

**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
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>	
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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: 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**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR REQUALIFICATION	CODE #:	PLOR-219C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	004
AUTHOR:	M. J. Kelly	TYPIST:	rja
TITLE:	Perform an APRM Scram Margin Check		
APPROVALS:			
		Signature / Title	Date
		Signature / Title	Date
		Signature / Title	Date
		Signature / Title	Date
APPROVED FOR USE:			
		Signature / Title	Date
EFFECTIVE DATE: ____/____/____			

NAME: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>Last</span> <span>First</span> <span>M.I.</span> </div>	ISSUE DATE: _____				
EMPLOYEE ID NO. _____	COMPLETION DATE: _____				
COMMENTS:					
Training Review for Completeness:  _____ <div style="text-align: center;">Signature/Date</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">LMS CODE:</td> <td style="width: 50%;"></td> </tr> <tr> <td>LMS ENTRY:</td> <td></td> </tr> </table>	LMS CODE:		LMS ENTRY:	
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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: 2150300101 / PLOR-219C

K/A: G2.1.31

RO: 4.6

SRO: 4.3

TASK DESCRIPTION: Perform APRM Scram Margin Check

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. This JPM requires performance using either the Simulator NUMAC drawers or the actual Control Room APRM NUMAC drawers. Due to the electronic displays, this JPM should not be "simulated". Normally, this "Control Room" JPM will be performed in the simulator however this JPM may be performed in the actual Control Room on a real APRM NUMAC drawer with no impact on plant operation under the supervision of the shift.
  - 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 should be performed in the Simulator but may be performed in the actual Control Room with no impact on plant operation. Obtain Control Room Supervisor and Unit RO permission prior to performing this JPM and prior to entering the controls area.
7. The evaluator may also select a different APRM if desired (e.g., if APRM #1 NUMAC drawer is out of service).

## B. TOOLS AND EQUIPMENT

A copy of ST-O-001-200-2, Rev. 29, "Turbine Stop Valve Closure and EOC-RPT Functional", with procedure steps marked up and completed up to and including step 6.1.1. The Examinee will continue the surveillance at step 6.1.2.

## C. REFERENCES

1. SO 60A.7.C-2, Rev. 11 "APRM Scram Margin Check"
2. ST-O-001-200-2, Rev. 29, "Turbine Stop Valve Closure and EOC-RPT Functional"

## D. TASK STANDARD

1. Satisfactory task completion is indicated when the student determines the correct scram margin as recorded on SO 60A.7.C-2 Data Sheet 1 and has determined that there is sufficient scram margin to continue with the ST-O-001-200-2.
2. Estimated time to complete: 12 minutes Non-Time Critical

## E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to determine if there is adequate APRM scram margin to perform Turbine Stop Valve Closure testing 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 at full power (approximately 100%).
2. ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional", is in progress.
3. All APRM Channels are operable.

## G. INITIATING CUE

The Control Room Supervisor directs you to perform steps 6.1.2 and 6.1.3 of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional". Inform the Control Room Supervisor when the steps are completed and whether the surveillance can be continued.



## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional".  (Cue: Provide the Examinee a marked up copy of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional" with steps complete up to and including step 6.1.1.)	P	A marked up copy of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional" with steps complete up to and including step 6.1.1 is obtained.
2	Obtain a copy of procedure SO 60A.7.C-2, "APRM Scram Margin Check".  (Cue: The Lead Evaluator may approve handing the Examinee a blank copy of SO 60A.7.C-2, "APRM Scram Margin Check" for review prior to performing the JPM.)	P	A copy of procedure SO 60A.7.C-2, "APRM Scram Margin Check" is obtained.
3	Determine that the APRM Downscale is clear.	P	Observe APRM Downscale lights are NOT lit on Panel 20C05 and /or annunciator 211 C-2 "APRM DOWNSCALE" is clear.
*4	Determine that Step 4.1 of SO 60A.7.C-2 is applicable for Mode 1 operation.	P	Select Step 4.1 of SO 60A.7.C-2 to perform.
<p style="text-align: center;"><b>*****NOTE*****</b></p> <p><b>Step 4.1 of SO 60A.7.C-2 directs the operator to determine Scram setpoints for all operable APRMs. For this JPM, APRM #1 is the selected. A different APRM may be selected by the evaluator if desired (e.g., APRM #1 NUMAC is out of service, or If this JPM is being performed in the Control Room).</b></p>			
5	At selected APRM NUMAC display (APRM #1), depress the "ETC" softkey to obtain the "SHOW PARAMETERS" softkey.	P	At APRM #1 NUMAC display, depress the "ETC" softkey to obtain the "SHOW PARAMETERS" softkey.

STEP NO	STEP	ACT	STANDARD
6	Depress "SHOW PARAMETERS" softkey.	P	Depress "SHOW PARAMETERS" softkey.
*7	Under the "APRM RUN MODE SETPOINTS" section, record the value of "STP UPSCALE TRIP (FLOW BIASED)" on Data Sheet 1 under "APRM SCRAM SETPOINT".	P	Record the value of "STP UPSCALE TRIP (FLOW BIASED)" on Data Sheet 1 under "APRM SCRAM SETPOINT". (NOTE: With simulator reset to IC14, this value should be 116.0%)
8	Depress "EXIT" softkey.	P	Depress "EXIT" softkey.
*9	Record "STP (%)" value on Data Sheet 1 under "APRM CURRENT".	P	Record "STP (%)" value on Data Sheet 1 under "APRM CURRENT". (NOTE: With simulator reset to IC14, this value should be 99.9%)
*10	Determine SCRAM margin by performing the following calculation AND recording the value on Data Sheet 1 under "SCRAM MARGIN":  SCRAM MARGIN = APRM SCRAM SETPOINT - APRM CURRENT = SP - C	P	Correctly calculates APRM #1 Scram Margin on Data Sheet 1:  SCRAM MARGIN = APRM SCRAM SETPOINT - APRM CURRENT  = SP - C  (NOTE: With simulator reset to IC14, the Scram Margin value should be 16.1%)
<p style="text-align: center;"><b>***Note***</b></p> <p><b><u>At this time</u> the Evaluator should inform the Examinee that the remaining 3 APRM Scram Margin checks have been completed with the same results obtained.</b></p>			
<p style="text-align: center;"><b>***Note***</b></p> <p style="text-align: center;"><b>Step 4.2 of SO 60A.7.C-2 is not applicable for the reactor mode condition.</b></p>			

11	Records the date, time, and Scram Margin values in step 6.1.2 of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional".	P	The date, time, and Scram Margin values are filled in for step 6.1.2 of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional". The step is initialed as satisfactory.
*12	Verifies that the Scram Margin for each APRM channel is acceptable to continue ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional".	P	ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional" step 6.1.3 is referenced. 15% Scram Margin is required when reactor power is above 75%. Step 6.1.3 of ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional" is initialed as satisfactory.
13	Inform Control Room Supervisor that the Scram Margin is sufficient to continue the surveillance test.  <b>(Cue: Control Room Supervisor acknowledges report.)</b>	P	Task completion reported.
14	As an evaluator, ensure that you have positive control of all exam material provided to the examinees (Task Conditions/Prerequisites AND procedures.	P	Positive Control Established.

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

#### I. TERMINATING CUE

When the scram margin for APRM #1 has been determined in accordance with SO 60A.7.C-2 "APRM Scram Margin Check", and the determination of whether the ST-O-001-200-2, "Turbine Stop Valve Closure and EOC-RPT Functional" can be continued, the Evaluator may terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 is at full power (approximately 100%).**
- 2. ST-O-001-200-2, “Turbine Stop Valve Closure and EOC-RPT Functional”, is in progress.**
- 3. All APRM Channels are operable.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to perform steps 6.1.2 and 6.1.3 of ST-O-001-200-2, “Turbine Stop Valve Closure and EOC-RPT Functional”. Inform the Control Room Supervisor when the steps are completed and whether the surveillance can be continued.**

**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-220C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #::	001
AUTHOR:	G. Zellmer	TYPIST:	Rja
TITLE:	Print Reading		

APPROVALS:

	Date
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Signature / Title	

APPROVED FOR USE:

	Date
Signature / Title	

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

NAME: _____ <div style="display: flex; justify-content: space-between; font-size: small; margin-top: -10px;"> <span>Last</span> <span>First</span> <span>M.I.</span> </div>	ISSUE DATE: _____				
EMPLOYEE I.D. NO. _____	COMPLETION DATE: _____				
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Training Review for Completeness:  <div style="border-top: 1px solid black; text-align: center; font-size: small; margin-top: 10px;">Signature/Date</div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">LMS CODE:</td> <td style="width: 50%;"></td> </tr> <tr> <td>LMS ENTRY:</td> <td></td> </tr> </table>	LMS CODE:		LMS ENTRY:	
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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: PLOR-220

K/A: 2.2.41

URO: 3.5    SRO: 3.9

TASK DESCRIPTION: Ability to Obtain and Interpret Station Electrical and Mechanical Drawings

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. M-300 sheet 1, Rev. 48, "P&I Diagram Legend" print
2. M-300 sheet 2, Rev. 46, "P&I Diagram Legend" print
3. M-300 sheet 3, Rev. 01, "P&I Diagram Legend" print
4. M-333 Sheet 1, Rev. 57, "P&I Diagram Instrument Nitrogen" print
5. M-333 Sheet 2, Rev. 58, "P&I Diagram Instrument Nitrogen" print

C. REFERENCES

1. M-300 sheet 1, Rev. 48, "P&I Diagram Legend" print
2. M-300 sheet 2, Rev. 46, "P&I Diagram Legend" print
3. M-300 sheet 3, Rev. 01, "P&I Diagram Legend" print
4. M-333 Sheet 1, Rev. 57, "P&I Diagram Instrument Nitrogen" print
5. M-333 Sheet 2, Rev. 58, "P&I Diagram Instrument Nitrogen" print
6. E-1670 sheet 3 Rev 5 "Electrical Schematic Diagram Instrument Nitrogen Compressor 3AK37" print
7. E-1670 sheet 4 Rev 4 "Electrical Schematic Diagram Instrument Nitrogen Compressor 3BK37" print

D. TASK STANDARD

1. Satisfactory task completion is indicated when it has been determined that:
  - a. Solenoid Valve SV-5232A should be energized under the present conditions.
  - b. Solenoid Valve SV-5232A is currently closed.
  - c. Starting the 3BK037 Instrument Nitrogen Compressor will energize the SV-5232B Solenoid Valve after a time delay of 0.5 seconds.
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 status of a degraded component in the Instrument Nitrogen System using the appropriate P&IDs. 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 and Unit 3 are at 100% power with the station in a normal line-up.
- 2) An Equipment Operator reports to the control room that Solenoid Valve SV-5232A is making a humming sound. The Solenoid Valve is located on the discharge of the Unit 3 Instrument Nitrogen Compressor 3AK037 (Between the 3A Instrument Nitrogen Compressor and the 3A Instrument Nitrogen Compressor Aftercooler). The 3AK037 compressor is currently running as the 'LEAD' compressor and the pressure in the Receivers (3AT109 and 3BT109) is rising.
- 3) No other equipment is out of service or in a degraded condition.
- 4) A copy of the latest approved versions of M-300 sheets 1, 2, & 3 as well as M-333 sheets 1 & 2 are being provided to you.

G. INITIATING CUE

The Control Room Supervisor directs you to determine the following:

- A) Should the Solenoid Valve SV-5232A be energized with the 3AK037 Compressor running?
- B) What is the status of SV-5232A right now (is the valve open or closed)?
- C) If the 3BK037 Instrument Nitrogen Compressor is (manually) started momentarily, will the equipment operator be able to compare the 'humming noise' of the SV-5232A Solenoid Valve with the operation of the SV-5232B Solenoid Valve?



## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
N/A	Note to evaluator: The sequence of steps not critical. Nor is it necessary to validate the performance of each step individually. When the trainee makes the correct determinations (either verbally or written), that is sufficient to determine that the below steps have been completed satisfactorily.	N/A	Provide trainee with a written list of 'Task Conditions and Prerequisites' as well as the 'Initiating Cue' Provide trainee with legible copies the latest approved versions of: M-300 sheet 1 M-300 sheet 2 M-300 sheet 3 M-333 sheet 1 M-333 sheet 2
1	Locate the "SV-5232A" on M-333 sheet 2.	P	"SV-5232A" Solenoid Valve is located at coordinates B-6 on M-333 Sheet 2.
2	Locate 'NOTE 4' on the 'Notes' section of M-333 sheet 1.	P	NOTE 4 is located at coordinates F-1 on M-333 Sheet 1.
3	Determine that the "SV-5232A" Solenoid Valve unloads the 3AK037 Compressor for starting (while Solenoid Valve is de-energized).	P	Solenoid Valve SV-5232A opens when the coil is de-energized and allows the discharge of the 3AK037 Compressor to flow directly to the Compressor Inlet (unloading the compressor).
4	Determine that SV-5232A Solenoid Valve is designed to be energized (and closed) when the compressor is running.	P	The electrical connection to the solenoid valve is associated with the compressor Hand Switch and the Auto Start features of the Compressor (solenoid is labeled N.E.).
5	Determine that the SV-5232A Solenoid Valve must be closed in order for the compressor to load and function properly.	P	Compressor will not be able to develop high discharge pressure if a direct flow path exists between the Compressor discharge and the Compressor suction.
6	Determine that SV-5232A has a time delay that prevents the Solenoid Valve from energizing for 0.5 seconds following a start to the 3AK037 Compressor	P	The logic symbol for 'function time delay' is identified (symbol is listed on M-300 sheet 1).
7	Determine that SV-5232B Solenoid Valve is designed to work in the same manner as SV-5232A.	P	Logic lines and symbols used for the SV-5232A Solenoid Valve are identical to the logic lines and symbols used for the SV-5232B Solenoid Valve.

STEP NO	STEP	ACT	STANDARD
*8	Control Room Supervisor informed of the status and determinations made concerning the Unit 3 Instrument Nitrogen System.  <b>(Cue: Acknowledge report.)</b>	P	Inform the Control Room Supervisor that (this may be done verbally or written – response does not have to match the below listed standards word for word): <ul style="list-style-type: none"> <li>• Solenoid Valve SV-5232A should be energized with the 3AK037 Compressor running</li> <li>• Solenoid Valve SV-5232A is currently closed (Valve is energized to close)</li> <li>• Starting the 3BK037 Compressor will allow a comparison of SV-5232A and SV-5232B provided the 3BK037 Compressor is run for longer than 0.5 seconds.</li> </ul>
9	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites <b><u>AND</u></b> procedures/prints).	P	<b>Positive control established.</b>

Under “ACT” P - must perform  
S - must simulate

#### I. TERMINATING CUE

When the trainee has provided his determinations to the questions given in the 'Initiating Cue', then the evaluator may terminate this JPM session.

## **TASK CONDITIONS/PREREQUISITES**

- Unit 2 and Unit 3 are at 100% power with the station in a normal line-up.
- An Equipment Operator reports to the control room that Solenoid Valve SV-5232A is making a humming sound. The Solenoid Valve is located on the discharge of the Unit 3 Instrument Nitrogen Compressor 3AK037 (Between the 3A Instrument Nitrogen Compressor and the 3A Instrument Nitrogen Compressor Aftercooler). The 3AK037 compressor is currently running as the 'LEAD' compressor and the pressure in the Receivers (3AT109 and 3BT109) is rising.
- No other equipment is out of service or in a degraded condition.
- A copy of the latest approved versions of M-300 sheets 1, 2, & 3 as well as M-333 sheets 1 & 2 are being provided to you.

## **INITIATING CUE**

The Control Room Supervisor directs you to determine the following:

- Should the Solenoid Valve SV-5232A be energized with the 3AK037 Compressor running?
- What is the status of SV-5232A right now (is the valve open or closed)?
- If the 3BK037 Instrument Nitrogen Compressor is (manually) started momentarily, will the equipment operator be able to compare the 'humming noise' of the SV-5232A Solenoid Valve with the operation of the SV-5232B Solenoid Valve?

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-218C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	006
AUTHOR:	M. J. Kelly	TYPIST:	mda
TITLE:	EVALUATE A P1 EDIT FROM 3D MONICORE AND TAKE CORRECTIVE ACTION FOR A THERMAL LIMIT VIOLATION		
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 NO. _____		COMPLETION DATE: _____	
COMMENTS:			
Training Review for Completeness:  _____ Signature/Date		LMS CODE:	
		LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2830150401 / PLOR-218C K/A: 2.1.7

SRO: 4.7

TASK DESCRIPTION: Resolution of Thermal Limit Violation

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. JPM Attachment 2, Prepared Official 3D P1 Edit on green colored paper

C. REFERENCES

1. GP-13 Rev. 23, "Resolution of Thermal Limit Violations"
2. GP-5-3 Rev. 001, "Power Operations"
3. Technical Specification 3.2.2, "Minimum Critical Power Ratio (MCPR)"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the examinee has determined that MFLCPR is above 1.000, a reactor power reduction using GP-5, "Power Operations" and entry into Technical Specification 3.2.2, "Minimum Critical Power Ratio (MCPR)" are required.
2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, review the initial 3D Monitor Case (P1) edit run following a recent Unit 3 power ascension. Identify any unsatisfactory data points and document any actions that are 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 3 reactor power is currently stable at 100%.
2. Reactor power was recently raised from 90% to 100% following a rod pattern adjustment in accordance with GP-5, "Power Operations."
3. A valid OFFICIAL 3D Monitor Case (P1) edit has just been run to assess the reactor power ascension.
4. The Plant Monitoring System (PMS) and 3D MONICORE were operable at the time the OFFICIAL 3D Monitor Case (P1) edit was run. The OFFICIAL 3D Monitor Case [P1] has no unexplained changes to its input parameters.

G. INITIATING CUE

As the CRS, review the official Unit 3 3D Monitor Case (P1) edit provided. On the cue sheet, list all unsatisfactory data points and document all actions/notifications that are required by applicable procedures or Technical Specifications / Technical Requirements Manual, and record what document / step number requires the action/notification.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>***NOTE ***</b></p> <p align="center"><b>Provide examinee with the official Unit 3 3D Monitor Case (P1) Edit (Attachment 2 of this JPM). Ensure it is printed on green paper.</b></p>			
1	Review the official 3D P1 edit.	P	Reviews 3D P1 edit to ensure Core Thermal Limits are within specified limits. Focuses on MFLCPR, MFLPD, MAPRAT and FLLP values toward the top of the page.
*2	Determine MFLCPR is above 1.000 in one location (19-20).  (Cue: As the Shift Manager, request the examinee to determine what actions, if any, need to be performed to resolve the thermal limit violation.)	P	States and / or records on the cue sheet that a MFLCPR value of 1.001 is listed at core location 19-20.
3	Obtain and enter GP-13, "Resolution of Thermal Limit Violations."	P	Obtains and enters GP-13, "Resolution of Thermal Limit Violations."
4	Notify Shift Management and Reactor Engineers that MFLCPR is above 1.000. (GP-13, step 3.1)  (Cue: Acknowledge notifications.)	P	States and / or records on the cue sheet that Shift Management and Reactor Engineering require notification of core thermal limit violation as required by GP-13, step 3.1.
*5	Determine that Reactor power must be reduced with the assistance of Reactor Engineering in accordance with GP-5, "Power Operations" to restore MFLCPR to below 1.000.  (GP-13, step 3.2)	P	States and / or records on the cue sheet that a GP-5 power reduction is required to restore MFLCPR to below 1.000 as required by GP-13, step 3.2.
6	Examine the OFFICIAL 3D Monitor Case (P1) for unexplained changes to its input parameters.  (GP-13, step 3.5)	P	As stated in the cue, the OFFICIAL 3D Monitor Case [P1] has no unexplained changes to its input parameters. This action is required by GP-13, step 3.5.
<p align="center"><b>***NOTE ***</b></p> <p align="center"><b>For the following step the other unit, Unit 2, Tech Spec LCO applicability is <math>\geq</math> 23% RTP following EPU.</b></p>			

STEP NO	STEP	ACT	STANDARD
*7	Determine that TS LCO 3.2.2 "Minimum Critical Power Ratio (MCPR)" is not met and state the associated action requirements a and b.	P	Identifies TS LCO 3.2.2 is not met and MFLCPR must be restored to below 1.000 within 2 hours <u>or</u> thermal power must be reduced to below 25% RTP within the next 4 hours.  MFLCPR $\leq$ 1.000 means that MCPR is restored to within limits of the Core Operating Limits Report (COLR)
8	Determine that a Condition Report should be written to address the thermal limit violation.  (GP-13, step 3.11)	P	States and / or records on the cue sheet that a Condition Report should be written to address the thermal limit violation.
9	As the evaluator, ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites <u>AND</u> procedures).	P	<b>Positive control established.</b>

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

#### I. TERMINATING CUE:

When the examinee has reviewed the 3D Monitor Case (P1) edit and determined actions associated with the thermal limit violation, the evaluator may terminate the exercise.



## TASK CONDITIONS / PREREQUISITES

1. Reactor power was recently raised from 90% to 100% following a rod pattern adjustment in accordance with GP-5, "Power Operations."
2. Unit 3 reactor power is currently stable at 100%.
3. A valid OFFICIAL 3D Monitor Case (P1) edit has just been run to assess the reactor power ascension.
4. The Plant Monitoring System (PMS) and 3D MONICORE were operable at the time the OFFICIAL 3D Monitor Case (P1) edit was run. The OFFICIAL 3D Monitor Case [P1] has no unexplained changes to its input parameters.

## INITIATING CUE

As the CRS, review the official 3D Monitor Case (P1) edit provided.

On the cue sheet, list all Unit 3 unsatisfactory data points and document all actions/notifications that are required by applicable procedures or Technical Specifications / Technical Requirements Manual, and record what document / step number requires the action/notification

Unsatisfactory data points (if any)

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Required actions (if any)

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# **Official 3D P1 Edit**

## CORE PARAMETERS

POWER MWT 3514  
 POWER MWE 1170  
 FLOW MLB/HR 91.380  
 FPAPDR 0.775  
 SUBC BTU/LB 29.02  
 PR PSia 1033.8  
 CORE MWD/ST 27938.9  
 CYCLE MWD/ST 12409.2  
 MCPR 1.348

## 3DM/P11

PERIODIC LOG  
 AUTOMATIC  
 CALC RESULTS

KEFF 1.0000  
 XE WORTH % -2.47  
 XE/RATED 1.12  
 AVE VF 0.433  
 FLLP 0.947

(Current time/date minus 10 minutes) CALCULATED

(Current time/date) PRINTED

CASE ID FMLS1020404155957

RESTART FMLS1020404135957

LPRM SHAPE - FULL CORE

## LOAD LINE SUMMARY

CORE POWER 100.0%  
 CORE FLOW 90.5%  
 LOAD LINE 113.2%

CORRECTION FACTOR:  
 OPTION: ARTS

MFLCPR=1.000  
 2 LOOPS ON

MFLPD=1.000  
 MANUAL FLOW

MAPRAT=1.000  
 MCPRLIM = 1.350

ZBB = 2.96 ft  
 FCBB = N/A

## MOST LIMITING LOCATIONS (NON-SYMMETRIC)

MFLCPR	LOC	MFLPD	LOC	MAPRAT	LOC	PCRAT	LOC
1.001	19-20	0.729	25-54- 5	0.978	27-52- 5	0.695	25-52- 5
0.978	29-52	0.724	53-26- 5	0.931	51-28- 5	0.695	51-26- 6
0.888	25-52	0.720	25-52- 5	0.925	17-50- 5	0.691	19-50- 5
0.881	27-50	0.711	51-26- 6	0.924	19-52- 5	0.689	49-20- 5
0.881	35-26	0.711	19-50- 5	0.922	51-20- 5	0.683	25-54- 5
0.879	25-44	0.707	49-20- 5	0.920	49-18- 5	0.683	17-52- 5
0.879	49-28	0.694	49-28- 5	0.904	43-28- 5	0.679	35-26- 5
0.877	43-30	0.694	35-26- 5	0.903	41-26- 5	0.678	51-18- 5
0.875	51-32	0.694	17-52- 5	0.894	49-26- 5	0.678	41-20- 6
0.874	43-26	0.692	41-20- 6	0.888	23-52- 5	0.677	53-26- 5

SEQ. A-2	C=MFLCPR	D=MFLPD	M=MAPRAT	P=PCRAT	*=MULTIPLE	NOTCH	CORE AVE AXIAL REL PW	LOC										
							0.147	25										
						00	0.350	24										
59						02	0.679	23										
L						04	0.852	22										
55						06	0.963	21										
51						08	1.067	20										
L						10	1.129	19										
47		14	36	14		12	1.134	18										
43						14	1.093	17										
L						16	1.120	16										
39	14		00	14		18	1.114	15										
35						20	1.097	14										
L						22	1.130	13										
31	36	00	00	36		24	1.151	12										
27						26	1.156	11										
L						28	1.184	10										
23	14		00	14		30	1.225	09										
19		C				32	1.243	08										
L						34	1.235	07										
15		14	36	14		36	1.256	06										
11						38	1.250	05										
L						40	1.188	04										
07						42	1.086	03										
03						44	0.811	02										
	02	06	10	14	18	22	26	30	34	38	42	46	50	54	58	46	0.340	01

## CORE AVERAGE RADIAL POWER DISTRIBUTION

RING #	1	2	3	4	5	6	7	8
REL PW	1.020	1.229	1.092	1.261	1.097	1.257	1.070	0.523

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR -279C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	002
AUTHOR:	R. J. Artus	TYPIST:	rja
TITLE:	Evaluate Overtime Work Request		
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:  _____ Signature/Date		LMS CODE:	
		LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2991120301 – PLOR-279C K/A: G2.1.5  
SRO: 3.9

TASK DESCRIPTION: Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.

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. LS-AA-119 "Fatigue Management and Work Hour Limits"
2. OP-PB-101-111-1002, "Peach Bottom Operations Overtime Guidelines"

C. REFERENCES

1. LS-AA-119, Rev. 11, "Fatigue Management and Work Hour Limits"
2. OP-PB-101-111-1002, Rev. 6, "Peach Bottom Operations Overtime Guidelines"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the candidate successfully assesses the work hour limits and documents findings on the cue sheet.
2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to review the work history provided, determine whether or not you are able to cover the requested shift AND determine if any work hour limits have already been violated, using appropriate procedures. I will describe initial conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The present time/date is 0300 hours on 2/16.
2. In accordance with OP-PB-101-111-1002, "Peach Bottom Operations Overtime Guidelines", the Shift Manager has directed the WECS to review the availability of RO #1 to work Dayshift 2/16 for load drop coverage.
3. RO #1 was on vacation for two weeks, returning to work on Sunday, 2/3.
4. RO #1 work history for the previous two weeks is as follows, with all hours having been in posted Licensed Reactor Operator positions.

Sunday 2/3	Monday 2/4	Tuesday 2/5	Wednesday 2/6	Thursday 2/7	Friday 2/8	Saturday 2/9
Worked 1900 – 0700	Worked 1900 - 0700	OFF	Worked 1900 - 1100	Worked 1900 - 0700	OFF	OFF
Sunday 2/10	Monday 2/11	Tuesday 2/12	Wednesday 2/13	Thursday 2/14	Friday 2/15	Saturday 2/16
Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Request: 0700 to 1900

## G. INITIATING CUE

Using the work history provided:

1. Determine whether or not RO #1 is able to cover the required shift.
2. If applicable, document all work hour limits that would be exceeded if RO #1 works on Saturday 2/16.
3. Determine whether or not RO #1 has already violated any work hour limits.
4. If applicable, document all work hour limits that have already been exceeded.
5. Document your results on the Cue sheet provided.

## H. PERFORMANCE CHECKLIST

	<p align="center"><b>Evaluator Cue:</b></p> <p align="center"><b>Along with the Cue Sheet, provide candidate with copy of procedures OP-PB-101-111-1002, "Peach Bottom Operations Overtime Guidelines AND LS-AA-119 "Fatigue Management and Work Hour Limits".</b></p>		
1	Review work history, OP-PB-101-111-1002, and LS-AA-119 to determine if able to work requested shift.	P	Candidate reviews procedures for Work Hour limits and reviews work history provided.
*2	Determine that working the requested future shift will result in exceeding work hour limits.	P	Circles "Cannot" on the cue sheet for question #1.
*3	Identifies work hour limits exceeded if RO #1 works on Saturday 2/16.	P	Determines that working the requested shift would result in exceeding 72 hours in any 7-day period (Sunday, 2/10 through Friday, 2/15 shows 72 hours worked. Working Saturday would result in exceeding 72 hours in the 7-day period)
*4	Determines whether or not RO #1 has already violated any work hour limits.	P	Circles "Yes" on the cue sheet for question #3.
*5	Determine that the break between shifts from Thursday 2/7 to Friday 2/8 was less than the required 10 hours.	P	Documents less than a 10 hour break between 2/7 to 2/8 on the cue sheet for question #4.
*6	Determine that shifts Thursday 2/7 to Friday 2/8 were greater than 26 hours worked in 48-hour period.	P	Documents greater than 26 hours worked (actual of 28 hours) in the 48-hour period over 2/7 to 2/8.
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



## I. TERMINATING CUE

When review is complete and the cue sheet has been completed, the evaluator will terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. The present time/date is 0300 hours on 2/16.
2. In accordance with OP-PB-101-111-1002, "Peach Bottom Operations Overtime Guidelines", the Shift Manager has directed the WECS to review the availability of RO #1 to work Dayshift 2/16 for load drop coverage.
3. RO #1 was on vacation for two weeks, returning to work on Sunday, 2/3.
4. RO #1 work history for the previous two weeks is as follows, with all hours having been in posted Licensed Reactor Operator positions.

Sunday 2/3	Monday 2/4	Tuesday 2/5	Wednesday 2/6	Thursday 2/7	Friday 2/8	Saturday 2/9
Worked 1900 – 0700	Worked 1900 - 0700	OFF	Worked 1900 - 1100	Worked 1900 - 0700	OFF	OFF
Sunday 2/10	Monday 2/11	Tuesday 2/12	Wednesday 2/13	Thursday 2/14	Friday 2/15	Saturday 2/16
Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Worked 0700 - 1900	Request: 0700 to 1900

## INITIATING CUE

Using the work history provided:

1. Determine whether or not RO #1 is able to cover the required shift.  
  
Circle one: Can / Cannot
2. If applicable, document all work hour limits that would be exceeded if RO #1 works on Saturday 2/16.

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3. Determine whether or not RO #1 has already violated any work hour limits.  
  
