EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator

TASK-JPM DESIGNATOR: 2100070201 / PLOR-154C K/A: G 2.1.23

RO: 4.3 SRO: 4.4

TASK DESCRIPTION: MONITOR REACTOR VESSEL TEMPERATURES DURING COOLDOWN

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. Partially completed copy of ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures and Pressure"

2. Calculator

C. REFERENCES

1. ST-O-080-500-2 Rev. 17, "Recording and Monitoring Reactor Vessel Temperature and Pressure"

D. TASK STANDARD

1. Satisfactory task completion is indicated when all required steps have been completed for one set of 15 minute data.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform and verify compliance with ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures and Pressure." I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. A reactor cooldown is in progress with a stable cooldown rate established.

2. Initial data for ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" has been recorded on Data Sheet 1 of the procedure copy to be provided to you.

3. Cooldown data from PMS is unavailable.

G. INITIATING CUE

The Control Room Supervisor directs you to record the next set of values in Data Sheet 1 of ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" and verify compliance with the applicable requirements.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
	****NOTE**** **Provide the examinee with a consumable copy of ST-O-080-500-2 with four lines of temperature data complete on Data Sheet 1.**		
1	Record current date and time in columns 1 and 2 respectively. (Cue: Today's date and time is 15 minutes from previously indicated time.)	P	Current date and time are entered in columns 1 and 2.
*2	Obtain and record Vessel Drain Pipe temperature using TR-2-02-089 Pt 9. (Cue: Acknowledge data collection point. Inform examinee that Vessel Drain Pipe temperature is 412°F)	P	Vessel Drain Pipe temperature is obtained from TR-2-02-089 Pt. 9 and recorded in column 3.
*3	Obtain and record Vessel Metal temperature from TR-2-02-3-089 Pt. 2, Shell Near Flange. (Cue: Acknowledge data collection point. Inform examinee that TR-02-3-089 Pt. 2 temperature is 484°F)	P	Shell Near Flange temperature is obtained from TR-2-02-3-089 Pt. 2 and recorded in column 4.
*4	Obtain and record Vessel Metal temperature from TR-2-02-3-089 Pt. 3 (4 alt), Bottom Head. (Cue: Acknowledge data collection point. Inform examinee that TR-02-3-089 Pt. 3 temperature is 515°F)	P	Bottom Head temperature is obtained from TR-2-02-3-089 Pt. 3 and recorded in column 5.
*5	Obtain and record Reactor pressure from PR-2-06-096 or PR-2-06-097. (Cue: Acknowledge data collection point. Inform examinee that Reactor pressure is 535 psig.)	P	Reactor pressure is obtained from PR-2-06-096 or PR-2-06-097 and recorded in column 7.
*6	Determine Steam Dome Saturation Temperature for the reactor pressure recorded in column 7. (Cue: Acknowledge that the saturation temperature is determined to be 476°F.)	P	Table 1 (TSAT) is used to determine the saturation temperature for reactor pressure and recorded in column 8.

STEP NO	STEP	ACT	STANDARD
*7	Obtain and record "A" Recirc Loop Pump Suction temperature from TR-2-02-165 Red Pen. (Cue: The "A" Recirc pump is RUNNING. Acknowledge data collection point. Inform examinee that "A" Recirc Loop temperature on TR-2-02-165 (Red Pen) is 469.1°F)	P	"A" Recirc Pump Suction temperature is obtained from TR-2-02-165's Red Pen and recorded in column 9. Note: Circling the value is not critical.
*8	Obtain and record "B" Recirc Loop Pump Suction temperature from TR-2-02-165 Black Pen. (Cue: The "B" Recirc pump is RUNNING. Acknowledge data collection point. Inform examinee that "B" Recirc Loop temperature on TR-2-02-165 (Black Pen) is 470°F)	P	"B" Recirc Pump Suction temperature is obtained from TR-2-02-165's Black Pen and recorded in column 10. Note: Circling the value is not critical.
*9	Determine which required temperature points are valid for 100°F/hr compliance. (Cue: Both Recirc Pumps are running. Acknowledge selection of temperature points.)	P	Determine that Steam Dome Saturation Temperature, Bottom Head Drain Temperature, and both Recirc Pump Suction Temperature are valid for 100°F/hr compliance. Column 11 is marked "N/A" (due to Recirc Pump operation).
*10	Calculate the difference between the current valid temperature points and the values taken 15 minutes ago. (Cue: Acknowledge calculation.)	P	A calculation of the 15 minute differential temperature for Steam Dome Saturation Temperature, Bottom Head Drain Temperature, and both Recirc Pump Suction Temperature is made.
*11	Record the value of the largest 15 minute change from the valid temperature points on Data Sheet 1. (Cue: Acknowledge use of Data Sheet 1.)	P	The value of the largest 15 minute change from the valid temperature points on Data Sheet 1. 17.5°F is recorded in column 12.
*12	Verify the largest 15 minute temperature change is less than or equal to 20°F and initial "SAT" on Data Sheet 1. (Cue: Acknowledge use of Data Sheet 1.)	P	The largest 15 minute temperature change is verified to be less than 20°F. Column 13 is marked "N/A."

*13	Determine that valid temperature points have changed by less than 100°F in the last hour and initial "SAT" on Data Sheet 1. (Cue: Acknowledge use of Data Sheet 1.)	P	Steam Dome Saturation Temperature and both Recirc Pump Suction Temperatures are determined to have changed less than 100°F in the last hour. Initials are placed in the "SAT" portion of column 14.
*14	Determine the appropriate P-T Curve Figure for the current plant conditions. (Cue: Acknowledge choice of table.)	P	Table 4 is determined to be the appropriate P-T curve.
*15	Determine the required valid temperature points per Table 4. (Cue: Acknowledge choice of temperature points.)	P	Table 4 is used to determine the following valid points: - Curve B - Saturation Temperature - Curve BBH - Recirc Pump Suction Temperature
*16	Verify reactor pressure and the required valid temperatures are on the safe side of the required P-T Curve and initial "SAT" on Data Sheet 1. (Cue: Acknowledge Table 4 and Data Sheet 1 use.)	P	Reactor Pressure versus Steam Dome Saturation Temperature are verified to be on the right side of Table 4 Curve "B". Recirc Pump Suction Temperatures are verified to be on the right side of Table 4 Curve BBH. Initials are placed in the "SAT" portion of column 6.
17	Inform the Control Room Supervisor of task completion. (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
18	As the 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 applicable steps of ST-O-080-500-2 are complete including evaluation of data to determine compliance with applicable limits, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. A reactor cooldown is in progress with a stable cooldown rate established.

2. Initial data for ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" has been recorded on the procedure copy to be provided to you.

3. Cooldown data from PMS is unavailable.

INITIATING CUE

The Control Room Supervisor directs you to record the next set of values in Data Sheet 1 of ST-O-080-500-2, "Recording and Monitoring Reactor Vessel Temperatures and Pressure" and verify compliance with the applicable requirements.

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator

TASK-JPM DESIGNATOR: 2880130201 / PLOR-61C K/A: G2.1.25
URO: 3.9 SRO: 4.2

TASK DESCRIPTION: MANUALLY CALCULATE DRYWELL BULK AVERAGE TEMPERATURE

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	Calculate the Temperature fraction for Zone 1.	P	Add points 119-124 (1129F). Divide by 6 (operable points) (188.17F). Multiply by the volume fraction of .10 (18.82F)
*2	Calculate the Temperature fraction for Zone 2.	P	Add points 126-127 (220F). Divide by 1 (operable point) (220F). Multiply by the volume fraction of .26 (57.2F)
*3	Calculate the Temperature fraction for Zone 3.	P	Add points 135-138 (252F). Divide by 2 (operable points) (126F). Multiply by the volume fraction of .57 (71.82F)
*4	Calculate the Temperature fraction for Zone 4.	P	Point 139 (211F). Divide by 1 operable point (211F). Multiply by the volume fraction of .05 (10.55F)
*5	Calculate the Temperature fraction for Zone 5.	P	Add points 163-166 (928F). Divide by the 4 operable points (232F). Multiply by the volume fraction of .02 (4.64F)
*6	Determine the calculated Drywell Bulk Average Temperature.	P	Add 18.82+57.2+71.82+10.55+4.64 to determine a calculated Drywell Bulk Average Temperature of **163.03F**.
*7	Complete verification of Drywell Bulk Average Temperature less than 140°F.	P	Initial the UNSAT Black Box beside Step 6.2.3.
*8	Report ON-120, "High Drywell Temperature" entry condition.	P	Report to the CRS that ON-120 should be entered due to Calculated Drywell Bulk Average Temperature greater than 140°F.
*9	Report T-102, "Primary Containment Control" entry condition.	P	Report to the CRS that T-102 should be entered due to Calculated Drywell Bulk Average Temperature greater than 145°F.
10	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 candidate informs the Control Room Supervisor of the ON-120, "High Drywell Temperature" and T-102, "Primary Containment Control" entry conditions, 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:

_____

_____

_____

_____

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator

TASK-JPM DESIGNATOR: 2990730101 / PLOR-204C K/A: 2.2.13
URO: 3.6 SRO: 3.8

TASK DESCRIPTION: Knowledge of tagging and clearance 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. P&ID M-356 sheet 1, Rev. 75

2. Electrical drawing E-8 sheet 1, Rev. 17

C. REFERENCES

1. P&ID M-356 sheet 1, Rev. 75

2. Electrical drawing E-8 sheet 1, Rev. 17

D. TASK STANDARD

1. Satisfactory task completion is indicated when the clearance points for the control rod drive pump have been identified.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, determine the clearance points necessary to replace the outboard pump bearing on the 2B Control Rod Drive Pump.

F. TASK CONDITIONS/PREREQUISITES

1. The outboard pump bearing for CRD pump 2BP039 needs to be replaced while the 2AP039 remains online.

2. The Turbine Building Closed Cooling Water (TBCCW) System cooler will NOT be breached.

3. Maintenance has indicated they will **NOT** accept an exceptional clearance.

G. INITIATING CUE

The Control Room Supervisor directs you to identify the clearance points for replacement of the 2B control rod drive pump bearing. Inform the Control Room Supervisor when complete.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Locate the component to be repaired on the P&ID drawing. (Cue: Provide the candidate with a copy of M-356 Sheet 1.)	P	Locate CRD Pump 2BP039 on M-356 sheet 1, (C-5).
2	Locate the component to be repaired on electrical print. (Cue: Provide the candidate with a copy of E-8 Sheet 1.)	P	Locate CRD Pump 2BP039 on E-8 Sheet 1.
*3	Take the pump control switch to OFF (Cue: Acknowledge the blocking point selections.)	P	Identifies that pump control switch 2BP039, "B CRD Pump" must be taken to OFF
*4	OPEN and RACK OUTBKR 152-1805, "B CRD Pump" (Cue: Acknowledge the blocking point selections.)	P	Identifies that Breaker 152-1805, "B CRD Pump" must be OPENED and RACKED OUT
*5	Close HV 2-3-35B "Suction Block VLV" (Cue: Acknowledge the blocking point selections.)	P	Identifies that HV 2-3-35B "Suction Block VLV" must be CLOSED
*6	Close HV 2-3-36B "Inner Disch Block VLV" (Cue: Acknowledge the blocking point selections.)	P	Identifies that HV 2-3-36B "Inner Disch Block VLV" must be CLOSED
*7	Close HV 2-3-143B "Outer Disch Block VLV" (Cue: Acknowledge the blocking point selections.)	P	Identifies that HV 2-3-143B "Outer Disch Block VLV" must be CLOSED
*8	Close HV 2-3-39 "Seal Flood Cross Conn. VLV" (Cue: Acknowledge the blocking point	P	Identifies that HV 2-3-39 "Seal Flood Cross Conn. VLV" must be CLOSED

STEP NO	STEP	ACT	STANDARD
	selections.)		
*9	Close HV 2-3-37B "Recirc to CST" (Cue: Acknowledge the blocking point selections.)	P	Identifies that HV 2-3-37B "Recirc to CST" must be CLOSED
*10	Close HV 2-2A-23045B "CRD PMP Disch VLV to Recirc PMP Seal Purge" (Cue: Acknowledge the blocking point selections.)	P	Identifies that HV 2-2A-23045B "CRD PMP Disch VLV to Recirc PMP Seal Purge" must be CLOSED
*11	Open one or more of the following: • HV 2-3-21659B "Blowdown VLV" • HV 2-3-21670B "Drain VLV" (Cue: Acknowledge the blocking point selections.)	P	Identifies that one or both of the following must be OPENED: • HV 2-3-21659B "Blowdown VLV" • HV 2-3-21670B "Drain VLV"
*12	Open one or more of the following: • RTV-2-3-38B "CRD Pp suct-lo" AND IDV-2-3-201B "Inst. drain VLV" • HV 2-3-21661B "CRD Pp 2BP039 Casing Vent From Last Stage Impeller" • HV 2-3-21660B "CRD Pp 2BP039 Casing Vent From First Stage Impeller" (Cue: Acknowledge the blocking point selections.)	P	Identifies that one of the following must be opened: • RTV-2-3-38B "CRD Pp suct-lo" AND IDV-2-3-201B "Inst. drain VLV" • HV 2-3-21661B "CRD Pp 2BP039 Casing Vent From Last Stage Impeller" • HV 2-3-21660B "CRD Pp 2BP039 Casing Vent From First Stage Impeller"
13	Inform Control Room Supervisor of task completion. (Cue: The Control Room Supervisor acknowledges the report.)	P	The operator informs the Control Room Supervisor of task completion.
14	As an evaluator ensure that you have positive control of all exam material provided to the examinee (Task	P	Positive control established.

STEP NO	STEP	ACT	STANDARD
	Conditions/Prerequisites) AND procedures.		

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

I. TERMINATING CUE

When the clearance points have been identified, and the Control Room Supervisor informed, the evaluator will terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. The outboard pump bearing for CRD pump 2BP039 needs to be replaced while the 2AP039 remains online.

2. The Turbine Building Closed Cooling Water (TBCCW) System cooler will NOT be breached.

3. Maintenance has indicated they will <u>NOT</u> accept an exceptional clearance.

INITIATING CUE

The Control Room Supervisor directs you to identify the clearance points for the repair of the control rod drive pump bearing. Inform the Control Room Supervisor when complete.

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator

TASK-JPM DESIGNATOR: 2950120501 – PLOR-92C K/A: 2.4.29 (Generic)
RO: 3.1 SRO: 4.4

TASK DESCRIPTION: Emergency Response Organization Response Augmentation using the Everbridge Web-based Call Out 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

1. Access to a Web-connected Computer
2. Optional - a pager that will receive a call out from Scenario 11 to verify that the call out was successfully completed. Contact the Site EP Coordinator.

C. REFERENCES

1. EP-MA-114-100 Mid-Atlantic State / Local Notifications Rev 023

2. EP-AA-112-100 Control Room Operations Rev 014

3. EP-AA-112-100-F-06 ERO Notification and Augmentation Rev T

D. TASK STANDARD

1. Satisfactory task completion is indicated when the trainee has initiated ERO Activation in accordance with EP-AA-112-100-F-06.

2. Estimated time to complete: 10 minutes

E. DIRECTIONS TO EXAMINEE

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

2. TRUE (Actual) PEER CHECK will be performed between candidate and evaluator during Everbridge activation to ensure ERO is NOT actually activated.

F. TASK CONDITIONS/PREREQUISITES

1. The Shift Emergency Director has declared an ALERT based on a rise in plant radiation levels that impedes operation of systems required to maintain plant safety functions.

G. INITIATING CUE

The Shift Emergency Director directs you (the Shift Communicator) to initiate ERO Activation (Call-out) in accordance with EP-AA-112-100-F-06 Section 1, Steps 1.3 - 1.11 - (Obtain a PEER CHECK from NRC Examiner prior to step 1.9 to ensure correct Scenario is initiated).

IPM redacted
due to sensitive
info contained
in Steps of IPM.

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: 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. 24, "Resolution of Thermal Limit Violations"

2. GP-5-3 Rev. 006, "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 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.

G. INITIATING CUE

As the CRS, review the official Unit 3 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.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
	***NOTE *** **Provide examinee with the official Unit 3 3D Monitor Case (P1) Edit (Attachment 2 of this JPM). Ensure it is printed on green paper.**		
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.
	***NOTE *** **For the following step the other unit, Unit 2, Tech Spec LCO applicability is ≥ 23% RTP following EPU.**		

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 or thermal power must be reduced to below 23% RTP within the next 4 hours. MFLCPR ≤ 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 AND procedures).	P	**Positive control established.**

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. **Unit 3 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)

_____

_____

_____

_____

Required actions (if any)

_____

_____

_____

_____

_____

_____

_____

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2690010201 / PLOR-354C K/A: G2.1.25
SRO: 4.2

TASK DESCRIPTION: PERFORM REACTOR COOLANT LEAKAGE TEST – SRO Version

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. AT2 – In-progress ST-O-020-560-2, Rev. 13, "Reactor Coolant Leakage Test"

2. Calculator

C. REFERENCES

1. ST-O-020-560-2, Rev. 13, "Reactor Coolant Leakage Test"

2. AT3 – ST-O-020-560-2 Data Sheet 1 ANSWER KEY

D. TASK STANDARD

1. Satisfactory task completion is indicated when reactor coolant leakage has been calculated using Data Sheet 1 of ST-O-020-560-2 "Reactor Coolant Leakage Test".

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

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

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 is at 100% power.

2. The Unit 2 Drywell Sump Monitoring System is operable.

3. Unit 2 Drywell Floor Drain Sump valves and pumps are lined up in accordance with SO 20A.1.A, "Floor Drain Sumps Startup and Normal Operation".

4. Unit 2 Drywell Equipment Drain Sump valves and pumps are lined up in accordance with SO 20C.1.D, "Equipment Drain Sumps Startup and Normal Operation".

5. AO 2A.16-2 "Manual Adjustment of Recirculation Pump Seal Second Stage Pressure" has NOT been performed.

6. The previous week's flow data readings of Drywell Floor and Equipment Drain Sumps have been entered on Data Sheet 1 of ST-O-020-560-2,"Reactor Coolant Leakage Test".

7. The current 4-hour Drywell Floor Drain and Equipment Drain sump integrator readings have already been documented on Data Sheet 1 of ST-O-020-560-2,"Reactor Coolant Leakage Test".

8. All steps of ST-O-020-560-2,"Reactor Coolant Leakage Test", up to and including step 4.4.15, have been completed satisfactorily.

G. INITIATING CUE

The Control Room Supervisor directs you to (1) determine the Unit 2 reactor coolant leakage flow rate by performing steps 6.1 through 6.4 of ST-O-020-560-2,"Reactor Coolant Leakage Test," and (2) identify required Tech Spec actions if any. (Document results in space provided on Cue Sheet.)

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	**Cue: Hand the Candidate AT2, in-progress ST-O-020-560-2,"Reactor Coolant Leakage Test" with some data recorded on Data Sheet 1**	P	
*2	Calculate and record Drywell Floor Drain 4-hour integrator difference.	P	Subtract the latest Floor Drain Sump Integrator reading from the previous 4-hour reading. Place a "72" in column (a) of Data Sheet 1.
*3	Calculate and record Drywell Floor Drain flow in gallons per minute.	P	Divide the number from column (a) of Data Sheet 1 by 12. Place a "6" in column (b) of Data Sheet 1.
*4	Calculate and record the Drywell Floor Drain 24-hour running average flow.	P	Add the six flow numbers from Column (b) and divide by 6. Place a "1" in column (c) of Data Sheet 1.
*5	Record 24 hour running average flow Drywell Floor Drain for 24 hour ago.	P	Record a "0" in column (d) of Data Sheet 1.
*6	Calculate and record the Drywell Floor Drain 24-hour running average difference.	P	Subtract column (d) from column (c) on Data Sheet 1. Place a "1" in column (e) on Data Sheet 1.
*7	Calculate and record Equipment Floor Drain 4-hour integrator difference.	P	Subtract the latest Equipment Drain Sump Integrator reading from the previous 4-hour reading. Place a "19" in column (f) of Data Sheet 1.
*8	Calculate and record Drywell Equipment Drain flow in gallons per minute. **Cue: If examinee stalls here (step 6.2.3 of the surveillance test) state "You have adequate information on task conditions."**	P	Divide the number from column (f) of Data Sheet 1 by 12. Place a "1.58" in column (g) of Data Sheet 1.
*9	Calculate and record Total Drywell Leakage.	P	Add the six Floor Drain numbers from column (b) to the six Equipment Drain numbers from column (g) of Data Sheet 1. Divide the above number by 6 and place a "2.38" in column (h) of Data Sheet 1.

STEP NO	STEP	ACT	STANDARD
*10	Verify the following data is acceptable: Column (b) is $\leq$ 5.0 gpm Column (e) is $\leq$ 2.0 gpm Column (h) is $\leq$ 25.0 gpm	P	Recognize all data is NOT below the specified limits (Column "b" is 6 gpm) and initial "All Data Within Accep Crit" Column of Data Sheet 1 as UNSAT.
***** Note to Evaluator ***** If candidate requests an Independent Verification of their calculations, direct them to proceed with identifying required actions based on their calculations.			
*11	Identify Tech Spec LCO 3.4.4 actions required.	P	Identify Tech Spec 3.4.4 Action A as required action.
12	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 step 6.4 of ST-O-020-560-2,"Reactor Coolant Leakage Test" has been completed and the Tech Spec Action entry has been identified, the evaluator will terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 is at 100% power.

2. The Unit 2 Drywell Sump Monitoring System is operable.

3. Unit 2 Drywell Floor Drain Sump valves and pumps are lined up in accordance with SO 20A.1.A, "Floor Drain Sumps Startup and Normal Operation".

4. Unit 2 Drywell Equipment Drain Sump valves and pumps are lined up in accordance with SO 20C.1.D, "Equipment Drain Sumps Startup and Normal Operation".

5. AO 2A.16-2, "Manual Adjustment of Recirculation Pump Seal Second Stage Pressure" has NOT been performed.

6. The previous week's flow data readings of Drywell Floor and Equipment Drain Sumps have been entered on Data Sheet 1 of ST-O-020-560-2, "Reactor Coolant Leakage Test".

7. The current 4-hour Drywell Floor Drain and Equipment Drain sump integrator readings have already been documented on Data Sheet 1 of ST-O-020-560-2, "Reactor Coolant Leakage Test".

8. All steps of ST-O-020-560-2, "Reactor Coolant Leakage Test," up to and including step 4.4.15, have been completed satisfactorily.

INITIATING CUE

The Control Room Supervisor directs you to:

(1) determine the Unit 2 reactor coolant leakage flow rate by performing steps 6.1 through 6.4 of ST-O-020-560-2, "Reactor Coolant Leakage Test," and

(2) identify required Tech Spec actions, if any.

Document any follow-up actions below:

_____

_____

_____

_____

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2590360402 / PLOR-252C K/A: G 2.2.22
SRO: 4.7

TASK DESCRIPTION: Asymmetric Feedwater Temperature Operation (AFTO)

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 satisfactory.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. AO 6.7-2 "Asymmetric Feedwater Temperature Operation (AFTO)"

2. Calculator

3. Technical Specification 3.2

C. REFERENCES

1. AO 6.7-2, Rev. 9 "Asymmetric Feed water Temperature Operation (AFTO)"

D. TASK STANDARD

1. Satisfactory task completion is indicated when steps 1.0 through 2.0 of Attachment 2 of AO 6.7-2, Asymmetric Feedwater Temperature Operation (AFTO), are properly completed.

2. Estimated time to complete: 30 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to assure compliance with regulations during asymmetric feed water temperature operation 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 experienced a loss of feed water heating due to several failed extraction steam valves.

2. OT-104 "Positive Reactivity Insertion" was entered and reactor power was lowered to 89% power and is presently stable.

3. Total core flow as read on FR-2-02-3-095 is 92 Mlb/hr.

4. Computer point NSS016 is in "major alarm" and procedure AO 6.7-2 "Asymmetric Feedwater Temperature Operation (AFTO)" was entered.

