

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: RO-ADMIN-1

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** RO-ADMIN-1**Task Title:** Ensure adequate shutdown margin exists with all CEAs operable, in Mode 3**Task Number:** 201.072**K/A Reference:** 2.1.37 (4.3, 4.6)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work which required 21 SGFP to be secured (work still in progress).
2. Today at 0800, Unit-2 experienced an uncomplicated reactor trip
3. RCS boron concentration is 1300 PPM per a grab sample obtained at 1100
4. Current time, for purposes of this JPM, is 1130
5. T<sub>AVG</sub> is stable at 532°F
6. Core Burnup is 13,500 MWD/MTU on Cycle 20
7. Start-up is anticipated to occur in approximately 36 hours
8. A Xenon report has yet to be provided by Reactor Engineering.
9. POWERTRAX is currently unavailable
10. You are performing the duties of an extra RO

**Initiating Cue:**

The CRS directs you to verify and document that shutdown margin is adequate, **using the figure method**, for the present plant conditions per NEOP-301. Are there any questions? You may begin.

**Task Standard:**

Adequate shutdown margin is verified, using the figure method, for the stated core conditions, with all CEAs operable, in Mode 3

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

1. NEOP-301, Operator Surveillance Procedure
2. NEOP-23, Technical Data Book (U-2)

**General References:**

Procedures and manuals normally available in the Control Room

**Time critical task:**

No

**Validation Time:**

20 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>TIME START:</b> _____	
<input type="checkbox"/> Locates NEOP-301, Operator Surveillance Procedure	Same as element
<input type="checkbox"/> Selects NEOP-301, Operator Surveillance Procedure, Section 6.1, Shutdown Margin (All CEAs Operable)	Same as element
<b>CAUTION</b>	
<p>The allowable times to verify SDM in Step 6.1.1 are applicable for <math>T_{AVG}</math> greater than or equal to 515°F with a steady or increasing soluble Boron concentration. With <math>T_{AVG}</math> greater than or equal to 515°F and with steady or increasing Boron concentration, SDM will be acceptable for a minimum of 4 hours under all non-accident conditions. SDM must be verified prior to decreasing <math>T_{AVG}</math> below 515°F or reducing Boron concentration. Initiating a cooldown to below a <math>T_{AVG}</math> of 515°F or reducing soluble Boron concentration prior to verifying SDM will invalidate the times to verify SDM in Step 6.1.1 and may lead to a loss of adequate shutdown margin.</p>	
<input type="checkbox"/> 6.1.1 - <b>DETERMINE</b> the allowable time to verify shutdown margin by performing Step 6.1.1.1. <b>OR</b> Step 6.1.1.2:	Selects 6.1.1.1. based on information provided in Cues
<input type="checkbox"/> 6.1.1.1. - Reference the following table ...	References the table and determines SDM must be verified within <b>6</b> hours
<input type="checkbox"/> 6.1.1.2. - <b>MODEL</b> the trip using the XENON code (or POWERTRAX).	Determines step is N/A
<b>NOTE</b>	
Either of Steps 6.1.2 or 6.1.3 below may be performed to calculate the required SDM for MODE 3 with $T_{AVG}$ greater than or equal to 300°F.	
<b>NOTE</b>	
Precautions 5.4 and 5.5 describe the differences between the various methods below which can be used to determine the required boron concentration.	
<input type="checkbox"/> 6.1.2 - MODE 3, 4, or 5 (Figure Method)	
<input type="checkbox"/> 6.1.2.1. - <b>DETERMINE</b> the required shutdown boron concentration by using one of the two following methods:	Selects 6.1.2.1.a. based on information provided in Cues
<b>CUE</b>	If requested, the $B_{10}$ Correction Factor is 0.93.

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> 6.1.2.1.a. - <b>REFER</b> to Figure 1-II.A.3 of NEOP-13 (Figure 2-II.A.3 of NEOP-23).		Refers to Figure 2-II.A.3 of NEOP-23. Determines required shutdown boron concentration is <b>1231 PPM</b>
<input type="checkbox"/> 6.1.2.1.b. - <b>DETERMINE</b> using POWERTRAX.		Determines step is N/A
<input type="checkbox"/> 6.1.2.1. - <b>VERIFY AND DOCUMENT</b> the following bulleted conditions on Attachment 2 within the time period determined in Step 6.1.1. <b>AND</b> at least once per 24 hours thereafter:		Obtains copy of Attachment 2
<b>CUE</b>	Sequence number for NEOP-23, Attachment 2 is "1"	
<input type="checkbox"/> RCS T <sub>AVG</sub> is acceptable for current operating MODE. <input type="checkbox"/> A soluble Boron concentration sample from the RCS has been obtained. <input type="checkbox"/> RCS soluble Boron concentration is greater than or equal to the required Shutdown Boron Concentration.		<ul style="list-style-type: none"> <li>• Logs Sequence #: 1 (not critical)</li> <li>• Logs Unit#: 2 (not critical)</li> <li>• Logs Cycle #: 20 (not critical)</li> <li>• Logs RCS T<sub>AVG</sub>: <b>532°F</b></li> <li>• Logs Mode: <b>3</b></li> <li>• Logs Burnup: 13,500 MWD/MTU</li> <li>• Logs CEA position: <b>IN</b></li> <li>• Logs boron conc: <b>1300 PPM</b></li> <li>• Logs date/time of sample: <b>Today at 1100</b></li> <li>• Logs req'd boron conc: <b>1231 PPM</b></li> <li>• Logs method used: Figure</li> <li>• Logs figure used: 2-II.A.3</li> <li>• Logs SDM valid until: tomorrow at 1130</li> <li>• Enters initials/date/time as preparer (date/time not critical)</li> </ul>

**TERMINATING CUE:** This JPM is complete when the status of core shutdown margin has been determined and recorded. No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: RO-ADMIN-1

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work which required 21 SGFP to be secured (work still in progress).
2. Today at 0800, Unit-2 experienced an uncomplicated reactor trip
3. RCS boron concentration is 1300 PPM per a grab sample obtained at 1100
4. Current time, for purposes of this JPM, is 1130
5.  $T_{AVG}$  is stable at 532°F
6. Core Burnup is 13,500 MWD/MTU on Cycle 20
7. Start-up is anticipated to occur in approximately 36 hours
8. A Xenon report has yet to be provided by Reactor Engineering.
9. POWERTRAX is currently unavailable
10. You are performing the duties of an extra RO

**Initiating Cue:**

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRS directs you to verify and document that shutdown margin is adequate, **using the figure method**, for the present plant conditions, per NEOP-301.

Are there any questions? You may begin.



## OPERATOR SURVEILLANCE PROCEDURE

NEOP-301

Revision 01201

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**Attachment 2, Shutdown Margin Verification**

Sequence # \_\_\_\_\_

Unit \_\_\_\_\_ Cycle \_\_\_\_\_

T <sub>AVG</sub> (°F)	MODE	Burnup (MWD/MTU)	CEA Position *	Boron Sample (ppm)**	Date/Time Of Sample	Req'd Boron Conc (ppm)	Method (PDIL+BIAS Or Figure)	Figure Used or Attachment and Sequence#	SDM Valid Until (Date/Time)	Preparer (Init/Date/Time)	SRO Review (Init/Date/Time)

\* Enter IN, OUT, or PDIL. Enter N/A if in MODE 6

\*\* During MODE 6, this Boron Grab Sample is the minimum value of Refueling Pool or filled portion of the RCS.

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JPM #: RO-ADMIN-2

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** RO-ADMIN-2**Task Title:** Monitor Azimuthal Power Tilt (Tq) using Excore Nuclear Instrumentation**Task Number:** 204.129**K/A Reference:** 2.1.25 (3.9/4.2)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 power was recently reduced to 70% power to facilitate repairs to 11 SGFP.
2. CEAs are currently inserted to 108 inches on Group 5.
3. Channel "D" LRNI is out of service for maintenance. T.S. LCOs 3.3.1.A and 3.3.1.D have been entered.
4. The plant computer has "crashed" and is inoperable.
5. OPS CALC is not available.
6. You are performing the duties of the CRO.
7. NI Readings are as follows:

Channel	Upper	Lower
A	70.9	69.9
B	68.3	67.2
C	69.7	68.7
D	0	0

**Initiating Cue:**

AOP-7H, Loss of Plant Computer, has been implemented and the CRS directs you to determine the Azimuthal Power Tilt (Tq) using the excore NIs per Section IV.E and determine if any limits are being exceeded.

**Task Standard:**

Calculate and determine whether or not Tq is in spec.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

1. Procedures and manuals normally available in the plant
2. AOP-7H, Loss of Plant Computer in Mode One or Two, ATTACHMENT (2)
3. AOP-7H, Loss of Plant Computer in Mode One or Two, ATTACHMENT (5)

**General References:**

1. AOP-7H, Loss of Plant Computer in Mode One or Two.
2. AOP-7H, Loss of Plant Computer in Mode One or Two, ATTACHMENT (2)
3. T.S. 3.2.4 Azimuthal Power Tilt - Tq
4. NEOP-301, Operator Surveillance Procedure

**Time critical task:**

No

**Validation Time:**

20 minutes

**Simulator Setup:**

None

<b>TIME START:</b> _____	
<input type="checkbox"/> Locates AOP-7H, Section IV.C. - IF Greater than 50% Rated Thermal Power, Monitor Tq.	Same as element.
<input type="checkbox"/> VI.C.1 - <b>IF ALL</b> four Linear Power Channels are operable, <b>THEN</b> perform <b>EITHER</b> of the following to calculate upper and lower Tq ...	Determines Step is N/A
<b><u>NOTE</u></b>	
For the purposes of Tq monitoring, a total of 3 upper and 3 lower RPS power range detectors are required to be operable. The failed detectors can be on different channels.	
<input type="checkbox"/> VI.C.2 - <b>IF ONLY</b> 3 upper <b>AND</b> three lower RPS power range detectors are operable, <b>THEN</b> perform the following:	Determines Step is applicable
<input type="checkbox"/> VI.C.2.a. - <b>IF</b> greater than 75% Rated Thermal Power, <b>THEN</b> reduce power to less than or equal to 75% Rated Thermal Power within 12 hours.	Determines Step is N/A
<input type="checkbox"/> VI.C.2.b. - Perform either of the following to calculate upper and lower Tq:	Same as element
<input type="checkbox"/> Calculate Tq using Opscale function <u>Tq Calculator</u>	Determines Step is N/A
<b>OR</b>	
<input type="checkbox"/> Calculate Tq using the method in ATTACHMENT (2), <u>Tq CALCULATION USING EXCORE DETECTORS</u>	Determines Step is applicable
<input type="checkbox"/> Record the readings on ATTACHMENT (2), <u>Tq CALCULATION USING EXCORE DETECTORS</u>	Records Readings on Attachment 2 and performs calculations the correct formula on Attachment 2. Results: Upper Tq = .02970 (.029 to .030) Lower Tq = .03152 (.031 to .032)
<input type="checkbox"/> VI.C.3 - <b>IF</b> less than three upper <b>OR</b> three lower RPS power range detectors are operable, <b>THEN</b> reduce power to less than or equal to 50% Rated Thermal Power within four hours, <b>AND</b> exit Step C.	Determines Step is N/A
<input type="checkbox"/> VI.C.4 - Ensure that Tq is within limits of LCO 3.2.4, as directed by NEOP-301, <u>OPERATOR SURVEILLANCE PROCEDURE</u> .	Determines Tq is greater than 0.03 and escalates issue to CRS

**TERMINATING CUE:** This JPM is complete when calculated azimuthal power tilt (Tq) is determined to be outside acceptable limits. No further actions are required.