Circle one: Yes / No

4. If applicable, document all work hour limits that have already been exceeded.

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-222C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	002
AUTHOR:	M. J. Kelly	TYPIST:	mjk
TITLE:	REVIEW A TEMPORARY PROCEDURE CHANGE		
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:  _____ Signature/Date		LMS CODE: _____	
		LMS ENTRY: _____	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 3421130302 / PLOR-222C

K/A: 2.2.6

SRO: 3.6

TASK DESCRIPTION: Knowledge of the process for making changes to procedures

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. ST-R-003-495-2 marked-up with a proposed Temporary Change to steps 5.8, 6.17.1.2, and Data Sheet 3 for changing the control rod insertion time criteria to position "36" from a maximum of 1.08 seconds to 1.15 seconds.
  - a. TC Form AD-PB-101-1003 F-01 should be on white colored paper
2. AD-PB-101-1003, Rev. 14, "Temporary Changes to Approved Documents and Partial Procedure Use"
3. AD-PB-101-1003-F-01, with first three sections filled out. See Attachment 2 of this JPM for an example.

## C. REFERENCES

1. ST-R-003-495-2, Rev. 7 "CRD Scram Insertion Timing of Selected Control Rods During Hydro"
2. AD-PB-101-1003, Rev. 14, "Temporary Changes to Approved Documents and Partial Procedure Use"

## D. TASK STANDARD

1. Satisfactory task completion is indicated when the Shift Management review has been completed and it has been identified that the proposed temporary change results in change of intent and the Temporary Change is disapproved pending resolution of the problem.
2. Estimated time to complete: 10 minutes Non-Time Critical

## E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to review a Temporary Change to a procedure 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 in a refueling outage.
2. A Temporary Change has been prepared for ST-R-003-495-2, "CRD Scram Insertion Timing of Selected Control Rods During Hydro". Steps 5.8, 6.17, and Data Sheet 3 have been modified.

## G. INITIATING CUE

You have been assigned as the SRO Reviewer for the temporary change to the surveillance procedure. Review and approve the temporary change to ST-R-003-495-2, "CRD Scram Insertion Timing of Selected Control Rods During Hydro".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p style="text-align: center;"><b>*** Note ***</b></p> <p style="text-align: center;"><b>Provide marked up procedure change AND a copy of procedure AD-PB-101-1003 to the Examinee.</b></p>			
1	Review ST-R-003-495-2 temporary procedure change.	P	Review the procedure change and compare it to the Change of Intent Screening criteria in AD-PB-101-1003.
*2	Identify a change of intent due to: <ul style="list-style-type: none"> <li>a change to the acceptance criteria that decreases the margin of acceptance (step 3.2.1),</li> </ul> and/or <ul style="list-style-type: none"> <li>a change to technical specifications (step 3.2.1)</li> </ul>	P	Identify that the proposed change to steps 5.8, 6.17.1.2, and Data Sheet 3 constitutes a "change of intent" in accordance with AD-PB-101-1003 step 2.1 and 3.2.1 due to: <ul style="list-style-type: none"> <li>a change to the acceptance criteria that decreases the margin of acceptance,</li> </ul> and/or <ul style="list-style-type: none"> <li>a change to technical specifications</li> </ul> <p style="text-align: center;"><b>Either of the above choices is acceptable</b></p>
*3	Disapprove the procedure change. (Cue: Acknowledge the disapproval.)	P	Disapprove the temporary procedure change.
4	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 review of ST-R-003-495-2 has been completed, and the temporary procedure change is disapproved, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 is in a refueling outage.**
- 2. A Temporary Change has been prepared for ST-R-003-495-2, "CRD Scram Insertion Timing of Selected Control Rods During Hydro". Steps 5.8, 6.17, and Data Sheet 3 have been modified.**

## **INITIATING CUE**

**You have been assigned as the SRO Reviewer for the temporary change to the surveillance procedure. Review and approve the temporary change to ST-R-003-495-2, "CRD Scram Insertion Timing of Selected Control Rods During Hydro".**



**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-256C
<b>COURSE:</b>	LICENSED OPERATOR REQUALIFICATION	<b>REV #:</b>	002
<b>AUTHOR:</b>	M. J. Kelly	<b>TYPIST:</b>	Jav
<b>TITLE:</b>	REVIEW AND APPROVE PRIMARY CONTAINMENT PURGE/VENT ISOLATION VALVE CUMULATIVE HOUR LOG		
<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>  _____		<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: 2270140201 / PLOR-256C K/A: G2.3.13  
SRO: 3.8

TASK DESCRIPTION: Perform Primary Containment Purge/Vent Isolation Valve Cumulative Log.

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. Calculator
2. Copy of ST-O-007-560-2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log".
3. A calculation error made on Data Sheet 1 such that "Accumulated Total Time Since Beginning of Calendar Year" is greater than 90 hours, with the procedure completed to indicate total time is less than 90 hours (use Attachment 2 of this JPM for exact values).

C. REFERENCES

1. ST-O-007-560-2, Rev. 2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log".

D. TASK STANDARD

1. Satisfactory task completion is indicated when the Shift Management review has been completed, the calculation error on Data Sheet 1 identified, and the total accumulated time a purge/vent valve is open has been determined to be greater than 90 hours.
2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to review the Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. The "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log" for Unit 2 (ST-O-007-560-2) has been completed.
2. The "Accumulated Total Time Since Beginning of Year" is greater than 80 hours. Shift Management has been notified as required by Step 6.1.6.

G. INITIATING CUE

You are the Work Control Supervisor. Perform the Plant Staff review and approval of ST-O-007-560-2, "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log". Document all errors on procedure copy, if applicable.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	<b>Cue: Hand the Examinee a completed copy of ST-O-007-560-2," Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log" with Data Sheets 1 and 2 data filled in by hand from Attachment 2 of this JPM.</b>		
2	Review ST-O-007-560-2 for completeness.	P	Verifies all procedure steps, Data Sheet 1, and Data Sheet 2 have been completed satisfactorily.
3	Verify calculations.	P	Performs all calculations that were done on Data Sheet 1 to verify they are correct and properly recorded.
*4	Recognize calculation errors.	P	<p>Recognizes the following calculation errors on Data Sheet 1:</p> <ol style="list-style-type: none"> <li>1. Second row of the "Flow Path Open Total Time" column should be 17 Hr, 4 Min versus 5 Hr, 4 Min.</li> <li>2. Fourth row of the "Accumulated Total Time Since Beginning of Calendar Year" column total is incorrect...one additional hour should be added.</li> </ol> <p><b>NOTE:</b> the "critical" part of this step is to recognize the first error and the fact that the accumulated total time has exceeded 90 hours.</p>
*5	Determines the "Accumulated Total Time Since Beginning of Year" is beyond the Acceptance Criteria specified in Step 5.0.	P	Determines the "Accumulated Total Time Since Beginning of Year" is 93 Hr, 22 Min versus 80 Hr, 22 Min.
6	<p>Notify Shift Management of unsatisfactory test results.</p> <p>(Cue: Acknowledge report.)</p>	P	Reports to Shift Manager and/or Control Room Supervisor that the "Accumulated Total Time Since Beginning of Year" is greater than 90 hours.
7	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 review of ST-O-007-560-2 has been completed, the calculation error on Data Sheet 1 identified, and the total accumulated time a purge/vent valve is open has been determined to be greater than 90 hours, the evaluator will terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. The “Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log” for Unit 2 (ST-O-007-560-2) has been completed.**
- 2. The “Accumulated Total Time Since Beginning of Year” is greater than 80 hours. Shift Management has been notified as required by Step 6.1.6.**

## **INITIATING CUE**

**You are the Work Control Supervisor.**

**Complete the Plant Staff review and approval of ST-O-007-560-2, “Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log”.**

**Document all errors on procedure copy, if applicable.**

**Exelon Nuclear**

Peach Bottom

Unit 2

Routine Test

**2**

ST-O-007-560-2

Rev. 2

Page 1 of 8

HJM:hjm

**ST-O-007-560-2****PRIMARY CONTAINMENT PURGE/VENT ISOLATION VALVE  
CUMULATIVE HOUR LOG**

TEST FREQUENCY: Once/Shift (See Section 1.0)

TECH SPEC: 3.6.1.3

APPLICABILITY: None

**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 **R** steps are**SATISFACTORY**B: One or More **R** steps are**UNSATISFACTORY**

Refer to Section 9.0 for Corrective Action

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 or ETT#: \_\_\_\_\_**4**Reviewed/Approved  
Plant Staff:

Printed Name

Time

Date

Initials

**1.0 PURPOSE**

This test tracks the total hours the 6" and 18" Primary Containment Purge/Vent Isolation Valves are open when Reactor pressure is greater than 100 PSIG, and Reactor is in Mode 1 or 2 for the calendar year for Tech Spec 3.6.1.3 Condition E. This test is issued weekly and performed once per shift. **CM-1**

**2.0 TEST EQUIPMENT**

None

**3.0 PREREQUISITES**

Initial

**3.1 Test Initiation**

None

**3.2 Document Review****3.2.1**

**ENSURE** procedure is current revision.

R.O.

**3.2.2**

**IF** this test is being performed for the first time this calendar year, **THEN ENTER** "0" on Data Sheet 1 the Total Hours to date in "Total Fwd" space **AND N/A** Step 3.2.3. **OTHERWISE, N/A** this step.

N/A

**3.2.3**

**OBTAIN** a copy of last performed ST-O-007-560-2 "Primary Containment Purge/Vent Isolation Valve Cumulative Hour Log" **AND RECORD** on Data Sheet 1 the Total Hours to date in "Total Fwd" space.

N/A

IV

**3.3 Equipment Configuration****3.3.1**

**VERIFY** the following conditions exists:

1. Reactor is in Mode 1 or 2.

R.O.

RO

2. Reactor pressure is greater than 100 PSIG.

R.O.

RO

**3.4 Required Redundant Safety Related Equipment**

None



### 3.5 Approval to Start Test

3.5.1 **OBTAIN** RO Permission to begin. Time M/D/YY R.O.  
Time Date RO

## 4.0 PRECAUTIONS, LIMITATIONS, AND GENERAL INSTRUCTIONS

### 4.1 Plant Impact Statement

4.1.1 This does **NOT** impact plant availability in any manner. This test is only performed when Reactor pressure is greater than 100 PSIG **AND** Reactor is in Mode 1 **OR** 2.

### 4.2 Precautions

None

### 4.3 Limitations

None

### 4.4 General Instructions

4.4.1 **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.

4.4.2 **IF** any Black Box is initialed, **THEN STOP** the test **AND RETURN** the equipment to a safe condition **AND NOTIFY** the RO or SMgt.

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

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

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

## 5.0 ACCEPTANCE CRITERIA

The total accumulated time a purge or vent flow path exists when Reactor pressure is greater than 100 PSIG and Reactor is in Mode 1 or 2 is less than 90 hours/year.

**6.0 PERFORMANCE STEPS**Initial  
Sat UnSat**6.1 Data Acquisition****NOTE**

All data and sign-offs for the following steps are located on Data Sheets 1 and 2.

< At Control Room Panel 20C003-03 >

**6.1.1 INDICATE** with a Check Mark "√" flow path(s) used **OR N/A** for non-use **AND INITIAL AND DATE** once per shift on Data Sheet 2.

**6.1.2 RECORD** time any flow path is open **AND** Reactor pressure is GREATER than 100 PSIG **AND** Reactor is in Mode 1 or 2.

**6.1.3 RECORD** time all flow paths are closed **OR** Reactor pressure is LESS than 100 PSIG **OR** Reactor is in Mode 3, 4, or 5.

**6.1.4 CALCULATE AND RECORD** "Flow Path Open Total Time".

**6.1.5 CALCULATE AND RECORD** "Accumulated Total Time Since Beginning of Calendar Year".

**6.1.6 NOTIFY** SMgt once "Accumulated Total Time Since Beginning of Calendar Year" is greater than 80 hours.

**6.1.7 VERIFY** "Accumulated Total Time Since Beginning of Calendar Year" is less than 90 hours **AND INITIAL** block on Data Sheet 1.

**6.1.8 IF** NO calculations were performed then **VERIFY** "Accumulated Total Time Since Beginning of Calendar Year" is less than 90 hours. **N/A IF** calculations were performed.

R R.O.

**7.0 PROCEDURE COMPLETION**Initial**7.1 Independent Verification**

**7.1.1** **WHEN** weekly data is collected, **THEN VERIFY** calculations are correct. **N/A IF** NO calculations were performed.

I.V.  
IV**7.2 Records Completion**

**7.2.1** **COMPLETE** Section 2 of Cover Page (and Section 3 **IF** applicable).

R.O.**8.0 REFERENCES****8.1 Governing**

**8.1.1** Tech Spec 3.6.1.3 Condition E.

**8.1.2** CM-1, Req to Spec Accum Time for Purge/Vent Path to 90 HRS (T03820)

**8.2 Interfacing**

None

**8.3 Developmental**

**8.3.1** Letter of Thomas Ippolito, NRC to Edward Bauer, Jr., PECO dated November 29, 1978.

**8.3.2** This procedure supersedes RT-O-007-560-2.

**9.0 CORRECTIVE ACTIONS**

**IF** corrective actions are necessary, **THEN INITIATE** an Issue to correct problems.

[illegible]

**DATA SHEET 1**  
**6" AND 18" FLOW PATH TOTAL HOUR LOG**

Any 6" or 18" Flow Path OPEN <b>AND</b> Reactor pressure GREATER than 100 PSIG <b>AND</b> Reactor in Mode 1 or 2.		All 6" or 18" Flow Path CLOSED <b>OR</b> Reactor pressure LESS than 100 PSIG <b>OR</b> Reactor in Mode 3, 4, or 5.		Flow Path Open Total Time	Accumulated Total Time Since Beginning of Calendar Year (Note 1)	Accumulated Total Time Since Beginning of Calendar Year < 90 hrs
TIME	DATE	TIME	DATE	(Hours & Minutes)	Total Fwd: <b>61 Hr, 28 Min</b>	Initial Sat <u>    </u> Unsat <u>    </u>
0131	03/19/13	0411	03/19/13	2 Hr, 40 Min	64 Hr, 8 Min	R <u>RO</u> <input type="checkbox"/>
0428	03/19/13	2132	03/19/13	5 Hr, 4 Min	69 Hr, 12 Min	R <u>RO</u> <input type="checkbox"/>
2147	03/19/13	2319	03/19/13	1 Hr, 32 Min	70 Hr, 44 Min	R <u>RO</u> <input type="checkbox"/>
0916	03/23/13	1706	03/23/13	7 Hr, 50 Min	77 Hr, 34 Min	R <u>RO</u> <input type="checkbox"/>
1154	03/24/13	1442	03/24/13	2 Hr, 48 Min	80 Hr, 22 Min	R <u>RO</u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>
						R <u>    </u> <input type="checkbox"/>

NOTE 1: **IF** "Accumulated Total Time Since Beginning of Year" is greater than or equal to 80 hrs, **THEN NOTIFY** SMgt.

## DATA SHEET 2

DAY / SHIFT		DATE	FLOW PATHS USED (See below)							Initial <u>Sat</u> <u>Unsat</u>	
			1	2	3	4	5	6	7		
MON	D	03/18/13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
	N	"	N/A	N/A	√	√	√	√	N/A	R.O.	_____
TUE	D	03/19/13	N/A	N/A	N/A	√	N/A	√	N/A	R.O.	_____
	N	"	N/A	N/A	√	√	√	√	N/A	R.O.	_____
WED	D	03/20/13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
	N	"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
THUR	D	03/21/13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
	N	"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
FRI	D	03/22/13	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
	N	"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
SAT	D	03/23/13	N/A	√	N/A	N/A	√	N/A	N/A	R.O.	_____
	N	"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____
SUN	D	03/24/13	√	√	N/A	N/A	√	√	N/A	R.O.	_____
	N	"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	R.O.	_____

1. AO-2-07B-2519 and AO-2-07B-2520 OPEN in a Drywell N2 Purge Flowpath
2. AO-2-07B-2519 and AO-2-07B-2521B OPEN in a Torus N2 Purge Flowpath
3. AO-2-07B-2505 and AO-2-07B-2520 OPEN in a Drywell Purge Supply Flowpath
4. AO-2-07B-2521A and AO-2-07B-2521B OPEN in a Torus Purge Supply Flowpath
5. AO-2-07B-2506 and AO-2-07B-2507 OPEN in a Drywell Exhaust Flowpath
6. AO-2-07B-2511 and AO-2-07B-2512 OPEN in a Torus Exhaust Flowpath
7. Abnormal Flowpath.

Description: \_\_\_\_\_

D = Day Shift - 6:30a - 6:30p  
 N = Night Shift - 6:30p - 6:30a

**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-153C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #::	000
AUTHOR:	R. J. Artus	TYPIST:	Rja
TITLE:	EAL CLASSIFICATION AND STATE/LOCAL NOTIFICATIONS FOR AN ALERT – INABILITY TO MAINTAIN PLANT IN COLD SHUTDOWN		
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 NO. _____	COMPLETION DATE: _____	
COMMENTS:		
Training Review for Completeness:	LMS CODE:	
_____ Signature/Date	LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007510502 / PLOR-235C

K/A: 2.4.41

SRO: 4.6

TASK DESCRIPTION: Classification of Emergencies and PARs

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.
  - c. Applicable JPM Work Practice Standards, TQ-JA-150-04 graded satisfactorily.
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. Ensure there are multiple copies of EP binders available that contain all the procedures listed below in the References Section C.
2. Copy of PMS Met Data screen that displays a wind direction of 75 degrees and a wind speed of 5 mph.

## C. REFERENCES

1. EP-AA-111 Rev. 19, "Emergency Classification and Protective Action Recommendations"
2. EP-AA-111-F-08 Rev. G, "Limerick / Peach Bottom Plant Based PAR Flowchart"
3. EP-AA-112-100 Rev. 13, "Control Room Operations"
4. EP-AA-112-100-F-01 Rev. U, "Shift Emergency Director Checklist"
5. EP-AA-114-F-02 Rev A, "BWR Release in Progress Determination Guidance"
6. EP-MA-114-100 Rev. 20, "Mid-Atlantic State/Local Notifications"
7. EP-MA-114-100-F-01 Rev O, "State/Local Notification Form"
8. EP-AA-1007, ADDM 3 Rev. 000, "Exelon Nuclear Emergency Action Levels for Peach Bottom Atomic Power Station"

## D. TASK STANDARD

1. Satisfactory task completion is indicated when the plant conditions have been classified correctly and EP-MA-114-100-F-01, "State/Local Event Notification Form" has been completed accurately.

(NOTE: The criteria for accurate Event Notification form completion were derived from EP-AA-125-1002 Rev. 8, "ERO Performance – Performance Indicators Guidance").

2. Estimated time to complete: Event Classification – 15 minutes: Time Critical  
State/Local Notification – 13 minutes: Time Critical

## E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to make the EAL classification and complete the State/Local Event Notification form (if required). I will describe initial plant conditions and provide you access to the materials required to complete this task.

## F. TASK CONDITIONS/PREREQUISITES

NOTE: This is a time critical JPM.

Unit 2 is operating at 100% power

Unit 3 has just shut down for a refueling outage. The Reactor Head has been removed. Fuel moves have not begun.

A loss of Off-site power has occurred. The following conditions exist:

- E-2 and E-3 D/G have started and are supplying power to their respective 4KV busses.
- Unit 2 has scrammed automatically. RPV level is being controlled by RCIC at -127 inches.
- Shut down cooling has been lost on Unit 3.
- Unit 3 Reactor Coolant temperature is 215°F and rising
- Unit 3 Reactor Building and Refuel Floor differential pressures are indicating +.05 on DPI 3003-1 & 2.

## G. INITIATING CUE

As the Emergency Director:

1. Make the EAL classification. Inform the Proctor when you have made a declaration.
2. Complete the State/Local Event Notification form. Inform the Proctor when you have completed the State/local Event Notification Form.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
*** NOTE ***			
<b>Record the time using the clock above the Full Core Display. Time = _____</b>			
1	Obtain procedures EP-AA-112-100-F-01, "Shift Emergency Director Checklist" and EP-AA-1007, "Radiological Emergency Plan Annex for PBAPS."	P	Procedures EP-AA-112-100-F-01 and EP-AA-1007 are obtained.
*2	Determine the appropriate EAL IC. <b>CA5</b> (Cue: Classification is acknowledged.)	P	The following sections of EP-AA-1007, Table PBAPS 3-1 are referenced: MU1 is referenced due to the loss of Off-site power. This is a correct EAL classification but not the highest classification that exists. CU5 is referenced. CU5 is a correct classification but not the highest classification. <b>CA5</b> is the correct EAL classification for Unit 3. The Reactor Head is removed which means that the RCS is not intact. Primary containment is not intact because Reactor building differential pressure is positive therefore Secondary Containment is not established..
3	Announce the event classification to the facility staff.	P	Announces the event classification to the Control Room crew.
*** NOTE ***			
<b><u>WHEN</u> the examinee completes the classification determination, <u>THEN</u> record the time using the clock above the Full Core Display. Time = _____ Determine if the elapsed time since the initiating cue exceeds 15 minutes. This time will also be used as the starting time for the State/Local notification process.</b>			
*** NOTE ***			
<b>Inform examinee that the Public Address announcement &amp; ERO Notification are NOT required.</b>			
*** NOTE ***			
<b><u>Follow-up Cue:</u> Complete EP-MA-114-100-F-01, "State/Local Notification Form."</b>			

STEP NO	STEP	ACT	STANDARD
*** NOTE ***			
The following steps are associated with EP-MA-114-100-F-01, "State/Local Event Notification Form."			
*4	Check the call status.	P	" <b>This is a drill</b> " is checked in Block #1.
*5	Check the affected station.	P	" <b>Peach Bottom</b> " is checked in Block #2.
*6	Check the affected unit(s). event classification.	P	Unit <b>3</b> is checked in Block #3.
*7	Check the event classification.	P	" <b>ALERT</b> " classification is checked in Block #4.
*8	Enter the time and date of the declaration.	P	Declaration time (in 24 hour clock nomenclature) and today's date are entered in Block #5. The declaration time should match the time the examiner entered in the note before JPM step 1.
9	Check the applicable change in classification status.	P	" <b>Initial Declaration</b> " is checked in Block #6.
*10	Enter the EAL number declared.	P	EAL# <b>CA5</b> is annotated in Block #7
*11	Provide a brief non-technical description of the event.	P	Check box " <b>F</b> " Cold Shutdown/Refueling System Malfunction in Block #8.
*12	Check the non-routine radiological release status.	P	" <b>No radiological release in-progress</b> " is checked in Block #9. EP-AA-114-F-02, "BWR Release In Progress Determination Guidance" may be referenced.
*13	Enter the wind direction "Degrees from".  (Cue: Wind direction is from 75 degrees.)	P	Wind direction of <b>75</b> degrees is obtained from either PMS Met data or Control Room panel OOC767 and is entered in Block #10. Minor discrepancy in parameter value is acceptable.
*14	Enter the wind speed.  (Cue: Wind speed is 5 mph.)	P	Wind speed of <b>5</b> mph is obtained from either PMS Met data or Control Room panel OOC767 and is entered in Block #10. Minor discrepancy in parameter value is acceptable.
*15	Check the utility Protective Action Recommendation.	P	The " <b>None</b> " box is checked in Block #11.
*16	Enter Communication Information.	P	" <b>This is a drill</b> " is checked in Block #13.
*17	Utility Message number and approve the event notification form.	P	The Emergency Director enters " <b>1</b> " for the Utility Message Number and signs the Event Notification form in the form's header area.
*** NOTE ***			
<b>WHEN</b> the examinee completes the Event Notification form, <b>THEN</b> record the time using the clock above the Full Core Display. Time = _____ Determine if the elapsed time since the classification exceeds 13 minutes.			

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

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

#### I. TERMINATING CUE

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

## **TASK CONDITIONS/PREREQUISITES**

NOTE: This is a time critical JPM.

1. Unit 2 is operating at 100% power
2. Unit 3 has just shut down for a refueling outage. The Reactor Head has been removed. Fuel moves have not begun.
3. A loss of Off-site power has occurred. The following conditions exist:
  - E-2 and E-3 D/G have started and are supplying power to their respective 4KV busses.
  - Unit 2 has scrammed automatically. RPV level is being controlled by RCIC at -127 inches.
  - Shut down cooling has been lost on Unit 3.
  - Unit 3 Reactor Coolant temperature is 215°F and rising
  - Unit 3 Reactor Building and Refuel Floor differential pressures are indicating +.05 on DPI 3003-1 & 2.

## **INITIATING CUE**

As the Emergency Director:

1. Make the EAL classification. Inform the Proctor when you have made a declaration.
2. Complete the State/Local Event Notification form. Inform the Proctor when you have completed the State/local Event Notification Form.

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-374CA
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	001
AUTHOR:	R. J. Artus	TYPIST:	mda
TITLE:	Reactor Operator Actions On A Recirc Pump Trip (Alternate Path-Thermal Hydraulic Instabilities Exist Without Operable OPRMs)		
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 NO. _____		COMPLETION DATE: _____	
COMMENTS:			
Training Review for Completeness:  _____ Signature/Date		LMS CODE:	
		LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007200501 / PLOR-374CA K/A: 295001.AA1.06

RO: 3.3 SRO: 3.4

TASK DESCRIPTION: Perform Actions for an Unexpected/Unplanned Change in Core Flow per OT-112

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.
  - c. Applicable JPM Work Practice Standards, TQ-JA-150-04 graded satisfactorily.
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 2D.7.B-2, Rev.22, "Recirculation MG Set Scoop Tube Lockup and Reset"
2. GP-9-2, Rev. 35, "Fast Reactor Power Reduction"
3. OT-112, Rev. 39, "Unexpected/Unexplained Change in Core Flow"
4. AO 60A.1-2 Rev 1, "Alternate Method to Detect and Suppress Thermal Hydraulic Instability (THI)"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the trip of the 'A' reactor recirculation pump has been recognized, GP-9-2 control rod insertion was initiated, and the reactor has been scrammed upon recognition of Thermal Hydraulic Instability (THI).
2. Estimated time to complete:
  1. 90 seconds to start insertion of GP-9-2 control rods upon recognition of 'A' recirculation pump trip,
  2. 5 minutes from the onset of THI as defined in AO 60A.1-2, "Alternate Method to Detect and Suppress Thermal Hydraulic Instability (THI)".

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to lockup the 2A Reactor Recirculation Pump. 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 100% power.
3. The OPRM System is NOT operable.
2. The 2A Reactor Recirculation Pump M-G Set needs to have the scoop tube locked up for approximately 2 hours to support scheduled maintenance.
4. An Equipment Operator is standing by in the Unit 2 Reactor Recirculation M-G Set Room.

## G. INITIATING CUE

The Control Room Supervisor directs you, the Unit Reactor Operator, to lockup the 2A Reactor Recirculation Pump M-G Set using SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset"	P	Copy of procedure SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset" is obtained.
2	Obtain a copy of procedure AO 60A.1-2, "Alternate Method to Detect and Suppress Thermal Hydraulic Instability (THI)".	P	Copy of AO 60A.1-2, "Alternate Method to Detect and Suppress Thermal Hydraulic Instability (THI)", is obtained.
3	Review section 4.2 of SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset" for guidance during transients requiring flow reductions.	P	Section 4.2 of SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset" for guidance during transients requiring flow reductions is reviewed.
4	Note speed demand setting for the affected MG set on SPI-2-02-184-016A-1.	P	Speed demand setting for the affected MG set on SPI-2-02-184-016A-1 noted.
5	Note the current settings of variables 'S' and 'V' of Moore Controller SPIC-2-02-184-016A	P	The current settings of variables 'S' and 'V' of Moore Controller SPIC-2-02-184-016A are noted.
6	Place Scoop Tube Positioner Lockup Switch 2A-S2A at Panel 20C004A to "LOCK".	P	Scoop Tube Positioner Lockup Switch 2A-S2A at Panel 20C004A is taken "counter-clockwise to "LOCK".
7	Verify annunciator 213 A-3, "A RECIRC FLUID DRIVE SCOOP TUBE LOCK" in alarm.	P	Verifies and acknowledges annunciator 213 A-3, "A RECIRC FLUID DRIVE SCOOP TUBE LOCK" in alarm.
8	Verify the "Scoop Tube Lockup" light is lit at Panel 2AC152 in MG Set Room.  <b>(CUE: If directed as an Equipment Operator, report that the Scoop Tube Lockup" light is lit at Panel 2AC152.)</b>	P	Direct an Equipment Operator to verify the "Scoop Tube Lockup" light is lit at Panel 2AC152 in MG Set Room.
9	Verify annunciator 214 E-2, "A Recirc Scoop Tube Positioner Trouble" is in alarm.	P	Verifies and acknowledges annunciator 214 E-2, "A Recirc Scoop Tube Positioner Trouble" is in alarm.

