Tom Hall</i>
Company Name and Address Of Caller.	<i>ChemTrec Emergency Center 1300 Wilson Blvd. Arlington Va.</i>
Telephone Number Of Caller (On Scene).	<i>(800) 262 8200</i>
Exelon Nuclear Shipment Number.	<i>PW-10-456</i>
<i>Is this a RAMQC Shipment</i>	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Incident Location. (As specific as possible, including State, County, Road, Intersection) If in Illinois and if known: (Section, Township, Range)	<i>Town of Bel Air, Harford County, Maryland – near the Intersection of Rt. 1 and Business Rt. 1</i>
Vehicles Involved.	<i>Transport Truck and a passenger Car</i>
<b>AS A DIRECT RESULT OF THE HAZARDOUS MATERIAL, WERE</b>	
People Killed?	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
People Injured?	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Injured Taken to Hospital? If YES, Where?	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Does The Estimate Of Carrier Or Property Damage Exceed \$50,000?	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Has A Major Transportation Artery Or Facility Been Closed One Or More Hours?	YES <input type="checkbox"/> or POTENTIAL <input type="checkbox"/> or NO <input checked="" type="checkbox"/>

**Attachment 1**  
**Transportation Accident / Incident Notification Form**  
**Page 2 of 2**

Has An Evacuation Of The General Public Lasting One Or More hours Occurred?	YES <input type="checkbox"/> or POTENTIAL <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Has the Flight Pattern Of An Aircraft Been Altered?	YES <input type="checkbox"/> or POTENTIAL <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Were Package(s) Impacted By Fire? (Package defined on Radioactive Shipment Notification Form)	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>
Was there a Loss of Package(s) Integrity? If YES, then does the potential exist for a spread of contamination?	YES <input type="checkbox"/> or NO <input checked="" type="checkbox"/>

NOTE: If ALL of the above questions are answered NO, then a transportation accident has not occurred.

Name of Emergency Response Units Contacted Or At the Scene	<i>Bel Air Vol Fire Co., Harford County Sheriff's Dept., Maryland State Police</i>
Name Of Hazard Being Shipped.	<i>LL Ram</i>
UN ID Number, (Reference number of hazard)	<i>UN-3321</i>
Public Health Precautions Implemented, If Any.	<i>None</i>
Weather Condition: (Rain, snow temperature, etc.)	<i>32°F, Light Snow</i>
Person Completing This Form. (Please print)	<i>Candidate's Name</i>

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-263C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	002
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Determine Electrical Safety Personal Protective Equipment for Racking Out a 4kV Circuit Breaker		

**APPROVALS:**

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

**APPROVED FOR USE:**

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

**EFFECTIVE DATE:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**NAME:** \_\_\_\_\_  
Last First M.I.

**ISSUE DATE:** \_\_\_\_\_

**EMPLOYEE ID#:** \_\_\_\_\_

**COMPLETION DATE:** \_\_\_\_\_

**COMMENTS:**

**Training Review for Completeness:**

**LMS CODE:**

**LMS ENTRY:**

\_\_\_\_\_  
Signature/Date

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2991780301 / PLOR-263C

K/A: 2.1.26

SRO: 3.6

TASK DESCRIPTION: Knowledge of industrial safety procedures (such as rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen).

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

1. SA-AA-129 "Electrical Safety"

**C. REFERENCES**

1. SA-AA-129, Rev. 7, "Electrical Safety"

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when the minimum required Electrical Safety personal protective equipment (PPE) has been determined for racking out a 4kV breaker using SA-AA-129 "Electrical Safety".
2. Estimated time to complete: 15 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to determine the minimum required Electrical Safety personal protective equipment (PPE) using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

The breaker for the 2A CRD pump needs to be racked out at the E12 switchgear.

**G. INITIATING CUE**

As the Work Execution Control Supervisor, determine the MINIMUM Electrical Safety personal protective equipment (PPE) required for racking out the 2A CRD pump breaker from the E12 switchgear using SA-AA-129 "Electrical Safety". Document your determination on the CUE SHEET.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Review SA-AA-129 "Electrical Safety". (Cue: Hand the Examinee a copy of SA-AA-129 "Electrical Safety".)	P	Reviews SA-AA-129 "Electrical Safety". References ATTACHMENT 4 - Electrical Safe Work Practices Hazard Assessment.
*2	Determine that Class 3 clothing is required. (Cue: N/A)	P	Uses ATTACHMENT 4 - Electrical Safe Work Practices Hazard Assessment, of SA-AA-129, Item 3, for racking in/out a 4KV switchgear breaker.
*3	Determine that eye protection is required. (Cue: N/A)	P	Same as Step 2, above
*4	Determine that flash hood is required. (Cue: N/A)	P	Same as Step 2, above
*5	Determine that a face shield is required. (Cue: N/A)	P	Same as Step 2, above
*6	Determine that a hard hat is required. (Cue: N/A)	P	Same as Step 2, above
*7	Determine that Class 1 Gloves with Glove Protectors are required. (Cue: N/A)	P	SA-AA-129, step 4.1.6
8	Inform evaluator of completion of the task.	P	Communicate that the task has been completed.
9	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

## I. TERMINATING CUE

When the minimum Electrical Safety personal protective equipment (PPE) for racking out a 4kV breaker using SA-AA-129 "Electrical Safety" has been determined, the evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. The breaker for the 2A CRD pump needs to be racked out at the E12 switchgear.**

## **INITIATING CUE**

**As the Work Execution Control Supervisor, determine the MINIMUM Electrical Safety personal protective equipment (PPE) required for racking out the 2A CRD pump breaker from the E12 switchgear using SA-AA-129 "Electrical Safety". Document your determination on this CUE SHEET.**

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**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> <b>X</b>	JPM	<input type="checkbox"/>	QUALIFICATION MANUAL	<input type="checkbox"/>	OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING				<b>CODE #:</b>	PLOR-221C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION				<b>REV #:</b>	001
<b>AUTHOR:</b>	F. J. Bruns				<b>TYPIST:</b>	jav
<b>TITLE:</b>	Determine Technical Specification Action, Make Manual Log Entry					
<b>APPROVALS:</b>						
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
<b>APPROVED FOR USE:</b>						
			_____ Signature / Title		_____ Date	
<b>EFFECTIVE DATE:</b> ____/____/____						

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID#:</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 3410170302 / PLOR 221C

K/A: 2.2.23

SRO: 4.6

TASK DESCRIPTION: Determine Required Actions and/or Compensatory Measures Related to Tech Spec or TRM Conditions, ODCM

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

## B. TOOLS AND EQUIPMENT

1. AT4, Blank Technical Specification Action Log (OP-PB-108-104, At 1).
2. AT2, Simulated IR for Conditions in JPM

## C. REFERENCES

1. Technical Specification 3.1.7, Amend 277, "Standby Liquid Control (SLC) System"
2. OP-PB-108-104, Rev 1 "Regulatory Compliance Action Logs"

## D. TASK STANDARD

1. Satisfactory task completion is indicated when the Technical Specification Action Log entries have been completed.
2. Estimated time to complete: 15 minutes Non-Time Critical

## E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to be taken for information obtained from the chemistry department, using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

## F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 is operating at rated power.
2. A Chemistry Tech has just reported that a sample on the Unit 2 Standby Liquid Control Tank shows the concentration of boron in solution at 9.84% weight and a temperature of 72 deg. F.
3. Chemistry has initiated IR# 1127359.
4. All other Tech Spec plant equipment is operable.
5. The Unified Control Room Log Computer is not operating.
6. The next sequential TSA number is "009."

## G. INITIATING CUE

The Control Room Supervisor directs you to determine the impact of this condition and make a manual Tech Spec Action Log entry, if required. Submit any required forms to the Shift Manager for review.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of Tech Specs.	P	A copy of Tech Specs is obtained.
*2	Determine the Tech Spec action.	P	<p>Review Tech Spec 3.1.7 and determine that Condition 'A' applies:</p> <ul style="list-style-type: none"> <li>• A solution &gt;9.82% weight requires verifying the concentration and temperature of the boron and pump suction piping temperature on figure 3.1.7-1 within 8 hrs and once per 12 hrs thereafter.</li> <li>• Review figure 3.1.7-1 and determine concentration and temperature plot "Acceptable".</li> <li>• Restore concentration of boron in solution to &lt;9.82% weight within 72 hrs.</li> </ul>

### \*\*\* NOTES TO EVALUATOR \*\*\*

(1) AT4, a blank copy of OP-PB-108-104 At 1 may be provided

(2) AT3 is a "key" to the standards for Step 3 below

(3) In Step 3 below, accurate completion of blocks marked with \* (TS Number, Condition, Required Action, Completion time) are the critical components of the critical step. Failure to accurately transcribe into those blocks will result in failure of the critical step. Failure to accurately transcribe into other blocks should be critiqued but do NOT constitute failure of the critical step.

*3	<p>Complete Tech Spec Action Log.</p> <p>Unit - "unit experiencing inoperability"</p> <ul style="list-style-type: none"> <li>• Entry # - sequential number consisting of year, unit and sequential TSA #</li> <li>• Tech Spec Number - "Tech Spec number for inoperability"</li> </ul> <p>(CUE: IF asked to perform Independent Verification (IV), STATE "For purpose of evaluation, IV will NOT be performed")</p>	P	<p>Using OP-PB-108-104, At 1, complete the following TSA Log data entries:</p> <ul style="list-style-type: none"> <li>• Unit - Unit 2</li> <li>• Entry # "11-2- 009"</li> </ul> <p>Tech Spec # - "3.1.7" - <b>CRITICAL</b></p> <p>Candidate should address the IV process, as this is required by PB process.</p>
*3	<ul style="list-style-type: none"> <li>• Discovery Date/Time - "date and time</li> </ul>		<ul style="list-style-type: none"> <li>• Discovery date/time - today's</li> </ul>

STEP NO	STEP	ACT	STANDARD
(cont)	<p>inoperability discovered"</p> <ul style="list-style-type: none"> <li>Equipment ID - "alpha-numeric designator for inop equipment"</li> <li>System Number - "system number for equipment inop"</li> <li>Reference # - "AR number associated with the INOP feature"</li> </ul>	P	<p>date/time of notification</p> <ul style="list-style-type: none"> <li>Equipment ID - 20T18</li> <li>System # - "11"</li> <li>Reference # - IR 1127359</li> </ul>
*	<ul style="list-style-type: none"> <li>Condition - "applicable Tech Spec condition letter and condition statement"</li> </ul> <p>(CUE: IF asked, report that NO related Safety Function Determinations currently active.)</p>		<ul style="list-style-type: none"> <li>Condition - "A", Concentration of boron in solution &gt;9.82% weight. (Required to be verbatim) - <b>CRITICAL</b></li> <li>SFD Required? NO</li> </ul>
	<ul style="list-style-type: none"> <li>Reason - "short reason system is inop"</li> </ul>		<p>Reason - concentration of boron in solution &gt;9.82% weight.</p>
*	<ul style="list-style-type: none"> <li>Required Action 1 - "Applicable required action statement"</li> </ul>		<ul style="list-style-type: none"> <li>Required Action 1 - Verify the concentration and tempertur4e of boron in solution and pump suction piping temperatures are within the limits of Figure 3.1.7-1(Required to be verbatim) - <b>CRITICAL</b></li> </ul>
*	<ul style="list-style-type: none"> <li>Completion Time Date/Time - "Date and time for required action to be completed"</li> </ul>		<ul style="list-style-type: none"> <li>8 hours - <b>CRITICAL</b></li> </ul>
*	<ul style="list-style-type: none"> <li>Required Action 2 - "Applicable required action statement"</li> </ul>		<ul style="list-style-type: none"> <li>Required Action 2 - Restore concentration of boron in solution <math>\leq</math>9.82% weight. (Required to be verbatim) - <b>CRITICAL</b></li> </ul>
*	<ul style="list-style-type: none"> <li>Completion Time Date/Time - "Date and time for required action to be completed"</li> </ul>		<ul style="list-style-type: none"> <li>72 hours- <b>CRITICAL</b></li> </ul>

STEP NO	STEP	ACT	STANDARD
4	Submit the completed form.  (Cue: Acknowledge receipt of the completed Tech Spec Action Log. IF candidate makes reference to OP-PB-108-104 Attachment 5, inform them that that Attachment will be completed when and if needed)	P	Submit the completed Tech Spec Action Log to the Shift Manager for review.
5	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the Tech Spec Action Log has been completed and submitted to the Shift Manager, the evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 is operating at rated power.**
- 2. A Chemistry Tech has just reported that a sample on the Unit 2 Standby Liquid Control Tank shows the concentration of boron in solution at 9.84% weight and a temperature of 72 deg. F.**
- 3. Chemistry has initiated IR# 1127359.**
- 4. All other Tech Spec plant equipment is operable.**
- 5. The Unified Control Room Log Computer is not operating.**
- 6. The next sequential TSA number is "009.".**

## **INITIATING CUE**

**The Control Room Supervisor directs you to determine the impact of this condition and make a manual Tech Spec Action Log entry, if required. Submit any required forms to the Shift Manager for review.**

## AR 1127359 Report

<b>Aff Fac:</b>	Peach Bottom	<b>AR Type:</b>	CR	<b>Status:</b>	INIT
<b>Aff Unit:</b>	02	<b>Owed To:</b>	ACAPALL	<b>Due Date:</b>	
<b>Aff System:</b>	11			<b>Event Date:</b>	1/30/2011
<b>CR Level/Class:</b>				<b>Disc Date:</b>	1/30/2011
<b>How Discovered:</b>	H02			<b>Orig Date:</b>	1/30/2011
<b>WR/PIMS AR:</b>		<b>Component #:</b>	SYSTEM-11 - Component - 20T18		

### Action Request Details

**Subject:** Unit 2 SBLC Tank Boron Concentration

**Description:** Originator: Shift Chemist Supv Contacted: YOUR NAME HERE

Condition Description:  
Unit 2 SBLC Tank Boron Concentration is 9.84% weight with a temperature of 72 Degrees Fahrenheit.

Immediate actions taken: Notified SSV.

Recommended Actions:

Operable Basis:

Reportable Basis:

Reviewed by:  
Reviewer Comments:

Reviewed by:  
Reviewer Comments:

Reviewed by:  
Reviewer Comments:

SOC Reviewed by:  
SOC Comments:

**ATTACHMENT 1**  
**TECHNICAL SPECIFICATION ACTION LOG**  
 UNIT 2 (2 OR 3)  
 PAGE 1 of 1

Entry # <b>11-2-009</b>	TS# <b>3.1.7</b>	Entry Made: By <u>Candidate</u>	Equipment ID <b>20T18</b>	System # <b>11</b>	Reference # <b>IR# 1127359</b>
Discovery Date/Time <i>Today's Date/Current Time</i>		IV _____			
Condition <i>A. Concentration of boron in solution &gt;9.82% weight.</i>  Is a SFD required? YES / <b>NO</b> Are any other SFDs currently active? YES / <b>NO</b> (If YES, verify SFD is still valid.)			Reason <i>Actual Boron Concentration is 9.84% weight</i>		Required Action 1 <i>Verify the concentration and temperature of boron in solution and pump suction piping temperatures are within the limits of Figure 3.1.7-1</i>  Completion Time Date/Time <u>8 Hours from Current Date/Time</u>
Required Action 2 <i>Restore concentration of boron in solution to <math>\leq 9.82\%</math> weight.</i> Completion Time Date/Time <u>72 Hours (3 Days) from Current Date/Current Hour</u>			Required Action 3 Completion Time Date/Time _____/_____/_____		
Exit Justification				Exit Date/Time	Exit Entries Made: By _____ IV _____

**ATTACHMENT 1**  
**TECHNICAL SPECIFICATION ACTION LOG**  
 UNIT \_\_\_\_ (2 OR 3)  
 PAGE 1 of 1

Entry #	TS#	Entry Made: By _____ IV _____	Equipment ID	System #	Reference #
Discovery Date/Time					
Condition  Is a SFD required? YES / NO Are any other SFDs currently active? YES / NO (If YES, verify SFD is still valid.)			Reason	Required Action 1	
				Completion Time Date/Time _____/_____/_____	
Required Action 2			Required Action 3		
Completion Time Date/Time ____/____/_____			Completion Time Date/Time ____/____/_____		
Exit Justification			Exit Date/Time	Exit Entries Made: By _____ IV _____	

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-249C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	001
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Review And Authorize An Emergency Exposure		

**APPROVALS:**

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature / Title

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Date

**APPROVED FOR USE:**

\_\_\_\_\_  
Signature / Title

\_\_\_\_\_  
Date

**EFFECTIVE DATE:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**NAME:** \_\_\_\_\_  
Last First M.I.

**ISSUE DATE:** \_\_\_\_\_

**EMPLOYEE ID#:** \_\_\_\_\_

**COMPLETION DATE:** \_\_\_\_\_

**COMMENTS:**

**Training Review for Completeness:**

**LMS CODE:**

**LMS ENTRY:**

\_\_\_\_\_  
Signature/Date

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007550502 / PLOR-249C

K/A: G2.3.4

SRO: 3.7

TASK DESCRIPTION: EMERGENCY RADIATION EXPOSURE GUIDELINES AND  
CONTROLS

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

1. EP-AA-113, Rev. 10 "Personnel Protective Actions"
2. Attachment 2, Authorization for Emergency Exposure Forms completed for Worker One and Worker Two with the exception of the Station Emergency Director authorization.
3. Worker One and Worker Two history descriptions.

**C. REFERENCES**

1. EP-AA-113, Rev. 10 "Personnel Protective Actions"
2. EP-AA-113-F-02, Rev. B "Authorization of Emergency Exposure"

**D. TASK STANDARD**

1. Satisfactory completion of this task is indicated when the Emergency Director has reviewed the worker histories, Authorization for Emergency Exposure Forms, and made decisions on the Emergency Exposure Requests.
2. Estimated time to complete: 20 minutes. (Not time-critical)

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, review the worker histories and Authorization for Emergency Exposure Forms and make the decision as to whether to authorize the Emergency Exposure. I will describe the initial conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Peach Bottom is experiencing a major plant transient.
2. A General Emergency has been declared.
3. It is necessary for two specially trained individuals to enter an area with extremely high radiation levels (> 520 Rem/hour) to prevent a major release that would cause significant radiation sickness to the general public in the area. The release would also result in long-term somatic and genetic effects for the public. It is estimated that each worker will receive 30 Rem of dose.
4. Only two individuals at Peach Bottom have the required training and experience to be successful in preventing the release.
5. Worker One and Worker Two are available and have volunteered for the assignment.
6. EP-AA-113-F-02, Authorization for Emergency Exposure Form, has been completed for both individuals and require Emergency Director review and authorization.

7. A description of each worker's history has been attached to the Emergency Authorization Forms.

**G. INITIATING CUE**

As the Emergency Director, review the workers histories and Authorization for Emergency Exposure Forms (EP-AA-113-F-02) for authorization using procedure EP-AA-113 "Personnel Protective Actions". Document your decisions in the space provided on the worker history sheet.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>NOTES:</b></p> <p align="center"><b>The following steps may be done in a different order as long as all steps are completed prior to signing STATION EMERGENCY DIRECTOR (Authorization) on the Authorization for Emergency Exposure Form (EP-AA-113-F-02).</b></p>			
1	Locate the correct section of EP-AA-113, Personnel Protective Actions.	P	The operator references section 4.3 of EP-AA-113.
2	Evaluate the task to determine if it is worthy of authorizing Emergency Exposure.	P	Determine that the task has an acceptable basis to authorize necessary emergency exposure. May reference EP-AA-113, Attachment 1, Emergency Worker Exposure Limits and Associated Risks.
3	Evaluate Worker One's Authorization for Emergency Exposure Form.	P	Review Worker One's Authorization for Emergency Exposure Form and note that it is completed correctly and signed by Worker One and Rad. Protection Management.
4	Evaluate Worker One's History.	P	Review Worker One's History and determine that it is acceptable for Worker One to receive the Emergency Exposure.
*5	Authorize Worker One to receive the Emergency Exposure.	P	Indicate the authorization for Emergency Exposure by signing the Station Emergency Director signature block on the Emergency Exposure Authorization Form.
6	Evaluate Worker Two's Authorization for Emergency Exposure Form.	P	Review Worker Two's Authorization for Emergency Exposure Form and note that it is completed correctly and signed by Worker Two and Rad. Protection Management.
*7	Evaluate Worker Two's History.	P	Review Worker Two's History and recognize that he has received an Emergency Exposure in the past.

STEP NO	STEP	ACT	STANDARD
*8	Do NOT authorize Worker Two to receive the Emergency Exposure.	P	<p>Determine that since Worker Two has previously received an Emergency Exposure, he is not permitted to receive another Emergency Exposure. This is based on the CAUTION in EP-AA-113 just after Step 4.3.3 which states that "All Emergency Exposures in excess of 25 Rem TEDE <b>shall</b> be voluntary and <b>shall</b> be limited to once in a lifetime."</p> <p>The Examinee must NOT sign Worker Two's Emergency Exposure Form (EP-AA-113-F-02).</p>
9	Inform the evaluator of the results of his reviews.	P	The Examinee informs the evaluator that Worker One may be authorized to perform the task, but that Worker Two is NOT eligible for the Emergency Exposure.
10	As an evaluator, ensure that you have positive control of all exam material provided to the examinees (Task Conditions/Prerequisites, Worker Histories, and procedure copies.	P	Positive Control Established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE:

When the Emergency Exposure Authorization Review is complete, the Examinee will inform the Evaluator and the exercise will be terminated.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Peach Bottom is experiencing a major plant transient.**
- 2. A General Emergency has been declared.**
- 3. It is necessary for two specially trained individuals to enter an area with extremely high radiation levels (>520 Rem/hour) to prevent a major release that would cause significant radiation sickness to the general public in the area. The release would also result in long-term somatic and genetic effects for the public. It is estimated that each worker will receive 30 Rem of dose.**
- 4. Only two individuals at Peach Bottom have the required training and experience to be successful in preventing the release.**
- 5. Worker One and Worker Two are available and have volunteered for the assignment.**
- 6. EP-AA-113-F-02, Authorization for Emergency Exposure Form, has been completed for both individuals and require Emergency Director review and authorization.**
- 7. A description of each worker's history has been attached to the Emergency Authorization Forms.**

## **INITIATING CUE**

**As the Emergency Director, review the workers histories and Authorization for Emergency Exposure Forms (EP-AA-113-F-02) for authorization using procedure EP-AA-113 "Personnel Protective Actions". Document your decisions in the space provided on the worker history sheet.**

## WORKER ONE HISTORY

- Worker One is a 33 year old male.
- He is in generally good health.
- Current Annual Exposure is 1765 mRem.
- Lifetime Occupational Exposure is 29,632 mRem.
- Worker One has never exceeded Station Administrative Limits.

Worker One (Circle one, IF Denied, then document basis)

Approved

Denied

Basis for Denial, If applicable:

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## WORKER TWO HISTORY

- Worker Two is a 48 year old male.
- He is in very good health.
- Current Annual Exposure is 112 mRem.
- Lifetime Occupational Exposure is 28,564 mRem.
- On June 5, 1997, Worker Two received 25,388 mRem while saving a coworker's life.

Worker Two (Circle one, IF Denied, then document basis)

Approved

Denied

Basis for Denial, If applicable:

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Nuclear

EP-AA-113-F-02

Revision B

Page 1 of 2

**AUTHORIZATION FOR EMERGENCY EXPOSURE**

Name: Worker One Date / Time: To/ Day/ 2011 10:00

Employee ID Number: 123456 Current Annual Exposure: 1765 mRem

Reason For Request:

To complete a task for which he is uniquely qualified that will prevent a major radiological  
release that would cause radiation sickness and long-term somatic and genetic effects to the  
General Public.

**REQUESTING AUTHORIZATION TO EXCEED:**

- ☐ 5 Rem TEDE (Authorized to receive greater than 5 Rem TEDE but less than 10 Rem TEDE)
- ☐ 10 Rem TEDE (Authorized to receive greater than 10 Rem TEDE but less than 25 Rem TEDE)
- ☒ 25 Rem TEDE (Authorized to receive greater than 25 Rem TEDE)

Worker One Today / 10 mins. ago

\* Emergency Worker Signature Date / Time

\* Emergency Worker Exposure Limits and Associated Risks (EP-AA-113 Attachment 1) have been reviewed and the potential health affects are understood.

Rad. P. Management Today / 5 mins. ago

Rad. Protection Management (Review) Date / Time

# Station Emergency Director (Authorization) Date / Time

# The Shift Manager (Shift Emergency Director) may approve prior to transferring Command and Control to the Station Emergency Director.

## AUTHORIZATION FOR EMERGENCY EXPOSURE

Name: Worker Two Date / Time: To/ Day/ 2011 10:05

Employee ID Number: 234567 Current Annual Exposure: 112 mRem

Reason For Request:

To complete a task for which he is uniquely qualified that will prevent a major radiological  
release that would cause radiation sickness and long-term somatic and genetic effects to the  
General Public.

### REQUESTING AUTHORIZATION TO EXCEED:

- ☐ 5 Rem TEDE (Authorized to receive greater than 5 Rem TEDE but less than 10 Rem TEDE)
- ☐ 10 Rem TEDE (Authorized to receive greater than 10 Rem TEDE but less than 25 Rem TEDE)
- ☒ 25 Rem TEDE (Authorized to receive greater than 25 Rem TEDE)

Worker Two Today / 10 mins. ago

\* Emergency Worker Signature

Date / Time

- \* Emergency Worker Exposure Limits and Associated Risks (EP-AA-113 Attachment 1) have been reviewed and the potential health affects are understood.

Rad. P. Management Today / 5 mins. ago

Rad. Protection Management (Review)

Date / Time

# Station Emergency Director (Authorization)

Date / Time

- # The Shift Manager (Shift Emergency Director) may approve prior to transferring Command and Control to the Station Emergency Director.

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-232C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	002
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	EAL CLASSIFICATION WITH STATE AND LOCAL NOTIFICATIONS (FU1, wind from 265 degrees, airborne release not in progress)		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>		_____ Signature / Title	_____ Date
<b>EFFECTIVE DATE:</b> ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007540502 / PLOR-232C

K/A: 2.4.41

SRO: 4.6

TASK DESCRIPTION: Emergency Director

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

None

**C. REFERENCES**

1. EP-AA-112-100, Rev. 10, "Control Room Operations"
2. EP-AA-111, Rev. 16, "Emergency Classification and Protective Action Recommendations"
3. EP-MA-114-100, Rev. 14, "Mid-Atlantic State/Local Notifications"
4. EP-MA-114-100-F-01, Rev I, "State/Local Notification Form"
5. EP-AA-112-100-F-01, Rev. L, "Shift Emergency Director Checklist"
6. EP-AA-1007, Table PBAPS 3-1, Rev. 19, "Emergency Action Level (EAL) Matrix"
7. EP-AA-114-F-01, Rev. D, "Release in Progress Determination Guidance"

**D. TASK STANDARD**

1. Performance Location: Simulator
2. Satisfactory task completion is indicated when EP-MA-114-100-F-01, "State/Local Event Notification Form" has been completed accurately.

(NOTE: The criteria for accurate Event Notification form completion was derived from EP-AA-125-1002, Rev. 006, "ERO Performance - Performance Indicators Guidance".)

3. Estimated time to complete: TIME CRITICAL
  - Event Classification: 15 minutes
  - State/Local Notification Form: 13 minutes

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, make the Emergency Classification and complete the State/Local Notifications (if required). I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Unit 2 was at 100% power when a steam leak was reported in the Outboard MSIV room.
2. A Main Steam Line (MSL) HI-HI temperature signal generated a Group I isolation signal.
3. Six of the eight MSIVs closed.

4. The "C" MSL inboard and outboard MSIVs failed to close.
5. A full reactor scram occurred; all rods are in.
6. T-103 was entered due to Secondary Containment high temperature. Points 1 and 16 have exceeded their Action Levels. No other T-103 Alarm levels have been reached.
7. RPV level and pressure are normal, being maintained with HPCI, RCIC, and SRVs.
8. The PRO placed both the inboard and outboard "C" MSL control switches to close but the valves did not respond.
9. When the PRO depressed the inboard and outboard "C" MSL Test pushbuttons both valves fully closed.
10. Drywell pressure rose to 0.9 psig and suddenly lowered to 0.0 psig.
11. Torus temperature is 104°F and rising slowly.

G. INITIATING CUE

As Emergency Director, make the EAL Classification and complete EP-MA-114-100-F-01, State/Local Notification Form.