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

**Verification of Completion**Job Performance Measure Number: **RO-ADMIN-2**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 power was recently reduced to 70% power to facilitate repairs to 11 SGFP.
2. CEAs are currently inserted to 108 inches on Group 5.
3. Channel "D" LRNI is out of service for maintenance. T.S. LCOs 3.3.1.A and 3.3.1.D have been entered.
4. The plant computer has "crashed" and is inoperable.
5. OPS CALC is not available.
6. You are performing the duties of the CRO.
7. NI Readings are as follows:

Channel	Upper	Lower
A	70.9	69.9
B	68.3	67.2
C	69.7	68.7
D	0	0

**Initiating Cue:**

AOP-7H, Loss of Plant Computer, has been implemented and the CRS directs you to determine the Azimuthal Power Tilt (Tq) using the excore NIs per Section IV.C and determine if any limits are being exceeded.



APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

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### JPM #: RO-ADMIN-3

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** RO-ADMIN-3**Task Title:** Apply Technical Specifications to a failed Containment Pressure Transmitter**Task Number:** 204.129**K/A Reference:** 2.2.42 - Ability to recognize system parameters that are entry-level conditions for Technical Specifications (3.9, 4.6)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 is at 100% power.
2. The U-1 ABO reports that a scaffold builder in U-1 45 East Penetration Room has bumped Containment Pressure transmitter 1-PT-5313A. It appears the wires coming from the transmitter are separated.
3. The ABO also reports that he is in the process of writing a CR and he will be indicating that it does affect operability

**Initiating Cue:**

You are directed to determine which Tech Spec LCO's apply, the LCO actions that must be taken and the completion time limits for these actions. Applicable prints and the technical specifications are provided.

**Task Standard:**

Determine the TS LCO's that apply and the LCO actions that must be taken including required completion times.

**Evaluation Criteria:**

1. This JPM evaluates an RO's expected level of knowledge regarding the application of Tech Specs
2. All critical steps completed (denoted by shading).
3. All sequential steps completed in order.
4. All time-critical steps completed within allotted time.
5. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

1. 60723SH0002 (OM-65-SH-2) Operations DWG Ventilation System
2. 1E-058 ESFAS Logic Diagram
3. 1E-058A ESFAS Logic Diagram
4. Technical Specifications
5. Technical Specification Basis
6. NO-1-200, Control of Shift Activities

**General References:**

1. 60723SH0002 (OM-65-SH-2) Operations DWG Ventilation System
2. 1E-058 ESFAS Logic Diagram
3. 1E-058A ESFAS Logic Diagram
4. Technical Specifications
5. Technical Specification Basis

**Time critical task:**

No

**Validation Time:**

15 minutes

**Simulator Setup:**

None

<u>ELEMENT (shaded = CRITICAL STEP)</u>	<u>STANDARD</u>
<b>TIME START:</b> _____	
<input type="checkbox"/> Review prints and initial conditions.	Same as element.
<input type="checkbox"/> Refer to Technical Specifications	Same as element
<b><u>Examiner Note:</u></b>	
None.	
<input type="checkbox"/> Identify the TS LCO's that apply	Determines TS LCO 3.3.1 Action A applies for RPS Trip Unit 9 (Table 3.3.1-1) & 3.3.4 ESFAS ZD Sensor Module SIAS CP (Table 3.3.4-1)
<input type="checkbox"/> Identify the TS LCO Actions that are required:	Determines that the required action is to Trip or Bypass affected RPS-Trip Unit or ESFAS-Sensor Module
<input type="checkbox"/> Identify the required completion time for the actions.	Determines that the initial required completion time is 1 hour for both channels. And to restore the Channel to Operable status or place the affected RPS Trip Unit or ESFAS Sensor in Trip within 48 hours ( <b>the 48 hr action is not critical, only the 1 hour action</b> )

**TERMINATING CUE:** This JPM is complete when applicant has determined applicable TS LCO, LCO Action required, and completion time. No further actions are required.

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

**Verification of Completion**Job Performance Measure Number: **RO-ADMIN-3**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 is at 100% power.
2. The U-1 ABO reports that a scaffold builder in U-1 45 East Penetration Room has bumped Containment Pressure transmitter 1-PT-5313A. It appears the wires coming from the transmitter are separated.
3. The ABO also reports that he is in the process of writing a CR and he will be indicating that it does affect operability

**Initiating Cue:**

You are directed to determine which Tech Spec LCO's apply, the LCO actions that must be taken and the completion time limits for these actions. Applicable prints and the technical specifications are provided.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

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## OPERATOR EXAM

## JPM #: RO-ADMIN-4



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**Facility:** Calvert Cliffs 1 & 2      **Job Performance Measure No.:** RO-ADMIN-4  
**Task Title:** Determine Proper Radiological Controls associated with manipulating a valve in the RCA  
**Task Number:** None  
**K/A Reference:** 2.3.7 (3.5/3.6)

**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. U-1 is in Mode 3.
2. The Unit-1 RCS leakrate is elevated.
3. You are performing the duties of an extra ABO and have been assigned to enter the RCA and verify 1-CVC-325, CVCS DIVERSION TO DEGAS ISOL, is shut, to help locate the source of the leak.

**Initiating Cue:**

The CRS has estimated a total time to accomplish this work of ~5 minutes. In preparation for a pre-job brief, you are to identify all appropriate radiological controls associated with this evolution, including:

1. RWP and Work Order
2. Protective Clothing required
3. Dosimetry required
4. Contaminated areas
5. Highest expected dose rate.

**Task Standard:**

Using correct OI Valve Lineup, Survey Map and Correct RWP determine appropriate radiological controls.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

1. Procedures and manuals normally available in the plant
2. RWP-2 Rev 2
3. Survey MAP for 5' AUX BLDG Unit-1 VCT Room

**General References:**

1. RWP-2 Rev 2
2. Survey MAP for 5' AUX BLDG Unit-1 VCT Room

**Time critical task:**

No

**Validation Time:**

10 minutes

**Simulator Setup:**

None

ELEMENT (shaded + \* = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_

- ☐ Reviews survey sheet for specific areas to be entered.

Locates appropriate survey map and determines that a contaminated area must be entered located around CVC-325 but no need to enter a high radiation area

**Cue:** Provide candidate with several RWP's including RWP# 2

- ☐ Candidate refers to the proper RWP. (RWP# 2-2 needed due to 22 mrem/hr at 30 cm)

Locates and selects RWP# 2-2.

**Cue:** Provide the candidate with several MO's including the correct MO.

- ☐ Candidate refers to list of MO's and selects proper MO

Locates and selects MO# OPS-NO-WO

**Cue:** After candidate identifies entry into contaminated area they should ask RP Tech for Dress Requirements respond with "Full Anti-C's due to reaching over contaminated piping"

- ☐ Candidate identifies entry into contaminated area and protective clothing requirements.

Candidate determines that Full Anti-C's are required due to CVC-325 being in a contaminated area.

Is student does not ask RP tech for input they may write "per RP tech" on answer sheet.

- ☐ Candidate identifies the highest expected dose levels

Candidate determines that the highest expected dose rate is between 22-40 mr/hr depending on how close they get to pipe.

**Cue:** When candidate asks RP Tech for teledosimetry requirements respond with "No teledosimetry required"

- ☐ Candidate determines dosimetry requirements

Candidate determines DLR & ED are required for entry and NO other dosimetry is required

**TERMINATING CUE:** This JPM is complete when candidate has identified all radiological controls listed above for entering the RCA, evaluator will terminate this JPM.

ELEMENT (shaded + \* = CRITICAL STEP)STANDARD**TIME STOP:** \_\_\_\_\_**NOTE TO EXAMINER:** Collect the applicant work sheet at the completion of the JPM

**Verification of Completion**Job Performance Measure Number: **RO-ADMIN-4**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. U-1 is in Mode 3.
2. The Unit-1 RCS leakrate is elevated.
3. You are performing the duties of an extra ABO and have been assigned to enter the RCA and verify 1-CVC-325, CVCS DIVERSION TO DEGAS ISOL, is shut, to help locate the source of the leak.

**Initiating Cue:**

The CRS has estimated a total time to accomplish this work of ~5 minutes. In preparation for a pre-job brief, you are to identify all appropriate radiological controls associated with this evolution, including:

1. RWP and Work Order
2. Protective Clothing required
3. Dosimetry required
4. Contaminated areas
5. Highest expected dose rate.

## APPLICANTS WORK SHEET

Identify appropriate radiological controls associated with this evolution, including:

1. Appropriate RWP and Work Order#
2. Protective Clothing required
3. Dosimetry required
4. Contaminated areas
5. Highest expected dose rates



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## JPM #: SRO-ADMIN-1

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SRO-ADMIN-1**Task Title:** Ensure adequate shutdown margin exists with all CEAs operable, in Mode 3**Task Number:** 201.072**K/A Reference:** 2.1.37 (4.3, 4.6)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work requiring 21 SGFP to be secured (work still in progress)
2. At 0900 this morning Unit-2 experienced an uncomplicated reactor trip
3. T<sub>AVG</sub> is stable at 532°F
4. Core Burnup is 13,500 MWD/MTU
5. Start-up is anticipated to occur in approximately 36 hours
6. RCS boron concentration is 1210 PPM per a grab sample obtained at 1430
7. POWERTRAX is currently unavailable
8. Current time, for purposes of this JPM, is 1500
9. You are performing the duties of the Unit-2 CRS

**Initiating Cue:**

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRO has performed the required calculation, using the figure method, and has asked you to perform the SRO Review of the Shutdown Margin verification.

**Task Standard:**

Candidate correctly determines Shutdown Margin Exists with the Plant in Mode 3

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

NEOP-301, Operator Surveillance Procedure

NEOP-23, Technical Data Book (U-2)

**General References:**

Procedures and manuals normally available in the Control Room

**Time critical task:**

No

**Validation Time:**

20 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_

- ☐ Locates NEOP-301, Operator Surveillance Procedure and proceeds to Step 6.1.2.3.

Same as element

- ☐ 6.1.2.3. - Independently verify the information in Attachment 2

Same as element (using NEOP-301, Operator Surveillance Procedure and NEOP-23, Technical Data Book (U-2))

- ☐ Conducts review of completed Attachment 2, Shutdown Margin Verification

Notes RCS T<sub>AVG</sub>, Mode, Burnup, CEA position, Boron Sample information, Method and Figure used are entered correctly (not critical)

Notes SDM Valid Until time is incorrect (not critical)

Refers to Figure 2-II.A.3 of NEOP-23. Determines required shutdown boron concentration is **1231 PPM**. Notes required boron concentration listed on Att. 2 is in error (value for Mode 5 was used).