5. PMS Computer point NSS018 is INVALID.

6. All reactor feed water pumps are in service.

7. Feedwater temperatures as read on TR-2151 are as follows:

   A feed water temperature = 280°F
   B feed water temperature = 320°F
   C feed water temperature = 322°F

8. Feed water flows from FR-2565 are as follows:

   A RFP Flow = 4.67e6 lbm/hr
   B RFP Flow = 4.70e6 lbm/hr
   C RFP Flow = 4.73e6 lbm/hr

9. Repairs to the extraction steam valves are going to take 8 hours.

G. INITIATING CUE

The Control Room Supervisor directs you, an extra SRO on shift, to perform Attachment 2, "Feedwater Temperature Reduction Monitoring Requirements" of AO 6.7-2 "Asymmetric Feedwater Temperature Operation".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of AO 6.7-2 "Asymmetric Feed water Temperature Operation (AFTO)".	P	AO 6.7-2 "Asymmetric Feedwater Temperature Operation (AFTO)" is obtained. AO 6.7-2, Attachment 2, "Feedwater Temperature Reduction Monitoring Requirements", is referenced.
2	Determine that the second bullet of step 1.1 of Attachment 2 of AO 6.7-2 is applicable since PMS Computer point NSS018 is INVALID. (Cue: If necessary, repeat Task/Prerequisite Condition that PMS Computer point NSS018 is INVALID.)	P	Determine that average feed water temperature has to be calculated using Attachment 5 of AO 6.7-2.
*3	Calculate average feed water temperature value using Attachment 5 "Determining Feed water Injection Temperature Using TR-2151 and FR-2565". (Cue: If necessary, repeat Task/Prerequisite Conditions that: A FW temperature = 280°F B FW temperature = 320°F C FW temperature = 322°F, A RFP Flow = 4.67e6 lbm/hr B RFP Flow = 4.70e6 lbm/hr C RFP Flow = 4.73e6 lbm/hr	P	Since PMS Computer point NSS018 is INVALID, per step 1.1 of AO 6.7-2 the Examinee will use Attachment 5 "Determining Feed water Injection Temperature Using TR-2151 and FR-2565" to calculate the average feed water temperature value. Examinee inserts temperature values of 280, 320 and 322°F and flow values of 4.67e6 lbm/hr, 4.70e6 lbm/hr and 4.73e6 lbm/hr respectively into Exhibit 5. The average feed water injection temperature with 3 in-service reactor feed water pumps is determined to be 307.42°F.
4	Using Attachment 1 of RE-41, "Installation/Verification of the 3D Monicore Thermal Operating Limits", determine that 55°F feed water temperature reduction is applicable. (Cue: Provide a completed RE-41 Att 1 to the examinee.)	P	RE-41 Attachment 1 reviewed and 55°F temperature reduction determined to be applicable.
5	Plot feed water temperature and core thermal power on Attachment 3 of AO 6.7-	P	Plot temperature calculated using Attachment 5 (307.42°F) versus core

STEP NO	STEP	ACT	STANDARD
	2.		thermal power (3516 MWth).
*6	Determine that Unit 2 is operating in the TSA Region of Attachment 3, "Feed water Temperature Limits". (Cue: If necessary, repeat Task/Prerequisite Condition that Unit 2 is at 89% reactor power and stable.)	P	Compare the feed water temperature determined above (307.42°F) against the Feedwater Temperature Reduction Region Curve located on Attachment 3, "Feedwater Temperature Limits" of AO 6.7-2. Mark step 2.2 as "N/A".
7	Notify Shift Management and Reactor Engineering. (Cue: acknowledge communication)	P	Notify Shift Management and the Reactor Engineering group of being in the TSA Region of Attachment 2, Figure 1 "Feedwater Temperature Limits" either face-to-face or by telephone.
*8	Enter the required actions for Technical Specification LCOs 3.2.1, 3.2.2, 3.2.3 (Cue: acknowledge entry into the LCOs)	P	As required by AO 6.7-2, Attachment 2, "Feedwater Temperature Reduction Monitoring Requirements", step 2.3.2, Tech. Spec. LCOs 3.2.1, 3.2.2, 3.2.3 are entered. All three LCOs require that thermal limits (APLHGR, MCPR, and LHGR) are restored within 2 hours. If not restored within 2 hours, reduce thermal power $\leq$ 23% within 4 hours.
*9	Determine reactor power must be reduced to less than 23% RTP within Tech Spec time limit. (Cue: acknowledge required actions)	P	Based on the task conditions provided equipment repairs are not possible, it should be determined that either step 2.3.3.2 **OR** 2.3.3.3 should be performed.
10	Inform Control Room Supervisor of completion of Attachment 2 "Feedwater Temperature Reduction Monitoring Requirements" of AO 6.7-2. (Cue: acknowledge communication.)	P	Control room Supervisor is notified of task completion.
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 steps 1.0 through 2.0 of Attachment 2, "Feedwater Temperature Reduction Monitoring Requirements", of AO 6.7-2 are completed and it is recognized that step 2.3.3.3 needs to be performed, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 experienced a loss of feedwater heating due to several failed extraction steam valves.

2. OT-104 “Positive Reactivity Insertion” was entered and reactor power was lowered to 89% power and is presently stable.

3. Total core flow as read on FR-2-02-3-095 is 92 Mlb/hr.

4. Computer point NSS016 is in "major alarm" and procedure AO 6.7-2 “Asymmetric Feedwater Temperature Operation (AFTO)” was entered.

5. PMS Computer point NSS018 is INVALID.

6. All reactor feedwater pumps are in service.

7. Feedwater temperatures as read on TR-2151 are as follows:

   A feedwater temperature = 280°F
   B feedwater temperature = 320°F
   C feedwater temperature = 322°F

8. Feedwater flows from FR-2565 are as follows:

   A RFP Flow = 4.67e6 lbm/hr
   B RFP Flow = 4.70e6 lbm/hr
   C RFP Flow = 4.73e6 lbm/hr

9. Repairs to the extraction steam valves are going to take 8 hours.

INITIATING CUE

The Control Room Supervisor directs you, an extra SRO on shift, to perform Attachment 2, "Feedwater Temperature Reduction Requirements" of AO 6.7-2, "Asymmetric Feedwater Temperature Operation".

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007560502 / PLOR-215C K/A: G2.3.14
SRO: 3.8

TASK DESCRIPTION: REVIEW AND AUTHORIZE ISSUANCE OF THYROID BLOCKING AGENT (KI)

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

1. EP-AA-113, Personnel Protective Actions

2. EP-AA-113-F-03, Thyroid Blocking Agent Authorization Form completed with the exception of the Station Emergency Director authorization.

3. EP-AA-1007, Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station

4. EP-AA-114-F-02, BWR Release in Progress Determination Guidance

5. Procedure index for EP procedures.

6. Worker history descriptions.

C. REFERENCES

1. EP-AA-112-100-F-01, Rev. V, "Shift Emergency Director Checklist"

2. EP-AA-113, Rev. 12, "Personnel Protective Actions"

3. EP-AA-113-F-03, Rev. E, "Thyroid Blocking Agent Authorization"

4. EP-AA-1007, Rev 031, Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station

5. EP-AA-114-F-02, Rev A, "BWR Release in Progress Determination Guidance"

D. TASK STANDARD

1. Satisfactory completion of this task is indicated when the Emergency Director has reviewed and denied the issuance of Thyroid Blocking Agent.

2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, review the information provided including the Thyroid Blocking Agent Authorization and make the decision as to whether to authorize the issuance of Thyroid Blocking Agent. I will describe the initial conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 experienced a LOCA transient that resulted in a Site Area Emergency declaration.

2. A small steam leak continues to exist in the Turbine Building due to failure of both Inboard and Outboard MSIVs in the B line to close.

3. Reactor power is 2.34 E-5% and dropping.

4. RPV level is -120 inches and steady. Lowest RPV level during the transient was -160 inches.

5. RPV pressure is 800 psig and dropping slowly.

6. Primary Containment pressure on PR-2508 is 8 psig and lowering slowly due to Drywell sprays in service. Highest observed Primary Containment pressure was 13 psig.

7. Primary Containment radiation on RI-8103A-D is 5.0 Rem/hour, the highest observed to this point.

8. Field Monitoring Teams have been mobilized by the Shift Dose Assessor.

9. Iodine air samples have been completed and a Committed Dose Equivalent (CDE) Thyroid Dose has been calculated and verified. Total CDE Thyroid Dose is expected to be 30 Rem.

10. Due to concerns for the exposure the Field Monitoring Teams may receive, EP-AA-113-F-03, Thyroid Blocking Agent Authorization Forms, have been completed and reviewed/approved by the Radiation Protection Manager.

G. INITIATING CUE

As the Shift Emergency Director, authorize the attached Thyroid Blocking Agent Authorization Form (EP-AA-113-F-03), in accordance with EP-AA-113. Document the basis for your decision.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
***Note**: All JPMs use TQ-JA-150-04, JPM Work Practice Standards to evaluate applicable work practices. If the JPM is intended to focus on specific work practices or department focus areas, consider scripting the selected behaviors in the JPM steps, (i.e. department focus is on use of first check, script the first check as first step after locating the equipment location).[IR#01531579 02]*			
1	Obtain a copy of EP-AA-113, "Personnel Protective Actions".	P	The examinee obtains the current revision of EP-AA-113, "Personnel Protective Actions".
2	Use Section 4.4 of the procedure for KI assessment.	P	The examinee references section 4.4 of EP-AA-113.
****** NOTE: ****** **IF the Operator requests to review the KI calculation, inform the Operator that the EP-MA-110-100-F-02 form is not currently available, but it has been verified and is accurate.**			
3	Analyze given conditions and determine that a release IS in progress	P	Examinee determines that a release IS in progress
*4	Recognize that the conditions for issuing KI are not currently met.	P	Examinee determines the conditions for Step 4.4.1.1.A are NOT met due to: • Condition 1: there is not a loss or potential loss of the Fuel Clad Barrier. • Condition 2: the projected iodine thyroid exposure will be < 50 Rem CDE. (Examinee may discuss the following, but this is NOT critical because no on-site workers are specified.) The conditions for Step 4.4.1.1.B are NOT met since this applies to onsite workers, and: • Condition 1: there is not a loss or potential loss of the Fuel Clad Barrier. • Condition 2: the projected iodine thyroid exposure will be < 50 Rem CDE.

STEP NO	STEP	ACT	STANDARD
5	Determine that Thyroid Blocking Agent (KI) should not be issued. (Cue: Acknowledge report.)	P	Recognize and report that KI should not be issued.
*6	Deny authorizing the issuance of Thyroid Blocking Agent. (Cue: Acknowledge denial.)	P	The examinee does not sign EP-AA-113-F-03, "Thyroid Blocking Agent Authorization Form."
7	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

TERMINATING CUE:

When the examinee has determined the conditions for issuing KI are not met and EP-AA-113-F-03 "Thyroid Blocking Agent Authorization Form" is returned without authorization, the evaluator may terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. **Unit 2 experienced a LOCA transient that resulted in a Site Area Emergency declaration.**

2. **A small steam leak continues to exist in the Turbine Building due to failure of both Inboard and Outboard MSIVs in the B line to close.**

3. **Reactor power is 2.34 E-5% and dropping.**

4. **RPV level is -120 inches and steady. Lowest RPV level during the transient was -160 inches.**

5. **RPV pressure is 800 psig and dropping slowly.**

6. **Primary Containment pressure on PR-2508 is 8 psig and lowering slowly due to Drywell sprays in service. Highest observed Primary Containment pressure was 13 psig.**

7. **Primary Containment radiation on RI-8103A-D is 5.0 Rem/hour, the highest observed to this point.**

8. **Field Monitoring Teams have been mobilized by the Shift Dose Assessor.**

9. **Iodine air samples have been completed and a Committed Dose Equivalent (CDE) Thyroid Dose has been calculated and verified. Total CDE Thyroid Dose is expected to be 30 Rem.**

10. **Due to concerns for the exposure the Field Monitoring Teams may receive, EP- AA-113-F-03, Thyroid Blocking Agent Authorization Forms, have been completed and reviewed/approved by the Radiation Protection Manager.**

INITIATING CUE

As the Shift Emergency Director, authorize the attached Thyroid Blocking Agent Authorization Form (EP-AA-113-F-03), in accordance with EP-AA-113. Document the basis for your decision.

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007510502/PLOR-236C 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.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

1. EP-AA-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. 14, "Control Room Operations"

4. EP-AA-112-100-F-01 Rev. V, "Shift Emergency Director Checklist"

5. EP-AA-114-F-02 Rev A, "BWR Release in Progress Determination Guidance"

6. EP-MA-114-100 Rev. 23, "Mid-Atlantic State/Local Notifications"

7. EP-MA-114-100-F-01 Rev P, "State/Local Notification Form"

8. EP-AA-1007, Table PBAPS 3-1 Rev. 31, "Radiological Emergency Plan Annex for Peach Bottom Atomic Power Station"

9. EP-AA-1007, ADDM 3 Rev. 004, "Exelon Nuclear Emergency Action Levels for Peach Bottom Atomic Power Station"

10. EP-AA-125-1002 Rev. 12, "ERO Performance – Performance Indicators Guidance"

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.

At time = 0 seconds:

1. Both Units are operating at 100% power.

2. A fire is reported in the (Unit 2) 20C005A "Reactor" Panel wiring.

3. ON-114, "Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower Structure" is entered.

4. T-325-2 and T-325-3, "Area 25 Fire Guide" procedures are entered.

5. Both units are shutdown by performance of GP-4, "Manual Reactor Scram" procedures.

6. SE-10, "Plant Shutdown from the Alternative Shutdown Panels" is entered on both units.

7. The fire continues to burn with no visible damage observed.

8. Although plant control remains possible, the last operator has left the Control Room.

At T = 22 minutes:

RPV control is established from the respective Alternate Shutdown Panels in accordance with SE-10, "Plant Shutdown from the Alternative Shutdown Panels."

G. INITIATING CUE

As the Emergency Director, make the EAL classification and complete the State/Local Event Notification form (if required).

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
Note: *All JPMs use TQ-JA-150-04, JPM Work Practice Standards to evaluate applicable work practices. If the JPM is intended to focus on specific work practices or department focus areas, consider scripting the selected behaviors in the JPM steps, (i.e. department focus is on use of first check, script the first check as first step after locating the equipment location).[IR#01531579 02]*			
***** NOTE ***** **Record the time using the clock above the Full Core Display. Time = _____**			
1	Obtain procedures EP-AA-112-100-F-01, "Shift Emergency Director Checklist", EP-AA-1007, "Radiological Emergency Plan Annex for PBAPS", and EP-AA-1007, ADDM 3, "Exelon Nuclear Emergency Action Levels for Peach Bottom Atomic Power Station"	P	Procedures EP-AA-112-100-F-01, EP-AA-1007, and EP-AA-107 ADDM 3 are obtained.
*2	Determine the appropriate EAL IC. (Cue: Classification is acknowledged.)	P	The following sections of EP-AA-1007, ADDM 3 are referenced: Control Room evacuation has been initiated and plant control cannot be established (HS2), Control Room evacuation has been initiated (HA2), FIRE or EXPLOSION affecting the operability of plant safety systems required to establish or maintain safe shutdown (HA3), FIRE within the PROTECTED AREA not extinguished within 15 minutes of detection or EXPLOSION within the PROTECTED AREA (HU3) and Release of toxic, corrosive, asphyxiant or flammable gases deemed detrimental to NORMAL PLANT OPERATIONS (HU5). The event is classified as a Site Area Emergency (**HS2**) due to meeting the EAL Threshold (last operator has left the Control Room and plant control not established using SE-10 for more than 15 minutes).
3	Announce the event classification to the facility staff.	P	Announces the event classification to the Control Room crew.
***** NOTE ***** **WHEN the examinee completes the classification determination,** **THEN 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.			
***** NOTE ***** **Inform examinee that the Public Address announcement & ERO Notification are NOT required.**			

TASK CONDITIONS/PREREQUISITES

NOTE: This is a time critical JPM.

At time = 0 seconds:

1. Both Units are operating at 100% power.

2. A fire is reported in the (Unit 2) 20C005A "Reactor" Panel wiring.

3. ON-114, "Actual Fire Reported in the Power Block, Diesel Generator Building, Emergency Pump, Inner Screen or Emergency Cooling Tower Structure" is entered.

4. T-325-2 and T-325-3, "Area 25 Fire Guide" procedures are entered.

5. Both units are shutdown by performance of GP-4, "Manual Reactor Scram" procedures.

6. SE-10, "Plant Shutdown from the Alternative Shutdown Panels" is entered on both units.

7. The fire continues to burn with no visible damage observed.

8. Although plant control remains possible, the last operator has left the Control Room.

At T = 22 minutes:

RPV control is established from the respective Alternate Shutdown Panels in accordance with SE-10, "Plant Shutdown from the Alternative Shutdown Panels."

INITIATING CUE

As the Emergency Director, make the EAL classification and complete the State/Local Event Notification form (if required).

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

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

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

A. NOTES TO EVALUATOR:

1. An asterisk (*) before the step number denotes a CRITICAL STEP. CRITICAL STEPS are those steps which when not performed correctly will prevent the system from functioning properly or prevent successful task completion.

2. System cues included in the performance checklist are to be provided to the examinee when no system response is available.

3. JPM Performance

   a. "Control Room" JPMs are designed to be performed in the simulator. If a "Control Room" JPM is to be performed in the Control Room all perform steps (P) shall be simulated (S).

   b. When performing "In-Plant" JPMs, no equipment will be operated without Shift Management approval.

4. Satisfactory performance of this JPM is accomplished if:

   a. The task standard is met.

   b. JPM completion time requirement is met.

      1) For non-time critical JPMs, completion within double the estimated time (listed in paragraph D.2) is acceptable provided the evaluator determines that the progress to completion is acceptable.

      2) For time critical JPMs, completion within the estimated time (listed in paragraph D.2) is required.

5. The estimated time to complete this JPM, though listed in the task standard, is not to be given to the examinee.

B. TOOLS AND EQUIPMENT

None

C. REFERENCES

1. SO 6D.2.A-2 Rev. 37, "Reactor Feedwater Pump Shutdown"

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

D. TASK STANDARD

1. Satisfactory task completion is indicated when the "A" RFP is secured and its suction valve (MO-2140A) closed.

2. Estimated time to complete: 25 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

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

F. TASK CONDITIONS/PREREQUISITES

1. A normal plant shutdown is in progress IAW GP-3, "Normal Plant Shutdown".

2. Three Reactor Feed Pumps running.

3. Reactor power is approximately 78%.

4. Feedwater Master Level Controller is in "AUTO".

5. All RFP M/A Stations are in "AUTO".

6. The Zinc Injection system is shutdown.

7. Heat balance is in Venturi mode for all three RFP strings IAW AO 59C.2-2, "Transfer Core Thermal Power Calculation LEFM/Venturi Mode and Maximum Allowable Power Level Adjustments".

8. An Equipment Operator is stationed at the Unit 2 Condensate Demineralizer Panel for Condensate Demineralizer management.

G. INITIATING CUE

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

H. PERFORMANCE CHECKLIST

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

*****NOTE*****

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

IF NECESSARY, PROVIDE THE FOLLOWING CUE:

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

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

STEP NO	STEP	ACT	STANDARD
10	Place the control switch for AO-2147A, Feedpump Check valve, in "CLOSE". (Cue: Acknowledge control switch operation.)	P	AO-2147A control switch is placed in the "CLOSE" position at panel 20C006A.
11	Check AO-2147A, Feedpump Check valve response. (Cue: AO-2147A green light is on, red light is on.)	P	AO-2147 red and green lights are verified ON at panel 20C006A.
*12	Bump closed MO-2149A, Feedpump "A" Discharge valve. (Cue: Acknowledge control switch operation.)	P	MO-2149A control switch is momentarily placed in the "CLOSE" position at panel 20C006A. Valve Red Indicating Light/Stop Pushbutton is depressed to stop valve travel. Repeat IAW procedure guidance.
13	Monitor Reactor Feed Pumps and RPV level response (Cue: Discharge flow of "A" RFP is dropping, discharge flow of "B" and "C" RFPs are rising, RPV water level is stable.)	P	• Checks discharge flow of "A" RFP is dropping • Checks discharge flow of "B" and "C" RFPs are rising • Monitors RPV water level, allow RPV water level to stabilize
*14	When RFP flow lowers to 1 x 10^6 lbm/hr, then trip "A" RFP. (Cue: "A" RFPT TRIP" annunciator on panel 201 is up.)	P	When "A" RFP flow lowers to 1 x 10^6 lbm/hr, "A" RFPT Turbine Trip pushbutton (PBA1) is momentarily DEPRESSED at panel 20C005A.
15	Verify the "A" RFP tripped. (Cue: The "A" RFP green turbine trip lights are lit; SPI-2621A reads Ø. Annunciators 201 G-4, 202 G-3, and 210 A-3 are lit.)	P	The "A" RFP green turbine trip lights are verified lit and "A" RFPT speed is verified to drop to Ø on SPI-2621A at panel 20C005A.
16	Verify MO-2149A is fully closed. (Cue: MO-2149A green light is on, red light is off.)	P	MO-2149A green light is verified ON at panel 20C006A.

STEP NO	STEP	ACT	STANDARD
17	Verify AO-8633A, "A H2 FDW INJ" closes when flow is less than the low flow alarm setpoint of 1.1 Mlbm/hr or if AO-8633A does not close, then place the control switch for AO-8633A to off and apply an Equipment Status Tag. (Cue AO-8633A green light is on and red light is off)	P	AO-8633A green light is verified ON at panel 20C006A.
18	Verify "A" RFP Turning Gear control switch in AUTO. (Cue: Turning gear control switch is in AUTO.)	P	"A" RFP Turning Gear control switch is verified in the AUTO (normal) position at panel 20C005A.
19	Verify "A" RFPT MSC SELECT light is lit. (Cue: "A" RFPT MSC SELECT light is lit.)	P	"A" RFPT amber MSC SELECT light is verified ON on panel 20C005A.
*20	Close MO-2140A, "Feed Pump `A' Suct" valve. (Cue: Acknowledge control switch operation.)	P	MO-2140A control switch is momentarily placed in the close position at panel 20C006A.
21	Verify MO-2140A, "Feed Pump `A' Suct" valve is closed. (Cue: MO-2140A green light is on, red light is off.)	P	MO-2140A green light is verified ON at panel 20C006A.
22	Inform Control Room Supervisor of task completion. (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
23	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 "A" Reactor Feed Pump is secured, and its suction valve (MO-2140A) closed the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. A normal plant shutdown is in progress IAW GP-3, "Normal Plant Shutdown".

2. Three Reactor Feed Pumps running.

3. Reactor power is approximately 78%.

4. Feedwater Master Level Controller is in "AUTO".

5. All RFP M/A Stations are in "AUTO".

6. The Zinc Injection system is shutdown.

7. Heat balance is in Venturi mode for all three RFP strings IAW AO 59C.2-2, "Transfer Core Thermal Power Calculation LEFM/Venturi Mode and Maximum Allowable Power Level Adjustments".

8. An Equipment Operator is stationed at the Unit 2 Condensate Demineralizer Panel for Condensate Demineralizer management.

INITIATING CUE

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

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2390030101 / PLOR-0379C K/A: 239001A4.01

RO: 4.2 SRO: 4.0

TASK DESCRIPTION: Recover a Single Main Steam Line

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-J040 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

SO 1A.7.B-2 Rev 8, "Main Steam Line Recovery"

D. TASK STANDARD

1. Satisfactory task completion is indicated when The "A" Main Steam Line is reopened.

2. Estimated time to complete: 8 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to reopen the "A" Main Steam Line 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

a. The "A" Main Steam line has been closed for 2 hours.

b. Reactor power is approximately 60%.

G. INITIATING CUE

The Control Room Supervisor directs you to reopen the "A" Main Steam line using SO 1A.7.B-2, "Main Steam Line Recovery".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of SO 1A.7.B-2, "Main Steam Line Recovery".	P	A controlled copy of procedure SO 1A.7.B-2, "Main Steam Line Recovery" has been obtained.
2	Verify AO-2-02-80A "A Main Steam Line Inboard Isolation Valve" is closed. (Cue: The green light is lit and the red light is off for AO-2-02-80A)	P	AO-2-02-80A is verified closed by monitoring the red light off and the green lit on.
3	Verify AO-2-02-86A "A Main Steam Line Outboard Isolation Valve" is closed. (Cue: The green light is lit and the red light is off for AO-2-02-86A)	P	AO-2-02-86A is verified closed by monitoring the red light off and the green lit on.
*4	Open MO-2-02-074 "Main Steam Lines Drain Inboard Valve". (Cue: When the control switch is taken the open position, the red light for MO-2-02-74 is on.)	P	Control Switch for MO-2-02-074 is momentarily taken to the OPEN position.
5	Verify MO-2-02-074 "Main Steam Lines Drain Inboard Valve" is open. (Cue: The red light for MO-2-02-74 is on and the green light is off.)	P	Control Switch for MO-2-02-074 is verified open by the red light for MO-2-02-74 is on and the green light is off.
*6	Open MO-2-02-077 "Main Steam Lines Drain Outboard Valve". (Cue: When the control switch is taken the open position, the red light for MO-2-02-77 is on.)	P	Control Switch for MO-2-02-077 is momentarily taken to the OPEN position.
7	Verify MO-2-02-077 "Main Steam Lines Drain Outboard Valve" is open. (Cue: The red light for MO-2-02-77 is on and the green light is off.)	P	Control Switch for MO-2-02-077 is verified open by the red light for MO-2-02-74 is on and the green light is off.
8	Open MO-2-02-079 "Main Steam Lines Drain Orifice Bypass to Main CDSR". (Cue: When the control switch is taken the open position, the red light for MO-2-02-79 is on.)	P	Control Switch for MO-2-02-079 is momentarily taken to the OPEN position.