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>***NOTE***</b></p> <p align="center"><b>The Alternate Path portion of the JPM begins with the next step</b></p>			
*10	Recognize the trip of the "A" Recirc MG Set Drive Motor Breaker".	P	Verifies the trip of the "A" Recirc pump by monitoring the following: Green light on for the "A" Recirc MG Set Drive Motor Breaker. Drop in Reactor Power. Rise in RPV level. Recognize and acknowledge annunciator 214 C-3, "A RECIRC DRIVE MOTOR TRIP".
11	Obtain a copy of procedure GP-9-2, "Fast Reactor Power Reduction".	P	A copy of procedure GP-9-2 is obtained.
<p align="center"><b>Note</b></p> <p align="center"><b>The malfunction for THI will be entered <u>either</u> after the first Control Rod is driven <u>or</u> 3 minutes has elapsed since the trip of the recirculation pump, whichever occurs first.</b></p>			
*12	<p>Drive in the following GP-9-2, Appendix 1, Table 1 control rods:</p> <p>22-23, 38-39, 38-23, 22-39, 30-15, 30-47, 14-31, 46-31, 30-31.</p> <p>(Cue: Rod Select matrix pushbuttons backlight for each selected rod, Full Core Display rod position has green "00" on for each inserted rod.)</p>	P	<p>GP-9-2, Appendix 1, Table 1 control rods are selected and driven in by depressing the corresponding select matrix pushbutton and placing 3A-S2, ROD CONTROL switch <u>OR</u> 3A-S3, EMERGENCY IN/ NOTCH OVERRIDE switch in the IN position at panel 20C005A.</p> <p>Operations Management expects insertion of GP-9-2 control rods to be performed within 90 seconds of the trip of the recirculation pump. Doubling this estimated time is acceptable provided the evaluator determines that the progress to completion is acceptable.</p>
13	<p>Monitor for Thermal Hydraulic Instabilities (THI) on the APRMs.</p> <p>(Cue: APRMs A, B, and D readings are swinging from 45% to 60%.)</p>	P	All APRM recorders are monitored for noise level growing by two or more times or oscillations greater than 10% peak to peak on panel 20C005A.
*14	Recognize Thermal Hydraulic Instabilities (THI).	P	Determine that the Power oscillations meet the criteria for THI

STEP NO	STEP	ACT	STANDARD
15	Inform Control Room Supervisor of the Thermal Hydraulic Instabilities and the insertion of a manual scram.  <b>(Cue: Control Room Supervisor acknowledges report.)</b>	P	The presence of Thermal Hydraulic Instabilities and the insertion of a manual scram reported.
*16	Place the Mode Switch in SHUTDOWN.  (Cue: Annunciator 211 A-2 is alarming)	P	Mode Switch moved counterclockwise from "RUN" to "SHUTDOWN" position at panel 20C005A.
17	Verify that Control Rods are in the process of inserting.  (Cue: All rod positions indicate inward rod movement.)	P	Rod positions verified "COUNTING DOWN" on the full core display at panel 20C005B.
18	Verify all APRM Downscale Lights are lit	P	Individual APRM downscale lights verified ON at panel 20C005A.
19	Initial scram report made to Control Room Supervisor.  <b>(Cue: Control room supervisor acknowledges initial scram report.)</b>	P	The following report is made to the Control Room Supervisor: <ul style="list-style-type: none"> <li>• Mode switch is in SHUTDOWN</li> <li>• Control Rods are inserting</li> <li>• APRMs are downscale.</li> </ul>
<b>When the initial scram actions are complete, inform the examinee that the JPM is complete.</b>			
20	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 manually scrammed due to the presence of thermal hydraulic instabilities and the initial scram actions are complete, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 is operating at 100% power.**
- 2. The OPRM System is NOT operable.**
- 3. The 2A Reactor Recirculation Pump M-G Set needs to have the scoop tube locked up for approximately 2 hours to support scheduled maintenance.**
- 4. An Equipment Operator is standing by in the Unit 2 Reactor Recirculation M-G Set Room**

## **INITIATING CUE**

**The Control Room Supervisor directs you, the Unit Reactor Operator, to lockup the 2A Reactor Recirculation Pump M-G Set using SO 2D.7.B-2, "Recirculation MG Set Scoop Tube Lockup and Reset".**

SIMULATOR JPM INITIAL CONDITIONS					
JPM NO:	PLOR-374CA	TITLE:	URO Actions on a Recirc Pump Trip (Alternate Path - THI)	DATE:	3/15/15
SIMULATOR INITIAL CONDITIONS					
IC NO:	14				
TITLE:	100% Power Target Rod Pattern				
POWER:	100%				
PRESSURE:	1030 psig				

MALF No.	TITLE	FINAL SEV.	DELAY TIME	RAMP TIME	ACTIVE TIME	REMOTE SWITCH	EVENT		NOTE
							AC	DA	
APR02A	APRM Channel 1 Average Circuit Deviation	100							
APR02B	APRM Channel 2 Average Circuit Deviation	100							
APR02C	APRM Channel 3 Average Circuit Deviation	100							
APR02D	APRM Channel 4 Average Circuit Deviation	100							
RRS08A	Recirc M-G Drive Motor "A" Breaker Trip								

I/O OVERRIDE LIST (IOSI)							
PLANT ID	PAGE No.	TITLE	VALUE/ STATUS	EVENT		TIME DELAY	NOTE
				AC	DA		
ANO205RA3		APRM/OPRM HI-HI-INOP	ALARM_OFF				

REMOTE FUNCTIONS (RFI)					
RF ID #	PAGE NO.	TITLE	VALUE/STATUS	EVENT	NOTE

SPECIAL NOTES
<ol style="list-style-type: none"> <li>Enter the following I/O Override: <ul style="list-style-type: none"> <li>IOR ANO205RA3 ALARM_OFF "APRM/OPRM HI-HI-INOP"</li> </ul> </li> <li>Have a copy of the alternate Power/Flow map available</li> <li><b>Start JPM.</b></li> <li>WHEN the "A" M/G Set is locked up THEN enter the following Malfunction: <ul style="list-style-type: none"> <li>IMF RRS08A "Recirc M-G Drive Motor 'A' Breaker Trip".</li> </ul> </li> <li>When the Candidate has either driven the first Control Rod OR 3 minutes has elapsed since the recirc pump trip, THEN enter the following Malfunction: <ul style="list-style-type: none"> <li>APR02A 100, "APRM Channel 1 Average Circuit Deviation"</li> <li>APR02B 100, "APRM Channel 3 Average Circuit Deviation"</li> <li>APR02C 100, "APRM Channel 3 Average Circuit Deviation"</li> <li>APR02D 100, "APRM Channel 4 Average Circuit Deviation"</li> </ul> </li> <li><b>Delete</b> Malfunction DMF APR02 A-D when the reactor is scrammed.</li> </ol>

**EXELON NUCLEAR**  
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**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	Licensed Operator Training	CODE #:	PLOR-353CA
COURSE:	Licensed Operator Requalification	REV #:	001
AUTHOR:	M. J. Kelly	TYPIST:	mda
TITLE:	Startup HPCI in the CST To CST Mode (Alternate Path - Turbine Exhaust Diaphragm High Pressure)		
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 NO. _____	COMPLETION DATE: _____	
COMMENTS:		
Training Review for Completeness:  _____ Signature/Date	LMS CODE:	
	LMS ENTRY:	



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. RRC 23.1-2, Rev. 6, "HPCI System Operation During a Plant Event"
2. 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, correctly placed in the CST-to-CST mode of operation, and then manually tripped due to receipt of Turbine Exhaust Diaphragm rupture alarm.
2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary 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. RPV level is +20 inches and steady
3. The HPCI System is set up for operation in accordance with SO 23.1.A-2, "HPCI System Setup for Automatic or Manual Operation".
4. "B" loop of RHR is in the Torus Cooling mode in accordance with RRC 10.1-2, "RHR System Torus Cooling During a Plant Event".
5. SBTG is in service.

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, "HPCI System Operation During a Plant Event".	P	A copy of procedure RRC 23.1-2 is obtained. Section D, HPCI System Startup in "CST to CST" Mode, is selected.
*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.

STEP NO	STEP	ACT	STANDARD
*8	<p>Simultaneously START the Auxiliary Oil Pump, 20P026 and OPEN MO-2-23-014 "Supply" valve.</p> <p>(Cue: Acknowledge control switch operation.)</p>	P	<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.</p>
9	<p>Verify the Auxiliary Oil pump started.</p> <p>(Cue: Auxiliary Oil pump red light is ON, green light is OFF and annunciator 222 D-5 is alarming.)</p>	P	<p>Auxiliary Oil Pump red light is verified ON at panel 20C004B.</p>
10	<p>Verify MO-2-23-014, "Supply" valve opened.</p> <p>(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>	P	<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.</p>
11	<p>Verify pump flow rate of 5000 gpm on FI-2-23-108.</p> <p>(Cue: FI-2-23-108 indicates 5000 gpm.)</p>	P	<p>FIC-2-23-108 setpoint is adjusted to obtain 5000 gpm on FI-2-23-108 at panel 20C004B.</p>
12	<p>Throttle MO-2-23-021 and adjust FIC-2-23-108 to obtain desired system pressure and flow.</p> <p>(Cue: Acknowledge control switch operation. PI-2-23-109 reads about 800 psig, FI-2-23-108 reads 5000 gpm.)</p>	P	<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> <p>FIC-2-23-108 set point control knob is adjusted clockwise or counter-clockwise as needed. This action should not be required as long as the FIC is functioning correctly in automatic.</p>

STEP NO	STEP	ACT	STANDARD
<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>			
*13	Recognize HPCI Exhaust Diaphragm rupture condition.  (Cue: Annunciator 221 E-3 is alarming.)	P	Recognize annunciator 221 E-3 "HPCI TURBINE EXH DIAPHRAM HI PRESS" is flashing and consult Alarm Response Card 221 E-3. Recognize that the condition requires HPCI turbine trip as Adequate Core Cooling is NOT in jeopardy.
<p align="center"><b>****NOTE****</b></p> <p><b>The following steps are scripted from Rapid Response procedure RRC 23.1-2, Section F, HPCI Shutdown with <u>NO</u> initiation Signal Present.</b></p> <p><b>Based on direction from Alarm Response Card 221 E-3 "HPCI TURBINE EXH DIAPHRAM HI PRESS" the Examinee may go directly to steps 17 and 20 to immediately trip the HPCI turbine and close the steam supply valve MO-2-23-014.</b></p>			
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	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.
*17	Depress and hold the HPCI System "Remote Trip" pushbutton.  (Cue: Turbine speed drops and annunciator 221 B-1 is alarming "HPCI TURB TRIP".)	P	Remote trip pushbutton is DEPRESSED <u>AND</u> HELD in until MO-2-23-014 indicates fully closed at panel 20C004B.

STEP NO	STEP	ACT	STANDARD
18	Verify annunciator 221 B-1 "HPCI TURB TRIP" is in alarm.  (Cue: Annunciator 221 B-1 "HPCI TURB TRIP" is alarming.)	P	Recognizes that annunciator 221 B-1 "HPCI TURB TRIP" is flashing and acknowledges alarm.
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	Close MO-2-23-014, "Supply" valve <u>OR</u> WAIT for the turbine shaft to stop rotating as indicated by SPI-4505 on Panel 20C004B (or local visual indication) and place the Aux. Oil Pump control switch to the Pull-to-Lock (PTL) position.  (Cue: Acknowledge control switch operation.)	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.  The operator may follow the ARC 221 E-3 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. If this option is chosen THEN steps 21-27 can be marked as "N/A".
21	Verify MO-2-23-014, "Supply" valve closed.  (Cue: MO-14 green light is on red light is off. HPCI speed, discharge pressure, and exhaust pressure have dropped to 0.)	P	MO-2-23-014 green light verified ON at panel 20C004B.
22	Verify closed the MO-2-23-019, "To Feed Line" valve.  (Cue: MO-2-23-019 green light ON, red light OFF.)	P	MO-2-23-019 green light verified ON and red light verified OFF on panel 20C004B.
23	When MO-2-23-14 is fully closed, release the HPCI system "Remote Trip" pushbutton.  (Cue: Acknowledge pushbutton is released.)	P	Remote trip pushbutton is RELEASED at panel 20C004B.

STEP NO	STEP	ACT	STANDARD
24	Depress 23A-S21 "Initiation Signal" reset push-button.  (Cue: Acknowledge Control Switch Operator.)	P	23A-S21 "Initiation Signal" reset push-button is depressed on panel 20C004B.
25	Direct Equipment Operator to verify HPCI Turbine Shaft is stopped  <b>(Cue: Acknowledge direction, inform Candidate that the HPCI turbine shaft has stopped rotating)</b>	P	Equipment Operator dispatched
26	Place the Aux oil pump (20P026) control switch to "STOP" and verify it returns to "AUTO".  (Cue: Aux oil pump control switch (20P026) is in "AUTO".)	P	Aux oil pump (20P026) control switch is placed in "STOP" and then verified to return to "AUTO" position at panel 20C004B.
27	Verify HPCI system flow controller FIC-2-23-108 is in "AUTO" and set for 5000 gpm.  (Cue: FIC-2-23-108 is in "AUTO" and the set point indicates 5000 gpm.)	P	FIC-2-23-108 should already be in "AUTO" with the set point at 5000 gpm.
28	Inform Control Room Supervisor of Exhaust Diaphragm rupture indications and HPCI Turbine trip.  <b>(Cue: Control Room Supervisor acknowledges report.)</b>	P	Exhaust Diaphragm rupture indications and HPCI Turbine trip reported.  NOTE: This step may be performed at any point post-Alarm condition.
29	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. RPV level is +20 inches and steady**
- 3. The HPCI System is set up for operation in accordance with SO 23.1.A-2, "HPCI System Setup for Automatic or Manual Operation".**
- 4. "B" loop of RHR is in the Torus Cooling mode in accordance with RRC 10.1-2, "RHR System Torus Cooling During a Plant Event".**
- 5. SBGT is in service.**

## **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.**



SIMULATOR JPM INITIAL CONDITIONS					
JPM NO:	PLOR-353CA	TITLE:	Start HPCI in CST to CST Mode – Alternate Path	DATE:	2/24/15
SIMULATOR INITIAL CONDITIONS					
IC NO:	14				
TITLE:	100% Power, 60°F River Temp				
POWER:	100%				
PRESSURE:	1042 psia				

MALFUNCTION LIST (MFSI)										
MALF No.	PAGE No.	TITLE	FINAL SEV.	DELAY TIME	RAMP TIME	ACTIVE TIME	REMOTE SWITCH	EVENT		NOTE
								AC	DA	

I/O OVERRIDE LIST (IOSI)							
PLANT ID	PAGE No.	TITLE	VALUE/ STATUS	EVENT		TIME DELAY	NOTE
				AC	DA		
ANO204BE3		HPCI TURB EXH DIAPH HI PRESSURE	ALARM_ON	2		1:00	
ANO214B1		UNIT 2 RB HI RAD	ALARM_ON	2		1:15	
ZAORMARM_2		ARM CH.2 (TORUS ROOM)	1000	2		1:15	
ZLORMHI_2		ARM HI LIGHT	ON	2		1:15	

REMOTE FUNCTIONS (RFI)					
RF ID #	PAGE NO.	TITLE	VALUE/STATUS	EVENT	NOTE

SPECIAL NOTES
<p>1. Consider performing the following:</p> <ul style="list-style-type: none"> <li>a. Place the 'B' RHR loop in Torus Cooling.</li> <li>b. Place SBGT in service per SO 9A.1.B.</li> </ul> <p>2. Run APP JPM 353CA or enter the Event Trigger and the I/O Overrides listed below to bring in Hi Exhaust Pressure alarm and Rad Indications :</p> <p>TRG E2 HPCI_FLOW_GE_4950</p> <p>IOR ANO204BE3 (E2 1:00 0) ALARM_ON</p> <p>IOR ANO214B1 (E2 1:15 0) ALARM_ON</p> <p>IOR ZAORMARM_2 (E2 1:15 0) 1000</p> <p>IOR ZLORMHI_2 (E2 1:15 0) ON</p>

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-381CA
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	000
AUTHOR:	R. J. Artus	TYPIST:	Mda
TITLE:	Manual Startup of LPCI for Injection (Alternate Path-RHR Injection Valve Trips on Thermal Overload)		
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 NO. _____	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: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2320350401 / PLOR-381CA

K/A: 203000.A4.02

RO: 4.1

SRO: 4.1

TASK DESCRIPTION: Take Actions for System I RHR Injection Valves Overcurrent Alarm

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.
  - c. Applicable JPM Work Practice Standards, TQ-JA-150-04 graded satisfactorily.
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. RRC 10.2-2, Rev. 3, "RHR System LPCI Manual Start During a Plant Event"
2. ARC-226 D-3, Rev. 0, "System II RHR Injection Valves Overcurrent"

D. TASK STANDARD

1. Satisfactory task completion is indicated when both loops of LPCI are injecting into the RPV.
2. Estimated time to complete: 15 minutes

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to inject both loops of RHR into the RPV using RRC 10.2-2, "RHR System LPCI manual Start During a Plant Event".

F. TASK CONDITIONS/PREREQUISITES

1. A loss of high pressure feed has occurred.
2. Reactor conditions:
  - Reactor is shutdown
  - RPV level is -140 inches and down slow.
  - RPV Pressure is 300 psig.

G. INITIATING CUE

The Control Room Supervisor directs you, the Unit Reactor Operator, to inject both loops of RHR into the RPV using RRC 10.2-2, "RHR System LPCI Manual Start During a Plant Event".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure RRC 10.2-2, "RHR System LPCI Manual Start During a Plant Event".	P	A copy of procedure RRC 10.2-2 is obtained.
*2	Open MO-2-10-154A, "RHR Loop A Outboard Discharge Valve".  (Cue: Control switch for MO-2-10-154A is taken to the OPEN position.)	P	The control switch for MO-2-10-154A is taken to the OPEN position for a count of three.
3	Verify open MO-2-10-154A, "RHR Loop A Outboard Discharge Valve".  (Cue: When the MO-154A control switch is taken to OPEN then report that the red light is on and green light is out.)	P	Verify that the Red light is ON and that the green light is OFF.
4	Verify open MO-2-10-154B, "RHR Loop B Outboard Discharge Valve".  (Cue: Report that the red light is on and green light is out.)	P	Verify that the Red light is ON and that the green light is OFF.
*5	Start RHR pumps 2AP035 and 2BP035.  (Cue: Control Switches for RHR pumps 2AP035 and 2BP035 are taken to the START position.)	P	Control Switches for RHR pumps 2AP035 and 2BP035 are taken to the START position.
6	Verify the A and B RHR pumps are running.  (Cue: Red light is on and green light is off, discharge pressure is rising, pump amps rise and then return to normal)	P	Monitor pump light indication, discharge pressure and pump amps.
*7	Start RHR pumps 2CP035 and 2DP035.  (Cue: Control Switches for RHR pumps 2CP035 and 2DP035 are taken to the START position.)	P	Control Switches for RHR pumps 2CP035 and 2DP035 are taken to the START position.
8	Verify the C and D RHR pumps are running.  (Cue: Red light is on and green light is off, discharge pressure is rising, pump amps rise and then return to normal)	P	Monitor pump light indication, discharge pressure and pump amps.

STEP NO	STEP	ACT	STANDARD
9	Verify Reactor pressure is less than 450 psig.  (Cue: When the operator monitors RPV pressure, report that RPV pressure is 300 psig.)	P	Monitor RPV pressure and determine that RPV pressure is 300 psig.
*10	Open MO-2-10-25A, "RHR Loop A Outboard Discharge Valve".  (Cue: Control Switch for MO-25A is taken to the open position and spring returns to normal)	P	The control switch for MO-2-10-25A is taken to the OPEN position for a count of three.
11	Verify open MO-2-10-25A, "RHR Loop A Outboard Discharge Valve".  (Cue: When the MO-25A control switch is taken to OPEN then report that the red light is on and green light is out.)	P	Verify that the Red light is ON and that the green light is OFF.
<b>The Alternate Path portion of the JPM begins with the next step</b>			
12	Open MO-2-10-25B.  (Cue: Control Switch for MO-25B is taken to the open position and spring returns to normal)	P	The control switch for MO-2-10-25B is taken to the OPEN position for a count of three.
13	Verify open MO-25B, "RHR Loop B Outboard Discharge Valve".  (Cue: When the MO-2-10-25B control switch is taken to OPEN then report that the red light is off the green light is on and alarm 226 D-3 alarms)	P	Recognize that MO-2-10-25B did not open.
14	Recognize alarm 226 D-3, "System II RHR Injection Valves Overcurrent".  (Cue: Alarm 226 D-3 is received when MO-25B is taken to open.)	P	The Operator recognizes alarm 226 D-3.
15	Obtain a copy of procedure ARC-226 D-3, "System I RHR Injection Valves Overcurrent".	P	A copy of procedure ARC 226 D-3 is obtained.

STEP NO	STEP	ACT	STANDARD
16	Notify the CRS that MO-2-10-25B did not open due to a thermal overload trip.  <b>(Cue: Acknowledge the report from the RO. Repeat the initiating cue to the operator.)</b>	P	Notify the CRS that MO-2-10-25B did not open due to a thermal overload trip.
*17	Hold the MO-2-10-25B control switch to the OPEN position until MO-2-10-25B is open.  (Cue: When the control switch for MO-2-10-25B is taken to the OPEN position report the Red light is on and discharge pressure is rising	P	The control switch for MO-2-10-25B is held in the OPEN position until the valve is fully open.
18	Verify open MO-2-10-25B, "RHR Loop B Outboard Discharge Valve".  (Cue: Report that the red light is on and green light is out.)	P	Verify that the Red light is ON and that the green light is OFF.
19	Notify Shift Management of completion of assigned task.  <b>(Cue: Acknowledge report.)</b>	P	Verbally report completion of assigned task to Control Room Supervisor.
20	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 both loops of RHR are injecting into the RPV, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

A loss of high pressure feed has occurred on Unit 2.

Reactor conditions:

- Reactor is shutdown
- RPV level is -140 inches and down slow.
- RPV Pressure is 300 psig.

## INITIATING CUE

The Control Room Supervisor directs you, the Unit Reactor Operator, to inject both loops of RHR into the RPV using RRC 10.2-2, "RHR System LPCI manual Start During a Plant Event".



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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-321CA
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #::	005
AUTHOR:	J. T. Hanley	TYPIST:	rja
TITLE:	DRYWELL VENTING VIA THE 2" VENT – ALTERNATE PATH		
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 NO. _____		COMPLETION DATE: _____	
COMMENTS:			
Training Review for Completeness:  _____ Signature/Date		LMS CODE:	
		LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2230020101 / PLOR-321CA K/A: 223001A2.07

URO: 4.2 SRO: 4.3

TASK DESCRIPTION: Drywell Venting via the 2" Vent – Alternate Path

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. OT-101, Rev. 14 "High Drywell Pressure"
2. SO 7B.3.A-2, Rev. 17, "Containment Atmosphere Pressure Control and Nitrogen Makeup"
3. ARC 003 D-2, Rev. 11, "Main Stack Radiation High"

D. TASK STANDARD

1. Performance Location: Simulator
2. Satisfactory task completion is indicated when drywell venting via the 2" vents has been initiated, maximized, and terminated due to high radioactive release levels.
3. Estimated time to complete: 12 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to initiate drywell venting via the 2" vent 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. Drywell pressure is 1 psig and going up slowly.
2. The CRS has entered OT-101, "High Drywell Pressure".
3. The primary containment has been inerted in accordance with SO 7B.1.A-2, "Containment Atmosphere Inerting".
4. Drywell and Torus Hydrogen/ Oxygen Sampling system is in operation in accordance with SO 7J.1.A-2, "Drywell and Torus H<sub>2</sub>/O<sub>2</sub> Sampling System Startup and Normal Operation CAC Mode".
5. Drywell Ventilation System is in operation in accordance with SO 40C.1.A-2, "Drywell Ventilation System Startup and Normal Operations".
6. SBTGT is currently operating on the 'A' Fan and the 'A' Train. The "B" SBTGT train is available.
7. The Drywell Radiation Monitors are in service and being monitored by the STA.
8. The Main Stack Radiation Monitors are in service and being monitored by the STA.

9. Stack Dilution fans are in operation in accordance with SO 8.7.A, "Off-Gas Dilution Fan Operation".
10. Primary Containment Isolation System is reset in accordance with GP-8B, "PCIS Isolation - Group II & III".
11. Management has determined that COL 7B.3.A-2, "Containment Atmosphere Pressure Control and Nitrogen Makeup", is not required.

G. INITIATING CUE

The Control Room Supervisor directs you to maximize venting the drywell via the 2" vents in accordance with OT-101, Step 3. 7 "High Drywell Pressure" to lower drywell pressure to 0.70 psig.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure OT-101, "High Drywell Pressure"	P	A copy of procedure OT-101. "High Drywell Pressure" is obtained.
2	Verify Drywell Radiation Monitor Reading is less than $10^{-1}$ $\mu\text{Ci/cc}$ .  (Cue: PR/RR-2-02-3-404B is reading 2.5 E-6 $\mu\text{Ci/cc}$ .)	P	Verify that Drywell Radiation Monitor reading, indicated on PR/RR-404B at panel 20C003 is reading less than $10^{-1}$ $\mu\text{Ci/cc}$
3	Verify the "Main Stack Radiation High" alarm at Panel 003 D-2 is clear.  (Cue: 003 D-2 is NOT in alarm.)	P	Verify that the Main Stack Radiation High alarm at Panel 003 D-2 is NOT in alarm.
4	Obtain a copy of procedure SO 7B.3.A-2.	P	A copy of procedure SO 7B.3.A-2 is obtained.
5	Verify open AO-2509, "Drywell Vent Inbd 2" Vent".  (Cue: AO-2509 red light is lit, green light is out.)	P	AO-2509 red light is verified on.
*6	Open AO-2510, "Drywell Vent Outbd 2" Vent".  (Cue: Acknowledge switch operation.)	P	AO-2510 switch is taken to open.
7	Verify AO-2510 is open.  (Cue: AO-2510 red light is lit, green light is out.)	P	The AO-2510 red light is verified ON.
*8	Open CV-4957, "Drywell Bleed Flow", using manual control HCS-4957 to set the desired flowrate.  (Cue: Acknowledge controller operation. HCS-4957 is indicating full open)	P	HCS-4957 is used to fully open CV-4957 to maximize venting via the 2" vents.

**\*\*\* Note \*\*\***

**If the examinee monitors drywell pressure on PR-2508, cue him that:  
Drywell pressure is 0.95 psig and down slow.  
After 2 minutes, update examinee that DW pressure is 0.90 psig, down slow.**

STEP NO	STEP	ACT	STANDARD
9	Inform Control Room Supervisor that Drywell Venting is in progress.  (Cue: Control Room Supervisor acknowledges report.)	P	Drywell Venting is reported.
<p style="text-align: center;"><b>*** Notes ***</b></p> <ul style="list-style-type: none"> <li>Once drywell venting is in progress, PR/RR-2-02-3-404B will slowly rise and 003 D-2 "Main Stack Radiation High" will alarm. Examinee may terminate Drywell venting by performing step 10 OR step 12 (or both).</li> <li>The ALTERNATE PATH portion of this JPM begins with the next step.</li> </ul>			
*10	Terminate Drywell Venting by closing AO-2510 on panel 20C484B.  (Cue: Acknowledge switch operation.)	P	Upon either Drywell Radiation Monitor exceeding 10N1 $\mu\text{C/cc}$ , or receipt of annunciator 003 D-2, terminate Drywell Venting per OT-101 by taking AO-2510 control switch to close.
11	Verify AO-2510 is closed.  (Cue: AO-2510 green light is lit, red light is out.)	P	The AO-2510 Green light is verified ON.
*12	Terminate Drywell Venting by closing CV-4957, "Drywell Bleed Flow", using manual control HCS-4957.  (Cue: Acknowledge switch operation. HCS-4957 is indicating closed.)	P	HCS-4957 is used to close CV-4957 to terminate drywell venting via the 2" vents.
13	Inform Control Room supervisor that Drywell Venting has been terminated.  (Cue: Control Room supervisor acknowledges report.)	P	Drywell Venting termination is reported.
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 drywell venting via the 2" vents has been terminated, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Drywell pressure is 1 psig and going up slowly.**
- 2. The CRS has entered OT-101, "High Drywell Pressure".**
- 3. The primary containment has been inerted in accordance with SO 7B.1.A-2, "Containment Atmosphere Inerting".**
- 4. Drywell and Torus Hydrogen/ Oxygen Sampling system is in operation in accordance with SO 7J.1.A-2, "Drywell and Torus H<sub>2</sub>/O<sub>2</sub> Sampling System Startup and Normal Operation CAC Mode".**
- 5. Drywell Ventilation System is in operation in accordance with SO 40C.1.A-2, "Drywell Ventilation System Startup and Normal Operations".**
- 6. SBGT is currently operating on the 'A' Fan and the 'A' Train. The "B" SBGT train is available.**
- 7. The Drywell Radiation Monitors are in service and being monitored by the STA.**
- 8. The Main Stack Radiation Monitors are in service and being monitored by the STA.**
- 9. Stack Dilution fans are in operation in accordance with SO 8.7.A, "Off-Gas Dilution Fan Operation".**
- 10. Primary Containment Isolation System is reset in accordance with GP-8B, "PCIS Isolation - Group II & III".**
- 11. Management has determined that COL 7B.3.A-2, "Containment Atmosphere Pressure Control and Nitrogen Makeup", is not required.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to maximize venting the drywell via the 2" vents in accordance with OT-101, Step 3.7 "High Drywell Pressure" to lower drywell pressure to 0.70 psig.**



SIMULATOR JPM INITIAL CONDITIONS					
JPM NO:	PLOR-321CA	TITLE:	Drywell Venting via the 2" Vent – Alternate Path	DATE:	2/23/15
SIMULATOR INITIAL CONDITIONS					
IC NO:	14				
TITLE:	100% Power, 60°F River				
POWER:	100%				
PRESSURE:	1043				

MALFUNCTION LIST (MFSI)										
MALF	PAGE		FINAL	DELAY	RAMP	ACTIV E	REMOTE	EVENT		
No.	No.	TITLE	SEV.	TIME	TIME	TIME	SWITCH	AC	DA	NOTE
MSS01		Steam Leakage Inside Primary Containment	0.5							See special notes below

I/O OVERRIDE LIST (IOSI)							
PLANT ID	PAGE No.	TITLE	VALUE/ STATUS	EVENT		TIME DELAY	NOTE
				AC	DA		
ZAORMRR023404B		DW Activity Meter (404B)	.75	1			5 min. ramp
ANO214D2		Stack Gas Hi Rad	ALARM_ ON	1		1 min.	Alarm 003 D-2
ZAORM14RR1751A_1		Stack Gas Recorder AOs	.55	1		1 min.	
ZAORM14RR1751B_1		Stack Gas Recorder AOs	.55	1		1 min.	

REMOTE FUNCTIONS (RFI)					
RF ID #	PAGE NO.	TITLE	VALUE/STATUS	EVENT	NOTE

SPECIAL NOTES
<ol style="list-style-type: none"> <li>Any IC.</li> <li>Remove drywell fans from service to raise drywell pressure to 1.0 psig.</li> <li>Place 'A' SBGT filter and 'A' SBGT fan in-service per SO 9A.1.B.</li> <li>Assign the following Event Trigger to E1: AO2510_RED_LIGHT_ON (ZLOPC484BAO2510_2==True)</li> <li>Load overrides per list above.</li> <li>Insert malfunction IMF MSS01 0.5 until drywell pressure is 1.0 psig, then reduce the value of MSS01 to 0.01.</li> </ol>

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-373CA
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #::	001
AUTHOR:	R. J. Artus	TYPIST:	mda
TITLE:	LOAD DIESEL GENERATOR TO 500 KW (ALTERNATE PATH DIFFERENTIAL/GROUND)		
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 NO. _____		COMPLETION DATE: _____	
COMMENTS:			
Training Review for Completeness:  _____ Signature/Date		LMS CODE:	
		LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2640630401 / PLOR-373CA K/A: 264000A4.04

RO: 3.7 SRO: 3.7

TASK DESCRIPTION: Take Actions for E-4 Diesel Generator Differential and Ground

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.
  - c. Applicable JPM Work Practice Standards, TQ-JA-150-04 graded satisfactorily.
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 52A.1.B Rev 51, "Diesel Generator Operations"
2. ARC 005 F-1 Rev 4, "Diesel Generator Differential and Ground"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the E-4 Diesel Generator is synchronized to the E-43 bus and then shutdown following receiving alarm 005 F-1 "Diesel Generator Differential and Ground".
2. Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, synchronize the E-4 Diesel to the E-43 bus and pick up 500 KW for testing purpose 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. E-4 Diesel Generator has been "SLOW" started in accordance with Section 4.1 of SO 52A.1.B, "Diesel Generator Operations".
2. E-4 Diesel Generator is running at rated frequency and voltage.
3. E-43 Bus is being supplied by 2SUE.
4. The ESW system is supplying D/G cooling water.

G. INITIATING CUE

The Control Room Supervisor directs you to synchronize the E-4 Diesel to the E-43 Bus and pick up 500 KW in accordance with Section 4.2 of SO 52A.1.B, "Diesel Generator Operations".