# H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>*** NOTE ****</b></p> <p align="center"><b>Record the time using the clock above the Full Core Display. Time = _____</b></p>			
1	Obtain a copy of EP-AA-112-100-F-01 and EP-AA-1007.	P	Copies of EP-AA-112-100-F-01 and EP-AA-1007 are obtained.
2	Determine that the isolation of the Main Steam Line (MSL) with the Test pushbutton constitutes successful isolation of the MSL.	P	MSL is successfully isolated with the Test pushbutton.
3	Determine that the successful isolation of the MSL does <b>NOT</b> satisfy the criterion of the Fission Product Barrier Matrix thresholds 2.d.1, 2.d.4, 3.d.1 or 3.d.3.	P	Successful isolation of the MSL does <b>NOT</b> satisfy the criterion of the Fission Product Barrier Matrix thresholds 2.d.1, 2.d.4, 3.d.1 or 3.d.3.
4	Determine that the Fission Product Barrier Matrix threshold for RCS leakage >50 gpm is <b>NOT</b> applicable since the leak has been isolated.	P	Fission Product Barrier Matrix threshold for RCS leakage >50 gpm is <b>NOT</b> applicable since the leak has been isolated.
*5	Determine that the Fission Product Barrier Matrix threshold 3.b.1 is met due to Primary Containment pressure unexpectedly lowering to 0 psig.	P	EAL <b>FU1</b> is the correct classification due to a rapid unexplained drop in Drywell pressure following initial pressure rise.
6	Announce the event classification to the facility staff.	S	UNUSUAL EVENT is announced.
<p align="center"><b>*** NOTE ****</b></p> <p align="center"><b>Record the time using the clock above the Full Core Display. Time = _____</b></p> <p align="center"><b>Determine if the elapsed time since the initiating cue exceeds 15 minutes.</b></p>			
<p align="center"><b>*** NOTE ***</b></p> <p align="center"><b>Inform the examinee that the Public Address Announcement and the ERO Notification required by EP-AA-112-100-F-01, Shift Emergency Director Checklist, are NOT required for this JPM.</b></p>			
<p align="center"><b>*** NOTE ***</b></p> <p align="center"><b>The following steps are associated with completion of EP-MA-114-100-F-01, "State/Local Event Notification Form."</b></p>			
*7	Check the call status.	P	"This is a drill" line is checked in Block #1.
*8	Check the affected station.	P	"Peach Bottom" is checked in Block #2.
*9	Check the event classification.	P	"UNUSUAL EVENT" classification is checked in Block #3a.

STEP NO	STEP	ACT	STANDARD
*10	Check the affected unit.	P	Unit "Two" is checked in Block #3b.
*11	Enter the time and date of the declaration.	P	Declaration time (in 24 hour clock nomenclature) and today's date are entered in Block #3c. The declaration time should match the time the examiner entered in the note before JPM step 1.
*12	Check the applicable change in classification status.	P	"Initial Declaration" is checked in Block #3d.
*13	Enter the EAL number declared <u>AND/OR</u> provide a brief non-technical description of event.	P	EAL# "FU1" is annotated in Block #4a <u>AND</u> a simplified explanation for the event classification is provided in Block #4b. Acronyms, abbreviations or other terms that would not be recognized by state and local response agencies are avoided. The Offsite EAL Reference Manual may be referred to, if necessary.
*14	Check the non-routine radiological release status.	P	"Airborne" non-routine radiological release is <b>NOT</b> in progress is checked in Block #5A. EP-AA-114-F-01, "Release in Progress Determination Guidance" may be referenced.
*15	Enter the wind direction "degrees from."  (Cue: Wind direction is from 265 degrees.)	P	"265" is entered as the wind direction degrees from in Block #6a.
*16	Enter the wind speed. (Cue: Wind speed is 5 mph.)	P	Wind speed is entered as "5" miles per hour in Block #6b.
*17	Check the utility Protective Action Recommendation.	P	7a, NOT APPLICABLE is checked.
*18	Check the appropriate conclusion.	P	"This is a drill" line is checked in Block #8.
19	Approve the event notification form.	P	The event notification form is signed in the form's header area by the Emergency Director.
<p style="text-align: center;"><b>*** NOTE ***</b></p> <p style="text-align: center;"><b><u>WHEN</u> the examinee completes the Event Notification form, <u>THEN</u> record the time using the clock above the Full Core Display. Time = _____ Determine if the elapsed time since the declaration exceeds 13 minutes.</b></p>			

STEP NO	STEP	ACT	STANDARD
20	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When EP-MA-114-100-F-01, "State/Local Event Notification Form" has been completed, the evaluator will terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 was at 100% power when a steam leak was reported in the Outboard MSIV room.**
- 2. A Main Steam Line (MSL) HI-HI temperature signal generated a Group I isolation signal.**
- 3. Six of the eight MSIVs closed.**
- 4. The “C” MSL inboard and outboard MSIVs failed to close.**
- 5. A full reactor scram occurred; all rods are in.**
- 6. T-103 was entered due to Secondary Containment high temperature. Points 1 and 16 have exceeded their Action Levels. No other T-103 Alarm levels have been reached.**
- 7. RPV level and pressure are normal, being maintained with HPCI, RCIC, and SRVs.**
- 8. The PRO placed both the inboard and outboard “C” MSL control switches to close but the valves did not respond.**
- 9. When the PRO depressed the inboard and outboard “C” MSL Test pushbuttons both valves fully closed.**
- 10. Drywell pressure rose to 0.9 psig and suddenly lowered to 0.0 psig.**
- 11. Torus temperature is 104°F and rising slowly.**

## **INITIATING CUE**

**As Emergency Director, make the EAL Classification and complete EP-MA-114-100-F-01, State/Local Notification Form.**

## STATE/LOCAL EVENT NOTIFICATION FORM

(OR ELECTRONIC FACSIMILE)

UTILITY MESSAGE NO. \_\_\_\_\_

**EMERGENCY DIRECTOR APPROVAL:** \_\_\_\_\_

**PERFORM INITIAL ROLL CALL PRIOR TO TRANSMITTING – Refer to Page 3 of Form**

<p>1. <u>CALL STATUS</u> is:</p> <p><input checked="" type="checkbox"/> This is a DRILL.</p> <p><input type="checkbox"/> This is an ACTUAL EVENT.</p>	<p>2. This is _____</p> <p>for <input type="checkbox"/> LIMERICK / <input checked="" type="checkbox"/> PEACH BOTTOM / <input type="checkbox"/> TMI</p> <p>My phone number is _____ The current time is _____.</p> <p><small>(Communicator will provide his/her NAME, PHONE NUMBER, and CURRENT TIME (in 24-hour clock) when notification is read.)</small></p>
<p>3.a <u>EMERGENCY CLASSIFICATION</u></p> <p><input checked="" type="checkbox"/> UNUSUAL EVENT</p> <p><input type="checkbox"/> ALERT</p> <p><input type="checkbox"/> SITE AREA EMERGENCY</p> <p><input type="checkbox"/> GENERAL EMERGENCY</p> <p><input type="checkbox"/> RECOVERY</p> <p><input type="checkbox"/> TERMINATION</p>	<p>b. <u>AFFECTED UNIT(S) is/are:</u></p> <p><input type="checkbox"/> ONE <input checked="" type="checkbox"/> TWO <input type="checkbox"/> THREE</p> <p>c. <u>DECLARED AT:</u></p> <p>TIME: _____ (24-hr clock)</p> <p>DATE: ____/____/____</p>
<p>d. <u>THIS REPRESENTS A/AN:</u></p> <p><input checked="" type="checkbox"/> INITIAL DECLARATION</p> <p><input type="checkbox"/> ESCALATION</p> <p><input type="checkbox"/> NO CHANGE</p> <p><input type="checkbox"/> REDUCTION</p> <p>- IN CLASSIFICATION STATUS</p>	
<p>4. a. <u>EMERGENCY ACTION LEVEL (EAL) NO. is:</u> <b>FU1</b></p> <p>b. <u>A BRIEF NON-TECHNICAL DESCRIPTION OF THE EVENT is as follows:</u></p> <p>(Anything similar to the below wording is acceptable. Wording does NOT have to be exact.)</p> <p>There are indications of a loss or possible loss of Primary Containment Integrity. Current plant conditions DO NOT threaten public safety..</p>	
<p>5. <u>NON-ROUTINE RADIOLOGICAL RELEASE STATUS is:</u></p> <p><input checked="" type="checkbox"/> a. NO radiological release in-progress</p> <p><input type="checkbox"/> b. AIRBORNE radiological release in-progress</p> <p><input type="checkbox"/> c. LIQUID radiological release in-progress</p> <p><input type="checkbox"/> d. Radiological release TERMINATED</p>	
<p>6. <u>METEOROLOGY is:</u></p> <p>a. WIND DIRECTION is FROM: <b>265</b> (degrees)</p> <p>b. WIND SPEED is: <b>5</b> (miles per hour)</p>	

## STATE/LOCAL EVENT NOTIFICATION FORM

7. **UTILITY PROTECTIVE ACTION RECOMMENDATION: (a or b)** – No action should be taken until government officials have been notified: by State:

☒ a. **NOT APPLICABLE** (Unusual Event, Alert, Site Area Emergency, Termination or Recovery only)

(Complete the following for Shelter or Evacuation for a General Emergency only for the applicable station):

☐ b. The PROTECTIVE ACTION RECOMMENDATION (PAR) from the utility is:

LGS/PBAPS

☐ **SHELTER** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO \_\_\_\_\_ MILES

**AND**

**SHELTER** THE FOLLOWING SECTORS FROM \_\_\_\_\_ MILES TO \_\_\_\_\_ MILES:

<input type="checkbox"/> N	<input type="checkbox"/> E	<input type="checkbox"/> S	<input type="checkbox"/> W
<input type="checkbox"/> NNE	<input type="checkbox"/> ESE	<input type="checkbox"/> SSW	<input type="checkbox"/> WNW
<input type="checkbox"/> NE	<input type="checkbox"/> SE	<input type="checkbox"/> SW	<input type="checkbox"/> NW
<input type="checkbox"/> ENE	<input type="checkbox"/> SSE	<input type="checkbox"/> WSW	<input type="checkbox"/> NNW

**AND**

The utility recommends that government officials notify the general public to take potassium iodide (KI) for those sectors where shelter is recommended and advise remainder of the EPZ to monitor EAS Messages.

☐ **EVACUATE** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO 5 MILES

**AND**

**EVACUATE** THE FOLLOWING SECTORS FROM 5 MILES TO 10 MILES:

<input type="checkbox"/> N	<input type="checkbox"/> E	<input type="checkbox"/> S	<input type="checkbox"/> W
<input type="checkbox"/> NNE	<input type="checkbox"/> ESE	<input type="checkbox"/> SSW	<input type="checkbox"/> WNW
<input type="checkbox"/> NE	<input type="checkbox"/> SE	<input type="checkbox"/> SW	<input type="checkbox"/> NW
<input type="checkbox"/> ENE	<input type="checkbox"/> SSE	<input type="checkbox"/> WSW	<input type="checkbox"/> NNW

**AND**

The utility recommends that government officials notify the general public to take potassium iodide (KI) for those sectors where evacuation is recommended and advise remainder of the EPZ to monitor EAS Messages.

TMI

☐ **SHELTER** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO \_\_\_\_\_ MILES

**AND**

The utility recommends that government officials notify the general public to take potassium iodide (KI) for those areas where shelter is recommended and advise remainder of the EPZ to monitor EAS Messages.

☐ **EVACUATE** 360 DEGREES FROM 0 MILES (SITE BOUNDARY) TO \_\_\_\_\_ MILES

The utility recommends that government officials notify the general public to take potassium iodide (KI) for those areas where evacuation is recommended and advise remainder of the EPZ to monitor EAS Messages.

8. **CONCLUSION:** ☒ This is a DRILL. ☐ This is an ACTUAL EVENT.

- **PERFORM** FINAL ROLL CALL UPON COMPLETION – Refer to Page 3 of Form
- **ASK** if there are any questions regarding message or repeat backs needed
- **READ** "This concludes the notification message"
- **FAX** completed copies of all form pages to the Control Room, TSC and EOF, as applicable.
- **INFORM** the Shift Manager (Shift Emergency Director), TSC Director or EOF Director, as applicable, when notification is completed to required contacts.

## STATE/LOCAL EVENT NOTIFICATION FORM

**"15 Minute Notifications"****PEACH BOTTOM (CAN 833)****"Notification Line":** Dial "833" for conference call. Stay on the line until agencies come on**"3 Digit Extensions":** Make these calls from 3-digit lines.**"Commercial # From PBAPS":** Make these calls from a 4-digit line. Dial "9-1-Area Code-Number"**"Commercial # From PBAPS 3-digit lines":** Dial "7-1-9-1-Area Code-Number"**Initial Roll Call**

(Time Contacted: 24-hour clock)

**Final Roll Call**

(✓)

**Pennsylvania EMA** ☐Ext. 216 or 9-1-800-424-7362 /  
9-1-717-651-2001**Maryland EMA** ☐

Ext. 205 or 9-1-410-517-3600

**York County** ☐

Ext. 219 or 9-1-717-854-5571

**Harford County** ☐Ext. 214 or 9-1-410-638-3400 /  
9-1-410-638-4900**Cecil County** ☐Ext. 234 or 9-1-410-398-2222 /  
9-1-410-392-2010**Lancaster County** ☐Ext. 217 or 9-1-800-808-5234 /  
9-1-717-664-1190**Chester County** ☐

Ext. 218 or 9-1-610-344-5100

Initial Roll Call Completed

**FOLLOW-UP NOTIFICATIONS \*  
(PEACH BOTTOM ONLY)**☐ **Maryland Dept. of the Environment**  
Emergency ext. 292 or 235  
9-1-866-633-4686

Contacted at: \_\_\_\_\_ (time: 24-hour clock)

☐ **PA State Police, York Barracks**  
Ext. 284 or 9-1-717-428-1011

Contacted at: \_\_\_\_\_ (time: 24-hour clock)

\* NOT required within 15 minutes of Classification

**"15 Minute Notifications"****LIMERICK (CAN 841)****Initial Roll Call**

(Time Contacted: 24-hour clock)

**Final Roll Call**

(✓)

**Pennsylvania EMA** ☐Ext. 116 or 9-1-800-424-7362 /  
9-1-717-651-2001**Montgomery County** ☐

Ext. 117 or 9-1-610-6541

**Chester County** ☐

Ext. 118 or 9-1-610-344-5100

**Berk County** ☐

Ext. 119 or 9-1-610-655-4931

Initial Roll Call Completed

**"15 Minute Notifications"****TMI (CAN 44)****"Notification Line":** Dial "44" for all-call. If necessary, dial 3-digit extension #'s to notify individual agencies**"Commercial # From TMI":** Dial "9" and the #**"Commercial # From EOF":** Dial "9-1-717" and the #**"Toll-Free '800' # From TMI or EOF":** Dial the #'s exactly as they appear below**Initial Roll Call**

(Time Contacted: 24-hour clock)

**Final Roll Call**

(✓)

**Pennsylvania EMA** ☐Ext. 315 or 9-1-800-424-7362 or  
9-651-2001**Cumberland County** ☐Ext. 319 or 9-238-9676, 9-243-4121 or  
9-532-8878**Lebanon County** ☐

Ext. 321 or 9-272-2025 / -7621 / -2054

**Lancaster County** ☐

Ext. 318 or 9-664-1190 / -1200

**York County** ☐Ext. 317 or 9-854-5571, 9-840-2955 or  
9-1-800-427-8347**Dauphin County** ☐

Ext. 320 or 9-911 or 9-558-6900

Initial Roll Call Completed

**FOLLOW-UP NOTIFICATIONS \* (TMI)**☐ **York Haven Power Station**  
9-266-3654 or 9-818-3962

Contacted at: \_\_\_\_\_ (time: 24-hour clock)

		Weather Tower #2		
Direction		EL 320	EL 75	EL 33
	Current	265	265	265
	15 Min Avg	265	250	265
	60 Min Avg	250	250	265
Speed				
	Current	4	5	4
	15 Min Avg	5	5	5
	60 Min Avg	5	5	4

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-307CA
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	010
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	RESPOND TO A ROD DRIFT (ALTERNATE PATH - SECOND ROD DRIFTS)		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>			
		_____ Signature / Title	_____ Date
<b>EFFECTIVE DATE:</b> ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____
<b>Employee ID. NO.</b> _____	<b>COMPLETION DATE:</b> _____
<b>COMMENTS:</b>	
<b>Training Review for Completeness:</b>  _____ Signature/Date	<b>LMS CODE:</b> _____
	<b>LMS ENTRY:</b> _____

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2002600401 / PLOR-307CA K/A: 201003A2.03  
RO: 3.4 SRO: 3.7

TASK DESCRIPTION: RESPOND TO A ROD DRIFT (ALTERNATE PATH - SECOND ROD DRIFTS)

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

1. ON-121, Rev. 9, "Drifting Control Rod"
2. GP-9-2, Rev. 34, "Fast Reactor Power Reduction"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Reactor has been scrammed.
2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to respond to a drifting Control Rod using appropriate procedure. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Rod 46-07 is drifting in from position 48.
2. Equipment Operator has been directed to inspect HCU 46-07.
3. Reactor Engineering has been notified.
4. PCIOMR Surveillance is NOT required

G. INITIATING CUE

The Control Room Supervisor directs you to respond to the drifting Control Rod situation in accordance with ON-121, "Drifting Control Rod".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure ON-121.	P	A copy of procedure ON-121 is obtained.
*2	Select Rod 46-07.  (Cue: Rod 46-07 select pushbutton backlight is lit.)	P	Rod 46-07 select pushbutton is momentarily DEPRESSED at panel 20C005A.
3	Monitor the following parameters:  <ul style="list-style-type: none"> <li>Reactor Power</li> <li>Generator Load</li> <li>Reactor Water Level</li> <li>Reactor Pressure</li> </ul> (Cue: Reactor power and generator load are lowering slowly. Reactor water level and reactor pressure are steady.)	P	Monitor the following parameters on panels 20C005A and/or 20C008B:  <ul style="list-style-type: none"> <li>Generator load on computer point GØ29 or JR-2157.</li> <li>Reactor water level on LI-85A-C and LI-94A-C.</li> <li>Reactor pressure on PI-90A, B.</li> </ul>
*4	Insert Rod 46-07 using the EMERG IN switch and hold the rod at Full-in for 30 seconds.  (Cue: Full Core Display and Four Rod Display indicate "00" for Rod 46-07.)	P	The Emergency In/Notch Override switch is held in the EMER ROD IN position for at least 30 seconds at panel 20C005A and then released.
5	Reset the "Rod Drift" alarm.  (Cue: Annunciator 211 D-4 and Rod 46-07 rod drift light are not lit.)	P	Place the "Drift Alarm" switch 3A-S7 in the "RESET" [COUNTERCLOCKWISE] position and release the switch at panel 20C005A.
6	Obtain a copy of procedure GP-9-2.	P	A copy of procedure GP-9-2 is obtained.
7	Reduce Reactor power to 950 MWe (by reducing Recirc flow).  (Cue: Reactor power is 950 GMWe.)	P	"A" and "B" Recirc Pump Speed Controller manual control knobs are rotated in the COUNTERCLOCKWISE direction at panel 20C004A until Reactor power is 950 MWe.
<p style="text-align: center;"><b><u>Note to Evaluator</u></b></p> <p style="text-align: center;"><b>The Alternate Path portion of this JPM starts here.</b></p>			
*8	Recognize other rod drifts.  (Cue: Rod Drifts lights for Rods 10-19 and 34-55 are lit and annunciator 211 D-4 is flashing.)	P	"Rod Drift" annunciator 211 D-4 and/or rod 10-19 and 34-55 rod drift lights are recognized.
*9	Scram the Reactor.  (Cue: All rod indicators have green backlight lit on the Full Core Display.)	P	5A-S1 Reactor Mode Switch is placed in "SHUTDOWN" position or 5A-S3A and 5A-S3B Scram pushbuttons are depressed at Panel 20C005A.

STEP NO	STEP	ACT	STANDARD
10	Inform Control Room Supervisor of second rod drift, Reactor Scram, and entry condition to T-100 "Scram".  (Cue: Control Room Supervisor acknowledges report.)	P	Second rod drift, Reactor Scram and entry condition to T-100 reported to the CRS.
11	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the Reactor has been scrammed, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Rod 46-07 is drifting in from position 48.**
- 2. Equipment Operator has been directed to inspect HCU 46-07.**
- 3. Reactor Engineering has been notified.**
- 4. PCIOMR Surveillance is NOT required**

## **INITIATING CUE**

**The Control Room Supervisor directs you to respond to the drifting Control Rod situation in accordance with ON-121, “Drifting Control Rod.”**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="checked" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="checked" type="checkbox"/> <b>X</b>	JPM	<input type="checkbox"/>	QUALIFICATION MANUAL	<input type="checkbox"/>	OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Requalification				<b>CODE #:</b>	PLOR-303CA
<b>COURSE:</b>	Licensed Operator Requalification				<b>REV #:</b>	010
<b>AUTHOR:</b>	B. Hennigan				<b>TYPIST:</b>	jav
<b>TITLE:</b>	Shutdown the "A" RFP Turbine (Alternate Path - Min Flow Valve Fails Closed)					
<b>APPROVALS:</b>						
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
			_____ Signature / Title		_____ Date	
<b>APPROVED FOR USE:</b>						
			_____ Signature / Title		_____ Date	
EFFECTIVE DATE: ____/____/____						

<b>NAME:</b> _____ Last First M.I.		<b>ISSUE DATE:</b> _____	
<b>EMPLOYEE ID NO.</b> _____		<b>COMPLETION DATE:</b> _____	
<b>COMMENTS:</b>			
Training Review for Completeness:  _____ Signature/Date		<b>LMS CODE:</b>	
		<b>LMS ENTRY:</b>	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2590010401 / PLOR-303CA K/A: 259001A4.02  
RO: 3.9 SRO: 3.7

TASK DESCRIPTION: SHUTDOWN THE "A" RFP TURBINE (ALTERNATE PATH - MIN FLOW VALVE FAILS CLOSED)

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

1. SO 6D.2.A-2 Rev. 27, "Reactor Feedwater Pump Shutdown"
2. AO 6D.1-2 Rev. 3, "Reactor Feedwater Pump Shutdown with Failed Minimum Flow Valve"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the "A" RFP is secured and its suction valve (MO-2140A) closed.
2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to shutdown the "A" RFP to the point of having its suction valve (MO-2140A) closed, using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A normal plant shutdown is in progress IAW GP-3, "Normal Plant Shutdown".
2. Three Reactor Feed Pumps running.
3. Reactor power is approximately 78%.
4. Feedwater Master Level Controller is in "AUTO".
5. All RFP M/A Stations are in "AUTO".
6. The Zinc Injection system is shutdown.
7. Heat balance is in Venturi mode for all three RFP strings IAW AO 59C.2-2, "Transfer Core Thermal Power Calculation LEFM/Venturi Mode and Maximum Allowable Power Level Adjustments".
8. An Equipment Operator is stationed at the Unit 2 Condensate Demineralizer Panel for Condensate Demineralizer management.

G. INITIATING CUE

The Control Room Supervisor directs you to shutdown the "A" RFP using SO 6D.2.A-2, "Reactor Feedwater Pump Shutdown" to the point of having its suction valve (MO-2140A) closed.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 6D.2.A-2.	P	A copy of procedure SO 6D.2.A-2 is obtained.
2	<p>Equalize the Bias on the "B" and "C" RFPs without exceeding <math>0.5 \times 10^6</math> lb/hr between the "B" and "C" RFPs.</p> <p>(Cue: When "x" is selected on the "B" M/A station the value is 0. When "x" is selected on the "C" M/A station the value is 0.)</p>	P	Depress the display pushbutton and select "X" on the B and C RFP M/A stations. Turn the control knob until the Bias is matched on both RFPs while observing FR-2565 at panel 20C005A.
3	<p>Open AO-2139A, Feed Pump A Recirc valve.</p> <p>(Cue: Acknowledge control switch operation.)</p>	P	AO-2139A control switch is placed in the "OPEN" position at panel 20C006A.
4	<p>Verify AO-2139A, Feed Pump A Recirc valve is open.</p> <p>(Cue: AO-2139A green light is on, red light is off.)</p>	P	Recognize by reporting failure of AO-2139A to open at panel 20C006A.

### \*\*\*NOTE\*\*\*

**IT IS EXPECTED THAT THE CANDIDATE WILL RECOGNIZE THAT AO-2139A DID NOT OPEN, AND OBTAIN A COPY OF AO 6D.1-2 "REACTOR FEEDWATER PUMP SHUTDOWN WITH FAILED MINIMUM FLOW VALVE" TO COMPLETE THE EVOLUTION. SELECTION OF THE APPROPRIATE PROCEDURE IS THE RESPONSIBILITY OF THE CANDIDATE.**

**IF NECESSARY, PROVIDE THE FOLLOWING CUE:**

**"CONTINUE TO SHUTDOWN THE "A" RFP USING APPROPRIATE PLANT PROCEDURES TO THE POINT OF HAVING ITS SUCTION VALVE (MO-2140A) CLOSED"**

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>**** NOTES ****</b></p> <p><b>(1) The Alternate Path portion of this JPM begins with the next step.</b></p> <p><b>(2) The CUE in the following step must be provided to the candidate independent of plant response.</b></p>			
*5	Obtain a copy of procedure AO 6D.1-2, "Reactor Feedwater Pump Shutdown with Failed Minimum Flow Valve"  <b>(Cue: The System Manager and the Shift Manager have determined the Min Flow valve to be FAILED CLOSED.)</b>	P	A copy of procedure AO 6D.1-2 is obtained.
*6	Place "A" RFP M/A Station in MANUAL.  <b>(Cue: Acknowledge pushbutton operation.)</b>	P	"A" RFP M/A Station Automatic/Manual select pushbutton is momentarily depressed at panel 20C005A.
7	Verify the "A" RFP controller is in "MANUAL".  <b>(Cue: The red light is on and green light is off beside the auto/man pushbutton.)</b>	P	"A" RFP controller Automatic/Manual pushbutton red light is ON at panel 20C005A.
8	Reduce "A" RFP flow to $2.0 - 2.5 \times 10^6$ lbm/hr by adjusting the control knob on the RFP M/A Station.  <b>(Cue: FT-2-06-050A on FR-2565 indicates <math>2.3 \times 10^6</math> lbm/hr.)</b>	P	"A" RFP M/A Station Control knob is rotated COUNTERCLOCKWISE until FT-2-06-050A on FR-2565 indicates $2.0 - 2.5 \times 10^6$ lbm/hr at panel 20C005A.
9	Verify Reactor water level LI-2-06-94A, B, and C, is stable and remaining RFPs can supply feedwater for existing steam loads.  <b>(Cue: LI-2-06-94A, B, and C indicate 23" and stable. FR-2-06-098 black pen indicates <math>8.5 \times 10^6</math> lbm/hr.)</b>	P	Reactor level is verified to be stable on LI-2-06-94A, B, C, and total feedflow verified to be less than $9.0 \times 10^6$ lbm/hr on FR-2-06-098 at panel 20C005A.
10	Place the control switch for AO-2147A, Feedpump Check valve, in "CLOSE".  <b>(Cue: Acknowledge control switch operation.)</b>	P	AO-2147A control switch is placed in the "CLOSE" position at panel 20C006A.

STEP NO	STEP	ACT	STANDARD
11	Check AO-2147A, Feedpump Check valve response.  (Cue: AO-2147A green light is on, red light is on.)	P	AO-2147 red and green lights are verified ON at panel 20C006A.
*12	Bump closed MO-2149A, Feedpump "A" Discharge valve.  (Cue: Acknowledge control switch operation.)	P	MO-2149A control switch is momentarily placed in the "CLOSE" position at panel 20C006A. Valve Red Indicating Light/Stop Pushbutton is depressed to stop valve travel. Repeat IAW procedure guidance.
13	Monitor Reactor Feed Pumps and RPV level response  (Cue: Discharge flow of "A" RFP is dropping, discharge flow of "B" and "C" RFPs are rising, RPV water level is stable.)	P	<ul style="list-style-type: none"> <li>• Checks discharge flow of "A" RFP is dropping</li> <li>• Checks discharge flow of "B" and "C" RFPs are rising</li> <li>• Monitors RPV water level, allow RPV water level to stabilize</li> </ul>
*14	<u>When</u> RFP flow lowers to $1 \times 10^6$ lbm/hr, <u>then</u> trip "A" RFP.  (Cue: "A" RFPT TRIP" annunciator on panel 201 is up.)	P	When "A" RFP flow lowers to $1 \times 10^6$ lbm/hr, "A" RFPT Turbine Trip pushbutton (PBA1) is momentarily DEPRESSED at panel 20C005A.
15	Verify the "A" RFP tripped.  (Cue: The "A" RFP green turbine trip lights are lit; SPI-2621A reads 0. Annunciators 201 G-4, 202 G-3, and 210 A-3 are lit.)	P	The "A" RFP green turbine trip lights are verified lit and "A" RFPT speed is verified to drop to 0 on SPI-2621A at panel 20C005A.
16	Verify MO-2149A is fully closed.  (Cue: MO-2149A green light is on, red light is off.)	P	MO-2149A green light is verified ON at panel 20C006A.
17	Verify "A" RFP Turning Gear control switch in AUTO.  (Cue: Turning gear control switch is in AUTO.)	P	"A" RFP Turning Gear control switch is verified in the AUTO (normal) position at panel 20C005A.
18	Verify "A" RFPT MSC SELECT light is lit.  (Cue: "A" RFPT MSC SELECT light is lit.)	P	"A" RFPT amber MSC SELECT light is verified ON on panel 20C005A.
*19	Close MO-2140A, "Feed Pump 'A' Suct" valve.  (Cue: Acknowledge control switch operation.)	P	MO-2140A control switch is momentarily placed in the close position at panel 20C006A.