**CUE**

What actions, if any, are required, based on your review of the Shutdown Margin Verification worksheet?.

- ☐ 6.1.2.4. - **IF** the RCS soluble Boron concentration is less than the required shutdown Boron concentration for the current burnup, **THEN IMMEDIATELY START** boration at greater than or equal to 40 gpm of borated water at or above required Shutdown Boron Concentration.

Directs boration at greater than or equal to 40 gpm of borated water at or above required Shutdown Boron Concentration

**TERMINATING CUE:** This JPM is complete when the status of core shutdown margin has been determined and boration of the RCS directed. No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: SRO-ADMIN-1

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-2 had been operating at 100% power for 100 days when power was reduced, three days ago, for work requiring 21 SGFP to be secured (work still in progress)
2. At 0900 this morning Unit-2 experienced an uncomplicated reactor trip
3. T<sub>AVG</sub> is stable at 532°F
4. Core Burnup is 13,500 MWD/MTU
5. Start-up is anticipated to occur in approximately 36 hours
6. RCS boron concentration is 1210 PPM per a grab sample obtained at 1430
7. POWERTRAX is currently unavailable
8. Current time, for purposes of this JPM, is 1500
9. You are performing the duties of the Unit-2 CRS

**Initiating Cue:**

EOP-Attachment 13 requires a shutdown margin calculation be performed. The CRO has performed the required calculation, using the figure method, and has asked you to perform the SRO Review of the Shutdown Margin verification per NEOP-301, starting at Step 6.1.2.3.

Are there any questions? You may begin.

## OPERATOR SURVEILLANCE PROCEDURE

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## Attachment 2, Shutdown Margin Verification

Sequence # 1Unit 2 Cycle 20

T <sub>AVG</sub> (°F)	MODE	Burnup (MWD/MTU)	*CEA Position	Boron Sample (ppm)**	Date/Time Of Sample	Req'd Boron Conc (ppm)	Method (PDIL+BIAS Or Figure)	Figure Used or Attachment and Sequence#	SDM Valid Until (Date/Time)	Preparer (Init/Date/Time)	SRO Review (Init/Date/Time)
532	3	13,500	IN	1210	Today @ 1430	1180	Figure	2.II.A.3	Tomorrow @ 1450	<i>DFL</i> today @ 1450	

\* Enter IN, OUT, or PDIL. Enter N/A if in MODE 6

\*\* During MODE 6, this Boron Grab Sample is the minimum value of Refueling Pool or filled portion of the RCS.



APPLICANT: \_\_\_\_\_

CALVERT CLIFFS  
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2014 NRC

INITIAL LICENSED

OPERATOR EXAM

JPM #: SRO-ADMIN-2

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SRO-ADMIN-2**Task Title:** Ability to implement plant procedures for a Condenser Tube Leak**Task Number:** 202.008**K/A Reference:** 2.1.34 (2.7, 3.5)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

- 1) Unit-1 is at 88% reactor power.
- 2) At 0015, 12A Waterbox was secured IAW AOP-10, Abnormal Secondary Chemistry Conditions, due to a condenser tube leak.
  - a. Condensate Demineralizers are in service with full flow
  - b. Condenser High Level Dump is manually isolated
  - c. S/G Blowdown flow has been maximized
- 3) At 0045, exceeded Action Level 2 values for sodium in the Steam Generators, 52 ppb in 11 S/G & 55 ppb in 12 S/G.
- 4) At 1800, Chemistry notifies the Control Room we are still exceeding Action Level 2 values that sodium levels are lowering slowly. Chemistry anticipates exiting Action Level 2 at 0330
- 5) You are performing the duties of an extra SRO.

**Initiating Cue:**

The Shift Manager directs you to perform AOP-10, Section VI. (Please verbalize progress thru the AOP with the evaluator.)

**Task Standard:**

This JPM is complete when it is determined a reactor trip is required. No further actions are required. The evaluator is expected to end the JPM.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

AOP-10, Abnormal Secondary Chemistry Conditions.

CP-217, Specifications and Surveillance - Secondary Chemistry

**General References:**

Procedures and manuals normally available in the Control Room

**Time critical task:**

No

**Validation Time:**

15 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_☐ Locates AOP-10, Section VI

Same as element.

☐ VI.A. - Determine If A Reactor Trip Is Required.

☐ VI.A.1. - **IF** Feedwater Sodium is greater than 200 ppb **AND** Condensate Sodium is greater than 200 ppb, **THEN** perform the following:

- ☐ VI.A.1.a. - Trip the Reactor
- ☐ VI.A.1.b. - Perform the Reactivity control portion of EOP-0.
- ☐ VI.A.1.c. - Initiate Auxiliary Feed.
- ☐ VI.A.1.d. - Trip **BOTH** SGFPs
- ☐ VI.A.1.e. - **IMPLEMENT** the remainder of EOP-0

Reviews step against information provided on the cue sheet.  
Determines no actions are required at this time

**CUE:** The CRS is directing the Crew in the performance of AOP-10, Section VI.B☐ VI.B. - Determine required plant conditions.☐ VI.C. - Actions with power greater than or equal to 50%**NOTE:**

If SG chemistry levels are reduced below the Action Level 3 value, before or during the power reduction, power level is still required to be reduced below 5%.

☐ VI.C.1. - **IF** Plant Chemistry determines SG Chemistry is in Action Level 3, as a result of a Condenser tube leak, **THEN** commence an orderly plant shutdown to be less than 5% power as quickly as safe operation permits **PER** OP-3 and OP-4.

Determines step is N/A at this time

☐ VI.C.2. - **IF** Plant Chemistry determines that SG Chemistry is in Action Level 2, as a result of a Condenser tube leak, **THEN** perform the following actions:

Determines step is applicable

☐ VI.C.2.a. - Within 24 hours of initiating Action Level 2, reduce power to less than 50% **PER** OP-3, **NORMAL POWER OPERATION**.

Determines power must be reduced to less than 50% by 0045

ELEMENT (shaded = CRITICAL STEP)		STANDARD
<div><input type="checkbox"/> VI.C.2.b. - <b>WHEN</b> the following conditions exist:<ul style="list-style-type: none"><li>• The source of the impurity ingress is controlled</li><li>• SG Chemistry is less than the value for Action Level 2</li></ul><b>THEN</b> the power reduction may be terminated and power stabilized.</div>		Determines step is N/A at this time
<div><input type="checkbox"/> VI.C.2.c. - <b>IF</b> the SG chemistry level has <b>NOT</b> been reduced to less than Action Level 1 within 300 hours of entering Action Level 2 <b>THEN</b> consider the SG Chemistry level to be in Action Level 3, <b>AND</b> commence an orderly plant shutdown to be less than 5% power as quickly as safe operation permits <b>PER</b> OP-3 and OP-4.</div>		Determines step is N/A at this time
CUE:	12A Waterbox is secured for leak location/repair	
<div><input type="checkbox"/> VI.C.3. - Attempt to locate and repair the tube leak.</div>		Determines actions already in progress per Evaluator CUE
NOTE TO EVALUATOR: Candidate will have to refer back to Step VI.C.1. to determine actions required based on data provided in the following CUE		
CUE:	Chemistry reports S/G sodium has exceeded Action Level 3 values	
<div><input type="checkbox"/> VI.C.1. IF Plant Chemistry determines SG Chemistry is in Action Level 3, as a result of a Condenser tube leak, <b>THEN</b> commence an orderly plant shutdown to be less than 5% power as quickly as safe operation permits <b>PER</b> OP-3 and OP-4.</div>		Determines a plant shutdown to <5% power is required.
NOTE TO EVALUATOR: Candidate will have to refer back to Step VI.A.1. to determine if a Reactor Trip is required based on data provided in the following CUE		
CUE:	Chemistry reports <b>Condensate</b> and <b>Feedwater Sodium</b> levels are <b>210 ppb</b> and rising rapidly. The source appears to be 13B Waterbox.	
<div><input type="checkbox"/> VI.A. - Determine If A Reactor Trip Is Required.</div>		

ELEMENT (shaded = CRITICAL STEP)STANDARD

- ☐ VI.A.1. - **IF** Feedwater Sodium is greater than 200 ppb **AND** Condensate Sodium is greater than 200 ppb, **THEN** perform the following:
  - ☐ VI.A.1.a. - Trip the Reactor
  - ☐ VI.A.1.b. - Perform the Reactivity control portion of EOP-0.
  - ☐ VI.A.1.c. - Initiate Auxiliary Feed.
  - ☐ VI.A.1.d. - Trip **BOTH** SGFPs
  - ☐ VI.A.1.e. - **IMPLEMENT** the remainder of EOP-0

Determines reactor trip is required using values for Condensate and Feedwater Sodium levels provided by Evaluator CUE

**TERMINATING CUE:** This JPM is complete when it is determined a reactor trip is required. No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: SRO-ADMIN-2

Applicant: \_\_\_\_\_

NRC Examiner: . \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

- 1) Unit-1 is at 88% reactor power.
- 2) At 0015, 12A Waterbox was secured IAW AOP-10, Abnormal Secondary Chemistry Conditions, due to a condenser tube leak.
  - a. Condensate and Feed sodium levels are 50 ppb and 45 ppb respectively
  - b. Condensate Demineralizers are in service with full flow
  - c. Condenser High Level Dump is manually isolated
  - d. S/G Blowdown flow has been maximized
- 3) At 0045, exceeded Action Level 2 values for sodium in the Steam Generators, 52 ppb in 11 S/G & 55 ppb in 12 S/G.
- 4) At 0755, Chemistry notifies the Control Room we are still exceeding Action Level 2 values, and sodium levels are lowering slowly. Chemistry anticipates exiting Action Level 2 at 0330 tomorrow.
- 5) You are performing the duties of an extra SRO.

**Initiating Cue:**

The Shift Manager directs you to perform AOP-10, Section VI. (Please verbalize progress thru the AOP with the evaluator.)



APPLICANT: \_\_\_\_\_

CALVERT CLIFFS  
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OPERATOR EXAM

JPM #: SRO-ADMIN-3

**Facility:** Calvert Cliffs 1 & 2      **Job Performance Measure No.:** SRO-ADMIN-3  
**Task Title:** Apply Technical Specifications to a relay failure  
**Task Number:** 204.129  
**K/A** 2.2.42 - Ability to recognize system parameters that are entry-level  
**Reference:** conditions for Technical Specifications (3.9, 4.6)

Method of testing:

Simulated Performance: ☐

Actual Performance: ☒

Classroom: ☒

Simulator: ☐

Plant: ☐

**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 is at 100% power.
2. An IM Technician performed a visual inspection of ESFAS ZA Actuation Relay Cabinet. The technician reports that two SIAS A8 power relays are discolored and show signs of deformation possibly due to excessive temperature. These relays CANNOT be considered operable.
3. The affected relays are as follows:
  - SIAS A8 Relay at B5 (11 LPSI)
  - SIAS A8 Relay at B8 (11 & 12 CAC Fans)

**Initiating Cue:**

You are directed to determine which Tech Spec LCO's apply, the LCO actions that must be taken and the completion time limits for these actions. Applicable prints and the technical specifications are provided.