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 52A.1.B, "Diesel Generator Operations".	P	A copy of procedure SO 52A.1.B is obtained.
2	Verify the E-4 Diesel is running in accordance with Section 4.1 of SO 52A.1.B.  (Cue: E-4 diesel Generator is running normally.)	P	Verify the following (00C026D panel): --The E4 D/G "101-DG12" red "RUN" light is lit --The E4 D/G is running at rated frequency (58.8 → 61.2 hz) as indicated on the E4 D/G "FREQ" meter. --The E4 EDG is running at rated voltage (4.16 → 4.40 KV) as indicated on the E4 D/G "V" meter (and/or PMS computer E038).  OR Check JPM Task Conditions/Prerequisites
*3	Place the E43 Breaker "BKR SYNC" switch in the "ON" position.  (Cue: The synroscope is rotating.)	P	Synchronizing Switch Handle is inserted into the "E43 BKR SYNC" Switch. The "E43 BKR SYNC" Switch handle is then rotated in the clockwise direction until the handle position indicates that the switch is in the "ON" position.
4	Operate the "GOVERNOR" control switch for the E4 EDG to "RAISE" frequency to 0.5 Hz above the initial value.  (Cue: When the governor control switch is taken to raise, the Diesel Generator frequency rises to 60.5 hz.)	P	Raise E4 D/G speed by momentarily taking the E4 D/G "GOVERNOR" Control Switch "165-DG12" to "RAISE" at panel 00C026D. The E4 D/G "FREQ" meter should change indication from ~60 hz to ~60.5 hz.
5	Operate the "GOVERNOR" control switch for the E4 EDG to "LOWER" frequency to 0.5 Hz below the initial value.  (Cue: When the governor control switch is taken to lower, the Diesel Generator frequency rises to 59.5 hz.)	P	Lower E4 D/G speed by momentarily taking the E4 D/G "GOVERNOR" Control Switch "165-DG12" to "LOWER" at panel 00C026D. The E4 D/G "FREQ" meter should change indication from ~60.5 hz to ~59.5 hz.

STEP NO	STEP	ACT	STANDARD
6	Operate the "GOVERNOR" control switch for the E4 EDG to "RAISE" frequency to return to initial value.  (Cue: When the governor control switch is taken to raise, the Diesel Generator frequency rises to 60 hz.)	P	Raise E4 D/G speed by momentarily taking the E4 D/G "GOVERNOR" Control Switch "165-DG12" to "RAISE" at panel 00C026D. The E4 D/G "FREQ" meter should change indication from ~59.5 hz to ~60 hz.
7	Operate the "AUTO VOLT REG" control switch for the E4 EDG to "RAISE" voltage to 50 volts above the initial value.  (Cue: When the voltage control switch is taken to raise, the Diesel Generator voltage rises to 4.25 KV.)	P	Raise the E4 D/G output voltage by momentarily taking the E-4 D/G "AUTO VOLT REG" Control Switch "90-DG14" to "RAISE" at panel 00C026D. The voltage indicated on the E4 D/G "V" meter should change from ~4.2 KV to ~4.3 KV.
8	Operate the "AUTO VOLT REG" control switch for the E4 EDG to "LOWER" voltage to 50 volts below the initial value.  (Cue: When the voltage control switch is taken to lower, the Diesel Generator voltage rises to 4.15 KV.)	P	Lower the E4 D/G output voltage by momentarily taking the E-4 D/G "AUTO VOLT REG" Control Switch "90-DG14" to "LOWER" at panel 00C026D. The voltage indicated on the E4 D/G "V" meter should change from ~4.3 KV to ~4.1 KV.
9	Operate the "AUTO VOLT REG" control switch for the E4 EDG to "RAISE" voltage to return to initial value.  (Cue: When the voltage control switch is taken to raise, the Diesel Generator voltage rises to 4.2 KV.)	P	Raise the E4 D/G output voltage by momentarily taking the E-4 D/G "AUTO VOLT REG" Control Switch "90-DG14" to "RAISE" at panel 00C026D. The voltage indicated on the E4 D/G "V" meter should change from ~4.1 KV to ~4.2 KV.
10	Check both synchronizing lights for proper operation.  (Cue: Both lights "ON" when synchroscope is at "Bottom Dead Center". -- Both lights "OFF" when synchroscope is at "Top Dead Center".)	P	Verify proper operation of the synchronizing lights (at the 00C026C panel) as follows: -- Both lights "ON" when synchroscope is at "Bottom Dead Center". -- Both lights "OFF" when synchroscope is at "Top Dead Center".

STEP NO	STEP	ACT	STANDARD
11	<p>Adjust diesel generator speed, using the "GOVERNOR" control switch for the E4 EDG, to make the synchroscope rotate 1 revolution/5 to 10 seconds in the "FAST" direction.</p> <p>(Cue: Synscope is rotating slow in the fast direction.)</p>	P	<p>Raise or lower E4 D/G speed by momentarily taking the "GOVERNOR" control switch "165-DG12" to the "RAISE" and/or "LOWER" position as appropriate (at the 00C026D panel).</p> <p>NOTE: The synchroscope must rotate 1 revolution/5 to 10 seconds in the "FAST" direction to satisfy this step. Use of a stopwatch, the digital control room clock, or a wristwatch are acceptable means of timing the action of the synchroscope.</p>
<p style="text-align: center;"><b>*** Note ***</b></p> <p><b>The following step may be marked N/A if the INCOMING voltage is already slightly higher than the RUNNING voltage.</b></p>			
12	<p>Adjust diesel generator "INCOMING" voltage so that it is slightly higher than "RUNNING" bus voltage by using the "AUTO VOLT REG" control switch for the E4 D/G.</p> <p>(Cue: Incoming voltage is 50 volts higher than running voltage.)</p>	P	<p>Raise or lower the E4 D/G output voltage by taking the E-4 D/G "AUTO VOLT REG" Control Switch "90-DG14" to the "RAISE" and/or "LOWER" position as appropriate (at the OOC026D panel).</p>
13	<p>Verify the synchroscope is still rotating 1 revolution/5 to 10 seconds in the "FAST" direction.</p> <p>(Cue: Synscope is rotating slow in the fast direction.)</p>	P	<p>Verify the synchroscope is rotating 1 revolution/5 to 10 seconds in the "FAST" direction (at the 00C026C panel).</p> <p>NOTE: Use of a stopwatch, the digital control room clock, or a wristwatch are acceptable means of timing the action of the synchroscope.</p>

STEP NO	STEP	ACT	STANDARD
*14	<p><u>WHEN</u> the diesel generator is synchronized with the 4KV emergency bus, <u>THEN</u> close the E43 Breaker.</p> <p>(Cue: The red light is on and the green light is off for the E-43 breaker. The synscope has stopped rotating.)</p>	P	<p>The E43 Breaker is closed by taking the control switch "E43 BKR" momentarily to the "CLOSE" position <u>when</u> the following conditions are met:</p> <ul style="list-style-type: none"> <li>--Diesel generator "INCOMING" voltage slightly higher than "RUNNING" bus voltage.</li> <li>--Synchroscope rotating 1 revolution/ 5 to 10 seconds in the "FAST" direction.</li> <li>--Synchroscope within 13 degrees of "Top Dead Center".</li> </ul>
<p style="text-align: center;"><b>*** Note ***</b></p> <p><b>The following two steps may be marked N/A if no load or VAR adjustments are required.</b></p>			
*15	<p>Pickup 200 to 300 kW of load on the diesel generator by turning the E4 D/G "GOVERNOR" control switch to "RAISE".</p> <p>(Cue: When the governor control switch is taken to raise, diesel generator load rises to 250 KW.)</p>	P	<p>Raise E4 D/G load by momentarily taking the E4 D/G "GOVERNOR" control switch 165-DG12 to "RAISE" at panel 00C026D as required to raise diesel loading as indicated on the E4 D/G 'W' meter.</p> <p>NOTE: This step must be performed <u>immediately</u> following the previous step.</p> <p>NOTE: Loading the diesel generator shall proceed at a rate <u>NOT</u> to exceed 300 KW/min.</p>
16	<p>Ensure ~100 KVAR on the EDG by turning the E4 D/G "AUTO VOLT REG" control switch to "RAISE" or "LOWER" as required.</p> <p>(Cue: When the voltage control switch is operated, diesel generator VARs rise to 100 KVAR.)</p>	P	<p>Verify 100 KVAR on the E4 D/G by momentarily taking the E-4 D/G AUTO VOLT REG. Control Switch 90-DG14 to "RAISE" or "LOWER" at panel OOC026D as required to place ~100 KVAR on the E4 D/G as indicated on the E4 D/G 'VAR' meter.</p> <p>NOTE: The KVAR value must not exceed 75% of the KW value, to assure that the generator 0.8 power factor will <u>NOT</u> be exceeded. For a D/G load of 300 KW, the allowable KVAR load is less than or equal to 225 KVAR.</p>



STEP NO	STEP	ACT	STANDARD
<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>			
*17	Recognize "E-4 Diesel Generator Differential and Ground" alarm.  (Cue: Alarm 005 F-1 is in alarm)	P	Scan the alarm panel and acknowledge the "E-4 Diesel Generator Differential and Ground" alarm.
18	Obtain a copy of ARC-005 F-1 "E-4 Diesel Generator Differential and Ground" alarm.	P	A copy of ARC-005 F-1 "E-4 Diesel Generator Differential and Ground" alarm is obtained.
<p align="center"><b>NOTE</b></p> <p align="center"><b>It is acceptable for the Operator to trip the Diesel Generator then verify the 43 breaker is tripped. If the Diesel Generator is tripped before the E-43 breaker then the E-43 breaker will automatically trip.</b></p>			
19	Trip the E-43 breaker  (Cue: When the E-43 Breaker is taken to trip, green light above the E-43 breaker is lit and the red light is out.)	P	The control switch for the E-43 breaker is taken to the trip position.
*20	Trip the E-4 Diesel Generator.  (Cue: When the Diesel generator is tripped, the green light is lit and the red light is out)	P	The control switch for the E-4 Diesel generator is taken to trip position.
21	Inform Control Room Supervisor that the E-4 diesel generator was tripped due to a Differential and Ground alarm.  (Cue: Control Room Supervisor acknowledges report.)	P	Control Room Supervisor is informed of the Diesel Generator differential and ground condition.
22	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task Conditions/Prerequisites) <b><u>AND</u></b> procedures.	P	Positive control established.

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

I. TERMINATING CUE

When the E-4 diesel generator is tripped due to the differential and ground condition the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. E-4 Diesel Generator has been “SLOW” started in accordance with Section 4.1 of SO 52A.1.B, “Diesel Generator Operations”.**
- 2. E-4 Diesel Generator is running at rated frequency and voltage.**
- 3. E-43 Bus is being supplied by 2SUE.**
- 4. The ESW system is supplying D/G cooling water.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to synchronize the E-4 Diesel to the E-43 Bus and pick up 500 KW in accordance with Section 4.2 of SO 52A.1.B, “Diesel Generator Operations”.**

SIMULATOR JPM INITIAL CONDITIONS					
JPM NO:	PLOR-373CA	TITLE:	LOAD DIESEL GENERATOR TO 500 KW (ALTERNATE PATH DIFFERENTIAL/GROUND)	DATE:	3/17/15
SIMULATOR INITIAL CONDITIONS					
IC NO:					
TITLE:					
POWER:					
PRESSURE:					

MALFUNCTION LIST (MFSI)										
MALF No.	PAGE No.	TITLE	FINAL SEV.	DELAY TIME	RAMP TIME	ACTIVE TIME	REMOTE SWITCH	EVENT		NOTE
								AC	DA	

I/O OVERRIDE LIST (IOSI)							
PLANT ID	PAGE No.	TITLE	VALUE/ STATUS	EVENT		TIME DELAY	NOTE
				AC	DA		
ANO226DF1		E-4 Diesel Gen Diff and Ground	ALARM_ON				
ANO226DB4		E-43Bus Diff or Overcurrent Relays	ALARM_ON				

REMOTE FUNCTIONS (RFI)					
RF ID #	PAGE NO.	TITLE	VALUE/STATUS	EVENT	NOTE

SPECIAL NOTES
<ol style="list-style-type: none"> <li>1. Ensure 2SU XFMR (00X003) is supplying the 2SUE Bus.</li> <li>2. Manually start E-4 D/G by simultaneously placing the START MODE switch to "MAN" and the START-STOP switch to "START".</li> <li>3. After 3.5 minutes, perform the following: <ul style="list-style-type: none"> <li>• Shutdown the "B" ESW pump.</li> <li>• Acknowledge and reset annunciators.</li> </ul> </li> <li>4. Begin the JPM.</li> <li>5. <b>When the examinee has raised load on the E-4 Diesel Generator, THEN enter I/O Overrides</b> <ul style="list-style-type: none"> <li>• IOR ANO226DF1 ALARM_ON "E-4 Diesel Gen Diff and Ground",</li> <li>• IOR ANO226DB4 ALARM_ON "E-43 Bus Diff or Overcurrent Relays"</li> </ul> </li> </ol>

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-366C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	001
AUTHOR:	J. E. McClintock	TYPIST:	mda
TITLE:	ROD WORTH MINIMIZER SYSTEM INITIALIZATION		
APPROVALS:			
		_____	_____
		Signature / Title	Date
		_____	_____
		Signature / Title	Date
		_____	_____
		Signature / Title	Date
		_____	_____
		Signature / Title	Date
APPROVED FOR USE:			
		_____	_____
		Signature / Title	Date
EFFECTIVE DATE: ____/____/____			

NAME: _____		ISSUE DATE: _____	
Last	First	M.I.	
Employee ID NO. _____		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: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2010010101 / PLOR-366C

K/A: 201006A3.01

URO: 3.2    SRO: 3.1

TASK DESCRIPTION: INITIALIZE THE RWM

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

Ensure that all RWM alarm messages are cleared on the RWM screen prior to JPM starting

C. REFERENCES

SO 62A.1.A-2, Rev 10, "Rod Worth Minimizer System Initialization"

D. TASK STANDARD

1. Satisfactory task completion is indicated when:
  - a. The Rod Worth Minimizer has been initialized and a system diagnostic completed in accordance with SO 62A.1.A-2
  - b. Allotted time to complete: 12 minutes (A.5) Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to initialize the RWM. 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 shutdown with all control rods inserted.
2. There are no substitute rod positions or inoperable rod position indications on Unit 2
3. The RWM is energized

G. INITIATING CUE(S)

The Shift Supervisor directs you, the unit 2 Reactor Operator, to initialize the RWM, using SO 62A.1.A-2.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 62A.1.A-2, "Rod Worth Minimizer System Initialization".	P	A copy of procedure SO 62A.1.A-2 is obtained.
2	Notify the RO that alarm 211 F-5 will annunciate  (Cue: Acknowledge report)	P	Expected alarm communication made to the unit RO.
*3	Initiate the RWM System Initialization by pressing and momentarily holding in the System Initialization" pushbutton.  (Cue: The "System Initialize" pushbutton "clicks" when depressed and momentarily back lights RED)	P	The "System Initialize" pushbutton (located beneath the RWM monitor) is PRESSED and momentarily HELD until the initialization commences.
4	Monitor the initialization routine for the "RWM INOP" indicator to CLEAR within 2 minutes.  (Cue: Acknowledge monitoring, RWM INOP indicator clears in one minute)	P	The RWM screen and pushbuttons are monitored during the initialization routine and timed to determine when the RWM INOP indicator clears.
5	Press "FULLCORE"  (Cue: The FULLCORE screen is displayed.)	P	The RWM touch screen "FULLCORE" button is identified and pressed.
6	Verify there are not rod position indicators indicating "-99". (Cue: No rod positions indicate "-99".)	P	The operator verifies that no rod positions indicate "-99" by reviewing the rod positions.
*7	Select the "RWM MAIN" screen by pressing the touch screen "RWM Main" button.  (Cue: The RWM Main screen is displayed.)	P	The RWM touch screen "RWM Main" button is identified and pressed.



8	<p>Verify the RWM has latched to a rod group appropriate for current plant conditions.</p> <p>(Cue: The RWM is latched to the correct rod group.)</p>	P	The operator verifies that the RWM has latched to the appropriate rod group by monitoring rod position and comparing that to the RWM.
9	<p>Acknowledge all RWM messages</p> <p>(Cue: the RWM messages are selected and acknowledged)</p>	P	The RWM touch screen is used to select and acknowledge all of the RWM messages one at a time OR by double tapping "acknowledge"
10	<p>Notify the RO that alarm 211 F-5 will annunciate</p> <p><b>(Cue: Acknowledge report)</b></p>	P	Expected alarm communication made to the unit RO.
*11	<p>Initiate the RWM System Diagnostic routine by pressing and momentarily holding in the "System Diagnostic" pushbutton.</p> <p>(Cue: the "System Diagnostic" pushbutton "clicks" when depressed and back lights RED)</p>	P	The "System Diagnostic" pushbutton (located beneath the RWM monitor) is PRESSED and momentarily HELD until the diagnostic routine commences.
12	<p>Verify "System Diagnostic" pushbutton remains lit after being released.</p> <p>(Cue: "System Diagnostic" pushbutton is lit.)</p>	P	The "System Diagnostic" pushbutton is observed after being released to determine if the back light remains lit after the pushbutton is released.
13	<p>Verify the "Insert Block" and "Withdraw Block" indicator lights under the RWM console go ON and then OFF.</p> <p>(Cue: "Insert Block" and "Withdraw Block" lights go ON and then OFF)</p>	P	The "Insert Block" and "Withdraw Block" indicator lights are observed to determine if the light and then extinguish.
14	<p>Verify that the RWM insert block/permissive indication cycles between "Insert Block" and "Insert Permissive"</p> <p>(Cue: Indication on the RWM console cycles between "Insert Block" and "Insert Permissive")</p>	P	The RWM insert block/insert permissive indication on the RWM screen is observed to verify that the indication cycles between "Insert Block" and "Insert Permissive"

15	Verify that the RWM withdraw block/permissive indication cycles between "Withdraw Block" and "Withdraw Permissive"  (Cue: Indication on the RWM console cycles between "Withdraw Block" and "Withdraw Permissive")	P	The RWM withdraw block/withdraw permissive indication on the RWM screen is observed to verify that the indication cycles between "Withdraw Block" and "Withdraw Permissive"
*16	Terminate the RWM System Diagnostic routine by pressing and momentarily holding in the System Diagnostic" pushbutton.  (Cue: the "System Diagnostic" pushbutton "clicks" when depressed and back lights extinguish)	P	The "System Diagnostic" pushbutton (located beneath the RWM monitor) is PRESSED and momentarily HELD
17	Verify "System Diagnostic" pushbutton light goes OFF after being released.  (Cue: "System Diagnostic" pushbutton light is OFF)	P	The "System Diagnostic" pushbutton is observed after being released to determine if the back light goes OFF after the pushbutton is released.
18	Inform Shift Supervisor of task completion.  <b>(Cue: Shift Supervisor acknowledges report.)</b>	P	Task completion reported.
19	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 RWM has been successfully initialized, the Shift Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Unit 2 is shutdown with all control rods inserted.**
- 2. There are no substitute rod positions or inoperable rod position indications on Unit 2**
- 3. The RWM is energized**

## **INITIATING CUE(S)**

**The Shift Supervisor directs you, the unit 2 Reactor Operator, to initialize the RWM, using SO 62A.1.A-2.**

**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE																
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-270C																
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	003																
AUTHOR:	J. A. Verbillis	TYPIST:	Rja																
TITLE:	ECW System Makeup to Tower Using a HPSW Pump																		
<b>APPROVALS:</b> <table style="width: 100%; border: none;"> <tr> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> <tr> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> <tr> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> <tr> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: center;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> </table>				_____	Signature / Title	_____	Date	_____	Signature / Title	_____	Date	_____	Signature / Title	_____	Date	_____	Signature / Title	_____	Date
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<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>  <div style="border-top: 1px solid black; text-align: center; margin-top: 10px;">             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: 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 008, "Emergency Cooling Water System Makeup To Tower Using A High Pressure Service Water Pump"
2. SO 32.1.A-2 Rev 019, "High Pressure Service Water System Startup And Normal Operations"
3. SO 32.2.A-2 Rev 011, "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 "2A" 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, "Emergency Cooling Water System Makeup To Tower Using A High Pressure Service Water Pump".	P	Procedure SO 48.7.A obtained.
2	Obtain a copy of SO 32.1.A-2, "High Pressure Service Water System Startup And Normal Operations", for starting the HPSW pump.	P	Procedure SO 32.1.A-2 is obtained
3	Direct Equipment Operator to verify "A" HPSW Pump motor oil level at STAND STILL level  <b>(Cue: Report as EO that "A" HPSW Pump motor oil level at STAND STILL level)</b>	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> <b>(Cue: Report as EO that fans aligned as above)</b>	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  <b>(Cue: As Chemistry, acknowledge the report)</b>	P	Chemistry notified
6	Monitor "A" HPSW motor bearing temperatures on PMS	P	PMS used for bearing temperature monitoring



STEP NO	STEP	ACT	STANDARD
*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.
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	Direct Equipment Operator to perform SO 32.8.A 2, "High Pressure Service Water System Routine Inspection".  <b>(Cue: EO acknowledges.)</b>	P	EO directed to perform routine inspection. Candidate should NOT wait for EO report of completion.
*12	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"
13	Verify TSA log entries are completed for one HPSW subsystem inoperable.  <b>(Cue: TSA log entry will be made by Supervisor)</b>	P	Candidate acknowledges requirement for TSA log entry

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>*** Note ***</b></p> <p align="center"><b>The following step will need to be coordinated with the Simulator Operator.</b></p>			
*14	Close breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486".  <b>(Cue: When requested inform the operator that breaker 5442 for MO-2486 is closed.)</b>	P	Direct an Equipment Operator to close breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486".
*15	Close MO-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 MO-2486, "Unit 2 HPSW Disch to Pond"
<p align="center"><b>***NOTE***</b></p> <p align="center"><b>In the following step, ECT level rise, as indicated on LI-0503, WILL BE TIME COMPRESSED.</b></p>			
16	Monitor ECT reservoir level.  (Cue: ECT reservoir level is slowly rising.)  (Cue: Inform candidate that ECT level is now 18 feet, 3 inches.)	P	Observe level indicator LI-0503, "Clg Twr" on Panel 00C123.
17	Obtain a copy of SO 32.2.A, "High Pressure Service Water System Shutdown", for shutting down the HPSW pump	P	A copy of SO 32.2.A is obtained
*18	Shutdown the running HPSW pump.  (Cue: Acknowledge switch operation.)	P	Running HPSW Pump control switch taken to OFF.
19	Verify "A" HPSW Pump shutdown as expected.  (Cue: Red light OFF, Green light ON, Pump amps 0, discharge pressure is 0 psig.)	P	HPSW pump parameters verified to be as expected for shutdown pump.

STEP NO	STEP	ACT	STANDARD
20	Close MO-2-10-089A "HPSW Hx Out"  (Cue: Red light OFF, Green light ON)	P	Correct valve closed
21	Direct Equipment Operator to verify CHK-2-32-502A "HPSW 2A P042 Discharge Check Valve" is closed  <b>(Cue: As Equipment Operator, report that CHK-2-32-502A is CLOSED)</b>	P	Check Valve verified closed
22	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> <b>(Cue: Report as EO that fans aligned as above)</b>	P	EO directed to verify Fan alignment
23	Open M0 2 32 2486, "Unit 2 HPSW Disch to Pond"  (Cue: Red light ON, Green light OFF)	P	At Panel 00C123 (MCR Emergency Cooling Tower Panel), candidate opens M0 2486, "Unit 2 HPSW Disch to Pond"
24	EXIT TSA one HPSW subsystem inoperable.  <b>(Cue: TSA status entry will be made by Supervisor)</b>	P	Candidate acknowledges requirement for TSA status change
25	Close M0 2 32 2803, "Unit 2 HPSW Disch to Clg Tower"  (Cue: Red light OFF, Green light ON)	P	At Panel 00C123 (MCR Emergency Cooling Tower Panel), candidate closes M0 2803, "Unit 2 HPSW Disch to Clg Tower"

STEP NO	STEP	ACT	STANDARD
<p style="text-align: center;"><b>*** Note ***</b></p> <p style="text-align: center;"><b>The following step will need to be coordinated with the Simulator Operator.</b></p>			
*26	Open breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486".  <b>(Cue: When directed, inform the operator that breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486" is open.)</b>	P	Direct an Equipment Operator to open breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486".
27	Inform Control Room Supervisor of task completion.  <b>(Cue: Control Room Supervisor acknowledges report.)</b>	P	Task completion reported.
28	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 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 "2A" 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**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-018C
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #:	014
AUTHOR:	J. R. Felice	TYPIST:	mda
TITLE:	MANUALLY PLACE SBTG ON EQUIPMENT CELL EXHAUST		
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 I.D. NO. _____	COMPLETION DATE: _____				
COMMENTS:					
Training Review for Completeness:  _____ Signature/Date	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;">LMS CODE:</td><td style="width: 50%;"></td></tr><tr><td>LMS ENTRY:</td><td></td></tr></table>	LMS CODE:		LMS ENTRY:	
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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: 2610070101 / PLOR-018C

K/A: 295017AA1.09

RO: 3.6 SRO: 3.8

TASK DESCRIPTION: Manually Place SBT on Equipment Cell Exhaust

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.7.G Rev. 13, "SBGT Manual Startup on Equipment Cell Exhaust" (R)
2. ST-O-09A-500-2 Rev. 5, "SBGT Filter Train Operation Log" (A)

D. TASK STANDARD

1. Satisfactory task completion is indicated when SBGT operating on Equipment Cell Exhaust.
2. Estimated time to complete: 9 minutes (A.5) Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to place SBGT on Equipment Cell Exhaust 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 lined up for automatic operation per SO 9A.1.A, "Standby Gas Treatment System Lineup for Automatic Operation"
2. Operator stationed at Reactor Building Vent Panel 20C132.
3. Standby Gas Treatment Filter Train "A" has the least amount of run-hours.

G. INITIATING CUE

The Control Room Supervisor directs you to place SBGT on Equipment Cell Exhaust using SO 9A.7.G, "Standby Gas Treatment System Manual Startup on Equipment Cell Exhaust".



## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure SO 9A.7.G.	P	A copy of procedure SO 9A.7.G is obtained.
2	<p>Notify Health Physics that SBGT is to be started on Unit 2 Equipment Cell Exhaust.</p> <p><b>(Cue: Health Physics acknowledges notification.)</b></p>	P	Health Physics notified that SBGT is to be started on Unit 2 Equipment Cell Exhaust.
*3	<p>Open PO-20465, Exh To SBGT Equip Cell Damper.</p> <p>(Cue: Acknowledge control switch operation.)</p>	P	PO-20465 control switch placed in the OPEN position at panel 20C012.
4	<p>Verify PO-20465, Exh To SBGT Equip Cell Damper is open.</p> <p>(Cue: PO-20465 red light is on, green light is off.)</p>	P	PO-20465 red light verified ON at panel 20C012.
*5	<p>Open AO-20469-1, SBGT DW Rx Bldg Exh Damper.</p> <p>(Cue: Acknowledge control switch operation.)</p> <p>(Evaluator Note: This step is critical IF AO-20469-2 is <u>NOT</u> opened.)</p>	P	AO-20469-1 control switch placed in the OPEN position at panel 20C012.
6	<p>Verify AO-20469-1, SBGT DW Rx Bldg Exh Damper is open.</p> <p>(Cue: AO-20469-1 red light is on, green light is off.)</p>	P	AO-20469-1 red light verified ON at panel 20C012.

STEP NO	STEP	ACT	STANDARD
*7	Open AO-20469-2, SBTG DW Rx Bldg Exh Damper.  (Cue: Acknowledge control switch operation.)  (Evaluator Note: This step is critical IF AO-20469-1 is <u>NOT</u> opened.)	P	AO-20469-2 control switch is placed in the OPEN position at panel 20C012.
8	Verify AO-20469-2, SBTG DW Rx Bldg Exh Damper is open.  (Cue: AO-20469-2 red light is on, green light is off.)	P	AO-20469-2 red light verified ON at panel 20C012.
*9	Open AO-00475-1, SBTG "A" Filter Inlet Damper.  (Cue: Acknowledge control switch operation.)	P	AO-00475-1 control switch is placed in the OPEN position at panel 20C012.
10	Verify AO-00475-1, SBTG "A" Filter Inlet Damper is open.  (Cue: AO-0475-1 red light is on, green light is off.)	P	AO-00475-1 red light verified ON at panel 20C012. Acknowledges annunciator 216 A-5 "SBTG Filters Not in Auto".
*11	Open AO-00475-2, SBTG "A" Filter Outlet Damper.  (Cue: Acknowledge control switch operation.)	P	AO-00475-2 control switch is placed in the OPEN position at panel 20C012.
12	Verify AO-00475-2, SBTG "A" Filter Outlet Damper is open.  (Cue: AO-00475-2 red light is on, green light is off.)	P	AO-00475-2 red light verified ON at panel 20C012.
*13	Start "A" SBTG Fan.  (Cue: Acknowledge control switch operation.)	P	"A" SBTG Fan control switch is placed in the RUN position at panel 20C012.

STEP NO	STEP	ACT	STANDARD
14	Verify the "A" SBTG Fan Start.  (Cue: Flow rises to approx. 6000 SCFM on FR-20008 and "A" SBTGs Filter $\Delta P$ rises to 1" H <sub>2</sub> O on DPI-20001 "A" SBTG Fan red light is on, green light is off.)	P	SBGT Flow rises to approx. 6000 SCFM on FR-20008, "A" SBTGs Filter $\Delta P$ rises to 1" H <sub>2</sub> O on DPI-20001 and "A" SBTG Fan red light verified ON at panel 20C012.
15	Wait 3 to 5 seconds after "A" SBTG fan starts to close AO-20467.	P	AO-20467 is closed more than 3 seconds after "A" SBTG fan is started.
*16	Close AO-20467, Ventilation Exhaust Equip Cell Damper.  (Cue: Acknowledge control switch operation.)	P	AO-20467 control switch is placed in the CLOSE position at panel 20C012.
17	Verify AO-20467, Ventilation Exhaust Equip Cell Damper is closed.  (Cue: AO-20467 green light is on, red light is off.)	P	AO-20467 green light verified ON at panel 20C012.
*18	Close AO-20468, Ventilation Exhaust Equip Cell Damper.  (Cue: Acknowledge control switch operation.)	P	AO-20468 control switch is placed in the CLOSE position at panel 20C012.
19	Verify AO-20468, Ventilation Exhaust Equip Cell Damper is closed.  (Cue: AO-20468 green light is on, red light is off.)	P	AO-20468 green light verified ON at panel 20C012. Acknowledges annunciator 216 L-1.