STEP NO	STEP	ACT	STANDARD
20	Verify MO-2140A, "Feed Pump `A' Suct" valve is closed.  (Cue: MO-2140A green light is on, red light is off.)	P	MO-2140A green light is verified ON at panel 20C006A.
21	Inform Control Room Supervisor of task completion.  (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
22	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the "A" Reactor Feed Pump is secured, and its suction valve (MO-2140A) closed the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. A normal plant shutdown is in progress IAW GP-3, "Normal Plant Shutdown".**
- 2. Three Reactor Feed Pumps running.**
- 3. Reactor power is approximately 78%.**
- 4. Feedwater Master Level Controller is in "AUTO".**
- 5. All RFP M/A Stations are in "AUTO".**
- 6. The Zinc Injection system is shutdown.**
- 7. Heat balance is in Venturi mode for all three RFP strings IAW AO 59C.2-2, "Transfer Core Thermal Power Calculation LEFM/Venturi Mode and Maximum Allowable Power Level Adjustments".**
- 8. An Equipment Operator is stationed at the Unit 2 Condensate Demineralizer Panel for Condensate Demineralizer management.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to shutdown the "A" RFP using SO 6D.2.A-2, "Reactor Feedwater Pump Shutdown" to the point of having its suction valve (MO-2140A) closed.**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR REQUALIFICATION	<b>CODE #:</b>	PLOR-023C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	008
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	ADS RESET FOLLOWING BLOWDOWN		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>			
		_____ Signature / Title	_____ Date
EFFECTIVE DATE: ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2180040101 / PLOR-023C

K/A: 218000A4.03

RO: 4.2

SRO: 4.2

TASK DESCRIPTION: ADS RESET FOLLOWING BLOWDOWN

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

None

**C. REFERENCES**

Procedure SO 1G.7.C-2, Rev. 9, "Automatic Depressurization System Reset Following Blowdown" (R)

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when ADS logic reset, Vacuum breaker position indication reset, and ADS relief valve position indication reset.
2. Estimated time to complete: 7 minutes (A.5) Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to reset the ADS system using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. An automatic ADS initiation has occurred.
2. RPV water level is now greater than -160" and the capability exists to maintain level above -160".
3. The following annunciators have been reset:
  - a. "System I ECCS REAC VESSEL LO-LO-LO LEVEL", panel 227 D-2.
  - b. "System II ECCS REAC VESSEL LO-LO-LO LEVEL", panel 228 C-2.
4. Blowdown of the RPV is complete.
5. Reactor pressure is 10 psig.
6. Drywell pressure is 1.35 psig.

**G. INITIATING CUE**

The Control Room Supervisor directs you to reset the ADS logic in accordance with SO 1G.7.C-2, "Automatic Depressurization System Reset Following Blowdown", Section 4.1.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
*1	Depress the "A" ADS LOGIC RESET-TIMER pushbutton, 2E-S2A.  (Cue: Acknowledge pushbutton operation.)	P	The "A" ADS LOGIC TIMER RESET pushbutton, 2E-S2A, is momentarily depressed at panel 20C003-01.
*2	Depress the "B" ADS LOGIC RESET-TIMER pushbutton, 2E-S2B.  (Cue: Acknowledge pushbutton operation.)	P	The "B" ADS LOGIC TIMER RESET pushbutton, 2E-S2B, is momentarily depressed at panel 20C003-01.
3	Reset the following annunciators:  a. "BLOWDOWN AUX RELAYS ENERGIZED RHR OR CS".  b. "BLOWDOWN RELIEF VALVES HIGH TEMP".  (Cue: Acknowledge pushbutton operation.)	P	The alarm "RESET" pushbutton is momentarily depressed on panel 20C003.
4	Verify "BLOWDOWN AUX RELAYS ENERGIZED RHR OR CS" and "BLOWDOWN RELIEF VALVES HIGH TEMP" annunciators are clear.  (Cue: Annunciators 227 E-4 and 227 B-4 are not lit.)	P	"BLOWDOWN AUX RELAYS ENERGIZED RHR OR CS" and "BLOWDOWN RELIEF VALVES HIGH TEMP" annunciators are verified clear on alarm panels 227 E-4 and 227 B-4.
5	Verify "BLOWDOWN TIMERS INITIATED" annunciator reset.  (Cue: Annunciator 227 D-4 is not lit.)	P	"BLOWDOWN TIMERS INITIATED" annunciator is verified clear on alarm panel 227 D-4.
6	Verify "SAFETY RELIEF VALVE OPEN" annunciator reset.  (Cue: Annunciator 210 D-2 is not lit.)	P	"SAFETY RELIEF VALVE OPEN" annunciator is verified clear on alarm panel 210 D-2.
7	Verify the ADS valves indicate closed.  (Cue: RV-2-02-71A, B, C, G, & K green lights are on, red lights are off.)	P	RV-2-02-71A, B, C, G, & K green lights verified ON at panel 20C003-01.

STEP NO	STEP	ACT	STANDARD
8	Monitor temperature recorder TR-2-02-103 to ensure each valve has reseated.  (Cue: TR-2-02-103 points TE-2-2-113A, B, C, G, & K read ~250°F and are decreasing slowly.)	P	TR-2-02-103 monitored at panel 20C003-01 to ensure each ADS valve has reseated, as indicated by each point trending downward from ~260-240°F.
*9	Depress the "A" ADS LOGIC RESET - DRYWELL HIGH PRESS pushbutton, 2E-S3A.  (Cue: Acknowledge pushbutton operation.)	P	The "A" ADS DRYWELL HIGH PRESSURE LOGIC RESET pushbutton, 2A-S3A, is momentarily depressed at panel 20C003-01.
*10	Depress the "B" ADS LOGIC RESET DRYWELL HIGH PRESS pushbutton 2E-S3B.  (Cue: Acknowledge pushbutton operation.)	P	The "B" ADS DRYWELL HIGH PRESS LOGIC RESET pushbutton, 2E-S3B, is momentarily depressed at panel 20C003-01.
11	Reset the following annunciators:  a. "DRYWELL HI PRESS SIGNAL SEALED IN".  b. "HIGH DRYWELL PRESSURE BYPASS TIMERS INITIATED".  (Cue: Acknowledge pushbutton operation.)	P	The alarm "RESET" pushbutton is momentarily depressed on panel 20C003.
12	Verify "DRYWELL HI PRESS SIGNAL SEALED IN" and "HIGH DRYWELL PRESSURE BYPASS TIMERS INITIATED" annunciators are clear.  (Cue: Annunciators 227 A-4 and 227 A-3 are not lit.)	P	"DRYWELL HI PRESS SIGNAL SEALED IN" and "HIGH DRYWELL PRESSURE BYPASS TIMERS INITIATED" annunciators are verified clear on alarm panels 227 A-4 and 227 A-3.
13	Inform the Control Room Supervisor of task completion.  (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.

STEP NO	STEP	ACT	STANDARD
14	As an evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the ADS logic has been reset, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. An automatic ADS initiation has occurred.**
- 2. RPV water level is higher than -160 inches and the capability exists to maintain level above -160 inches.**
- 3. The following annunciators have been reset:**
  - a. “System I ECCS REAC VESSEL LO-LO-LO LEVEL”, panel 227 D-2.**
  - b. “System II ECCS REAC VESSEL LO-LO-LO LEVEL”, panel 228 C-2.**
- 4. Blowdown of the RPV is complete.**
- 5. Reactor pressure is 10 psig.**
- 6. Drywell pressure is 1.35 psig.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to reset the ADS logic in accordance with SO 1G.7.C-2, “Automatic Depressurization System Reset Following Blowdown”, Section 4.1.**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Training	<b>CODE #:</b>	PLOR-353CA
<b>COURSE:</b>	Licensed Operator Requalification	<b>REV #:</b>	000
<b>AUTHOR:</b>	John A Verbillis	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Startup HPCI in the CST To CST Mode (Alternate Path - Turbine Exhaust Diaphragm High Pressure)		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>			
		_____ Signature / Title	_____ Date
<b>EFFECTIVE DATE:</b> ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____	
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____	
<b>COMMENTS:</b>		
<b>Training Review for Completeness:</b>	<b>LMS CODE:</b>	
_____ Signature/Date	<b>LMS ENTRY:</b>	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2060480401 / PLOR-353CA K/A: 206000A3.07  
RO: 3.9 SRO: 3.8

TASK DESCRIPTION: Startup HPCI in the CST to CST Mode (Alternate Path - Turbine Exhaust Diaphragm High Pressure)

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

None

**C. REFERENCES**

1. SO 23.1.B-2, Rev. 22, "HPCI System Manual Operation"
2. SO 23.2.A-2, Rev. 15, "HPCI System Shutdown"
3. RRC 23.1-2, Rev. 5, "HPCI System Operation During a Plant Event"
4. ARC 221 (20C204B) E-3, Rev. 2, "HPCI Turb Exh Diaphragm Hi Press"

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when the HPCI Turbine has been started and then manually tripped due to receipt of Turbine Exhaust Diaphragm rupture alarm.
2. Estimated time to complete: 16 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to steps to startup HPCI in the CST to CST mode using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Reactor is shutdown following an electrical transient.
2. The HPCI System is set up for operation in accordance with SO 23.1.A-2, "HPCI System Setup for Automatic or Manual Operation".
3. "B" loop of RHR is in the Torus Cooling mode in accordance with SO 10.1.D-2, "RHR System Torus Cooling".
4. SBTGT is in service in accordance with SO 9A.1.B, "Standby Gas Treatment System Manual Startup"

**G. INITIATING CUE**

The Control Room Supervisor directs you to start up HPCI in the CST to CST Mode in accordance with RRC 23.1-2, "HPCI System Operation During a Plant Event" and lower reactor pressure to 500 psig.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure RRC 23.1 - 2.	P	A copy of procedure RRC 23.1 -2 is obtained.
*2	Open MO-2-23-024, "Cond. Tank Return". (Cue: Acknowledge control switch operation.)	P	MO-2-23-024 control switch is momentarily placed in the OPEN position at panel 20C004B.
3	Verify MO-2-23-024, "Cond. Tank Return" valve opened. (Cue: MO-24 red light is ON, green light is OFF.)	P	MO-2-23-024 red light is verified ON at panel 20C004B.
4	Verify closed MO-2-23-019, "To Feed Line" (Cue: MO-19 red light is OFF, green light is ON.)	P	MO-2-23-19 verified CLOSED at panel 20C004B.
5	Start the Gland Seal Condenser Vacuum Pump 20K002. (Cue: Acknowledge control switch operation.)	P	Gland Seal Condenser Vacuum Pump control switch is placed in the "START" position at panel 20C004B.
6	Verify the Gland Seal Condenser Vacuum Pump 20K002 is running. (Cue: 20K002 red light is ON and green light is OFF.)	P	20K002 red light is verified ON at panel 20C004B.
*7	Throttle open MO-2-23-021, "Full Flow Test" until the red "OPEN" indicating light has been lit for 3 to 4 seconds. (Cue: MO-21 green light is ON, red light has been ON for 3 to 4 seconds.)	P	MO-2-23-021 control switch is momentarily placed in the OPEN position. Approximately 3 to 4 seconds after the red light lit, the red stop travel pushbutton is depressed at the 20C004B panel.
*8	Simultaneously START the Auxiliary Oil Pump, 20P026 and OPEN MO-2-23-014 "Supply" valve. (Cue: Acknowledge control switch operation.)	P	Auxiliary oil pump control switch is placed in the START position while simultaneously placing MO-2-23-014 "Supply" control switch momentarily in the "OPEN" position at panel 20C004B.

STEP NO	STEP	ACT	STANDARD
9	Verify the Auxiliary Oil pump started.  (Cue: Auxiliary Oil pump red light is ON, green light is OFF and annunciator 222 D-5 is alarming.)	P	Auxiliary Oil Pump red light is verified ON at panel 20C004B.
10	Verify MO-2-23-014, "Supply" valve opened.  (Cue: MO-14 red light is ON, green light is OFF, HPCI discharge pressure, flow, speed and exhaust pressure rise, Aux. oil pump red light is OFF and green light is ON.)	P	MO-2-23-14 red light verified ON and HPCI speed, discharge pressure, and flow are verified at panel 20C004B. HPCI Aux Oil Pump is verified to have turned itself OFF as the Attached Oil Pump ramps up.
11	Verify pump flowrate of 5000 gpm on FI-2-23-108.  (Cue: FI-2-23-108 indicates 5000 gpm.)	P	FIC-2-23-108 setpoint is adjusted to obtain 5000 gpm on FI-2-23-108 at panel 20C004B.
12	Throttle MO-2-23-021 to obtain desired pressure.  (Cue: Acknowledge control switch operation. PI-2-23-109 reads about 800 psig, FI-2-23-108 reads 5000 gpm.)	P	MO-2-23-021 control switch is closed to raise pressure, opened to lower pressure and red stop travel pushbutton is depressed to obtain a pressure of 200 psig below reactor pressure on PI-2-23-109 while maintaining turbine speed greater than 2200 rpm at SPI-4505 at panel 20C004B.
<p style="text-align: center;"><b>**** NOTE: ****</b></p> <p style="text-align: center;"><b>The Alternate Path portion of this JPM begins with the next step.</b></p>			
*13	Recognize HPCI Exhaust Diaphragm rupture condition.  (Cue: Annunciator 221 E-3 is alarming.)	P	Recognize annunciator 221 E-3 is flashing and consult Alarm Response Card 221 E-3 recognize condition requiring HPCI turbine trip as Adequate Core Cooling is NOT in jeopardy.

**\*\*\*\*NOTE\*\*\*\***

The following steps are scripted from SO 23.2.A-2, "HPCI System Shutdown." **IF** the Rapid Response procedure RRC 23.1-2 is used, **THEN** the steps indicated with "RRP N/A" are **NOT** applicable.

14	Verify HPCI initiation pushbutton (23A-S105) collar is in "DISARM".  (Cue: HPCI initiation collar is in "DISARM" and annunciator 221 B-2 is not lit.)	P	HPCI Manual Initiation (23A-S105) collar is verified in the "DISARM" [counterclockwise] position on 20C004B or "HPCI IN TEST/ARMED" annunciator 221 B-2 is clear.
15	Verify the Aux oil pump (20P026) control switch is in "START".  (Cue: Aux oil pump control switch (20P026) is in "START".)	P	Aux oil pump (20P026) control switch is verified in "START" at panel 20C004B.
16 <b>RRP N/A</b>	Verify annunciators "HPCI AUX OIL PUMP MOTOR OVERCURRENT" (221 A-2) and "HPCI DC MOTOR POWER LOSS" (221 A-1) are clear.  (Cue: Annunciators 221 A-1 and 221 A-2 are not lit.)	P	Annunciators "HPCI AUX OIL PUMP MOTOR OVERCURRENT" (221 A-2) and "HPCI DC MOTOR POWER LOSS" (221 A-1) are verified clear.
17	Verify Gland Seal Condenser Vacuum Pump (20K002) is in "START".  (Cue: Vacuum pump switch is in "Start", red light is on and green light is off.)	P	Gland Seal Condenser Vacuum Pump (20K002) control switch is verified in "START" at panel 20C004B.
*18	Depress and hold the HPCI System "Remote Trip" pushbutton.  (Cue: Turbine speed drops and 221 B-1 is alarming "HPCI TURB TRIP".)	P	Remote trip pushbutton is <b>DEPRESSED AND HELD</b> in until MO-2-23-014 indicates fully closed at panel 20C004B.
19	Verify HPCI Aux oil pump starts as turbine slows down (1200-1500 RPM).  (Cue: HPCI Aux oil pump red light is lit and green light is off. Annunciator 222 D-5 is flashing.)	P	HPCI Aux oil pump (20P026) red light is verified ON at panel 20C004B and/or "HPCI AUX OIL PUMP RUNNING" annunciator 222 D-5 is verified lit.

*20	<p>Close MO-2-23-014, "Supply" valve <u>OR</u> Wait for the Turbine shaft to stop rotating as indicated by SPI-4505 on 20C004B (or Local Indication) and place the Aux oil pump control switch to the PTL position.</p> <p>(Cue: Acknowledge control switch operation.)</p>	P	<p><u>SO 23.2.A-2 and RRC 23.1-2 standard</u></p> <p>MO-2-23-014 control switch is momentarily placed in the CLOSE position within 5 minutes of receiving annunciator 221 B-3 at panel 20C004B.</p> <p>(The operator may follow the ARC guidance which directs the operator to trip the HPCI turbine. The operator may elect to place the Aux Oil Pump control switch to PTL after the turbine shaft stops rolling and before releasing the trip pushbutton)</p>
21	<p>Verify MO-2-23-014, "Supply" valve closed.</p> <p>(Cue: MO-14 green light is on red light is off. HPCI speed, discharge pressure, and exhaust pressure have dropped to 0.)</p>	P	MO-2-23-014 green light verified ON at panel 20C004B.
22	<p>Verify closed the MO-2-23-019, "To Feed Line" valve.</p> <p>(Cue: MO-2-23-019 green light ON, red light OFF.)</p>	P	MO-2-23-019 green light verified ON and red light verified OFF on panel 20C004B.
23	<p>When MO-2-23-14 is fully closed, release the HPCI system "Remote Trip" pushbutton.</p> <p>(Cue: Acknowledge pushbutton is released.)</p>	P	Remote trip pushbutton is RELEASED at panel 20C004B.
24 RRP N/A	<p>CLOSE MO-2-23-021 "Full Flow Test"</p> <p>(Cue: Acknowledge Control Switch Operator.)</p>	P	MO-2-23-021 Control Switch is momentarily place in CLOSE.
25 RRP N/A	<p>Verify MO-2-23-021 "Full Flow Test" is CLOSED.</p> <p>(Cue: MO-21 Red light is OFF, Green light is ON.)</p>	P	MO-2-23-021 Green light verified on at Panel 20C004B.
26 RRP N/A	<p>Close MO-2-23-024 "Cond Tank Return"</p> <p>(Cue: Acknowledge control Switch Operation.)</p>	P	MO-2-23-024 Control Switch is momentarily placed in CLOSE.

27 <b>RRP</b> <b>N/A</b>	Verify MO-2-23-024 "Cond Tank Return valve is closed."  (Cue: MO-24 Red light is OFF, Green light is ON.)	P	MO-2-23-024 green light verified ON at Panel 20C0043.
28 <b>RRP</b> <b>N/A</b>	Verify 228 C-5, "HPCI RELAYS NOT RESET" is reset  (Cue: 228 C-5 is clear)	P	228 C-5 is verified clear
29 <b>RRP</b> <b>N/A</b>	Verify OPEN AO-2-23-042, "Drain Isol to Mn Cndr"  (Cue: AO-042 Red light is ON, Green light is OFF.)	P	AO-2-23-042 Verified Open
30 <b>RRP</b> <b>N/A</b>	Verify OPEN AO-2-23-043, "Drain Isol to Mn Cndr"  (Cue: AO-043 Red light is ON, Green light is OFF.)	P	AO-2-23-043 Verified Open
31 <b>RRP</b> <b>N/A</b>	Direct Equipment Operator to Verify HPCI Turbine Shaft is Stopped  (Cue: Acknowledge direction, inform Candidate JPM is concluded)	P	Equipment Operator dispatched
32	Inform Control Room Supervisor of Exhaust Diaphragm rupture indications and HPCI Turbine trip.  (Cue: Control Room Supervisor acknowledges report.)	P	Exhaust Diaphragm rupture indications and HPCI Turbine trip reported.  NOTE: This step may be performed at any point post-Alarm condition. IF Evaluator Terminates JPM before CRS is informed, then this step is N/A.
33	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

i. TERMINATING CUE

When the HPCI Turbine has been tripped due to Exhaust Diaphragm rupture indications, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Reactor is shutdown following an electrical transient.**
- 2. The HPCI System is set up for operation in accordance with SO 23.1.A-2, "HPCI System Setup for Automatic or Manual Operation".**
- 3. "B" loop of RHR is in the Torus Cooling mode in accordance with SO 10.1.D-2, "RHR System Torus Cooling".**
- 4. SBGT is in service in accordance with SO 9A.1.B, "Standby Gas Treatment System Manual Startup"**

## **INITIATING CUE**

**The Control Room Supervisor directs you to start up HPCI in the CST to CST Mode in accordance with RRC 23.1-2, "HPCI System Operation During a Plant Event" and lower reactor pressure to 500 psig.**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/>	QUALIFICATION MANUAL	<input type="checkbox"/>	OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Training			<b>CODE #:</b>	PLOR-081C
<b>COURSE:</b>	Licensed Operator Requalification Training			<b>REV #:</b>	007
<b>AUTHOR:</b>	J. R. Felice			<b>TYPIST:</b>	jav
<b>TITLE:</b>	HPSW Injection Into the Torus				
<b>APPROVALS:</b>					
			_____ Signature / Title	_____ Date	
			_____ Signature / Title	_____ Date	
			_____ Signature / Title	_____ Date	
			_____ Signature / Title	_____ Date	
<b>APPROVED FOR USE:</b>					
			_____ Signature / Title	_____ Date	
EFFECTIVE DATE: ____/____/____					

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
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<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
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EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2004800501 / PLOR-081C

K/A: 219000A4.13

RO: 3.9      SRO: 3.8

TASK DESCRIPTION: HPSW Injection Into the Torus

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. Keys for MO-2-10-174 and MO-2-10-176

C. REFERENCES

1. T-231-2, Rev. 6, "HPSW Injection Into the Torus"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the 2B HPSW Pump is injecting water into the Torus.
2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to inject water into the Torus using the 2B HPSW pump using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Use of this procedure has been directed by the TRIP procedures.
2. High Pressure Service Water Pumps are available.
3. A LPCI initiation signal is NOT present.
4. 4 KV Buses are receiving power from off-site power.

G. INITIATING CUE

The Control Room Supervisor directs you to perform T-231-2, "HPSW Injection into the Torus" in order to inject water into the Torus with the 2B HPSW pump.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure T-231-2, "HPSW Injection into the Torus".	P	A copy of procedure T-231-2, "HPSW Injection into the Torus" is obtained. Steps 4.1 and 4.2 are referenced.
2	Verify closed MO-2-10-154B, "Outboard Disch".  (Cue: MO-154B green light ON, red light OFF.)	P	MO-154B green light verified ON, red light verified OFF on panel 20C003-02.
3	Verify RHR pump 2BP035 shutdown.  (Cue: "B" RHR pump green light ON, red light OFF.)	P	"B" RHR pump green light verified ON at panel 20C003-02.
4	Verify RHR pump 2DP035 shutdown.  (Cue: "D" RHR pump green light ON, red light OFF.)	P	"D" RHR pump green light verified ON at panel 20C003-02.
5	Verify 2BP042 HPSW pump shutdown.  (Cue: "B" HPSW pump green light ON, red light OFF.)	P	"B" HPSW pump green light verified ON at panel 20C003-02.
6	Verify 2DP042 HPSW pump shutdown.  (Cue: "D" HPSW pump green light ON, red light OFF.)	P	"D" HPSW pump green light verified ON at panel 20C003-02.
7	Verify closed MO-2-10-089B, "B HPSW Hx Out".  (Cue: MO-089B green light ON, red light OFF.)	P	MO-089B green light verified ON, red light verified OFF at panel 20C003-02.
8	Verify closed MO-2-10-089D "D HPSW Hx Out".  (Cue: MO-089D green light ON red light OFF.)	P	MO-089D green light verified ON, red light verified OFF at panel 20C003-02.

STEP NO	STEP	ACT	STANDARD
9	Verify closed MO-2-32-2344 (10-186), "HPSW Loop Cross Tie".  (Cue: MO-2344 (10-186) green light ON, red light OFF.)	P	MO-2344 (10-186) green light verified ON, red light verified OFF at panel 20C00-03.
*10	Open MO-2-10-174, "HPSW/RHR Em Inner Cross Tie".  (Cue: Acknowledge keylock switch operation.)	P	Key is obtained from the SSV keybox, inserted into MO-174 keylock switch and placed in the OPEN position at panel 20C003-03.
11	Verify MO-2-10-174, "HPSW/RHR Em Inner Cross Tie" valve is opened.  (Cue: MO-174 red light is ON, green light is OFF.)	P	MO-174 red light verified on at panel 20C003-03.
*12	Open MO-2-10-176, "HPSW/RHR Em Outer Cross Tie".  (Cue: Acknowledge keylock switch operation.)	P	Key is obtained from the SSV keybox, inserted into MO-176 keylock switch and placed in the OPEN position at panel 20C003-03.
13	Verify MO-2-10-176, "HPSW/RHR Em Outer Cross Tie" valve is opened.  (Cue: MO-176 red light is ON, green light is OFF.)	P	MO-176 red light verified on at panel 20C003-03.
*14	Open MO-2-10-039B, "Torus Hdr"  (Cue: Acknowledge switch operation.)	P	MO-2-10-039B control switch is momentarily placed in the OPEN position at panel 20C003-02.
15	Verify MO-2-10-039B, "Torus Hdr." is opened.  (Cue: MO-39B red light is on, green light is off.)	P	MO-2-10-039B red light verified ON at panel 20C003-02.
*16	Start the "B" HPSW pump.  (Cue: "B" HPSW pump red light is on, green light is off and annunciator 225 B-5 is alarming.)	P	"B" HPSW pump control switch is momentarily placed in the START position at panel 20C003-02.

STEP NO	STEP	ACT	STANDARD
17	Verify proper start of the "B" HPSW pump. (Cue: 10A-A2B indicates 62 amps and PI-2330B indicates 430 psig.)	P	Pump amps and discharge pressure are verified stable after starting current decays.
18	Acknowledge the "RHR DISCH HDRS HI PRESS & SHUTDOWN SUCTION HDRS HI PRESS" annunciator. (Cue: Annunciator 225 B-5 is lit solid.)	P	The annunciator "ACKNOWLEDGE" pushbutton is depressed on panel 20C003-04.
*19	Throttle open MO-2-10-034B, "Full Flow Test" valve to maintain HPSW flow less than 5300 gpm on FI-2-10-139B. (Cue: FI-139B reads 5200 gpm.)	P	MO-2-10-034B control switch is momentarily placed in the OPEN position until 5000-5300 gpm is obtained on FI-2-10-139B THEN the red, stop travel pushbutton is depressed at panel 20C003-02.
20	Inform the Control Room Supervisor of task completion. (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
21	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the 2B HPSW Pump is injecting into the Torus, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Use of this procedure has been directed by the TRIP procedures.**
- 2. High Pressure Service Water Pumps are available.**
- 3. A LPCI initiation signal is NOT present.**
- 4. 4 KV Buses are receiving power from off-site power.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to perform T-231-2, “HPSW Injection into the Torus” in order to inject water into the Torus with the 2B HPSW pump.**

**EXELON NUCLEAR**  
**Nuclear Generation Group**  
**OJT/TPE MATERIAL COVERSHEET**

<b>TYPE:</b>	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-344CA
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	001
<b>AUTHOR:</b>	G. W. Zellmer	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Restoration of 4KV Buses From 2SUE (Alternate Path – 2SU-A Bkr Closes)		

<b>APPROVALS:</b>	<hr/> Signature / Title	<hr/> Date
	<hr/> Signature / Title	<hr/> Date
	<hr/> Signature / Title	<hr/> Date
	<hr/> Signature / Title	<hr/> Date

<b>APPROVED FOR USE:</b>	<hr/> Signature / Title	<hr/> Date
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<b>EFFECTIVE DATE:</b> ____ / ____ / ____
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<b>NAME:</b> _____ <div style="display: flex; justify-content: space-around; font-size: small;"> <span>Last</span> <span>First</span> <span>M.I.</span> </div>	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  <hr/> <div style="text-align: center; font-size: small;">Signature/Date</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"><b>LMS CODE:</b></td> <td style="width: 50%;"></td> </tr> <tr> <td><b>LMS ENTRY:</b></td> <td></td> </tr> </table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
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EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2008470501 –PLOR344CA

K/A: 262001 A4.01

RO: 3.4

SRO: 3.7

TASK DESCRIPTION: Restore Power to E13 Bus From Offsite

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.
6. This JPM is designed to be given in the Control Room Simulator.

B. TOOLS AND EQUIPMENT

1. T-350-3 'Area 50 Fire Guide'

C. REFERENCES

1. T-350-3 'Area 50 Fire Guide' Rev 007.

D. TASK STANDARD

1. Satisfactory task completion is indicated when the E12 bus and the E13 bus are being powered from the 2SU Off-Site power source with the 2SU-A Bkr open.
2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to restore power to the E12 and E13 Buses from 2SU using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. 2SU is the only offsite power source available.
2. A loss of power to the 2SU Transformer Tap Changer has occurred.
3. 4KV Buses have tripped on undervoltage.
4. E22, E32, E42, E23, E33, E43 Buses are now being powered from their respective Diesel Generator.
5. The E1 Emergency Diesel Generator has failed to start.
6. T-350-3 Attachment 1 "Defeat of 4KV Bus 2SU Feeder Breakers Degraded Voltage Trip Relays" has been completed.

G. INITIATING CUE

The Control Room Supervisor directs you to restore power to the E12 and the E13 Buses from 2SU in accordance with T-350-3 'Area 50 Fire Guide' steps 2.8 AND 2.9.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of T-350-3 'Area Fire Guide'	P	Correct procedure obtained.
*2	<p><u>OPEN</u> breaker 252-0308 "2SU-A Bkr" at Panel 00C024</p> <p>CUE: 2SU-A Breaker green indicating light is lit (red indicating light is out).</p>	P	Control Switch for the 2SU-A Breaker is taken to the 'Trip' position and then permitted to spring return to normal.
<p style="text-align: center;"><b>*** Notes ***</b></p> <p><b>A. After step 2 is complete the simulator operator will simulate the action of the fire by re-closing the 2SU-A breaker (over-riding the Sync Switch for the 2SU-A Breaker to the 'ON TRIP 0906' position and momentarily overriding the 2SU-A Breaker Control Switch to the 'Close' position). Simulator Operator MUST immediately return Breaker 2SU-A Control Switch to 'normal' operation. This action can easily be initiated by using an Event Trigger.</b></p> <p><b>B. The above action by the simulator operator is the start of the Alternate Path.</b></p> <p><b>C. Step 3 below (Step 2.9 of T-350-3) does NOT have to be performed in the order listed.</b></p>			
*3	<p><u>OPEN</u> breaker 252-0308 "2SU-A Bkr" at Panel 00C024</p> <p>CUE: 2SU-A Breaker green indicating light is lit (red indicating light is out).</p>	P	Control Switch for the 2SU-A Breaker is taken to the 'Trip' position and then permitted to spring return to normal.
*4	<p><u>OPEN</u> breaker 252-0311 "2SU-B Bkr" at Panel 00C024</p> <p>CUE: 2SU-B Breaker green indicating light is lit (red indicating light is out).</p>	P	Control Switch for the 2SU-B Breaker is taken to the 'Trip' position and then permitted to spring return to normal.