STEP NO	STEP	ACT	STANDARD
9	Verify MO-2-02-079 "Main Steam Lines Drain Orifice Bypass to Main CDSR" is open. (Cue: The red light for MO-2-02-79 is on and the green light is off.)	P	Control Switch for MO-2-02-079 is verified open by the red light for MO-2-02-79 is on and the green light is off.
*10	Open MO-2-02-078 "Main Steam Lines Drain Downstream Drain Valve". (Cue: When the control switch is taken the open position, the red light for MO-2-02-78 is on.)	P	Control Switch for MO-2-02-078 is momentarily taken to the OPEN position.
11	Verify MO-2-02-078 "Main Steam Lines Drain Downstream Drain Valve" is open. (Cue: The red light for MO-2-02-78 is on and the green light is off.)	P	Control Switch for MO-2-02-078 is verified open by the red light for MO-2-02-78 is on and the green light is off.
When all 4 drain valves are open inform the examinee that the valves have now been open for 20 minutes.			
*12	Open AO-2-02-80A "A Main Steam Line Inboard Isolation Valve". (Cue: The red light is lit AO-2-02-80A)	P	Control switch forAO-2-02-80A is taken to the OPEN position.
13	Verify AO-2-02-80A "A Main Steam Line Inboard Isolation Valve" is opened. (Cue: The green light is out and the red light is lit for AO-2-02-80A)	P	AO-2-02-80A is verified open by monitoring the red light on and the green lit off.
*14	Open AO-2-02-86A "A Main Steam Line Outboard Isolation Valve". (Cue: The red light is lit AO-2-02-80A)	P	Control switch forAO-2-02-86A is taken to the OPEN position.
15	Verify AO-2-02-86A "A Main Steam Line Outboard Isolation Valve" is opened. (Cue: The green light is out and the red light is lit for AO-2-02-86A)	P	AO-2-02-86A is verified open by monitoring the red light on and the green lit off.
*16	Close MO-2-02-074 "Main Steam Lines Drain Inboard Valve". (Cue: When the control switch is taken the close position, the green light for MO-2-02-74 is on.)	P	Control Switch for MO-2-02-074 is momentarily taken to the CLOSE position.

STEP NO	STEP	ACT	STANDARD
17	Verify MO-2-02-074 "Main Steam Lines Drain Inboard Valve" is closed. (Cue: The green light for MO-2-02-74 is on and the red light is off.)	P	Control Switch for MO-2-02-074 is verified closed by the red light for MO-2-02-74 is off and the green light is on.
*18	Close MO-2-02-077 "Main Steam Lines Drain Outboard Valve". (Cue: When the control switch is taken the close position, the green light for MO-2-02-77 is on.)	P	Control Switch for MO-2-02-077 is momentarily taken to the CLOSE position.
19	Verify MO-2-02-077 "Main Steam Lines Drain Outboard Valve" is closed. (Cue: The red light for MO-2-02-77 is off and the green light is on.)	P	Control Switch for MO-2-02-077 is verified closed by the red light for MO-2-02-74 is off and the green light is on.
*20	Close MO-2-02-079 "Main Steam Lines Drain Orifice Bypass to Main CDSR". (Cue: When the control switch is taken the close position, the green light for MO-2-02-79 is on.)	P	Control Switch for MO-2-02-079 is momentarily taken to the CLOSE position.
21	Verify MO-2-02-079 "Main Steam Lines Drain Orifice Bypass to Main CDSR" is closed. (Cue: The red light for MO-2-02-79 is off and the green light is on.)	P	Control Switch for MO-2-02-079 is verified closed by the red light for MO-2-02-79 is off and the green light is on.
*22	Close MO-2-02-078 "Main Steam Lines Drain Downstream Drain Valve". (Cue: When the control switch is taken the close position, the green light for MO-2-02-78 is on.)	P	Control Switch for MO-2-02-078 is momentarily taken to the CLOSE position.
23	Verify MO-2-02-078 "Main Steam Lines Drain Downstream Drain Valve" is closed. (Cue: The red light for MO-2-02-78 is off and the green light is on.)	P	Control Switch for MO-2-02-078 is verified closed by the red light for MO-2-02-78 is off and the green light is on.
24	Report to Control Room Supervisor that the "A" Main Steam Line is reopened. (Cue: Control Room Supervisor acknowledges report.)	P	Task completed.

STEP NO	STEP	ACT	STANDARD
25	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 "A" Main Steam Line is reopened, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. The "A" Main Steam line has been closed for 2 hours.

2. Reactor power is approximately 60%.

INITIATING CUE

The Control Room Supervisor directs you to re-open the "A" Main Steam line using SO 1A.7.B-2, "Main Steam Line Recovery".

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2008070501 / PLOR-302CA K/A: 295031EA1.05
RO: 4.3 SRO: 4.3

TASK DESCRIPTION: Manually Initiate RCIC (Alternate Path – Controller Fails Low)

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. None

C. REFERENCES

1. RRC 13.1-2 Rev. 3, "RCIC System Operation During A Plant Event"

D. TASK STANDARD

1. Satisfactory task completion is indicated when RCIC is injecting to the RPV at approximately 600 gpm.

2. Estimated time to complete: 6 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to manually initiate the RCIC system and inject into the Reactor vessel at a flow rate of approximately 600 gpm 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 scram has occurred on low RPV level due to a loss of all Feedwater.

2. Reactor level is –25 inches and dropping slowly.

G. INITIATING CUE

The Control Room Supervisor directs you to initiate the RCIC System using the RCIC Manual Initiation pushbutton and inject to the Reactor vessel at approximately 600 gpm using RRC 13.1-2 "RCIC System Operation During a Plant Event."

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure RRC 13.1-2.	P	A copy of procedure RRC 13.1-2 is obtained. Section A "Vessel Injection Using Manual Initiation PB" is referenced.
*2	Arm the RCIC Manual Initiation pushbutton, 13A-S80. (Cue: Acknowledge pushbutton collar operation. Annunciator A-2 on Panel 222 is alarming.)	P	RCIC Manual Initiation pushbutton collar is rotated clockwise to the ARMED position at panel 20C004C.
*3	Depress the RCIC Manual Initiation pushbutton, 13A-S80. (Cue: Acknowledge Manual Initiation pushbutton pushbutton operation; annunciator 222 C-5 "RCIC Barometric Condenser Vacuum Pump Running" is alarming.)	P	RCIC Manual Initiation pushbutton is momentarily DEPRESSED at panel 20C004C.
4	Acknowledge the "RCIC BAROMETRIC CONDENSER VACUUM PUMP RUNNING" annunciator. (Cue: Annunciator 222 C-5 is lit solid.)	P	The annunciator "ACKNOWLEDGE" pushbutton is depressed.
5	Verify MO-2-13-131, RCIC Turbine Supply valve opens. (Cue: MO-131 red light is on, green light is off.)	P	MO-2-13-131 red light is verified ON at panel 20C004C.
6	Verify MO-2-13-021, RCIC to Feed Line valve opens. (Cue: MO-021 red light is on, green light is off.)	P	MO-2-13-021 red light is verified ON at panel 20C004C.
7	Verify MO-2-13-132, RCIC Cooling Water valve is open. (Cue: MO-132 red light is on, green light is off.)	P	MO-2-13-132 red light verified ON at panel 20C004C.

STEP NO	STEP	ACT	STANDARD
8	Verify AO-2-13-034 and AO-2-13-035 RCIC Drain Isol to Mn Cndr valves close. (Cue: AO-034 and AO-035 green lights are on, red lights are off.)	P	AO-2-13-034 and AO-2-13-035 green lights verified ON at panel 20C004C.
9	Verify 20P046 Vacuum Pump starts. (Cue: 20P046 red light is on, green light is out. Alarm 222 C-5 lit.)	P	20P046 red light verified ON at panel 20C004C.
****** NOTE ****** **The Alternate Path portion of this JPM begins with the next step.**			
****** NOTE ****** **Annunciators 221, B-1 "RCIC Lo Flow" and 222 A-3 "RCIC Turb Bearing Oil LO Press" are expected alarms during RCIC start.**			
10	Verify RCIC system flowrate is 600 gpm. (Cue: FI-2-13-091 indicates ≈0 gpm. RCIC Flow Controller output meter indicates 0%. "RCIC Lo Flow" (222 B-1) and "RCIC Turb Bearing Oil LO Press" (222 A-3) alarms are flashing.	P	RCIC Flow Controller failure is recognized. The annunciator "ACKNOWLEDGE" pushbutton is depressed.
*11	Place the RCIC Flow Controller in "MANUAL". (Cue: Acknowledge controller mode switch operation.)	P	RCIC Flow Controller is placed in the MAN position at panel 20C004C.
*12	Adjust RCIC Flow Controller to maintain RCIC flow at 600 gpm. (Cue: [CLOCKWISE] FI-2-13-091 rises to 600 gpm as control knob is turned.	P	RCIC Flow Controller manual control knob is rotated CLOCKWISE until RCIC flow is 550-650 gpm on FI-2-13-091 at panel 20C004C.
13	Place 13A-S80, "RCIC Manual Initiation", collar in DISARMED position.	P	RCIC Manual Initiation PB is rotated counter-clockwise to DISARMED position at panel 20C004C.

STEP NO	STEP	ACT	STANDARD
14	Inform Control Room Supervisor of task completion AND that the RCIC flow controller is in MANUAL. (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
15	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 RCIC is injecting into the Reactor vessel at approximately 600 gpm, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Reactor scram has occurred on low RPV level due to a loss of all Feedwater.

2. Reactor level is –25 inches and dropping slowly.

INITIATING CUE

The Control Room Supervisor directs you to initiate the RCIC System using the RCIC Manual Initiation pushbutton and inject to the Reactor vessel at approximately 600 gpm using RRC 13.1-2 "RCIC System Operation During a Plant Event".

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2002800501/ PLOR-135C K/A: 295024EA1.19
URO: 3.3 SRO: 3.4

TASK DESCRIPTION: Vent the Primary Containment via the Torus Hardened Vent for Gas or Pressure Control per T-200J

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. 1 Key PA 2235 (or PA 1235 or PA 235) for AO-80290 keylock control switch.

2. 2 Keys 3095 for 16A-S114A and 16A-S114B Bypass switches.

C. REFERENCES

T-200J-2, Rev. 4, "Containment Venting via the Torus Hardened Vent"

D. TASK STANDARD

Satisfactory task completion is indicated when Primary Containment venting via the Torus Hardened Vent has been initiated and Primary Containment pressure is below 60 psig.

Estimated time to complete: 10 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to begin venting Primary Containment using T-200J-2, "Containment Venting via the Torus Hardened Vent". I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. An ELAP is in progress. In order to extend RCIC life do to Torus Temperature Containment venting is required.

2. Use of T-200J-2, "Containment Venting Via the Torus Hardened Vent" has been directed by T-200-2, "Primary Containment Venting".

3. Torus level is 16 feet.

4. 125 VDC and operating air are available to Torus vent valves AO-80290 and AO-2511.

5. Drywell and Torus pressure are 10 psig and rising slowly.

6. The Emergency Director has been notified that Primary Containment venting is required.

G. INITIATING CUE

The Control Room Supervisor directs you to perform T-200J-2, "Containment Venting via the Torus Hardened Vent" to reduce Primary Containment pressure.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure T-200J-2.	P	A copy of procedure T-200J-2 is obtained.
2	Obtain keys for 16A-S118, "HCVS Power Transfer Switch", SV-23472, "HVCS Argon Purge" and AO-80290, "CTMT Emergency Vent". (Cue: When ask for the keys as Shift Management, provide the three (3) keys.)	P	Keys for 16A-S118, "HCVS Power Transfer Switch", SV-23472, "HVCS Argon Purge" and AO-80290, "CTMT Emergency Vent" are obtained from Shift Management.
3	Perform a GP-15, "Local Evacuation" of the outside areas west of both Reactor Buildings. (Cue: Local evacuation is performed.)	P	A local evacuation of the outside areas west of both Reactor Buildings is performed using GP-15, "Local Evacuation". (the announcement should be similar to Attention all personnel, attentional all personnel a radiological hazard exists n the areas west of the Reactor Buildings. All personnel evacuate the area west of the Reactor Building)
4	Request Radiation Protection personnel to monitor dose rates during venting in the vicinity of the Bullet Resistant Enclosure (BRE) to determine the need to evacuate Security personnel. (Cue: RP acknowledges the request to monitor dose rates.)	P	Requests RP personnel to monitor dose rates during venting in the vicinity of the Bullet Resistant Enclosure (BRE) to determine the need to evacuate Security personnel.
5	Direct an Equipment Operator to monitor the atmosphere in RW-135' ROS area for adequate oxygen concentration at regular intervals. OR Don SCBA prior to entry into ROS Area (Cue: EO acknowledges the requests to monitor oxygen concentration or Don SCBA prior to entry into ROS Area.)	P	Directs Equipment Operator to monitor the atmosphere in RW-135' ROS area for adequate oxygen concentration at regular intervals. OR Don SCBA prior to entry into ROS Area

STEP NO	STEP	ACT	STANDARD
6	Direct an Equipment Operator to slowly open 2AS1107 thru 2RS1107, "HCVS Argon Gas Supply Cylinder 2A thru 2R". (Cue: EO reports that 2AS1107 thru 2RS1107, "HCVS Argon Gas Supply Cylinder 2A thru 2R" are open.)	P	Directs an Equipment Operator to slowly open 2AS1107 thru 2RS1107, "HCVS Argon Gas Supply Cylinder 2A thru 2R".
7	Direct an Equipment Operator to slowly open HV-2-07K-23473A thru R, Argon Gas Bottle Supply to CTMT Vent HDR Isolation Valve". (Cue: EO reports that HV-2-07K-23473A thru R, Argon Gas Bottle Supply to CTMT Vent HDR Isolation Valve" are open.)	P	Directs an Equipment Operator to slowly open HV-2-07K-23473A thru R, Argon Gas Bottle Supply to CTMT Vent HDR Isolation Valve".
8	Direct an Equipment Operator to slowly open 2AS1108, "B/U N2 BTL Supply to CTMT SYS AO VV"s" (Cue: EO reports the 2AS1108, "B/U N2 BTL Supply to CTMT SYS AO VV's" is open)	P	Directs an Equipment Operator to slowly open 2AS1108, "B/U N2 BTL Supply to CTMT SYS AO VV's"
9	Direct an Equipment Operator to slowly open 2BS1108, "B/U N2 BTL Supply to CTMT SYS AO VV's" Bottle Isolation valve. (Cue: EO reports the 2AS1108, "B/U N2 BTL Supply to CTMT SYS AO VV's is open)	P	Directs an Equipment Operator to slowly open 2BS1108, "B/U N2 BTL Supply to CTMT SYS AO VV's" Bottle Isolation valve.
10	Direct an Equipment Operator to slowly open HV-2-16C-23434A, "2AS1108 N2 BTL to CTMT Vent SYS ISOL VV". (Cue: EO reports HV-2-16C-23434A is open.)	P	Direct an Equipment Operator to slowly open HV-2-16C-23434A, "2AS1108 N2 BTL to CTMT Vent SYS ISOL VV".
11	Direct an Equipment Operator to slowly open HV-2-16C-23434B, "2BS1108 N2 BTL to CTMT Vent SYS ISOL VV". (Cue: EO reports HV-2-16C-23434B is open.)	P	Direct an Equipment Operator to slowly open HV-2-16C-23434B, "2AS1108 N2 BTL to CTMT Vent SYS ISOL VV".

STEP NO	STEP	ACT	STANDARD
12	Direct an Equipment Operator to adjust PCV-2-16C-23435, "Backup N2 Sup Press Reg to CTMT Vent HDR" to obtain a pressure of 106 to 110 psig on local indicator PI-81430. (Cue: EO reports pressure on PI-81430 is 108 psig.)	P	Directs an Equipment Operator to adjust PCV-2-16C-23435, "Backup N2 Sup Press Reg to CTMT Vent HDR" to obtain a pressure of 106 to 110 psig on local indicator PI-81430.
13	Direct an Equipment Operator to open HV-2-16C-23436, "B/U N2 to CTMT Vent Sys Isol Valve" (Cue: EO reports HV-2-16C-3436 is open.)	P	Directs an Equipment Operator to open HV-2-16C-23436, "B/U N2 to CTMT Vent Sys Isol Valve"
14	Direct an Equipment Operator to unlock and open HV-2-07K-23478, "Argon Gas Supply to Ctmt Vent Hdr Isol Vv". (Cue: EO reports HV-2-07K-23478 is open.)	P	Direct an Equipment Operator to unlock and open HV-2-07K-23478, "Argon Gas Supply to Ctmt Vent Hdr Isol Vv".
15	Verify closed AO-2512, "Outbd 18"Vent" (Cue: The green light is ON and the red light is OFF for AO-2512	P	Verifies closed AO-2511, "Outbd 18"Vent" by checking that the green light is ON and the red light is OFF for AO-2511.
16	Verify closed AO-2511, "Outbd 18"Vent" (Cue: The green light is ON and the red light is OFF for AO-2511	P	Verifies closed AO-2511, "Outbd 18"Vent" by checking that the green light is ON and the red light is OFF for AO-2511.
*17	Place 16A-S118, HCVS Power Transfer Switch" in "bypass". (Cue: Keylock switch 16A-S118 is placed in bypass.)	P	16A-S118, HCVS Power Transfer Switch" is placed in bypass on panel 20C003-03.
18	Direct an Equipment Operator to monitor PI-81428, "HCVS Argon Supply Press Gauge". (Cue: EO reports that they are monitoring pressure on PI-81428.)	P	Directs an Equipment Operator to monitor PI-81428, "HCVS Argon Supply Press Gauge".

STEP NO	STEP	ACT	STANDARD
19	Direct a RO to monitor temperature on TI-81407, "HCVS Vent Temperature Indication" (Cue: RO reports that they are monitoring temperature on TI-81407.)	P	Directs a RO to monitor temperature on TI-81407, "HCVS Vent Temperature Indication".
*20	Open SV-23472, "HCVS Argon Purge". (Cue: Control switch for SV-23472 is in the open position)	P	Opens SV-23472, "HCVS Argon Purge" by taking the control switch to the open position.
REPORT AS THE EQUIPMENT OPERATOR THAT PRESSURE ON PI-81428 IS LOWERING.			
*21	Close SV-23472, "HCVS Argon Purge". (Cue: Control switch for SV-23472 is in the closed position)	P	Closes SV-23472, "HCVS Argon Purge" by taking the control switch to the closed position.
22	Notify Shift Management that PSD-80293, "CTMT EMERG Vent Rupture Disc" has been manually ruptured. (Cue: Shift Management acknowledges that the rupture disc has been ruptured.)	P	Notifies Shift Management that PSD-80293, "CTMT EMERG Vent Rupture Disc" has been manually ruptured.
*23	Open AO-2511, "INBD 18" Vent". (Cue: Acknowledge control switch operation.)	P	AO-2511, "INBD 18" Vent" control switch is placed in AUTO OPEN position on panel 20C003-03.
24	Verify AO-2511, "INBD 18" Vent" is open. (Cue: AO-2511 red light is ON and green light if OFF.)	P	AO-2511 red light is verified ON and green light is verified OFF on panel 20C003-03.
25	Insert the key into the key-lock control switch for AO-80290, "CTMT Emerg Vent". (Cue: Key is inserted into switch AO-80290.)	P	Insert the key into the key-lock control switch for AO-80290, "CTMT Emerg Vent".

STEP NO	STEP	ACT	STANDARD
*26	Open AO-80290, "CTMT Emergency Vent". (Cue: AO-80290 keylock control switch is placed in "OPEN".)	P	Open AO-80290, "CTMT Emergency Vent".
27	Verify AO-80290, "CTMT EMERG VENT", is open. (Cue: AO-80290 red light ON and green light OFF.)	P	AO-80290, "CTMT EMERG VENT", red light is verified ON and green light OFF.
28	Inform Control Room Supervisor that venting through the Torus Hardened Vent. (Cue: Control Room Supervisor acknowledges report.)	P	Task completion reported.
29	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 Primary Containment is being vented via the Torus Hardened Vent, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. An ELAP is in progress. In order to extend RCIC life do to Torus Temperature Containment venting is required.

2. Use of T-200J-2, "Containment Venting Via the Torus Hardened Vent" has been directed by T-200-2, "Primary Containment Venting".

3. Torus level is 16 feet.

4. 125 VDC and operating air are available to Torus vent valves AO-80290 and AO-2511.

5. Drywell and Torus pressure are 10 psig and rising slowly.

6. The Emergency Director has been notified that Primary Containment venting is required.

INITIATING CUE

The Control Room Supervisor directs you to perform T-200J-2, "Containment Venting via the Torus Hardened Vent" to reduce Primary Containment pressure.

PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2640020101 / PLOR-322CA K/A: 264000A4.04
URO: 3.7 SRO: 3.7

TASK DESCRIPTION: Diesel Generator Load Test (Alternate Path – D/G will not load)

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

Synchronizing Switch Removable Handle

C. REFERENCES

Procedure SO 52A.1.B, Rev. 54, "Diesel Generator Operations"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the E-43 breaker has been opened OR the E-4 Diesel Generator tripped by the examinee (due to E-4 Diesel Generator load control difficulty).

2. Estimated time to complete: 23 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 2600 KW and 1000 KVAR for testing purposes 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. The E-4 Diesel Generator has been "SLOW" started and is running in accordance with Section 4.1 of SO 52A.1.B, "Diesel Generator Operations."

2. The E-4 Diesel Generator is running at rated frequency and voltage.

3. The E-43 Bus is being supplied by 2SUE.

4. The ESW system is supplying Diesel Generator cooling water.

G. INITIATING CUE

The Control Room Supervisor directs you, the Plant Reactor Operator, to synchronize the E-4 Diesel Generator to the E-43 Bus and pick up 2600 KW and 1000 KVAR 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.	P	A copy of procedure SO 52A.1.B is obtained.
2	Verify E-4 D/G is running at rated frequency and voltage. (Cue: E-4 D/G frequency is 60 HZ and voltage is 4280 volts.)	P	E-4 D/G frequency is verified at 58.8 to 61.2 Hz on E-4 D/G Freq. meter. E-4 D/G voltage is verified at 4.16 to 4.4 KV on E-4 D/G Volt meter.
*3	Insert Sync scope key in E-43 Breaker Sync Switch and turn ON. (Cue: Both Sync Scopes rotating, incoming and running lights "ON" at Bottom Dead Center and "OFF" at Top Dead Center.)	P	E-43 Breaker Sync Switch (3-125-1807) is placed in the "ON" position at panel 00C026A.
4	Verify E-4 D/G speed control. (Cue: "GOVERNOR" control switch raises, lowers frequency 0.5 Hz above/below the initial value, then returns to initial value.)	P	E-4 D/G frequency is raised to 60.5 Hz then lowered to 59.5 Hz on E-4 D/G FREQ meter using the "GOVERNOR" control switch (165-DG12) then returned to the initial value at panel 00C026D.
5	Verify E-4 D/G voltage control. (Cue: "AUTO VOLT REG" raises then lowers voltage 50 volts above/below initial value, then returns to initial value.)	P	E-4 D/G voltage is raised and lowered 50 volts above/below initial value on E-4 D/G volts meter using the "AUTO VOLT REG" control switch (90-DG14) then returned to the initial value at panel 00C026D.
6	Check both synchronizing lights for proper operation. (Cue: Both lights "ON" when sync scope at "Bottom Dead Center" and both lights "OFF" when sync scope at "Top Dead Center".)	P	Both sync lights are verified "ON" at Bottom Dead Center and "OFF" at Top Dead Center at panels 00C026A or 00C026C.

STEP NO	STEP	ACT	STANDARD
*7	Adjust E-4 D/G engine speed using "GOVERNOR" control switch until sync scope is rotating 1 revolution / 5 to 10 seconds in "FAST" direction. (Cue: Acknowledge control switch operation. Synchroscope is rotating 1 revolution / 5 to 10 seconds in the fast direction.)	P	Sync scope is verified rotating 1 revolution / 5 to 1 seconds in "FAST" direction at panels 00C026A OR 00C026C.
*8	Adjust E-4 diesel generator voltage until "INCOMING" voltmeter is slightly higher than "RUNNING" voltmeter. (Cue: Acknowledge control switch operation. Incoming is slightly higher (50 volts) than running.)	P	Incoming voltmeter about 50 volts but less than 100 volts above bus voltage at panel 00C026C.
9	Verify sync scope rotating 1 revolution / 5 to 10 seconds in "FAST" direction. (Cue: Sync scope rotating 1 revolution / 5 to 10 seconds in "FAST".)	P	Sync scope is verified rotating 1 revolution / 5 to 10 seconds in "FAST" direction at Panels 00C026A OR 00C026C.
*10	Close the E-43 breaker when the sync scope is within 13 degrees of "Top Dead Center". (Cue: Acknowledge [CLOCKWISE] breaker control switch operation.)	P	When the sync scope is within 13 degrees of "Top Dead Center", the E-43 breaker control switch is taken to the "CLOSED" position and released at panel 00C026D.
11	Verify the E-43 breaker is closed. (Cue: E-43 breaker red light on, both sync scopes stopped at 12 o'clock and sync lights "OFF".)	P	E-43 breaker red light lit, sync scope stopped at 12 o'clock, and sync lights "OFF" verified at panel 00C026C and 00C026D.
*12	Immediately load the E-4 diesel to 200-300 KW by placing “Governor” control switch to “RAISE” (Cue: [CLOCKWISE, "GOVERNOR" control switch is taken to "RAISE"].	P	E-4 D/G KW load is promptly raised by momentarily placing the "GOVERNOR" control switch (165-DG12) to "RAISE" at panel 00C026D. No reverse power trip of the E-43 breaker occurs.