**Task Standard:**

Determine the TS LCO's that apply and the LCO actions that must be taken including required completion times.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

1. 1E-076 Sheet 1, LPSI Pump 11.
2. 1E-076 Sheet 11C Containment Cooling Fan 11
3. 1E-076 Sheet 11D Containment Cooling Fan 12
4. 1E-058 ESFAS Logic Diagram
5. 1E-058A ESFAS Logic Diagram
6. Technical Specifications
7. Technical Specification Basis

**General References:**

1. 1E-076 Sheet 1, LPSI Pump 11.
2. 1E-076 Sheet 11C Containment Cooling Fan 11
3. 1E-076 Sheet 11D Containment Cooling Fan 12
4. 1E-058 ESFAS Logic Diagram
5. 1E-058A ESFAS Logic Diagram
6. Technical Specifications
7. Technical Specification Basis

**Time critical task:**

No

**Validation Time:**

15 minutes

**Simulator Setup:**

None

ELEMENT (shaded + \* = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_☐ Review prints and initial conditions.

Same as element.

☐ Refer to Technical Specifications

Same as element

**Examiner Note:**

Applicant may enter TS LCO's 3.5.2 & 3.6.6 for inoperable components. This action is not necessarily required but may be entered as a conservative application of the Technical Specifications.

☐ Identify the TS LCO Actions that are required

Determines TS LCO 3.3.5 Action C applies for loss of Function 1.b (SIAS Actuation Logic) in Table 3.3.5-1

☐ Identify the TS LCO's that apply:

Determines that required action is to restore affected Actuation Logic channel(SIAS Channel A) to Operable status

☐ Identify the required completion time for the actions.

Determines that required completion time is 48 hours

**TERMINATING CUE:** This JPM is complete when applicant has determined applicable TS LCO, LCO Action required, and completion time. No further actions are required.

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

**Verification of Completion**Job Performance Measure Number: **SRO-ADMIN-3**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 is at 100% power.
2. An IM Technician performed a visual inspection of ESFAS ZA Actuation Relay Cabinet. The technician reports that two SIAS A8 power relays are discolored and show signs of deformation possibly due to excessive temperature. These relays CANNOT be considered operable.
3. The affected relays are as follows:
  - SIAS A8 Relay at B5 (11 LPSI)
  - SIAS A8 Relay at B8 (11 & 12 CAC Fans)

**Initiating Cue:**

You are directed to determine which Tech Spec LCO's apply, the LCO actions that must be taken and the completion time limits for these actions. Applicable prints and the technical specifications are provided.

APPLICANT: \_\_\_\_\_

CALVERT CLIFFS  
NUCLEAR POWER PLANT

2014 NRC

INITIAL LICENSED

OPERATOR EXAM

JPM #: SRO-ADMIN-4

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SRO-ADMIN-4**Task Title:** Approve a Liquid Waste Discharge Permit**Task Number:** 064.040**K/A Reference:** 2.3.6 (2.0, 3.8)Method of testing:Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 is in Mode 3 with 11A and 13B Waterboxes removed from service for cleaning
2. Unit-2 is at 88% power with 21A Waterbox removed from service for cleaning
3. 12 RCWMT discharge has been risk assessed and is on the schedule for today.
4. You are performing the duties of the CRS.

**Initiating Cue:**

The Shift Chemistry Technician has delivered a permit for the discharge of 12 RCWMT for your review and approval. If necessary, identify any issues associated with the planned discharge.

**Task Standard:**

This JPM is complete when the candidate rejects the permit because the required numbers of Circulating Water Pumps are not operating and RMS values are inconsistent. No further actions are required.



**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

Procedures and manuals normally available in the plant

**General References:**

CP-601, Liquid Radioactive Waste Release Permit

**Time Critical Task:**

No

**Validation Time:**

20 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_**CUE: Provide the candidate the prepared copy of CP-601, Attachment 2 (12 RCWMT Discharge Permit)**

<input type="checkbox"/> Release Criteria is understood:	Same as element.
<input type="checkbox"/> Discharge Point	Determines Unit 1 is checked.
<input type="checkbox"/> Min # Circ Water Pumps Required	Determines 5 CW Pps are required
<input type="checkbox"/> Dilution Flow Rate Pre-Release:	Determines 1,000,000 GPM is consistent with 5 CW Pps running
<input type="checkbox"/> Maximum Release Flow Rate: 120 GPM	
<input type="checkbox"/> RMS Number: 0-RE-2201	

**CUE: If checked, RMS reads as stated on permit.**

<input type="checkbox"/> RMS Background:	Checks RMS reading for agreement with permit value
<input type="checkbox"/> Expected RMS Reading:	Notes value is above RMS background
<input type="checkbox"/> Adjustable Setpoint:	Notes that Adjustable Setpoint is lower than Expected Reading

**Note to Evaluator: Candidate may determine permit criteria not met when reviewing Min # of Circ Water Pumps required.**

<input type="checkbox"/> Required plant configuration for conducting release has been established	Determines Unit 1 has only 4 CW Pps running and does not meet permit conditions
<input type="checkbox"/> Chemistry Tech discussed permit with SRO/SM.	Informs Chemistry Tech of mistakes found on permit and does not approve permit.

Terminating Cue: This JPM is complete when the candidate rejects the permit because the required numbers of Circulating Water Pumps are not operating and RMS values are inconsistent. No further actions are required. The evaluator is expected to end the JPM.

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

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**Verification of Completion**

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Job Performance Measure Number: **SRO-ADMIN-4**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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\_\_\_\_\_  
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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

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APPLICANT'S CUE SHEET

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**Initial Conditions:**

1. Unit-1 is in Mode 3 with 11A and 13B Waterboxes removed from service for cleaning
2. Unit-2 is at 88% power with 21A Waterbox removed from service for cleaning
3. You are performing the duties of the CRS.

**Initiating Cue:**

The Shift Chemistry Technician has delivered a permit for the discharge of 12 RCWMT for your review and approval. If necessary, identify any issues associated with the planned discharge.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

2014 NRC

INITIAL LICENSED

OPERATOR EXAM

JPM #: SRO-ADMIN-5

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SRO-ADMIN-5**Task Title:** Determine Appropriate Emergency Response Actions**Task Number:** 204.097**K/A Reference:** 2.4.41 (2.9, 4.6)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☒Simulator: ☐Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-2-1 was at 100% power when an electrical fault occurred on 14 4KV bus occurred.
2. A reactor trip was manually initiated by de-energizing 480VAC busses when TM/LP trip setpoints reached.
3. EOP-8 was implemented due to multiple events in progress (steam leak and LOCA in containment).
4. CSAS A cannot be verified due to failure of 11 CS pump
5. RI-5317A & B Containment High Range Rad Monitors are currently reading  $\approx 4000$  R/hr
6. You are performing the duties of the Shift Manager.
7. This JPM is **TIME CRITICAL**.

**Initiating Cue:**

You have been requested to determine appropriate Emergency Response Actions, per the ERPIP, based on the current plant conditions provided.

**Task Standard:**

Determines EAL classification, Protective Action Recommendations and completes the initial notification form within prescribed time limits.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within required time (TIME CRITICAL).

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

1. Shift Manager ERPIP Book
- ~~1-2.~~ EAL – Hot Chart
- ~~2-3.~~ EP-ChLst-MCR01 “Shift Manager Checklist”
- ~~3-4.~~ CNG-EP-1.01-1019 “Shift Emergency Operations”
- ~~4-5.~~ A blank copy of ERPIP 3.0, Attachment 3, “INITIAL NOTIFICATION FORM CNG-EP-1.01-1013 “Emergency Classification and PAR””
- ~~5-6.~~ ERPIP 3.0 Attachment 4, “GENERAL EMERGENCY ACTION SEP-Form-ALL12 “Onsite Protective Measures Flowchart”
- ~~7.~~ ERPIP 3.0 Attachment 5, “GENERAL EMERGENCY PROTECTIVE ACTION RECOMMENDATION SEP-Form-ALL36 “Emergency PA Announcements”
- ~~6-8.~~ EP-Fprm-ALL21 “CCNPP ERONS Notification Details”

**General References:**

Procedures and manuals normally available in the Control Room

**Time critical task:**

Yes

**Validation Time:**

12 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD**EVALUATOR NOTE:**

The "EAL CLOCK" starts after candidate reads "Initial Conditions" CUE sheet.

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

**EAL CLOCK TIME START:** \_\_\_\_\_

<input type="checkbox"/> Identify and locate Shift Manager Checklist	Same as element
<input type="checkbox"/> 1.1 - Entry into the Emergency Plan	
<input type="checkbox"/> 1.1.1 - Implement Checklist per CNG-EP-1.01-1019	
<input type="checkbox"/> 1.1.2 - Print your name and today's date	Same as element
<input type="checkbox"/> 1.1.3 - Call or direct an available individual to call the Shift Communicator and Dose Assessor to the Control Room	Same as element
<input type="checkbox"/> 1.2 - Emergency Classification and PAR and Notifications	
<b>NOTE:</b> Emergency Classification and declaration shall be completed as soon as possible but no later than 15 minutes from the time indications an EAL threshold being met or exceeded are available in the Control Room	
<input type="checkbox"/> 1.2.1 - If entry is due to a security event, THEN perform the appropriate actions in the station specific procedure in parallel with completing this checklist	Determines step is N/A
<input type="checkbox"/> 1.2.2 - Classify the events in progress using CNG-EP-1.01-1013, Emergency Classification and PAR	Reference Tab 3, EAL Wall Chart
<input type="checkbox"/> Identify Tab 3 CNG-EP-1.01-1013	
<input type="checkbox"/> 5.3 - Emergency Classification and Declaration	
<input type="checkbox"/> 5.3.A - An emergency condition must be assessed, classified, and declared within 15 minutes of the availability of indications that an EAL has been exceeded	Same as element
<input type="checkbox"/> 5.3.B - Assess and classify abnormal conditions	



ELEMENT (shaded = CRITICAL STEP)		STANDARD
<input type="checkbox"/> 5.3.B.1 - Determining if one or more EAL thresholds in the EAL matrix have been matched or exceeded. <input type="checkbox"/> 5.3.B.2 - Classifying the event at the highest level emergency classification for which an EAL is currently being met or exceeded		Evaluates EAL HOT CHART and determines a <b>GENERAL EMERGENCY</b> classification is warranted, under EAL <b>F.G.1.1</b> , in the Fission Product Barrier Category, based on the loss of all 3 fission product barriers.  Fuel Clad Barrier-Containment Radiation reading > 3500 rem/hr  RCS Barrier- Containment Radiation reading > 6 rem/hr  Containment Barrier->4.25psig with less than minimum cooling (2 CAC's, zero CS pumps)
<b>CUE:</b>	When a Peer Check of the EAL call is requested, acknowledge the request.	
<input type="checkbox"/> Checklist 1.2.2.A - <b>IF</b> time permits, <b>THEN</b> validate the emergency classification with the STA (peer check), if available.		Requests Peer Check from STA
<input type="checkbox"/> 1.2.2.B - Declare the event by announcing the following:  "I am declaring an _____ (EAL) at _____ (time) due to _____ (brief reason) and assuming the role as Emergency Director  <input type="checkbox"/> <b>EAL Clock Time Stop ( _____ ) minus EAL Clock Time Start ( _____ ) = _____ minutes</b>		Fills out checklist  <del>Time ≤ 15 minutes</del> Time ≤ 15 minutes
<b>CUE:</b>	DIR 10 = 265°, DIR 60 = 272°	
<input type="checkbox"/> 1.2.3 - Determine if protective actions for onsite personnel are necessary using EP-FORM-ALL 12, Onsite Protective Measures Flowchart		Implement OCA Evacuation and Accountability based on GE and safe to evacuate personnel
<b>CUE:</b>	Inform candidate the Unit-1 CRS will implement PA announcements as necessary	
<input type="checkbox"/> 1.2.4 - Announce, or direct PA announcements, for station personnel as necessary		Directs U-2 CRS to perform announcements