STEP NO	STEP	ACT	STANDARD
*5	<p><u>PLACE</u> the "E212 BKR SYNC" switch to "ON"</p> <p>CUE: The component that you identified is in the position that you described.</p>	P	Sync Switch for the E212 Breaker is positioned to the 'ON' position using the Sync Key.
*6	<p><u>TURN</u> the "E212 BKR" Control Switch to the 'CLOSE' position <u>AND VERIFY</u> the E212 Breaker closed.</p> <p>CUE: The E212 Breaker red indicating light is lit, the green indicating light is out.</p>	P	Control Switch for E212 Breaker is momentarily taken to the 'CLOSE' position and allowed to spring return to normal. Examinee verifies E212 Breaker red indicating light is lit, green indicating light is out.
7	<p><u>PLACE</u> the "E212 BKR SYNC" switch to "OFF"</p> <p>CUE: The component that you identified is in the position that you described.</p>	P	Sync Switch for the E212 Breaker is positioned to the 'OFF' position.
8	<p><u>VERIFY</u> the E124 Breaker is closed</p> <p>CUE: The E124 Breaker red indicating light is lit, the green indicating light is out.</p>	P	Verify E124 Breaker is closed.
*9	<p><u>PLACE</u> the "E213 BKR SYNC" switch to "ON"</p> <p>CUE: The component that you identified is in the position that you described.</p>	P	Sync Switch for the E213 Breaker is positioned to the 'ON' position using the Sync Key.
*10	<p><u>TURN</u> the "E213 BKR" Control Switch to the 'CLOSE' position <u>AND VERIFY</u> the E213 Breaker closed.</p> <p>CUE: The E213 Breaker red indicating light is lit, the green indicating light is out.</p>	P	Control Switch for E213 Breaker is momentarily taken to the 'CLOSE' position and allowed to spring return to normal.

STEP NO	STEP	ACT	STANDARD
11	<p><u>PLACE</u> the "E213 BKR SYNC" switch to "OFF"</p> <p>CUE: The component that you identified is in the position that you described.</p>	P	Sync Switch for the E213 Breaker is positioned to the 'OFF' position.
12	<p><u>VERIFY</u> the E134 Breaker is closed</p> <p>CUE: The E134 Breaker red indicating light is lit, the green indicating light is out.</p>	P	Verify E134 Breaker is closed.
13	<p>Notify the Control Room Supervisor that power has been restored to the E12 and the E13 Buses from 2SU in accordance with T-350-3 'Area 50 Fire Guide' steps 2.8 and 2.9</p> <p>CUE: If the examinee identified that the 2SU-A Breaker re-closed, then the evaluator should acknowledge the report and terminate the JPM.</p>	P	Notify the Control Room Supervisor that power has been restored to the E12 and the E13 Buses from 2SU in accordance with T-350-3 'Area 50 Fire Guide' steps 2.8 and 2.9
<p style="text-align: center;"><b>*** Note ***</b></p> <p><b>When the E12 bus and the E13 bus are being powered from the 2SU Off-Site power source (with the 2SU-A Bkr open), then the evaluator may terminate the JPM.</b></p>			
14	As an evaluator ensure you have positive control of all exam material provided to the examinee (Task Conditions/ Prerequisites) <u>AND</u> procedures.	P	Positive control established

Under "ACT" P - must perform  
S - must simulate  
D - must discuss

#### I. TERMINATING CUE

When the E12 bus and the E13 bus are being powered from the 2SU Off-Site power source (with the 2SU-A Bkr open) the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. 2SU is the only offsite power source available.**
- 2. A loss of power to the 2SU Transformer Tap Changer has occurred.**
- 3. 4KV Buses have tripped on under voltage.**
- 4. E22, E32, E42, E23, E33, E43 Buses are now being powered from their respective Diesel Generator.**
- 5. The E1 Emergency Diesel Generator has failed to start.**
- 6. T-350-3 Attachment 1 “Defeat of 4KV Bus 2SU Feeder Breakers Degraded Voltage Trip Relays” has been completed.**

## **INITIATING CUE:**

**The Control Room Supervisor directs you to restore power to the E12 and the E13 Buses from 2SU in accordance with T-350-3 ‘Area 50 Fire Guide’ steps 2.8 AND 2.9.**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	LICENSED OPERATOR TRAINING	<b>CODE #:</b>	PLOR-270C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	001
<b>AUTHOR:</b>	J. A. Verbillis	<b>TYPIST:</b>	jav
<b>TITLE:</b>	ECW System Makeup to Tower Using a HPSW Pump		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>			
		_____ Signature / Title	_____ Date
<b>EFFECTIVE DATE:</b> ____/____/____			

<b>NAME:</b> _____ Last                      First                      M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE ID NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
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<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2770040101 / PLOR-270C K/A: 400000 A4.01  
URO: 3.1 SRO: 3.0

TASK DESCRIPTION: ECW System Makeup to Tower using a HPSW Pump

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

None

**C. REFERENCES**

1. SO 48.7.A Rev 5 "Emergency Cooling Water System Makeup To Tower Using A High Pressure Service Water Pump"
2. SO 32.1.A-2 Rev 15 "High Pressure Service Water System Startup And Normal Operations"
3. SO 32.2.A-2 Rev 8 "High Pressure Service Water System Shutdown"

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when:  
  
Emergency Cooling Tower level is at or about 18 Ft 3 In, and Emergency Service Water is returned to a standby lineup.
2. Estimated time to complete: 15 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to makeup to the Emergency Cooling Tower with the High Pressure Service Water system using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Emergency Cooling Water tower level is 17 ft.
2. All 4 KV busses are receiving power from the off-site startup sources.
3. Power available to the HPSW System per SO 54 and SO 56E.
4. The HPSW System is lined up for normal operation in accordance with COL 32.1.A-2 "High Pressure Service Water System" and SO 32.1.A-2 "High Pressure Service Water System Startup And Normal Operations"
5. Emergency Cooling Water (ECW) System is lined for normal standby operation in accordance with COL 48.1.A, "Emergency Cooling Water System (Units 2 and 3)".
6. High Pressure Service Water Radiation Monitoring System is lined up for normal operation in accordance with SO 63H.1.A-2, High Pressure Service Water Radiation Monitoring System Startup and Normal Operations.

7. Outside air temperature is 50°F.
8. One HPSW System has been declared INOPERABLE and appropriate TSA entries have been made per SO 48.7.A Precaution 3.1.

G. INITIATING CUE:

The Control Room Supervisor directs you to makeup to the Emergency Cooling Tower to a level of 18 ft 3 in, then restore to a normal lineup, using the "A" HPSW Pump / Heat Exchanger IAW SO 48.7.A "Emergency Cooling Water System Makeup To Tower Using A High Pressure Service Water Pump"

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 48.7.A.	P	Procedure obtained.
2	Obtain a copy of SO 32.1.A-2 for starting the HPSW pump	P	A copy of SO 32.1.A-2 is obtained
3	Direct Equipment Operator to verify "A" HPSW Pump motor oil level at STAND STILL level  (Cue: Report as EO that "A" HPSW Pump motor oil level at STAND STILL level)	P	EO directed to verify Oil Level
4	Direct Equipment Operator to verify Area Ventilation Fans are aligned as follows:  <ul style="list-style-type: none"> <li>HPSW + ESW Pump Room Supply Fan 2BV060 should be in "AUTO" AND 2AV060 should be in "AUTO STBY" on Panel 20C139.</li> <li>HPSW + ESW Pump Room Exhaust Fans 2AV083 AND 2BV083 should be in "AUTO" on Panel 20C139.</li> </ul> (Cue: Report as EO that fans aligned as above)	P	EO directed to verify Fan alignment
5	Notify Chemistry that the "A" RHR Heat Exchanger will be placed in service and appropriate samples are required  (Cue: As Chemistry, acknowledge the report)	P	Chemistry notified
6	Monitor "A" HPSW motor bearing temperatures on PMS	P	PMS used for bearing temperature monitoring
*7	Open MO 2 10 089A HPSW Hx Out  (Cue: Red Light On, Green Light Off)	P	Correct valve opened
*8	Start the "A" HPSW Pump. (Cue: Acknowledge control switch operation.)	P	"A" HPSW pump control switch manipulated.

STEP NO	STEP	ACT	STANDARD
9	Verify "A" HPSW Pump operating as expected.  (Cue: Red Light On, Pump amps initially peg high then settle at about 110 amps, discharge pressure is 270 psig.)	P	HPSW pump parameters verified to be in expected range.
10	Throttle MO 2 10 089A to establish 3300 to 5300 gpm flow on FI 2 10 132A on Panel 20C003.  (Cue: System Flow is 4500 gpm)	P	System Flow verified in band provided in SO.
11	Verify DPI 2 10 130A indicates greater than 20 psid across the inservice RHR heat exchanger AND annunciator 20C203C C-4, "RHR Heat Exchanger Tube to Shell Low Press" is clear.  (Cue: DP is 95 psid, Annunciator C-4 is clear)	P	DP and Annunciator status are verified
12	Direct Equipment Operator to perform SO 32.8.A 2, "High Pressure Service Water System Routine Inspection".  (Cue: EO acknowledges.)	P	EO directed to perform routine inspection. Candidate should NOT wait for EO report of completion.
*13	Open M0 2 32 2803, "Unit 2 HPSW Disch to Clg Tower"  (Cue: Red light ON, Green light OFF)	P	At Panel 00C123 (MCR Emergency Cooling Tower Panel), candidate opens M0 2803, "Unit 2 HPSW Disch to Clg Tower"
14	Verify TSA log entries are completed for one HPSW subsystem inoperable.  (Cue: TSA log entry will be made by Supervisor)	P	Candidate acknowledges requirement for TSA log entry
*15	Close M0 2 32 2486, "Unit 2 HPSW Disch to Pond"  (Cue: Red light OFF, Green light ON)	P	At Panel 00C123 (MCR Emergency Cooling Tower Panel), candidate closes M0 2486, "Unit 2 HPSW Disch to Pond"

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>***NOTE***</b></p> <p align="center"><b>In the following step, ECT level as indicated on LI-0503 WILL NOT CHANGE, so this information must be CUED to the Candidate.</b></p>			
16	<p>Monitor ECT reservoir level.</p> <p>(Cue: ECT reservoir level is slowly rising.)</p> <p>(Cue: Inform candidate that ECT level is now 18 feet, 3 inches.)</p>	P	Observe level indicator LI-0503, "Clg Twr" on Panel 00C123.
17	Obtain a copy of SO 32.2.A for shutting down the HPSW pump	P	A copy of SO 32.2.A is obtained
*18	<p>Shutdown the running HPSW pump.</p> <p>(Cue: Acknowledge switch operation.)</p>	P	Running HPSW Pump control switch taken to OFF.
19	<p>Verify "A" HPSW Pump shutdown as expected.</p> <p>(Cue: Red light OFF, Green light ON, Pump amps 0, discharge pressure is 0 psig.)</p>	P	HPSW pump parameters verified to be as expected for shutdown pump.
20	<p>Close MO-2-10-089A "HPSW Hx Out"</p> <p>(Cue: Red light OFF, Green light ON)</p>	P	Correct valve closed
21	<p>Direct Equipment Operator to verify CHK-2-32-502A "HPSW 2A P042 Discharge Check Valve" is closed</p> <p>(Cue: As Equipment Operator, report that CHK-2-32-502A is CLOSED)</p>	P	Check Valve verified closed

STEP NO	STEP	ACT	STANDARD
22	<p>Direct Equipment Operator to verify Area Ventilation Fans are aligned as follows:</p> <ul style="list-style-type: none"> <li>HPSW + ESW Pump Room Supply Fan 2BV060 should be in "AUTO" AND 2AV060 should be in "AUTO STBY" on Panel 20C139.</li> <li>HPSW + ESW Pump Room Exhaust Fans 2AV083 AND 2BV083 should be in "AUTO" on Panel 20C139.</li> </ul> <p>(Cue: Report as EO that fans aligned as above)</p>	P	EO directed to verify Fan alignment
23	<p>Open M0 2 32 2486, "Unit 2 HPSW Disch to Pond"</p> <p>(Cue: Red light ON, Green light OFF)</p>	P	At Panel 00C123 (MCR Emergency Cooling Tower Panel), candidate opens M0 2486, "Unit 2 HPSW Disch to Pond"
24	<p>EXIT TSA one HPSW subsystem inoperable.</p> <p>(Cue: TSA status entry will be made by Supervisor)</p>	P	Candidate acknowledges requirement for TSA status change
25	<p>Close M0 2 32 2803, "Unit 2 HPSW Disch to Clg Tower"</p> <p>(Cue: Red light OFF, Green light ON)</p>	P	At Panel 00C123 (MCR Emergency Cooling Tower Panel), candidate closes M0 2803, "Unit 2 HPSW Disch to Clg Tower"
26	<p>Inform Control Room Supervisor of task completion.</p> <p>(Cue: Control Room Supervisor acknowledges report.)</p>	P	Task completion reported.
27	<p>As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.</p>	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

## I. TERMINATING CUE

When the lineup for making up to the Emergency Cooling Tower is secured, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Emergency Cooling Water tower level is 17 ft.**
- 2. All 4 KV busses are receiving power from off-site startup sources.**
- 3. Power available to the HPSW System per SO 54 and SO 56E.**
- 4. The HPSW System is lined up for normal operation in accordance with COL 32.1.A-2 "High Pressure Service Water System" and SO 32.1.A-2 "High Pressure Service Water System Startup And Normal Operations"**
- 5. Emergency Cooling Water (ECW) System is lined for normal standby operation in accordance with COL 48.1.A, "Emergency Cooling Water System (Units 2 and 3)".**
- 6. High Pressure Service Water Radiation Monitoring System is lined up for normal operation in accordance with SO 63H.1.A-2, High Pressure Service Water Radiation Monitoring System Startup and Normal Operations.**
- 7. Outside air temperature is 50°F.**
- 8. One HPSW System has been declared INOPERABLE and appropriate TSA entries have been made per SO 48.7.A Precaution 3.1.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to makeup to the Emergency Cooling Tower to a level of 18 ft 3 in, then restore to a normal lineup, using the "A" HPSW Pump / Heat Exchanger IAW SO 48.7.A "Emergency Cooling Water System Makeup To Tower Using A High Pressure Service Water Pump"**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="checked" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Requalification	<b>CODE #:</b>	PLOR-044C
<b>COURSE:</b>	Licensed Operator Requalification	<b>REV #:</b>	018
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Manually Start SBT System		
<b>APPROVALS:</b>			
		Signature / Title	Date
		Signature / Title	Date
		Signature / Title	Date
		Signature / Title	Date
<b>APPROVED FOR USE:</b>			
		Signature / Title	Date
EFFECTIVE DATE: ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
<b>LMS CODE:</b>					
<b>LMS ENTRY:</b>					

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2610050101 / PLOR-044C

K/A: 261000A4.03

URO: 3.0    SRO: 3.0

TASK DESCRIPTION: Manually Startup the SGBT System

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

None

**C. REFERENCES**

1. Procedure SO 9A.1.B Rev. 9, "Standby Gas Treatment System Manual Startup" |
2. Procedure ST-O-09A-500-2, Rev. 4 "Standby Gas Treatment Filter Train Operation Log"

**D. TASK STANDARD**

1. Performance Location: Simulator |
2. Satisfactory task completion is indicated when Standby Gas Treatment System in operation with:
  - a. "A" or "B" SGBT fan running.
  - b. "A" Filter train in service.
3. Estimated time to complete: 10 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to manually start the Standby Gas Treatment System using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Standby Gas Treatment System is lined up for automatic operation in accordance with SO 9A.1.A, "Standby Gas Treatment System Lineup for Automatic Operation".
2. Standby Gas Treatment System is required for HPCI System operation.
3. The "B" SGBT filter train run time is greater than the "A" SGBT filter train run time.
4. Data required by ST-O-09A-500-2 "Standby Gas Treatment Filter Train Operation Log" is being completed by another Reactor Operator.

**G. INITIATING CUE**

The Control Room Supervisor directs you to start the Standby Gas Treatment System in preparation for HPCI System operation using SO 9A.1.B "Standby Gas Treatment System Manual Startup".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 9A.1.B.	P	A copy of procedure SO 9A.1.B is obtained.
2	Notify Health Physics prior to starting SBGT for Unit 2 HPCI operations.  (Cue: Health Physics acknowledges notification.)	P	Health Physics has been notified that SBGT is going to be started.
*3	Open AO-00475-1, SBGT "A" Filter Inlet damper.  (Cue: Acknowledge control switch operation.)	P	AO-00475-1 control switch is placed in the "OPEN" position at panel 20C012.
4	Verify AO-00475-1 SBGT "A" Filter Inlet damper is open.  (Cue: AO-0475-1 red light is on, green light is off.)	P	AO-00475-1 red light is verified ON at panel 20C012.
5	Acknowledge the "STAND-BY GAS TREATMENT FILTERS NOT IN AUTO" annunciator.  (Cue: Annunciator 216 A-5 is not lit.)	P	The annunciator "ACKNOWLEDGE" pushbutton is depressed at panel 20C012.
*6	Open AO-00475-2 SBGT "A" Filter Outlet damper.  (Cue: Acknowledge control switch operation.)	P	AO-00475-2 control switch is placed in the "OPEN" position at panel 20C012.
7	Verify AO-00475-2 SBGT "A" Filter Outlet damper is open.  (Cue: AO-00475-2 red light is on, green light is off.)	P	AO-00475-2 red light is verified ON at panel 20C012.
8	Verify AO-20469-1 D/W Rx Bldg Equip Exh damper is closed.  (Cue: AO-20469-1 green light is on, red light is off.)	P	AO-20469-1 green light is verified ON at panel 20C012.

STEP NO	STEP	ACT	STANDARD
9	Verify AO-20469-2 D/W Rx Bldg Equip Exh damper is closed.  (Cue: AO-20469-2 green light is on, red light is off.)	P	AO-20469-2 green light is verified ON at panel 20C012.
<p align="center"><b>*** NOTE TO EVALUATOR ***</b></p> <p align="center"><b>The candidate has the choice of either "A" or "B" SBG T Fan since system operation is in support of HPCI operation. See NOTE at Step 4.4 of SO 9A.1.B.</b></p>			
*10	Start "A" <u>or</u> "B" SBG T Fan.  (Cue: Acknowledge control switch operation.)	P	"A" <u>or</u> "B" SBG T Fan control switch is placed in the "RUN" position at panel 20C012.
11	Verify the proper start of the "A" <u>or</u> "B" SBG T Fan.  (Cue: "A" <u>or</u> "B" SBG T Fan red light is on, green light is off.)	P	"A" <u>or</u> "B" SBG T Fan red light is
<p align="center"><b>*** NOTE TO EVALUATOR ***</b></p> <p align="center"><b>SBGT system flows and system differential pressures do not need to be verified in a specific range for HPCI System operation per step 4.4.1. Procedure steps 4.4.1, 4.4.2, and 4.4.3 can be skipped.</b></p>			
12	Inform Control Room Supervisor of task completion.  (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
13	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When SBG T system is running to support HPCI operation, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Standby Gas Treatment System is lined up for automatic operation in accordance with SO 9A.1.A, "Standby Gas Treatment System Lineup for Automatic Operation".**
- 2. Standby Gas Treatment System is required for HPCI System operation.**
- 3. The "B" SBTG filter train run time is greater than the "A" SBTG filter train run time.**
- 4. Data required by ST-O-09A-500-2 "Standby Gas Treatment Filter Train Operation Log" is being completed by another Reactor Operator.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to start the Standby Gas Treatment System in preparation for HPCI System operation using SO 9A.1.B "Standby Gas Treatment System Manual Startup".**

**Exelon Nuclear  
Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Training	<b>CODE #:</b>	PLOR-346PA
<b>COURSE:</b>	Licensed Operator Requalification	<b>REV #:</b>	000
<b>AUTHOR:</b>	J. A. Verbillis	<b>TYPIST:</b>	jav
<b>TITLE:</b>	Manual Operation Of Scoop Tube Positioner (Alternate Path – Hand Crank Fails To Engage)		

<b>APPROVALS:</b>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Signature / Title</span> <span>Date</span> </div>	
	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Signature / Title</span> <span>Date</span> </div>	
	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Signature / Title</span> <span>Date</span> </div>	
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<b>APPROVED FOR USE:</b>	<div style="border-bottom: 1px solid black; margin-bottom: 5px;"></div> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Signature / Title</span> <span>Date</span> </div>	
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<b>NAME:</b> _____ <div style="display: flex; justify-content: space-between; font-size: small; margin-top: 5px;"> <span>Last</span> <span>First</span> <span>M.I.</span> </div>	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE I.D. NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  <div style="border-bottom: 1px solid black; margin-top: 10px; width: 80%;"></div> <div style="text-align: center; font-size: small; margin-top: 5px;">Signature/Date</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;"><b>LMS CODE:</b></td> <td style="width: 50%;"></td> </tr> <tr> <td style="padding: 5px;"><b>LMS ENTRY:</b></td> <td></td> </tr> </table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
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EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2020100401 / PLOR-346PA K/A: 202001 A4.08

URO: 3.2 SRO: 3.1

TASK DESCRIPTION: Manual Operation of Scoop Tube Positioner (Alternate Path – Hand Crank Fails to Engage)

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

1. None

**C. REFERENCES**

1. AO 2D.2-2, Rev. 7, "Recirculation MG Set Scoop Tube Manual Operation"

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when the 2A Recirculation MG Set speed has been reduced to 1400 RPM using manual control of the MG Set Scoop Tube Positioner.
2. Estimated time to complete: 10 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to take manual control of the 2A Recirculation MG Set Scoop Tube Positioner using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Prerequisites for AO 2D.2-2, "Recirculation MG Set Scoop Tube Manual Operation" are complete.
2. 2A Recirculation pump M/A Station is NOT operable.
3. 2A Recirculation pump speed is 1420 RPM.
4. Recirculation flow reduction is required.
5. 2A Recirculation pump Scoop Tube Positioner has been locked up.

**G. INITIATING CUE**

The Control Room Supervisor directs you, the extra RO, to take manual control of the 2A Recirculation MG Set Scoop Tube Positioner and reduce its speed to 1400 RPM using AO 2D.2-2, "Recirculation MG Set Scoop Tube Manual Operation".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure AO 2D.2-2.	P	A copy of procedure AO 2D.2-2 is obtained.
2	Establish constant communications with Control Room.  (Cue: Evaluator responds as Control Room Operator.)	S	Communications (Radio) with Control Room Operator established.
<p align="center"><b>**** NOTE ****</b></p> <p align="center"><b>Reinforce to Examinee the importance of simulating ALL manipulations during the conduct of this JPM.</b></p>			
<p align="center"><b>**** NOTE ****</b></p> <p align="center"><b>The Alternate Path portion of this JPM begins with the next step.</b></p>			
3	For the 2A Recirc MG set, depress the MANUAL plunger next to the manual hand crank.  (Cue: Inform candidate that plunger spring returns to normal position.)	S	2A Recirc MG set MANUAL plunger depressed.
4	Rotate hand crank in the COUNTER-CLOCKWISE direction in an attempt to reduce the speed of the 2A Recirculation MG Set.  (Cue: When candidate indicates rotation of hand crank, inform the candidate that NO resistance is felt.)  (Cue: IF the candidate asks the Control Room Operator for Recirc Speed change, report NO CHANGE in 2A Recirc Pump Speed.)	S	Hand crank turned in the COUNTER-CLOCKWISE direction.
*5	RECOGNIZE the failure of the handwheel to engage	P	Candidate should recognize failure of hand crank mechanism to latch based on lack of resistance and lack of speed change.

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>***Note to Evaluator***</b></p> <p><b>The following step may have been accomplished with initial rotation of handwheel. It is acceptable to NOT rotate handwheel an additional rotation provided a full turn was made after plunger was initially depressed.</b></p>			
6	Rotate hand crank one full turn. (Cue: Hand crank is turned one full turn.)	S	Hand crank turned one full turn
*7	Depress the MANUAL plunger next to the manual hand crank. (Cue: Inform candidate that plunger spring returns to normal position.)	S	2A Recirc MG set MANUAL plunger depressed.
*8	Rotate hand crank in the COUNTER-CLOCKWISE direction in an attempt to reduce the speed of the 2A Recirculation MG Set to 1400 RPM.  (Cue: When candidate indicates rotation of hand crank, inform the candidate that resistance is felt.)  (Cue: IF the candidate asks the Control Room Operator for Recirc Speed change, report CHANGE in 2A Recirc Pump Speed of 5 RPM for each simulated revolution. IF candidate asks for plant response, report that reactor power is lowering.)	S	Hand crank turned in the COUNTER-CLOCKWISE direction. Speed reduction recognized.  IF the candidate indicates rotation in the CLOCKWISE direction, report that speed is RISING and reactor power is RISING, and grade this step as UNSAT.
*9	Reduce the speed of the 2A Recirculation MG Set to 1400 RPM by making a total of 4 rotations in the COUNTER-CLOCKWISE direction.  (Cue: Report CHANGE in 2A Recirc Pump Speed of 5 RPM for each simulated revolution. IF candidate asks for plant response, report that reactor power is lowering.)	S	Hand crack positioned 4 rotations in the COUNTER-CLOCKWISE direction.

STEP NO	STEP	ACT	STANDARD
10	Verify the 2A Recirculation MG Set speed is 1400 RPM.  (Cue: Control Room Operator reports that 2A Recirculation MG Set speed is 1400 RPM. Inform candidate that no further speed adjustment is required.)	S	2A Recirculation MG Set speed reduction is verified by communicating (radio) with the Control Room Operator.
11	Inform Control Room of task completion.  (Cue: Acknowledge report.)	S	Task completion reported using radio, telephone, or plant page system.
12	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the speed of the 2A Recirc MG set has been reduced to 1400 RPM, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Prerequisites for AO 2D.2-2, “Recirculation MG Set Scoop Tube Manual Operation” are complete.**
- 2. 2A Recirculation pump M/A Station is NOT operable.**
- 3. 2A Recirculation pump speed is 1420 RPM.**
- 4. Recirculation flow reduction is required.**
- 5. 2A Recirculation pump Scoop Tube Positioner has been locked up.**

## **INITIATING CUE**

**The Control Room Supervisor directs you, the extra RO, to take manual control of the 2A Recirculation MG Set Scoop Tube Positioner and reduce its speed to 1400 RPM using AO 2D.2-2, “Recirculation MG Set Scoop Tube Manual Operation”.**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Training	<b>CODE #:</b>	PLOR-334PA
<b>COURSE:</b>	Licensed Operator Requalification	<b>REV #:</b>	002
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	rja
<b>TITLE:</b>	Swapping EHC System Pressure Regulators – Unit 3 (Alternate Path - Backup Pressure Regulator Instabilities)		
<b>APPROVALS:</b>			
		_____ Signature / Title	_____ Date
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		_____ Signature / Title	_____ Date
<b>APPROVED FOR USE:</b>		_____ Signature / Title	_____ Date
<b>EFFECTIVE DATE:</b> ____/____/____			

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____
<b>EMPLOYEE I.D. NO.</b> _____	<b>COMPLETION DATE:</b> _____
<b>COMMENTS:</b>     	
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	<b>LMS ENTRY:</b> _____

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2480260401 / PLOR-334PA

K/A: 241000A2.01

RO: 3.5      SRO: 3.7

TASK DESCRIPTION:      Swap EHC Pressure Regulators

A.    NOTES TO EVALUATOR:

1.    An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2.    System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3.    JPM Performance
  - a.    "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b.    When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4.    Satisfactory performance of this JPM is accomplished if:
  - a.    The task standard is met.
  - b.    JPM completion time requirement is met.
    - 1)    For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2)    For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5.    The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

**B. TOOLS AND EQUIPMENT**

1. AO 1D.1-3 "Swapping EHC Pressure Regulators" with steps 4.1.1, 4.1.2, and 4.1.3 already signed off and documenting that the 3A EHC pressure regulator is in control.

**C. REFERENCES**

1. AO 1D.1-3, Rev.3, Swapping EHC Pressure Regulators

**D. TASK STANDARD**

1. Satisfactory task completion is indicated when it is identified that the backup Unit 3 EHC pressure regulator is not providing stable RPV pressure control and the original pressure regulator is placed back in-service.
2. Estimated time to complete: 25 minutes Non-Time Critical

**E. DIRECTIONS TO EXAMINEE**

When given the initiating cue, perform necessary steps to swap Unit 3 EHC System pressure regulators using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

**F. TASK CONDITIONS/PREREQUISITES**

1. Unit 3 power level has been reduced from 100% to 99% due to observed 1 to 2 psig swings in RPV pressure.
2. The EHC System is in service in accordance with SO 1D.1.A-3, "EHC Oil System Startup and Normal Operations."
3. The 'A' pressure regulator is in service. The "A IN CONTROL" lamp is lit on both the 30C008A panel in the Main Control Room and the 30C030 panel in the Cable Spreading Room
4. Permission to swap EHC pressure regulators has been granted by both the Unit 3 Reactor Operator and the Control Room Supervisor.
5. Steps 4.1.1 through 4.1.3 of AO 1D.1-3 "Swapping EHC Pressure Regulators" are complete.