STEP NO	STEP	ACT	STANDARD
13	Verify E-4 D/G load is 200-300 KW. (Cue: E-4 D/G load is 250 KW.)	P	E-4 D/G load is verified to be 150 - 350 KW on the E-4 D/G KW meter at panel 00C026D.
14	Immediately load the E-4 Diesel Generator to 100 KVAR raised by placing the AUTO VOLT REG control switch in "RAISE" (Cue: [CLOCKWISE, AUTO VOLT REG control switch is taken to "RAISE"].	P	E-4 D/G KVAR load is promptly raised by momentarily placing the AUTO VOLT REG control switch (90-DG14) in "RAISE" at panel OOC026D.
15	Verify E-4 D/G load is 100 KVAR. (Cue: E-4 D/G load is 100 KVAR.)	P	E-4 D/G load is verified to be 50-150 KVAR on the E-4 D/G KVAR meter at panel OOC026D.
16	Place the E-43 "BKR SYNC" switch to "OFF". (Cue: Acknowledge COUNTERCLOCKWISE control switch operation.)	P	E-43 "BKR SYNC" switch taken to "OFF" at Panel 00C026D.
17	Verify the E-43 "BKR SYNC" in "OFF". (Cue: INCOMING AND RUNNING voltmeters drop to zero.)	P	"BKR SYNC" verified in "OFF" via INCOMING and RUNNING voltmeters dropping to zero.
18	Check generator output voltage for all 3 phases. (Cue: Acknowledge VOLT SEL switch operation, reading is 4280 Volts on each phase)	P	Generator output voltage is checked by rotating the VOLT SEL switch through positions "1-2", "2-3", "3-1" on panel OOC026D.
19	Check generator amperage for all 3 phases. (Cue: Acknowledge AMP SEL switch operation, reading is >0 Amps on each phase)	P	Generator amperage is checked by rotating the AMP SEL switch through positions "1", "2", "3".

STEP NO	STEP	ACT	STANDARD
	***** NOTE: ****** **The Alternate Path portion of this JPM begins with the next step.**		
20	Pick up desired KW and KVAR loading on E-4 D/G. Cue: [CLOCKWISE, "GOVERNOR" and AUTO VOLT REG control switches are momentarily placed in "RAISE".].	P	E-4 D/G "Governor" control switch (165-DG12) and AUTO VOLT REG control switches are momentarily placed in "RAISE".
21	Verify E-4 D/G load. (Cue: E-4 D/G load does not change)	P	Candidate recognizes that E-4 D/G load does not change on the E-4 D/G KW meter at panel 00C026D.
*22	Trip the E-43 breaker OR stop the E-4 D/G. Cue: ([COUNTERCLOCKWISE], "GOVERNOR" control switch is taken to "LOWER" OR E-43 breaker control switch placed in "TRIP" OR the E-4 D/G control switch placed in "STOP."	P	The E-43 breaker control switch is taken to the "TRIP" position and released OR the E-4 D/G control switch is taken to "STOP" and released at panel 00C026D.
23	Verify action taken in the previous step. (Cue: E-4 D/G load is below 3000 KW and stable OR E-43 breaker green light on, red light off, KW and KVAR load indicated zero.)	P	The E-43 breaker green light on, red light off, KW and KVAR load indicate zero at panel 00C026D.
24	Notify the Control Room Supervisor that the E-43 breaker is open, the E-4 D/G is inoperable. (CUE: Control Room Supervisor acknowledges report.)	P	Information provided to the Control Room Supervisor.
25	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 E-43 breaker is opened OR D/G tripped by the examinee, then the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. The E-4 Diesel Generator has been "SLOW" started and is running in accordance with Section 4.1 of SO 52A.1.B, "Diesel Generator Operations."

2. The E-4 Diesel Generator is running at rated frequency and voltage.

3. The E-43 Bus is being supplied by 2SUE.

4. The ESW system is supplying Diesel Generator cooling water.

INITIATING CUE

The Control Room Supervisor directs you, the Plant Reactor Operator, to synchronize the E-4 Diesel Generator to the E-43 Bus and pick up 2600 KW and 1000 KVAR in accordance with Section 4.2 of SO 52A.1.B, "Diesel Generator Operations."

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2007200502 / PLOR-355CA K/A: 212000 A4.03
RO: 3.9 SRO: 3.9

TASK DESCRIPTION: PERFORM ACTIONS FOR AN UNEXPECTED/UNEXPLAINED CHANGE IN CORE FLOW PER OT-112 (ALTERNATE PATH CONTROL RODS WILL NOT INSERT)

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. None

C. REFERENCES

1. OT-112, Rev. 43, "Unexpected Unexplained Change in Core Flow"

2. GP-9-2 Appendix 2, Rev 0, "U2 Single Rod Scram Move Sheet"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the four rods listed in GP-9-2 are inserted and the individual scram switches have been returned to the "up/normal" position.

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to exit Region 2 of the power to flow map. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Unit 2 was at approximately 86% power.

2. "C" Condensate pump tripped resulting in a Recirc runback.

3. Reactor operations are in Region 2 of the "Power to Flow Operation Map".

G. INITIATING CUE

The Control Room Supervisor directs you to perform OT-112, "Unexpected Unexplained Change in Core Flow" beginning with step 2.5 to insert four (4) control rods.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Monitor for indications of THI. (Cue: APRM flux levels are stable)	P	APRM flux levels are monitored for indications of THI
2	Control 22-23 is selected and inserted per GP-9-2. (Cue: When rod insertion is attempted, control rods will not move)	P	Control rod 22-23 is selected using the select matrix. Control rod insertion is attempted using the "Rod Control" switch in the "IN" position.
	The candidate may attempt to insert the control rod using the "Emergency In" switch when the "Rod Control" switch fails to give the expected responds. This action is not required for full credit on this JPM.		
3	Recognize by reporting the failure of control rods to insert. (Cue: the report is acknowledged by the CRS. If necessary, repeat the initiating cue)	P	Reports to the CRS the failure of control rods to insert.
Alternate path begins with the next step			
*4	Enter GP-9-2 Appendix 2, "U/2 Single Rod Scram Move Sheet".	P	GP-9-2 Appendix 2 "U/2 Single Rod Scram Move Sheet" is entered.
5	Notify Radiation Protection that radiation conditions at the SDV may change during Control Rod Scram insertion. (Cue: Radiation Protection acknowledges the report and will monitor the SDV for changing radiation levels.)	P	Radiation Protection is notified that radiation conditions at the SDV may change during Control Rod Scram insertion.
*6	Insert Control Rod 30-15 by placing its Scram toggle switch in the Scram (down) position. (Cue: When the scram toggle switch is in the down position report that Control Rod 30-15 indicated green double dashes)	P	Control Rod 30-15 is inserted by placing its Scram toggle switch in the Scram (down) position.
*7	When Control Rod 30-15 indicated fully in or after 10 seconds return Control Rod 30-15 Scram Toggle switch to the Normal	P	Control Rod 30-15 indicates fully in or after 10 seconds Scram toggle switch for Control Rod 30-15 is returned to the

STEP NO	STEP	ACT	STANDARD
	(up) position. (Cue: When the Scram toggle switch is in Normal position report that the Scram toggle switch for Control Rod 30-15 is in the Normal (up) position.		Normal (up) position.
*8	Insert Control Rod 30-47 by placing its Scram toggle switch in the Scram (down) position. (Cue: When the scram toggle switch is in the down position report that Control Rod 30-47 indicated green double dashes)	P	Control Rod 30-47 is inserted by placing its Scram toggle switch in the Scram (down) position.
*9	When Control Rod 30-47 indicated fully in or after 10 seconds return Control Rod 30-47 Scram Toggle switch to the Normal (up) position. (Cue: When the Scram toggle switch is in Normal position report that the Scram toggle switch for Control Rod 30-47 is in the Normal (up) position.	P	Control Rod 30-47 indicates fully in or after 10 seconds Scram toggle switch for Control Rod 30-47 is returned to the Normal (up) position.
*10	Insert Control Rod 14-31 by placing its Scram toggle switch in the Scram (down) position. (Cue: When the scram toggle switch is in the down position report that Control Rod 14-31 indicated green double dashes)	P	Control Rod 14-31 is inserted by placing its Scram toggle switch in the Scram (down) position.
*11	When Control Rod 14-31 indicated fully in or after 10 seconds return Control Rod 14-31 Scram Toggle switch to the Normal (up) position. (Cue: When the Scram toggle switch is in Normal position report that the Scram toggle switch for Control Rod 14-31 is in the Normal (up) position.	P	Control Rod 14-31 indicates fully in or after 10 seconds Scram toggle switch for Control Rod 14-31 is returned to the Normal (up) position.
*12	Insert Control Rod 46-31 by placing its Scram toggle switch in the Scram (down) position. (Cue: When the scram toggle switch is in	P	Control Rod 46-31 is inserted by placing its Scram toggle switch in the Scram (down) position.

STEP NO	STEP	ACT	STANDARD
	the down position report that Control Rod 46-31 indicated green double dashes)		
*13	When Control Rod 46-31 indicated fully in or after 10 seconds return Control Rod 46-31 Scram Toggle switch to the Normal (up) position. (Cue: When the Scram toggle switch is in Normal position report that the Scram toggle switch for Control Rod 46-31 is in the Normal (up) position.	P	Control Rod 46-31 indicates fully in or after 10 seconds Scram toggle switch for Control Rod 46-31 is returned to the Normal (up) position.
14	Inform the CRS that four control rods have been inserted to exit Region 2. (Cue: Acknowledge the report)	P	CRS is informed that four control rods have been inserted to exit Region 2.
15	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 four control rods on GP-9-2 are inserted, the evaluator will terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Unit 2 was at approximately 86% power.

2. "C" Condensate pump tripped resulting in a Recirc runback.

3. Reactor operations are in Region 2 of the "Power to Flow Operation Map".

INITIATING CUE

The Control Room Supervisor directs you to perform OT-112, "Unexpected Unexplained Change in Core Flow" beginning with step 2.5 to insert four (4) control rods.

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 **(Cue: Report as EO that "A" HPSW Pump motor oil level at STAND STILL level)**	P	EO directed to verify Oil Level
4	Direct Equipment Operator to verify Area Ventilation Fans are aligned as follows: • HPSW + ESW Pump Room Supply Fan 2BV060 should be in "AUTO" AND 2AV060 should be in "AUTO STBY" on Panel 20C139. • HPSW + ESW Pump Room Exhaust Fans 2AV083 AND 2BV083 should be in "AUTO" on Panel 20C139. **(Cue: Report as EO that fans aligned as above)**	P	EO directed to verify Fan alignment
5	Notify Chemistry that the "A" RHR Heat Exchanger will be placed in service and appropriate samples are required **(Cue: As Chemistry, acknowledge the report)**	P	Chemistry notified
6	Monitor "A" HPSW motor bearing temperatures on PMS	P	PMS used for bearing temperature monitoring

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". **(Cue: EO acknowledges.)**	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. **(Cue: TSA log entry will be made by Supervisor)**	P	Candidate acknowledges requirement for TSA log entry

STEP NO	STEP	ACT	STANDARD
	***** Note ***** **The following step will need to be coordinated with the Simulator Operator.**		
*14	Close breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486". **(Cue: When requested inform the operator that breaker 5442 for MO-2486 is closed.)**	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"
	*****NOTE***** **In the following step, ECT level rise, as indicated on LI-0503, WILL BE TIME COMPRESSED.**		
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 **(Cue: As Equipment Operator, report that CHK-2-32-502A is CLOSED)**	P	Check Valve verified closed
22	Direct Equipment Operator to verify Area Ventilation Fans are aligned as follows: • HPSW + ESW Pump Room Supply Fan 2BV060 should be in "AUTO" AND 2AV060 should be in "AUTO STBY" on Panel 20C139. • HPSW + ESW Pump Room Exhaust Fans 2AV083 AND 2BV083 should be in "AUTO" on Panel 20C139. **(Cue: Report as EO that fans aligned as above)**	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. **(Cue: TSA status entry will be made by Supervisor)**	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
	***** Note ***** **The following step will need to be coordinated with the Simulator Operator.**		
*26	Open breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486". **(Cue: When directed, inform the operator that breaker 5442 at E234-D-A "U/2 HPSW Return to Discharge Pond MO-2486" is open.)**	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. **(Cue: Control Room Supervisor acknowledges report.)**	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) AND 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
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2000080501 / PLOR-136C K/A: 295002AK2.07

URO: 3.1 SRO: 3.1

TASK DESCRIPTION: Steam Jet Air Ejector Operations During a Condenser Low Vacuum Transient (OT-106)

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

OT-106, Rev. 27, "Condenser Low Vacuum - Procedure"

D. TASK STANDARD

1. Satisfactory task completion is indicated when "A" SJAE first stage steam supply pressure is restored and Main Condenser vacuum is stabilized in accordance with OT-106, "Condenser Low Vacuum - Procedure".

2. Estimated time to complete: 15 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to stabilize Main Condenser vacuum using OT-106, "Condenser Low Vacuum - Procedure". 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 Main Condenser vacuum is 28" and dropping slowly.

2. OT-106, "Condenser Low Vacuum - Procedure" has been entered.

3. Reactor power is being reduced in accordance with GP-9, "Fast Reactor Power Reduction".

4. "A" SJAE is in service.

G. INITIATING CUE

The Control Room Supervisor directs you to restore Main Condenser vacuum, beginning with Step 3.9 of OT-106, "Condenser Low Vacuum - Procedure".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain a copy of procedure OT-106.	P	A copy of procedure OT-106 is obtained.
2	Verify Air Ejector 1st Stage `A' PI-2472A reading. (Cue: PI-2472A reads 0 psig.)	P	PI-2472A is verified to read 0 psig on Panel 20C006B.
3	Verify AO-2-08A-2466A position at Panel 20C006B. (Cue: AO-2-08A-2466A red light is OFF and green light is ON.)	P	AO-2-08A-2466A, "MAIN STEAM ISOLATION VALVE TO 'A' SJAE" red light is verified OFF and green light is verified ON at Panel 20C006B.
*4	Place control switch "ALT INSTR AIR AO-2-08A-2466A" to "OPEN". (Cue: Acknowledge control switch operation.)	P	Control switch "ALT INSTR AIR AO-2-08A-2466A" is placed to "OPEN" on Panel 20C007A.
5	Verify AO-2-08A-2466A position at Panel 20C006B. (Cue: AO-2-08A-2466A red light is ON and green light is OFF.)	P	AO-2-08A-2466A, "MAIN STEAM ISOLATION VALVE TO 'A' SJAE" red light is verified ON and green light is verified OFF at Panel 20C006B.
*6	Place PIC-2239A, "A STEAM PRESS", in manual. (Cue: Acknowledge control switch operation.)	P	PIC-2239A, "A STEAM PRESS" is placed in manual by depressing the "hand" symbol on Panel 20C007A.
7	Verify PIC-2239A, "A STEAM PRESS" is in manual. (Cue: PIC-2239A "Auto" symbol backlight is OFF, "hand" symbol backlight is "ON".	P	PIC-2239A "A STEAM PRESS" is "auto" symbol backlight if OFF and "hand" symbol backlight is "ON".
*8	Restore "A" SJAE steam supply pressure to between 115 and 125 psig. (Cue: PIC-2239A OPEN and CLOSE pushbuttons are depressed to establish SJAE first stage steam supply pressure between 115 and 125 psig.	P	PIC-2239A OPEN and CLOSE pushbuttons are depressed as required on Panel 20C007A to restore "A" SJAE first stage steam supply pressure to between 115 and 125 psig.
9	Verify "A" SJAE first stage steam supply is between 115 and 125 psig. (Cue: PI-2472A "A" SJAE first stage pressure on Panel 20C006B is between 115 and 125 psig.)	P	"A" SJAE first stage steam supply PI-2472A is verified between 115 and 125 psig on Panel 20C006B.

STEP NO	STEP	ACT	STANDARD
10	IF required THEN acknowledge "SJAE DISCHARGE HI/LO PRESSURE" annunciator. (Cue: Annunciator 204 D-5 is lit solid.)	P	IF required THEN the annunciator acknowledge pushbutton is depressed on Panel 20C007A.
*11	IF a system isolation occurs due to high SJAE discharge pressure THEN (repeatedly) place the AO-2236A/B/C "Air Ejector Off-Gas Inlet A" valve control switch in "CLOSE" and then to "AUTO".	P	IF AO-2236A/B/C automatically closes THEN (repeatedly) place its control switch in "CLOSE" and then to "AUTO".
12	Verify Main Condenser vacuum is improving (rising). (Cue: Main Condenser vacuum is rising.)	P	Main Condenser vacuum is verified to be rising on PR-2154 on Panel 20C007A.
13	Inform Control Room Supervisor of task completion. (Cue: Control Room Supervisor acknowledges report.)	P	Task completion is reported to Control Room Supervisor.
14	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 "A" SJAE first stage steam supply is restored and Main Condenser vacuum is improving, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. **Unit 2 Main Condenser vacuum is 28" and dropping slowly.**

2. **OT-106, "Condenser Low Vacuum - Procedure" has been entered.**

3. **Reactor power is being reduced in accordance with GP-9, "Fast Reactor Power Reduction".**

4. **"A" SJAE is in service.**

INITIATING CUE

The Control Room Supervisor directs you to restore Main Condenser vacuum, beginning with Step 3.9 of OT-106, "Condenser Low Vacuum - Procedure".

EXELON NUCLEAR
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2003910599 / PLOR-064P K/A: 295037EA1.05
URO: 3.9 SRO: 4.0

TASK DESCRIPTION: Rod Insertion By Withdraw Line Venting (T-215)- Unit 2

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-215-2 Tool Package from EOP Tool Locker

2. EOP Tool Locker Key from Control Room Supervisor (if needed)

C. REFERENCES

1. T-215-2, Control Rod Insertion By Withdraw Line Venting, Rev 4.

D. TASK STANDARD

1. Satisfactory task completion is indicated when venting is aligned and control room reports rod is full in.

2. Estimated time to complete: 20 minutes Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to insert control rod 26-15 by withdraw line venting 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. T-101, "RPV Control" directs entry into T-215-2.

2. Another operator and Health Physics Technician available (simulated).

3. Nonessential personnel have been evacuated from the Reactor Building 135' elevation.

4. HP technician has determined that no respiratory equipment is required.

5. HP technician is present, initial radiation levels have been determined, and the HP technician will continuously monitor levels near vent valve located on catwalk above HCU.

G. INITIATING CUE

The Control Room Supervisor directs you to insert control rod 26-15 using T-215-2, "Control Rod Insertion by Withdraw Line Venting".

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain the key for the Emergency Operating Procedure Tool Locker. (Cue: When examinee requests EOP Tool Locker key from WCS OR examinee identifies the location of the WCS keybox and its associated key then evaluator should provide the EOP Tool Locker key.)	S	Emergency Operating Procedure Tool Locker Key requested from WCS OR examinee identifies the location of the WCS keybox and its associated key.
2	Open Emergency Operation Procedure Tool Locker and obtain T-215 Tool Kit. (Cue: Equipment obtained.)	P	Tool Locker located on Radwaste Building El. 165' (near Unit 2 Remote Shutdown Panel) is unlocked, opened and T-215 Took Kit located.
	******NOTE****** **When examinee locates tool kit, inform him that he now has the tools to perform the procedure. Provide the examinee with a copy of T-215-2 procedure. DO NOT allow equipment to be removed from the locker. Relock the locker before leaving the area.**		
*3	Locate the 50 ft. 3/8 inch steel braided hose. (Cue: 50 ft. hose obtained.)	P	50 ft. hose obtained from the Operation's CRD charging equipment box under false bottom near HCU row on 135' el..
	******NOTE****** **When examinee locates 50 ft. hose, inform him that he now has the hose to perform the procedure. DO NOT allow equipment to be removed from the area.**		
4	Place an X in the 26-15 box on Figure 1. (Cue: Acknowledge annotation of Figure 1.)	P	An X is placed in the 26-15 box on Figure 1 of T-215-2 procedure.
5	Insert unthreaded end of the hose into nearest floor drain and tape to the floor. (Cue: Acknowledge placement of hose.)	S	Unthreaded end of hose is placed into the floor drain near HCU Rack "B" and taped to floor.
	******NOTE******* **When examinee attempts to access the catwalk area DO NOT allow access, Identify that examinee should describe actions using Figure 2 of T-215-2 from 135' elevation.**		

STEP NO	STEP	ACT	STANDARD
6	Unscrew the needle valve cap for HV-2-3A-106AX valve block for HCU 26-15. (Cue: The valve cap is turned [COUNTERCLOCKWISE] until cap is free from HV-2-3A-106AX valve block.)	S	Needle valve cap is turned COUNTERCLOCKWISE with a wrench from the Took Kit until cap is free from HV-2-3A-106AX valve block at HCU 26-15.
7	Insert tee handle and verify closed HV-2-3A-106AX for HCU 26-15. (Cue: Tee handle inserted and [CLOCKWISE] tee handle does not turn.)	S	Tee handle from the Tool Kit is inserted into HV-2-3A-106AX valve block for HCU 26-15, tee handle movement is attempted in the CLOCKWISE direction.
*8	Remove the vent cap on HV-2-3A-106AX valve block for HCU 26-15. (Cue: Vent cap is turned [COUNTERCLOCKWISE] until cap is free from HV-2-3A-106AX valve block.)	S	Vent cap is turned COUNTERCLOCKWISE with a wrench from the Tool Kit until cap is free from HV-2-3A-106AX valve block at HCU 26-15.
*9	Install steel braided hose into HV-2-3A-106AX vent connection for HCU 26-15. (Cue: Steel braided hose is connected to HV-2-3A-106AX valve block vent connection.)	S	Steel braided hose is connected to HV-2-3A-106AX valve block vent connection and turned CLOCKWISE until resistance from valve block is felt.
10	Obtain Control Room permission to vent CRD 26-15 just prior to opening HV-2-3A-106AX. (Cue: Permission is obtained to vent CRD 26-15.)	S	Permission obtained from the Main Control Room to vent CRD 26-15 using a hand held radio or GAI-TRONICS page system.
*11	Crack open and throttle HV-2-3A-106AX for HCU 26-15. (Cue: Tee handle turns [COUNTERCLOCKWISE], flow noise heard, and water discharges to drain via hose.)	S	Tee handle is slowly turned COUNTERCLOCKWISE to crack open and throttle HV-2-3A-106AX needle vent valve at HCU 26-15.

STEP NO	STEP	ACT	STANDARD
12	Verify no steam is released from the hose connection or the HV-2-3A-106AX valve block at HCU 26-15. (Cue: No steam is present at the hose connection or the HV-2-3A-106AX valve block at HCU 26-15.)	S	Verified no steam is released from the hose connection or HV-2-3A-106AX valve block at HCU 26-15.
13	(Cue: As MCR Operator, inform examinee that Control Rod 26-15 is fully inserted into the core) Close HV-2-3A-106AX for HCU 26-15. (Cue: Tee handle is turned [CLOCKWISE], flow noise and discharge of water to drain via hose stops.)	S	When Control Room informs examinee that Control Rod 26-15 is fully inserted, the tee handle is turned CLOCKWISE until resistance of needle valve seat is felt.
14	Verify no water or steam issuing from steel braided hose in floor drain. (Cue: No flow noise and no water or steam discharge from hose.)	S	Verified no water or steam issuing from hose.
15	Inform Control Room of task completion. (Cue: Control Room acknowledges report.)	S	Task completion reported by hand held radio or GAI-TRONICS page system.
16	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 venting is aligned and control room reports rod is full in. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. T-101, "RPV Control" directs entry into T-215-2.

2. Another operator and Health Physics Technician available (simulated).

3. Nonessential personnel have been evacuated from the Reactor Building 135' elevation.

4. HP technician has determined that no respiratory equipment is required.

5. HP technician is present, initial radiation levels have been determined, and the HP technician will continuously monitor levels near vent valve located on catwalk above HCU.

INITIATING CUE

The Control Room Supervisor directs you to insert control rod 26-15 using T-215-2, Control Rod Insertion By Withdraw Line Venting.