<u>ELEMENT (shaded = CRITICAL STEP)</u>	<u>STANDARD</u>
<input type="checkbox"/> 1.2.5 Determine the appropriate PAR per CNG-EP-1.01-1013, Emergency Classification and PAR	Reference TAB 3
<input type="checkbox"/> EP-1.01-1013 5.4.B If the event is classified as a General Emergency, then go to appropriate attachment	Reference Attachment 2 for CCNPP
<input type="checkbox"/> Att 2 Step 1.A If a controlled release.....	Determines step is N/A
<input type="checkbox"/> Att 2 Step 1.B <b>IF</b> the criteria of item A above are <b>NOT</b> met, <b>THEN</b> select appropriate PAR as follows:	
<input type="checkbox"/> Att 2 Step 1.B.1 <b>IF</b> "From" wind direction is between 168.75 – 303.75, <b>THEN</b> recommend: <input type="checkbox"/> Evacuate <b>PAZ 1</b> unless conditions make evacuation dangerous, notify the public in PAZ 1 to take KI, shelter remainder of the 10 mile EPZ	Same as Element
<input type="checkbox"/> SM Checklist 1.3 Notifications for Change in Classification or PAR	
<input type="checkbox"/> 1.3.1 <b>IF</b> the ERO has <b>NOT</b> been activated, <b>THEN</b> notify the ERO as follows: <input type="checkbox"/> 1.3.1.A Complete station specific ERONS Notification Details Form	Determines step is Applicable and references Tab 6
<input type="checkbox"/> Tab 6 EP-FORM-ALL21	
<input type="checkbox"/> Event	Drill
<input type="checkbox"/> Reason for Notification	General Emergency
<input type="checkbox"/> Action	Staff Normal Emergency Facilities for Emergency
<input type="checkbox"/> Time Event Declared	Enters time event determination made
<input type="checkbox"/> Message Approval	Signs name and enters current time
<input type="checkbox"/> SM Checklist 1.3.1.B (NMP ONLY) ....	Determines step is N/A
<input type="checkbox"/> 1.3.1.C Provide completed ERONS form to Shift Communicator <b>AND</b> direct them to notify ERO	Gives form to Communicator

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> 1.3.1.D <b>IF</b> no one is available .....		Determines step is N/A
<b>NOTE:</b> Notification to the state and local are required within 15 minutes of the Emergency Declaration or a change in PAR		
<input type="checkbox"/> 1.3.2.A - Complete station specific initial notification form		References Tab 8 EP-FORM-ALL23
<input type="checkbox"/> Complete Item A.1.		Checks <b>"is"</b> a drill
<input type="checkbox"/> Complete Item A.2.		Checks <b>"Unit-21"</b>
<input type="checkbox"/> Complete Item A.3.		Checks <b>"General Emergency"</b>
<input type="checkbox"/> Complete Item A.4.		Enters <b>"F.G.1.1"</b>
<input type="checkbox"/> Complete Item A.5.		Checks <b>"Yes"</b>
<input type="checkbox"/> Complete Item A.5.a		Checks <b>"Yes"</b>
<input type="checkbox"/> Complete Item A.5.b		Checks <b>"Airborne"</b>
<input type="checkbox"/> Complete Item A.6.		Checks box for <b>"A.6.c"</b> , "Evacuate <b>PAZ 1</b> unless conditions make evacuation dangerous, notify the public in PAZ 1 to take KI, shelter remainder of the 10 mile EPZ."
<input type="checkbox"/> Complete Item A.7.		Time entered is time GE declared not current time. Date is current date.
<input type="checkbox"/> Complete ED name & signature		Same as element
<input type="checkbox"/> SM Checklist 1.3.2.A.1 <b>(GNP Only)</b> .....		Determines step is N/A
<b>CUE:</b>	When a Peer Check of the EAL call is requested, acknowledge the request.	
<input type="checkbox"/> 1.3.2.B - IF time permits, THEN obtain a peer check of completed form information		Same as element
<input type="checkbox"/> 1.3.2.C - Provide completed form to the Shift Communicator <b>AND</b> direct them to notify State and Local		Same as element Time ≤ 15 minutes

ELEMENT (shaded = CRITICAL STEP)STANDARD

<input type="checkbox"/> <b>EAL Form to Communicator ( _____ ) minus EAL Clock Time Stop ( _____ ) = _____ minutes</b>	
--	--

**TERMINATING CUE:** This JPM is complete when an EAL classification is determined based on given plant conditions, the initial notification form is completed **and** the CR Communicator has been requested to recall the ERO and to notify offsite agencies. No further actions are required. The evaluator is expected to end the JPM.

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



**APPLICANT'S CUE SHEET****Initial Conditions:**

1. Unit-2-1 was at 100% power when an electrical fault occurred on 14 4KV bus occurred.
2. A reactor trip was manually initiated by de-energizing 480VAC busses when TM/LP pre-trip setpoints reached.
3. EOP-8 was implemented due to multiple events in progress (steam leak and LOCA in containment).
4. CSAS A cannot be verified due to failure of 11 CS pump
5. RI-5317A & B Containment High Range Rad Monitors are currently reading  $\approx 4000$  R/hr
6. You are performing the duties of the Shift Manager.
7. This JPM is **TIME CRITICAL**.

**Initiating Cue:**

You have been requested to implement Emergency Response Actions, per the ERPIP, based on the current plant conditions provided.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: SIM-1 (Alt Path)

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2  
**Path)**

**Job Performance Measure No.:** SIM-1 (Alt

**Task Title:** Evaluates Operator's ability to align a LPSI Pp for Core Flush via Hot Leg Injection

**Task Number:** 201.058

**K/A Reference:** 005.A4.01 (3.6, 3.4), 011.EA1.11 (4.2, 4.2)

**Method of testing:**

Simulated Performance: ☐

Actual Performance: ☒

Classroom: ☐

Simulator: ☒

Plant: ☐

**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. A Loss of Coolant Accident (LOCA) has occurred on Unit-1.
2. SIAS actuated 9 hours ago.
3. RCS pressure ~ 20 PSIA with CETs indicating ~ 230° F
4. Containment pressure is ~ 5 PSIG.
5. Core flush, using 11 HPSI Pp for Pressurizer Injection via the Charging Header, is aligned thru EOP-5, Step IV.AE.1.g.
6. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to continue with the procedure, beginning at Step IV.AE.1.h., of EOP-5-1.

**Task Standard:**

Establishes Core Flush, via Hot Leg Injection, using 11 Low Pressure Safety Injection Pump

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

EOP-5, Loss of Coolant Accident (Unit-1)

**General References:**

Procedures and manuals normally available in the Control Room

**Time critical task:**

No

**Validation Time:**

25 minutes

**Simulator Setup:**

- \_\_\_\_\_ 1. Reset to IC-24 with both units at 100% (IC-117 is 1 min prior to RAS with RCS Cold Leg Rupture **rcs001** at **100% inserted**)
- \_\_\_\_\_ 2. Place simulator in **RUN**.
- \_\_\_\_\_ 3. Insert following Malfunctions/Remote Functions:
  - \_\_\_\_\_ a. RCS Cold Leg 12B Rupture: **rcs001** at **100%** at time **zero**
  - \_\_\_\_\_ b. 1-SI-651-MOV Bkr: **1-SI-651-MOV** to **CLOSED**, with a **15 second delay**, on **Event 1**
  - \_\_\_\_\_ c. 1-SI-652-MOV Bkr: **1-SI-652-MOV** to **CLOSED**, with a **45 second delay**, on **Event 1**
- \_\_\_\_\_ 4. Perform applicable EOP Block steps thru Step R, Prepare for RAS.
- \_\_\_\_\_ 5. **WHEN** RAS actuates, perform Step S, Verify RAS Actuation; Step AD, Perform LOW Temperature Actions; and Step AE.1, Commence Core Flush using Pressurizer Injection, thru Step AE.1.g.
- \_\_\_\_\_ 6. IF required, insert Override **P1C07\_1FIA212\_MT** (1-FIA-212 CHRG FLOW MT) to a final value of **100 GPM** with **no ramp time**
- \_\_\_\_\_ 7. Place 11 & 12 LPSI Pump Handswitches in PTL.
- \_\_\_\_\_ 8. Place simulator in **FREEZE**.
- \_\_\_\_\_ 9. Obtain an Independent Verification for steps 3, 4, 5, and 6.
- \_\_\_\_\_ 10. Acknowledge all panel alarms and plant computer alarms and ensure "Horn On" for annunciators.
- \_\_\_\_\_ 11. Select "Clock" time.
- \_\_\_\_\_ 12. **WHEN** cued by evaluator, go to **RUN**.
- \_\_\_\_\_ 13. **WHEN** cued by evaluator, activate **Event 1**.

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_**EXAMINER's NOTE**

Once applicant has located the correct section of the EOP, provide them with a working copy of the procedure section.

Locates EOP-5-1, Step IV.AE.1.h.