**G. INITIATING CUE**

The Control Room Supervisor directs you to swap from the 3A to the 3B EHC pressure regulator using procedure AO 1D.1-3 "Swapping EHC Pressure Regulators".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>** NOTE **</b></p> <p><b>Reinforce to Candidate the importance of simulating ALL manipulations during the conduct of this JPM.</b></p>			
1	Obtain a copy of procedure AO 1D.1-3.  (Cue: provide AO 1D.1-3 "Swapping EHC Pressure Regulators" with steps 4.1.1, 4.1.2, and 4.1.3 already signed off and documenting that the 3A EHC pressure regulator is in control.)	P	A copy of procedure AO 1D.1-3 is obtained.
2	Record initial Pressure Setpoint Bias potentiometer reading.  (Cue: Pressure setpoint bias potentiometer indicates 4.53.)	P	On EHC panel 30C030 record Pressure Setpoint Bias potentiometer reading in step 4.1.4 of AO 1D.1-3. Place initials on same step.
<p align="center"><b>** NOTE **</b></p> <p align="center"><b>Candidate should utilize Section 4.3 of AO 1D.1-3.</b></p>			
3	Slowly turn the Pressure Setpoint Bias potentiometer <u>CLOCKWISE</u> .  (Cue: Acknowledge potentiometer operation. After 4 to 5 operations of the potentiometer in the CLOCKWISE direction, state that both the "A and B IN CONTROL" lamps are illuminated.)	S	On panel 30C030 in the Cable Spreading Room, unlock and SLOWLY turn the pressure setpoint bias potentiometer in the CLOCKWISE direction. SLOWLY means 1/8 of a turn (0.12 to 0.13 indicated) every 30 seconds.
4	Record the Pressure Setpoint Bias potentiometer reading when both the "A and B IN CONTROL" lamps are illuminated.  (Cue: Report that the potentiometer is indicating 5.12.)	P	Record the Pressure Setpoint Bias potentiometer reading on AO 1D.1-3, step 4.3.2.

STEP NO	STEP	ACT	STANDARD
*5	<p>Continue <u>Slowly</u> turning the Pressure Setpoint Bias potentiometer <u>CLOCKWISE</u> until only the "B IN CONTROL" lamp is illuminated.</p> <p>(Cue: The "B IN CONTROL" lamp is lit. The "A IN CONTROL" lamp is NOT lit. Report that the potentiometer is indicating 5.30.)</p>	S	<p>On the 30C030 in the Cable Spreading Room, SLOWLY turn the Pressure Setpoint Bias potentiometer in the CLOCKWISE direction until it is observed that the "B IN CONTROL" lamp is lit and the "A IN CONTROL" lamp is not lit.</p> <p>SLOWLY means 1/8 of a turn (0.12 to 0.13 indicated) every 30 seconds.</p>
*6	<p>Slowly turn the Pressure Setpoint Bias potentiometer <u>CLOCKWISE</u> 0.75 turns past the position at which the "B IN CONTROL" lamp lit.</p> <p>(Cue: Acknowledge potentiometer motion in the CLOCKWISE direction. Report that the potentiometer is indicating 5.87. <b>REPORT that the Main Control Room is observing a rise in reactor pressure instabilities of 3 to 4 psig RPV pressure swings.</b>)</p>	S	<p>On the 30C030 in the Cable Spreading Room, SLOWLY turn the Pressure Setpoint Bias potentiometer in the CLOCKWISE direction to obtain a position <math>\frac{3}{4}</math> of a turn from where the "B IN CONTROL" lamp lit.</p> <p>SLOWLY means 1/8 of a turn (0.12 to 0.13 indicated) every 30 seconds.</p>

**\*\* NOTES TO EVALUATOR\*\***

- A. The Alternate Path portion of this JPM begins with the next step.
- B. The Candidate determines that the 3A Pressure Regulator should be placed back in service based on precaution Step 3.1 of AO 1D.1-3.
- C. The Candidate can place the 3A Pressure Regulator back in service by utilizing Section 4.2 of AO 1D.1-3 OR by immediately reversing steps previously performed based on precaution Step 3.1 of AO 1D.1-3.
- D. IF the candidate interacts with the evaluator as supervision asking for direction as to how to proceed, the evaluator should cue the candidate to "Comply with the procedural guidance." The intent is to ensure the candidate identifies and carries out the direction provided in precaution 3.1 to return the system to previous alignment without inappropriate cueing.

STEP NO	STEP	ACT	STANDARD
*7	<p>Slowly turn the Pressure Setpoint Bias potentiometer <u>COUNTER-CLOCKWISE</u>.</p> <p>(Cue: Acknowledge potentiometer operation. After 4 to 5 operations of the potentiometer in the COUNTER-CLOCKWISE direction, state that both the "A and B IN CONTROL" lamps are illuminated.)</p>	S	<p>On the 30C030 in the Cable Spreading Room, SLOWLY turn the Pressure Setpoint Bias potentiometer in the COUNTER-CLOCKWISE direction. SLOWLY means 1/8 of a turn (0.12 to 0.13 indicated) every 30 seconds.</p>
<p align="center"><b>** NOTE TO EVALUATOR**</b></p> <p align="center"><b>The following step is only applicable if utilizing Section 4.2 of AO 1D.1-3.</b></p>			
8	<p>Record the Pressure Setpoint Bias potentiometer reading when both the "A and B IN CONTROL" lamps are illuminated.</p> <p>(Cue: Report that the potentiometer is indicating 5.28.)</p>	P	<p>Record the Pressure Setpoint Bias potentiometer readings on AO 1D.1-3, step 4.2.2.</p>
*9	<p>Continue <u>slowly</u> turning the Pressure Setpoint Bias potentiometer <u>COUNTER-CLOCKWISE</u> until only the "A IN CONTROL" lamp is illuminated.</p> <p>(Cue: The "A IN CONTROL" lamp is lit. The "A IN CONTROL" lamp is NOT lit. Report that the Pressure Setpoint Bias potentiometer indicates 5.10.)</p>	S	<p>On the 30C030 in the Cable Spreading Room, SLOWLY turn the Pressure Setpoint Bias potentiometer in the COUNTER-CLOCKWISE direction until it is observed that the "A IN CONTROL" lamp is lit and the "B IN CONTROL" lamp is not lit.</p> <p>SLOWLY means 1/8 of a turn (0.12 to 0.13 indicated) every 30 seconds.</p>
*10	<p>Slowly turn the Pressure Setpoint Bias potentiometer <u>COUNTER-CLOCKWISE</u> 0.75 turns past the position at which the "A IN CONTROL" lamp lit.</p> <p>(Cue: Acknowledge potentiometer motion in the COUNTER-CLOCKWISE direction. Report that the Pressure Setpoint Bias potentiometer indicates 4.53. <b>Report that RPV pressure has returned to the original 1 to 2 psig swings.</b>)</p>	S	<p>On the 30C030 in the Cable Spreading Room, SLOWLY turn the Pressure Setpoint Bias potentiometer in the COUNTER-CLOCKWISE direction to obtain a position <math>\frac{3}{4}</math> of a turn from where the "A IN CONTROL" lamp lit.</p> <p>SLOWLY means 1/8 of a turn (0.12 to 0.13 indicated) every 30 seconds.</p>

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>** NOTE TO EVALUATOR**</b></p> <p align="center"><b>The following step is only applicable if utilizing Section 4.2 of AO 1D.1-3.</b></p>			
11	Record final reading for the Pressure Setpoint Bias potentiometer.  (Cue: Potentiometer is reading 4.53.)	P	Record the Pressure Setpoint Bias potentiometer reading on AO 1D.1-3, step 4.2.8.
<p align="center"><b>** NOTE TO EVALUATOR**</b></p> <p align="center"><b>At this time report that steps 4.4 and 4.5 of AO 1D.1-3 are being performed by the Main Control Room.</b></p>			
12	Inform Control Room of task completion.	S	Task completion reported using telephone or plant page system.
13	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <u>AND</u> procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the original 3A EHC Pressure Regulator has been placed back in service, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 3 power level has been reduced from 100% to 99% due to observed 1 to 2 psig swings in RPV pressure.**
- 2. The EHC System is in service in accordance with SO 1D.1.A-3, "EHC Oil System Startup and Normal Operations."**
- 3. The 'A' pressure regulator is in service. The "A IN CONTROL" lamp is lit on both the 30C008A panel in the Main Control Room and the 30C030 panel in the Cable Spreading Room**
- 4. Permission to swap EHC pressure regulators has been granted by both the Unit 3 Reactor Operator and the Control Room Supervisor.**
- 5. Steps 4.1.1 through 4.1.3 of AO 1D.1-3 "Swapping EHC Pressure Regulators" are complete.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to swap from the 3A to the 3B EHC pressure regulator using procedure AO 1D.1-3 "Swapping EHC Pressure Regulators".**

**EXELON NUCLEAR**  
**Nuclear Generation Group**

**OJT/TPE MATERIAL COVERSHEET**

<input checked="" type="checkbox"/> <b>X</b>	<b>Peach Bottom</b>	<input type="checkbox"/>	<b>Limerick</b>	<input type="checkbox"/>	<b>Common</b>
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<b>TYPE:</b>	<input checked="" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
<b>PROGRAM:</b>	Licensed Operator Training	<b>CODE #:</b>	PLOR-096P
<b>COURSE:</b>	Licensed Operator Requalification Training	<b>REV #:</b>	016
<b>AUTHOR:</b>	J. R. Felice	<b>TYPIST:</b>	rja
<b>TITLE:</b>	Loss of RBCCW (Plant Actions for the Instrument Nitrogen System)		

**APPROVALS:**

\_\_\_\_\_  
Signature / Title

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Date

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**APPROVED FOR USE:**

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Signature / Title

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Date

**EFFECTIVE DATE:** \_\_\_\_/\_\_\_\_/\_\_\_\_

<b>NAME:</b> _____ Last First M.I.	<b>ISSUE DATE:</b> _____				
<b>EMPLOYEE I.D. NO.</b> _____	<b>COMPLETION DATE:</b> _____				
<b>COMMENTS:</b>					
<b>Training Review for Completeness:</b>  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;"><b>LMS CODE:</b></td><td style="width: 50%;"></td></tr><tr><td><b>LMS ENTRY:</b></td><td></td></tr></table>	<b>LMS CODE:</b>		<b>LMS ENTRY:</b>	
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EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2002000401 / PLOR-096P

K/A: 295018AA1.01

RO: 3.3 SRO: 3.4

TASK DESCRIPTION: LOSS OF RBCCW (PLANT ACTIONS FOR THE INSTRUMENT NITROGEN SYSTEM)

A. NOTES TO EVALUATOR:

1. An asterisk (\*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.
2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.
3. JPM Performance
  - a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).
  - b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.
4. Satisfactory performance of this JPM is accomplished if:
  - a. The task standard is met.
  - b. JPM completion time requirement is met.
    - 1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.
    - 2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.
5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

Procedure ON-113, Rev. 18, "Loss of RBCCW"

D. TASK STANDARD

1. Satisfactory task completion is indicated when
  - a. The Instrument Air System is supplying the Instrument Nitrogen System.
  - b. The Instrument Nitrogen Compressors have been shutdown.
2. Estimated time to complete: 17 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to lineup the Unit 2 Instrument Air System to supply the Instrument Nitrogen System and trip the Instrument Nitrogen Compressors, using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. RBCCW has been lost on Unit 2.
2. ON-113, "Loss of RBCCW" is in progress.

G. INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform steps 2.10 and 2.11 of ON-113, "Loss of RBCCW" on Unit 2.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure ON-113.	P	A copy of procedure ON-113 is obtained.
*2	Open AO-4230A "A" Instrument Air Backup to "A" Instrument N <sub>2</sub> Header valve.  (Cue: Acknowledge control switch operation.)	S	SV-4230A control switch is placed in the OPEN position at the local control station, 2AC839 on Reactor Building 135' Elevation, SDV area.
3	Verify AO-4230A "A" Instrument Air Backup to "A" Instrument N <sub>2</sub> Header valve is open.  (Cue: AO-4230A red light is on, and green light is off.)	P	AO-4230A red light is verified ON at the local control station, 2AC839 on Reactor Building 135' Elevation, SDV area.
*4	Open AO-4230B "B" Instrument Air Backup to "B" Instrument N <sub>2</sub> Header valve.  (Cue: Acknowledge control switch operation.)	S	SV-4230B control switch is placed in the OPEN position at the local control station, 2BC839 on Reactor Building 135' Elevation. (TIP Room Roof)
5	Verify AO-4230B "B" Instrument Air Backup to "B" Instrument N <sub>2</sub> Header valve is open.  (Cue: AO-4230B red light is on, and green light is off.)	P	AO-4230B red light is verified ON at the local control station, 2BC839 on Reactor Building 135' Elevation. (TIP Room Roof)
*6	Shutdown the "A" Instrument Nitrogen Compressor.  (Cue: Acknowledge control switch operation.)	S	"A" Instrument Nitrogen Compressor control switch (HS-2-16-4225) is placed in the OFF position at the local control station, 2AC268 on Reactor Building 195' Elevation.
7	Verify the "A" Instrument Nitrogen Compressor is shutdown.  Cue: The "A" Instrument Nitrogen Compressor control switch is in OFF and green light is on.)	P	"A" Instrument Nitrogen Compressor OFF (green) light is ON at the local control station, 2AC268 on Reactor Building 195' Elevation.
*8	Shutdown the "B" Instrument Nitrogen Compressor.  (Cue: Acknowledge control switch operation.)	S	"B" Instrument Nitrogen Compressor control switch (HS-2-16-4121) is placed in the OFF position at the local control station, 2BC268 on Reactor Building 195' Elevation.
9	Verify the "B" Instrument Nitrogen Compressor is shutdown.  (Cue: The "B" Instrument Nitrogen Compressor control switch is in OFF and green light is on.)	P	"B" Instrument Nitrogen Compressor OFF (green) light is ON at the local control station, 2BC268 on Reactor Building 195' Elevation.

STEP NO	STEP	ACT	STANDARD
10	Inform Control Room Supervisor of task completion.  (Cue: Control Room Supervisor acknowledges report.)	S	Task completion reported using telephone, hand held radio, or GAI-TRONICS page system.
11	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) AND procedures.	P	Positive control established.

Under "ACT" P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the Instrument Air backup valves to Instrument Nitrogen, AO-4230A and AO-4230B, are open and the Instrument Nitrogen Compressors have been shutdown, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. RBCCW has been lost on Unit 2.**
- 2. ON-113, "Loss of RBCCW" is in progress.**

## **INITIATING CUE**

**The Control Room Supervisor directs you, the Equipment Operator, to perform steps 2.10 and 2.11 of ON-113, "Loss of RBCCW" on Unit 2.**

## **SIMULATOR OPERATOR INSTRUCTIONS FOR 2011 NRC SCENARIO #1**

### **GENERAL REQUIREMENTS**

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

### **SCENARIO SOURCE HISTORY**

- This is a new scenario developed for the 2011 NRC ILT Exam.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-81, 100% power, created from IC-14
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### **Blocking Tags**

- None

**Activate APP "2011\_NRC\_SCN1", or insert the following:**

#### **Event Triggers**

**None**

#### **Malfunctions**

**IMF MTA03C (E1 0 0) (Turbine stop valve #3 fails closed)**  
**IMF HPC02 (E2 0 0) (HPCI spurious automatic start)**  
**IMF HPC07 (E3 0 0) 5 20:00 0 (HPCI steam supply line break)**

#### **Overrides**

**IOR ZYP01A2A1S02 (none 0 0) NORMAL ('C' RFP discharge startup bypass MO-8090)**  
**IOR ZYP13A1S07 (none 0 0) OPEN (HPCI steam line isolation valve MO-23-15)**  
**IOR ZYP13A1S05 (none 0 0) OPEN (HPCI steam line isolation valve MO-23-16)**

## **Remote Functions**

NOTE: the following Remote Function is activated manually (see Simulator Operator Directions for Event #2); it is NOT included in the APP file.

**MRF T210\_3 MIN** (closes CRD pump suction strainer isolation to simulate clogged strainer)

## **Trip Overrides**

**MRF HPO04TO Override** (HPCI isolation override – includes K27, K28, K36, K57 relays)

**MRF MGA01TO Override** (Main Generator 86 lockout relay)

## **Batch Files**

None

## **Turnover Procedures**

- SO 55.6.A-0, 480V Auxiliary Load Center Cross-Tie

### **SIMULATOR OPERATOR DIRECTIONS**

#### **EVENT 1**

Support the crew as necessary to perform SO 55.6.A-0 "480V Auxiliary Load Center Cross-Tie".

#### **EVENT 2**

After the 480V load centers are cross-tied, or when directed by the Lead Examiner, **MRF T210\_3 MIN** to simulate a clogged CRD pump suction strainer.

NOTE: The local horn and beacon are auto resetting. If an operator is sent to verify the horn and beacon it will not be alarming if the pump has already tripped.

If directed to investigate the 'A' CRD pump / breaker, report the pump / breaker appear normal.

When directed to bypass and isolate the suction filter, wait approximately 2 minutes, then **MRF T210\_3 MAX** and report that the suction filter is bypassed and isolated.

If directed to make the 'B' CRD pump ready for start, then wait 4 minutes and report that it is ready for start.

When directed to open the 'B' CRD pump discharge valve, **MRF CRH02 OPEN**.

#### **EVENT 3**

After the CRD system is returned to service, or when directed by the Lead Examiner, initiate pending events on **ET 1 (IMF MTA03)** to cause turbine stop valve #3 to fail closed.

#### **EVENT 4**

After reactor power has been lowered to 95% or when directed by the Lead Examiner, initiate pending events on **ET 2 (IMF HPC02)** to cause a spurious start of HPCI.

If an Equipment Operator is dispatched to investigate the HPCI start, wait approximately 5 minutes and report HPCI is operating normally.

#### **EVENT 5**

After the Tech Spec determination has been made, or when directed by the Lead Examiner, initiate pending events on **ET 3 (IMF HPC07 5 20:00 0)** to cause a HPCI steam supply line break.

Modify the leak severity as necessary to control the scenario pace and ensure a second Reactor Building area exceeds the Action Level for temperature. This will vary based on the crew's action to depressurize the reactor.

#### **EVENT 6**

Following the GP-4 shutdown and Main Turbine Trip, the Main Generator will not lockout.

#### **EVENT 7**

When the URO attempts to establish RPV level control using MO-8090, the valve will not open.

### **SIMULATOR OPERATOR DIRECTIONS**

#### **EVENT 8**

When the second area temperature exceeds the action level, the CRS will direct an emergency blowdown. The CRS may have directed a rapid depressurization with bypass valves prior the second parameter exceeding the action level.

#### **TERMINATION**

The scenario may be terminated when 5 SRVS are open, the RPV is depressurized, and RPV level is under control.

## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

- Unit 2 is at 100% power.

### **INOPERABLE EQUIPMENT/LCOs:**

- None

### **SCHEDULED EVOLUTIONS:**

- Cross-tie 480V auxiliary load center 1PS4 with 3PS4 (with 1PS4 supplying) to allow for scheduled preventive maintenance on the 1PS4 breaker.
  - An Operational Risk review has been performed in accordance with WC-A-104 "Integrated Risk Management".
  - The Director of Operations has approved the 480V cross-tie.
  - Operations Management has determined no loads are required to be shed.
  - The work on the load center breaker is expected to take 4 hours.

### **SURVEILLANCES DUE THIS SHIFT:**

- None

### **ACTIVE CLEARANCES:**

- None

### **GENERAL INFORMATION:**

- None

### **CRITICAL TASK LIST**

- 1. Following a positive reactivity addition, restore Reactor power below 100%.**
- 2. When a Primary System is discharging into Secondary Containment through an unisolable leak, scram the Reactor prior to performing an Emergency Blowdown.**
- 3. Perform T-112 "Emergency Blowdown" when the same parameter (temperature) exceeds a T-103 "Secondary Containment Control" Action Level in more than one area and the system breach has not been isolated.**

**OR**

**Perform a rapid depressurization using RC/P-12 when the blowdown limit in T-103 is approached.**

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 1      **Page:** 1 of 12

**Event Description:** Cross-tie 480v auxiliary load center 1PS4 with 3PS4.

**Cause:** Required to allow for scheduled preventive maintenance on the 1PS4 breaker

**Effects:** N/A

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct the PRO to Cross-tie 480v auxiliary load center 1PS4 with 3PS4 IAW SO 55.6.A-0, 480V Auxiliary Load Center Cross-Tie.
	PRO	Cross-tie load centers by performing the following: <ul style="list-style-type: none"><li>• Hold closed the control switch for the 1-3 PS4 Tie Breaker on Panel 20C009.</li><li>• Open the 1PS4 BUS BKR on Panel 20C009.</li><li>• Verify the 1-3 PS4 Tie Breaker by observing the indicating lights and ammeter indications.</li><li>• Release the 1-3 PS4 Tie Breaker control switch.</li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 2      **Page:** 2 of 12

**Event Description:** 'A' CRD pump trip

**Cause:** Clogged suction filter causes a low suction pressure trip of the 'A' CRD pump

**Effects:**

1. Alarms:
  - 211 F1 "'A' CRD Water Pump Trip"
  - 211 F3 "'A' CRD Pump Suction LO Press"
2. 'A' CRD pump trip

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	<p>Recognize and report the 'A' CRD pump trip.</p> <p>Recognize and report entry into ON-107 "Loss of CRD Regulating Function".</p> <p>Enter and execute ON-107 "Loss of CRD Regulating Function".</p> <p>Enter and execute Alarm Response Card 211 F3 "'A' CRD Pump Suction LO Press".</p> <p>Enter and execute Alarm Response Card 211 F1 "'A' CRD Water Pump Trip".</p> <ul style="list-style-type: none"><li>• Place the pump control switch for the 'A' CRD pump in the STOP position.</li></ul>
	CRS	<p>Enter and execute ON-107 "Loss of CRD Regulating Function".</p> <p>Determine that Unit 2 can operate for up to 20 minutes when the following conditions exist:</p> <ul style="list-style-type: none"><li>• Reactor Pressure &gt; 900psig</li><li>And</li><li>• Charging header pressure is &lt; 940 psig</li><li>And</li><li>• Two or more CRD accumulator trouble indicators are lit on withdrawn control rods.</li></ul> <p>Verify compliance with Tech Spec 3.1.5.B.</p> <p>Determine that Unit 2 can operate for 1 hour after receiving a valid CRD High Temperature alarm.</p> <p>Direct bypassing the CRD pump suction filter and placing the 'B' CRD pump in service.</p> <p><u>NOTE:</u> step 2.4 of ON-107 directs placing the alternate CRD pump ('B' in this case) in service since the in-service pump did not trip "for reasons other than a CRD system related issue".</p>

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 1      Event No.: 2      Page: 3 of 12****Event Description:** 'A' CRD pump trip (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	<p>Perform ON-107 actions:</p> <ul style="list-style-type: none"><li>• Direct an Equipment Operator to bypass and isolate the pump suction filter using step 2.3.1 -2.3.3 of ON-107.</li><li>• Start the 'B' CRD pump using SO 3.1.B-2 "Control Rod Drive Hydraulic System Startup with the System Filled and Vented".<ul style="list-style-type: none"><li>○ Direct an Equipment Operator to check the 'B' CRD pump per step 4.1 and standby for a start.</li><li>○ Place the CRD flow controller in manual and close the flow control valve.</li><li>○ Open MO-2-3-20 "Drive Water Pressure".</li><li>○ Close MO-2-2A-8029 A and B "Seal Purge".</li><li>○ Start the 'B' CRD pump.</li><li>○ Direct an Equipment Operator to slowly open HV-2-3-36B.</li><li>○ When CRD flow has stabilized and the CRD hydraulic accumulators have charged, then establish system flow.<ul style="list-style-type: none"><li>▪ Adjust the flow controller for 55-65 gpm.</li><li>▪ Place the flow control valve in AUTO.</li><li>▪ Throttle MO-2-3-20 "Drive Water Pressure" to obtain 260 to 280 psid.</li></ul></li></ul></li></ul> <p>Restore recirc pump seal purge IAW SO 2A.1.C-2 "Operation of the Recirculation Pump Seal Purge System".</p> <ul style="list-style-type: none"><li>• Direct the Equipment Operator to perform steps 4.1.1 through 4.1.6 (for the 2A pump) and steps 4.2.1 through 4.2.6 (for the 2B pump).</li><li>• Open MO-8029A "Seal Purge Supply" for 2A Recirc pump.</li><li>• Open MO-8029B "Seal Purge Supply" for 2B Recirc pump.</li><li>• Direct Equipment Operator to adjust/verify seal purge flowrate in accordance with SO 2A.1.C-2.</li></ul>
	CRS	Direct monitoring recirc pump seal temperatures IAW ON-107.
	PRO	Monitor recirc pump seal temperatures and CRD temperatures, as directed.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 3      **Page:** 4 of 12

**Event Description:** Turbine stop valve fails closed / Reactor power reduction

**Cause:** An internal fault in the control pac for #3 stop valve causes the stop valve to go closed

**Effects:** Reactor pressure will rise due to the valve closure.  
Reactor power will rise in response to the rise in RPV pressure.

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO/PRO	Recognize and report the rise in RPV pressure. Recognize and report entry into OT-102 "Reactor High Pressure". Enter and execute OT-102 "Reactor High Pressure".
	URO/PRO	Recognize and report the rise in reactor power. Recognize and report entry into OT-104 "Positive Reactivity Insertion". Enter and execute OT-104 "Positive Reactivity Insertion". Exit OT-104 (per step 3.2).
	CRS	Enter and execute OT-102 "Reactor High Pressure". Enter and execute OT-104 "Positive Reactivity Insertion". Exit OT-104 (per step 3.2). Recognize OT-102 requirement to reduce reactor thermal power within 2 hours in order to comply with Tech Spec 3.2. Enter and execute GP-5 "Power Operation" per OT-102, step 3.5.
	CRS	Direct the URO to lower reactor power to $\leq 95\%$ (3338 MWth). Verify operation is within the acceptable region of AO 1E. 4-2 "Planned Removal of the Fifth or Fourth Stage Feedwater Heaters for Service During End of Cycle Coastdown and Return to Normal Shutdown Condition".
	URO	Lower reactor power using Recirc until reactor power $\leq 95\%$ (3338 MWth), as directed.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 4      **Page:** 5 of 12

**Event Description:** Inadvertent HPCI initiation

**Cause:** Initiation relay contacts short closed

**Effects:**

1. Alarms:
  - 222 D-5 "HPCI Auxiliary Oil Pump Running"
  - 228 C-5 "HPCI Relays Not Reset"
2. HPCI injection to the RPV; reactor water level and reactor power increase

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	Recognize and report HPCI initiation. Verify, using at least two independent indications, misoperation of HPCI and/or adequate core cooling is assured.
	URO	Control feed pump speed / discharge pressure as necessary to maintain RPV water level below +35 inches.
	CRS	Enter and execute OT-104 "Positive Reactivity Insertion". <ul style="list-style-type: none"><li>• Verify, using at least two independent indications, misoperation of HPCI and/or adequate core cooling is assured.</li><li>• Direct HPCI tripped in accordance with RRC 23.1-2 "HPCI System Operation during a Plant Event".</li></ul> Enter and execute OT-110 "Reactor High Level". <ul style="list-style-type: none"><li>• Direct maintaining RPV water level below +35 inches.</li></ul> Review Tech Spec 3.3.5.1 and determine Condition B applies: <ul style="list-style-type: none"><li>• Declare HPCI inoperable within 1 hour.</li><li>• Place the channel in trip within 24 hours.</li></ul> Review Tech Spec 3.5.1 and determine Condition C applies: <ul style="list-style-type: none"><li>• Verify RCIC operability immediately.</li><li>• Restore HPCI to operable status within 14 days.</li></ul>
	PRO	Perform RRC 23.1-2 "HPCI System Operation During a Plant Event", Section E, "HPCI Shutdown With Initiation Signal Present (short-term shutdown):" <ul style="list-style-type: none"><li>• Place Aux Oil Pump control switch in START.</li><li>• Place Vacuum Pump control switch in START.</li><li>• Depress and hold Remote Trip pushbutton.</li><li>• When turbine speed reaches ~ 0 RPM, place Aux Oil Pump control switch in P-T-L and release the Remote Trip pushbutton.</li></ul>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 1      Event No.: 5      Page: 6 of 12

**Event Description:**      HPCI steam leak into Secondary Containment

**Cause:**      Unisolable HPCI steam line break in the HPCI room

**Effects:**      Secondary containment temperature and radiation levels will increase. First alarm to actuate is 210 J-3 "High Area Temp". This will cause an entry into T-103 "Secondary Containment Control".

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	Recognize and report alarms 218 B-5 "Vent Exh Stack Rad Monitor Hi/Trouble A" and 218 C-5 "Vent Exh Stack Rad Monitor Hi/Trouble B" and enter the corresponding Alarm Response Cards. Monitor RI-2979 to verify a valid signal. Enter ON-104 "Vent Stack High Radiation".
	CRS	Enter ON-104 "Vent Stack High Radiation" and direct search for source of high vent exhaust radiation.
	URO/PRO	Recognize and report alarms 218 B-4 "Vent Exh Stack Rad Monitor Hi-Hi A" and 218 C-4 "Vent Exh Stack Rad Monitor Hi-Hi B". Announce T-104 "Radiation Release" entry.
	CRS	Enter/direct actions IAW T-104 "Radioactivity Release Control". <ul style="list-style-type: none"><li>• Initiate dose assessment.</li><li>• Determine radiation release occurring in the Reactor Building.</li><li>• Direct a GP-15 evacuation of the Reactor Building.</li></ul>
	PRO/URO	Recognize and report the "High Area Temp" (210 J-3). Recognize and report the Fire Panel alarm (007C-6 Lower).
	PRO	Report the temperature rise on HPCI room temperature (Point #3). Report the temperature alarm as an entry into T-103 "Secondary Containment Control".