STEP NO	STEP	ACT	STANDARD
20	<p>Direct Equipment Operator to verify Equipment Cell Exhaust Fans 2AV18 and 2BV18 are not running and verify the control switches for both of the Equipment Cell Exhaust Fans are in "OFF".</p> <p><b>(Cue: Equipment Operator reports 2AV18 and 2BV18 are not running and both of the Equipment Cell Exhaust Fan control switches are in "OFF".)</b></p>	P	Equipment Operator directed to verify the Equipment Cell Exhaust Fans not running and Fan control switches in "OFF".
21	<p>Verify proper operation of the SBTG system.</p> <p>(Cue: SBTG Filter DP is in the Expected Performance Region of SO 9A.7.G, Figure 1.)</p>	P	The "A" SBTG Filter DP is verified to be in Expected Performance Region of Figure 1 of SO 9A.7.G and SBTG System flow is verified to be between 2000 and 9000 SCFM on FR-20008.
22	<p>Verify Unit 2 Reactor Building differential pressure between -.1 and -.4" H<sub>2</sub>O as indicated on DPI-20003-01.</p> <p>(Cue: Reactor Building DP is between - 0.1 and -0.4" H<sub>2</sub>O.)</p>	P	Reactor Building DPI-20003-01 indicates between -.1 and -.4" H <sub>2</sub> O. Equipment Operator is directed to adjust differential pressure between -.1 to -.4 inches of water as necessary.
23	<p>Verify Unit 2 Refuel Floor differential pressure between -.1 and -.4" H<sub>2</sub>O as indicated on DPI-20003-02.</p> <p>(Cue: Refuel Floor DP is between -0.1 and -0.4" H<sub>2</sub>O.)</p>	P	Equipment Operator is directed to verify Refuel Floor DPI-20003-02 indicates between -.1 and -.4" H <sub>2</sub> O. . Equipment Operator is directed to adjust differential pressure between -.1 to -.4 inches of water as necessary.
24	<p>Log start time in the SBTG Filter Train Run Log in accordance with ST-O-09A-500-2.</p> <p>(Cue: Start time is logged in ST-O-09A-500-2.)</p>	P	Logs start time in ST-O-09A-500-2, Data Sheet 1.

STEP NO	STEP	ACT	STANDARD
25	Inform Control Room Supervisor of task completion.  <b>(Cue: Control Room Supervisor acknowledges report.)</b>	P	Task completion reported.
26	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

#### I. TERMINATING CUE

When Equipment Cell Exhaust is placed on Standby Gas Treatment, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Standby Gas Treatment System lined up for automatic operation per SO 9A.1.A, “Standby Gas Treatment System Lineup for Automatic Operation”**
- 2. Operator stationed at Reactor Building Vent Panel 20C132.**
- 3. Standby Gas Treatment Filter Train “A” has the least amount of run-hours.**

## **INITIATING CUE**

**The Control Room Supervisor directs you to place SBT on Equipment Cell Exhaust using SO 9A.7.G, “Standby Gas Treatment System Manual Startup on Equipment Cell Exhaust”.**

**EXELON NUCLEAR**  
Nuclear Generation Group

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE																
PROGRAM:	LICENSED OPERATOR TRAINING	CODE #:	PLOR-105P																
COURSE:	LICENSED OPERATOR REQUALIFICATION	REV #.:	011																
AUTHOR:	M. J. Kelly	TYPIST:	mda																
TITLE:	ALTERNATE RPV INJECTION USING THE SBLC TEST TANK																		
<b>APPROVALS:</b> <table style="width: 100%; border: none;"> <tr> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> <tr> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> <tr> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> <tr> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> </table>				_____	Signature / Title	_____	Date	_____	Signature / Title	_____	Date	_____	Signature / Title	_____	Date	_____	Signature / Title	_____	Date
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<b>APPROVED FOR USE:</b> <table style="width: 100%; border: none;"> <tr> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Signature / Title</td> <td style="border: none; text-align: right;">_____</td> <td style="border: none; text-align: center;">Date</td> </tr> </table>				_____	Signature / Title	_____	Date												
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NAME: _____ <div style="display: flex; justify-content: space-between; width: 80%; margin: 0 auto;"> <span>Last</span> <span>First</span> <span>M.I.</span> </div>	ISSUE DATE: _____				
EMPLOYEE I.D. NO. _____	COMPLETION DATE: _____				
COMMENTS:					
Training Review for Completeness:  <div style="border-top: 1px solid black; width: 80%; margin: 0 auto; text-align: center;"> Signature/Date </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">LMS CODE:</td> <td style="width: 50%;"></td> </tr> <tr> <td>LMS ENTRY:</td> <td></td> </tr> </table>	LMS CODE:		LMS ENTRY:	
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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: 2005410599 / PLOR-105P

K/A: 295031EA1.08

URO: 3.8    SRO: 3.9

TASK DESCRIPTION: Alternate RPV Injection Using the SBLC Test Tank

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. T-244-2, Tool Package
2. One 50 Foot Length of Air Hose
3. Unit 2 Locked Valve Key
4. EOP Tool Locker Key

C. REFERENCES

1. T-244-2, Rev. 6, "Alternate Injection Using the SBLC Test Tank"

D. TASK STANDARD

1. Performance Location: Plant
2. Satisfactory task completion is indicated when the SBLC Test Tank is aligned for alternate RPV injection per T-244-2.
3. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to align the SBLC system for alternate RPV injection using T-244-2, "Alternate Injection Using the SBLC Test Tank". 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 T-244-2 "Alternate Injection Using the SBLC Test Tank" has been directed by TRIPs.
2. All rods are fully inserted.
3. SBLC pump(s) are available.
4. Demineralized water is available to the SBLC system.
5. A loss of power event is NOT in progress.

G. INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform T-244-2, "Alternate Injection Using the SBLC Test Tank" up to and including Step 4.6.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>***NOTE***</b></p> <p><b>IF this is the first in-plant JPM then the license candidate is required to go to the EOP Tool Locker. For subsequent in-plant JPMs it is not necessary to have the candidate go to the Tool Locker for JPMs that require material from the locker. Describing where the locker is located, how to access key to unlock it, and what procedure packages/material would be obtained is sufficient for subsequent JPMs.</b></p>			
1	Obtain the key for the Emergency Operating Procedure Tool Locker. (Cue: When examinee requests EOP Tool Locker key from WECS <u>OR</u> examinee identifies the location of the WECS key box and its associated key then evaluator should provide the EOP Tool Locker key.)	S	Emergency Operating Procedure (EOP) Tool Locker Key requested from WECS <u>OR</u> examinee identifies the location of the WECS key box and its associated key.
2	Obtain a Unit 2 Locked Valve Key.  (Cue: When the examinee identifies the location of the U-2 Lock Valve key located in the WECS key box <u>OR</u> examinee produces a personal copy of Lock Valve key, then the evaluator should state that the examinee has obtained a Unit 2 Locked Valve key.	S	Examinee identifies the location of the U-2 Lock Valve key located in the WECS key box <u>OR</u> examinee produces a personal copy of Lock Valve key.
3	Open Emergency Operating Procedure Tool Locker and obtain T-244-2 Tool Kit and 50 foot length of air hose.  (Cue: Equipment obtained.)	S, P	EOP Tool Locker located on Radwaste Building El. 165' is unlocked, opened and T-244-2 Tool Kit and is located.  The required 50 foot length of air hose is located in a separate locker nearby.
<p align="center"><b>***NOTE***</b></p> <p><b>When examinee locates tool kit and air hose, inform him that he now has the tools to perform the procedure. Provide the examinee with a copy of the T-200 procedure which corresponds to the tool kit that has been chosen. <u>DO NOT</u> allow tools to be removed from the locker. Relock the locker before leaving the area.</b></p>			

STEP NO	STEP	ACT	STANDARD
4	<p>Verify closed HV-2-11-28, "SBLC Test Tank 20T017 Inner Drain Valve". (RB 195' El. below the tank)</p> <p>(Cue: [CLOCKWISE] Valve handwheel turned, valve handwheel will not turn.)</p>	S	HV-2-11-28 valve handwheel CLOCKWISE turning is attempted to verify it will not close further.
5	<p>Verify closed HV-2-11-29 "SBLC Test Tank 20T017 Demin Water Hose Connection". (RB 195' El. East wall)</p> <p>(Cue: [CLOCKWISE] Valve handwheel turned, valve handwheel will not turn.)</p>	S	HV-2-11-29 valve handwheel CLOCKWISE turning is attempted to verify it will not close further.
*6	<p>Connect the 50 foot length of air hose to HV-2-11-29, "SBLC Test Tank 20T017 Demin Water Hose Connection".</p> <p>(Cue: 50 ft. air hose is connected to HV-2-11-29.)</p>	S	The 50 foot length of air hose has been connected to HV-2-11-29 via the quick disconnect.
*7	<p>Connect the 50 foot length of air hose to HV-2-38D-29, "Demin Water Hose Block Vlv for Stby Liq Ctrl Tnk 20T017" (RB 195' El. West wall).</p> <p>(Cue: 50 ft. air hose is connected to HV-2-38D-29.)</p>	S	The 50 foot length of air hose has been connected to HV-2-38D-29 via the quick disconnect.
*8	<p>Open HV-2-38D-29, "Demin Water Hose Block Vlv for Stby Liq Ctrl Tnk 20T017".</p> <p>(Cue: Valve handwheel turned [COUNTERCLOCKWISE] until stem length above valve yoke increases 2 inches then will not turn.)</p>	S	HV-2-38D-29 handwheel is turned COUNTERCLOCKWISE until resistance of the valve backseat is felt.
9	<p>Verify no leakage from the demineralized water hose connection.</p> <p>(Cue: There is no leakage from the hose connection.)</p>	S	Demineralized water hose connection is visually inspected for leakage.

STEP NO	STEP	ACT	STANDARD
*10	Open HV-2-11-29, "SBLC Test Tank 20T017 Demin Water Hose Connection", to fill the SBLC Test Tank.  (Cue: Valve handwheel is turned [COUNTERCLOCKWISE], stem length above valve yoke increases 2" then will not turn.)	S	HV-2-11-29 Handwheel is turned COUNTERCLOCKWISE until the resistance of the valve backseat is felt.
11	Observe LG-2797 "SBLC Test Tank Level" rising.  <b>(Cue: LG-2797 indication is rising "out of sight" high.)</b>	P	LG-2797 is observed on the side of the SBLC Test Tank.
12	<u>WHEN</u> the SBLC Test Tank is full, <u>THEN</u> close HV-2-38D-29 "Demin Wtr Hose Blk Vlv for SBLC Test Tank 20T017".  (Cue: Valve handwheel is turned [CLOCKWISE] until it will turn no further.)	S	HV-2-38D-29 handwheel is turned CLOCKWISE until resistance of the valve seat is felt.
13	Unlock HV-2-11-41 "SBLC Test Tank 20T017 Outlet to SBLC Pump Suction Hdr".  (Cue: Locking device is unlocked and removed.)	S	The locked valve key is inserted into the lock, the lock is unlocked and the chain is removed from HV-2-11-41 handwheel.
*14	Open HV-2-11-41 "SBLC Test Tank 20T017 Outlet to SBLC Pump Suction Hdr".  (Cue: Valve handwheel is turned [COUNTERCLOCKWISE] until stem length above valve yoke increases 4 inches and then will not move.)	S	HV-2-11-41 handwheel is turned COUNTERCLOCKWISE until resistance of valve backseat is felt.
15	Unlock HV-2-11-11, "SBLC Tank 20T018 Outlet Block to Pumps 2AP040 and 2BP040".  (Cue: Locking device is unlocked and removed.)	S	The locked valve key is inserted into the lock, the lock is unlocked and the chain is removed from HV-2-11-11 handwheel.

STEP NO	STEP	ACT	STANDARD
*16	Close HV-2-11-11 "SBLC Tank 20T018 Outlet Block to Pumps 2AP040 and 2BP040".  (Cue: Valve handwheel is turned [CLOCKWISE], stem length above yoke decreases until it will not turn further.)	S	HV-2-11-11 handwheel turned CLOCKWISE until valve will not turn further.
17	Inform Main Control Room that task is completed.  <b>(Cue: The Control Room acknowledges report.)</b>	S	Task completion reported using hand held radio or GAI-TRONICS page system.
18	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

#### I. TERMINATING CUE

When the SBLC system has been aligned for alternate RPV injection, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## **TASK CONDITIONS/PREREQUISITES**

- 1. Use of T-244-2 “Alternate Injection Using the SBLC Test Tank” has been directed by TRIPs.**
- 2. All rods are fully inserted.**
- 3. SBLC pump(s) are available.**
- 4. Demineralized water is available to the SBLC system.**
- 5. A loss of power event is NOT in progress.**

## **INITIATING CUE**

**The Control Room Supervisor directs you, the Equipment Operator, to perform T-244-2, “Alternate Injection Using the SBLC Test Tank” up to and including Step 4.6.**

**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-093P
<b>COURSE:</b>	Licensed Operator Requalification	<b>REV #:</b>	000
<b>AUTHOR:</b>	R. J. Artus	<b>TYPIST:</b>	Rja
<b>TITLE:</b>	RPV venting During Containment Flooding (T-252-3)		
<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: 2002300504 / PLOR-093P

K/A: 206000 K1.01

RO: 3.8      SRO: 3.9

TASK DESCRIPTION: RPV Venting During Containment Flooding

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. T-252 Tool Package (A)

C. REFERENCES

1. Procedure T-252-3, Rev. 8, "RPV Venting During Containment Flooding" (R)

D. TASK STANDARD

1. Satisfactory task completion is indicated when the required interlocks have been defeated to allow RAPV venting while flooding the containment.
2. Estimated time to complete: 24 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to allow for RPV vent during Primary Containment flooding 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. Alternate RPV depressurization is required by T-112.
2. Pneumatic supply and power is available to the HPCI and RCIC Steam Line Drain Valves.
3. HPCI System is shutdown.
4. RCIC System is shutdown.

G. INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform sections 4.3 and 4.4 of T-252-3, "RPV Venting During Containment Flooding" to setup the HPCI and RCIC Steam Line Drain flow paths.

## H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
<p align="center"><b>***NOTE***</b></p> <p><b>IF this is the first in-plant JPM then the license candidate is required to go to the EOP Tool Locker. For subsequent in-plant JPMs it is not necessary to have the candidate go to the Tool Locker for JPMs that require material from the locker. Describing where the locker is located, how to access key to unlock it, and what procedure packages/material would be obtained is sufficient for subsequent JPMs.</b></p>			
*1	Obtain the key for the Emergency Operating Procedure Tool Locker.  (Cue: Examinee locates the EOP Tool Locker key.)	S	Examinee identifies the location of the WCS keybox and its associated key.
*2	Open EOP Tool Locker and obtain T-252-3 Tool Kit.  (Cue: Equipment obtained.)	P	EOP Tool Locker is unlocked, opened and T-252-3 Tool Kit is located.
<p align="center"><b>****NOTE****</b></p> <p><b>When examinee locates tool kit, inform him that he now has the tools to perform the procedure. Provide the examinee with a copy of the T-200 procedure which corresponds to the tool kit that has been chosen. <u>DO NOT</u> allow equipment to be removed from the locker. Relock the locker before leaving the area.</b></p>			
*3	In the back of Panel 30C32, on Terminal Block BB, pull the following fuses: F5 (23A-F17) F6 (23A-F18)  (Cue: Fuses are pulled.)	S	Using fuse pullers, fuses F5 (23A-F17) and F6 (23A-F18) are pulled on Terminal Block BB in the back of Panel 30C32.
*4	In the back of Panel 30C39, on Terminals Block BB, pull the following fuses: F1 (23A-F1) F2 (23A-F2)  (Cue: Fuses are pulled.)	S	Using fuse pullers, fuses F1 (23A-F1) and F2 (23A-F2) are pulled on Terminal Block BB in the back of Panel 30C39 are pulled.
5	Verify closed MO-3-23-016 "Steam Isol" at panel 30C04B.  (Cue: Unit 3 Reactor Operator reports that MO-3-23-016 is CLOSED).	P	Due to the Cable Spreading Room being a radio free area, the Examinee calls the Main Control Room Unit 3 Reactor Operator <u>via telephone</u> to verify MO-3-23-016 is CLOSED.

STEP NO	STEP	ACT	STANDARD
6	Open MO-3-23-015 "Steam Isol" at Panel 30C04B.  <b>(Cue: Unit 3 Reactor Operator reports that MO-3-23-015 is OPEN).</b>	P	Due to the Cable Spreading Room being a radio free area, the Examinee calls Main Control Room Unit 3 Reactor Operator <u>via telephone</u> to verify MO-3-23-015 is OPEN.
7	Inform Shift Management that HPCI Steam Line Drain flow path is set up.  <b>(Cue: Acknowledge as Shift management the report that the HPCI Steam Line Drain flow path is setup).</b>	P	Due to the Cable Spreading Room being a radio free area, the Examinee informs Shift Management <u>via telephone</u> that the HPCI Steam Line Drain flow path is setup.
*8	In the back of Panel 30C33, on Terminal Block BB, pull the following fuses: F5 (13A-F21) F6 (13A-F22)  (Cue: Fuses are pulled.)	S	Using fuse pullers, fuses F5 (13A-F21) and F6 (13A-F22) are pulled on Terminal Block BB in the back of Panel 30C33.
*9	In the back of Panel 30C34, on Terminal Block BB, pull the following fuses: F1 (13A-F1) F2 (13A-F2)  (Cue: Fuses are pulled.)	S	Using fuse pullers, fuses F1 (13A-F1) and F2 (13A-F2) are pulled on Terminal Block BB in the back of Panel 30C34.
10	Verify closed MO-3-13-016 "Steam Isol" at panel 30C004C.  <b>(Cue: Unit 3 Reactor Operator reports that MO-3-13-016 is CLOSED).</b>	P	Due to the Cable Spreading Room being a radio free area, the Examinee calls the Main Control Room Unit 3 Reactor Operator <u>via telephone</u> to verify MO-3-13-016 is CLOSED.
11	Open MO-3-13-015 "Steam Isol" at Panel 30C04C.  <b>(Cue: Unit 3 Reactor Operator reports that MO-3-13-015 is OPEN).</b>	P	Due to the Cable Spreading Room being a radio free area, the Examinee calls the Main Control Room Unit 3 Reactor Operator <u>via telephone</u> to verify MO-3-13-015 is OPEN.
12	Inform Shift Management that RCIC Steam Line Drain flow path is set up.  <b>(Cue: Acknowledge as Shift Management the report that the RCIC Steam Line Drain flow path is setup).</b>	P	Due to the Cable Spreading Room being a radio free area, the Examinee informs Shift Management <u>via telephone</u> that the RCIC Steam Line Drain flow path is setup.

STEP NO	STEP	ACT	STANDARD
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 required steps have been completed to setup the HPCI and RCIC Steam Line Drain flow paths, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

## TASK CONDITIONS/PREREQUISITES

1. Alternate RPV depressurization is required by T-112.
2. Pneumatic supply and power is available to the HPCI and RCIC Steam Line Drain Valves.
3. HPCI System is shutdown.
4. RCIC System is shutdown.

## INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform sections 4.3.and 4.4 of T-252-3, "RPV Venting During Containment Flooding" to setup the HPCI and RCIC Steam Line Drain flow paths.

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

**OJT/TPE MATERIAL COVERSHEET**

TYPE:	<input checked="checked" type="checkbox"/> JPM	<input type="checkbox"/> QUALIFICATION MANUAL	<input type="checkbox"/> OJT MODULE
PROGRAM:	Licensed Operator Training	CODE #:	PLOR-096P
COURSE:	Licensed Operator Requalification Training	REV #:	016
AUTHOR:	J. R. Felice	TYPIST:	Mda
TITLE:	Loss of RBCCW (Plant Actions for the Instrument Nitrogen System)		
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 I.D. NO. _____		COMPLETION DATE: _____	
COMMENTS:			
Training Review for Completeness:  _____ Signature/Date		LMS CODE:	
		LMS ENTRY:	

EXELON NUCLEAR  
PEACH BOTTOM ATOMIC POWER STATION  
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2000200401 / 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 near the Scram Discharge Instrument Volume 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 near the Scram Discharge Instrument Volume area.
<p style="text-align: center;"><b>***NOTE***</b></p> <p><b>For the next 2 steps, after the examinee identifies the location of the control station for the AO-4230B on the TIP Room Roof, have them demonstrate required actions back on the control station for the AO-4230A since it is more accessible.</b></p>			
*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.

STEP NO	STEP	ACT	STANDARD
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.
10	Inform Control Room Supervisor of task completion.  <b>(Cue: Control Room Supervisor acknowledges report.)</b>	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.**

<b>Simulation Facility</b>	<u>Peach Bottom</u>	<b>Scenario No.</b>	<u>#1</u>	<b>Op Test No.</b>	<u>2015 NRC</u>
<b>Examiners</b>	_____	<b>Operator</b>	_____	CRS (SRO)	
	_____		_____	URO (ATC)	
	_____		_____	PRO (BOP)	

**Scenario Summary** The scenario begins with the reactor at approximately 3% power during a reactor startup.

Following shift turnover, the PRO will secure the Drywell Purge lineup.

A Primary Containment Isolation valve will fail open. The failed valve will require the CRS to evaluate the situation in Tech Specs and determine that the penetration must be isolated within four hours.

The URO will continue the startup by raising reactor power to > 4% by withdrawing control rods in accordance with the approved startup sequence until 3 main turbine bypass valves are open with reactor pressure at 915 psig using procedure GP-2-2, "Normal Plant Startup".

A control rod will become mispositioned due to a Reactor Manual Control System timer failure, requiring the crew to execute ON-122, "Mispositioned Control Rod" to return the control rod to the correct target position.

Following the mispositioned Control Rod, the steam supply valve for the in-service Steam Jet Air Ejector fails closed due to a loss of its normal air supply. The loss of steam to the air ejector will cause main condenser vacuum to get worse. The crew should recognize the lowering vacuum condition and enter procedure OT-106 "Condenser Low Vacuum". The CRS should direct the crew to place the steam supply valve alternate air supply in service and restore the air ejector to normal service and thereby reestablishing normal main condenser vacuum. The CRS might direct the PRO to swap Air Ejectors using SO 8A.6.A-2, "Placing the Standby SJAE In Service and Placing the In-Service SJAE in Standby".

Once main condenser vacuum is normal there will be a spurious start of the "A" loop of Core Spray. Following the spurious start a leak will occur in the "A" Core Spray pump discharge piping. The leak will continue until the Crew secures the pumps and isolated the suction for the "A" Core Spray pump. The CRS should reference Technical Specifications for required actions with the "A" Core Spray pump inoperable.

When the CRS has determined the Tech Spec action, the startup level control system will experience a control signal failure resulting in the startup level control valve failing closed. The valve closure will halt any makeup to the RPV and subsequently RPV level will lower. The crew should recognize the lowering RPV level and enter procedure OT-100 "Reactor Level Low". Placing the startup level control valve controller into manual will not return control of the makeup valve. The URO will need to establish RPV level control using the "C" RFP discharge valve and RFP speed.

Once RPV level is stabilized, a steam leak will develop in the primary containment with a stuck open Torus to Drywell vacuum breaker. The crew should recognize the rise in drywell temperature and pressure and enter procedure OT-101 "High Drywell Pressure". OT-101 actions include maximizing drywell cooling and isolating steam supply valves in the drywell in order to identify the possible leak location. When drywell pressure reaches 1.2 psig the crew should attempt to scram the reactor. When the mode switch is placed in shutdown no control rods will insert due to an electric ATWS. The crew should enter procedure T-101 "RPV Control" to respond to the ATWS condition. The control rods will fully insert and the ATWS will be terminated when Alternate Rod Insertion is initiated using Rapid Response Card RRC 3B.1-2 "ARI During a Plant Event". **(Critical Task; Insert all control rods using ARI)**

When drywell pressure reaches 2 psig the crew will enter procedure T-102 "Primary Containment Control" to respond to the degrading condition. The crew should spray the primary containment using procedure T-204 "Initiation of Containment Sprays Using RHR" to maintain below the Pressure Suppression Pressure Limit. **(Critical Task; Spray the Drywell before the Pressure Suppression Pressure Limit Curve is exceeded)** When Drywell Sprays are placed in-service, the RHR pump will trip and another RHR will need to be placed in-service. The scenario will be terminated when Primary Containment pressure is stable due to spraying containment.

**Initial  
Conditions  
Turnover**

IC-71 Approximately 3% power

Unit 2 startup is in progress.

Drywell purge needs to be secured. The extra RO will begin inerting Containment shortly after turnover.

Reactor Power is approximately 3% with direction to continue to raise Reactor power with control rods using GP-2-2

Event No.	Malfunction No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Secure the Drywell Purge Lineup
2	See Scenario Guide	TS CRS	Failure of a Primary Containment isolation valve
3	See Scenario Guide	R URO CRS	Raise reactor power by withdrawing control rods until 2 main turbine bypass valves are open with reactor pressure at 915 psig
4	See Scenario Guide	C URO CRS	A control rod becomes mispositioned, requiring execution of ON-122 "Mispositioned Control Rod"
5	See Scenario Guide	C PRO CRS	Steam supply valve for in-service Steam Jet Air Ejector fails closed / lowering main condenser vacuum
6	See Scenario Guide	C TS PRO CRS	"A" Core Spray loop spurious start. "A" Core Spray suction line break/flooding (Tech Spec)
7	See Scenario Guide	C URO CRS	Startup level control valve fails closed / lowering RPV level
8	See Scenario Guide	M ALL	Reactor coolant leak inside the drywell / Torus to Drywell vacuum breaker fails open
9	See Scenario Guide	C URO CRS	ATWS / Control rods inserted using Alternate Rod Insertion
10	See Scenario Guide	C PRO CRS	RHR pump running in Torus Spray trips

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

## **SIMULATOR OPERATOR INSTRUCTIONS FOR 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 scenario is a new scenario written for the 2015 NRC exam.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-9, 8% power (IC-71 for the 2015 exam)  
OR
- Insert Control Rods to lower Reactor power to 3%.  
AND
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active
- "A" RFP M/A Station is at 0.

#### **Blocking Tags**

- None

**Activate APP NRC 1 or insert the following:**

#### **Event Triggers**

TRG E3 = FALSE  
TRG E4 = FALSE  
TRG E5 = FALSE  
TRG E6 = FALSE

## **Malfunctions**

**IMF CSS02A (E3 1:00 0) 100** "CS Pmp A Discharge Line Break Before the Check Valve"

**IMF FWC01D (E5) 5** "LCV 8091 Controller Failure"

**IMF MSS01 (E6) 15 30:00** "Steam leakage Inside the Primary Containment"

**IMF PCS03A (E6)** "Torus-Drywell Vacuum Breaker 'A' Fails Open"

## **Overrides**

**IOR ZYP12A1S101B (E3) ARMED** "CS SYS I Manual Init PB"

**IOR ZYP12A1S101A (E3) ON** "CS SYS I Manual Init PB"

**IOR ZLOPC03AO2506\_2 (E4) ON** "DW 18" Vent Valve AO 2506 (Red)"

**IOR ZLOPC03AO2506GRP\_2 (E-4) ON** "DW 18"Vent Valve AO-2506 (Red)"

**IOR ANO203BA3 (E4) ALARM\_ON** "Drywell Vent valves Open (225 A3)"

**IOR ANO206LH1 (E5) ALARM\_ON** "Feedwater Field Inst Trouble"(201 H1)

## **Trip Overrides**

**MRF RPS01TO OVERRIDE** "RPS Auto Scram CH A-1"

**MRF RPS02TO OVERRIDE** "RPS Auto Scram CH A-2"

**MRF RPS05TO OVERRIDE** "RPS Auto Scram CH A-3"

## **Remote Functions**

**None**

## **Expert Commands**

## **Turnover Procedures**

GP-2-2, "Normal Plant Startup" completed up to step 6.2.53 with the exception of step 6.2.49 to secure purge.

Control Rod sequence sheets marked up through Sequence Step 14 Group 8 rod 10-19 is the next Control Rod to be withdrawn.

ReMA for the plant startup with guidance for Control Rod withdrawal described on page 6 of this scenario.



## **SIMULATOR OPERATOR DIRECTIONS**

**EVENT 1**     Secure the Drywell Purge Lineup - Support the Crew as necessary to allow the PRO to secure the Drywell Purge lineup.

If directed to close and lock HV-2-36B-23840A and HV-2-36B-23840D, wait approximately 4 minutes and report that HV-2-36B-23840A and HV-2-36B-23840D are locked and closed.

**EVENT 2**     Failure of a Primary Containment Isolation Valve – When the operator begins to secure SGBT or at the direction of the Lead Examiner, initiate **ET 4** (ZLOPC03AO2506\_2, ZLOPC03AO2506GRP\_2 & ANO203BA2) to fail the boot seal on the DW 18” Vent Valve AO-2506.

If directed to check the Instrument Air Supply and Backup Nitrogen Supply pressures for the AO-2506, THEN WAIT approximately 4 minutes and report that Instrument Air Supply pressure and the Backup N2 Supply pressure is approximately 50 psig and that the valve appears to be closed.

**EVENT 3**     Control Rod Withdraw – Support the crew as necessary during Control Rod withdraw.

**EVENT 4**     Mispositioned Control Rod – When Control Rod 42-35 is withdrawn, the Control Rod will move beyond the expected position and be mispositioned.

Before Control Rod 42-35 is withdrawn, enter APP-NRC\_1\_1 or insert the following:

- **TRG E1 = ON\_122**     (Activates when the green light above the rod movement control switch is energized.)
- **TRG E2 = ON122A**     (Activates when the settle light is energized.)
- **IOR ZAP02A4S03 NOTCH OVERRIDE** “Emergency In/Notch Override Switch”
- **IOR ZLORD05A3ADS6 OFF** “Emergency In/Notch Override switch yellow light”
- **IOR ZYP02A4S09 (E1 0 8) OUT NOTCH** “Rod Movement Control Switch”
- **TRG E2 = DOR ZYP02A4S03**
- **TRG E2 = DOR ZLORD05A3ADS6**

At the completion of the movement verify the **ET-2** has deleted ZYP02A4S03 and ZLORD05A3ADS6.

## **SIMUALTOR OPERATOR DIRECTIONS**

**EVENT 5**     Loss of Main Condenser Vacuum - When Control Rod 42-35 is returned to position 12 or at the direction of the Lead Examiner, enter **MRF MSS05A CLOSE** "A' SJAE Stm Isolation Valve AO 2466A".

The steam supply to the "A" Air Ejector will go closed. Steam Supply can be restored by using the Alternate Instrument Air Supply control switch.

**EVENT 6**     Core Spray Spurious Start and Room Leak – At the direction of the Lead Examiner, initiate **ET 3** (ZYP12A1S101B, ZYP12A1S101A, CSS02A) to spuriously start the A and C Core Spray pumps and cause a leak on the "A" Core Spray pump discharge piping.

If directed to investigate the Core Spray pump starts, wait approximately 3 minutes and report that you don't know why the Core Spray pumps started.