<input type="checkbox"/> IV.AE.1.g. - <b>IF</b> 13 HPSI PP is available, <b>THEN</b> perform the following actions:	Same as element
<input type="checkbox"/> IV.AE.1.h.(1) - Verify 13 HPSI PP is running.	Same as element
<input type="checkbox"/> IV.AE.1.h.(2) - Verify HPSI HDR XCONN valve, 1-SI-653-MOV, is shut.	Same as element
<input type="checkbox"/> IV.AE.1.h.(3) - Shut AUX HPSI HDR valves: <ul style="list-style-type: none"> <li><input type="checkbox"/> 1-SI-617-MOV</li> <li><input type="checkbox"/> 1-SI-627-MOV</li> <li><input type="checkbox"/> 1-SI-637-MOV</li> <li><input type="checkbox"/> 1-SI-647-MOV</li> </ul>	Same as element
<input type="checkbox"/> IV.AE.1.h.(4) - Verify 11 or 12 HPSI PP is running.	Same as element
<input type="checkbox"/> IV.AE.1.h.(5) - <b>IF</b> approximately 150 GPM is <b>NOT</b> indicated <b>THEN</b> initiate Hot Leg Injection.	Determines step is Applicable. Proceeds to Step IV.AE.1.1
<b>BEGIN ALTERNATE ACTIONS</b>	
<input type="checkbox"/> IV.AE.1.1 - <b>IF</b> Pressurizer Injection is <b>NOT</b> adequate <b>AND</b> the following conditions are met: <ul style="list-style-type: none"> <li><input type="checkbox"/> RCS pressure is less than 270 PSIA {245}</li> <li><input type="checkbox"/> RCS pressure minus containment pressure is &lt;75 PSID</li> <li><input type="checkbox"/> HPSI PP(s) are available</li> </ul> <b>THEN</b> line up for Hot Leg Injection as follows:	Determines step is APPLICABLE.
<b>CUE:</b>	The CRS desires that 11 LPSI Pump be used for Hot Leg Injection
<input type="checkbox"/> IV.AE.1.1.a. - Place the selected LPSI PP RAS OVERRIDE switch in OVERRIDE.	Same as element
<input type="checkbox"/> IV.AE.1.1.b. - Verify the CNTMT SUMP DISCH valves are open: <ul style="list-style-type: none"> <li><input type="checkbox"/> 1-SI-4144-MOV</li> <li><input type="checkbox"/> 1-SI-4145-MOV</li> </ul>	Same as element

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> IV.AE.1.1.c. - Open SDC RECIRC ISOL valve, 1-SI-399-MOV.		Same as element
<input type="checkbox"/> IV.AE.1.1.d. - Shut LPSI HDR valves: <ul style="list-style-type: none"> <li><input type="checkbox"/> 1-SI-615-MOV</li> <li><input type="checkbox"/> 1-SI-625-MOV</li> <li><input type="checkbox"/> 1-SI-635-MOV</li> <li><input type="checkbox"/> 1-SI-645-MOV</li> </ul>		Same as element
<b>CUE:</b>	Acknowledge, as ABO, and activate <b>Event 1</b> to close the breakers for 1-SI-651-MOV (52-11466) and 1-SI-652-MOV (52-10424) and report completed.	
<input type="checkbox"/> IV.AE.1.1.e. - Close the power supply breaker to the SDC HDR RETURN ISOL valves: <ul style="list-style-type: none"> <li><input type="checkbox"/> 1-SI-651-MOV breaker, 52-11466</li> <li><input type="checkbox"/> 1-SI-652-MOV breaker, 52-10424</li> </ul>		Contacts ABO to shut associated breakers
<b><u>Evaluator NOTE:</u></b> Operator must hold handswitch in OPEN for each valve OR valve will stop moving.		
<input type="checkbox"/> IV.AE.1.1.f. - Open SDC HDR RETURN ISOL valves: <ul style="list-style-type: none"> <li><input type="checkbox"/> 1-SI-651-MOV</li> <li><input type="checkbox"/> 1-SI-652-MOV</li> </ul>		Same as element
<input type="checkbox"/> IV.AE.1.1.g. - Start the selected LPSI PP.		Starts 11 LPSI PP per previous CUE.
<input type="checkbox"/> IV.AE.1.1.h. - Maintain a flowrate of at least 150 GPM.		Verifies from LPSI HDR flow indication, on 1-FIC-306, that adequate flow exists.
<b>END ALTERNATE ACTIONS</b>		

**TERMINATING CUE:** This JPM is complete when the operator has determined that adequate flow exists after HOT LEG injection is established. No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: SIM-1

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Applicant Response: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. A Loss of Coolant Accident (LOCA) has occurred on Unit-1.
2. SIAS actuated 9 hours ago.
3. RCS pressure ~ 20 PSIA with CETs indicating ~ 230° F
4. Containment pressure is ~ 5 PSIG.
5. Core flush, using 11 HPSI Pp for Pressurizer Injection via the Charging Header, is aligned thru EOP-5, Step IV.AE.1.g.
6. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to continue with the procedure, beginning at Step IV.AE.1.h., of EOP-5-1.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: SIM-2 (Alt Path)



APPLICANT: \_\_\_\_\_

Rev. 1

Incorporated comments from NRC validation of JPM

**Facility:** Calvert Cliffs 1 & 2  
**Path)**

**Job Performance Measure No.:** SIM-2 (Alt

**Task Title:** Respond to CEA(s) Misaligned by 15 inches or more

**Task Number:** 202.008

**K/A Reference:** 003AA1.02 (3.6, 3.4)

**Method of testing:**

Simulated Performance: ☐

Actual Performance: ☒

Classroom: ☐

Simulator: ☒

Plant: ☐

**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 is in Mode 1 at 100% power.
2. STP O-29-1, MONTHLY CEA PARTIAL MOVEMENT TEST, was in progress. When CEA 01 was being exercised, it became misaligned from its group.
3. AOP-1B has been implemented and all stabilizing actions have been performed.
4. Electrical Maintenance discovered and replaced a faulty power supply during troubleshooting.
5. CEA alignment time expires in 90 minutes.
6. You are performing the duties of the Unit-1 RO.
7. The CRO is responsible to hold power constant during Control Rod realignment.

**Initiating Cue:**

The CRS directs you to realign CEA #1 per AOP-1B Step VI.B. **Are there any questions? You may begin.**

**Task Standard:**

**Manually realigns CEA-01 to within 7.5 inches of the remaining CEAs in Group 5. Trips reactor when CEA-01 and CEA-36 drop into the core. Verifies Reactor is shut down.**

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

AOP-1B, CEA Malfunction

AOP-1B Trip Criteria Hard Card

**General References:**

1C05-ALM, Reactivity Control Alarm Manual

AOP-1B, CEA Malfunction

**Time critical task:**

No

**Validation Time:**

15 minutes

**Simulator Setup/Booth Operator Instructions:**

- \_\_\_\_\_ 1. **Reset** to IC-24 with both units at 100%.
- \_\_\_\_\_ 2. Place Simulator in **RUN**.
- \_\_\_\_\_ 3. Select Manual Individual, depress Group 5 Inhibit Bypass, depress and hold CMI Bypass pushbutton, then insert CEA #1 to approximately 110 inches withdrawn. After 5 seconds release the CMI Bypass pushbutton.
- \_\_\_\_\_ 4. Place CEDS control panel in **OFF**
- \_\_\_\_\_ 5. Place the Group 5 Inhibit Bypass to **OFF**.
- \_\_\_\_\_ 6. Verify the button for Group 5 is selected (lit)
- \_\_\_\_\_ 7. Verify the individual CEA button for CEA #1 is selected (lit).
- \_\_\_\_\_ 8. Allow plant to stabilize.
- \_\_\_\_\_ 9. CEA 01 Drop: **ceds012\_01** on **Event 1**.
- \_\_\_\_\_ 10. CEA 36 Drop: **ceds012\_36** on **Event 1** with a **15 second delay**.
- \_\_\_\_\_ 11. Obtain Independent Verification for completion of steps 3 through 11.
  - \_\_\_\_\_ 3. CEA #1 inserted to approximately 110 inches withdrawn.
  - \_\_\_\_\_ 4. CEDS control panel in OFF
  - \_\_\_\_\_ 5. Group 5 Inhibit Bypass to OFF
  - \_\_\_\_\_ 6. Group 5 is selected (lit)
  - \_\_\_\_\_ 7. CEA button for CEA #1 is selected (lit)
  - \_\_\_\_\_ 8. Plant is stabilized
  - \_\_\_\_\_ 9. CEA 01 Drop is assigned to Event 1
  - \_\_\_\_\_ 10. CEA 36 Drop is assigned to Event 1 with 15 second delay
- \_\_\_\_\_ 12. Acknowledge all panel and plant computer alarms.
- \_\_\_\_\_ 13. Ensure "HORN ON" for annunciation.
- \_\_\_\_\_ 14. Select Clock Time and **GO TO FREEZE**.
- \_\_\_\_\_ 15. Place in **CONTINUE**
- \_\_\_\_\_ 16. When cued by evaluator, actuate **Event 1**.

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_**CUE** Once AOP-1B is located, hand AOP-1B Trip Criteria Hard Card to applicant☐ Locates AOP-1B Section VI.B - ATTEMPT CEA REALIGNMENT

Same as element.

☐ VI.B.1 - **IF** at any time the CEA is realigned, **THEN** perform the subsequent actions in Section IV., PRELIMINARY, Step B, Page 16.

Determines step is N/A.

**CUE:** There is 90 minutes remaining for realignment of CEA-01.☐ VI.B.2 - **IF** the CEA alignment time has expired, **THEN PROCEED** to Step B.4, Page 24.

Determines step is N/A.

**CAUTION****CEA movement should be minimized until the cause of the misalignment has been determined.****CUE:** The electric shop discovered and replaced a faulty power supply during the troubleshooting. The CRS directs you to continue the procedure.**CUE:** The CRS has directed the CRO to maintain power level no higher than the present level using boration per OI-2B.☐ VI.B.3 - Attempt to realign the affected CEA(s):

Same as element

☐ VI.B.3.a. - Maintain Reactor Power as required by :☐ Boration **PER** OI-2B, CVCS BORATION, DILUTION AND MAKEUP OPERATIONS.**OR**☐ Adjust Regulating CEAs.

Determines no action needed based on Cue from evaluator.

☐ VI.B.3.b. - Select the desired group.

Checks group 5 selected.

☐ VI.B.3.c. - Select the desired CEA.

Checks CEA 01 selected.

☐ VI.B.3.d. - Select Manual Individual Mode.

Same as element

☐ VI.B.3.e. - **IF** CMI is in effect, **THEN** override CMI as follows:

Determines CMI is in effect.

**NOTE**

CMI will be bypassed to the affected group and applied to all other groups, and CMI Bypass annunciation will alarm.

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> VI.B.3.e.(1) - Depress the Group Inhibit Bypass pushbutton.		Same as element
<input type="checkbox"/> VI.B.3.e.(2) - Depress and hold the Motion Inhibit Bypass pushbutton for at least 5 seconds before <b>AND</b> 5 seconds after CEA motion.		Same as element
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p><b>Do NOT allow Reactor Power to rise above the power the unit was stabilized at in Section IV., <u>PRELIMINARY</u>, Step A.2, while the CEA is being realigned. Turbine load shall NOT be raised until the CEA is within its alignment requirements.</b></p>		
<input type="checkbox"/> VI.B.3.f. - Realign the CEA:		
<input type="checkbox"/> VI.B.3.f.(1) - IF the CEA must be withdrawn, THEN withdraw the CEA using the "Pull and Wait" method:		Determines step is applicable
<input type="checkbox"/> For shutdown CEA's, pull 3.75 inches and wait 10 seconds		Determines this rate is N/A.
<input type="checkbox"/> For regulating CEAs, pull 5.25 inches and wait 15 seconds		Determines rate is applicable and commences recovery of CEA-01 <b>(withdraws CEA no more than 6.75" each time CEA is withdrawn).</b>
<input type="checkbox"/> VI.B.3.f.(2) - IF the CEA must be inserted, then insert the CEA.		Determines step is N/A
<p style="text-align: center;"><b><u>EVALUATOR NOTE:</u></b></p> <p>The intent of this JPM, going forward, is for the <b>OPERATOR</b> to <u>recognize</u> that a Reactor Trip is required when two CEAs become misaligned by greater than 15 inches per Step V.A.1. criteria.</p>		
<b>CUE:</b>	Signal the booth operator to activate <b>Event 1</b> to drop CEA-01 to the bottom after the student has performed a minimum of two pull and wait cycles. CEA-36 will drop when CEA 01 is fully inserted.	
The following alarms annunciate when CEA # 01 drops: <input type="checkbox"/> Dropped CEA PI, <input type="checkbox"/> Primary PDIL, <input type="checkbox"/> Secondary PPDIL, <input type="checkbox"/> Secondary PDIL, and <input type="checkbox"/> CEA deviation alarms annunciate		Operator stops withdrawing CEA, notes alarms and CEA status, and recommends tripping the reactor

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
Locates AOP-1B, Section V.A.1 - PLANT SHUTDOWN		Same as element
<b>PERFORM ALTERNATE ACTIONS</b>		
<input type="checkbox"/> V.A.1. - <b>IF</b> two or more CEAs are misaligned from the other CEAs in their respective group by greater than 15 inches, <b>THEN</b> perform the following actions:		Same as element
<b>CUE:</b>	<b>IF</b> the operator recommends tripping the reactor to the CRS, <b>acknowledge</b> tripping the reactor and implement EOP-0.	
<input type="checkbox"/> V.A.1.a. - Trip the reactor		Depresses manual reactor trip buttons on 1C05.
<b>END OF ALTERNATE ACTIONS</b>		
<input type="checkbox"/> V.A.1.b. - IMPLEMENT EOP-0, POST TRIP IMMEDIATE ACTIONS.		Verifies reactor is tripped by observing a prompt drop in NI power and a negative startup rate. Reports reactor is tripped.