**Operator Actions****ES-D-2****Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 5      **Page:** 7 of 12**Event Description:** HPCI steam leak into Secondary Containment (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Enter and direct T-103 "Secondary Containment Control". <ul style="list-style-type: none"><li>• Monitor and control secondary containment temperatures.</li><li>• Perform a local evacuation IAW GP-15.</li><li>• Direct operators to isolate all systems discharging into the area except systems required to suppress a fire or are required by the TRIP procedures.</li><li>• Determine a primary system is discharging into the Reactor Building.</li></ul>
	PRO	Monitor secondary containment temperatures on TR-2-13-139. Inform the CRS of the inability to isolate HPCI. Perform a GP-15 local evacuation as directed.
CT	CRS	Direct a GP-4 "Manual Reactor Scram" before HPCI room temperature (Point #3) exceeds the action level of 150 degrees F. Enter and direct T-101 "RPV Control".
CT	URO	Perform GP-4 "Manual Reactor Scram" as directed: <ul style="list-style-type: none"><li>• Place the mode switch to SHUTDOWN.</li><li>• Verify control rods are inserting.</li><li>• Verify APRMs are downscale.</li><li>• When RPV level begins to recover, then "Emergency Stop" all 3 RFPTs.</li><li>• Depress "SLOW RAISE" or "FAST RAISE" on the RFPT to remain in service.</li><li>• Close all RFP discharge valves and open 'C' RFP discharge bypass valve. <b>(See Event 7)</b></li><li>• Establish and maintain RPV level control with feedwater.</li><li>• Verify all control rods are inserted.</li><li>• Verify RPV pressure, trend, and status of EHC.</li><li>• Notify health physics of changing plant conditions.</li></ul>

**Operator Actions**

ES-D-2

**Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 5      **Page:** 8 of 12**Event Description:** HPCI steam leak into Secondary Containment (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	Perform GP-4 "Manual Reactor Scram" as directed: <ul style="list-style-type: none"><li>• Transfer 13 KV house loads.</li><li>• Trip main turbine when directed by the CRS.</li><li>• Verify main generator lockout. <b>(See Event 6)</b></li><li>• Verify Group II and III isolations and SGTS initiation.</li><li>• Verify scram discharge volume vents and drains are closed.</li><li>• Verify hydrogen water chemistry is isolated.</li><li>• Verify both recirc pumps speed have runback to 30%.</li><li>• Monitor instrument air header pressure and drywell pressure.</li><li>• When the CRS is ready, report scram actions.</li></ul>
	CRS	Direct the URO to control RPV level between +5" to +35" with feedwater. Direct the PRO to bypass and restore instrument nitrogen to the drywell.
	URO	Control RPV level between +5" to +35" with feedwater.
	PRO	Bypass and restore drywell instrument nitrogen IAW RRC 94.2-2 or GP-8E. <ul style="list-style-type: none"><li>• Place AO-2969A control switch to "CLOSE".</li><li>• Place AO-2969B control switch to "CLOSE".</li><li>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position.</li><li>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.</li></ul>
	CRS	Direct RPV depressurization IAW T-101 "RPV Control"
	URO/PRO	Perform RPV depressurization using the Bypass Valves, as directed.

**Operator Actions**

**ES-D-2**

**Op Test No.:**        1        **Scenario No.:**        1        **Event No.:**        6        **Page:**        9 of 12

**Event Description:**        Generator lockout fails to occur following Main Turbine trip

**Cause:**        Failure in the generator lockout circuit

**Effects:**        Main Generator output breakers fail to open  
Main Generator exciter field breaker fails to open

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	Recognize the failure of the Main Generator lockout while performing PRO scram actions. Open the Main Generator output breakers (215 BKR and 225 BKR). Open the exciter field breaker (ALT EXC FLD BKR 41-0601). Report to the CRS that the Main Generator lockout failed and that you manually opened the Main Generator output breakers and the field breaker.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 1      Event No.: 7      Page: 10 of 12

**Event Description:** 'C' reactor feedpump discharge bypass valve fails to open

**Cause:** Failure of the motor operator for MO-8090 ('C' feed pump discharge bypass) to engage and open the valve

**Effects:** RPV level must be controlled using the RFP discharge valve and not the RFP bypass, complicating post-scam and post blowdown Reactor level control.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO	Recognize the failure of MO-8090 to open during URO scram actions. Throttle open RFP discharge valve MO-2149A, B or C. Maintain RPV level by controlling RFP discharge valve position and RFP speed (pump discharge pressure).

NOTE: when RFP's are no longer available (e.g., following emergency depressurization), the RPF discharge valve must be throttled to control Condensate flow to the RPV.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 1      Event No.: 8      Page: 11 of 12

**Event Description:** Emergency blowdown due to exceeding Reactor Building temperature limits in more than one area

**Cause:** Steam leak in the Reactor Building continues to degrade Secondary Containment parameters

**Effects:** RPV depressurization via Bypass Valves and ADS SRVs

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
CT	CRS	When a second Reactor Building area temperature approaches the Action Level, direct the URO to perform a rapid depressurization using T-101, RC/P-12.
CT	URO	Rapidly depressurize the reactor by opening all Main Turbine bypass valves.
CT	CRS	When the same parameter exceeds an action level in more than one area (HPCI Room and Torus Room) <u>and</u> the primary system breach has not been isolated, enter and execute T-112 "Emergency Blowdown": <ul style="list-style-type: none"><li>• Verify torus level is above 7 feet.</li><li>• Verify RPV pressure is 50 psig or more above torus pressure.</li><li>• Direct 5 ADS SRVs opened.</li></ul>
CT	PRO	When directed, open 5 ADS SRVs by placing their control switches in OPEN.

#### **TERMINATION CRITERIA:**

The scenario may be terminated when 5 SRVS are open, the RPV is depressurized, and RPV level is under control.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 1      **Event No.:** 9      **Page:** 12 of 12

**Event Description:** EAL classification

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	<p>Determine EAL classification using EP-AA-1007.</p> <ul style="list-style-type: none"><li>• Based on the scenario conditions and expected outcome, the CRS will classify the event as FS1 Based on a Loss of the Primary Containment Barrier and a Potential loss of the Reactor Coolant System Barrier.</li><li>• Based on the scenario conditions and expected outcome, the CRS should determine that there is a Release in Progress.</li></ul>

## **SIMULATOR OPERATOR INSTRUCTIONS FOR 2011 NRC SCENARIO #2**

### **GENERAL REQUIREMENTS**

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

### **SCENARIO SOURCE HISTORY**

- This is a modified scenario that was originally developed for the 2009 NRC ILT Exam.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-82, 100% power
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### **Blocking Tags**

- None

**Activate APP "2011\_NRC\_SCN2", or insert the following:**

#### **Event Triggers**

**None**

#### **Malfunctions**

**IMF PCI01V (none 0 0)** (RWCUI INBD isolation valve (MO-15) failure)  
**IMF PCI01W (none 0 0)** (RWCUI OTBD isolation valve (MO-18) failure)  
**IMF PCI01X (none 0 0)** (RWCUI OTBD isolation valve (MO-68) failure)  
**IMF TBW04B (none 0 0)** (TBCCW pump 'B' auto start failure)  
**IMF TBW01A (E1 0 0)** (TBCCW pump 'A' Trip)  
**IMF RRS08A (E3 0 0)** (Recirc M-G drive motor 'A' breaker trip)  
**IMF SWC01 (E4 3:00 0)** (loss of Stator Water Cooling with a three-minute time delay)

## Overrides

**IOR ZYP02A5S14 (none 0 0) NORMAL** (Drywell N2 valve 2969A isolation bypass)  
**IOR ZYP02A5S12 (none 0 0) NORMAL** (Drywell N2 valve 2969B isolation bypass)  
**IOR ZYP04A4S22 (E2 0 10) START** ('A' ESW pump spurious start; 10 second deactivation)  
**IOR ANO209RA5 (E4 0 0) ALARM\_ON** (Stator coolant/H2 seal oil trouble alarm 220 A-5)  
**IOR ANO208RG5 (E4 1:30 0) ALARM\_ON** (Stator coolant standby pump run alarm 206 G-5)

## Remote Functions

None

## Trip Overrides

Insert the following to provide an electrical ATWS:

**MRF ARI01TO OVERRIDE**  
**MRF ARI02TO OVERRIDE**  
**MRF RPS01TO OVERRIDE**  
**MRF RPS02TO OVERRIDE**  
**MRF RPS03TO OVERRIDE**  
**MRF RPS04TO OVERRIDE**  
**MRF RPS05TO OVERRIDE**  
**MRF RPS06TO OVERRIDE**

## Batch Files

None

## Turnover Procedures

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test"

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 1**

Support the crew as necessary for the Master Trip Solenoid Valves Routine Test.

### **EVENT 2**

Following completion of the Master Trip Solenoid Valves RT, or when directed by the Lead Examiner, initiate pending events on **ET1 (IMF TBW01A)** to trip the 'A' TBCCW pump.

If directed to investigate the trip of the 'A' TBCCW pump, wait approximately 3 minutes and report there is the smell of burnt insulation at the 'A' TBCCW pump.

If directed to investigate the breaker for the 'A' TBCCW pump, wait approximately 4 minutes and report the breaker is closed.

If requested to perform step 4.1 of SO 34.6.A-2 "Placing Standby TBCCW System Pump In Service" to vent the 'B' TBCCW pump, then wait approximately 2 minutes and report the step is complete and the pump is vented.

If directed to verify the operation of the 'B' TBCCW pump, then after the 'B' TBCCW pump is started, wait approximately 10 minutes and report the 'B' TBCCW pump is operating properly.

### **EVENT 3**

When the 'B' TBCCW pump is in-service, or when directed by the Lead Examiner, initiate pending events on **ET2 (IOR ZYP04A4S22 START)** to cause a spurious start of the 'A' ESW pump.

If directed to investigate the start of the 'A' ESW pump, wait 3 minutes and report that you are at the E-22 bus and there is a burnt electrical smell in the vicinity of the 'A' ESW pump breaker.

### **EVENT 4**

When the Tech Spec determination is complete for the ESW pump, or when directed by the Lead Examiner, initiating pending events on **ET3 (IMF RRS08A)** to trip the 'A' Recirc M-G Drive Motor Breaker.

Support the crew as necessary for GP-9 "Fast Power Reduction". Role-play as the Power System Director when called.

### **EVENT 5**

When Single loop operation is established and the Tech Spec determination is complete or when directed by the Lead Examiner, initiate **ET4** to initiate the following sequence of events (times are in minutes):

- T = 0 – Stator coolant/H2 seal oil trouble 220 A-5 (**IOR ANO209RA5**)
- T = 1.5 – Stator coolant standby pump run 206 G-5 (**IOR ANO208RG5**)
- T = 3.0 – Loss of stator cooling (**IMF SWC01**)

### **SIMULATOR OPERATOR DIRECTIONS**

#### **EVENT 5** **(continued)**

When directed to investigate the Stator Coolant trouble alarm, wait 2 minutes then report "INLET FLOW LOW and INLET PRESSURE LOW are alarming on Panel 20C084; investigating the cause."

If directed to report the status of the standby stator cooling pump, report both pumps are running.

If directed to report Stator Cooling head tank level, report level is normal.

Pre-inserted malfunctions (**Trip Overrides**) will result in an electrical ATWS.

#### **NOTE:**

**Do not permit the operators to utilize the individual scram test switches on the RPS panels when performing T-213 "Scram Solenoid Deenergization." When the applicant opens the panel, inform him/her that the individual scram switches are all in the down position.**

When directed, provide support for T-220 as an Equipment Operator then wait approximately 4 minutes and **MRF T220\_2 CLOSE** and report to the control room that HV-2-3-56 is closed.

When directed to perform T-221 on Unit 2, wait 5 minutes then **MRF T221\_1 DEFEAT**.

After RPV level has been lowered to control power IAW T-240 and the APRM downscale lights are lit, then on the Lead Examiner's cue insert control rods using T-214 "Venting the Scram Air Header" (**MRF T214 VENT**).

Report that you have commenced venting the scram air header IAW T-214.

#### **EVENT 6**

Pre-inserted malfunctions (**PCI01V, W, X**) will prevent RWCU from automatically isolating when SBLC is initiated.

#### **EVENT 7**

Pre-inserted failures (**overrides**) will prevent restoring normal drywell instrument nitrogen. This will prevent all non-ADS SRVs from being used for pressure control and/or depressurization. The crew should align Backup Instrument Nitrogen (bottles) to the ADS SRVs and/or request aligning CAD in accordance with T-261.

If directed to perform T-261, wait 20 minutes then enter **MRF T261\_1 OPEN**.

#### **TERMINATION**

The scenario may be terminated when all control rods have been inserted and reactor level is being controlled above the top of active fuel.

## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

- Unit 2 is at 100% power.

### **INOPERABLE EQUIPMENT/LCOs:**

- None

### **SCHEDULED EVOLUTIONS:**

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test"

### **SURVEILLANCES DUE THIS SHIFT:**

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test"

### **ACTIVE CLEARANCES:**

- None

### **GENERAL INFORMATION:**

- Maintain current power.

### CRITICAL TASK LIST

1. **Before torus temperature exceeds the limits of the Heat Capacity Temperature Limit (HCTL) curve, lower reactor power by performing T-240 "Terminating and Preventing Injection" to lower RPV level until:**
  - a. Reactor power is below 4%, OR
  - b. RPV level reaches -172 inches, OR
  - c. All SRVs remain closed and drywell pressure is below 2 psig.
2. **Initiate a reactor shutdown by performing one or more of the following:**
  - a. T-214 "Isolating and Venting the Scram Air Header"
  - b. T-220 "Driving Control Rods During a Failure to Scram"
  - c. **Injecting Standby Liquid Control before torus temperature exceeds 110 degrees F (requires manual isolation of RWCU).**

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 1      **Page:** 1 of 12

**Event Description:** Main turbine master trip solenoid valves routine test

**Cause:** N/A

**Effects:** None

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct PRO to perform RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test".
	PRO	Perform RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test": <ul style="list-style-type: none"><li>• Review RT</li><li>• Place the Master Trip Test Selector switch to TRIP A</li><li>• Verify "Test A" lamp if OFF</li><li>• Release and place Master Trip Test Selector switch to RESET</li><li>• Verify "Test A" lamp if ON</li><li>• Place the Master Trip Test Selector switch to TRIP B</li><li>• Verify "Test B" lamp if OFF</li><li>• Release and place Master Trip Test Selector switch to RESET</li><li>• Verify "Test B" lamp if ON</li><li>• Complete RT paperwork</li></ul>
	CRS	Review RT for completeness/satisfactory results.
	URO	Monitor plant parameters/assist as directed.

**Operator Actions**

ES-D-2

**Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 2      **Page:** 2 of 12**Event Description:** TBCCW pump failure / trip with failure of the standby pump to auto-start**Cause:** Failure of the 42 relay in the 'A' TBCCW pump motor circuit  
Failure of PS-2131 to actuate on low TBCCW System pressure**Effects:** 1. Alarm: 217 C-5 "TURB BLDG COOLING WATER SUPPLY LO PRESS"  
2. Loss of cooling to TBCCW loads

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	Recognize annunciator 217 C-5 "TURB BLDG COOLING WATER SUPPLY LO PRESS" and report trip of 2A TBCCW pump. Respond IAW Alarm Response Card. Place 2A TBCCW pump control switch to "OFF". Recognize failure of 2B TBCCW pump to auto start after 20 seconds.
	CRS	Enter ON-118 "Loss of TBCCW". Direct starting the 2B TBCCW pump. Direct follow-up use of SO 34.6.A-2 "Placing Standby TBCCW System Pump In Service". Direct troubleshooting.
	URO	Place 2B TBCCW pump control switch to "RUN". Verify placing standby TBCCW pump in service IAW SO 34.6.A-2 "Placing Standby TBCCW System Pump In Service".
	PRO	Monitor plant parameters/assist as necessary.

**Operator Actions****ES-D-2****Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 3      **Page:** 3 of 12**Event Description:** ESW pump spurious start**Cause:** Failure in the ESW pump breaker causes a spurious start**Effects:** Inoperable ESW pump requiring Tech Spec evaluation

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	Recognize and report the 'A' ESW pump start Recognize and report that no automatic start signals exist and that the pump is operating normally.
	CRS	Direct an Equipment Operator to investigate the spurious pump start. Direct the PRO to shutdown the 'A' ESW pump Recognize that a Tech Spec LCO is not met. Refer to Tech Spec 3.7.2 and determine Condition A applies: <ul style="list-style-type: none"><li>• The 'A' ESW pump must be restored to operable status within 7 days.</li></ul>
	PRO	Shutdown the 'A' ESW pump using SO 33.2.A "Emergency Service Water System Shutdown." <ul style="list-style-type: none"><li>• Stop the 'A' ESW pump by placing its control switch in STOP.</li></ul>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 2      Event No.: 4      Page: 4 of 12

**Event Description:**      Recirc pump trip ('A' M-G set drive motor breaker)

**Cause:**      Instantaneous overcurrent trip

**Effects:**      1. Alarms:

- 214 B-4 "A Recirc Pump Low Diff Press"
- 214 C-2 "A Recirc Gen Lockout Trip"
- 214 C-3 "A Recirc Drive Motor Trip"
- 214 D-4 "A Recirc Gen Aux Lockout Trip"

2. Trip of the 'A' recirc pump, causing reduction in core flow and reactor power

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO	Recognize and report trip of the 'A' reactor recirc pump and entry into OT-112 "Unexpected/Unexplained Change in Core Flow". Enter the corresponding Alarm Response Cards for alarms 214 C-2 "A Recirc Gen Lockout Trip", 214 C-3 "A Recirc Drive Motor Trip" and 214 D-4 "A Recirc Gen Aux Lockout Trip" (as time permits).
	CRS	Enter and execute OT-112 "Unexpected/Unexplained Change in Core Flow". Verify insertion of ALL GP-9-2 Table 1 control rods. Determine current operating point on Power-Flow Operation Map. Direct monitoring for THI. Direct closing 'A' recirc pump discharge valve MO-053A, then re-opening valve after 5 minutes. Direct performing SO 2A.2.A-2 "Recirculation System Shutdown".
	URO	Insert ALL GP-9-2 Table 1 control rods. Monitor for THI. Close 'A' recirc pump discharge valve MO-053A; re-open after 5 minutes. Perform SO 2A.2.A-2 "Recirculation System Shutdown" (as time permits).
	CRS	Perform AO 2A.1-2 "Recirculation System Single Loop Operation". Refer to Tech Spec 3.4.1 and determine requirements for operating in single loop. <u>NOTE:</u> since OT-112 and Tech Spec 3.4.1 allow up to 12 hours for transitioning to single loop, these actions may be assessed as follow-up questions after the scenario is complete.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 2      Event No.: 5      Page: 5 of 12

**Event Description:** Loss of Stator Water Cooling / reactor scram / ATWS (electric)

**Cause:** Clogged SWC filter / scram condition with power above 4% due to RPS failure

**Effects:**

1. Alarms:
  - 220 A-5 "2 Gen Stator Coolant or H2 Seal Oil Trouble"
  - 206 G-5 "Stator Coolant Standby Pump Run"
  - 206 L-1 "Generator Protection Circuit Energized"
2. The crew will attempt to initiate a manual scram, and then take actions to terminate the ATWS, as well as control RPV level/power.
3. The turbine will trip in 3.5 minutes since stator amps will be greater than 7760.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	Recognize and report 220 A-5 "2 Gen Stator Coolant or H2 Seal Oil Trouble" and enter the corresponding Alarm Response Card. Dispatch an Equipment Operator to investigate the alarm.
	URO	Recognize and report 206 G-5 "Stator Coolant Standby Pump Run" and 206 L-1 "Generator Protection Circuit Energized" and enter the corresponding Alarm Response Cards.
	CRS	Enter/direct actions IAW OT-113 "Loss of Stator Cooling": <ul style="list-style-type: none"><li>• Lead crew in verifying a valid loss of Stator Cooling condition exists (per OT-113, 206 L-1 in conjunction with 206 G-5 is a valid loss of Stator Cooling).</li><li>• Direct a reactor scram per GP-4 "Manual Reactor Scram".</li></ul>
	URO	Perform GP-4 "Manual Reactor Scram": <ul style="list-style-type: none"><li>• Reduce recirc flow controllers to minimum (20% demand)</li><li>• Place the mode switch to "SHUTDOWN".</li><li>• Report control rods are <u>NOT</u> inserting.</li><li>• Report APRMs are <u>NOT</u> downscale.</li><li>• Depress both manual scram pushbuttons.</li><li>• Report T-101 entry due to an ATWS with reactor power &gt; 4%.</li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 5      **Page:** 6 of 12

**Event Description:** Reactor scram / ATWS (continued)

<u><b>Time</b></u>	<u><b>Position</b></u>	<u><b>Applicant's Actions or Behavior</b></u>
	PRO	<p>Perform GP-4 "Manual Reactor Scram" / scram actions:</p> <ul style="list-style-type: none"><li>• Transfer 13 KV house loads using RRC 53.1-2.</li><li>• Verify Group II &amp; III isolations and SGTS initiation.</li><li>• Verify scram discharge volume vents and drains are closed (only the outboard vents and drains will close due to the RPS failure).</li><li>• Isolate Hydrogen Water Chemistry.</li><li>• Verify recirc pumps are at (or below) 30% speed.</li><li>• Monitor instrument air header pressure and drywell pressure.</li><li>• Report to the CRS instrument air header pressure is greater than drywell pressure.</li><li>• <u>WHEN</u> the turbine trips (due to the loss of Stator Cooling), verify generator lockout.</li></ul>
	CRS	<p>Enter/direct actions for T-101 "RPV Control":</p> <ul style="list-style-type: none"><li>• Verify URO/PRO scram actions.</li><li>• Direct RPV pressure stabilized below 1050 psig using EHC (using SRVs and/or HPCI after the turbine trips).</li><li>• Direct drywell instrument nitrogen restored.</li><li>• Direct actions for the ATWS (<b>see next page</b>).</li></ul>
	PRO	<p>When the isolation occurs (+1 inch RPV level), attempt to restore drywell instrument nitrogen IAW GP-8.E "Primary Containment Isolation Bypass".</p> <ul style="list-style-type: none"><li>• Place AO-2969A control switch to "CLOSE".</li><li>• Place AO-2969B control switch to "CLOSE".</li><li>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position.</li><li>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.</li></ul> <p>Recognize and report that while attempting to restore drywell instrument nitrogen, the valves did not reopen (<b>see Event #7</b>).</p>
	CRS	<p>Enter T-103 "Secondary Containment Control" as necessary for Torus Compartment High Radiation (per ARC 003 B-1 "2 Unit Reac Bldg Hi Radiation), due to SRV lift following turbine trip.</p>

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 5      **Page:** 7 of 12

**Event Description:** Reactor scram / ATWS (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct T-101 RC/Q actions: <ul style="list-style-type: none"><li>• Initiate ARI.</li><li>• Trip 'B' recirc pump.</li><li>• T-213 "Deenergize Scram Solenoids".</li></ul>
CT		<ul style="list-style-type: none"><li>• T-214 "Vent Scram Air Header" (this direction is critical because it is the only success path to insert control rods during the ATWS).</li></ul>
CT		<ul style="list-style-type: none"><li>• T-220 "Driving Control Rods During Failure To Scram".</li><li>• Enter T-117 "Level/Power Control".</li></ul>
CT		<ul style="list-style-type: none"><li>• Initiation of SBLC.</li></ul>
	URO	Perform T-101 RC/Q actions when directed: <ul style="list-style-type: none"><li>• Initiate ARI; report to the CRS that ARI was <u>NOT</u> successful.</li><li>• Trip 'B' recirc pump.</li><li>• Direct an Equipment Operator to perform T-213. Attempt URO portion of T-213; report to the CRS that T-213 was <u>NOT</u> successful.</li></ul> <p><b>NOTE to Examiner: do <u>NOT</u> allow T-213 to be performed.</b></p>
CT		<ul style="list-style-type: none"><li>• Direct an Equipment Operator to perform T-214.</li></ul>
CT		<ul style="list-style-type: none"><li>• Perform T-220.</li><li>• Initiate SBLC in accordance with RRC 11.1-2 "Standby Liquid System Initiation During A Plant Event" (<b>see Event #6</b>).</li></ul>

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 2      Event No.: 5      Page: 8 of 12****Event Description:** Reactor scram / ATWS (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct T-117 actions: <ul style="list-style-type: none"><li>• Inhibit ADS.</li><li>• T-221 "Main Steam Isolation Valve Bypass".</li></ul>
CT		<ul style="list-style-type: none"><li>• Lowering RPV level to below -60 inches by terminating and preventing RPV injection using T-240, Attachment 1, Figure 1.</li></ul>
	URO/PRO	Perform T-117 actions when directed: <ul style="list-style-type: none"><li>• Inhibit ADS.</li><li>• Direct an Equipment Operator to perform T-221 to bypass the low level MSIV isolation (-160 inches).</li></ul>
CT		Perform T-240 when directed. <ul style="list-style-type: none"><li>• Terminate and prevent injection using T-240, Attachment 1, Figure 1:<ul style="list-style-type: none"><li>○ If HPCI is <u>NOT</u> running, place the Aux Oil Pump in "Pull-to-Lock".</li><li>○ If HPCI is running, place the Aux Oil Pump in "Start", depress and hold the "Remote Trip" pushbutton; when turbine speed reaches ~0 rpm, place the Aux Oil Pump in "Pull-to-Lock" and release the "Remote Trip" pushbutton.</li><li>○ Press "Emergency Stop" for all reactor feed pumps.</li><li>○ Press "Slow Raise" or "Fast Raise" for 2 reactor feed pumps.</li><li>○ Close reactor feed pump discharge valves MO-2149A, B, C.</li><li>○ Verify closed MO-8090 "C RFP Discharge Bypass".</li></ul></li><li>• Restore RPV injection to control level below -60 inches <u>and</u> within the RPV level band, and using the source, directed by the CRS.</li></ul>
	URO/PRO	Recognize and report entry into T-102 "Primary Containment Control" due to high Torus temperature of 95 degrees F and/or Torus level high 14.9 feet (depending on whether or not SRVs are lifting).
	CRS	Enter and execute T-102: <ul style="list-style-type: none"><li>• Ensure Torus cooling has been maximized.</li></ul>

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 2      Event No.: 5      Page: 9 of 12****Event Description:** Reactor scram / ATWS (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct T-117 actions: <u>NOTE:</u> Torus temperature is <u>NOT</u> expected to reach 110 degrees F during this scenario.
CT		<ul style="list-style-type: none"><li>• IF Torus temperature reaches 110 degrees F, direct the crew to perform T-240 using Attachment 1, Figure 1, if no SRVs are open; <u>OR</u> Attachment 1, Figure 2, if any SRV is open.</li></ul>
CT		<ul style="list-style-type: none"><li>• If not already done, direct initiation of SBLC at or before Torus temperature reaches 110 degrees F (<b>see Event #6</b>).</li></ul>
CT	URO/PRO	Perform T-240 again, if directed. <ul style="list-style-type: none"><li>• Terminate and prevent injection using T-240, Attachment 1, Figure 2 (<u>the specific performance steps are listed on page 8</u>).</li><li>• Restore RPV injection when any of the following are reached:<ul style="list-style-type: none"><li>○ RPV level reaches -172 inches, or</li><li>○ Reactor power drops below 4%, or</li><li>○ All SRVs remain closed.</li></ul></li></ul> Control level as directed by the CRS to prevent level from lowering below -226 inches (2/3 core coverage).
CT	URO	Recognize "Scram Valve Pilot Air Header Press Lo" (211 D-2) alarm and/or control rods inserting due to T-214 and inform the CRS. Verify all control rods are inserted and inform the CRS.
	CRS	Determine the ATWS is terminated, exit T-117 "Level /Power Control" and enter T-101 RC/L: <ul style="list-style-type: none"><li>• Direct crew to restore level to +5 to +35 inches.</li><li>• Direct restoration actions.</li></ul>
	URO/PRO	Restore RPV level to +5 to +35 inches as directed by CRS.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 6      **Page:** 10 of 12

**Event Description:** RWCU fails to automatically isolate on Group II isolation signal

**Cause:** Isolation logic failure

**Effects:** When SBLC is initiated, RWCU will not automatically isolate, resulting in dilution and removal of boron solution. Operator action will be required in order to isolate RWCU.