If directed to investigate the room flood alarm report that there is water in the "A" Core Spray pump room and that the level is rising. Continue to report that the water is rising until the "A" Core Spray suction valve is fully closed. Modify the report of leak rate based on the status of the Core Spray Pumps.

If directed to rack out the "A" Core Spray pump breaker, then perform the following:

- **IOR ZLOCS032AP37\_1 OFF**, "2A Core Spray Pump (Green)"
- **IOR ZLOCS032AP37\_2 OFF**, "2A Core Spray Pump (Red)"
- **IOR ZYP12A1S07 STOP**, "2A Core Spray Pump (Stop/Start)"

**EVENT 7**     Startup Level Controller Fails Low – At the direction of the Lead Examiner, initiate **ET-5** (FWC01D & ANO206LH1). The Startup level controller will fail in the closed direction. RPV level control will be with the "C" RFP discharge valve and RFP speed.

If directed to investigate the feedwater trouble as I&C, wait approximately 10 minutes and report that you cannot determine an issue with the startup level controller but will continue to look.

**If the crew does not recover RPV level and the Reactor scrams, then move onto event 8.**

## **SIMULATOR OPERATOR DIRECTIONS**

**EVENT 8**     Steam Leak in the Drywell - At the direction of the Lead Examiner initiate **ET-6** (MSS01 and PCS03A). The steam leak will cause Primary Containment parameters to deteriorate and require a Reactor scram. The failed open Torus to Drywell Vacuum Breaker will require the Crew to spray containment in-order to prevent an Emergency Blowdown (exceeding the Pressure Suppression Pressure limit).

If directed to raise chiller loading to 100%, wait approximately 4 minutes and report the "C" chiller load has been raised to 100%.

If directed to report Drywell Chilled Water Return Header pressure, wait approximately 5 minutes and report that Drywell Chilled Water Return Header pressure is 26 psig.

If directed to place the Drywell fans in slow speed wait approximately 10 minutes and report that the fan control switches are in slow speed.

**EVENT 9**     ATWS, Control Rods Will Insert with ARI - When the Crew scrams the Reactor the Control Rods will not insert. Control Rods will insert when ARI is initiated.

**EVENT 10**    RHR Pump Trips – When Drywell Sprays are placed in service, trip the operating RHR pump by inserting Malfunction **IMF RHR01A-D**.

If directed to determine the cause of the RHR pump trip, wait approximately 3 minutes and report that the RHR pump tripped on instantaneous overcurrent.

**TERMINATION**     The scenario may be terminated when Primary Containment pressure is stable due to spraying containment.

## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

A Unit 2 startup is in progress at approximately 3% Reactor power.

### **INOPERABLE EQUIPMENT/LCOs:**

None

### **SCHEDULED EVOLUTIONS:**

Continue the Reactor startup in accordance with GP-2-2.

Secure the Drywell purge lineup using SO 7B.4.A-2, "Containment Atmosphere De-Inerting and Purging Via SGBT System" steps 4.22.1-4.22.12.

### **SURVEILLANCES DUE THIS SHIFT:**

None

### **ACTIVE CLEARANCES:**

None

### **GENERAL INFORMATION:**

When the Crew assumes the shift, secure the Drywell Purge lineup. GP-2-2 is complete up to step 6.2.53 with the exception of step 6.2.49 to secure purge. A Reactivity Briefing was already completed and you are ready to begin withdrawing rods at the beginning of Rod Group 8, Control Rod 10-19, to achieve 2 bypass valves open.

An unexpected slow response was observed by the Reactor Operator when rods 18-35, 42-27, 42-35 and 18-27 were moved from position 8 to position 12. Because of this the Reactor Engineers will be performing special testing prior to the movement of these Control Rods. These Control Rods are the first 4 Control Rods to be withdrawn in Sequence 15. Prior to withdrawing these Control Rods the Reactor Operator will:

1. Ensure the Reactor Engineers are ready to monitor Control Rod withdrawal.
2. Notch out the Control Rod from position 12 to position 14.
3. Verify proper operation of the Control Rod with the Reactor Engineer.
4. Withdraw the selected Control Rod to position 48.

### **CRITICAL TASK LIST**

1. Insert all control rods using ARI. (T-101-2)
2. Spray the Drywell before the Pressure Suppression Pressure (PSP) Limit Curve is exceeded. (T-102-7a)

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 1      Page: 1 of 18

**Event Description:**      **Secure the Drywell Purge Lineup using SO 7B.4.A-2, "Containment Atmosphere De-Inerting and Purging Via SBT System"**

**Cause:**      N/A

**Effect:**      N/A

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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PRO		<p>Place the standby Drywell Purge fan in OFF.            Stop the running Drywell Purge fan.            Acknowledge and report alarm 220 G-4, "LOW DRYWELL TO TORUS DIFFERENTIAL PRESSURE". (Expected alarm for securing the purge lineup.)            Shutdown the SBT system:</p> <ul style="list-style-type: none"> <li>• Take the SBT fan control switch to STOP then to AUTO.</li> <li>• Close "A' filter Inlet AO-00475-1 Valve" then place the control switch to AUTO.</li> <li>• Close "A' filter Outlet AO-00475-2 Valve" then place the control switch to AUTO.</li> <li>• Acknowledge and report alarm 216 A-5, "STANDBY GAS TREATMENT FILTERS NOT IN AUTO". (Expected alarm for moving the control switch back to the AUTO position.)</li> </ul> <p>Close AO-20459 "DW Purge" on panel 20C012.            Close AO-20460 "DW Purge" on panel 20C012.            Verify HCS-00522-1 is open on panel 0BC452.            Close the following valves:</p> <ul style="list-style-type: none"> <li>• AO-2505, "DW Air Purge Inlet Valve"</li> <li>• AO-2520, "DW Air &amp; N2 Purge Valve"</li> <li>• AO-2506, "Drywell Ventilation INBD 18" Vent Valve"</li> <li>• AO-2507, "Drywell Ventilation OUTBD 18" Vent Valve"</li> <li>• AO-2521A, "Torus Air Purge Outboard Valve"</li> <li>• AO-2521B, "Torus Air &amp; N2 Purge INBD Valve"</li> <li>• AO-2511, "Torus Ventilation INBD 18" Vent Valve"</li> <li>• AO-2512, "Torus Ventilation OUTBD 18" Vent Valve"</li> <li>• AO-20469-1, "DW Rx BLDG Equip Exh"</li> <li>• AO-20469-2, "DW Rx BLDG Equip Exh"</li> </ul> <p>Direct an Equipment Operator to close and lock HV-2-36B-23840A (Step 4.22.11) and HV-2-36B-23840D (Step 4.22.12).</p>
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Operator Actions

OP Test No. 1      Scenario No.      1      Event No.      1      Page: 2 of 18

Event Description:      Secure the Drywell Purge Lineup using SO 7B.4.A-2,  
"Containment Atmosphere De-Inerting and Purging Via  
SBGT System" (continued)

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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URO	Continue to monitor RPV level and power. Provide peer checks to the PRO as directed.
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CRS	Monitor PRO actions.
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Operator Actions

OP Test No. 1      Scenario No.      1      Event No.      2      Page: 3 of 18

**Event Description:**      **Failure of a Primary Containment isolation valve**

**Cause:**      **Valve AO-2506 boot seal fails**

**Effect:**      **Tech spec required entry for a failed PCIV**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	<p>When the Operator begins to secure SGBT by securing the SGBT fan, recognize by reporting the "DRYWELL VENT VALVES OPEN" alarm (225 A-3).</p> <p>Enter and execute ARC 225 A-3.</p> <p>Recognize by reporting that AO-2506, "Drywell INBD 18" Vent" indicates mid position.</p> <p>Direct an Equipment Operator to monitor boot seal pressure.</p> <p>Verify the AO-2507, "Drywell OTBD 18" Vent Valve" is closed to isolate the Primary Containment penetration.</p>
	CRS	<p>Enter and execute ARC 225 A-3.</p> <p>Determine that AO-2506, "Drywell INBD 18 Vent" is INOP.</p> <p>Enter Tech Specs 3.6.1.3, PCIVs and determine that 3.6.1.3.A applies and the penetration must be isolated within 4 hours.</p> <p>Verify the AO-2507 "Drywell OTBD 18" Vent Valve" is closed to isolate the Primary Containment penetration.</p>



Operator Actions

OP Test No. 1      Scenario No.      1      Event No.      3      Page: 4 of 18

Event Description:      Power ascension with Control Rods

Cause:      N/A

Effect:      Raise power above 4% for T-101 entry and ATWS response in events 8 and 9.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	CRS	Direct the URO to commence rod withdrawal in accordance with the Startup REMA and the Startup Sequence beginning with Rod Group 8, control rod 10-19 to achieve 2 bypass valves open.
	URO	Withdraw the following Control Rods 10-19, 18-51, 42-11, 42-51, and 18-11. Withdraw control rods selecting the rod on the matrix and then using the Single Notch Withdrawal switch to withdraw control rods to position 10 then position 12. Monitor nuclear instrumentation and reactor power during control rod withdrawal. Withdraw Control Rod 18-35 to position 14 then to position 48. Withdraw Control Rod 42-27 to position 14 then to position 48. Withdraw Control Rod 42-35 to position 14. (When Control Rod 42-35 is notched out to position 14, Event 4 will occur.)
	PRO	Monitor balance of plant conditions during rod withdrawal. Peer Check rod motion as directed by CRS.

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 4      Page: 5 of 18

**Event Description:**      **Mispositioned Control Rod (ON-122, “Mispositioned Control Rod”)**

**Cause:**      **RMCS timer failure**

**Effect:**      **Control rod 42-35 will withdraw from the core beyond the expected single notch.**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO	<p>Recognize by reporting the mispositioned control rod.</p> <p>Recognize the mispositioned rod as a symptom for entry into ON-122, “Mispositioned Control Rod”.</p> <p>Halt all control rod motion and power changes not directed by ON-122.</p> <p>Notify Shift Management.</p> <p>Move Control Rod 42-35 back to position 12.</p> <p>Notify the Reactor Engineers of the mispositioned Control Rod</p>
	CRS	<p>Enter and execute ON-122, “Mispositioned Control Rod”.</p> <p>Notify the Reactor Engineers of the mispositioned Control Rod.</p>
	PRO	<p>Peer Check rod movement as directed by the CRS.</p>

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 5      Page: 6 of 18

**Event Description:**      **Steam Supply valve for the in-service Air Ejector fails closed (PRA)**

**Cause:**      **Failure of the normal air supply to steam valve AO-2466A.**

**Effect:**      **Air Ejector Supply pressure goes to 0 psig  
Main Condenser Vacuum begins to drop slowly**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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PRO/URO	Recognize by reporting the following alarms 204 D-5, "SJAE DISCHARGE HI/LO PRESSURE". 201 H-3, "H2 WATER CHEMISTRY SYSTEM TROUBLE". 003 E-3, "2 UNIT OFF GAS RECOMBINER TROUBLE". 218 E-2, AIR EJECTOR DISCHARGE RADIATION HIGH". Recognize by reporting the drop in Man Condenser vacuum. Recognize the drop in Main Condenser Vacuum as an entry into OT-106, "Condenser Low Vacuum". Enter and execute OT-106.
CRS	Enter and execute OT-106 Direct the PRO to perform step 3.8 of OT-106 to place the Alternate air supply in-service.
PRO	Place control switch "Alt Instr Air AO-2-08A-2466A" to OPEN. Verify AO-2-08A-2466A indicates open at Panel 20C006B. Place PIC-2239A, "A Steam Press" in MANUAL. Restore SJAE steam supply pressure to between 115 and 125 psig.

**The Crew may elect to restore the Air Ejector system using SO 8A.6.A-2, "Placing the Standby SJAE in Service and Placing the In-Service SJAE in Standby" instead of OT-106, "Condenser Low Vacuum". If that is the case then the crew will perform the below steps.**

CRS	Direct the PRO to place the "B" SJAE in-service with SO 8A.6.A-2, "Placing the Standby SJAE in Service and Placing the In-Service SJAE in Standby".
-----	---

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 5      Page: 7 of 18

**Event Description:**      **Steam Supply valve for the in-service Air Ejector fails closed (PRA) (continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
PRO		<p>Verify MO-2104B, "SPE B Isolation" is OPEN.  Verify MO-2105B, "SJAE B Isolation" is OPEN.  Verify PIC-2239B is in MANUAL at panel 20C007A.  Verify PIC-2239B 'S' setpoint is at 120 psig.  Verify PIC-2239B 'V' Output Valve signal is at the MINIMUM position.  Open AO-2244/45/47B, "Air Ejector Inlet B 2<sup>nd</sup> Stage".  Direct an Equipment Operator to adjust HCS-2-8A-2466B, "Main Steam Isolation Valve to SJAE 2B" to 35 to 40 psig.  Verify PIC-2239B is in MANUAL and slowly raise the output valve signal 'V' on PIC-2239B to slowly open CV-2-8A-2239B.  Observe rising pressure on PI-2472B on panel 20C006B.  Raise pressure slowly in 20 psig increments over several minutes until steam pressure is 115 to 125 psig.  Verify process 'P' and setpoint 'S' vertical bars matched and place PIC-2239B in "AUTO".  In necessary, then lower SJAE steam supply pressure as necessary on PIC-2239B to reduce SJAE steam supply pressure when 2<sup>nd</sup> stage vacuum for Standby SJAE is indicated on PI-2246B.  When SJAE 2<sup>nd</sup> Stage vacuum is greater than 13 inches Hgv on PI-2246B at panel 20C006B for the Standby SJAE, then OPEN AO-2238D/E/F, "Air Ejector Inlet B 1<sup>st</sup> Stage" and AO-2540B, "Air Ejector Inter Cdsr Drain".  When steam pressure reaches 115 to 125 psig, then place the control switch for AO-2236D/E/F, "Air Ejector Off-Gas Inlet B" in "AUTO"</p>

Operator Actions

OP Test No. 1      Scenario No.      1      Event No.      6      Page: 8 of 18

**Event Description:**      **Spurious start of A and C Core spray and a leak of the discharge of the "A" Core Spray pump**

**Cause:**      **Short in the manual initiation pushbutton logic**

**Effect:**      **Start of the A and C Core Spray pumps  
A Core Spray pump Room Flood Alarm**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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PRO	<p>Recognize and Report alarms</p> <ul style="list-style-type: none"> <li>• 223 A-5, "SYSTEM I CORE SPRAY TEST / ARMED".</li> <li>• 223 A-1, "A CORE SPRAY PUMP AUTO START".</li> <li>• 224 A-1, "C CORE SPRAY PUMP AUTO START".</li> <li>• 223 D-5, "A CORE SPRAY PUMP ROOM FLOOD".</li> </ul> <p>Enter and execute ARCs</p> <ul style="list-style-type: none"> <li>• 223 A-5, "SYSTEM I CORE SPRAY TEST / ARMED".</li> <li>• 223 A-1, "A CORE SPRAY PUMP AUTO START".</li> <li>• 224 A-1, "C CORE SPRAY PUMP AUTO START".</li> <li>• 223 D-5, "A CORE SPRAY PUMP ROOM FLOOD".</li> </ul> <p>Direct an Equipment Operator to investigate the "A" Core Spray Pump Room for Flooding.</p>
URO	<p>Recognize by reporting the following alarms:</p> <ul style="list-style-type: none"> <li>• 217 B-4, "A COOL TWR FANS TROUBLE".</li> <li>• 217 C-4, "B COOL TWR FANS TROUBLE".</li> <li>• 217 D-4, "C COOL TWR FANS TROUBLE".</li> </ul> <p>Recognize by reporting that the Cooling Towers are out of service.</p>

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 6      Page: 9 of 18

**Event Description:**      **Spurious start of A and C Core spray and a leak of the discharge of the "A" Core Spray pump (continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	CRS	<p>Enter and execute T-103 "Secondary Containment Control"</p> <p>Direct an Equipment Operator to monitor "A" Core Spray Pump room water level.</p> <p>Monitor Torus water level on PMS or at panel 20C003-3.</p> <p>Direct the PRO to secure the Core Spray pumps and close the "A" Core Spray Suction Valve (MO-2-14-007A).</p> <p>Evaluate Tech Specs 3.5.1, "ECCS Operating" 3.5.1.A, determine that the "A" Core Spray loop must be returned to operable within 7 days.</p> <p>The CRS may consider racking out the "A" Core Spray pump breaker using SO 54.7.C, "4KV Breaker Rack-out/Rack-in". If so, then direct the PRO to rack out the "A" Core Spray pump breaker.</p>
	PRO	<p>Monitor Torus water level on PMS or at panel 20C003-3.</p> <p>When directed secure the A and C Core Spray pumps.</p> <p>When directed close MO-2-14-007A, "A' Core Spray Pump Suction"" by inserting and turning a key for the suction valve control.</p> <p>If directed to rack out the "A" Core Spray pump breaker, then direct an Equipment Operator to perform SO 54.7.C, "4KV Breaker Rack-out/Rack-in".</p>

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 7      Page: 10 of 18

Event Description:      Startup level control valve fails closed (*PRA*)

Cause:      Failure of the control signal cable

Effect:      RPV level will begin to lower

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
URO		<p>Recognize by reporting alarm 201 H-1, "FEEDWATER FIELD INSTRUMENT TROUBLE".</p> <p>Recognize by reporting the lowering RPV level.</p> <p>Recognize the lowering RPV level as an entry into OT-100, "Reactor Low level".</p> <p>Enter and execute OT-100.</p> <p>Recognize the failure of the Startup Level Controller.</p> <p>Place the Startup Level controller in manual.</p> <p>Recognize that the Startup level control valve will not control in manual.</p> <p>Stabilize RPV level using the "C" RFP discharge valve and RFP speed.</p>
CRS		<p>Enter and execute OT-100.</p> <p>Direct the URO to place the Startup Level Controller in manual to control level if not already completed.</p>
PRO		<p>Provide peer checks as directed by the CRS.</p>

Operator Actions

OP Test No. 1      Scenario No.      1      Event No.      8      Page: 11 of 18

**Event Description:**      **Steam Leak in the Drywell with a failed open Torus to Drywell Vacuum Breaker**

**Cause:**      **An unidentified steam leak occurs in the Drywell.  
A Torus to Drywell Vacuum Breaker sticks when it opens and will not reclose.**

**Effect:**      **Containment pressure will rise. The suppression capability of the Drywell will not function allowing Drywell pressure to continue to rise. If Containment sprays are not placed in-service the Pressure Suppression Capability of the Drywell will be lost.**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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URO/PRO	Recognize by reporting the following alarms: <ul style="list-style-type: none"> <li>• 225 A-4, "DRYWELL HI/LO PRESS"</li> <li>• 210 F-2, "DRYWELL HI/LO PRESS"</li> </ul> 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 Maximizing drywell cooling using RRC 44A.1-2 "Maximize Drywell Cooling". Direct actions to monitor components e.g., RRP seals. 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> When Drywell pressure cannot be maintained below 1.2 psig, direct a GP-4, "Manual Reactor Scram".



Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 8      Page: 12 of 18

**Event Description:**      **Steam Leak in the Drywell with a failed open Torus to Drywell Vacuum Breaker (continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	<p>Perform OT-101 actions as directed:</p> <p>Monitor drywell pressure and plant parameters.</p> <p>If directed, verify drywell inerting is not in progress.</p> <p>If directed, maximize drywell cooling using RRC 44A.1-2 "Maximize Drywell Cooling".</p> <ul style="list-style-type: none"> <li>• Start the 2C DWCW pump by taking the control switch to RUN.</li> <li>• Start the 2C Drywell Chiller by taking the control switch to RUN.</li> <li>• If Drywell pressure is above .75 psig then direct an Equipment Operator to place the speed control switches for all of the Drywell Cooler Fans that are not running to SLOW speed.</li> <li>• Direct an Equipment Operator to raise the load setting on the "C" Drywell Chiller.</li> <li>• Place all Drywell Cooler Fan control switches to RUN.</li> </ul> <p>Monitor components for abnormal indications as directed by the CRS.</p> <p>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...).</p>
	URO	<p>Perform GP-4 "Manual Reactor Scram" actions:</p> <ul style="list-style-type: none"> <li>• Place the mode switch to "Shutdown".</li> <li>• Verify control rods inserting.</li> <li>• Verify APRMs are downscale.</li> </ul> <p>Report to the CRS that control rods have not inserted and that the APRMs are not downscale.</p>

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 8      Page: 13 of 18

**Event Description:**      **Steam Leak in the Drywell with a failed open Torus to Drywell Vacuum Breaker (continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	<p>Perform scram actions per RRC 94.2-2 "Plant Reactor Operator Scram Actions".</p> <p>Verify all isolations.</p> <p>Restore Instrument Nitrogen to the drywell when directed by the CRS using RRC 94.2-2 "Plant Reactor Operator Scram Actions".</p> <p>Recognize and respond to 2 psig drywell pressure and announce entry into T-101 "RPV Control" and T-102 "Primary Containment Control".</p>
	CRS	<p>Enter and execute T-101, "RPV Control".</p> <p>May enter T-117, "Level Power Control" if Control Rods are not inserting with ARI before the entry step for T-117 is reached in T-101.</p> <p>Enter and Execute T-101, RPV Control and T-102, Primary Containment Control when Drywell pressure reaches 2 psig.</p> <p>Verify adequate RPV level control and direct the PRO to secure HPCI.</p> <p>If entered, exit T-117, "Level Power Control" when control rods are inserted with ARI.</p> <p>Verify adequate RPV level control and direct the PRO to secure the RHR and Core Spray pumps.</p> <p>Direct URO/PRO to perform T-223 "Drywell Cooler Fan Bypass" to bypass and restore drywell ventilation.</p>

Operator Actions

OP Test No. 1      Scenario No. 1      Event No. 8      Page: 14 of 18

**Event Description: Steam Leak in the Drywell with a failed open Torus to Drywell Vacuum Breaker (continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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URO/PRO	<p>Recognize and verify Group II/III isolations.</p> <p>Recognize and report the HPCI auto start at 2 psig Drywell pressure.</p> <p>Trend and report containment parameters.</p> <p>Recognize and verify Diesel Generators start at 2 psig Drywell pressure and have cooling water.</p> <p>Recognize and report Core Spray and RHR pumps auto start when Drywell pressure reaches 2 psig and Reactor pressure is less than 450 psig.</p> <p>Perform T-223:</p> <ul style="list-style-type: none"> <li>• Verify T-223 requirements.</li> <li>• Verify operation on the safe side of Figure 1 "DWCW Saturation Curve".</li> <li>• Place all Drywell Cooler Control Switches in "OFF".</li> <li>• Momentarily place "D/W Cooler Fans 43-S-J165" control switch in "BYPASS" and allow it to spring return to "NORMAL".             <ul style="list-style-type: none"> <li>○ Verify the Amber light above the "D/W Cooler Fans 43-S-J165" control switch is lit.</li> <li>○ "DRYWELL COOLER FAN TRIP BYPASS" alarm in up on panel 207 B-2.</li> </ul> </li> <li>• Direct EO to place drywell fans in slow.</li> </ul> <p>Operate the Drywell Cooler Fans, as necessary to reduce Drywell pressure and temperature.</p>
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Operator Actions

OP Test No. 1      Scenario No.      1      Event No.      8      Page: 15 of 18

Event Description:      **Steam Leak in the Drywell with a failed open Torus to Drywell Vacuum Breaker (continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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PRO

Perform isolation or shutdown of HPCI as directed by the CRS.

- For isolation, depress the HPCI isolation pushbutton and verify that HPCI shuts down and the HPCI Steam Line Isolation Valves close.
- For a HPCI shutdown:
  - Place the HPCI aux oil pump control switch to start.
  - Depress and hold the HPCI trip pushbutton.
  - Verify that the HPCI aux oil pump starts as HPCI turbine speed drops.
  - When the indication for HPCI speed reached 0 RPM then place the HPCI Aux Oil Pump in Pull-to-Lock and release the HPCI trip pushbutton.

Shutdown Core Spray and RHR pumps as directed by the CRS.

Operator Actions

OP Test No.      Scenario No.      1      Event No.      9      Page: 16 of 18

Event Description:      ATWS

Cause:      Failure of the Automatic and Manual scram logic.

Effect:      Control Rods will not insert using the manual scram pushbuttons or  
with the mode switch Control Rods will insert with ARI

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	CRS	Direct the URO to initiate ARI
	URO CT	<p>Initiate ARI using RRC 3B.1-2 "Alternate Rod Insertion During a Plant Event" when directed:</p> <ul style="list-style-type: none"> <li>• Rotate the Arming collar clockwise for the "A" and "B" ARI initiation pushbuttons.</li> <li>• Depress the "A" and "B" ARI initiation pushbuttons.</li> </ul> <p>Recognize by reporting that the scram air header is depressurizing. Recognize by reporting that the control rods are inserting. Report that all of the control rods are inserted.</p>

Operator Actions

OP Test No.      Scenario No.      1      Event No.      10      Page: 17 of 18

**Event Description:**      **RHR pump in Drywell Spray trips**

**Cause:**      **Instantaneous overcurrent trip of the RHR pump selected for Containment Spray**

**Effect:**      **Containment Spray will be lost, requiring the crew to realign Containment Sprays with a different RHR pump.**

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

CRS	<p>When Torus pressure exceeds 2 psig, direct the PRO to spray the Torus using T-204, "Initiation of Containment Sprays using RHR". Direct the PRO to start a different RHR pump to reestablish Torus Sprays.</p> <p><b>When plant conditions permit, direct the PRO to spray the Drywell using T-204, "Initiation of Containment Sprays using RHR".</b></p>
PRO	<p>When directed, perform Torus Sprays IAW T-204 "Initiation of Containment Sprays using RHR":</p> <ul style="list-style-type: none"> <li>• Place keylock switch 10A-S18A(B), Containment Spray Override 2/3 Core Coverage" in MANUAL OVERRIDE</li> <li>• Momentarily place the S17A/B switch in "MAN".</li> <li>• Open MO-39A(B) "Torus Hdr. Valve".</li> <li>• Open MO-89C(D) "HPSW Outlet Valve"</li> <li>• Start a HPSW pump in the respective loop.</li> <li>• Start an RHR pump in the respective loop.</li> <li>• Throttle open MO-38A(B) to obtain 1000 gpm on FI-2-10-136A(B).</li> </ul>
CT	<p><b>When directed, perform Drywell Sprays IAW T-204 "Initiation of Containment Sprays using RHR":</b></p> <ul style="list-style-type: none"> <li>• <b>Verify both Recirc pumps are off.</b></li> <li>• <b>Verify all Drywell Cooling fan Switches are in Off</b></li> <li>• <b>Open MO-31A(B), "D/W Spray Inboard".</b></li> <li>• <b>Open MO-26A(B), "D/W Spray Outboard"</b></li> <li>• <b>Monitor Torus and Drywell pressure.</b></li> <li>• <b>Report the drop in Primary Containment pressure.</b></li> </ul> <p>Recognize by reporting the trip of the RHR pump. When directed, spray containment using another RHR pump or the other loop.</p>

Operator Actions

OP Test No.      Scenario No.      1      Event No.      10      Page: 18 of 18

Event Description:      RHR pump in Drywell Spray trips

Time   Position   Applicant's Actions or Behavior

PRO      Spray Containment with the other RHR pump in the same loop as follows:

- Close MO-2-10-034A(B), "Full Flow Test".
- Close MO-2-10 89A(B, C, D), "HPSW HX Out".
- Close MO-2-10-031A(B), "D/W Spray Inboard".
- Close MO-2-10-026A(B), "D/W Spray Outboard".
- Open MO-2-10-89A(B, C, D), "HPSW HX Out"
- Start 2A,(B, C, D) HPSW pump.
- Start the other RHR pump.
- Throttle open MO-38A(B) to obtain 1000 gpm on FI-2-10-136A(B).
- Open MO-31A(B), "D/W Spray Inboard".
- Open MO-26A(B), "D/W Spray Outboard"
- Monitor Torus and Drywell pressure.
- Report the drop in Primary Containment pressure.

**OR**

Spray Containment with the other RHR loop as follows:

- Place keylock switch 10A-S18A(B), Containment Spray Override 2/3 Core Coverage" in MANUAL OVERRIDE
- Momentarily place the S17A/B switch in "MAN".
- Open MO-39A(B) "Torus Hdr. Valve".
- Open MO-89C(D) "HPSW Outlet Valve"
- Start a HPSW pump in the respective loop.
- Start an RHR pump in the respective loop.
- Throttle open MO-38A(B) to obtain 1000 gpm on FI-2-10-136A(B).
- Open MO-31A(B), "D/W Spray Inboard".
- Open MO-26A(B), "D/W Spray Outboard"
- Monitor Torus and Drywell pressure.
- Report the drop in Primary Containment pressure.

**TERMINATION CRITERIA:**

The scenario may be terminated when Primary Containment pressure is stable due to spraying containment.

Simulation Facility Peach BottomScenario No. #2Op Test No. NRC

Examiners	_____	Operator	_____	CRS (SRO)
	_____		_____	URO (ATC)
	_____		_____	PRO (BOP)

**Scenario Summary** The scenario begins with the reactor at 100% power with the 'B' Electrohydraulic Control (EHC) pump and the E-332 breaker are blocked out of service for scheduled maintenance.

After taking the shift, the Crew will perform the Master Trip Solenoid Valve Routine Test RT-O-01D-402-2.

Shortly after this, the E-4 diesel generator will inadvertently start, requiring the Crew to shut down the E-4 diesel generator from the main control room and apply Technical Specifications for an inoperable diesel generator.

Following the diesel generator inoperability there will be a loss of the 250 VDC bus that supplies power to the RCIC system. The Crew must recognize the loss of DC power and apply Technical Specifications for the inoperable DC power supply.

Following the 250 VDC bus inoperability, the in-service Turbine Building Closed Cooling Water (TBCCW) pump trips on overload and the standby TBCCW pump fails to automatically start. The Crew should place the standby pump in service by placing its control switch to start and monitor the system pressure and temperature.

Shortly after the TBCCW system is restored the Crew should recognize and respond to lowering main condenser vacuum caused by air in-leakage. The Crew will be able to stabilize the plant with the existing air in-leakage by entering OT-106 "Condenser Low Vacuum" and reducing reactor power in accordance with GP-9-2 "Fast Power Reduction". During the power reduction a reactor feed pump will not automatically respond requiring the Crew to take manual control and reduce feed pump flow to avoid a main turbine trip on high reactor water level.

Following the power reduction, a high vibration condition for the main turbine will occur, requiring the Crew to scram the reactor and trip the main turbine. A CRD hydraulic malfunction will result in an ATWS, requiring the Crew to execute T-101 "RPV Control" and T-117 "Level/Power Control."