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
1	Obtain the key for the Emergency Operating Procedure Tool Locker. (Cue: When examinee requests EOP Tool Locker key from WECS OR 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 OR 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 OR 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 OR 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.
*****NOTE***** **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. DO NOT allow tools to be removed from the locker. Relock the locker before leaving the area.**			
4	Verify closed HV-2-11-28, "SBLC Test Tank 20T017 Inner Drain Valve". (RB 195' El. below the tank) (Cue: [CLOCKWISE] Valve handwheel turned, valve handwheel will not turn.)	S	HV-2-11-28 valve handwheel CLOCKWISE turning is attempted to verify it will not close further.

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

STEP NO	STEP	ACT	STANDARD
11	Observe LG-2797 "SBLC Test Tank Level" rising. **(Cue: LG-2797 indication is rising "out of sight" high.)**	P	LG-2797 is observed on the side of the SBLC Test Tank.
12	WHEN the SBLC Test Tank is full, THEN 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.
*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.

STEP NO	STEP	ACT	STANDARD
17	Inform Main Control Room that task is completed. **(Cue: The Control Room acknowledges report.)**	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) AND 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
PEACH BOTTOM ATOMIC POWER STATION
JOB PERFORMANCE MEASURE

POSITION TITLE: Unit Reactor Operator/Senior Reactor Operator

TASK-JPM DESIGNATOR: 2004610599 / PLOR-198P K/A: 295029EA1.01
URO: 3.4 SRO: 3.5

TASK DESCRIPTION: Defeating HPCI High Torus Level Suction Transfer

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-226-3, Tool Package

2. EOP Tool Locker Key

C. REFERENCES

1. T-226-3, Rev. 4, "Defeating HPCI High Torus Level Suction Transfer"

D. TASK STANDARD

1. Satisfactory task completion is indicated when the HPCI high Torus level suction transfer has been defeated.

2. Estimated time to complete: 10 minutes, Non-Time Critical

E. DIRECTIONS TO EXAMINEE

When given the initiating cue, perform necessary steps to defeat the HPCI high Torus level suction transfer, using appropriate procedures. I will describe initial plant conditions and provide you access to the materials required to complete this task.

F. TASK CONDITIONS/PREREQUISITES

1. Use of this procedure has been directed by the T-100 procedures.

2. Water is available from the CST.

3. High Torus level HPCI suction swap interlock has NOT already been defeated by T-250-3.

G. INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform steps 4.1 and 4.2 of T-226-3, "Defeating HPCI High Torus Level Suction Transfer" on Unit 3.

H. PERFORMANCE CHECKLIST

STEP NO	STEP	ACT	STANDARD
1	Obtain the key for the Emergency Operating Procedure Tool Locker. (Cue: When examinee requests EOP Tool Locker key from WECS OR examinee identifies the location of the WECS key box and its associated key then evaluator should provide the EOP Tool Locker key. Examinees may also have an EOP tool locker key on their key ring.)	S	Emergency Operating Procedure Tool Locker Key requested from WECS OR examinee identifies the location of the WECS key box and its associated key.
2	Open Emergency Operating Procedure Tool Locker and obtain T-226 Tool Kit. (Cue: Equipment obtained.)	P	Tool Locker located on Radwaste Building 165' El. is unlocked, opened and T-226 Tool Kit located.
	****NOTE**** **When trainee 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 that corresponds to the tool kit that has been chosen.** DO NOT allow tools to be removed from the locker. Relock the locker before leaving the area.		
*3	Remove front cover from relay 23A-K46. (Cue: Cover is removed.)	S	The two front cover fasteners are turned counterclockwise until loose, front cover is then pulled from the face of relay 23A-K46 at panel 30C39 [FRONT] in the Cable Spreading Room.
*4	Boot contact 1-2 on relay 23A-K46. (Cue: Boot is installed.)	S	The FAR RIGHT relay contact spring arm is moved out away from its mating contact and a boot is placed over the spring arm contact.
*5	Boot contact 3-4 on relay 23A-K46. (Cue: Boot is installed.)	S	The SECOND FROM FAR RIGHT relay contact spring arm is moved out away from its mating contact and a boot is placed over the spring arm contact.
6	Replace front cover on relay 23A-K46. (Cue: Cover is replaced.)	S	The front cover is held in place while turning the two front cover fasteners clockwise until tight.

STEP NO	STEP	ACT	STANDARD
7	Inform Control Room of task completion. (Cue: Control Room acknowledges report.)	S	Task completion reported using telephone or GAI-TRONICS page system. NOTE: Hand held radio is NOT to be used in the Cable Spreading Room.
8	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 HPCI high Torus level suction transfer has been defeated, the Control Room Supervisor should be informed. The evaluator will then terminate the exercise.

TASK CONDITIONS/PREREQUISITES

1. Use of this procedure has been directed by the T-100 procedures.

2. Water is available from the CST.

3. High Torus level HPCI suction swap interlock has NOT already been defeated by T-250-3.

INITIATING CUE

The Control Room Supervisor directs you, the Equipment Operator, to perform steps 4.1 and 4.2 of T-226-3, "Defeating HPCI High Torus Level Suction Transfer" on Unit 3.

Simulation Facility Peach Bottom **Scenario No.** #1 **Op Test No.** 2017 NRC

Examiners _____ **Operator** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

Scenario Summary The scenario begins with the reactor at approximately 100% power.

Following shift turnover, the PRO will cross tie 1PS4 with 3PS4 using SO 55.6.A-0, "480 V Auxiliary Load Center Cross-Tie".

When the PRO has completed the cross-tie, the CRD suction strainer will clog. The URO should recognize and report the trip of the "A" CRD pump due to low suction pressure. The Crew should have the suction filter bypassed. The URO should start the "B" CRD pump after the suction filter is bypassed. The CRS should recognize the condition requiring entry into a Tech Spec required action. The CRS should enter and execute Tech Spec 3.1.5. Based on the time it takes to start the "B" CRD pump, the Crew may also receive a CRD Hydraulic Hi Temperature alarm. The PRO should monitor CRD temperatures until CRD is returned to service.

When CRD has been returned to service, the #3 stop valve will fail closed. The Crew should recognize and report the rise in RPV pressure and Reactor power and determine that the #3 stop valve has failed closed. The Crew should enter and execute OT-102, "Reactor High Pressure and OT-104, "Positive Reactivity insertion" to lower power to 84.5%. **(Critical Task: Following a positive reactivity addition, restore Reactor power below 100%)** The CRS should reference Tech Specs sections 3.2, "Power Distribution Limits" and 3.4.10, "Reactor Steam Dome Pressure" and determine that no actions are required.

After the power reduction is complete HPCI will spuriously start. The PRO should determine that an initiation signal for HPCI does not exist. The URO should report the rise in Reactor Power and RPV level. The Crew should enter and execute OT-104, "Positivity Reactivity insertion and OT-110, "Reactor High Level". The CRS should direct the PRO to place HPCI in "short term shutdown" using SO 23.2.A-2, "HPCI System Shutdown" or RRC 23.1-2, "HPCI System Operation during a Plant Event". (If RRC 23.1-2 is used then the CRS should direct follow-up with SO 23.2.A-2) The CRS should recognize a condition requiring entry into a Tech Spec required action. The CRS should enter and execute required actions 3.5.1.C.

After HPCI is secured, the "B" RFP speed will fail low. RPV level will drop until the "A" and "C" RFPs and recover RPV level. The Crew should enter and execute OT-100, "Reactor Low Level". The URO should take manual control of the "B" RFP and raise the sped to match the Speeds of the "A" and "C" RFPS.

When RFP speeds are matched and RPV level is steady, a report of a large spill of radioactive liquid will be reported to the control room. The Crew should enter SE-9, "Radioactive Liquid Spill" but not immediately be able to take any actions because the area has been evacuated. The PRO should recognize and report the

rise in Vent Stack and Reactor Zone radiation levels. The Crew should enter and execute ON-104, "Vent Stack High Radiation" when alarms 218 B-5 and 218 C-5 are received. The CRS should evacuate the Reactor Building. The PRO should place Reactor Building Ventilation on SBGT. The PRO should recognize and report the drop in Vent stack radiation levels when Reactor Building Ventilation is placed on SBGT.

When Reactor Building ventilation has been placed on SBGT, a steam leak will develop on HPCI. The Crew will receive smoke detector alarms and area high temperature alarms for the HPCI room. The Crew should attempt to isolate the HPCI steam supply and determine that the HPCI steam supply valves will not go closed. As HPCI area temperature continues to rise, the CRS should direct a GP-4, Manual Reactor Scram". **(Critical Task: When a Primary System is discharging into Secondary Containment through an unisolable leak, scram the Reactor when any parameter (temperature) exceeds a T-103, "Secondary Containment Control" Action Level)** The Reactor Operators will take their scram actions per RRC 94.2-2, "Plant Reactor Operator Scram Actions" and RRC 94.1-2, "Reactor Operator Scram Actions". The CRS will enter and execute T-101, "RPV Control".

During the performance of the PRO Scram actions, the PRO should recognize that the Main Generator did not lockout following the Main Turbine trip. The PRO should manually open the generator output breakers and the field breaker. During the performance of the URO Scram actions, the URO should recognize that the "C" RFP discharge valve bypass isolation valve MO-8090 would not open. The URO should use the RFP discharge valve position and speed to control RPV level.

The CRS should direct an RPV depressurization to minimize the input into the Reactor building.

Conditions will continue to deteriorate, Torus room temperature will being to rise, the CRS should direct a rapid depressurization be conducted with bypass valves as conditions approach a blowdown limit. When a second area exceeds the action level in two areas the Crew should perform an Emergency Blowdown using OT-112, "Emergency Blowdown" **(Critical Task: Perform T-112, "Emergency Blowdown" when the same parameter (temperature) exceeds a T-103, "Secondary Containment Control" Action Level in More than one area and the system breach has not been isolated OR Perform a rapid depressurization using RC/P-12 when the blowdown limit in T-103 is approached.)**

The scenario may be terminated when the Reactor is depressurized and Reactor level is being controlled above -172 inches.

Initial Conditions IC-14 Approximately 100% power

Turnover Unit 2 is at 100% power.
Following shift turnover perform SO 55.6.A-0, "480V Auxiliary Load Center Cross-tie".

SIMULATOR OPERATOR INSTRUCTIONS FOR NRC A SCENARIO #1 (PSEG 1110L)

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 was a scenario developed for the 2011 NRC ILT Exam but modified to add more malfunctions.

INITIAL SETUP

Initial Conditions

- IC-14, 100% power River Temp 60F
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

Blocking Tags

- None

Event Triggers

TRG 1 = False
TRG 2 = False
TRG 3 = False
TRG 4 = False
TRG 5 = False
TRG 6 = False
TRG 7 = False
TRG 8 = False
TRG 9 = False

Malfunctions

IMF CRH03A (1), "CHD Hydraulic Pump 'A' Trip"
IMF CRH03B (2), "CHD Hydraulic Pump 'B' Trip"
ICF TCVSV3:SMV_0 (3) 0, "Turbine Stop Valve #3"
IMF HPC02 (4), "HPCI Spurious Automatic Start"
IMF FWC01B (5) 45, "'B' Local Controller Failure"
IMF PRM01_25 (6) .015 1:00, "PRM Channel Failure, Vent Stack Exhaust RM A"

IMF PRM01_26 (6) 1.5E-8 1:00, "PRM Channel Failure, Vent Stack Exhaust RM B"
IMF PRM01_16 (6) .11, "PRM Channel Failure, Vent Rx Building Vent (Reactor Zone) "A"
IMF PRM01_17 (6) .12, "PRM Channel Failure, Vent Rx Building Vent (Reactor Zone) "B"
IMF PRM01_18 (6) .15, "PRM Channel Failure, Vent Rx Building Vent (Reactor Zone) "C"
IMF PRM01_19 (6) .1, "PRM Channel Failure, Vent Rx Building Vent (Reactor Zone) "D"
IMF HPC07 (8) 5 20:00 0, "HPCI Steam Supply Line Break"

Overrides

IOR ANO205RF3 (1) ALARM_ON, "'A' CRD Pump Suction Low Pressure Alarm" (211 F-3)
IOR ANO205RF2 ALARM-OFF, "'A' CRD Water Pump Overload Alarm" (211F-2)
IOR ANO205RG3 (2 0 0) ALARM_ON, "'B' CRD Pump Suction Low Pressure Alarm" (211 G-3)
IOR ANO205RG2 ALARM-OFF, "'B' CRD Water Pump Overload Alarm" (211G-2)
IOR ZGI01A2A1S02 NORMAL ('C' RFP discharge startup bypass MO-8090)
IOR ZGI13A1S07 OPEN (HPCI steam line isolation valve MO-23-15)
IOR ZGI13A1S05 OPEN (HPCI steam line isolation valve MO-23-16)

Remote Functions

IRF RBV03A (7) OFF, "Reactor Building Supply Fan 'A'"
IRF RBV03B (7) OFF, "Reactor Building Supply Fan 'B'"
IRF RBV03C (7) OFF, "Reactor Building Supply Fan 'C'"
IRF RBV04A (7 :01 0) OFF, "Reactor Building Exhaust Fan 'A'"
IRF RBV04B (7 :01 0) OFF, "Reactor Building Exhaust Fan 'B'"
IRF RBV04C (7 :01 0) OFF, "Reactor Building Exhaust Fan 'C'"
IRF RBV01A (7 :02 0) OFF, "Refueling Building Supply Fan 'A'"
IRF RBV01B (7 :02 0) OFF, "Refueling Building Supply Fan 'B'"
IRF RBV01C (7 :02 0) OFF, "Refueling Building Supply Fan 'C'"
IRF RBV02A (7 :03 0) OFF, "Refueling Building Exhaust Fan 'A'"
IRF RBV02B (7 :03 0) OFF, "Refueling Building Exhaust Fan 'B'"
IRF RBV02C (7 :03 0) OFF, "Refueling Building Exhaust Fan 'C'"
IRF RBV05A (7 :04 0) OFF, "Equipment Cell Exhaust Fan 'A'"
IRF RBV05B (7 :04 0) OFF, "Equipment Cell Exhaust Fan 'B'"

Trip Overrides

MRF HPO04TO Override (HPCI isolation override – includes K27, K28, K36, K57 relays)
MRF MGA01TO Override (Main Generator 86 lockout relay)

Expert Command

TRG 9 = DMF PRM01_25
TRG 9 = DMF PRM01_26
TRG 9 = DMF PRM01_16
TRG 9 = DMF PRM01_17
TRG 9 = DMF PRM01_18
TRG 9 = DMF PRM01_19

Turnover Procedures

- SO 55.6.A-0, "480V Auxiliary Load Center Cross-Tie" (**provide a consumable copy**)

SIMULATOR OPERATOR DIRECTIONS

EVENT 1 480 VAC Auxiliary Bus Transfer

Support the crew as necessary to perform SO 55.6.A-0 "480V Auxiliary Load Center Cross-Tie".

EVENT 2 CRD Suction Strainer Clogged

After the 480V load centers are cross-tied, or at the Lead Examiners direction, activate pending events on Event Trigger 1. Verify **ANO205RF3** and **CRH03A** activate.

After the "A" CRD pump trips, clear I/O override **DOR ANO205RF3** and malfunction **DMF CRH03A.**

If the Crew starts the "B" CRD pump without bypassing the suction strainer then activate pending events on Event Trigger 2. Verify **ANO205RG3** and **CRH03B** activate.

If the "B" CRD pump is tripped because the suction filter was not bypassed,then when the CRD pump is tripped, clear I/O override **DOR ANO205RG3** and malfunction **DMF CRH03B**.

NOTE: The local horn and beacon are auto resetting. If an operator is sent to verify the horn and beacon, it will not be alarming if the pump has already tripped.

If directed to bypass and isolate the suction filter, then wait approximately 5 minutes and report that the suction filter is bypassed and isolated.

If directed to make the 'B' CRD pump ready for start, then wait approximately 4 minutes and report that the "B" CRD pump is ready for start.

When directed to open the CRD pump discharge valve, enter remote function **IRF CRH02 OPEN**, "CRD Pump "B" Discharge Valve HV-36B".

If directed to investigate the 'A' CRD pump / breaker, report the pump / breaker appear normal.

EVENT 3 Stop Valve # 3 fails closed

When the CRD system is returned to service, or at the Lead Examiners direction, initiate pending events on **ET 3.** Verify malfunction **TCVSV3:SMV_0** actuates.

EVENT 4 HPCI Spuriously Starts

When Reactor power has been lowered to 80% or at the Lead Examiners direction, initiate pending events on Event Trigger 4. Verify malfunction **HPC02** actuates.

If dispatched as the Equipment Operator to investigate the HPCI start, wait approximately 5 minutes and if HPCI is still running, report HPCI is operating normally.

If directed to the cable spreading room to verify relay status, wait approximately 10 minutes and report the K-23 is energized, and K-28 and K-36 are de-energized.

If directed to verify that the HPCI shaft has stopped rotating, verify HPCI status and when the shaft has stopped rotating, report the shaft has stopped rotating to the Crew.

EVENT 5 "B" RFP Speed Lowers

When the HPCI Tech Spec determination has been made, or at the Lead Examiners direction, initiate pending events on Event Trigger 5. Verify malfunction **FWC01B** actuates.

If directed to investigate the "B" RFP, wait approximately 4 minutes and report that there is no immediate indication of why the RFP speed is lower.

EVENT 6 "Vent Stack High Radiation

When the "B" RFP is being controlled on the MSC, or at the Lead Examiners direction, initiate pending events on Event Trigger 6. Verify malfunctions **PRM01_25, PRM01_26, PRM01_16, PRM01_17, PRM01_18 and PRM01_19** actuate.

After activating pending events on Event Trigger 6, report to the control room and report that there is a spill of radioactive liquid on 165 ft elevation of the Reactor building.

If the Crew asks for more details on the spill, report that a 55 gallon drum of radioactive liquid fell off the cart used for transport and opened spilling all of its contents onto the floor. The area has been evacuated.

If directed to secure ventilation fans, wait approximately 3 minutes and initiate pending events on Event Trigger 7. Verify remote functions **RBV03A, RBV03B, RBV03C, RBV04A, RBV04B, RBV04C, RBV01A, RBV01B, RBV01C, RBV02A, RBV02B, RBV02C, RBV05A and RBV05B** activate.

When Reactor Building ventilation is on SBGT, then initiate pending events on Event Trigger. Verify malfunctions **PRM01_25, PRM01_26, PRM01_16, PRM01_17, PRM01_18 and PRM01_19** delete.

Report to the control room that the Reactor Building, Refueling Floor and Equipment Cell fans have been secured.

EVENT 7 HPCI steam leak into Secondary Containment

When Reactor Building Ventilation has been placed on SBGT, or at the Lead Examiners direction, initiate pending events on Event Trigger 8. Verify malfunction **HPC07** activates.

If directed to investigate the smoke detector alarms, wait approximately 2 minutes and report that there is steam in the stairway going down to the HPCI room.

Modify the leak severity as necessary to control the scenario pace and ensure a second Reactor Building area exceeds the Action Level for temperature. This will vary based on the crew's action to depressurize the reactor.

EVENT 8 Main Generator fails to lockout

Following the GP-4 shutdown and Main Turbine Trip, the Main Generator will not lockout.

EVENT 9 Startup level control isolation valve (MO-8090) fails to open

When the URO attempts to establish reactor level control using MO-8090, the valve will not open.

EVENT 10 Second area exceeds an action level

TERMINATION The scenario may be terminated when the Reactor is depressurized, and Reactor level is being controlled above -172 inches.

SHIFT TURNOVER

PLANT CONDITIONS:

- Unit 2 is at 100% power.

INOPERABLE EQUIPMENT/LCOs:

- None

SCHEDULED EVOLUTIONS:

- Cross-tie 480V auxiliary load center 1PS4 with 3PS4 (with 1PS4 supplying) using SO 55.6.A-0, "480V Auxiliary Load Center Cross-Tie" to allow for scheduled preventive maintenance on the 3PS4 breaker.
    - Perform steps 4.1.12 through 4.1.14.
    - An Operational Risk review has been performed in accordance with WC-A-104 "Integrated Risk Management".
    - The Director of Operations has approved the 480V cross-tie.
    - Operations Management has determined no loads are required to be shed.
    - The work on the load center breaker is expected to take 4 hours.

SURVEILLANCES DUE THIS SHIFT:

- None

ACTIVE CLEARANCES:

- None

GENERAL INFORMATION:

- None

CRITICAL TASK LIST

1. **Following a positive reactivity addition, restore Reactor power below 100%.**

2. **When a Primary System is discharging into Secondary Containment through an unisolable leak, scram the Reactor when any parameter (temperature) exceeds a T-103 "Secondary Containment Control" Action Level.**

3. **Perform T-112 "Emergency Blowdown" when the same parameter (temperature) exceeds a T-103 "Secondary Containment Control" Action Level in more than one area and the system breach has not been isolated.**

OR

Perform a rapid depressurization using RC/P-12 when the blowdown limit in T-103 is approached.

Operator Actions **ES-D-2**

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 1 **Page:** 1 of 19

Event Description: Cross-tie 480v auxiliary load center 1PS4 with 3PS4 (with 1PS4 supplying)

Cause: Required to allow for scheduled preventive maintenance on the 3PS4 breaker

Effects: N/A

Time	Position	Applicant's Actions or Behavior
	CRS	Direct the PRO to Cross-tie 480V auxiliary load center 1PS4 with 3PS4 (with 1PS4 supplying) using SO 55.6.A-0 "480V Auxiliary Load Center Cross-Tie".
	PRO	Cross-tie load centers by performing the following: • Hold closed the control switch for the 1-3 PS4 Tie Breaker on Panel 20C009. • Open the 3PS4 BUS BKR on Panel 20C009. • Verify the 1-3 PS4 Tie Breaker by observing the indicating lights and ammeter indications. • Release the 1-3 PS4 Tie Breaker control switch.

Event Description: 'A' CRD pump trip *(PRA)*

Cause: Clogged suction filter causes a low suction pressure trip of the 'A' CRD pump

Effects:
1. Alarms:
   - 211 F1 "'A' CRD Water Pump Trip"
   - 211 F3 "'A' CRD Pump Suction LO Press"
2. 'A' CRD pump trip

Time	Position	Applicant's Actions or Behavior
	URO	Recognize by reporting the 'A' CRD pump trip.
		Recognize by reporting the condition as a symptom for entry into ON-107 "Loss of CRD Regulating Function".
		Enter and execute ON-107 "Loss of CRD Regulating Function" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Enter and execute Alarm Response Card 211 F3 "'A' CRD Pump Suction LO Press".
		Enter and execute Alarm Response Card 211 F1 "'A' CRD Water Pump Trip".
		Place the pump control switch for the 'A' CRD pump in the STOP position.
	CRS	Enter and execute ON-107 "Loss of CRD Regulating Function" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Direct the URO to bypass the CRD pump suction filter and place the 'B' CRD pump in service.
		NOTE: step 2.4 of ON-107 directs placing the alternate CRD pump ('B' in this case) in service since the in-service pump did not trip "for reasons other than a CRD system related issue".

Event Description: 'A' CRD pump trip (continued) *(PRA)*

Time	Position	Applicant's Actions or Behavior

URO

Perform ON-107 actions:

- Direct an Equipment Operator to bypass and isolate the pump suction filter using step 2.3.1 -2.3.3 of ON-107.
-
- Start the 'B' CRD pump using SO 3.1.B-2 "Control Rod Drive Hydraulic System Startup with the System Filled and Vented".
  - Direct an Equipment Operator to check the 'B' CRD pump per step 4.1 and standby for a start.
  - Place the CRD flow controller in manual and close the flow control valve FC-2-03-301.
  - Open MO-2-3-20 "Drive Water Pressure".
  - Close MO-2-2A-8029 A and B "Seal Purge".
  - Start the 'B' CRD pump.
  - Direct an Equipment Operator to slowly open HV-2-3-36B.
  - When CRD flow has stabilized and the CRD hydraulic accumulators have charged, then establish system flow.
    - Adjust the flow controller for 55-65 gpm.
    - Place the flow control valve in AUTO.
    - Throttle MO-2-3-20 "Drive Water Pressure" to obtain 260 to 280 psid.

NOTE: the Chief Examiner may elect to continue the scenario prior to completing the following steps since restoration of Recirc seal purge is not necessary for the purposes of this scenario.

Restore recirc pump seal purge IAW SO 2A.1.C-2 "Operation of the Recirculation Pump Seal Purge System".

- Direct the Equipment Operator to perform steps 4.1.1 through 4.1.6 (for the 2A pump) and steps 4.2.1 through 4.2.6 (for the 2B pump).
- Open MO-8029A "Seal Purge Supply" for 2A Recirc pump.
- Open MO-8029B "Seal Purge Supply" for 2B Recirc pump.
- Direct Equipment Operator to adjust/verify seal purge flowrate in accordance with SO 2A.1.C-2.