**TERMINATING CUE:** This JPM is complete when the manual reactor trip pushbuttons are depressed, the reactor is verified tripped and the reactor is reported tripped. No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: **SIM-2**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Applicant Response: \_\_\_\_\_

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\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_



**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 is in Mode 1 at 100% power.
2. STP O-29-1, MONTHLY CEA PARTIAL MOVEMENT TEST, was in progress. When CEA 01 was being exercised, it became misaligned from its group.
3. AOP-1B has been implemented and all stabilizing actions have been performed.
4. Electrical Maintenance discovered and replaced a faulty power supply during troubleshooting.
5. CEA alignment time expires in 90 minutes.
6. You are performing the duties of the Unit-1 RO.
7. The CRO is responsible to hold power constant during Control Rod realignment.

**Initiating Cue:**

The CRS directs you to realign CEA #1 per AOP-1B Step VI.B. **Are there any questions? You may begin.**

APPLICANT: \_\_\_\_\_

CALVERT CLIFFS  
NUCLEAR POWER PLANT

2014 NRC

INITIAL LICENSED

OPERATOR EXAM

JPM #: SIM-3 (Alt Path)

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SIM-3 (Alt Path)**Task Title:** Attempt to Correct the Abnormal SDC Condition**Task Number:** 202.026**K/A Reference:** 025AK3.03 (3.9, 4.1)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☐Simulator: ☒Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 has been shut down for 5 days and is presently in Mode 5 to repair RCS instrumentation sensing lines.
2. SDC is in service, using 12 LPSI Pp, and RCS temperature is 150°F. The RCS is being cooled down to a temperature band of 100-110°F.
3. RCS pressure is 150 PSIA with a bubble in the Pressurizer. The S/Gs are still available.
4. The ABO reported smoke coming from 12 LPSI Pp motor.
5. 12 LPSI Pp Breaker has just tripped.
6. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to respond to the Loss of SDC per AOP-3B, Abnormal Shutdown Cooling Conditions, starting in Section IV, Step A.6.

**Task Standard:**

SDC flow is restored, using a Containment Spray Pump, per AOP-3B. Reactor Coolant system temperature is observed to be lowering.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

AOP-3B, Abnormal Shutdown Cooling Conditions

**General References:**

Procedures and manuals normally available in the control room

**Time critical task:**

No

**Validation Time:**

15 minutes

**Simulator Setup/Booth Operator Instructions:**

- \_\_\_\_\_ 1. **Reset** to IC-07, (Unit-1 in Mode 5 with a PZR bubble with the RCS at 150° F and 250 PSIA).
- \_\_\_\_\_ 2. **Insert** the following malfunctions/overrides:
  - \_\_\_\_\_ 3. 11 LPSI Pump Bkr Failure: **si003\_01**, on **Event 1**
  - \_\_\_\_\_ 4. 12 LPSI Pump Bkr Failure: **si003\_02**, on **Event 1**
  - \_\_\_\_\_ 5. 11 CS PP DISCH: **1-SI-314**, to **1.0** on **Event 2**
  - \_\_\_\_\_ 6. 11 LPSI RWT SUCTION: **1-SI-444**, to **1.0** on **Event 2**
- \_\_\_\_\_ 7. Place in **RUN**
- \_\_\_\_\_ 8. Lower RCS Pressure to approximately 150 PSIA using Auxiliary Spray.
- \_\_\_\_\_ 9. Activate **Event 1**.
- \_\_\_\_\_ 10. Place in **FREEZE**.
- \_\_\_\_\_ 11. Obtain Independent Verification for completion of the following steps:
  - \_\_\_\_\_ 5. 11 CS PP DISCH, 1-SI-314, is set to open on Event 2
  - \_\_\_\_\_ 6. 11 LPSI RWT SUCTION, 1-SI-444, is set to open on Event 2
  - \_\_\_\_\_ 8. RCS Pressure has been stabilized at approximately 150 PSIA
  - \_\_\_\_\_ 9. 11 & 12 LPSI Pump Bkr Failures are inserted as Event 1
  - \_\_\_\_\_ 10. Simulator has been placed in FREEZE
- \_\_\_\_\_ 12. Acknowledge all panel and plant computer alarms.
- \_\_\_\_\_ 8. Select "Horn On" for annunciators.
- \_\_\_\_\_ 9. Select "Clock" time.
- \_\_\_\_\_ 10. When cued by evaluator, place in **RUN**.
- \_\_\_\_\_ 11. When directed, activate **Event 2** to open 1-SI-314 and 1-SI-444. Report complete after agreed upon delay (≈60 seconds each).

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>TIME START:</b> _____	
Locates AOP-3B, Step IV.A.6.	Same as element.
<b>IV.A. PRELIMINARY</b>	
<input type="checkbox"/> IV.A.6. - <b>IF</b> SDC is lost due to failure of the operating LPSI PP <b>AND</b> the cause will <b>NOT</b> result in a common mode failure, <b>THEN</b> complete the following actions:	Determines step is applicable.
<input type="checkbox"/> IV.A.6.a. - Place the failed PP handswitch in PULL TO LOCK.	Places 12 LPSI in PTL. Determines 12 LPSI Pump failure will not result in a common mode failure.
<input type="checkbox"/> IV.A.6.b. - <b>IF</b> RCS purification is in service, <b>THEN</b> place IX BYP valve handswitch 1-HS-2520 in the BYP position.	Same as element.
<input type="checkbox"/> IV.A.6.c. - Shut S/D COOLING TEMP CONTR valve, 1-SI-657-CV.	Lowers output of HIC-657 on 1C09 to zero or places HS-3657 on 1C09 to CLOSE. Checks position indication for SI-657.
<input type="checkbox"/> IV.A.6.d. - Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in MANUAL.	Shifts FIC-306 on 1C08 to MANUAL.
<input type="checkbox"/> IV.A.6.e. - Adjust the output of the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to 95%.	Adjusts output of FIC-306 to 95%.
<input type="checkbox"/> IV.A.6.f. - Verify <b>BOTH</b> RAS OVERRIDE switches in OVERRIDE: <input type="checkbox"/> 11 LPSI PP RAS OVERRIDE, 1-HS-302XA <input type="checkbox"/> 12 LPSI PP RAS OVERRIDE, 1-HS-302YA.	Checks position on HS-302XA and 302YA on 1C08 and 1C09. If not in OVERRIDE position, places HS in OVERRIDE
<b><u>CAUTION:</u></b> <b>Before starting the standby LPSI PP, the cause for the running LPSI PP failure should be determined to preclude a common mode failure.</b>	
<b>CUE:</b>	The CRS states that 11 LPSI is not affected by the same motor issue that caused 12 LPSI pump to trip.

ELEMENT (shaded = CRITICAL STEP)STANDARD

<input type="checkbox"/> IV.A.6.g. Start the standby LPSI PP.	Tries to start 11 LPSI. Determines pump has not started. Goes to the alternate action step IV.A.6.g.1.
<b>PERFORM ALTERNATE ACTION(S)</b>	
<b>CUE:</b>	<ul style="list-style-type: none"> <li>• CRS reports he will assign the extra operator to perform B, Page 17.</li> <li>• CRS reports steps C.1 thru C.4 have been completed and directs you to begin at Step C.5.</li> </ul>
<input type="checkbox"/> IV.A.6.g.1.- <b>IF</b> the standby LPSI PP does <b>NOT</b> start, <b>THEN</b> assign an operator to perform B, Page 17, AND concurrently <b>PROCEED</b> to Step C, Page 20	Determines extra CRO will perform step B and next step is C.5 based on CRS direction.
<b>IV.C. ATTEMPT TO RESTORE FROM ABNORMAL SDC CONDITION</b>	
<input type="checkbox"/> IV.C.5. - <b>IF NO</b> LPSI PPs are available, <b>THEN</b> align the CS PPs for cooling.	Determines step is applicable.
<p style="text-align: center;"><b><u>CAUTION:</u></b></p> <p><b>To prevent CS Pump shaft seal and bearing damage, RCS temperature shall be less than 120° F OR the associated ECCS Pump Room Air Cooler shall be functional.</b></p>	
<input type="checkbox"/> IV.C.5.a. - Verify RCS temperature less than 120° F <b>OR</b> the associated ECCS PP Room Air Cooler is functional.	Checks that ECCS PP Room Air Coolers are not OOS.
<p style="text-align: center;"><b><u>CAUTION:</u></b></p> <p><b>To prevent over pressurization of the ECCS PP suction headers, RCS pressure shall be less than 170 PSIA.</b></p>	
<input type="checkbox"/> IV.C.5.b. - Check that RCS pressure is less than 170 PSIA.	Checks RCS pressure less than 170 PSIA on PI-103 and/or PI-103-1 on panel 1C06.
<input type="checkbox"/> IV.C.5.c. - Check that the SDC HDR RETURN ISOL valves are open: <input type="checkbox"/> 1-SI-651-MOV <input type="checkbox"/> 1-SI-652-MOV	Same as element