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	Initiate SBLC, when directed, per RRC 11.1-2: <ul style="list-style-type: none"><li>• Close Recirc sample valves AO-039 and AO-040.</li><li>• Start 'A' or 'B' SBLC pump.</li><li>• Recognize RWCU did <u>not</u> isolate.</li></ul>
CT		<ul style="list-style-type: none"><li>• Manually close RWCU valves MO-15, MO-18, and MO-68.</li><li>• Verify SBLC is injecting based on SBLC pump discharge pressure greater than reactor pressure and lowering tank level.</li></ul>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 2      Event No.: 7      Page: 11 of 12

**Event Description:**      Unable to restore drywell instrument nitrogen / loss of non-ADS SRVs

**Cause:**      Failure of isolation bypass logic

**Effects:**      Non-ADS SRVs are not available for reactor pressure control and/or depressurization

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	CRS	<p>Direct alternate methods of supplying nitrogen to the SRVs:</p> <ul style="list-style-type: none"><li>• Backup Instrument Nitrogen to ADS using SO 16A.7.A-2<ul style="list-style-type: none"><li>○ Place SV-8130A and SV-8130B control switches on panel 20C003-03 to RESET and then in AUTO/OPEN.</li><li>○ Verify open SV-8130A &amp; B.</li><li>○ Verify PI-8142 "Backup N2" on the 20C003-03 panel is <math>\geq 85</math> psig.</li></ul></li><li>• T-261 "Placing the Backup Instrument Nitrogen Supply From the CAD Tank in Service".</li></ul>
	PRO	<p>Restore drywell instrument nitrogen as directed.</p> <ul style="list-style-type: none"><li>• If directed to use Backup Instrument Nitrogen to ADS using SO 16A.7.A-2:<ul style="list-style-type: none"><li>○ Place SV-8130A and SV-8130B control switches on panel 20C003-03 to RESET and then in AUTO/OPEN.</li><li>○ Verify open SV-8130A &amp; B.</li><li>○ Verify PI-8142 "Backup N2" on the 20C003-03 panel is <math>\geq 85</math> psig.</li></ul></li><li>• If directed to perform T-261 "Placing the Backup Instrument Nitrogen Supply From the CAD Tank in Service":<ul style="list-style-type: none"><li>○ Verify closed AO-2969B on panel 20C003-03.</li><li>○ Dispatch an Equipment Operator to the CAD Building perform step 4.2 (manual valving).</li></ul></li></ul>

### **TERMINATION CRITERIA:**

The scenario may be terminated when all control rods have been inserted and reactor water level is being controlled above the top of active fuel.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 2      **Event No.:** 8      **Page:** 12 of 12

**Event Description:** EAL classification

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Determine EAL classification using EP-AA-1007. <ul style="list-style-type: none"><li>• Based on the scenario conditions and expected outcome, the CRS will classify the event as MS3 "Failure of Reactor Protection System Instrumentation to Complete or Initiate an Automatic Reactor Scram Once a Reactor Protection System Setpoint has been Exceeded and Manual Scram Was NOT Successful".</li></ul>

## **SIMULATOR OPERATOR INSTRUCTIONS FOR 2011 NRC SCENARIO #3**

### **GENERAL REQUIREMENTS**

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

### **SCENARIO SOURCE HISTORY**

- This is a new scenario containing elements from the 2005 and 2007 NRC ILT Exams.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-83, ~5% power (created from IC-8)
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### **Blocking Tags**

- None

**Activate APP "2011\_NRC\_SCN3" or insert the following:**

#### **Event Triggers**

**TRG E5 DW\_PRESSURE\_GT\_26**  
**TRG E6 DWCW\_HEADER\_RETURN\_VALVE\_GREEN\_LIGHT\_ON**  
**TRG E6 = DMF ARM01\_23**

#### **Malfunctions**

**IMF PRM01\_08 (E1 0 0) 100** ('A' main stack radiation monitor fails upscale)  
**IMF RFC04A (E2 0 0) 100** (Recirc M-G flow controller 'A' oscillations)  
**IMF MSS08H (E3 0 0) 50** (Reactor pressure relief valve 'H' failure)  
**IMF ADS02C (E4 0 0) 100 5:00 0** (Rupture in 'H' SRV downcomer w/ 5-minute ramp)  
**IMF DWC04 (E5 0 0) 100** (DWCW leakage inside the drywell)  
**IMF ARM01\_23 (E5 0 0) 0.1** (Heater & RFPT South 165 Elev. ARM failure – causes ARM 3.1 to alarm at 9 mRem/hr, indicating a DWCW leak into the Turbine Building)

## Overrides

Prevent CLOSE indication on drywell vent valve AO-2506 with the following overrides:

**IOR ZLOPC03AO2506\_1 (none 0 0) OFF**

**IOR ZLOPC03AO2506\_2 (none 0 0) ON**

**IOR ZLOPC03AO2506GRP\_1 (none 0 0) OFF**

**IOR ZLOPC03AO2506GRP\_2 (none 0 0) ON**

Prevent drywell spray with the following overrides:

**IOR ZYP12A1S23 (none 0 0) CLOSE** (Drywell header valve MO-26A fails to open)

**IOR ZYP12A1S43 (none 0 0) CLOSE** (Torus header valve MO-39A fails to open)

**IOR ZYP12A3S21 (none 0 0) CLOSE** (Drywell spray valve MO-31B fails to open)

**IOR ZYP12A3S41 (none 0 0) CLOSE** (Torus spray valve MO-38B fails to open)

## Trip Overrides

None

## Batch Files

None

## Turnover Procedures

- GP-2 "Normal Plant Start-Up" complete up through step 6.2.31
- Rod Sequence Sheet is complete up through RWM Sequence Step 14 (Array 8); next control rod is 26-43 in Sequence Step 15 (Array 8)
- Control rod withdrawal per SO 62.1.A-2 "Withdrawing/Inserting a Control Rod"
- Reactor level control through AO-8091 using SO 5.7.E-2 "Long Path Recirc for Startup Level Control" at step 4.1.19.8
- SO 7B.4.A-2 "Containment Atmosphere De-Inerting And Purging Via SBGT System" at step 4.19
- Turbine chest warming in progress using SO 1B.1.A-2 "Main Turbine Startup and Normal Operations" at step 4.10
- OP-AB-300-1003 Attachment 1 "Reactivity Maneuver Approval Form" at step 1 of 4 covering startup from all rods in to generator synchronization

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 1**

Support crew as necessary during HPCI steam supply valve (MO-2-23-014) cycling (GP-2, Rev 126 Step 6.2.32).

### **EVENT 2**

Support crew as necessary while Recirc pump speeds are raised to the 30% speed limiter (GP-2, Rev 126 Step 6.2.33).

### **EVENT 3**

When Reactor Recirc speeds have been raised to the 30% speed limiter, or when directed by the Lead Examiner, initiate pending events on **ET1 (IMF PRM01\_08 100)** to cause the 'A' main stack radiation monitor failure at 100% severity.

Pre-inserted overrides will result in drywell vent valve AO-2506 indicating OPEN (cannot actually fail just this valve open).

### **EVENT 4**

When the Tech Spec determinations are complete, or at the direction of the Lead Examiner, notify the control room that there is excessive seal leakage on the 'B' RBCCW pump. Report that the 'B' RBCCW pump should be removed from service immediately.

Support the crew in starting the 'A' RBCCW pump (SO 35.6.A-2 step 4.1):

- Report the suction block valve is open.
- Report that the discharge block valve is open.
- Report proper oil level in the pump.
- Wait approximately five minutes after being directed to vent the pump to report that the pump is vented.

### **EVENT 5**

After the 'A' RBCCW pump is placed in service, or when directed by the Lead Examiner, initiate pending events **ET2 (IMF RFC04A 100)** to cause Recirc M-G flow controller 'A' oscillations.

### **EVENT 6**

When the 'A' M-G set is "locked up" and the operators have reviewed the actions to take with a locked up M-G Set, or when directed by the Lead Examiner, initiate pending events on **ET3 (IMF MSS08H 50)** to cause SRV 'H' to fail open.

If directed to remove fuses for the 'H' SRV in accordance with OT-114, then **MRF ADS02H REMOVE**.

### **EVENT 7**

After Torus cooling has been placed in-service, or when directed by the Lead Examiner, initiate pending events on **ET4 (IMF ADS02C 100)** to cause a rupture in 'H' SRV downcomer (5-minute ramp rate).

Modify the leak severity / ramp rate as necessary to control the scenario pace and ensure the crew has sufficient time to respond to scenario conditions and attempt to spray containment prior to exceeding the PSP curve.

### **SIMULATOR OPERATOR DIRECTIONS**

#### **EVENT 7** **(continued)**

Pre-inserted overrides will prevent spraying the containment.

When requested, support activities to place DW cooling in-service IAW T-223.

#### **EVENT 8**

IF directed to check DWCW return header pressure, report that DWCW return header pressure is 20 psig.

When Drywell pressure exceeds 26 psig, and DWCW has NOT been isolated, then verify initiation of pending events on **ET5**:

- **IMF DWC04 100**
- **IMF ARM01\_23 0.1**

If/when DWCW is isolated, then delete the following malfunctions:

- **DMF DWC04**
- **DMF ARM01\_23**

If DWCW was not isolated per GP-8B prior to 26 psig in the Drywell and surveys are directed, report as Ops HP that the Turbine Building 165 ft. Elev. general area radiation levels are 10 mR/hr and rising slowly.

#### **EVENT 9**

The crew will perform an emergency blowdown due to exceeding the PSP Curve.

#### **TERMINATION**

The scenario may be terminated when 5 SRVS are open, the RPV is depressurized, RPV level is under control and Drywell Chilled Water is isolated.

## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

- Unit 2 is starting up at ~5% reactor power, 450 psig
- The drywell is de-inerted due to required inspections

### **INOPERABLE EQUIPMENT/LCOs:**

- None

### **SCHEDULED EVOLUTIONS:**

- Continue the reactor startup in accordance with GP-2, which is complete through step 6.2.31.

### **SURVEILLANCES DUE THIS SHIFT:**

- None

### **ACTIVE CLEARANCES:**

- None

### **GENERAL INFORMATION:**

The crew is expected to resume startup actions IAW GP-2 step 6.2.32 to cycle the HPCI Steam supply valve (MO-2-23-14). Then raise Recirc pump speeds IAW step 6.2.33 and continue with subsequent actions in GP-2.

Rod Sequence Sheet is complete up through RWM Sequence Step 14 (Array 8); next control rod is 26-43 in Sequence Step 15 (Array 8)

Currently in Step 1 of ReMA PB2C19-1.0

Reactor level control through AO-8091 using SO 5.7.E-2 (at step 4.1.19.8)

Containment purge in progress using SO 7B.4.A-2 (at step 4.19)

Turbine chest warming in progress using SO 1B.1.A-2 (at step 4.10)

The turbine bypass jack is at approximately 5%

### **CRITICAL TASK LIST**

1. **Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when the PSP Curve of T-102 is violated.**

**OR**

**Perform a rapid depressurization using RC/P-12 when the PSP Curve limit in T-102 is approached.**

2. **Perform isolations per GP-8.B "PCIS Isolation – Group II and III" when Drywell pressure exceeds Drywell Chilled Water System pressure.**

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 1      **Page:** 1 of 13

**Event Description:** Cycle the HPCI Steam Supply valve (MO-2-23-14)

**Cause:** N/A

**Effects:** N/A

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct the PRO to perform step 6.2.32 of GP-2 "Normal Plant Start-up" and cycle HPCI MO-2-23-014.
	PRO	Verify HO-4513 "HPCI Stop" is closed. Open MO-2-23-014 "HPCI Supply". Verify open MO-2-23-014 "HPCI Supply". Close MO-2-23-014 "HPCI Supply". Verify closed MO-2-23-014 "HPCI Supply". Close MO-2-23-025 "HPCI Min Flow". Verify closed MO-2-23-025 "HPCI Min Flow".

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 2      **Page:** 2 of 13

**Event Description:** Raise Recirc pump speed to the 30% speed limiter

**Cause:** N/A

**Effects:** Reactor power change

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct the URO to perform sep 6.2.33 of GP-2 "Normal Plant Start-up" and raise Recirc pump speed to the 30% speed limiter.
	URO	Use the Recirc controllers and raise Recirc pump speed to 30%. Monitor changes to: <ul style="list-style-type: none"><li>• The Recirc system</li><li>• Reactor power</li><li>• Reactor pressure</li><li>• Reactor water level</li></ul>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 3      Event No.: 3      Page: 3 of 13

**Event Description:** Main stack radiation monitor fails upscale / Drywell 18-inch vent AO-2506 fails to close

**Cause:** Module failure / valve control failure

**Effects:** Radiation monitor failure will cause the inboard drywell vent and purge valves greater than 2 inches to isolate.

Failure of AO-2506 to close will require the crew to close outboard vent valve AO-2507.

### Time

### Position

### Applicant's Actions or Behavior

PRO

Recognize and report alarm 003 D-1 "Main Stack Radiation High-High" and enter the corresponding Alarm Response Card.

- Verify automatic actions – all inboard Torus and Drywell vent and purge valves 2-inches and larger isolate (may use GP-8.B or GP-8.C)
- Recognize and report Drywell 18-inch vent valve AO-2506 failed to isolate; attempt to manually close AO-2506.
- Close outboard vent valve AO-2507 (if directed).
- Secure the Drywell Purge Supply Fans.
- Determine radiation monitor RI-0-17-050A failed upscale.
- Perform AO 63E.1-2 to bypass the failed main stack rad monitor.

CRS

Enter and execute the Alarm Response Card for 003 D-1.

- (May enter T-104 "Radioactive Release" but should exit without taking any actions).
- Direct manual isolation of Drywell 18-inch vent valve AO-2506; when manual isolation fails, direct closure of outboard vent valve AO-2507.
- For the failed radiation monitor, direct performance of AO 63E.1-2 to bypass the failed Main Stack radiation monitor.

NOTE: AO 63E.1-2 is not required to be completed prior to the next event.

- Review Tech Spec 3.3.6.1 for the radiation monitor failure:
  - Determine Condition A applies – channel must be placed in trip within 24 hours (Function 2c).
- Review Tech Spec 3.6.1.3 for the vent valve failure (AO-2506):
  - Determine Condition A applies – isolate flow path within 4 hours.
- Review ODCM 3.8.C.4.4 for the radiation monitor failure (RI-50A):
  - Determine no actions are required once AO 63E.1-2 is complete (since 1 channel remains operable), per OP-PB-108-115-1001.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 4      **Page:** 4 of 13

**Event Description:** RBCCW pump swap due to excessive seal leakage on the 'B' RBCCW pump

**Cause:** Excessive seal leakage

**Effects:** 'B' RBCCW pump removed from service and 'A' RBCCW pump placed in-service

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	Recognize and inform the CRS of the report from the Equipment Operator that there is excessive seal leakage from the 'B' RBCCW pump.
	CRS	Direct the PRO to swap RBCCW pumps using SO 35.6.A-2 "Placing Standby Reactor Building Closed Cooling Water Pump In Service"
	PRO	Direct the Equipment Operator to verify the 'A' RBCCW pump is ready for a start. Start the 'A' RBCCW pump. Verify that pressure on PI-2350 has risen slightly. Trip the 'B' RBCCW pump.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 5      **Page:** 5 of 13

**Event Description:** 'A' Recirc M-G Flow Controller oscillations

**Cause:** Failure in the 'A' flow controller

**Effects:**

1. Jet pump flow oscillation
2. Total flow oscillations
3. RPV level oscillations
4. 'A' Recirc parameter changes
5. Reactor power oscillations

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	Recognize and report the 'A' Recirc pump (controller) oscillations Recognize and report the oscillations as an entry into OT-112 "Unexpected/Unexplained Change in Core Flow". URO may lockup the 'A' Recirc M-G set without direction at this time. Enter and execute OT-112 "Unexpected/Unexplained Change in Core Flow".
	CRS	Direct the URO to Lock-up the 'A' Recirc pump by placing the Scoop Tube switch to "LOCK" at panel 20C004A. Refer to SO 2D.7.B-2 "Recirculation MG Set Scoop Tube Lockup and Reset" Verify the Jet pump flow mismatch is within 10.25 Mlbm/hr.
	URO	"Lock up" the 'A' Recirc MG Set if not already completed.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 3      Event No.: 6      Page: 6 of 13

**Event Description:** SRV 'H' inadvertently opens

**Cause:** Mechanical failure of relief valve pilot

**Effects:**

1. Alarms:
  - 210 D-2, "Safety Relief Valve Open"
  - 227 B-4, "Blowdown Relief Valves Hi Temp"
2. Heat input to the primary containment.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	Recognize, report, and take actions IAW ARC 210 D-2, "Safety Relief Valve Open", and ARC 227 B-4, "Blowdown Relief Valves Hi Temp".
	CRS	Enter/direct actions IAW OT-114: <ul style="list-style-type: none"><li>• Lead crew in confirming an SRV is open.</li><li>• Direct both loops of RHR placed in torus cooling.</li><li>• Direct attempts to close the 'H' SRV.</li></ul>
	URO/PRO	Confirm the 'H' SRV is open IAW OT-114.
	PRO	Cycle the 'H' SRV control switch when directed. Place both loops (only 'B' will work) of RHR in torus cooling IAW RRC 10.1-2, "RHR System Torus Cooling During a Plant Event", as directed: <ul style="list-style-type: none"><li>• Open MO-039B (MO-39A will fail to open)</li><li>• Open MO-089B (D)</li><li>• Start RHR pump B (D)</li><li>• Open MO-034B</li><li>• Verify flow is 11,500-12,200 gpm for one RHR pump in service</li><li>• Start HPSW pump in each loop to be used for torus cooling</li><li>• Start additional RHR and HPSW pumps as directed</li><li>• Verify flow is <math>\geq 20,000</math> gpm for two RHR pumps in service</li><li>• Direct an Equipment Operator to close stay full injection valve(s) for the RHR loop(s) in service</li></ul>
	CRS	Declare the 'H' SRV inoperable; verify compliance with Tech Spec 3.4.3: <ul style="list-style-type: none"><li>• Determine sufficient SRVs (<math>&gt;11</math>) are operable; PTSA applies for 'H' SRV inoperability.</li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 7      **Page:** 7 of 13

**Event Description:** Rupture in the 'H' SRV downcomer

**Cause:** Failure of the piping down stream of the SRV

**Effects:** "Drywell Hi-Lo Press" alarms (210 F-2, 225 A-4)  
High Drywell Pressure Scram Signal, Isolations, Diesel and HPCI auto starts.  
Rising drywell pressure resulting in manual scram at 1.2 psig or auto scram at 2 psig with isolations, HPCI and diesel starts.  
Loss of the suppression capability of the Torus

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO/PRO	Recognize Drywell High Pressure alarms. Recognize drywell pressure is rising and announce entry into OT-101 "High Drywell Pressure". Trend the drywell pressure rise.
	CRS	Enter/direct actions in accordance with OT-101 "High Drywell Pressure": Verify drywell inerting is not in progress. Direct placing additional drywell cooling in service. Direct actions to monitor components e.g., RRP seals. <b><u>NOTE:</u></b> the following action is not applicable if the crew determines that the leak is from the SRV tailpipe. As time permits, direct crew to isolate and restore systems IAW OT-101 to stop the source of the leak, including: <ul style="list-style-type: none"><li>• RWCU, HPCI and RCIC (i.e. close HPCI MO-15 steam supply valve, close RCIC MO-15 steam supply valve...).</li></ul> If not done earlier, direct manual isolation of Drywell 18-inch vent valve AO-2506; when manual isolation fails, direct closure of outboard vent valve AO-2507.
	PRO	Perform OT-101 actions as directed: Monitor drywell pressure and plant parameters. If directed, verify drywell inerting is not in progress. If directed, place additional drywell cooling in service. Monitor components for abnormal indications as directed by the CRS. As time permits, isolate plant systems, including RWCU, HPCI, and RCIC, as directed by the CRS IAW OT-101 (i.e. close HPCI MO-15 steam supply valve, close RCIC MO-15 steam supply valve...).

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 3      Event No.: 7      Page: 8 of 13****Event Description:** Rupture in the 'H' SRV downcomer (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct GP-4 "Manual Reactor Scram" when drywell pressure cannot be restored and maintained below 1.2 psig.
	URO	Perform GP-4 "Manual Reactor Scram" actions: <ul style="list-style-type: none"><li>• Place the mode switch to "Shutdown".</li><li>• Verify control rods inserting.</li><li>• Manually control the Reactor Feed Water System to control reactor level.</li><li>• Verify APRMs are downscale and report to the CRS.</li><li>• Verify all control rods inserted and report to the CRS</li></ul>
	PRO	Perform scram actions. <ul style="list-style-type: none"><li>• Verify all isolations, as applicable.</li><li>• Restore Instrument Nitrogen to the drywell when directed by the CRS.</li></ul>
	CRS	Enter and execute T-100 "Scram": <ul style="list-style-type: none"><li>• Direct level restored and maintained +5 to +35 inches.</li><li>• Direct restoration of drywell instrument nitrogen IAW GP-8.E "Primary Containment Isolation Bypass".</li></ul>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 3      Event No.: 7      Page: 9 of 13

**Event Description:** Drywell spray valve failures – prevents drywell spray

**Cause:** Failure of drywell spray valves to open on both loops of RHR system

**Effects:** 2 psig isolations, HPCI auto start, Core Spray and RHR pumps auto-start (due to low reactor pressure), and emergency diesels start.  
Drywell pressure continues to rise above 2 psig and requires the crew to perform an Emergency Blowdown when torus pressure cannot be maintained below the PSP curve.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	Recognize and respond to 2 psig drywell pressure and announce entry into T-101 and T-102: Recognize and verify Group II/III isolations. Recognize and verify Diesel Generator starts and has cooling water. Recognize and report the HPCI auto start. Recognize and report Core Spray and RHR pumps auto start. Trend and report containment parameters.
	CRS	Recognize and respond to 2 psig drywell pressure and announce entry into T-101 and T-102: Re-enter T-101 "RPV Control" and enter T-102 "Primary Containment Control". Verify adequate level and direct either a HPCI shutdown or isolation, and Core Spray and RHR pumps shutdown.
	PRO	Perform an isolation or shutdown of HPCI as directed by the CRS. <ul style="list-style-type: none"><li>For isolation, depress the HPCI isolation pushbutton and verify that HPCI shuts down and the HPCI Steam Line Isolation Valves close.</li><li>For a HPCI shutdown, trip HPCI, verify that the HPCI aux oil pump starts as required, and place the HPCI Aux Oil Pump in Pull-to-Lock when HPCI stops rotating.</li></ul> Shutdown Core Spray and RHR pumps as directed by the CRS.
	CRS	Direct T-102 actions: Direct Torus sprays IAW T-204 using A(B) Loop RHR Verify GP-8B isolations. Trend containment parameters, specifically drywell pressure and bulk average temperature.

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 3      Event No.: 7      Page: 10 of 13****Event Description:** Drywell spray valve failures – prevents drywell spray (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	Perform Torus Sprays IAW T-204 "Initiation of Containment Sprays using RHR": Recognize and report that Containment Sprays cannot be placed in-service on either loop of RHR.
	URO/PRO	Recognize and report containment parameters: Bulk drywell temperature at 145 degrees F and entry into T-102.
	CRS	Re-enter T-102 on bulk average temperature of 145 degrees F. Continue T-101 actions: Direct RPV level controlled +5 to +35 inches. Direct closing turbine bypass valves to slow cooldown/depressurization. (May) direct closing MSIVs to slow down RPV cooldown rate. (May) remove steam users from service to slow down the cooldown rate.
	URO	Maintain RPV level using Feedwater.
	URO/PRO	Trend and report containment parameters.
	CRS	Direct URO/PRO to perform T-223 "Drywell Cooler Fan Bypass" to bypass and restore drywell ventilation.
	URO/PRO	Perform T-223: Direct EO to place drywell fans in slow. Verify T-223 requirements.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 3      Event No.: 8      Page: 11 of 13

**Event Description:** Drywell Chilled Water (DWCW) piping break / manually isolate DWCW

**Cause:** Failure of drywell spray valves to open on both loops of RHR system

**Effects:** Drywell to Turbine Building leak, resulting in rising radiation levels in the Turbine Building (if DWCW is not manually isolated).

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
CT	CRS	Direct isolating Drywell Chilled Water per GP-8.B "PCIS Isolation – Groups II and III" when drywell pressure exceeds Drywell Chilled Water System pressure.
CT	URO/PRO	Isolate Drywell Chilled Water per GP-8.B when drywell pressure exceeds Drywell Chilled Water System pressure, as directed: <ul style="list-style-type: none"><li>• Trip the 'B' recirc pump.</li><li>• Close MO-2-200A and MO-2-200B.</li><li>• Close MO-2-201A and MO-2-201B.</li><li>• Trip the drywell chillers.</li><li>• Place the DWCW pump control switches in "Pull-to-Lock".</li><li>• Trip the drywell cooler fans.</li></ul>
		<b><u>NOTE:</u> the following steps are N/A if DWCW is isolated using GP-8B before drywell pressure exceeds 26 psig.</b>
	URO/PRO	Recognize and report alarm 003 B-2 "2 Unit Turb Bldg Hi Rad" and enter the corresponding Alarm Response Card. Monitor and report Turbine Building ARM readings.
	CRS	If alarm 003 B-2 alarm is received, direct GP-15 "Local Evacuation" of 165 ft. Elev. of the Unit 2 Turbine Building.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 8      **Page:** 12 of 13

**Event Description:** Emergency Blowdown due to exceeding the PSP curve

**Cause:** Failure of drywell spray valves to open on both loops of RHR system

**Effects:** N/A

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
CT	CRS	If the MSIVs are open, when the combination of Torus pressure and Torus level approach the limits of the PSP curve, direct the URO to perform a rapid depressurization using T-101, RC/P-12.
CT	URO	Rapidly depressurize the reactor by opening all Main Turbine bypass valves.
CT	CRS	When the combination of Torus pressure and Torus level cannot be maintained on the Safe Side of the PSP curve, enter and execute T-112 "Emergency Blowdown": <ul style="list-style-type: none"><li>• Verify torus level is above 7 feet.</li><li>• Verify RPV pressure is 50 psig or more above torus pressure.</li><li>• Direct 5 ADS SRVs opened.</li></ul>
CT	PRO	When directed, open 5 ADS SRVs by placing their control switches in OPEN.
	URO	Control reactor level as directed following the blowdown. (Note that level will swell high during the actual blowdown.)

**TERMINATION CRITERIA:**

The scenario may be terminated when 5 SRVS are open, the RPV is depressurized, RPV level is under control and Drywell Chilled Water is isolated.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 3      **Event No.:** 9      **Page:** 13 of 13

**Event Description:** EAL classification

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Determine EAL classification using EP-AA-1007. <ul style="list-style-type: none"><li>• Based on the scenario conditions and expected outcome, the CRS will classify the event as FA1 "Loss of the Reactor Coolant System Barrier".</li></ul>

## **SIMULATOR OPERATOR INSTRUCTIONS FOR 2011 NRC SCENARIO #5**

### **GENERAL REQUIREMENTS**

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

### **SCENARIO SOURCE HISTORY**

- This is a bank scenario that was last used on the 2009 NRC ILT exam. It has been modified (altered) slightly and is being submitted as a spare scenario for the 2011 NRC ILT exam.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-85, 88% power, full power rod pattern
- **Place the backup EHC pump in RUN** (for ST-O-001-200-2)
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### **Blocking Tags**

- None

**Activate APP "2011\_NRC\_SCN5" or insert the following:**

#### **Event Triggers**

TRG E5 ARI\_A\_ARMED  
TRG E4 = BAT BUS\_2\_OVERCURRENT\_LOCKOUT  
TRG E5 = MRF ARI01TO NORMAL

#### **Malfunctions**

IMF SWS01B (E1 0 0) ('B' Service Water pump trip)  
IMF MCS05A (E3 0 0) ('A' Condensate pump trip)  
IMF RRS20 (E4 5:00 0) 4 20:00 0 (Recirc loop rupture at 4% severity, 5 minute delay and 20 minute ramp)  
IMF HPC03 (E6 0 0) (HPCI turbine trips)

## Overrides

**IOR ZLORP15DS26B (none 0 0) ON** (5A-DS26B light at RPS Panel 20C017 to ON)  
**IOR ZYP06A521S16 FALSE** (SFCS recirc runback inhibit)  
**IOR ZYP12A1S19 (none 0 0) OFF** (Override Switch 10A-17A, prevents containment sprays)  
**IOR ZYP12A3S19 (none 0 0) OFF** (Override Switch 10A-17B, prevents containment sprays)  
**IOR ANO205LD4 (E2 0 0) ALARM\_ON** (RPS INSTRUMENT GROSS FAILURE – 210 D-4)  
**IOR ANO205LF1 (E2 0 0) ALARM\_ON** (DW HI PRESSURE – 210 F-1)

## Trip Overrides

**MRF ARI01TO OVERRIDE** (prevents ARI auto-initiation on 'A' channel)  
**MRF RPS03TO OVERRIDE** (prevents RPS B1 trip)  
**MRF RPS04TO OVERRIDE** (prevents RPS B2 trip)  
**MRF RPS06TO OVERRIDE** (prevents RPS B3 trip)

**Batch Files** (Verify the following Batch File exists – DO NOT ENTER AT THIS TIME)

**BAT BUS\_2\_OVERCURRENT\_LOCKOUT**  
**IMF MAP06D**  
**IMF MAP06E**  
**IMF MAP06F**  
**IOR ANO209LA2 ALARM\_ON**  
**IOR ANO209LC4 ALARM\_OFF**  
**IOR ZYP14A3S04 TRIP**  
**IOR ZYP14A3S08 TRIP**  
**IOR ZYP14A3S37 TRIP**

## Turnover Procedures

- GP-5 completed through step 5.3.1
- ST-O-001-200-2 completed through step 6.2.1.34; next step is 6.3.1
- Provide crew with Key #18 for the turbine stop valve functional test

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 1**

Support crew for main turbine stop valve functional test.

During the performance of ST-O-001-200-2 "Turbine Stop Valve Closure And EOC-RPT Functional" provide the crew with the following information (role play as Extra RO at Panels 20C015 and 20C017, allowing the CRS to apply Tech Specs:

- Step 6.3.7.2 – auxiliary scram relay 5A-K10A **did** de-energize.
- Step 6.3.7.3 – auxiliary scram relay 5A-K10B **did not** de-energize.
- Step 6.3.7.4 – indicating light 5A-DS26B **is lit**.
- Step 6.3.8.1 – auxiliary scram relay 5A-K10A **did** energize.
- Step 6.3.8.2 – auxiliary scram relay 5A-K10B **remained** energized.
- Step 6.3.8.3 – indicating light 5A-DS26B **is lit**.