Event Description: 'A' CRD pump trip (continued) *(PRA)*

Time	Position	Applicant's Actions or Behavior
	URO	Recognize by reporting the "CRD Hydraulic Hi Temp" alarm (211 G-5). Enter and execute the Alarm Response Card for the "CRD Hydraulic Hi Temp" alarm (211 G-5).
TS	CRS	Enter and execute the Alarm Response Card for the "CRD Hydraulic Hi Temp" alarm (211 G-5). Determine that Unit 2 can operate for 1 hour after receiving a valid CRD High Temperature alarm. Enter Tech Spec 3.1.5, "Control Rod Scram Accumulators" (3.1.5.B). Determine that Unit 2 can operate for up to 20 minutes when the following conditions exist: • Reactor Pressure > 900psig And • Charging header pressure is < 940 psig And • Two or more CRD accumulator trouble indicators are lit on withdrawn control rods. Direct monitoring Recirc pump seal temperatures IAW ON-107 and CRD temperatures.
	PRO	Monitor Recirc pump seal temperatures and CRD temperatures, as directed.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 3 **Page:** 5 of 19

Event Description: Turbine stop valve fails closed / Reactor power reduction

Cause: An internal fault in the control pac for #3 stop valve causes the stop valve to go closed

Effects:

1. Alarms:

   201 H-1 "Feedwater Field Instrument Trouble"

   206 A-4, "Main Steam Line Bypass Valve Open"

2. Reactor pressure will rise due to the valve closure; reactor power will rise in response to the rise in reactor pressure.

Time	Position	Applicant's Actions or Behavior
	URO/PRO	Recognize by reporting the following alarms: • 201 H-1, "Feedwater Field Instrument Trouble" • 206 A-4, "Main Steam Line Bypass Valve Open"
		Recognize by reporting the rise in Reactor pressure.
		Recognize by reporting the rise in Reactor pressure as an entry into OT-102, "Reactor High Pressure".
		Enter and execute OT-102, "Reactor High Pressure" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
	URO/PRO	Recognize and report the rise in Reactor power.
		Recognize by reporting the rise in Reactor power as an entry into OT-104, "Positive Reactivity Insertion".
		OT-104 is exited because the rise in Reactor power was caused by the rise in Reactor pressure.

Event Description: Turbine stop valve fails closed / Reactor power reduction (continued)

Time	Position	Applicant's Actions or Behavior
	CRS	Enter and execute OT-102, "Reactor High Pressure" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Enter and execute GP-5-2, "Power Operations"
CT		Direct the URO to lower Reactor power to 80% using Recirc flow.
		Verify Feedwater temperature vs. Core power is within the "acceptable region" of AO 1E.4-2, "Planned Removal of the Fifth or Fourth Stage Feedwater Heaters from Service During End of Cycle Coastdown".
		Refer to Tech Specs 3.2, "Power Distribution Limits" and 3.4.10, "Reactor Steam Dome Pressure" and determine that no actions are required.
CT	URO	Lower reactor power using Recirc until Reactor power is 80% (3160 MWth), as directed.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 4 **Page:** 7 of 19

Event Description: Inadvertent HPCI initiation

Cause: Initiation relay contacts short closed

Effects:
1. Alarms:
   - 222 D-5 "HPCI Auxiliary Oil Pump Running"
   - 228 C-5 "HPCI Relays Not Reset"
2. HPCI injection to the Reactor; Reactor water level and reactor power rise

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting HPCI initiation.
		Verify, using at least two independent indications, misoperation of HPCI and/or adequate core cooling is assured.
	URO	Recognize by reporting the rise in Reactor power.
		Recognize by reporting the rise in Reactor Power as an entry condition for OT-104, "Positive Reactivity Insertion".
		Recognize by reporting the rise in RPV level.
		Recognize by reporting the rise in Reactor Power as an entry condition for OT-110, "Reactor High Level".
		Enter and execute OT-110, "Reactor High Level" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Verify feed pump speed adjusts to maintain RPV level below +35 inches.

Event Description: Inadvertent HPCI initiation (continued)

Time	Position	Applicant's Actions or Behavior
	CRS	Enter and execute OT-104 "Positive Reactivity Insertion" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Enter and execute OT-110, "Reactor High Level" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Verify, using at least two independent indications, misoperation of HPCI and/or adequate core cooling is assured. Direct the PRO to shutdown HPCI using SO 23.2.A-2, "HPCI System Shutdown". (The CRS may elect to shutdown HPCI with RRC 23.1-2, "HPCI System Operation during a Plant Event" and follow up with SO 23.2.A-2, "HPCI System Shutdown".
	TS	Enter Tech Spec 3.3.5., "ECCS Instrumentation". Determine Condition B-2 applies: • Declare HPCI inoperable within 1 hour. • Place the channel in trip within 24 hours. Enter Tech Spec 3.5.1 "ECCS - Operating". Determine Condition C applies: • Verify RCIC operability immediately. • Restore HPCI to operable status within 14 days.

Time	Position	Applicant's Actions or Behavior
	PRO	Perform SO 23.2.A-2, "HPCI System Shutdown" or RRC 23.1-2 "HPCI System Operation During a Plant Event" as directed by the CRS to shutdown HPCI: • Verify Aux Oil Pump control switch in START. • Verify "HPCI Aux Oil Pump Motor Overcurrent" alarm is reset (SO Only) • Verify "HPCI DC Motor Power Loss" is reset (SO Only) • Verify Vacuum Pump control switch in START. • Depress and hold Remote Trip pushbutton. • Verify HO-4513, "HPCI turbine Stop" is closed (SO Only) • Verify annunciator 221 B-1, "HPCI turbine Trip" alarms (SO Only) • Locally verify HPCI turbine shaft stopped (SO Only) • When the Equipment Operator reports that te shaft is stopped, place the Aux Oil Pump control switch to PTL. (SO Only) • When turbine speed reaches ~ 0 RPM, place Aux Oil Pump control switch in PTL and release the Remote Trip pushbutton. (RRC Only) • Release the "Remote Trip" pushbutton.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 5 **Page:** 10 of 19

Event Description: "B" RFP speed lowers

Cause: Failure of the Control Signal cable

Effects: RPV level will lower until the "A" and "C"RFPs can respond

201 H-1, "Feedwater Field Instrument Trouble" alarm

Time	Position	Applicant's Actions or Behavior
	URO	Recognize by reporting the "Feedwater Field Instrument Trouble" alarm (201 H-1)
		Enter and execute the Alarm Responds care for 201 H-1, "Feedwater Field Instrument Trouble".
		Recognize by reporting the drop in RPV level.
		Recognize by reporting the rise in RPV level as an entry condition into OT-100, "Reactor Low Level".
		Enter and execute OT-100, Reactor Low Level" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Recognize by reporting the failure of the "B" RFP.
		Take manual control of the "B" RFP and raise the speed.
	CRS	Enter and execute OT-100, Reactor Low Level" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Direct the URO to take manual control of the "B" RFP and raise the speed if not already performed.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 6 **Page:** 11 of 19

Event Description: Vent Stack high radiation

Cause: Spill of radioactive liquid on elevation 195

Effects: Vent Stack radiation levels rise above the alarm setpoint (218 B-5 and 218C-5)

Reactor zone radiation levels rise

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting the rise in Vent stack and Reactor zone vent exhaust radiation levels.
		Recognize by reporting the "2 Vent Exhaust Stack Radiation Monitor Hi Trouble" alarms (218 B-5 and C-5).
		Enter and execute Alarm Response Cards 218 B-5 and 218 C-5.
		Recognize by reporting the "2 Vent Exhaust Stack Radiation Monitor Hi Trouble" alarms as a symptom for entry into ON-104, "Vent Stack High Radiation".
		Enter and execute ON-104, "Vent Stack High Radiation" " per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".

Event Description: Vent Stack high radiation (continued)

Time	Position	Applicant's Actions or Behavior
	PRO	Place Reactor Building ventilation on SBGT using SO 9A.7.E, "SBGT System Manual Startup on Reactor Building and Refuel Floor Ventilation":

- Notify Health Physics that Reactor Building ventilation is being placed on SBGT.
- Open the following dampers by turning their respective control switches to OPEN:
  - PO-20466, "Exh to Stby Gas Treat Rx Bldg"
  - AO-20469-1, "Standby Gas Treatment D/W Rx Bldg Equip Exh"
  - AO-20469-2, "Standby Gas Treatment D/W Rx Bldg Equip Exh"
  - AO-20470-1, "Standby Gas Treatment Refuel Flr Exh"
  - AO-20470-2, "Standby Gas Treatment Refuel Flr Exh"
  - AO-00475-1, "Standby Gas Treatment A(B) Filter Inlet"
  - AO-00475-2, "Standby Gas Treatment A(B) Filter Outlet"
- Start SBGT Fan "A", "Standby Gas Treatment A Fan" by placing its control switch to Run
- Direct an Equipment Operator to shutdown the Reactor Building Supply fans, Reactor Building Exhaust fans, the Refuel Floor Ventilation Supply fans, the Refuel Floor Ventilation Exhaust fans and the Equipment Cell Exhaust fans.
- Open damper PO-20465
- Close the following dampers by turning their control switches to CLOSE:
  - AO-20467
  - AO-20468
  - AO-20463, "Ventilation Exhaust Rx Bldg"
  - AO-20464, "Ventilation Exhaust Rx Bldg"
  - AO-20457, "Ventilation Supply Rx Bldg"
  - AO-20458, "Ventilation Supply Rx Bldg"
  - AO-20461, "Ventilation Exhaust Refuel"
  - AO-20462, "Ventilation Exhaust Refuel"
  - AO-20453, "Ventilation Supply Refuel"
  - AO-20452, "Ventilation Supply Refuel"

Event Description: Vent Stack high radiation (continued)

Time	Position	Applicant's Actions or Behavior
	PRO	• Verify the following: o Secondary Containment differential pressure for Unit 2 is between -.25 to -.040 H_2O. o SBGT Filter Train A differential pressure is in the Expected Performance Region on Figure 1 o SBGT System total flow between 2,000 and 9,000 scfm • Log the start time in the "SBGT Filter Train Run Log".
	CRS	Enter and execute Alarm Response Cards 218 B-5 and 218 C-5. Enter and execute ON-104, "Vent Stack High Radiation" " per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Direct and evacuation of all unnecessary personnel from the Reactor Building using GP-15, "Local Evacuation". Direct the PRO to place Reactor Building ventilation on SBGT using SO 9A.7.E, "SBGT System Manual Startup on Reactor Building and Refuel Floor Ventilation" if not already in progress. Enter and execute SE-9, "Radioactive Liquid Spill" Determine that no SE-9 actions can be taken until access can be restored to the spill area.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 7 **Page:** 14 of 19

Event Description: HPCI steam leak into Secondary Containment

Cause: Unisolable HPCI steam line break in the HPCI room

Effects: Secondary containment temperature and radiation levels will increase. First alarm to actuate is 210 J-3 "High Area Temp". This will cause an entry into T-103 "Secondary Containment Control".

Time	Position	Applicant's Actions or Behavior
	PRO/URO	Recognize by reporting the "High Area Temp" alarm (210 J-3).
		Enter and execute ARC 210J-3, High Area Temp".
	PRO	Recognize by reporting the Fire Panel alarm 007 C-6 Lower, "2 HPCI Pump Rm and Stairway 24 Smoke Detectors and 007 D-7 Upper, "2 RCIC Pump Rm Smoke Detectors".
		Report the rise in HPCI room temperature (Point #3).
		Recognize by reporting the HPCI room temperature as an entry into T-103, "Secondary Containment Control".
	CRS	Enter and execute the following ARCs: • 210J-3, High Area Temp" • 007 C-6 Lower, "2 HPCI Pump Rm and Stairway 24 Smoke Detectors • 007 D-7 Upper, "2 RCIC Pump Rm Smoke Detectors".
		Direct the PRO to dispatch the Fire Brigade to the HPCI and RCIC room areas.
		Direct the PRO to start the Motor Driven Fire pump.
	PRO	Direct the Fire Brigade to the HPCI and RCIC rooms
		Start the Motor Driven Fire pump.

Event Description: HPCI steam leak into Secondary Containment (continued)

Time	Position	Applicant's Actions or Behavior
	CRS	Enter and execute T-103, "Secondary Containment Control". • Monitor and control secondary containment temperatures. • Direct the SM to perform a local evacuation using GP-15. • Direct the PRO to isolate HPCI.
	PRO	Monitor secondary containment temperatures on TR-2-13-139. Inform the CRS of the inability to isolate HPCI.
CT	CRS	Direct a GP-4 "Manual Reactor Scram" before HPCI room temperature (Point #3) exceeds the action level of 150 degrees F. Enter and execute T-101, "RPV Control".
CT	URO	Perform GP-4 "Manual Reactor Scram" as directed: • Place the mode switch to SHUTDOWN. • Verify control rods are inserting. • Verify APRMs are downscale. • When reactor level begins to recover, then "Emergency Stop" all 3 RFPTs. • Depress "SLOW RAISE" or "FAST RAISE" on the RFPT to remain in service. • Close all RFP discharge valves and open 'C' RFP discharge bypass valve. **(See Event 9)** • Establish and maintain reactor level control with feedwater. • Verify scram discharge volume vents and drains are closed. • Verify all control rods are inserted. • Verify reactor pressure, trend, and status of EHC. • Notify health physics of changing plant conditions.

Event Description: HPCI steam leak into Secondary Containment (continued)

Time	Position	Applicant's Actions or Behavior
	PRO	Perform GP-4 "Manual Reactor Scram" as directed: • Transfer 13 KV house loads. • Trip main turbine when less than 50 MWe. • Verify main generator lockout. **(See Event 8)** • Verify Group II and III isolations and SGTS initiation. • Verify hydrogen water chemistry is isolated. • Verify both recirc pumps speed have runback to 30%. • Monitor instrument air header pressure and drywell pressure. • When the CRS is ready, report scram actions.
	CRS	Direct the URO to control reactor level between +5" to +35" with feedwater. Direct the PRO to bypass and restore instrument nitrogen to the drywell.
	URO	Control reactor level between +5" to +35" with feedwater.
	PRO	Bypass and restore drywell instrument nitrogen using RRC 94.2-2, "Plant Reactor Operator Scram Actions". • Place AO-2969A control switch to "CLOSE". • Place AO-2969B control switch to "CLOSE". • Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position. • Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position.
	CRS	Direct the URO/PRO to depressurization the Reactor using T-101, "RPV Control"
	URO/PRO	Perform Reactor depressurization using the Bypass Valves, as directed.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 8 **Page:** 17 of 19

Event Description: Main Generator fails to lockout

Cause: Failure in the generator lockout circuit

17Effects: Main Generator output breakers fail to open

Main Generator exciter field breaker fails to open

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize the failure of the Main Generator lockout while performing PRO scram actions.
		Open the Main Generator output breakers (215 BKR and 225 BKR).
		Open the exciter field breaker (ALT EXC FLD BKR 41-0601).
		Report to the CRS that the Main Generator lockout failed and that you manually opened the Main Generator output breakers and the field breaker.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 9 **Page:** 18 of 19

Event Description: Startup level control isolation valve (MO-8090) fails to open *(PRA)*

Cause: Failure of the motor operator for MO-8090 ('C' feed pump discharge bypass) to engage and open the valve

Effects: Reactor level must be controlled using the RFP discharge valve and not the RFP bypass, complicating post-scram and post blowdown Reactor level control.

Time	Position	Applicant's Actions or Behavior
	URO	Recognize the failure of MO-8090 to open during URO scram actions.
		Throttle open RFP discharge valve MO-2149A, B or C.
		Maintain reactor level by controlling RFP discharge valve position and RFP speed (pump discharge pressure).
		NOTE: when RFP's are no longer available (e.g., following emergency depressurization), the RPF discharge valve must be throttled to control Condensate flow to the reactor.

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 10 **Page:** 19 of 19

Event Description: Second area exceeds an action level

Cause: Steam leak in the Reactor Building continues to degrade Secondary Containment parameters

Effects: Reactor depressurization via Bypass Valves and ADS SRVs

Time		Position	Applicant's Actions or Behavior
	CT	CRS	When a second Reactor Building area temperature approaches the Action Level, direct the URO to perform a rapid depressurization using bypass valves.
	CT	URO	Rapidly depressurize the reactor by opening all Main Turbine bypass valves.
	CT	CRS	When the same parameter exceeds an action level in more than one area (HPCI Room and Torus Room) and the primary system breach has not been isolated, enter and execute T-112, "Emergency Blowdown": • Verify torus level is above 7 feet. • Verify reactor pressure is 50 psig or more above torus pressure. • Direct 5 ADS SRVs opened.
	CT	PRO	When directed, open 5 ADS SRVs by placing their control switches in OPEN.

TERMINATION CRITERIA:

The scenario may be terminated when the Reactor is depressurized, and Reactor level is being controlled above -172 inches.

Simulation Facility Peach Bottom **Scenario No.** #2 **Op Test No.** 2017 NRC

Examiners _____ **Operator** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

Scenario Summary

The scenario begins with the reactor at approximately 95% power.

Following shift turnover, the URO will raise Reactor power to 100%.

The PRO will lower Torus level to 14.55 feet.

When the Torus lineup is complete, the E-2 Diesel Generator will spuriously start. The Crew will be given feedback that there is a diesel fuel oil leak that will require the PRO to secure the E-2 Diesel Generator. The CRS should recognize the condition requiring entry into a Tech Spec required action. The CRS should enter and execute Tech Spec 3.8.1, "AC Sources Operating".

Following the Tech Spec determination, Control Rod 30-35 will drift into the core. The Crew will enter and execute ON-121, "Rod Drift" to insert and disarm the control rod. The CRS should recognize the condition requiring entry into a Tech Spec required action. The CRS should enter and execute Tech Spec 3.1.3, "Control Rod Operability".

When the Control Rod is inserted and the Tech Spec determination has been made, the Hydrogen Water Chemistry system hydrogen controller will fail full open. This will cause a rise in Main Steam Line radiation levels and an entry into ON-103, "Main Steam Line High Radiation". The HWC will fail to automatically isolate on the high hydrogen flow condition and the PRO must manually isolate the HWC system.

When the HWC system is isolated, the 13 KV breaker for the 2A Recirc pump Adjustable Speed Drive will trip. The Crew should enter and execute OT-112, "Unexpected/Unexplained Change in Core Flow". The URO should immediately begin to drive GP-9-2 Control Rods. The Crew should monitor for THI and plot position on the power to flow map.

After the first control rod is inserted, a loss of Stator Cooling will occur. The Crew should enter and execute OT-113, "Loss of Stator Cooling". The loss of stator cooling will require the Crew to perform a manual scram or an automatic scram will occur.

When the URO attempts a manual scram, control rods will not insert due to an electric ATWS. The Crew will enter and execute T-101, "RPV Control" and T-117, "Level/Power Control". The Reactor Operators will take their ATWS Rapid Response Card actions. When the second Recirc pump is tripped, THI will occur. This will require the Crew to lower level to halt the THI. **(Critical Task: Perform T-240, "Termination and Prevention of Injection into the RPV" to minimize thermal hydraulic instabilities (THI) until RPV level is below -60 inches.)**

When the URO injects SLC, RWCU will not automatically isolate and must be manually isolated for SLC to shut down the Reactor. The Crew will perform T-214, "Isolating and Vent Scram Air Header" and T-220, "Driving Control Rods During Failure to Scram" to shut down the Reactor. **(Critical Task: Attempt to shut down the Reactor by performing one or more of the following: a. T-214, "Isolating and Venting the Scram Air Header", b. T-220, "Driving Control Rods During a Failure to Scram" and/or c. Injecting Standby Liquid Control before Torus temperature exceeds 110 degrees F)**

When the PRO attempts to bypass and restore Drywell Instrument Nitrogen, the bypass logic will fail and the Crew will need to use the back Instrument Nitrogen bottles and/or perform T-261, "Placing the Backup Instrument Nitrogen Supply from the CAD Tank In Service". This will supply nitrogen to the SRVs and keep the MSIVs open for long term RPV pressure control.

When the PRO is controlling RPV level below -60 inches, T-214, "Isolating and Venting the Scram Air Header" will be successful and the Control Rods will insert.

Initial Conditions IC-14 Approximately 100% power

Turnover Unit 2 is at 95% power.
Reduce Torus level to 14.55 feet in preparations for a HPCI ST the following shift

SIMULATOR OPERATOR INSTRUCTIONS FOR NRC A SCENARIO #2 (PSEG 1111L)

GENERAL REQUIREMENTS

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

SCENARIO SOURCE HISTORY

- This is a modified scenario that was originally developed for the 2009 NRC ILT Exam.

INITIAL SETUP

Initial Conditions

- IC-14, 100% power 60F River
- Lower Reactor power with Recirc flow to approximately 95%.
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active

Blocking Tags

- None

Insert the following:

Event Triggers

TRG 1 = False
TRG 2 = False
TRG 3 = False
TRG 4 = HWC_TRIP_LIGHT (ZLOHC06AH2ON == 0)
TRG 5 = False
TRG 6 = False
TRG 7 = B_Recirc_Drive_MTR_BKR_Green_Light_On (ZLORR04A2520203_1 == True)
TRG 8 = RPV_LEVEL_LT_-60 (RRLNR < -60)

Malfunctions

IMF PCI01V, "RWCU INBD Isolation Valve (MO-15) Failure"
IMF PCI01W, "RWCU OTBD Isolation Valve (MO-18) Failure"
IMF PCI01X, "RWCU OTBD Isolation Valve (MO-68) Failure"
IMF CRH043035 (2), "Control Rod (30-35) Drifts In"
IMF ASD02A (5) TRIP, "Recirc Pump 2A ASD 13KV Breaker Failure"
IMF MCS07A (3) 50 3:00, "Condensate Filter Demin Resin 'A' injection"
IMF SWC01 (6 3:00 0) "Loss of Stator Water Cooling"
IMF RRS24A (7) 30, "Thermal Hydraulic Instability Out of Phase"

Overrides

IOR ANO207LA2 ALARM_OFF, "Condensate Filter Demin Trouble"
IOR ZGI02A5S14 NORMAL "Drywell N2 valve 2969A isolation bypass"
IOR ZGI02A5S12 NORMAL "Drywell N2 valve 2969B isolation bypass"
IOR ZGI04A4S04 (1 0 10) START, "E-2 D/G Quick Start Push Button"
IOR ANO209RA5 (6 0 0) ALARM_ON (Stator coolant/H2 seal oil trouble alarm 220 A-5)
IOR ANO208RG5 (6 1:30 0) ALARM_ON (Stator coolant standby pump run alarm 206 G-5)
IOR ZAOHC06AFR8629_1 (3) 40, "H2 Flow A/B Dissolved O2 Recorder"
IOR ANO206LH3 (3) ALARM_ON, "H2 Water Chem System Trouble"
IOR ANO810A3 (3) ALARM_ON, "Hydrogen Flowrate High / Low"
IOR ZAOHC06AFIC8629_3 (3) 1, "FIC-8629 Meter S, P, V, Y Meters"
IOR ZAOHC06AFIC8629_2 (3) 1, "FIC-8629 Meter S, P, V, Y Meters"
IOR ZAIHC06AFIC8629 (3) 1, "FIC-8629 E/I Set Point"

Remote Functions

IRF T232_4 OPEN, "Torus Water Filter Pump Discharge To Radwaste"

Expert Commands

TRG 4 = DMF MCS07A
TRG 4 = DOR ZAOHC06AFR8629_1
TRG 4 = DOR ANO810A3
TRG 4 = DOR ANO206LH3
TGR 8 = DMF RRS24A

Trip Overrides

Insert the following to provide an electrical ATWS:
MRF ARI01TO OVERRIDE
MRF ARI02TO OVERRIDE
MRF RPS01TO OVERRIDE
MRF RPS02TO OVERRIDE
MRF RPS03TO OVERRIDE
MRF RPS04TO OVERRIDE
MRF RPS05TO OVERRIDE
MRF RPS06TO OVERRIDE

Batch Files

None

Turnover Procedures

- SO 14A.1.A-2, "Torus Water Cleanup and Level Control" (**provide a consumable copy**)
- GP-5-2, "Power Operations" is complete through step 5.3.31. **(provide a consumable copy)**

SIMULATOR OPERATOR DIRECTIONS

EVENT 1 Raise Reactor power with Recirc flow

Support the Crew as necessary to raise Reactor power to 100%.

EVENT 2 Lower Torus level

Support the crew as necessary to lower Torus water level.

If directed to verify the Torus Water Filter pump lineup, wait approximately 3 minutes and report:

- HV-2-14A-73, "Torus Water Filter Pump discharge Block Valve" is Closed
- HV-2-14A-29038, "Torus Water Cleanup Block Valve to Radwaste Collection Tank" is Open

If directed to close HV-2-14A-29038, "Torus Water Cleanup Block Valve to Radwaste Collection Tank", wait approximately 3 minutes modify remote function **MRF T232_4 CLOSE** and report that HV-2-14A-29038, "Torus Water Cleanup Block Valve to Radwaste Collection Tank" is Closed

EVENT 3 E-2 Diesel Generator Starts

When the Torus water Filter pump lineup is complete or at the Lead Examiners direction, activate pending events on Event Trigger 1. Verify **ZGI04A4S04** activates.