A failure of the only available EHC pump will cause the turbine bypass valves to close, requiring the Crew to utilize SRVs for reactor pressure control. The Crew should perform T-220 "Driving Control Rods During Failure to Scram" and T-216 "Control Rod Insertion by Manual Scram or Individual Scram Test Switches" to insert control rods. **(Critical Task; Attempt to shutdown the reactor by performing one or more of the following: T-216 "Control Rod Insertion by Manual Scram or Individual Scram Test Switches", T-220 "Driving Control Rods During Failure to Scram", T-246, "Maximizing CRD Flow to the Reactor Vessel", "Initiating Standby Liquid Control before Torus temperature**



**exceeds 110°F").** The scenario may be terminated when the Crew has control of RPV power and level using T-240 "Termination and Prevention of Injection into the RPV" and the Crew is inserting control rods. **(Critical Task; Before violating the Heat Capacity Temperature Limit (HCTL) curve,, perform T-240 "Terminating and Preventing Injection Into the RPV" to protect Primary Containment until: Reactor power is below 4% or RPV level reaches -172 inches or All SRVs remain closed and Drywell pressure is below 2 psig.)**

**Initial** IC-14, 100% power

**Conditions**

**Turnover** Reactor power is 100% power.

'B' Electrohydraulic Control (EHC) pump blocked out of service for scheduled maintenance.

E-332 breaker is blocked out of service for scheduled maintenance.

Perform the Master Trip Solenoid Valve Routine Test RT-O-01D-402-2.

Event No.	Malfunction No.	Event Type*		Event Description
1	See Scenario Guide	N	PRO CRS	Perform the master trip solenoid valve routine test
2	See Scenario Guide	I TS	PRO CRS	E4 diesel generator spurious start / diesel generator manual shutdown (Tech Spec)
3	See Scenario Guide	TS	CRS	Loss of 250 VDC bus / RCIC becomes unavailable (Tech Spec)
4	See Scenario Guide	C	PRO CRS	In service Turbine Building Closed Cooling Water (TBCCW) pump trips on overload / Failure of standby TBCCW pump to automatically start
5	See Scenario Guide	R	URO	Main condenser air in-leakage causes lowering condenser vacuum / GP-9 fast power reduction (with Recirc)
6	See Scenario Guide	C	URO	Reactor feed pump does not respond to lowering power change / must place in manual to control
7	See Scenario Guide	C	URO CRS	Main turbine high vibration / reactor scram
8	See Scenario Guide	M	ALL	ATWS (hydraulic)
9	See Scenario Guide	C	PRO	Remaining EHC pump trips causing loss of main turbine bypass valves / control reactor pressure with HPCI and/or SRVs

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

## **SIMULATOR OPERATOR INSTRUCTIONS FOR 2015 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 scenario is modified from the 2009 cert exam.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-14 100% Power
- Ensure that Reactor Recirc pump speeds are less than 1665 rpm
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### **Blocking Tags**

- Apply Information Tag to the 2B EHC Pump control switch
- Apply Information Tag to Annunciator 205 K-3 EHC STANDBY PUMP NOT IN AUTO
- Apply Information Tag to the E-332 breaker control switch.

**Activate APP “2015\_NRC\_SCN2” or insert the following:**

#### **Event Triggers**

TRG 1 FALSE  
TRG 2 FALSE  
TRG 3 FALSE  
TRG 4 FALSE  
TRG 5 FALSE  
TRG 6 RPV\_LEVEL\_LT\_-60  
TRG 7 REACTOR\_MODE\_SWITCH\_NOT\_IN\_RUN

## Malfunctions

IMF IPM03 98 "Hydraulic ATWS"  
IMF FWC01A 73 "'A' Local Controller Failure"  
IMF TBW04B "B' TBCCW pump fails to auto-start"  
IMF DCD01A (E2) "RCIC 250 VDC failure"  
IMF TBW01A (E3) "'A' TBCCW pump trip"  
IMF CAR01 (E4) 2 "Main Condenser air in-leakage" at 2% severity  
IMF MTA02B (E5) 100 10:00 "Main Turbine bearing 'B' high vibration"  
IMF MTA02C (E5) 100 10:00 "Main Turbine bearing 'C' high vibration"  
IMF EHH04A (E6 2:00 0) "2A EHC pump trip" 2 minutes after RPV level < -60 inches  
IMF EHH02A (E6 4:00 0) "'A' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02B (E6 4:00 0) "'B' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02C (E6 4:00 0) "'C' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02D (E6 4:00 0) "'D' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02E (E6 4:00 0) "'E' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02F (E6 4:00 0) "'F' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02G (E6 4:00 0) "'G' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02H (E6 4:00 0) "'H' Bypass valves fail closed" 4 minutes after RPV level < -60"  
IMF EHH02I (E6 4:00 0) "'I' Bypass valves fail closed" 4 minutes after RPV level < -60"

## Overrides

IOR ZLOT08A2BP17\_1 OFF (Block 2B EHC pump green light)  
IOR ZYP01A6S39 STOP (Block 2B EHC pump control switch)  
IOR ZLOED6C21521701\_1 OFF (E-332 BKR Lights (Green))  
IOR ZYP04A6S01 TRIP (E-332 BKR Control Switch)  
IOR ZYP04A8S04 (E1 0 2) START (E-4 DG QUICK START pushbutton)

## Trip Overrides

None

## Expert Command

TRG 7 = DMF IPM03

## Turnover Procedures

- RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test"

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 1**

Master Trip Solenoid Valves Routine Test - Support the crew as necessary for the Master Trip Solenoid Valves Routine Test.

### **EVENT 2**

E4 Diesel Generator Spurious Start - Following completion of the Master Trip Solenoid Valves RT, or when directed by the Lead Examiner, initiate **ET1** (IOR ZYP04A8S04 START) to cause a spurious start of diesel generator E4.

After the E4 diesel starts, verify override ZYP04A8S04 is deleted.

If asked to perform a running inspection on the E4 Diesel Generator, wait approximately 10 minutes and report that the E4 diesel is running but that there is a fuel oil leak and recommend that the D/G be secured.

If directed to trip the fuel racks for the E-4 Diesel Generator, wait approximately 1 minute and enter **IMF DGA01D** "Diesel Generator "D" Fails to Start" and report that the fuel racks are tripped.

With the concurrence of the Lead Examiner and acting as the Shift Manager, prompt the CRS to remove the E-4 diesel generator from service if progress is not being made by the Crew to remove the Diesel Generator from service.

### **EVENT 3**

Loss of 250 VDC - When the CRS completes the Tech Spec determination or at the direction of the Lead Examiner, initiate **ET2** (IMF DCD01A) to cause a trip of the RCIC 250 VDC bus.

Support the crew in responding ARC 209 (C-2) "2 DA RCIC 250 VDC BUS LO VOLTAGE"

When directed to perform ARC 209 (C-2):

- Wait approximately 2 minutes and report that Battery chargers 2AD003 and 2CD003 output voltage is 135 VDC,
- Wait approximately 10 minutes and report that there are blown bus feed fuses at Panel 2AD018. Request Maintenance assistance.

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 4**

Loss of "A" TBCCW Pump - After the Tech Spec determination has been made, or as directed by the Lead Examiner, initiate **ET3** (IMF TBW01A) to trip the 2A TBCCW pump. A pre-inserted failure (TBW04B) will prevent auto-start of the 2B TBCCW pump.

If directed to investigate the problems with the TBCCW pumps wait approximately 2 minutes and report that you don't know why the "B" TBCCW pump did not auto start. Wait approximately another 2 minutes and report that the "A" TBCCW pump has tripped on overload and the pump motor smells like burnt insulation.

### **EVENT 5**

Main Condenser Air In-leakage - When TBCCW flow is restored or at the direction of the Lead Examiner, initiate **ET4** (IMF CAR01) to cause Main Condenser air in-leakage.

Support the crew for GP-9, "Fast Power Reduction". Role-play as the Transmission System Operator and Generation Dispatch Power System Director when called.

As soon as the crew begins to reduce reactor power, **MMF CAR01 1 1:00 0** to reduce the severity of the condenser in-leakage to 1% severity.

### **EVENT 6**

"A" RFP Does Not Respond - "A" RFP will not respond in Auto during the power drop. The "A" RFP will not respond when control is transferred to Manual at the M/A station. RFP control will need to be transferred to MSC control.

### **EVENT 7**

After power is reduced, or as directed by the Lead Examiner, initiate **ET5** (IMF MTA02B & IMF MTA02C).

If directed to investigate the Main Turbine, wait approximately five minutes and when # 2 bearing is above 225°F, report that oil flow to the #2 bearing is normal.

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 8**

Hydraulic ATWS – Hydraulic ATWS occurs when the crew scrams the reactor.

When the mode switch is placed in SHUTDOWN (i.e., not in RUN), verify trigger **ET5 (DMF IPM03)** deletes the ATWS malfunction.

When RPV level is lowered to -60 inches, verify trigger **ET6 (IMF EHH04A)** initiates a trip of the 'A' EHC pump 2 minutes later.

When requested to install jumpers to bypass ARI and RPS per T-216 steps 4.1 & 4.2, **enter the following overrides:**

- **MRF ARI01TO OVERRIDE “ARIA4-ARIA Relay Trip Override”**
- **MRF ARI02TO OVERRIDE “ARIA4-ARIB Relay Trip Override”**

WAIT approximately 10 minutes and report to the MCR by phone or in person that jumpers for ARI (step 4.1) have been installed.

**Enter the malfunction IMF RPS05 “RPS Automatic Scram Circuit Failure”**

WAIT approximately 5 minutes and report to the MCR by phone or in person that jumpers for RPS (step 4.2) have been installed.

When requested to T-221 step 4.1, **enter the following Remote Function: T221\_1 DEFEAT “Remove Low RPV Level/GP1 Isolation”.**

WAIT approximately 3 minutes and report to the MCR by phone or in person that jumpers T-221 (step 4.1) have been installed.

If directed to perform T-247, “Aligning CST Bottom Suction to Main Condenser Hotwell and CRD Pumps”, wait approximately 7 minutes and report that the lineup is complete.

### **EVENT 9**

Bypass Valves Fail Closed - Bypass valves fail closed due to a loss of EHC pressure.

When RPV level is lowered to -60 inches, verify trigger **ET6 (IMF EHH04A)** initiates a trip of the “A” EHC pump 2 minutes later.

### **TERMINATION**

The scenario may be terminated when the crew has:

Control of RPV power and level using T-240 “Termination and Prevention of Injection into the RPV”

Control of RPV pressure with SRVs

Torus cooling in-service

Made attempts to shut down the Reactor with SBLC or Control Rods.

## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

- Unit 2 is at 100% power

### **INOPERABLE EQUIPMENT/LCOs:**

- 2B EHC pump is blocked OOS for micron filter replacement
- E-332 breaker is blocked OOS for preventive maintenance of breaker cubicle

### **SCHEDULED EVOLUTIONS:**

- Perform RT-O-01D-402-2 "Master Trip Solenoid Valves Operability Test"

### **SURVEILLANCES DUE THIS SHIFT:**

- None

### **ACTIVE CLEARANCES:**

- 2B EHC pump
- E-332 breaker

### **GENERAL INFORMATION:**

- None



## **CRITICAL TASK LIST**

**1. Before violating the Heat Capacity Temperature Limit (HCTL) curve, perform T-240 “Terminating and Preventing Injection into the RPV” to protect Primary Containment:**

- Reactor power is below 4%, OR
- RPV level reaches –172 inches, OR
- All SRVs remain closed and drywell pressure is below 2 psig.

(T-117-2)

**2. Attempt to shutdown the reactor by performing one or more of the following:**

- T-216 “Control Rod Insertion by Manual Scram or Individual Scram Test Switches”.
- T-220 “Driving Control Rods During Failure to Scram”.
- T-246, “Maximizing CRD Flow to the Reactor Vessel”.
- Initiating Standby Liquid Control before torus temperature exceeds 110<sup>0</sup>F.

(T-101-4)

### 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: N/A

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	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: E4 diesel generator spurious start

Cause: Spurious automatic start signal

Effects: 1. Alarm 005 F-4 "E4 Diesel Running".  
2. The diesel will continue to run until manually shutdown...it should not be left running for long periods unloaded due to accumulation of oil in the exhaust manifold.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	Acknowledge and report alarm 005 F-4 "E4 DIESEL RUNNING" and enter corresponding Alarm Response Card. Recognize the E4 diesel is running unloaded. Red flag the breaker for the E4 diesel. Verify diesel automatic response using SO 52B.1.B "Diesel Generator Automatic Start". <ul style="list-style-type: none"><li>• Verify an ESW pump started.</li><li>• Red-flag the ESW pump to remain in service.</li><li>• Shutdown the remaining ESW pump.</li><li>• Direct an Equipment Operator to perform a running inspection of the E-4 diesel generator.</li></ul>
	CRS	Per SO 52B.1.B (step 4.7), direct a shutdown of the E-4 diesel generator IAW the applicable steps of section 4.5 of SO 52A.1.B "Diesel Generator Operations". (May) direct placing the E4 diesel in Pull-to-Lock.
	PRO	Shutdown the E4 diesel IAW SO 52A.1.B: <ul style="list-style-type: none"><li>• Place the E4 diesel generator control switch to "STOP".</li><li>• Shutdown the running ESW pump in accordance with SO 33.2.A.</li><li>• Direct the Equipment Operator to continue with the E4 diesel shutdown in accordance with SO 52A.1.B, section 4.5.</li></ul> Place the E4 diesel in Pull-to-Lock, as directed.
	CRS	Declare the E-4 diesel inoperable. Review Tech Spec 3.8.1 and determine Condition B applies: <ul style="list-style-type: none"><li>• Verify alignment/availability of the Conowingo tie line immediately.</li><li>• Verify breaker alignment for operable offsite circuits within 1 hour.</li><li>• Restore the E-4 diesel generator to operable status within 14 days.</li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.: 1      Scenario No.: 2      Event No.: 3      Page: 3 of 12**

**Event Description:      RCIC 250 VDC bus failure**

**Cause:      Blown RCIC 250 VDC bus fuses**

**Effects:      1. Alarm 209 C-2 “2 DA RCIC 250 VDC Bus LO Voltage”  
                 2. RCIC is inoperable and unavailable for operation**

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO	Reference ARC 209 (C-2) “2 DA RCIC 250 VDC BUS LO VOLTAGE” Dispatch Equipment Operator to perform ARC Operator Actions: <ul style="list-style-type: none"><li>• Check operation of battery chargers 2AD003 and 2CD003 (output voltage)</li><li>• Check bus feed fuses at Panel 2AD018.</li></ul>
	CRS	Enter SE-13 “Loss of a 125 or 250 VDC Safety Related Bus” (there are no specific actions required by SE-13 for this event). Refer to Tech Spec 3.8.7 D for RCIC 250 VDC Distribution System. Determine that DC power must be restored in 2 hours. While not required the CRS may refer to TS 3.5.3 for RCIC and TS 3.6.1 for PCIS. While not required, the Crew may test annunciators. Request assistance for troubleshooting/investigation from Shift Manager.

### Operator Actions

ES-D-2

Op Test No.: 1 Scenario No.: 2 Event No.: 4 Page: 4 of 12

Event Description: TBCCW pump trips with failure of the standby pump to auto-start

Cause: Overload of 2A TBCCW pump due to excessive motor bearing friction  
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

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	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. Start the 2B TBCCW pump as part of verifying automatic actions.
	CRS	Enter ON-118 "Loss of TBCCW" (may direct 2B TBCCW pump start from ARC 217 C-5 and not enter ON-118). 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.
	PRO	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".
	URO	Monitor plant parameters/assist as necessary.

### Operator Actions

ES-D-2

Op Test No.: 1 Scenario No.: 2 Event No.: 5 Page: 5 of 12

Event Description: Condenser air in-leakage / fast power reduction (w/ recirc)

Cause: Crack in condenser weld joint

Effects: 1. Alarm 206 D-2, "Condenser Lo Vacuum"  
2. Lowering main condenser vacuum, requiring a fast power reduction

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	Acknowledge, report alarms and enter corresponding Alarm Response Card for the following alarms: <ul style="list-style-type: none"><li>206 D-2, "CONDENSER LO VACUUM" Recognize and report lowering main condenser vacuum.</li><li>003 E-3, "2 UNIT OFF GAS RECOMBINER TROUBLE"</li></ul> Enter and execute OT-106, "Condenser Low Vacuum".
	CRS	Enter and execute OT-106, "Condenser Low Vacuum". Direct the URO to reduce reactor power in accordance with GP-9-2, "Fast Power Reduction" until vacuum stops lowering.
	URO	Perform a fast power reduction in accordance with GP-9-2: <ul style="list-style-type: none"><li>Lower recirculation flow as required to a value of 61.5 Mlbs/hr as read on Fr-2-02-3-095 at panel 20C05A.</li><li>Stop power reduction when main condenser vacuum stops lowering and/or begins to improve.</li></ul>
	PRO	Notify the Transmission System Operator and Generation Dispatch of the required power change.

### Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 2      Event No.: 6      Page: 6 of 12

Event Description: "A" Reactor Feedpump will not respond to changes in Reactor power

Cause: Failure of the control signal

Effects: The "A" RFP will not respond as Reactor power is reduced for the lower man condenser vacuum. The "B" and "C" RFPs will try to adjust for failure of the "A" RFP.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO	Recognize by reporting alarm 201 H-1, "FEEDWATER FIELD INSTRUMENT TROUBLE" Enter and execute ARC 201H-1 Recognize the failure of the "A" RFP to respond to lowering Reactor power. Transfer control of the "A" RFP to manual on the M/A station using SO 6C.1.D-2, "Reactor Feedwater Automatic Level Control". Recognize that the "A" RFP will not respond in manual control. Transfer the "A" RFP to MSC control: <ul style="list-style-type: none"><li>• Press MSC select</li><li>• Adjust speed using the raise/lower pushbuttons until the speeds are matched between the "A" RFP and the "B" and "C" RFPs.</li></ul>
	CRS	Enter and execute ARC 201H-1 Direct that control of the "A" RFP be transferred to MSC if the URO has not already selected MSC.
	PRO	Peer check as directed by the CRS.

### Operator Actions

ES-D-2

Op Test No.: 1 Scenario No.: 2 Event No.: 7 Page: 7 of 12

Event Description: Main turbine high vibration / reactor scram

Cause: Failure of the #2 main turbine bearing

Effects: Alarm 205 A-2, "Turbine Vibration / Thrust High"  
Turbine bearing vibrations will rise.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	Recognize and report alarm 205 A-2, "TURBINE VIBRATION/THRUST HIGH". Enter and execute ARC 205 A-2. Check turbine lube oil temperature on TR-2401, and increase cooling water to lube oil coolers, if necessary. Check vibration of the affected bearing on VR-2657. Dispatch operator to check for proper oil flow and local temperature at the affected bearing.
	CRS	Direct operator actions IAW ARC 205 A-2, "TURBINE VIBRATION/THRUST HIGH". Direct the reduction of turbine load IAW GP-9-2, "Fast Power Reduction" (the CRS may go directly to GP-4 "Manual Reactor Scram").
	URO	Perform a GP-9-2 "Fast Power Reduction" as directed. Perform a GP-4, "Manual Reactor Scram" as directed.
	CRS	When bearing vibration rises to 10 mils, then direct a manual scram IAW GP-4 "Manual Reactor Scram" ( <b>see next event</b> ).



**Operator Actions**

**ES-D-2**

**Op Test No.: 1      Scenario No.: 2      Event No.: 8      Page: 8 of 12**

**Event Description:      ATWS – hydraulic**

**Cause:      Control rods insert to various positions due to limited Scram Discharge Volume**

**Effects:      Requires the crew to take actions to terminate the ATWS, as well as control RPV level/power**

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	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>• Verify control rods are inserting.</li><li>• Report an ATWS is in progress with reactor power &gt; 4% (T-101 entry condition).</li></ul>
	PRO	Perform GP-4 "Manual Reactor Scram": <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 HWC isolated.</li></ul>
	CRS	Enter/direct actions for T-101 "RPV Control": <ul style="list-style-type: none"><li>• Verify URO/PRO scram actions.</li><li>• Direct tripping of the Main Turbine.</li><li>• Direct RPV pressure stabilized below 1050 psig using EHC, SRVs and/or HPCI.</li><li>• Following the PCIS GP II &amp; III isolation, direct drywell instrument nitrogen restored.</li><li>• Direct actions for the ATWS (<b>see next page</b>).</li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.: 1      Scenario No.: 2      Event No.: 8      Page: 9 of 12**

**Event Description:      ATWS – hydraulic (continued)**

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	PRO	<p>Trip the Main Turbine by depressing the "TRIP" pushbutton.</p> <p>Stabilize reactor pressure below 1050 psig as directed.</p> <p>Following the PCIS GP II &amp; III isolation, bypass and restore drywell instrument nitrogen IAW RRC 16.1-2, "Bypass and Restore Instrument N2 Supply to the Drywell".</p> <ul style="list-style-type: none"><li>• Place AO-2969A control switch to "CLOSE" on panel 20C03C.</li><li>• Place AO-2969B control switch to "CLOSE" on panel 20C03C.</li><li>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position on panel 20C05A.</li><li>• Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position on panel 20C05A.</li><li>• Place AO-2969A control switch to "OPEN" at panel 20C03C.</li><li>• Place AO-2969A control switch to "OPEN" at panel 20C03C.</li></ul>
	CRS	<p>Direct T-101, actions:</p> <ul style="list-style-type: none"><li>• Initiation of ARI</li><li>• Trip recirc pumps at least 10 seconds apart OR verify the Recirc pumps are tripped (ARI or 13 KV fast transfer).</li></ul>
CT		<ul style="list-style-type: none"><li>• <b>SLC Injection</b></li><li>• Enter T-117, "Level/Power Control"</li></ul>
CT		<ul style="list-style-type: none"><li>• <b>T-216, "Control Rod Insertion by Manual Scram or Individual Scram Test Switches"</b></li></ul>
CT		<ul style="list-style-type: none"><li>• <b>T-220 "Driving Control Rods during Failure to Scram"</b></li><li>• T-247, "Aligning CST Bottom Suction to Main Condenser Hotwell and CRD Pumps"</li></ul>

Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 2      Event No.: 8      Page: 10 of 12

Event Description:      ATWS – hydraulic (continued)

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO	Perform T-101, RC/Q actions: <ul style="list-style-type: none"><li>• Initiate ARI; report the scram air header is depressurized.</li><li>• Trip Recirc pumps at least 10 seconds apart OR verify the Recirc pumps are tripped (ARI or 13 KV fast transfer).</li></ul>
CT		• Initiate SLC by starting either SLC pump.
CT		• Direct an Equipment Operator to perform T-216 steps 4.1 and 4.2 (install jumpers in Cable Spreading Room and Main Control Room to defeat ARI Initiation Logic and bypass all RPS Auto Scram signals).
CT		• Per T-216 (on the 20C05A panel) <ul style="list-style-type: none"><li>○ Reset ARI by placing ARI 'A' &amp; 'B' manual pushbutton collars in "Disarm".</li><li>○ Depress the A &amp; B ARI reset pushbuttons.</li><li>○ Place the Scram Reset switch 5A-S9 to the "Group 1&amp;4" and "Group 2&amp;3" positions.</li><li>○ Open Scram Discharge Volume inboard and outboard vents and drains.</li></ul>
CT		• Perform T-220 "Driving Control Rods During Failure To Scram".
	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		• T-240 "Termination And Prevention Of Injection Into The RPV".

Operator Actions

ES-D-2

Op Test No.: 1      Scenario No.: 2      Event No.: 8      Page: 11 of 12

Event Description:      ATWS – hydraulic (continued)

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	Perform T-117 actions: <ul style="list-style-type: none"><li>• Inhibit ADS.</li><li>• Direct Equipment Operator to perform T-221.</li></ul>
CT		<ul style="list-style-type: none"><li>• <b>Perform T-240: terminate and prevent injection from all injection sources; control RPV level below –60 inches and within the specific RPV level band directed by the CRS.</b><ul style="list-style-type: none"><li>○ Place HPCI Aux Oil Pump in the “Pull-to-Lock” position.</li><li>○ Press “Emergency Stop” for all 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><li>○ Direct an Equipment Operator to secure ECCS Stayfull (considered to be complete when the direction is given).</li></ul></li></ul> <p><b>When RPV level is below -60 inches, restore injection and maintain RPV level between -60 and -195 inches as follows:</b></p> <ul style="list-style-type: none"><li>• <b>Using Feedwater:</b><ul style="list-style-type: none"><li>○ Place LIC-8091 in “MAN” and close the valve.</li><li>○ Open MO-8090 “C RFP Bypass”.</li><li>○ Raise RFP speed until discharge pressure is 75-100 psig above RPV pressure.</li><li>○ Control RPV injection by adjusting RFPT speed, <u>OR</u> LIC8091 setting, <u>OR</u> MO-2149C “RFP C Discharge” valve position.</li></ul></li><li>• <b>Using HPCI (manual initiation):</b><ul style="list-style-type: none"><li>○ Arm and depress the “HPCI Manual Initiation” pushbutton.</li><li>○ Verify MO-2-23-014 “Supply” opens.</li><li>○ Verify the aux oil pump starts.</li><li>○ Verify MO-2-23-019 “To Feed Line” opens.</li><li>○ Verify vacuum pump starts.</li><li>○ Verify AO-2-23-042 and AO-2-23-043 “Drain Isol to Mn Cndr” close.</li><li>○ Adjust HPCI flow controller setpoint to the desired RPV injection rate.</li></ul></li></ul>

**Operator Actions**

**ES-D-2**

**Op Test No.: 1      Scenario No.: 2      Event No.: 9      Page: 12 of 12**

**Event Description: 'A' EHC pump trips / loss of turbine bypass valves**

**Cause: 'A' EHC pump trips on overcurrent condition**

**Effects: Complete loss of Turbine EHC System, which causes a turbine trip (if not already tripped) and closure of all bypass valves**

<b><u>Time</u></b>	<b><u>Position</u></b>	<b><u>Applicant's Actions or Behavior</u></b>
	URO/PRO /CRS	Recognize loss of only available EHC Pump. Recognize complete loss of EHC System and eventual loss of turbine bypass valves for RPV pressure control.
	CRS	Direct RPV pressure control using SRVs.
	URO/PRO	Control RPV pressure using SRVs to stay below 1050 psig, <u>OR</u> to stay on safe side of T-102 Curve T/L-1 "SRV Tail Pipe Limit", as applicable.
	URO/PRO	Place Torus cooling in service using RRC 10.1-2 (at panel 20C03) <ul style="list-style-type: none"><li>• Open MO-2-10-39A(B)</li><li>• Open MO-2-32-89A (B, C, or D)</li><li>• Start a HPSW Pump</li><li>• Start an RHR Pump</li><li>• Open MO-2-10-34A(B)</li><li>• Place additional pumps in service as required</li></ul>

**TERMINATION CRITERIA:**

The scenario may be terminated when the crew has:

Control of RPV power and level using T-240 "Termination and Prevention of Injection into the RPV"

Control of RPV pressure with SRVs

Torus cooling in-service

Made attempts to shut down the Reactor with SBLC or Control Rods.

## Tech Spec Error from NRC Exam Scenario 2

It was discovered during performance of NRC Scenario 2 that the Tech Spec determination for a loss of 250 VDC was wrong. The scenario described the Tech Spec decision as a 2 hour required action per Tech Spec 3.8.7.D.

The scenario described the blown fuses as those providing power to the RCIC 250 VDC bus. In order for Tech Spec 3.8.7.d to be correct the blown fuses would have had to been for the 250 VDC distribution bus that connects the two 125 VDC battery chargers to the two 125 VDC batteries.

With the loss of power to the RCIC 250 VDC bus the correct Tech Specs should have been 3.5.3 for RCIC being INOP and 3.6.1.3 for INOP Primary Containment Isolation Valves. This was determined to be the correct course of actions by the Operation's Representative and the Shift Operations Superintendent.

<b>Simulation Facility</b>	<u>Peach Bottom</u>	<b>Scenario No.</b>	<u>#4</u>	<b>Op Test No.</b>	2015 <u>NRC</u>
<b>Examiners</b>	_____	<b>Operator</b>	_____		CRS (SRO)
	_____		_____		URO (ATC)
	_____		_____		PRO (BOP)

**Scenario Summary** The scenario begins with the reactor at 100% power with the 'B' Emergency Service Water (ESW) Pump in service for an evaluation of flow through the Emergency Diesel Generator heat exchangers.

Shortly after taking the shift the Crew will swap Electrohydraulic Control (EHC) Pumps using procedure SO 1D.6.A-2 "Placing the EHC Oil System Standby Pump in Service". The 'B' EHC pump will be started and the 'A' EHC pump will be shut down.

Once the "B" EHC pump is in service, an Equipment Operator will report a Core Spray snubber is INOP. The CRS will review the TRM and Tech Spec and determine that the Core Spray loop is INOP.

After the Tech Spec determination is made, a high temperature condition will occur on the in-service RWCU pump. With the standby pump out of service the Crew will be required to remove the RWCU system from service.

After the RWCU system is removed from service a leak will develop on the discharge of the running 'B' ESW Pump requiring the Crew to recognize the condition and secure the 'B' ESW pump. The CRS should reference Technical Specifications for the inoperable ESW pump and also for inoperable fire barriers due to doors being intentionally left open in response to the flooding.

Once the Technical Specification determinations have been made, the running RBCCW pump will trip and the standby pump will fail to start, resulting in a complete loss of RBCCW. The Crew should reduce reactor power as directed by ON-113 "Loss of RBCCW." The Crew should reduce power using procedure GP-9 "Fast Power Reduction". As a result of the loss of RBCCW the 'B' Recirculation Pump will experience a mechanical seal failure which is the source of a steam leak into the primary containment. The Crew should enter procedure OT-101 "Drywell High Pressure". Temperatures on the recirculation pump will rise requiring the Crew to remove the pump from service and they should enter procedure OT-112 "Unexpected/Unexplained Change in Core Flow". When primary containment pressure reaches 1.2 psig the Crew will shut down the reactor using procedure GP-4 "Scram". When the Crew places the mode switch in shut down the control rods will not insert due to a failure of the reactor mode switch. Depressing the manual scram pushbuttons will insert the control rods. **(Critical Task; Shutdown the Reactor by depressing the Manual Scram Pushbuttons.)**

The steam leak worsens. The Crew should execute procedures T-101 "RPV Control" and T-102 "Primary Containment Control". The Crew should spray the primary containment using procedure T-204 "Initiation of Containment Sprays

Using RHR". **(Critical Task; Spray the Drywell to (restore and) maintain Drywell Bulk Average Temperature below 281°F.)** A Drywell Chilled Water system to RBCCW system leak will develop allowing steam to leak into the RBCCW Room outside of the primary containment. The Crew will need to isolate the RBCCW system using procedure GP-8.B "PCIS Isolation – Groups 2 and 3". **(Critical Task; Isolate RBCCW from the Drywell in the Control Room.)**

The scenario may be terminated when the reactor is shut down with RPV level is under control, Primary Containment sprays are in service, and the RBCCW leak is isolated.