### **EVENT 2**

After the Tech Spec evaluation is complete, or when directed by the Lead Examiner, initiate **ET1 (IMF SWS01B)** to trip the 'B' Service Water pump.

When requested to check the 'B' Service Water pump breaker, report that it tripped on instantaneous overcurrent.

Support the crew while placing the 'C' Service Water pump in service IAW SO 30.1.A-2, section 4.2.

Support the crew while restoring the Fuel Pool Service Water booster pumps IAW SO 19.1.A-2, section 4.2.

### **EVENT 3**

When Fuel Pool Service Water is restored, or when directed by the Lead Examiner, initiate **ET2** for the drywell pressure instrument failure, and verify the following:

- **IOR ANO205LF1 ALARM\_ON**, DW HI PRESSURE (210 F-1)
- **IOR ANO205LD4 ALARM\_ON**, RPS INSTRUMENT GROSS FAILURE (210 D-4)

When requested to check the 2AC065D and 2BC065D instrument racks, report Drywell Pressure Instrument PIS-2-5-12A is upscale high with the gross failure light lit. If directed to reset the gross failure, report that it will **NOT** reset.

### **EVENT 4**

After the crew has inserted a half scram on RPS channel A1 and before inserting a PCIS channel trip, or when directed by the Lead Examiner, initiate a trip of the 'A' condensate pump using **ET3 (IMF MCS05A)**.

- Recirc pumps will fail to automatically runback due to a pre-inserted override (**IOR ZYP06A521S16 FALSE**).

When requested to check the 'A' condensate pump breaker, report that it tripped on instantaneous overcurrent.

Support the crew as necessary during the power reduction.

### **SIMULATOR OPERATOR DIRECTIONS**

#### **EVENT 5**

When actions for the condensate pump trip are complete, or when directed by the Lead Examiner, initiate **ET4 (BAT BUS\_2\_OVERCURRENT\_LOCKOUT)** to cause an overcurrent lockout on #2 aux bus.

Verify a Recirc loop rupture initiates 5 minutes later at 4% severity on a 20 minute ramp (**IMF RRS20 4 20:00**).

If asked, report DWCW return header pressure is 28 psig.

#### **EVENT 6**

RPS fails to scram automatically or manually (manual ARI works) – pre-inserted.

The 'A' ARI channel will fail to automatically initiate. When the URO arms the 'A' ARI channel, verify **ET5 (MRF ARI01TO NORMAL)** initiates to restore the 'A' ARI channel to normal.

When directed to close HV-2-3-56 (per T-246), **MRF T220\_2 CLOSE** and report HV-2-3-56 is closed.

#### **EVENT 7**

After HPCI automatically starts (or is manually started), and as soon as DW Sprays are initiated, initiate **ET6 (IMF HPC03)** (HPCI turbine trips)

When directed to investigate the HPCI turbine trip, wait 5 minutes and then report unable to determine the cause of the trip.

#### **EVENT 8**

Pre-inserted instrument failures will prevent the crew from spraying the torus or the drywell.

After the crew attempts to spray the containment (either torus or drywell), delete the override on the OPPOSITE RHR LOOP:

- To delete the override on the 'B' RHR Loop, **DOR ZYP12A3S19**
- To delete the override on the 'A' RHR Loop, **DOR ZYP12A1S19**

**NOTE:** adjust the severity of RRS20 as necessary to control the pace of RPV level trend toward -172 inches.

#### **TERMINATION**

The scenario may be terminated after the RPV has been depressurized and level has been recovered and is controlled.

## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

- Unit 2 is steady at 90% power.
- A load drop was been performed in preparation for ST-O-001-200-2.
- GP-5 "Power Operations" is in progress, complete through step 5.3.1.

### **INOPERABLE EQUIPMENT/LCOs:**

- None

### **SCHEDULED EVOLUTIONS:**

- Perform ST-O-001-200-2.
- Raise power to 100% once Reactor Engineers provide ReMA guidance.

### **SURVEILLANCES DUE THIS SHIFT:**

- Perform ST-O-001-200-2 "Turbine Stop Valve Closure and EOC-RPT Functional".
  - The ST has been started and is complete through step 6.2.1.34.
  - Continue the Turbine Stop Valve functional test beginning at step 6.3.1.
  - An extra RO is available to perform steps 6.3.7.2 through 4, and 6.3.8.1 through 3.  
(Provide KEY #18 to the crew during turnover.)

### **ACTIVE CLEARANCES:**

- None

### **GENERAL INFORMATION:**

- Power was lowered to 90% in accordance with GP-5 "Power Operations" under the Reactor Engineers guidance to perform ST-O-001-200-2. The Reactor Engineer will provide a ReMA for returning to full power following the completion of ST-O-001-200-2.

### **CRITICAL TASK LIST**

- 1. Recognize failure of the Reactor Protection System to scram the reactor and initiate Alternate Rod Insertion (ARI) to insert control rods in accordance with T-101 "RPV Control" and RRC 3B.1-2 "Alternate Rod Insertion During A Plant Event".**
- 2. Spray the drywell in accordance with T-204 "Initiation of Containment Sprays Using RHR" when conditions permit, but before drywell temperature exceeds 281 degrees F.**
- 3. Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when RPV water level cannot be restored and maintained above -172 inches.**

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 5      Event No.: 1      Page: 1 of 16****Event Description:** Perform the turbine stop valve functional test**Cause:** N/A**Effects:** N/A

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct the PRO to perform ST-O-001-200-2 "Turbine Stop Valve Closure and EOC-RPT Functional", beginning at step 6.3.1.
	PRO	<p>Perform ST-O-001-200-2 "Turbine Stop Valve Closure and EOC-RPT Functional":</p> <ul style="list-style-type: none"><li>• Review ST</li><li>• Inform the Unit Reactor Operator that the test is going to be conducted and what indications can be expected (this may be covered during turnover and/or a CRS briefing).</li><li>• At Panel 20C015 and 20C017:<ol style="list-style-type: none"><li>1. Verify all RPS 'A' and 'B' scram solenoid group 1-4 lights are lit.</li><li>2. Verify A1 and B1 TURB STOP VALVE NORMAL lights are lit.</li></ol></li><li>• At Panel 20C008B, place the CV/SV test selector switch to "SV TEST".</li><li>• Verify the lights on all four TSV test buttons are ON.</li><li>• At Panel 20C015, place the EOC-RPT test switch in "TEST" (<u>using KEY #18</u>).</li><li>• Verify alarm 214 D-3 SYSTEM I EOC-RPT LOGIC PWR FAIL/TEST.</li><li>• At Panel 20C008B, depress and hold TSV-1 test pushbutton.<ol style="list-style-type: none"><li>1. Verify TSV-1 position indicator moves smoothly at low speed to less than 10% open and then fast closes.</li><li>2. After 2 to 3 seconds at full close, release the test pushbutton.</li><li>3. Verify TSV-1 valve position indicator moves smoothly from closed to full open.</li></ol></li><li>• When the RPS relay failure is reported, STOP the functional test.<ol style="list-style-type: none"><li>1. Place the CV/SV test selector switch to "OFF".</li><li>2. Verify the lights on all four TSV test buttons are off.</li><li>3. Place backup EHC pump to "STOP", then back to "AUTO".</li></ol></li></ul>
	URO	Monitor plant parameters/assist as directed.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 5      Event No.: 1      Page: 2 of 16

**Event Description:** RPS failure during turbine stop valve functional test

**Cause:** Turbine stop valve position switch input to RPS logic fails

**Effects:** RPS instrumentation failure; application of Tech Specs

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
		<p>NOTE: the "Extra RO" at Panels 20C015 and 20C017 (role-played by the Simulator Operator in the booth) will provide the crew with the following information from ST-O-001-200-2, allowing the CRS to apply Tech Specs:</p> <ul style="list-style-type: none"><li>• Step 6.3.7.2 – auxiliary scram relay 5A-K10A <b>did</b> de-energize.</li><li>• Step 6.3.7.3 – auxiliary scram relay 5A-K10B <b>did not</b> de-energize.</li><li>• Step 6.3.7.4 – indicating light 5A-DS26B <b>is lit</b>.</li><li>• Step 6.3.8.1 – auxiliary scram relay 5A-K10A <b>did</b> energize.</li><li>• Step 6.3.8.2 – auxiliary scram relay 5A-K10B <b>remained</b> energized.</li><li>• Step 6.3.8.3 – indicating light 5A-DS26B <b>is lit</b>.</li></ul>
	PRO	<p>Stop the functional test when the RPS failure is reported.</p> <p>Perform system restoration IAW ST-O-001-200-2, step 6.7 (<b>see previous page</b>).</p>
	CRS	<p>Direct stopping the functional test and system restoration when the RPS failure is reported.</p> <p>Review <u>Tech Spec 3.3.1.1</u> and determine Condition A applies (RPS Function 8 on Table 3.3.1.1-1):</p> <ul style="list-style-type: none"><li>• Place associated channel (or trip system) in trip within 12 hours, <u>OR</u></li><li>• Reduce thermal power to &lt;29.5% RTP within the next 4 hours.</li></ul> <p>Review <u>Tech Spec 3.3.4.2</u> and determine Condition A applies:</p> <ul style="list-style-type: none"><li>• Restore EOC-RPT instrumentation, or place channel in trip, within 72 hours, <u>OR</u></li><li>• Apply COLR limits of Tech Spec LCOs 3.2.1, 3.2.2, and 3.2.3 for inoperable EOC-RPT, <u>OR</u></li><li>• Reduce thermal power to &lt;29.5% RTP within the next 4 hours.</li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 5      **Event No.:** 2      **Page:** 3 of 16

**Event Description:** 'B' Service Water pump trips on overcurrent

**Cause:** Motor winding failure

**Effects:**

1. Alarms:
  - 216 H-1 "B' Service Water Pump Trip"
  - 216 H-2 "B' Service Water Pump OVLD"
  - 216 F-1 "Service Water Header Lo Press"
  - 216 F-5 "Fuel Pool Service Water To HX Lo Press"
2. Loss of 'B' Service Water pump, requiring manual start of 'C' Service Water pump.

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO/PRO	<p>Recognize and report the following alarms and enter corresponding Alarm Response Cards:</p> <ul style="list-style-type: none"><li>• 216 H-1 "B' Service Water Pump Trip"</li><li>• 216 H-2 "B' Service Water Pump OVLD"</li><li>• 216 F-1 "Service Water Header Lo Press"</li><li>• 216 F-5 "Fuel Pool Service Water To HX Lo Press"</li></ul> <p>Recognize and report trip of the 2B Service Water pump.</p> <p>Recognize and report trip of the 2A and 2B Fuel Pool Service Water (FPSW) booster pumps.</p> <p>Green flag the 2B Service Water pump control switch.</p> <p>Green flag the 2A and 2B FPSW booster pump control switches.</p> <p>Dispatch an Equipment Operator to investigate the Service Water pump and breaker.</p>
	CRS	<p>Enter and direct actions of Alarm Response Cards 216 H-1, 216 H-2, 216 F-1 and 216 F-5.</p> <p>Direct placing the 2C Service Water pump in service IAW SO 30.1.A-2 "Unit 2 Service Water System Normal Operations".</p>
	PRO	<p>Place the 2C Service Water pump in service IAW SO 30.1.A-2 as follows:</p> <ul style="list-style-type: none"><li>• Direct an Equipment Operator to prepare the 2C Service Water pump for start IAW SO 30.1.A-2, steps 4.2.3 and 4.2.4.</li><li>• Start the 2C Service Water pump by placing the pump control switch in "Run".</li><li>• Verify Service Water pump discharge pressure is 65-95 psig (both in the Control Room and locally).</li></ul>

**Operator Actions**

ES-D-2

**Op Test No.:** 1      **Scenario No.:** 5      **Event No.:** 2      **Page:** 4 of 16**Event Description:** 'B' Service Water pump trips on overcurrent (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Direct placing the 2A and 2B Fuel Pool Service Water booster pumps in service IAW SO 19.1.A-2 "Fuel Pool Cooling System Startup and Normal Operations".
	PRO	<p>Place the 2A and 2B Fuel Pool Service Water booster pumps in service IAW SO 19.1.A-2 as follows:</p> <ul style="list-style-type: none"><li>• Direct an Equipment Operator to prepare the 2A and 2B Fuel Pool Service Water booster pumps for start IAW SO 19.1.A-2, steps 4.2.4 and 4.2.5.</li><li>• Start the 2A Fuel Pool Service Water booster pump by placing the pump control switch in "Run".</li><li>• Start the 2B Fuel Pool Service Water booster pump by placing the pump control switch in "Run".</li><li>• Direct an Equipment Operator to adjust differential pressure for the 2A and 2B Fuel Pool Service Water booster pumps IAW SO 19.1.A-2, step 4.2.8.</li></ul>
	CRS	Request troubleshooting/technical assistance through the Shift Manager.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 5      **Event No.:** 3      **Page:** 5 of 16

**Event Description:** Drywell pressure instrument fails upscale without the expected half scram

**Cause:** PIS-2-5-12A fails upscale (gross failure)

**Effects:** Alarms:

- 210 F-1 "Drywell Hi Pressure Trip"
- 210 D-4 "RPS/PCIS Trip Units in Calibration of Gross Failure"

Drywell pressure instrument fails high (gross failure); RPS half scram fails to occur.

**Time**

**Position**

**Applicant's Actions or Behavior**

URO

Recognize and report the following alarms and enter the corresponding Alarm Response Cards:

- 210 F-1 "Drywell Hi Pressure Trip"
- 210 D-4 "RPS/PCIS Trip Units in Calibration of Gross Failure"

Determine actual drywell pressure is below the scram setpoint.

Recognize and report the drywell pressure instrument failure did NOT cause the expected RPS half scram.

CRS

Enter and execute the Alarm Response Cards for 210 F-1 and 210 D-4. Direct an Equipment Operator to check the instrument racks in the Reactor Building to aid in determining the cause of the trip.

CRS

Direct troubleshooting in accordance with the Alarm Response Card for 210 D-4 "RPS/PCIS Trip Units in Calibration of Gross Failure".

Declare drywell pressure instrument PIS-2-5-12A inoperable.

Review Tech Spec 3.3.1.1 and determine Condition A applies (RPS Function 6 on Table 3.3.1.1-1):

- Place associated channel (or trip system) in trip within 12 hours, OR
- Be in Mode 3 within the next 12 hours.

Review Tech Spec 3.3.6.1 and determine Condition A applies (PCIS Function 2.b on Table 3.3.6.1-1):

- Place associated channel (or trip system) in trip within 12 hours, OR
- Be in Mode 3 in the next 12 hours and in Mode 4 in the next 36 hours.

Review Tech Spec 3.3.6.2 and determine Condition A applies (SCIS Function 2 on Table 3.3.6.2-1):

- Place associated channel (or trip system) in trip within 12 hours, OR
- Take the compensatory actions for Condition C.

Recognize that RPS/PCIS trips must be installed within 12 hours.

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 5      Event No.: 3      Page: 6 of 16****Event Description:** Drywell pressure instrument fails upscale without the expected half scram (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
		<b><u>NOTE:</u></b> due to the RPS failure, the Lead Examiner will act as the Shift Manager and direct the crew to perform GP-25 to install the RPS/PCIS trips.
	CRS	Initiate GP-25 Appendices 1 and 5 to install redundant RPS/PCIS trips.
	PRO	Install trip on A1 RPS channel as directed by the CRS using GP-25 Appendix 1: <ul style="list-style-type: none"><li>• Complete Appendix 1.</li><li>• Inform URO that a half scram on RPS channel A1 will be inserted.</li><li>• At Panel 20C015, insert key and place the A1 Test Keylock Switch to the TEST position.</li></ul> <b><u>NOTE:</u></b> the next event will be initiated before the crew can perform Appendix 5 of GP-25 (PCIS).

## Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 5      Event No.: 4      Page: 7 of 16

**Event Description:** 'A' Condensate pump trip with automatic Recirc runback failure / power reduction

**Cause:** 'A' Condensate pump trips on overcurrent / relay failure in the Recirc runback logic

**Effects:**

1. Alarms:
  - 203 E-1 "A Condensate Pump Overload"
  - 203 E-2 "A Condensate Pump BKR Trip"
2. Recirc automatic runback fails to occur, resulting in lowering RPV level and requiring manual recirc flow reduction to control RPV level.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO	<p>Recognize and report trip of the 'A' Condensate pump.</p> <p>Recognize and report the 45% Recirc pump runback failed to occur.</p> <p>Recognize and announce entry into the OT-100 "Reactor Low Level":</p> <ul style="list-style-type: none"><li>• Recognize the RPV water level drop is caused by a lack of makeup capability, requiring power to be lowered with Recirculation.</li><li>• Reduce power by lowering the 'A' and 'B' Recirc pump speed controllers to a speed demand of 45% (<u>NOTE</u>: this must be done in a controlled manner that does not result in level swell and a high level trip of the Reactor Feed pumps).</li></ul> <p>Monitor for Thermal Hydraulic Instabilities (THI).</p>
	CRS	<p>Enter / direct actions of ARC 203 E-2 "A Condensate Pump BKR Trip":</p> <ul style="list-style-type: none"><li>• Direct the URO to lower power by lowering Recirc flow manually to 45% speed.</li></ul> <p>(May) refer to GP-5 "Power Operations" to determine power must be limited to &lt;80% total feedwater flow with 2 Condensate and 3 Reactor Feedwater pumps.</p> <p>Enter and direct actions IAW OT-112 "Unexpected/Unexplained Change in Core Flow".</p> <p>Enter OT-100 "Reactor Low Level" (as necessary) – no additional actions are required.</p>
	PRO	<p>Investigate the cause of the 'A' Condensate pump trip using the applicable alarm response cards.</p> <p>Direct an Equipment Operator to investigate the breaker and pump.</p> <p>Green flag the 'A' Condensate pump control switch.</p>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 5      Event No.: 5 / 6      Page: 8 of 16

**Event Description:** Loss of #2 auxiliary bus (loss of Condensate and Feedwater) / RPS failure requires manual ARI initiation to scram the reactor

**Cause:** Failure in the bus work results in an overcurrent condition and a bus lockout / RPS 'B' automatic and manual channel failure

**Effects:**

1. Alarms:
  - 219 A-2 "2 Aux Bus Overcurrent Relays"
  - 219 B-2 "2 Aus Bus Lo Voltage"
2. #2 Auxiliary Bus breakers trip, de-energizing the bus and its loads
3. The immediate impact of loss of #2 Auxiliary Bus is the resultant loss of the remaining Condensate pumps, causing RPV water level to drop rapidly.
4. Full Reactor scram does not occur; manual ARI initiation is required.
5. Reactor level drop is greater because more time is spent under power conditions with no high-pressure injection.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	Recognize and report the loss of #2 Auxiliary Bus.
	URO	Recognize and report Reactor water level is dropping rapidly. Attempt to manually scram the Reactor by placing the Mode Selector Switch in "Shutdown". Attempt to scram 'B' RPS by depressing the manual scram pushbutton. Recognize and report an RPS scram has failed to occur. Report entry into T-101 "RPV Control" for the ATWS condition.
CT	CRS	Recognize a failure to scram condition exists; enter and execute T-101 "RPV Control". For RC/Q: <ul style="list-style-type: none"><li>• Direct initiation of Alternate Rod Insertion (ARI).</li></ul>

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 5      Event No.: 5 / 6      Page: 9 of 16****Event Description:** Loss of #2 auxiliary bus / RPS failure (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
CT	URO	<p>Initiate ARI IAW RRC 3B.1-2 "Alternate Rod Insertion During a Plant Event":</p> <ul style="list-style-type: none"><li>• Rotate the "A" <u>and</u> "B" ARI pushbutton collars to "Armed".</li><li>• Depress the "A" <u>and</u> "B" ARI pushbuttons.</li><li>• Verify the following ARI solenoid valves open:<ul style="list-style-type: none"><li>○ SV-2-03-141A</li><li>○ SV-2-03-142A</li><li>○ SV-2-03-141B</li><li>○ SV-2-03-142B</li></ul></li><li>• Verify and report the scram air header is depressurizing.</li><li>• Monitor and report when control rods begin to insert.</li><li>• Verify APRMs are downscale and report to the CRS.</li><li>• Report the status of RPV level control, RPV pressure control, Control Rods.</li></ul>
	CRS	<p>Execute T-101 "RPV Control".</p> <p>For RC/L:</p> <ul style="list-style-type: none"><li>• Direct restoring RPV level to +5 to +35 inches with HPCI and RCIC.</li></ul> <p>For RC/P:</p> <ul style="list-style-type: none"><li>• Direct instrument nitrogen bypassed and restored IAW GP-8E.</li><li>• Direct RPV pressure stabilized below 1050 psig.</li></ul>
	PRO	<p>Perform applicable scram actions:</p> <ul style="list-style-type: none"><li>• Transfer 13 KV house loads (#1 bus only).</li><li>• Trip main turbine at approximately 50 MWe.</li><li>• Verify main generator lockout.</li><li>• Verify Group II &amp; III isolations and SGTS initiation.</li><li>• Verify SDV vent and drain valves are closed.</li><li>• Verify HWC isolated.</li><li>• Verify recirc pumps are tripped.</li><li>• Report PRO scram actions to the CRS</li><li>• Monitor instrument air header pressure and drywell pressure; report instrument air header pressure is greater than drywell pressure.</li></ul>

**Operator Actions****ES-D-2****Op Test No.: 1      Scenario No.: 5      Event No.: 5 / 6      Page: 10 of 16****Event Description:**      Loss of #2 auxiliary bus / RPS failure (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	<p>Bypass and restore drywell instrument nitrogen IAW GP-8E, as directed.</p> <ul style="list-style-type: none"><li>• Place both instrument nitrogen valve control switches to "Close".</li><li>• Place both keylock switches in "Bypass".</li><li>• Place both instrument nitrogen valve control switches to "Open".</li></ul> <p><u>NOTE:</u> this activity may be coordinated between the URO and the PRO.</p>
	URO/PRO	<p>Announce an additional entry condition for T-101 based on Reactor level below -48 inches.</p> <p>Operate HPCI and RCIC to restore RPV level to +5 to +35 inches</p>

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 5      Event No.: 5      Page: 11 of 16

**Event Description:** Reactor coolant leak inside the drywell

**Cause:** A leak develops on a weld joint on the suction piping of the "B" reactor recirculation pump after it tripped; the leak size propagates over time.

**Effects:**

1. Initial alarms:
  - 210 F-2 "Drywell Hi-Lo Press"
  - 225 A-4 "Drywell Hi-Lo Press"
2. Drywell pressure and temperature will rise at an increasing rate, eventually leading to a high drywell pressure alarm, ECCS automatic start signals, and PCIS isolation signals. Conditions will escalate requiring the use of containment sprays.

### Time

### Position      Applicant's Actions or Behavior

URO/PRO Recognize and report alarms 210 F-2 "Drywell Hi-Lo Press" and 225 A-4 "Drywell Hi-Lo Press" and enter corresponding Alarm Response Cards.

CRS Enter and execute follow-up actions of OT-101 "High Drywell Pressure":

- When drywell pressure reaches 2 psig, then enter T-101 "RPV Control" and T-102 "Primary Containment Control" and execute concurrently with OT-101.
- Direct additional drywell cooling placed in service.

URO/PRO Maximize drywell cooling by placing all drywell cooler fans to RUN.

CRS Enter and execute T-102 "Primary Containment Control" when drywell pressure reaches 2 psig.

For PC/P:

- Direct torus sprays initiated IAW T-204 "Initiation of Containment Sprays Using RHR".

For DW/T:

- Direct drywell cooling maximized by performing T-223 "DW Cooler Fan Bypass".

For PC/G:

- Direct CAD placed in service as time permits.

Re-enter T-102 when Torus level reaches 14.9 feet, and when Drywell temperature reaches 145 degrees F.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 5      **Event No.:** 5      **Page:** 12 of 16

**Event Description:** Reactor coolant leak inside the drywell (continued)

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	When drywell pressure and temperature plot within the safe region of the Drywell Spray Initiation Limit Curve: <ul style="list-style-type: none"><li>• Direct drywell cooling fans shut down.</li></ul>
<b>CT</b>		<ul style="list-style-type: none"><li>• Direct drywell sprays initiated IAW T-204 "Initiation of Containment Sprays Using RHR".</li></ul>
	URO/PRO	Monitor T-102 parameters (torus temperature, torus level, drywell pressure, torus pressure, drywell temperature) and provide trends to the CRS as appropriate.
	URO	Maximize drywell cooling by performing T-223 "DW Cooler Fan Bypass". Shutdown drywell cooling fans when directed.
	PRO	Spray the torus in accordance with T-204 "Initiation of Containment Sprays Using RHR" ( <b>see Event #7</b> ).
<b>CT</b>		Spray the drywell in accordance with T-204 "Initiation of Containment Sprays Using RHR".
	URO/PRO	Place CAD in service when directed. Monitor RPV level, and report to the CRS RPV level is continuing to lower.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 5      Event No.: 7      Page: 13 of 16

**Event Description:** Pressure instrument failure prevents using containment spray on 1 RHR loop

**Cause:** Drywell pressure input to spray logic permissive not functioning

**Effects:** Prevents containment spray using B (A) loop of RHR, resulting in Drywell temperature rising toward 281 degrees F (the A (B) loop of RHR is available).

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
		<p><u>NOTE:</u> the spray logic failure will effect whichever loop of RHR (B or A) is first selected to spray the containment. The simulator operator will delete the associated override (failure) on the opposite RHR loop to allow spraying the containment with that loop. The steps listed below apply to the B loop of RHR but are the same as those for the A loop of RHR, with the exception of the letter designations.</p>
	PRO	<p>Spray the torus in accordance with T-204 "Initiation of Containment Sprays using RHR":</p> <ul style="list-style-type: none"><li>• Verify System 1 and 2 Drywell Pressure Permits Containment Spray annunciators (224 D-3, 225 B-3) are lit.</li><li>• Place keylock switch 10A-S18B in "MANUAL OVERRIDE".</li><li>• Momentarily place switch 10A-S17B in "MANUAL".</li><li>• Open or verify open MO-2-10-39B "Torus Header".</li><li>• Open or verify open MO-2-10-89B(D) HPSW Hx Outlet".</li><li>• Verify load on EDG supplying selected pumps is below 1400 KW.</li><li>• Start B(D) RHR pump.</li><li>• Start B(D) HPSW pump.</li><li>• Close or verify closed MO-2-10-34B "Full Flow Test".</li><li>• Throttle open MO-2-10-38B "Torus Spray" to obtain 1,000 gpm on FI-2-10-136B.</li></ul>
CT		Recognize and report inability to spray the torus (drywell) with the B (A) loop of RHR.
CT	CRS	Direct the operator to attempt to spray the torus with the opposite loop of RHR.
CT	PRO	As directed, spray the torus using the opposite loop of RHR in accordance with T-204 "Initiation of Containment Sprays using RHR".

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 5      **Event No.:** 8      **Page:** 14 of 16

**Event Description:** HPCI turbine trip / emergency blowdown

**Cause:** Instrument failure

**Effects:** HPCI will trip after Drywell Sprays are in-service, required emergency blowdown

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	Recognize and report alarm 221 B-1 "HPCI Turb Trip" and enter the corresponding Alarm Response Card (as time permits). Dispatch an Equipment Operator to determine the cause of the trip. When report is received from the field, report to the CRS that there is no apparent cause for the HPCI trip.
	CRS	Direct SBLC initiation to augment RPV level control. Direct T-246 "Maximize CRD Flow to the Reactor Vessel"
	URO/PRO	Initiate SBLC for RPV level control, as directed. Perform T-246 "Maximize CRD Flow to the Reactor Vessel."
	CRS	After it is determined RPV level <u>cannot</u> be maintained above -172 inches, exit the RC/L leg of T-101 and enter/execute T-111 "Level Restoration": <ul style="list-style-type: none"><li>• Direct ADS inhibited.</li><li>• Direct Core Spray and LPCI pumps started.</li></ul>
CT		When RPV level drops to -172 inches, enter and execute T-112 "Emergency Blowdown": <ul style="list-style-type: none"><li>• Verify torus level is above 7 feet.</li><li>• Verify reactor pressure is 50 psig above torus pressure.</li><li>• Direct 5 ADS SRVs opened.</li></ul>
	URO/PRO	Inhibit ADS when directed. Verify start of all available Core Spray and LPCI pumps.
CT		When directed, open 5 ADS SRVs by placing their control switches in OPEN.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 5      Event No.: 8      Page: 15 of 16

**Event Description:**      HPCI turbine trip / emergency blowdown (continued)

**Cause:**      Instrument failure

**Effects:**      HPCI will trip after Drywell Sprays are in-service, required emergency blowdown

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
CT	CRS	After T-112 is executed, direct RPV injection maximized with all systems, subsystems, and alternate subsystems. After it is determined RPV level <u>can</u> be maintained above –172 inches, exit T-111 and enter T-101, RPV Control at step RC/L-1. Direct RPV level restored to +5 to +35 inches with Core Spray/RHR.
CT	URO/PRO	Maximize injection with all systems, subsystems, and alternate subsystems. Restore and maintain RPV level +5 to +35 inches, as directed.

### **TERMINATION CRITERIA:**

The scenario may be terminated when the RPV has been depressurized and reactor level has been recovered and controlled.

**Operator Actions**

**ES-D-2**

**Op Test No.:** 1      **Scenario No.:** 5      **Event No.:** 9      **Page:** 16 of 16

**Event Description:** EAL classification

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	CRS	Determine EAL classification using EP-AA-1007. <ul style="list-style-type: none"><li>• Based on the scenario conditions and expected outcome, the CRS will classify the event as FS1 "Loss of the Reactor Coolant System Barrier" and Potential Loss of Fuel Clad Barrier".</li></ul>