After the E-2 diesel starts, verify override **ZGI04A4S04** is deleted.

If asked to perform a running inspection on the E-2 Diesel Generator, wait approximately 10 minutes and report that the E-2 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-2 Diesel Generator, wait approximately 1 minute and enter **IMF DGA01A** "Diesel Generator "A" 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-2 Diesel Generator from service if progress is not being made by the Crew to remove the Diesel Generator from service.

EVENT 4 Rod Drifts In

When the E-2 D/G is secured or at the Lead Examiners direction, activate pending events on Event Trigger 2. Verify **CRH043035** activates.

After Control Rod 30-35 has been inserted delete malfunction **DMF CRH043035**.

If directed to investigate the drifting Control Rod, wait approximately 5 minutes and report that there is no indication of why the Control Rod drifted in.

EVENT 5 HWC controller fails high

When the Tech Spec decision for the INOP Control Rod has been completed or at the Lead Examiners direction, activate pending events on Event Trigger 3. Verify the following activate:

- **MCS07A**
- **ZAOHC06AFR8629_1**
- **ANO206LH3**
- **ANO810A3**
- **ZAOHC06AFIC8629_3**
- **ZAOHC06AFIC8629_2**
- **ZAOHC06AFIC8629_4**
- **ZAOHC06AFIC8629_1**
- **ZAIHC06AFIC8629**

When the Crew trips the HWC system, verify the following delete:

- **MCS07A**
- **ZAOHC06AFR8629_1**
- **DOR ANO810A3**
- **DOR ANO206LH3**

EVENT 6 Recirc Pump 2A ASD 13 KV breaker Trips

When HWC has been removed from service or at the Lead Examiners direction, activate pending events on Event Trigger 5. Verify **ASD02A** activates.

EVENT 7 Loss of Stator Cooling

When the first control rod has been inserted or at the Lead Examiners direction, activate pending events on Event Trigger 6. Verify **ANO209RA5, ANO208RG5** and **SWC01** activate.

If directed to investigate the Stator Coolant trouble alarm, wait approximately 2 minutes then report "INLET FLOW LOW" and "INLET PRESSURE LOW" are alarming on Panel 20C084.

If directed to report the status of the standby stator cooling pump, report both pumps are running.

If directed to report Stator Cooling head tank level, report level is dropping.

EVENT 8 ATWS (Electric)

Do not permit the operators to utilize the individual scram test switches on the RPS panels when performing T-213 "Scram Solenoid Deenergization." When the applicant opens the panel, inform him/her that the individual scram switches are all in the down position.

Verify that malfunction **RRS24A** activates when the "B" Recirc pump is secured.

Verify that malfunction **RRS24A** deletes when RPV level drops below -60 inches.

If directed to close HV-2-3-56 per T-220, wait approximately 4 minutes enter remote function **IRF T220_2 CLOSE**, "Override Close CRD Charging HDR Isolation Valve" and report to the control room that HV-2-3-56 is closed.

If directed to perform T-221 on Unit 2, wait approximately 5 minutes enter remote function **IRF T221_1 DEFEAT**, "Remove Low RPV Level GP I Isolation" and report to the control room that MSIV low RPV closure is defeated.

After reactor level has been lowered to control power IAW T-240 and the APRM downscale lights are lit, then at the Lead Examiners direction enter remote function **IRF T214 VENT**, "Venting Scram Air Header" and report that you have commenced venting the scram air header IAW T-214.

SIMULATOR OPERATOR DIRECTIONS

EVENT 9 RWCU fails to isolate on SLC injection

Pre-inserted malfunctions **(PCI01V, W, X)** will prevent RWCU from automatically isolating when SBLC is initiated.

EVENT 10 Drywell Instrument Nitrogen bypass fails

Pre-inserted failures **(overrides)** will prevent restoring normal drywell instrument nitrogen. This will prevent all non-ADS SRVs from being used for pressure control and/or depressurization. The crew should align Backup Instrument Nitrogen (bottles) to the ADS SRVs and/or request aligning CAD in accordance with T-261.

If directed to perform T-261, wait approximately 20 minutes enter remote function **IRF T261_1 OPEN**, "Backup Nitrogen from CAD System to "B" Nitrogen Header" and report to the control room that CAD nitrogen is supplying the Drywell Instrument Nitrogen Header.

TERMINATION The scenario may be terminated when all control rods have been inserted and reactor level is being controlled above the top of active fuel.

SHIFT TURNOVER

PLANT CONDITIONS:

- Unit 2 is at approximately 95% power.

INOPERABLE EQUIPMENT/LCOs:

- None

SCHEDULED EVOLUTIONS:

- Raise Reactor power to 100% using Recirc flow
- Lower Torus level to 14.55 feet to Radwaste using SO 14A.1.A-2, "Torus Water Cleanup and Level Control" for HPCI testing scheduled for next shift.

SURVEILLANCES DUE THIS SHIFT:

- None
-

ACTIVE CLEARANCES:

- None

GENERAL INFORMATION:

- Raise Reactor power with Recirc flow. GP-5-2, "Power Operations" is complete through step 5.3.31.

CRITICAL TASK LIST

1. **Attempt to shutdown the Reactor by performing one or more of the following:**

   a. **T-214 "Isolating and Venting the Scram Air Header"**

   b. **T-220 "Driving Control Rods During a Failure to Scram"**

   c. **Injecting Standby Liquid Control before Torus temperature exceeds 110 degrees F (requires manual isolation of RWCU). (T-101-3)**

2. **Perform T-240, "Terminate and Prevention of Injection into the RPV" to minimize thermal hydraulic instabilities (THI) until RPV level is below -60 inches. (T-117-1)**

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 1 **Page:** 1 of 18

Event Description: Raise Reactor power with Recirc flow

Cause: N/A

Effects: Reactor power will raise

Time	Position	Applicant's Actions or Behavior
	CRS	Direct the URO to raise Reactor power with Recirc flow.
	URO	Raise Reactor power using Recirc flow in accordance with the direction in the ReMA.
		Monitor plant parameters while raising Reactor power.
	PRO	Monitor plant parameters/assist as directed.

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 2 **Page:** 2 of 18

Event Description: Lower Torus level

Cause: N/A

Effects: Torus level will lower

Time	Position	Applicant's Actions or Behavior
	CRS	Direct PRO to lower Torus level to 14.55 feet to Radwaste using SO 14A.1.A-2, "Torus Water Cleanup and Level Control".
	PRO	Lower Torus level to 14.55 feet to Radwaste using SO 14A.1.A-2, "Torus Water Cleanup and Level Control": • Direct an Equipment Operator to verify closed HV-2-14A-73, "Torus Water Filter Pump discharge Block Valve". • Direct an Equipment Operator to open HV-2-14A-29038, "Torus Water Cleanup Block Valve to Radwaste Collection Tank". • Open MO-2-14-070, "Inbd Suct" valve. • Open MO-2-14-071, "Outbd Suct" valve • Start the Torus Water Filter pump When Torus level reaches 14.55 feet secure the Torus letdown lineup by performing the following: • Stop the Torus Water Filter pump • Open MO-2-14-070, "Inbd Suct" valve. • Open MO-2-14-071, "Outbd Suct" valve • Direct an Equipment Operator to Close HV-2-14A-29038, "Torus Water Cleanup Block Valve to Radwaste Collection Tank".
	URO	Monitor plant parameters/assist as directed.

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

Event Description: E-2 Diesel Generator spurious start

Cause: Spurious automatic start signal

Effects:
1. Alarm 002 G-4 "E2 Diesel Running".
2. The diesel will continue to run until manually shutdown.

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting alarm 002 G-4, "E2 Diesel Running"
		Enter and execute ARC 002 G-4, "E2 Diesel Running"
		Recognize the E-2 diesel is running unloaded.
		Red flag the breaker for the E-2 diesel.
		Verify diesel automatic response using SO 52B.1.B, "Diesel Generator Automatic Start". • Verify an ESW pump started. • Red-flag the ESW pump to remain in service. • Shutdown the remaining ESW pump. • Direct an Equipment Operator to perform a running inspection of the E-2 diesel generator.
	CRS	Enter and execute ARC 002 G-4, "E2 Diesel Running"
		When the report of the diesel fuel oil leak is received, direct the PRO to shutdown of the E-2 diesel
		(May) direct placing the E-2 diesel in Pull-to-Lock.

Event Description: E-2 Diesel Generator spurious start (continued)

Time	Position	Applicant's Actions or Behavior
	PRO	Shutdown the E-2 diesel using SO 52A.1.B, "Diesel Generator Operations": • Place the E-2 diesel generator control switch to "STOP". • Shutdown the running ESW pump in accordance with SO 33.2.A, "Emergency Service Water System Shutdown". • Direct the Equipment Operator to continue with the E-2 diesel shutdown in accordance with SO 52A.1.B, section 4.5. Place the E-2 diesel in Pull-to-Lock, as directed.
	CRS	Declare the E-2 diesel inoperable.
	TS	Review Tech Spec 3.8.1 and determine Condition B applies: • Verify alignment/availability of the Conowingo tie line immediately. • Verify breaker alignment for operable offsite circuits within 1 hour. • Restore the E-2 diesel generator to operable status within 14 days.

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

Event Description: Control rod 30-35 begins to drift in

Cause: Leakage past the scram outlet valve

Effects: Control rod 30-35 will drift full in

Time	Position	Applicant's Actions or Behavior
	URO	Recognize by reporting alarm 211 D-4, "Rod Drift" and report that control rod 30-35 is drifting in. Enter and execute ARC 211D-4, "Rod Drift". Recognize by reporting the drifting control as a symptom for entry into ON-121, "Drifting Control Rod". Perform the following actions per ON-121, "Drifting Control Rod": • Select control rod 30-35. • Direct an Equipment Operator to inspect the HCU for control rod 30-35. • Notify the Reactor Engineers. • Insert the control rod using the "Emergency In" control switch and hold for 30 seconds. Repeat this step up to a total of five times. • Recognize by reporting that the Control Rod is no longer drifting. • Reset the rod drift alarm.

Event Description: Control rod 30-35 begins to drift in (continued)

Time	Position	Applicant's Actions or Behavior
	CRS	Enter and execute ARC 211D-4, "Rod Drift". Enter and execute ON-121, "Drifting Control Rod" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Contact or direct the Reactor Engineers be contacted to: 1. Inform them of the drifting control rod. 2. Monitor Reactor core parameters 3. Determine control rod pattern adjustments.
	TS	Declare control rod 30-35 INOP and Refer to Tech Specs 3.1.3. Direct that control rod 30-35 be disarmed and blocked.
	PRO	Provide assistance to the URO. Make notifications as directed by the CRS.

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 5 **Page:** 7 of 18

Event Description: HWC controller fails high

Cause: Malfunction in the controller with a failure to automatically isolate

Effects: Excessive Hydrogen injection into the RPV causes Main Steam Line radiation levels to rise.

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting the following alarms: • "H2 Water Chem system Trouble" (201 H-3) • "Hydrogen Flowrate High/Low" (230 A-3) Enter and execute the following ARC s • "H2 Water Chem system Trouble" (201 H-3) • "Hydrogen Flowrate High/Low" (230 A-3) • "Main Steam Line High Radiation" (218 D-2) Recognize by reporting the rise in Main Steam Line radiation levels. Enter and execute ON-103, "Main Steam Line High Radiation" IAW ARC 218 D-2"per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Trip the HWC system.
	CRS	Enter and execute the following ARC s • "H2 Water Chem system Trouble" (201 H-3) • "Hydrogen Flowrate High/Low" (230 A-3) • "Main Steam Line High Radiation" (218 D-2) Enter and execute ON-103, "Main Steam Line High Radiation" IAW ARC 218 D-2"per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Direct the PRO to trip the HWC system if not already completed.

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 6 **Page:** 8 of 18

Event Description: Recirc pump 2A ASD 13KV breaker trip

Cause: Electrical failure causes the 13KV breaker to trip

Effects: A trip of the 13KV breaker will cause a reduction in Reactor power, a reduction of core flow into the "potential instability region" and rise in RPV level

Time	Position	Applicant's Actions or Behavior
	URO	Recognize by reporting the trip of the 'A' Reactor Recirc pump.
		Recognize by reporting the trip of the Recirc pump as an entry into OT-112 "Unexpected/Unexplained Change in Core Flow".
		Enter and execute OT-112 "Unexpected/Unexplained Change in Core Flow" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Immediately insert all GP-9-2 rods.
		Monitor for indications of THI.
	CRS	Enter and execute OT-112 "Unexpected/Unexplained Change in Core Flow" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Determine current operating point on Power-Flow Operation Map.
		Direct monitoring for THI.
		Direct closing 'A' recirc pump discharge valve MO-053A, then re-opening valve after 5 minutes.

Event Description: Loss of Stator Water Cooling

Cause: Clogged SWC filter

Effects:

1. Alarms:
   - 220 A-5 "2 Gen Stator Coolant or H2 Seal Oil Trouble"
   - 206 G-5 "Stator Coolant Standby Pump Run"
   - 206 L-1 "Generator Protection Circuit Energized"
2. The turbine will trip 3.5 minutes after 206 L-1 is received since stator amps will be greater than 7760.

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting the following alarms: • "2 Gen Stator Coolant or H2 Seal Oil Trouble" (220 A-5) • "Stator Coolant Standby Pump Run" (206 G-5) • "Generator Protection Circuit Energized" (206 L-1) Enter and execute the following ARCs • "2 Gen Stator Coolant or H2 Seal Oil Trouble" (220 A-5) • "Stator Coolant Standby Pump Run" (206 G-5) • "Generator Protection Circuit Energized" (206 L-1) Dispatch an Equipment Operator to investigate the Stator cooling system. Recognize by reporting the "Generator protection Circuit Energized" alarm as an entry into OT-113, "Loss of Stator Cooling" Enter and execute OT-113, "Loss of Stator Cooling" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
	CRS	Enter and execute OT-113, "Loss of Stator Cooling" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Direct a reactor scram per GP-4 "Manual Reactor Scram".

Time	Position	Applicant's Actions or Behavior
	URO	Perform GP-4 "Manual Reactor Scram": • Reduce recirc flow to minimum (20% demand) • Place the mode switch to "SHUTDOWN". • Report control rods are NOT inserting. • Report APRMs are NOT downscale. • Depress both manual scram pushbuttons. • Recognize the ATWS condition as an entry into T-101, "RPV Control"

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 8 **Page:** 11 of 18

Event Description: ATWS (Electric) *(PRA)*

Cause: Scram signal is not generated

Effects: Control rods fail to insert until the either insert manually or the scram air header is vented.

Time	Position	Applicant's Actions or Behavior
	CRS	Enter and execute T-101, "RPV Control" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Enter and execute T-117, "Level/Power Control" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation". Direct the URO and PRO to perform their ATWS scram actions per RRC 94.3-2, "URO Actions During an ATWS with Power Above 4 Percent or Unknown" and RRC 94.4-2, "PRO Actions During an ATWS with Power Above 4 Percent or Unknown".

Event Description: ATWS (Electric) (continued) *(PRA)*

Time	Position	Applicant's Actions or Behavior
	URO	Depress both Scram pushbuttons
		Emergency Stop RFPTs as necessary to keep RPV level below +35 inches
		Initiate ARI
		Trip the "B" Recirc pump
		Inject SBLC
		Verify the Scram Discharge volume vent and drain valves are closed
		When the CRS is ready, Report ATWS actions.

Time	Position	Applicant's Actions or Behavior
	PRO	Inhibit ADS.
		Inform the CRS that ADS is inhibited and that you are ready to perform T-240-2
		Recognize by reporting the Main Turbine trip.
		Verify the Generator lockout
		Start the Main Turbine Bearing Lift pumps
		When the CRS is ready, report scram actions.

Event Description: ATWS (Electric) (continued) *(PRA)*

Time	Position	Applicant's Actions or Behavior
	CRS	Direct the PRO to perform T-240-2, "Termination and Prevention of Injection into the RPV". Direct the 3RO to perform T-221-2, "Main Steam Isolation Valve Bypass". Direct RPV pressure stabilized below 1050 psig using EHC. Direct drywell instrument nitrogen restored. Direct the URO to perform the following: • T-213 "Deenergize Scram Solenoids". • T-214 "Isolating and Venting the Scram Air Header". • T-220 "Driving Control Rods During Failure To Scram". Direct the PRO to maintain RPV level -70 to -110 inches
	URO	Direct an Equipment Operator to perform T-214 "Vent Scram Air Header". Drive Control Rods using T-220 "Driving Control Rods During Failure To Scram".
	URO/PRO	Recognize and report entry into T-102 "Primary Containment Control" due to high Torus temperature of 95 degrees F and/or Torus level high 14.9 feet (depending on whether or not SRVs are lifting).
	CRS	Enter and execute T-102: • Ensure Torus cooling has been maximized.

Event Description: ATWS (Electric) (continued) *(PRA)*

Time	Position	Applicant's Actions or Behavior
CT	PRO	Perform T-240, "Termination and Prevention of Injection into the RPV"; control RPV level below –60 inches and within the specific RPV level band directed by the CRS. o Place HPCI Aux Oil Pump in the "Pull-to-Lock" position. o Press "Emergency Stop" for all reactor feed pumps. o Close reactor feed pump discharge valves MO-2149A, B, C. o Verify closed MO-8090 "C RFP Discharge Bypass". When RPV level is below -60 inches, restore injection and maintain RPV level between -60 and -195 inches as follows: • Using Feedwater: o Place LIC-8091 in "MAN" and close the valve. o Open MO-8090 "C RFP Bypass". o Raise RFP speed until discharge pressure is 75-100 psig above RPV pressure. o Control RPV injection by adjusting RFPT speed, OR LIC8091 setting, OR MO-2149C "RFP C Discharge" valve position. Verify PCIS Group II and III isolations and SBGT initiation. When directed bypass and restore Drywell Instrument Nitrogen. • Place AO-2969A control switch to "CLOSE". • Place AO-2969B control switch to "CLOSE". • Place Drywell Instrument Nitrogen Bypass Switch 16A-S100 in the "BYPASS" position. • Place Drywell Instrument Nitrogen Bypass Switch 16A-S99 in the "BYPASS" position. Recognize by reporting the inability to restore Drywell Instrument Nitrogen. **(see Event 10)**

Event Description: Reactor scram / ATWS (continued) *(PRA)*

Time	Position	Applicant's Actions or Behavior
	CRS	NOTE: Torus temperature is NOT expected to reach 110 degrees F during this scenario.
CT		• IF Torus temperature reaches 110 degrees F, direct the crew to perform T-240 using Attachment 1, Figure 1, if no SRVs are open; OR Attachment 1, Figure 2, if any SRV is open.
CT		• If not already done, direct initiation of SBLC at or before Torus temperature reaches 110 degrees F **(see Event #9)**.
CT	URO/PRO	Perform T-240 again, if directed. • Terminate and prevent injection using T-240, Attachment 1, Figure 2 (the specific performance steps are listed on page 8). • Restore RPV injection when any of the following are reached: o RPV level reaches -172 inches, or o Reactor power drops below 4%, or o All SRVs remain closed. Control level as directed by the CRS to prevent level from lowering below -226 inches (2/3 core coverage).
CT	URO	Recognize "Scram Valve Pilot Air Header Press Lo" (211 D-2) alarm and/or control rods inserting due to T-214 and inform the CRS. Verify all control rods are inserted and inform the CRS.
	CRS	Determine the ATWS is terminated, exit T-117 "Level /Power Control" and enter T-101 RC/L: • Direct the URO to restore level to +5 to +35 inches.
	URO	Restore reactor level to +5 to +35 inches as directed by CRS.

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 9 **Page:** 17 of 18

Event Description: RWCU fails to automatically isolate on Group II isolation signal

Cause: Isolation logic failure

Effects: When SBLC is initiated, RWCU will not automatically isolate, resulting in dilution and removal of boron solution. Operator action will be required in order to isolate RWCU.

Time	Position	Applicant's Actions or Behavior
	URO	Recognize RWCU did not isolate. • Manually close RWCU valves MO-15, MO-18, and MO-68. • Verify SBLC is injecting based on SBLC pump discharge pressure greater than reactor pressure and lowering tank level.

Op Test No.: 1 **Scenario No.:** 2 **Event No.:** 10 **Page:** 18 of 18

Event Description: Unable to restore drywell instrument nitrogen / loss of non-ADS SRVs

Cause: Failure of isolation bypass logic

Effects: Non-ADS SRVs are not available for reactor pressure control and/or depressurization

Time	Position	Applicant's Actions or Behavior
	CRS	Direct alternate methods of supplying nitrogen to the SRVs: • Backup Instrument Nitrogen to ADS using SO 16A.7.A-2 o Place SV-8130A and SV-8130B control switches on panel 20C003-03 to RESET and then in AUTO/OPEN. o Verify open SV-8130A & B. o Verify PI-8142 "Backup N2" on the 20C003-03 panel is ≥ 85 psig. • T-261 "Placing the Backup Instrument Nitrogen Supply From the CAD Tank in Service".
	PRO	Restore drywell instrument nitrogen as directed. • If directed to use Backup Instrument Nitrogen to ADS using SO 16A.7.A-2: o Place SV-8130A and SV-8130B control switches on panel 20C003-03 to RESET and then in AUTO/OPEN. o Verify open SV-8130A & B. o Verify PI-8142 "Backup N2" on the 20C003-03 panel is ≥ 85 psig. • If directed to perform T-261 "Placing the Backup Instrument Nitrogen Supply from the CAD Tank In Service": o Verify closed AO-2969B on panel 20C003-03. o Dispatch an Equipment Operator to the CAD Building perform step 4.2 (manual valving).

TERMINATION CRITERIA:

The scenario may be terminated when all control rods have been inserted and reactor water level is being controlled above the top of active fuel.

Simulation Facility Peach Bottom **Scenario No.** #3 **Op Test No.** 2017 NRC

Examiners _____ **Operator** _____ CRS (SRO)

_____ _____ URO (ATC)

_____ _____ PRO (BOP)

Scenario Summary The scenario begins with the reactor at approximately 5% power during a reactor startup.

Following shift turnover, the URO will continue to withdraw control rods with a goal of 3 bypass valves fully open.

The PRO cycles HPCI MO-2-23-14 as part of GP-2-2, "Normal Plant Startup".

As the URO withdraws control rods he will determine that control rod 26-19 is stuck. The Crew should enter and execute SO 62.1.A-2, "Withdrawing/Inserting a Control Rod". The URO will raise drive water pressure in 50 psid increments until the control rod is no longer stuck (the rod will un-stick at 100 psid (the second adjustment by the URO). When the control rod is no longer stuck the URO will return drive water pressure to normal.

Following the stuck control rod, the Main Stack radiation monitor will fail upscale. The Crew should recognize the failure and also the failure of AO-2506, "Drywell 18" Vent Valve" to close on the isolation signal. The CRS should enter and execute Tech Specs sections 3.6.1.3, "Primary Containment Isolation Valves" and 3.3.6.1, "Primary Containment Isolation Instrumentation" and ODCM 3.8.C, "Gaseous Effluents and determine that a trip must be inserted within 24 hours and that the vent path must be isolated within 4 hours.

When the vent line is isolated, a loss of power to the "C" SRV will occur due to a blown fuse. The Crew will enter and execute the Alarm Response Card "Blowdown Valves Power Monitor" (227 C-5). The CRS should enter and execute Tech Specs sections 3.5.1, "ECCS Operating" and 3.4.3, "Safety Relief Valve and Safety Valve". The CRS should determine that the ADS valve must be returned to operable status within 14 days and that a potential TSA exists for the INOP SRV.

Following the loss of power to the "C" SRV, an Equipment Operator will report that the "B" RBCCW pump has excessive seal leakage. The CRS should direct the PRO to place the "A" RBCCW pump in service and remove the "B" RBCCW pump from service.

When the "A" RBCCW pump is in service, an unisolable steam leak will occur in the Drywell. The crew should enter and execute OT-101, "High Drywell Pressure". Drywell pressure will continue to rise. When Drywell pressure cannot be restored and maintained below 1.2 psig the CRS should direct a GP-4, "Manual Reactor Scram". The CRS should enter and execute T-101, "RPV Control".

The Steam leak will continue to get worse. The CRS will enter and execute T-102, "Primary Containment Control" and require the Crew to spray containment. When

containment sprays are attempted, failures in the valve logic will not allow the Crew to spray containment.

As the Drywell leak progresses, a Torus to Drywell vacuum breaker will fail open. This will cause a rapid rise in containment pressure and a violation of the PSP curve. This will require the Crew to perform an emergency blowdown. **(Critical Task: Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when the PSP Curve of T-102 is violated.)** Because of the loss of power to the "C" ADS/SRV the PRO will be required to open a non-ADS SRV to get a total of 5 ADS/SRVs open. **(Critical Task: Open one non-ADS SRV to compensate for the failure of an ADS valve to open during an Emergency Blowdown.)**

Initial Conditions IC-8 Approximately 5% power

Turnover Unit 2 startup is in progress.
GP-2-2, Normal Plant Startup" is complete through step 6.2.33
Continue rod withdraw with Group 8 rod 26-43
Cycle MO-2-23-14 HPCI steam vavle per GP2-2, "Normal Plant Startup".