**Initial  
Conditions  
Turnover**

IC-14, 100% power

Unit 2 is at 100% power.

"B" RWCU pump is out of service.

There is a leak in the RBCCW system that requires the head tank to be filled every 12 hours. The head tank was last filled 6 hours ago.

The "B" ESW pump is in-service to do a flow evaluation of flow through the D/G heat exchangers. The test is expected to be completed within the hour.

Following turnover the PRO will be directed to place the "B" EHC pump in-service and secure the "A" EHC pump.



Event No.	Malfunction No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Swap EHC Pumps
2	See Scenario Guide	TS CRS	INOP Core Spray pump discharge snubber
3	See Scenario Guide	C PRO CRS	RWCU pump motor high winding temperature, secure RWCU.
4	See Scenario Guide	C PRO TS CRS	'B' ESW Room flood / secure the 'B' ESW Pump (Tech Spec)
5	See Scenario Guide	R URO CRS	Loss of RBCCW / fast reactor power reduction (w/ recirc and rods)
6	See Scenario Guide	C URO CRS	'B' Recirculation Pump seal failure / Steam leak in primary containment
7	See Scenario Guide	C URO CRS	Failure of the Recirc suction valve "MO-2-02-043B" to close
8	See Scenario Guide	I URO CRS	Failure to automatically scram (manual scram pushbuttons are required to scram the reactor)
9	See Scenario Guide	M ALL	Steam leak worsens
10	See Scenario Guide	M ALL	Drywell to RBCCW leak / Steam leak in RBCCW Room outside of primary containment

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

## **SIMULATOR OPERATOR INSTRUCTIONS FOR NRC SCENARIO #4**

### **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 scenario is a new scenario developed for the 2015 NRC exam.

### **INITIAL SETUP**

#### **Initial Conditions**

- IC-14, 100% power
- Start the "B" ESW pump.
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

#### **Blocking Tags**

- Block the "B" RWCU pump

#### **Activate NRC4 or insert the following:**

#### **Event Triggers**

ET1 False  
ET2 False  
ET3 False  
ET4 False  
ET5 DW\_PRESSURE\_GT\_16.4\_ABSOLUTE  
ET6 DW\_PRESSURE\_GT\_18\_ABSOLUTE

## **Malfunctions**

IMF RBW01A "RBCCW Pump "A" Trip"  
IMF RBW01B (E3) "RBCCW Pump 'B' Trip"  
IMF RRS14B (E4) "Recirc Pump #2B Seal Failure"  
IMF RRS13B (E4) "Recirc Pump #1B Seal Failure"  
IMF MSS02 (E5) 2 15:00 0 "MSL Rupture Inside Primary Containment"  
IMF ARM01\_11 (E6 10:00 0) 1 "RBCCW Room 116' Elev"  
IMF H112 (E6 10:00 0) 100 "PMS Rad Level – RB 116' Elev RBCCW Pump Room"

## **Overrides**

IOR ZYP02A4S01 RUN "Reactor Mode Switch"  
IOR ZYP03A2S23 OPEN "PMP Suction VLV (Loop B)"  
IORZLOCU04ABP49\_1 OFF "CU Recirc Pump B (Green)"  
IOR ANO204RA1 (E1) ALARM\_ON "'A' Clean-up Recirc Pump MTR WDG Temp High"  
IOR ANO226CA4 (E2) ALARM\_ON "'B' ESW Pump Room Flooded".  
IOR ANO212RG5 (E5) ALARM\_ON "Reactor Building Cooling Water Header Tank Hi Lo Level"  
IOR ZAOSW12PI2350 (E5) 0 "Reactor Building Cooling Water Heat Exchanger Outlet Header Pressure"

## **Remote Functions**

MRF DGA06 Fail "DG Cooling water valve AO-33-0241'A' Air Failure"

## **Trip Overrides**

MRF RPS01TO OVERRIDE, "RPS Auto Scram Ch A1"  
MRF RPS02TO OVERRIDE, "RPS Auto Scram Ch A2"  
MRF ARI01TO OVERRIDE, "ARIA4-ARIA Relay Trip Override"  
MRF ARI02TO OVERRIDE, "ARIA4-ARIB Relay Trip Override"

## **Batch Files**

None

## **Turnover Procedures**

None

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 1**

Placing the “B” EHC Pump In-service – Support the Crew as needed to place the “B” EHC pump in service and remove the “A” EHC pump from service using SO 1D.6.A-2, “Placing the Electrohydraulic Control Oil System Standby Pump In-Service”.

If directed as an Equipment Operator to verify PI-4403, “EHC Fluid Pump B Discharge Pressure” indication is less than 100 psig at the EHC skid, report that pressure is 75 psig.

If directed as an Equipment Operator to perform Step 4.3.4 to adjust the B EHC pump pressure compensator, wait approximately 2 minutes and report that local pressure indication has raised 2 psig.

If asked as the Equipment Operator to provide local discharge pressure, report that discharge pressure is 1555 psig.

If directed as an Equipment Operator to verify that the Micron filter element indicator, report that the indicator indicates green.

### **EVENT 2**

Core Spray Snubber INOP – When the “B” EHC pumps is in-service or at the direction of the Lead Examiner, report to the control room as the Reactor Building Equipment Operator and report that you are in the 2B Core Spray Pump Room on elevation 116’ and that all of the hydraulic fluid has leaked out of the 2B Core Spray pump discharge pipe snubber. Also report that you have isolated the oil leak and it has not gotten into any drains. If asked for a snubber identification number report it is 14-GB-5-33.

IF the Station Duty Manager is requested to support an operability determination for the 2B Core Spray loop, THEN report that the determination will require several hours to complete.

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 3**

"A" RWCU Pump High Winding Temperature – When the Tech Spec determination is complete or at the direction of the Lead Examiner, initiate **ET 1 (ANO204RA1)**.

If directed to investigate the "A" RWCU Pump High Winding Temperature, wait approximately 3 minutes and report that the winding temperature is 140<sup>0</sup>F and rising.

If directed to determine the cause for the high temperature condition, wait approximately 5 minutes and report that you cannot find a reason for the high temperature condition.

If the Crew does not trip the "A" RWCU pump within 10 minutes of receiving the alarm, enter Malfunction **IMF RWC01A**, "RWC Pump 'A' Trip" and I/O Override, **IOR ANO204RA2 ALARM\_ON**, "A' Clean-up Recirc Pump Mtr Wdg Temp High-High".

## **SIMULATOR OPERATOR DIRECTIONS**

### **EVENT 4**

**"B" ESW Room Flooding** – When a RWCU is isolated or as directed by the Lead Examiner, initiate events on **ET2**. (ANO226CA4)

If directed to check the "B" ESW pump room, then wait approximately 4 minutes and report that there is a lot of water in the room; you cannot see the bottom step and the water level is above the bottom of the MCC (i.e., into the MCC). In addition, report you believe there is a shock hazard and you do not want to go any further into the room until the water is removed.

Report the source of the leak appears to be from the 'B' ESW pump discharge piping on the pump side of the discharge check valve and that water has sprayed onto the "B" ESW pump motor.

If the 'B' ESW pump is not tripped within 10 minutes of the flooding report, trip the pump using malfunction **IMF ESW01B**.

If asked to identify the MCC in the area, report that it is E-124-P-A.

When directed, wait approximately 2 minutes and report that the door directed by the crew is open.

If directed to close the diesel generator cooling water lineup then wait approximately 6 minutes and **MRF DGA06 NORM**, and report that the cooling water lineup is returned to normal.

If the Crew directs an Equipment Operator to remove the feed for the "B" ESW pump, enter **IOR ZLOSW26C0BP57\_1 OFF** "C010 Emerg SW Pump 'B' (Green Light)" and **IOR ZYP04A6S20 STOP** "C010 Emerg SW Pump 'B' Control Switch" then report back that the feed has been removed.

### **EVENT 5**

**Loss of RBCCW Cooling** – When the CRS has determined the Tech Spec and TRM requirements for the ESW flooding condition or at the direction of the Lead Examiner, initiate **ET3** (RBW01B).

If sent to check the "B" RBCCW pump, wait approximately 5 minutes then report that it smells like the motor windings have burned.

If sent to check the "A" RBCCW pump, wait approximately 5 minutes and report that you cannot determine why the "A" RBCCW pump will not start.

## **SIMULATOR OPERATOR DIRECTIONS**

**EVENT 6**                    Failed Seals on the “B” Recirc Pump – When the URO has reduced Reactor power with Recirc flow per GP-9 or when directed by the Lead Examiner, initiate **ET4** (RRS13B and RRS14B).

If the Crew asks for Drywell Chilled Water Return Header pressure, wait approximately 3 minutes and report that DWCW return header pressure is 26 psig.

**EVENT 7**                    2B Recirc Suction Valve Fails to Close – When the Crew attempts to isolate the Recirc seal leakage the Recirc Suction valve MO-2-02-043B will not close. This will allow the steam leak in Containment to continue and not be isolable.

**EVENT 8**                    Failure of Auto Scram and Reactor Mode Switch – When the Crew scrams the Reactor; the mode switch will fail to change position and will stay in Run. If the Crew is slow to scram the Reactor and an automatic scram signal is generated, the control rods will not insert. Then Control Rods will insert using the Scram Pushbuttons.

**EVENT 9**                    When Drywell pressure reaches 1.7 psig, VERIFY Pending Events on trigger **ET5** (IMF MSS02). This will make the steam leak worse and require the crew to spray Primary Containment.

**EVENT 10**                  Drywell to RBCCW Leak – As Drywell pressure continues to rise, Drywell pressure will exceed RBCCW pressure and require the Crew to perform the GP-8B manual isolations.

When Drywell pressure reaches 1.7 psig, VERIFY Pending Events on trigger **ET5**.

- IOR ANO212RG5 (E5 0 0) ALARM\_ON RBCCW Tank Hi-Lo Level
- IOR ZAOSW12PI2350 (E5 0 0) 0 RBCCW Heat Exchanger Outlet Header Pressure

When MO-2373 and MO-2374 are closed then clear the following Malfunctions:

- DMF ARM01\_11 “RBCCW Room 116’ Elev”
- DMF H112 “PMS – RBCCW Room 116’ Elev”

## **SIMULATOR OPERATOR DIRECTIONS**

### **TERMINATION**

**End the scenario when MO-2373 and MO-2374 are closed and Primary Containment parameters are under control.**



## **SHIFT TURNOVER**

### **PLANT CONDITIONS:**

- Unit 2 is at a 100% power.
- "B" RWCU is blocked for Motor Repairs
- There is a leak in the RBCCW system that requires the head tank to be filled every 12 hours. It was filled 6 hours ago.
- The 'B' ESW pump is in service using AO-33.2, "ESW System Manual Startup and Operation" to do a flow evaluation of flow through the D/G heat exchangers. The test is expected to be completed within the hour.

### **INOPERABLE EQUIPMENT/LCOs:**

**None**

### **SCHEDULED EVOLUTIONS:**

Place the "B" EHC pump in-service and the "A" EHC pump in Off for maintenance using SO 1D.6.A-2, "Placing the Electrohydraulic Control Oil System Standby Pump In-Service". There is an Equipment Operator standing by at the EHC skid.

### **SURVEILLANCES DUE THIS SHIFT:**

**None**

### **ACTIVE CLEARANCES:**

**"B" RWCU pump for motor repairs**

### **GENERAL INFORMATION:**

### **CRITICAL TASK LIST**

1. Shutdown the Reactor by depressing the manual Scram pushbuttons. (T-101-1b)
2. Spray the Drywell to (restore and) maintain Drywell Bulk Average Temperature below 281°F. (T-102-7c)
3. Isolate RBCCW from the Drywell in the Control Room.

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      1      Page: 1 of 14

Event Description:      Placing the “B” EHC pump in-service and the “A” EHC pump in Stop.

Cause:      N/A

Effect:      N/A

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	<p>Place the “B” EHC pump in-service using SO 1D.6.A-2, “Placing the Electrohydraulic Control Oil System Standby Pump In-Service”.</p> <p>On Panel 20C008A, verify 2AP017, “Turbine Gen EHC Pump A” is in service.</p> <p>On Panel 20C008A, verify 2BP017, “Turbine Gen EHC Pump B” is available to be placed in service.</p> <p>Direct an Equipment Operator to verify PI-4403, “EHC Fluid Pump B Discharge Pressure” indication is less than 100 psig at the EHC skid.</p> <p>Start 2BP017, “Turbine Gen EHC Pump B” by placing the control switch to “Run” on Panel 20C008A.</p> <p>Direct an Equipment Operator to perform Step 4.3.4 to adjust the B EHC pump pressure compensator.</p> <p>Verify PI-4403, EHC Fluid Pump B Discharge Pressure” is at least 1550 psig locally or Computer point T051.</p> <p>Direct an Equipment Operator to verify that the Micron filter element indicator indicates green.</p> <p>On Panel 20C008A, place 2AP017, “Turbine Gen EHC Pump A” to “Stop”.</p> <p>Acknowledge the expected alarm for 205 K-3, “EHC STANDBY PUMP NOT IN AUTO”.</p>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      2      Page: 2 of 14

Event Description:      Report that there is no oil in the “B” Core Spray pump discharge piping snubber.

Cause:      Damaged snubber

Effect:      N/A

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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CRS		Recognize that a Technical Requirement is not met. Consult TRM 3.16.A to determine the Required Actions. Determine that the 2B Core Spray pump is inoperable immediately and enter required action for Tech Spec 3.5.1.A “ECCS – Operating.” Restore the Core Spray subsystem to operable status within 7 days.
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Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      3      Page: 3 of 14

**Event Description:**      “A” RWCU Pump High Winding Temperature

**Cause:**      Overheating condition on the “A” RWCU pump

**Effect:**      Crew should secure the RWCU system.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	<p>Recognize by reporting the “A” CLEAN-UP RECIRC PUMP MOTOR WINDING TEMPERATURE HIGH” alarm (ARC 215 A-1).  Enter and execute ARC 215 A-1.  Direct an Equipment Operator to determine the cause of the High Winding Temperature.  Shutdown RWCU, at panel 20C04A, when directed:</p> <ul style="list-style-type: none"> <li>▪ Shutdown the “A” RWCU pump.</li> <li>▪ Close MO-2-12-068, “RWCU Outlet”.</li> <li>▪ Close MO-2-12-018, “RWCU Outboard Isol”.</li> <li>▪ May close MO-2-12-15, “RWCU Inboard Isol” but it is not required.</li> </ul>
	CRS	<p>Enter and execute ARC 215 A-1.  Direct the PRO to perform a rapid shut down of RWCU using SO 12.2.A-2, “Reactor Water Cleanup System Shutdown”</p>
	URO	<p>Provide peer checks as directed by the CRS.</p>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      4      Page: 4 of 14

**Event Description:**      "B" ESW Room Flooding

**Cause:**      The source of the leak is from the 'B' ESW pump discharge piping on the pump side of the discharge valve and that water has sprayed onto the "B" ESW pump motor.

**Effect:**      Room Flood.  
If the Crew does not secure the ESW pump it will trip.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	PRO	<p>Recognize by reporting the "'B' ESW PUMP ROOM FLOODED" alarm (004 A-4). Enter and execute the Alarm Response Card for the "'B' ESW PUMP ROOM FLOODED" alarm.</p> <ul style="list-style-type: none"> <li>• Direct an Equipment Operator to investigate the ESW Pump Room flood alarm.</li> <li>• When directed, trip the 'B' ESW pump.</li> <li>• Direct the Equipment Operator to open watertight door #C02 <u>OR</u> #C03.</li> <li>• Direct the Equipment Operator DO NOT OPEN watertight door #C09.</li> <li>• Direct the Equipment Operator to open watertight door #C02 <u>OR</u> #C03 which ever door was not opened in the above step.</li> </ul>
	CRS	<p>Enter and execute the Alarm Response Card for the "'B' ESW PUMP ROOM FLOODED" alarm. Direct the PRO to trip the 'B' ESW pump. Notify Security of the ESW Pump Room door status. Post a Fire Watch within 1 hour per TRM 3.14.8. Enter TRM 3.14.8 and determine that a continuous fire watch is required until the smoke detectors can be verified operable. Recognize that a Tech Spec LCO is not met. Consult Technical Specifications 3.7.2 to determine the Required Actions. Determine that the "B" ESW pump must be restored within 7 days. Direct an Equipment Operator to remove the feed for the "B" ESW pump. May direct the Shift Manager to review EALs for the flooding condition.</p>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      5      Page: 5 of 14

Event Description:      Loss of RBCCW (PRA)

Cause:      The "B" RBCCW pump will trip and the "A" RBCCW pump will not start.

Effect:      Complete loss of cooling to components supplied by RBCCW including Recirc pumps and RWCU

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	URO/PRO	<p>Recognize by reporting the loss of RBCCW.</p> <p>Recognize by reporting the loss of RBCCW as a symptom for entry into ON-113 "Loss of RBCCW" procedure.</p> <p>Enter and execute ON-113 "Loss of RBCCW".</p> <p>Monitor the Recirc pump temperatures.</p> <p>Direct an Equipment Operator to determine why the "A" RBCCW pump did not start.</p> <p>Recognize by reporting the following alarms:</p> <ul style="list-style-type: none"> <li>• 214 A-5, "A RECIRC PUMP COOLING WATER LO FLOW"</li> <li>• 214 F-5, "B RECIRC PUMP COOLING WATER LO FLOW"</li> </ul>
	PRO	<p>Verify the start of the "A" RBCCW pump.</p> <p>Recognize by reporting the failure of the "A" RBCCW pump to start.</p> <p>Verify RWCU is isolated.</p> <p>Recognize by reporting alarm 228 E-2, "NITROGEN COMPRESSOR A OR B TROUBLE". (May occur if a compressor starts following the loss of RBCCW flow.)</p>
	CRS	<p>Enter and execute ON-113 "Loss of RBCCW".</p> <p>Direct the PRO to verify RWCU is isolated.</p> <p>Direct the URO to lower Reactor power in accordance with GP-9-2 "Fast Power Reduction".</p> <p>Direct the PRO to monitor Recirc pump temperatures.</p>
	URO	<p>When directed, reduce Reactor power in accordance with GP-9-2 "Fast Power Reduction".</p>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      6      Page: 6 of 14

**Event Description:**      “B” Recirc pump seal failure

**Cause:**      The loss of cooling to the Recirc pump seals due to the loss of RBCCW causes the seals to fail.

**Effect:**      Drywell pressure will begin to rise.  
Temperatures on the Recirc will begin to rise and will reach the point requiring the “B” Recirc pump be removed from service.

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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URO/PRO	<p>Recognize by reporting the following alarms:</p> <ul style="list-style-type: none"> <li>• 214 F-1, “B RECIRC PUMP SEAL STAGE 2 HI FLOW”</li> <li>• 214 F-2, “B RECIRC PUMP SEAL STAGE 2 LO FLOW”</li> <li>• 213 B-3, “RECIRC PUMP MOTOR HI TEMP”</li> </ul> <p>Recognize by reporting the seal failures on the "B" Recirc pump. Recognize by reporting the "RECIRC PUMP MOTOR HI TEMP" alarm. Enter and execute the ARC 214 F-1, 214 F-2 and 213 B-3. Recognize by reporting the rise in Drywell pressure. Enter and execute OT-101, “High Drywell Pressure”. When the Recirc pump is secured, recognize by reporting an entry condition to OT-112, “Unexpected / Unexplained Change in Core Flow.” Enter and execute OT-112.</p>
PRO	<p>Maximize D/W cooling per RRC 44A.1 “Maximize Drywell Cooling”.</p> <ul style="list-style-type: none"> <li>• Start the 2C DWCCW pump by taking the control switch to RUN.</li> <li>• Start the 2C Drywell Chiller by taking the control switch to RUN.</li> <li>• If Drywell pressure is above .75 psig then direct an Equipment Operator to place the speed control switches for all of the Drywell Cooler Fans that are not running to SLOW speed.</li> <li>• Direct an Equipment Operator to raise the load setting on the “C” Drywell Chiller.</li> <li>• Place all Drywell Cooler Fan control switches to RUN.</li> </ul>



Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      6      Page: 7 of 14

Event Description:      “B” Recirc pump seal failure (continued)

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	CRS	Enter and execute the ARC 214 F-1 and F-2 Enter and execute OT-101, “High Drywell Pressure”. When the Recirc pump motor temperatures exceed the ARC limits, direct the URO to trip the “B” Recirc pump. Enter and execute OT-112. Verify position on the Power to Flow map. When Drywell pressure cannot be maintained below 1.2 psig, direct the Crew to perform GP-4 “Manual Reactor Scram”.

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      7      Page: 8 of 14

Event Description:      “B” Recirc pump suction valve, “MO-2-02-043B” failure to isolate

Cause:      Contacts fail to makeup to close the suction valve.

Effect:      Seal leakage cannot be isolated; drywell pressure will continue to rise.

Time   Position      Applicant’s Actions or Behavior

URO	<p>Trip the M/G set drive motor breaker for the “B” Recirc pump</p> <p>When directed, close MO-2-02-043B, “Recirc Pump Suction Valve”.</p> <p>Recognize by reporting that MO-2-02-043B will not close.</p> <p>Secure seal purge by closing MO 8029B, “Seal Purge”.</p> <p>When directed, close MO-2-02-053B “Recirc Pump Discharge Valve”.</p> <p>Continue inserting GP-9-2 Appendix 1 control rods.</p> <p>Report that there are no thermal hydraulic instabilities.</p>
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Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      8      Page: 9 of 14

**Event Description:**      **Failure to auto scram and failure of the Mode Switch in Run. (PRA)**  
**Scram Actions**

**Cause:**      **Mode Switch contacts will remain in Run even when the URO takes the Mode Switch to Shutdown. The “A” channel auto scram will fail to operate.**

**Effect:**      **The URO must use the Manual Scram Pushbuttons to insert the control rods.**  
**When the crew begins to depressurize the Reactor, a Group I isolation will occur because the Mode Switch logic is still in Run.**

Time   Position      Applicant’s Actions or Behavior

URO	Perform GP-4 “Manual Reactor Scram” actions: <ul style="list-style-type: none"> <li>• Place the Reactor mode switch to “Shutdown”.</li> <li>• Recognize by reporting the failure of the Mode Switch to initiate a Reactor Scram.</li> </ul>
CT	<ul style="list-style-type: none"> <li>• <b>Use the Scram Pushbuttons to insert the Control Rods.</b></li> <li>• Verify control rods inserting.</li> <li>• Verify APRMs are downscale.</li> </ul> <p>Report to the CRS that the mode switch is in Shutdown but that it did not cause the Reactor to scram, the APRMs are downscale and control rods have inserted.</p> <p>Establish RPV level control with feedwater.</p> <p>Maintain RPV level between 5 to 35 inches.</p> <p>Verify RPV pressure, trend, and the status of EHC.</p> <p>Report the following to the CRS per RRC 94.1-2:1 “URO Scram Reports”:</p> <ul style="list-style-type: none"> <li>a.      RPV level, trend, and status of Feedwater.</li> <li>b.      RPV pressure, trend, and status of EHC.</li> <li>c.      All control rods are inserted.</li> </ul>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      8      Page: 10 of 14

**Event Description:**      **Failure to auto scram and failure of the Mode Switch in Run.**  
**Scram Actions (continued)**

- PRO      Perform scram actions per RRC 94.2-2 "Plant Reactor Operator Scram Actions".
- Transfer House loads.
  - Trip the Main Turbine
  - Verify the Generator Lockout
  - Start all of the Main Turbine lift pumps
  - Verify Group I, II, and III isolations and SGTS initiation, as applicable.
  - Verify Scram Discharge Volume vents and drains are closed.
  - Verify Hydrogen Water Chemistry is isolated.
  - Verify the "A" Recirc Pump speed has runback to 30%.
  - Monitor Instrument Air header pressure and Drywell pressure.
- Report the following when the CRS is ready per RRC 94.2-2:1 "PRO Scram Reports":
- House loads are transferred.
  - Main Turbine is tripped.
  - Main Generator is locked out.
  - PCIS Group II and III isolations are complete and SBGT was manually started.
  - SDV vents and drains are closed.
  - Hydrogen Water Chemistry is isolated.
  - "A" Recirc Pump speed is 30% and the "B" Recirc Pump is tripped.
  - Instrument Air header pressure is greater than Drywell pressure.
  - When Directed, bypass and restore Drywell Instrument Nitrogen per RRC 94.2-2 "Plant Reactor Operator Scram Actions".
- CRS      Enter and execute T-101, "RPV Control".  
Direct the PRO to bypass and restore Drywell Instrument Nitrogen.

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      9      Page: 11 of 14

**Event Description:**      **Steam leak into Primary Containment Worsens**

**Cause:**      **Recirc pump seal completely fails.**

**Effect:**      **Drywell pressure will rise requiring the crew to Spray Primary Containment.**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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URO/PRO	When Drywell temperature reaches 140 <sup>0</sup> F recognize by reporting the rise in Drywell temperature as a symptom for entry into ON-120, "High Drywell Temperature". Enter and execute ON-120, "High Drywell Temperature". Recognize by reporting the event as an entry condition for T-102 "Primary Containment Control" procedure. (Drywell pressure 2 psig and Drywell Temperature 145 <sup>0</sup> F) Recognize by reporting the event as an entry condition for T-101 "RPV Control" procedure. Report the HPCI auto start on 2 psig Drywell pressure.
CRS	Enter and execute ON-120, "High Drywell Temperature". Enter and execute T-102 "Primary Containment Control". Enter and execute T-101 "RPV Control" Direct the PRO to secure HPCI when it is not required for level makeup. Direct the PRO to place Torus Sprays in-service when Drywell temperature cannot be maintained below 200 <sup>0</sup> F. Direct T-223 "Drywell Cooler Fan Bypass" be performed. Direct the URO to begin a depressurization In accordance with T-101, "RPV Control". If Drywell Bulk Average Temperature is above 281 <sup>0</sup> F the CRS may decide to perform a T-112, "Emergency Blowdown". <ul style="list-style-type: none"> <li>• Verify condensate injection is controlled by monitoring the Reactor Feedpump Discharge valve positions.</li> <li>• Verify Torus level is above 7 Feet.</li> <li>• Direct the PRO to open all ADS valves.</li> </ul>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      9      Page: 12 of 14

Event Description:      **Steam leak into Primary Containment Worsens  
(continued)**

Time    Position      Applicant's Actions or Behavior

PRO      When directed, secure HPCI in accordance with RRC 23.1 "HPCI System Operation During a Plant Transient".

- Verify 20P026, "Aux Oil Pump" control switch in "START"
- Place 20K002, "Vac Pump" control switch in "START"
- DEPRESS and hold "Remote Trip" pushbutton.
- Verify HO-4513, "HPCI Turbine Stop" is closed.
- When turbine speed reaches approximately 0RPM as indicated on SPI-4505, then place 20P026, "Aux Oil Pump" control switch to "PULL TO LOCK" position.
- Release the "Remote Trip" pushbutton.
- Verify HPCI Flow controller in "AUTO" and set for 5000 gpm.

When directed, perform Torus Sprays IAW T-204 "Initiation of Containment Sprays using RHR":

- Place keylock switch 10A-S18A(B), Containment Spray Override 2/3 Core Coverage" in MANUAL OVERRIDE
- Momentarily place the S17A/B switch in "MAN".
- Open MO-39A(B) "Torus Hdr. Valve".
- Open MO-89C(D) "HPSW Outlet Valve"
- Start a HPSW pump in the respective loop.
- Start an RHR pump in the respective loop.
- Throttle open MO-38A(B) to obtain 1000 gpm on FI-2-10-136A(B).

CT      **When directed, perform Drywell Sprays IAW T-204 "Initiation of Containment Sprays using RHR":**

- **Verify both Recirc pumps are off.**
- **Verify all Drywell Cooling fan Switches are in Off**
- **Open MO-31A(B), "D/W Spray Inboard".**
- **Open MO-26A(B), "D/W Spray Outboard"**
- **Monitor Torus and Drywell pressure.**
- **Report the drop in Primary Containment pressure.**

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      9      Page: 13 of 14

Event Description:      **Steam leak into Primary Containment Worsens  
(continued)**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
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PRO	<p>When directed, perform T-223 "Drywell Cooler Fan Bypass".</p> <ul style="list-style-type: none"> <li>• Verify operation on the safe side of Figure 1, "DWCW Saturation Curve", prior to starting or restarting any Drywell Cooler Fan Unit.</li> <li>• Verify cooling water is available to the Drywell Cooler Fan Units.</li> <li>• Place all Drywell Cooler Fan control switches on "OFF" at panel 20C012.</li> <li>• Momentarily place "D/W Cooler Fans, 43-S-J-165" control switch in "BYPASS" and allow it to spring return to "NORMAL" at panel 20C005A.</li> <li>• Verify the following:             <ul style="list-style-type: none"> <li>○ Amber light above the "D/W Cooler Fans, 43-S-J165" control switch is lit at panel 20C005A.</li> <li>○ "DRYWELL COOLER FAN TRIP BYPASS" alarm in up on panel 207 B-2.</li> </ul> </li> <li>• Direct an Equipment Operator to place the Drywell Cooler Fan speed control switches in "SLOW".</li> <li>• Operate the Drywell Cooler Fans as necessary to reduce Drywell pressure and temperature.</li> </ul> <p>When directed open all ADS valves.</p>
URO	<p>When directed, begin a depressurization with SRVs.</p>

Operator Actions

OP Test No. 1      Scenario No.      4      Event No.      10      Page: 14 of 14

**Event Description:**      **Steam leak into the RBCCW room**

**Cause:**      **Drywell pressure exceeds RBCCW pressure do the leak in the RBCCW due to the system leak and the failure of the RBCCW pumps.**

**Effect:**      **Conditions in the RBCCW will deteriorate. The ARM in the RBCCW room will alarm.  
Temperatures in the RBCCW room will rise.**

<u>Time</u>	<u>Position</u>	<u>Applicant's Actions or Behavior</u>
	CRS	Direct the PRO to perform GP-8.B "PCIS Isolations - Groups II and III" for high Drywell pressure. When conditions permit, the CRS should direct the PRO to spray the Drywell. Evacuate the RBCCW Room using GP-15 "Local Evacuation". (This step will be N/A if the isolation valves are closed.)
	PRO CT	When directed perform GP-8B"PCIS Isolations - Groups II and III". <ul style="list-style-type: none"> <li>• Trip the "A" Recirc pump on panel 20C04A.</li> <li>• <b>Close MO-2373 and MO-2374 on panel 20C12.</b></li> </ul> Recognize by reporting the RBCCW Room ARM alarm is clear and radiation levels have returned to normal. This step will be N/A if the isolation valves are closed.
	URO/PRO	Recognize by reporting the RBCCW Room ARM in alarm. This step will be N/A if the isolation valves are closed.

**TERMINATION CRITERIA:**

**End the scenario when MO-2373 and MO-2374 are closed and Primary Containment parameters are under control.**