Event No.	Malfunction No.	Event Type*	Event Description
1	See Scenario Guide	N PRO CRS	Cycle HPCI MO-2-23-14
2	See Scenario Guide	R URO CRS	Raise Reactor power using control rods until 3 main turbine bypass valves are open with reactor pressure at 450 psig
3	See Scenario Guide	C URO CRS	Control rod 26-19 is stuck requiring the use of SO 62.1.A-2, "Withdrawing Inserting a Control Rod" to free the rod.
4	See Scenario Guide	C PRO TS CRS	Main Stack radiation monitor fails upscale but does not cause all the isolations. The PRO must isolate the vent path.
5	See Scenario Guide	TS CRS	Loss of power to the "C" ADS/SRV
6	See Scenario Guide	C PRO CRS	"B" RBCCW pump has excessive leakage. PRO will swap to the "A" RBCCW pump and remove the "B" RBCCW pump from service.
7	See Scenario Guide	C URO CRS	Steam leak in the Drywell. The URO will maximize Drywell cooling to attempt to lower Drywell pressure.
8	See Scenario Guide	M ALL	Steam leak worsens requiring a Reactor Scram and containment sprays
9	See Scenario Guide	C PRO CRS	Containment Spray valves fail to operate. Will not allow the Crew to reduce containment pressure.
10	See Scenario Guide	M ALL	Torus to Drywell vacuum breaker fails open causing a violation of PSP and requiring an emergency blowdown.
11	See Sceanrio Guide	C PRO CRS	"C" SRV has no power open an additional SRV to complete the Emergency Blowdown

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

SIMULATOR OPERATOR INSTRUCTIONS FOR NRC A SCENARIO #3 (PSEG-1112L)

GENERAL REQUIREMENTS

- Recorders will be rolled prior to the scenario and paper from selected recorders will be retained for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be in their normal storage places.
- All markable procedures, boards, etc. will be erased.
- All paper used by the crew will be retained for the examination team as requested.
- The simulator operators will keep a log of all communications during the scenario as requested by the examination team.

SCENARIO SOURCE HISTORY

- This is significantly modified from the 2010 NRC exam.

INITIAL SETUP

Initial Conditions

- IC-8, 5% power
- Ensure recorder power is on; roll recorders as required
- Ensure annunciator horns are active
- Insert the following Control Rods to position 12:
    - 26-43
    - 34-19
    - 34-43
    - 26-19
    - 10-43
    - 50-19
    - 50-43
    - 10-19

Blocking Tags

- None

Insert the following:

Event Triggers

TRG 1 = False
TRG 2 = False
TRG 3 = False
TRG 4 = False

Malfunctions

IMF CRM022619, "Control Rod (26-19) Stuck"
IMF PRM01_08 (2) 100, "'A' main stack radiation monitor fails upscale"
IMF MSS01 (3) 5 10:00, Steam Leakage Inside the Primary Containment"
IMF PCS03A (3 10:00 0), "Torus-Drywell Vacuum BKR "A" Fails Open"

Overrides

IOR ANO196LE1 ALARM_ON, "Outlet Temp High/Low"

Prevent CLOSE indication on drywell vent valve AO-2506 with the following overrides:
IOR ZLOPC03AO2506_1 OFF, "DW 18" Vent Valve AO-2506 (Green Light)"
IOR ZLOPC03AO2506_2 ON, "DW 18" Vent Valve AO-2506 (Red Light)"
IOR ZLOPC03AO2506GRP_1 OFF, "DW 18" Vent Valve AO-2506 (Green Light)"
IOR ZLOPC03AO2506GRP_2 ON, "DW 18" Vent Valve AO-2506 (Red Light)"

Prevent drywell spray with the following overrides:
IOR ZGI12A1S23 CLOSE, "Drywell header valve MO-26A fails to open"
IOR ZGI12A1S43 CLOSE, "Torus header valve MO-39A fails to open"
IOR ZGI12A3S21 CLOSE, "Drywell spray valve MO-31B fails to open"
IOR ZGI12A3S41 CLOSE, "Torus spray valve MO-38B fails to open"

Remote Functions

IRF ADS02C (1) REMOVE, "'C' SRV Control Power Fuse"

Turnover Procedures

- GP-2-2 "Normal Plant Start-Up" complete up through step 6.2.33
- Rod Sequence Sheet is complete up through RWM Sequence Step 14 (Array 8); next control rod is 26-43 in Sequence Step 15 (Array 8)
- Control rod withdrawal per SO 62.1.A-2 "Withdrawing/Inserting a Control Rod"
- SO 7B.4.A-2 "Containment Atmosphere De-Inerting And Purging Via SBGT System" at step 4.19
- Turbine chest warming in progress using SO 1B.1.A-2 "Main Turbine Startup and Normal Operations" at step 4.10
- OP-AB-300-1003 Attachment 1 "Reactivity Maneuver Approval Form" at step 1 of 4 covering startup from all rods in to generator synchronization

SIMULATOR OPERATOR DIRECTIONS

EVENT 1 Cycle HPCI MO-2-23-14

Support crew as necessary during HPCI steam supply valve (MO-2-23-014) cycling (GP-2-2, Rev 5 Step 6.2.36).

EVENT 2 Control Rod withdraw

Support crew as necessary while Control Rods are withdrawn.

EVENT 3 Stuck Control Rod (26-19)

As the URO withdraws Control Rods, rod 26-19 will be stuck.

Control Rod 26-19 will not move with normal drive pressure but will move when drive pressure is raised 100 psid.

Delete Malfunction (DMF CRM022619) after the Crew raises drive water pressure approximately 100 psid.

EVENT 4 Stack Gas Radiation Monitor "A" Fails upscale

NOTE

Pre-inserted overrides will result in drywell vent valve AO-2506 indicating OPEN (cannot actually fail just this valve open).

When Control Rod 26-19 is at position 48 or at the Lead Examiners direction, activate pending events on Event Trigger 2. Verify IMF PRM01_08 activates.

EVENT 5 Loss of power to "C" SRV

When the Tech Spec determinations are complete, or at the Lead Examiner direction, activate pending events on Event Trigger 1. Verify **ADS02C** activates.

If directed to investigate the loss of power to the "C" SRV wait approximately 10 minutes and report that there is visual damage inside the C 32 panel (SRV cabinet).

If directed to check the fuse to the "C" SRV, wait approximately 5 minutes and report that the supply fuses are blown (2E-F11C and 2E-F12C).

EVENT 6 "B" RBCCW Excessive leakage

When the Tech Spec determinations are complete, or at the Lead Examiner direction, notify the control room that there is excessive seal leakage on the 'B' RBCCW pump. Report as the Floor Supervisor that the 'B' RBCCW pump should be removed from service immediately.

Support the crew in starting the 'A' RBCCW pump (SO 35.6.A-2 step 4.1):

- Report the suction block valve is open.
- Report that the discharge block valve is open.
- Report proper oil level in the pump.
- Wait approximately five minutes after being directed to vent the pump to report that the pump is vented.

If directed to close the "B" RBCCW suction and discharge valves, wait approximately seven minutes and report that the suction and discharge valves for the "B" RBCCW pump are closed.

EVENT 7 Steam Leak in the Drywell

When the "A" RBCCW pump is placed in service, or at the Lead Examiners direction, activate pending events on Event Trigger 3. Verify **MSS01** and **PCS03A** activate.

When requested to report DWCW return header pressure, wait approximately 4 minutes and report DWCW return header pressure is 25 psig.

EVENT 8 Steam leak worsens requiring a Reactor scram

Three minutes following the Reactor scram, raise the severity of the Drywell pressure leak to 70% and delete the ramp time.

EVENT 9 Containment Spray Valves fail to Operate

If directed to investigate the containment Spray valves, wait approximately 10 minutes and report that you do not see any problem with the valves.

If directed to manually open the spray valves, wait approximately 10 minutes and report that the valves will not open.

EVENT 10 The crew will perform an emergency blowdown due to exceeding the PSP Curve.

EVENT 11 "C" SRV will not open

TERMINATION The scenario may be terminated when 5 SRVS are open, the Reactor is depressurized, Reactor level is stable.

SHIFT TURNOVER

PLANT CONDITIONS:

- Unit 2 is starting up at ~5% reactor power, 450 psig
- The drywell is de-inerted due to required inspections

INOPERABLE EQUIPMENT/LCOs:

- None

SCHEDULED EVOLUTIONS:

- Continue the reactor startup in accordance with GP-2-2, which is complete through step 6.2.33.

SURVEILLANCES DUE THIS SHIFT:

- None

ACTIVE CLEARANCES:

- None

GENERAL INFORMATION:

The crew is expected to resume startup actions IAW GP-2-2 step 6.2.35 to cycle the HPCI Steam supply valve (MO-2-23-14). Then raise Reactor power with Control Rods.

Rod Sequence Sheet is complete up through RWM Sequence Step 14 (Array 8); next control rod is 26-43 in Sequence Step 15 (Array 8)

Currently in Step 1 of ReMA PB2C19-1.0

Reactor level control through AO-8091 using SO 5.7.E-2 (at step 4.1.19.8)

Containment purge in progress using SO 7B.4.A-2 (at step 4.19)

Turbine chest warming in progress using SO 1B.1.A-2 (at step 4.10)

The turbine bypass jack is at approximately 5%

CRITICAL TASK LIST

1. **Perform an emergency blowdown in accordance with T-112 "Emergency Blowdown" when the PSP Curve of T-102 is violated. (T-102-9)**

2. **Open one non-ADS SRV to compensate for the failure of an ADS valve to open during an Emergency Blowdown. (T-112-1)**

Operator Actions **ES-D-2**

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 1 **Page:** 1 of 16

Event Description: Cycle the HPCI Steam Supply valve (MO-2-23-14)

Cause: N/A

Effects: N/A

Time	Position	Applicant's Actions or Behavior
	CRS	Direct the PRO to perform step 6.2.36 of GP-2-2 "Normal Plant Start-up" and cycle HPCI MO-2-23-014.
	PRO	Verify HO-4513 "HPCI Stop" is closed. Open MO-2-23-014 "HPCI Supply". Verify open MO-2-23-014 "HPCI Supply". Close MO-2-23-014 "HPCI Supply". Verify closed MO-2-23-014 "HPCI Supply". Close MO-2-23-025 "HPCI Min Flow". Verify closed MO-2-23-025 "HPCI Min Flow".

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 2 **Page:** 2 of 16

Event Description: Raise Reactor power with Control Rods

Cause: N/A

Effects: Raise power above 4% for T-101 entry

Time	Position	Applicant's Actions or Behavior
	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 26-43.
	URO	Withdraw the following Control Rods 26-43, 34-19, 34-43, 26-19,10-43, 50-19, 50-43 and 10-19. Withdraw control rods selecting the rod on the matrix and then using the Single Notch Withdrawal switch to withdraw control rods to position 48. Monitor nuclear instrumentation and reactor power during control rod withdrawals
	PRO	Monitor balance of plant conditions during rod withdrawal. Peer Check rod motion as directed by CRS.

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 3 **Page:** 3 of 16

Event Description: Stuck Control Rod (26-19)

Cause: Mechanical Binding of the Control Rod blade

Effects: The Control Rod will not move until Drive Water pressure is raise approximately 100 psid in accordance with SO 62.1.A-2, "Withdrawing/Inserting a Control Rod".

Time	Position	Applicant's Actions or Behavior
	URO	Recognize and report that Control Rod 26-19 is not moving with normal drive pressure. Notify the CRS of the difficulty moving Control Rod 26-19. Attempt a one notch rod withdraw with normal drive pressure using SO 62.1.A-2, "Withdrawing Inserting a Control Rod" and observe the following: • Drive Flow • Drive Pressure • Drive-in, Settle and Drive-out lights Hold the Emergency IN/Notch Override Switch to "Emerg Rod In" for approximately one minute. Simultaneously place the Rod Control Switch to "Out Notch and the Emergency In/Notch Override Switch to "Notch Override" until the desired position is reached. Repeat the above step several times to attempt to move the control rod. Raise drive pressure 50 psid. Recognize by reporting that Control Rod 26-19 is not moving. Raise drive pressure another 50 psid. Recognize by reporting that Control Rod 26-10 is moving. Return Drive water pressure to between 260 and 280 psid

Event Description: Stuck Control Rod (26-19) (continued)

Time	Position	Applicant's Actions or Behavior
	CRS	Monitor CRD operations. Ensure drive water pressure is raised in 50 psid increments. Ensure drive water pressure is returned to normal following control rod movement.
	PRO	Provide peer checks as directed.

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 4 **Page:** 5 of 16

Event Description: Main stack radiation monitor fails upscale / Drywell 18-inch vent AO-2506 fails to close

Cause: Module failure / valve control failure

Effects: Radiation monitor failure will cause the inboard drywell vent and purge valves greater than 2 inches to isolate.

Failure of AO-2506 to close will require the crew to close outboard vent valve AO-2507.

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize and report alarm 003 D-1 "Main Stack Radiation High-High" and enter the corresponding Alarm Response Card. • Verify automatic actions – all inboard Torus and Drywell vent and purge valves 2-inches and larger isolate (may use GP-8.B or GP-8.C) • Recognize and report Drywell 18-inch vent valve AO-2506 failed to isolate; attempt to manually close AO-2506. • Secure the Drywell Purge Supply Fans. • Determine radiation monitor RI-0-17-050A failed upscale.
	CRS	Enter and execute the Alarm Response Card for 003 D-1. • (May enter T-104 "Radioactive Release" but should exit without taking any actions). • Direct manual isolation of Drywell 18-inch vent valve AO-2506; when manual isolation fails, direct closure of outboard vent valve AO-2507. • (May) direct securing the containment purge lineup. • For the failed radiation monitor, direct performance of AO 63E.1-2 to bypass the failed Main Stack radiation monitor. **NOTE: AO 63E.1-2 is not required to be completed prior to the next event.**
	PRO	Close outboard vent valve AO-2507, as directed. Perform AO 63E.1-2 to bypass the failed main stack radiation monitor, as directed. **NOTE: when the PRO attempts to perform AO 63E.1-2, inform the operator "the panel door cannot be opened".**

Event Description: Main stack radiation monitor fails upscale (continued)

Time	Position	Applicant's Actions or Behavior

	PRO	If directed, secure containment purge per step 4.19 of SO 7B.4.A-2 "Containment Atmosphere De-inerting and Purging Via SBGT System".
		• Place the standby Drywell Purge Fan to OFF (if not already done)
		• Stop the running Drywell Purge Fan (if not already done)
		• Shutdown SBGT using SO 9A.2.B "SBGT System Shutdown Following Manual Start"
		  ○ Stop the 'A' SBGT fan by placing its control switch to STOP (spring returns to AUTO)
		  ○ Close 'A' filter inlet AO-475-1 by placing its control switch to AUTO
		  ○ Close 'A' filter outlet AO-475-2 by placing its control switch to AUTO
		• Close AO-20459 and AO-20460 on panel 20C012
		• Direct the EO to verify HCS-00522-1 is OPEN on panel 0BC452
		• Close the following valves using SO 7B.7.A-2:
		  ○ AO-2505
		  ○ AO-2520
		  ○ AO-2506
		  ○ AO-2507
		• Close SBGT valves AO-20469-1 and AO-20469-2 on the 20C012 panel

TS	CRS	Review Tech Spec 3.3.6.1 for the radiation monitor failure: • Determine Condition A applies – channel must be placed in trip within 24 hours (Function 2c). Review Tech Spec 3.6.1.3 for the vent valve failure (AO-2506): • Determine Condition A applies – isolate flow path within 4 hours. Review ODCM 3.8.C.4.4 for the radiation monitor failure (RI-50A): • Determine no actions are required once AO 63E.1-2 is complete (since 1 channel remains operable), per OP-PB-108-115-1001.

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 5 **Page:** 7 of 16

Event Description: Loss of power to "C" SRV

Cause: Circuit short causes the supply fuses to open

Effects: Loss of indication to the "C" SRV
Alarm 227 C-5, "Blowdown Valves Power Monitor"

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting the "Blowdown Valves Power Monitor" alarm (227 C-5). Enter and execute the ARC for "Blowdown Valves Power Monitor" alarm (227 C-5). Recognize by reporting the loss of power to the "C" SRV. Direct an Equipment Operator to Verify the status of the fuses for the "C" SRV (2E-F11C and 2E-F12C).
	CRS	Enter and execute the ARC for "Blowdown Valves Power Monitor" alarm (227 C-5). If not already completed by the PRO, direct an Equipment Operator to Verify the status of the fuses for the "C" SRV (2E-F11C and 2E-F12C).
	TS	Consult Technical Specifications 3.5.1,"ECCS Operating" and 3.4.3, "Safety Relief Valve and Safety Valve" Determine that: • 3.5.1.E requires that the ADS valve be returned to operable within 14 days. • 3.4.3 requires a PTSA for one INOP SRV.

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 6 **Page:** 8 of 16

Event Description: RBCCW pump swap due to excessive seal leakage on the 'B' RBCCW pump *(PRA)*

Cause: Excessive seal leakage

Effects: 'B' RBCCW pump removed from service and 'A' RBCCW pump placed in-service

Time	Position	Applicant's Actions or Behavior
	URO	Inform the CRS of the report from the Equipment Operator / Floor Supervisor that there is excessive seal leakage from the 'B' RBCCW pump.
	CRS	Direct the PRO to swap RBCCW pumps using SO 35.6.A-2 "Placing Standby Reactor Building Closed Cooling Water Pump In Service"
	PRO	Direct the Equipment Operator to verify the 'A' RBCCW pump is ready for a start. Start the 'A' RBCCW pump. Verify that pressure on PI-2350 has risen slightly. Trip the 'B' RBCCW pump.

Event Description: Steam Leak in the Drywell

Cause: An unisolable steam leak will begin in the drywell

Effects: "Drywell Hi-Lo Press" alarms (210 F-2, 225 A-4)

Rise in Drywell pressure to the scram setpoint

Rise in Drywell temperature

Time	Position	Applicant's Actions or Behavior
	URO/PRO	Recognize by reporting the "Drywell High Pressure" alarms. Recognize Drywell pressure is rising and announce entry into OT-101, "High Drywell Pressure". Trend the drywell pressure rise. Enter and execute OT-101, "High Drywell Pressure" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
	CRS	Enter and execute OT-101, "High Drywell Pressure" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation": • 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: • RWCU, HPCI and RCIC (i.e. close HPCI MO-15 steam supply valve, close RCIC MO-15 steam supply valve...). • If not done earlier, direct manual isolation of Drywell 18-inch vent valve AO-2506; when manual isolation fails, direct closure of outboard vent valve AO-2507.

Event Description: Steam Leak in the Drywell (continued)

Time	Position	Applicant's Actions or Behavior
	URO	Maximize Drywell Cooling using RRC 44A.1-2 "Maximize Drywell Cooling". Monitor components for abnormal indications as directed by the CRS.
	PRO	Monitor Drywell pressure and plant parameters. Verify Drywell inerting is not in progress. 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...).

Op Test No.: 1 **Scenario No.:** 1 **Event No.:** 8 **Page:** 11 of 16

Event Description: Steam leak worsens requiring a Reactor scram

Cause: An unisolable steam leak will begin in the drywell

Effects: Drywell pressure cannot be restored or maintained below 1.2 psig

Time	Position	Applicant's Actions or Behavior
	CRS	When Drywell pressure cannot be restored and maintained below 1.2 psig, direct the URO and PRO to perform a GP-4, "Manual Reactor Scram".
	URO	Perform GP-4 "Manual Reactor Scram" actions: • Place the mode switch to "Shutdown". • Verify control rods inserting. Manually control the Reactor Feed Water System to control reactor level.
	CRS	Enter and execute T-101 "RPV Control" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation": • Direct level restored and maintained +5 to +35 inches. • Direct restoration of drywell instrument nitrogen using RRC 94.2-2 "Plant Reactor Operator Scram Actions".
	PRO	Perform scram actions per RRC 94.2-2 "Plant Reactor Operator Scram Actions". Verify all isolations. Restore Instrument Nitrogen to the drywell when directed by the CRS using RRC 94.2-2 "Plant Reactor Operator Scram Actions".

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 9 **Page:** 12 of 16

Event Description: Containment Spray valves fail to operate

Cause: Mechanical failure of the valve actuators

Effects: Inability to reduce Primary Containment pressure

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting Drywell pressure above 2 psig.
		Recognize by reporting Drywell pressure of 2 psig as an entry condition for T-101, "RPV Control" and T-102, "Primary Containment Control".
		Recognize and verify Diesel Generators start and have cooling water.
		Recognize and report the HPCI auto start.
		Recognize and report Core Spray and RHR pumps auto start.
		Trend and report containment parameters.
	CRS	Enter and execute T-101, "RPV control" and T-102, "Primary Containment Control" per OP-PB-101-111-1001, "Strategies for Successful Transient Mitigation".
		Verify adequate level and direct either a HPCI shutdown or isolation, and Core Spray and RHR pumps shutdown.
	PRO	Perform an isolation or shutdown of HPCI as directed by the CRS. • 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, trip HPCI, verify that the HPCI aux oil pump starts as required, and place the HPCI Aux Oil Pump in Pull-to-Lock when HPCI stops rotating. Shutdown Core Spray and RHR pumps as directed by the CRS.

Event Description: Containment Spray valves fail to operate (continued)

Time	Position	Applicant's Actions or Behavior
	CRS	Direct Torus sprays IAW T-204 using A(B) Loop RHR Direct T-223 actions to restore drywell ventilation. Trend containment parameters, specifically Drywell pressure and Bulk Average Temperature.
	PRO	Perform Torus Sprays IAW T-204 "Initiation of Containment Sprays using RHR": Momentarily place the S17B switch in "MAN". • Open MO-39A(B) "Torus Hdr. Valve". • Recognize by reporting the failure of MO-2-10-39A to open • Open MO-89C(D) "HPSW Outlet Valve". • Place switch S19A(B) in "Manual Override". • Start a HPSW pump in the respective loop. • Start an RHR pump in the respective loop. • Recognize by reporting the failure to MO-2-10-38B to open. • Recognize by reporting the failure of MO-2-10-31B to open.
	URO/PRO	Recognize and report containment parameters: • Drywell Bulk Average temperature at 145 degrees F and entry into T-102. • Drywell pressure and Torus pressure and equivalent indicating that the suppression function of the containment is failed.
	CRS	Direct URO to perform T-223 "Drywell Cooler Fan Bypass" to bypass and restore drywell ventilation. Direct the URO to verify GP-8B isolations.

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 9 **Page:** 14 of 16

Event Description: Containment Spray valves fail to operate (continued)

Time	Position	Applicant's Actions or Behavior
	URO	Perform T-223: • Direct EO to place drywell fans in slow. • Verify T-223 requirements. • Start all the DW cooling fans. Verify that Drywell chilled water and RBCCW isolation are not required until Drywell pressure exceeds 25 psig.
	CRS	When Drywell pressure exceeds 25 psig, direct the URO to isolate Drywell Chilled Water using GP-8B, "PCIS Isolation – Groups II and III.

Op Test No.: 1 **Scenario No.:** 3 **Event No.:** 10 **Page:** 15 of 16

Event Description: Emergency Blowdown due to exceeding the PSP curve

Cause: Drywell to Torus vacuum breaker fails open

Effects: Torus pressure rises and causes the PSP curve to be violated

Time		Position	Applicant's Actions or Behavior
	CT	CRS	If the MSIVs are open, when the combination of Torus pressure and Torus level approach the limits of the PSP curve, direct the URO to perform a rapid depressurization using T-101, RC/P-12.
	CT	URO	Rapidly depressurize the reactor by opening all Main Turbine bypass valves.
	CT	CRS	When the combination of Torus pressure and Torus level cannot be maintained on the Safe Side of the PSP curve, enter and execute T-112 "Emergency Blowdown": • Verify torus level is above 7 feet. • Verify reactor pressure is 50 psig or more above torus pressure. • Direct 5 ADS SRVs opened.
	CT	PRO	When directed, open 5 ADS SRVs by placing their control switches in OPEN.

Event Description: "C" ADS/SRV will not open

Cause: Blown fuse in the control logic.

Effects: Must use another SRV valve to complete Emergency Blowdown

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize by reporting that the "C" SRV will not open due to the loss of control power.
	CRS	Direct the PRO to open another SRV until a total of five SRVs are open.
	PRO	Open a fifth SRV.
	URO	Control reactor level as directed following the blowdown. (Note that level will swell high during the actual blowdown.)

TERMINATION CRITERIA:

The scenario may be terminated when 5 SRVS are open, the reactor is depressurized, reactor level is under control and Drywell Chilled Water is isolated.