ELEMENT (shaded = CRITICAL STEP)STANDARD

<input type="checkbox"/> IV.C.5.d. - Shut the 11 RWT OUT valves: <input type="checkbox"/> 1-SI-4142-MOV <input type="checkbox"/> 1-SI-4143-MOV	Same as element
<input type="checkbox"/> IV.C.5.e. - Isolate CS PP Min Flow to the RWT:	
<input type="checkbox"/> IV.C.5.e.(1) - Place the SI PP RECIRC LOCKOUT handswitches to ON. <input type="checkbox"/> 1-HS-3659A <input type="checkbox"/> 1-HS-3660A	Same as element
<input type="checkbox"/> IV.C.5.e.(2) - Shut the MINI FLOW RETURN TO RWT ISOL valves: <input type="checkbox"/> 1-SI-659-MOV <input type="checkbox"/> 1-SI-660-MOV	Same as element
<b>CUE:</b>	CRS directs use of 11 CS PP <b>Driver:</b> Acknowledge request. Activate <b>Event 2</b> to open 1-SI-314 and 1-SI-444. Report complete after agreed upon time delay (≈60 seconds each).
<input type="checkbox"/> IV.C.5.f. - <b>IF</b> 11 CS PP is desired for SDC, <b>THEN</b> open the following valves: <input type="checkbox"/> 11 CS PP Discharge valve, 1-SI-314 <input type="checkbox"/> 11 LPSI PP NORM SUCT ISOL valve, 1-SI-444	Contacts ABO to position 1-SI-314 and 1-SI-444 to the open position
<input type="checkbox"/> IV.C.5.g. - <b>IF</b> 12 CS PP is desired for SDC...	Determines step is N/A.
<input type="checkbox"/> IV.C.5.h. - Shut the S/D COOLING TEMP CONTR valve, 1-SI-657-CV.	Verifies output of 1-HIC-657 is zero or 1-HS-3657 is in CLOSE. Checks position indication for 1-SI-657.
<input type="checkbox"/> IV.C.5.i. - Place the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in MANUAL.	Same as element



<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> IV.C.5.j. - Adjust the output of the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to 95%.	Same as element	
<input type="checkbox"/> IV.C.5.k. - Start the selected CS PP.	Starts 11 CS PP	
<input type="checkbox"/> IV.C.5.l. - Slowly adjust the SHUTDOWN CLG FLOW CONTR, 1-FIC-306, to raise SDC flow to 1500-2000 GPM.	Same as element	
<b>CUE:</b>	CRS desires SHUTDOWN CLG FLOW CONTR, 1-FIC-306, be placed in auto	
<input type="checkbox"/> IV.C.5.m. - <b>IF</b> desired to place SHUTDOWN CLG FLOW CONTR, 1-FIC-306, in AUTO, <b>THEN</b> perform the following.		
<input type="checkbox"/> IV.C.5.m.(1) - Adjust the setpoint on 1-FIC-306 to match SDC flow	Same as element	
<input type="checkbox"/> IV.C.5.m (2) - Place 1-FIC-306 in AUTO.	Same as element	
<b>CUE:</b>	The CRS directs to continue RCS cooldown to a temperature band of 100 to 110 °F	
<input type="checkbox"/> IV.C.5.n. - Adjust the S/D COOLING TEMP CONTR valve, 1-SI-657-CV, as desired.	<p><b>IF</b> 1-HS-3657 is in CLOSE, places in AUTO then raises output of 1-HIC-3657 to lower RCS temperature.</p> <p>Checks RCS temperature slowly lowering (TR-351 on panel 1C09).</p>	
<b>ALTERNATE ACTION(S) COMPLETED</b>		

**TERMINATING CUE:** This JPM is complete when SDC has been restored using a CS Pump and SDC temperature is observed to be lowering. The evaluator is expected to end the JPM. No further actions are required.

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

**Verification of Completion**Job Performance Measure Number: **SIM-3**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

\_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 has been shut down for 5 days and is presently in Mode 5 to repair RCS instrumentation sensing lines.
2. SDC is in service, using 12 LPSI Pp, and RCS temperature is 150°F. The RCS is being cooled down to a temperature band of 100-110°F.
3. RCS pressure is 150 PSIA with a bubble in the Pressurizer. The S/Gs are still available.
4. The ABO reported smoke coming from 12 LPSI Pp motor.
5. 12 LPSI Pp Breaker has just tripped.
6. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to respond to the Loss of SDC per AOP-3B (Abnormal Shutdown Cooling Conditions) starting in Section IV, Step A.6.

**Are there any questions? You may begin.**

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: SIM-4 (Alt Path)

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SIM-4 (Alt Path)**Task Title:** Respond to a Failure of a Pump with Reactor Power < 5%**Task Number:** 202.037**K/A Reference:** 054AA1.02 (4.4, 4.4), 054AA2.03 (4.1, 4.2)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☐Simulator: ☒Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 is at ~0.5% power during plant startup from an extended outage.
2. 13 Condensate pump is tagged out.
3. Annunciator windows C-01 and C-02 "11 & 12 CONDS PUMP OIL FLOW LO" on 1C03 came into alarm. Shortly thereafter, 11 and 12 Condensate pumps tripped.
4. 11 & 12 SGFP's subsequently tripped on low suction pressure and annunciator windows C-25 "SGFP(S) SUCT PRESS LO" and C-26 "11 SGFPT TRIP" and C-30 "12 SGFPT TRIP" on 1C03 are in alarm.
5. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to respond to the Condensate Pump trip per AOP-3G, Main Feedwater Malfunctions, Section VI, Block Step A.

**Task Standard:**

Restores S/G levels using the Auxiliary Feedwater per the appropriate plant procedure.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

AOP-3G, Main Feedwater Malfunctions

**General References:**

Procedures and manuals normally available in the control room

**Time critical task:**

No

**Validation Time:**

20 minutes

**Simulator Setup:**

- \_\_\_\_\_ 1. Reset to IC-9 (U-1 ZPPDIL with 11 SGFP in service).
  - \_\_\_\_\_ a. Pull CEA's to criticality and level power at 10<sup>-5</sup>%
- \_\_\_\_\_ 2. Insert the following malfunctions / overrides
  - \_\_\_\_\_ a. 13 Cond Pp: **P1C03\_1HS4428**, to **PULL**, at **time zero**.
  - \_\_\_\_\_ b. 11 Cond Pp Breaker failure: **cd004\_01** at **time zero**
  - \_\_\_\_\_ c. 12 Cond Pp Breaker failure: **cd004\_02** at **time zero**
  - \_\_\_\_\_ d. 13 AFW Pump Breaker Failure: **afw005**, on **Event 1**.
- \_\_\_\_\_ 3. Place 13 Condensate Pump handswitch in **PTL**.
- \_\_\_\_\_ 4. Place a caution tag on 13 Condensate Pump handswitch.
- \_\_\_\_\_ 5. Place simulator in **RUN**.
- \_\_\_\_\_ 6. **WHEN** 11 SGFP trips, place simulator in **FREEZE**.
- \_\_\_\_\_ 7. Acknowledge all panel and computer alarms.
- \_\_\_\_\_ 8. Ensure "Horn On" is selected for annunciators.
- \_\_\_\_\_ 9. Ensure "Clock" is selected for time.
- \_\_\_\_\_ 10. Obtain Independent Verification for completion of steps 2 through 4 and 6.
  - \_\_\_\_\_ 2. Malfunctions/Overrides entered as specified.
  - \_\_\_\_\_ 3. 13 Cond Pp H/S is in **PTL**
  - \_\_\_\_\_ 4. 13 Cond Pp H/S is Caution Tagged in **PTL**
  - \_\_\_\_\_ 6. 11 SGFP tripped and the Simulator is in **FREEZE**
- \_\_\_\_\_ 11. **WHEN** cued by evaluator, place simulator in **RUN**.
- \_\_\_\_\_ 12. **WHEN** cued by evaluator, activate **Event 1**.



ELEMENT (shaded = CRITICAL STEP)STANDARD**EVALUATOR NOTE**Cue driver to place simulator in **RUN**.**TIME START:** \_\_\_\_\_☐ Identifies and locates AOP-3G Section VI

Same as element

**VI.A. - DETERMINE IF A REACTOR TRIP IS REQUIRED****CUE**Once CRO has determined S/G levels inform operator that the **RO will monitor S/G levels for trip strategy.**☐ VI.A.1 - **IF** SG level is approaching (-) 40 inches, **THEN**, with the approval of the SM/CRS, perform the following actions ...

Monitors S/G levels on 1C03, determines a reactor trip is not necessary and that the RO will monitor for trip criteria.

**VI.B. - ESTABLISH A SOURCE OF FEEDWATER****CAUTION****Excessive feeding at low power conditions will affect T<sub>COLD</sub> and Reactivity. PZR level and RCS pressure can be affected.****CAUTION****A severe waterhammer may result if Main Feedwater flow is restored after it has been stopped for greater than 80 minutes.****CUE:**

TBO reports there is no indication of a faulted bus.

☐ VI.B.1. - **IF** the following conditions exist:

- ☐ A SGFP has tripped
- ☐ The standby SGFP is available
- ☐ There is sufficient time available to start the standby pump

**THEN** perform the following actions: ...

Determines step is N/A. (Standby SGFP is not available due to low suction header pressure trip conditions)

ELEMENT (shaded = CRITICAL STEP)STANDARD**CAUTION**

**A severe waterhammer may result if Main Feedwater flow is restored after it has been stopped for greater than 80 minutes.**

<input type="checkbox"/> VI.B.2. - <b>IF</b> time does <b>NOT</b> permit starting the standby SGFP, <b>THEN</b> , with the approval of the SM/CRS, ...	Determines step is N/A. (Tripped SGFP cannot be restarted)
<input type="checkbox"/> VI.B.3. - <b>IF</b> a Condensate Booster Pump has tripped, <b>THEN</b> perform the following ...	Determines step is N/A. Proceeds to Step 4.
<input type="checkbox"/> VI.B.4. - <b>IF</b> a Condensate Pump has tripped, <b>THEN</b> perform the following actions ...	Determines backup Cond Pps are NOT available based on initiating cue

**PERFORM ALTERNATE ACTIONS****CAUTION**

**Starting a pump without determining the cause of the failure could initiate a common mode failure.**

<input type="checkbox"/> VI.B.4.a.1 - <b>IF</b> a backup Condensate Pump did <b>NOT</b> start, <b>THEN</b> , with the approval of the SM/CRS, attempt to start the backup Condensate Pump.	Determines step is N/A per Initiating Cue.
--	--

**CUE:** When requested, direct operator **do NOT attempt** to start tripped pumps.

<input type="checkbox"/> VI.B.4.a.2 - <b>IF</b> a backup Condensate Pump will <b>NOT</b> start, <b>THEN</b> , with the approval of the SM/CRS, attempt to start the tripped Condensate Pump.	Requests concurrence from CRS to attempt to start a tripped pump.
--	---

**ALTERNATE ACTIONS COMPLETED**

<input type="checkbox"/> VI.B.5. - <b>IF</b> Main Feedwater flow has been restored ...	Determines step is N/A and continues to step 6.
--	---

**NOTE**

Restoration of Main or Auxiliary Feedwater will affect RCS T<sub>COLD</sub>.

<input type="checkbox"/> VI.B.6. - Control RCS T <sub>COLD</sub> by using <b>ANY</b> of the following methods, as applicable: <input type="checkbox"/> adjusting TBVs <input type="checkbox"/> adjusting ADVs to maintain the following temperature band:	Monitors T <sub>COLD</sub> on 1C05 and/or 1C06, and TBV operation.
--	--

ELEMENT (shaded = CRITICAL STEP)		STANDARD
<input type="checkbox"/> IF the Reactor is critical, THEN within 2°F of program T <sub>COLD</sub>		Determines T <sub>COLD</sub> is within 2°F of program.
<input type="checkbox"/> IF the Reactor is NOT critical		Determines step is N/A
<input type="checkbox"/> VI.B.7. - IF Main Feedwater will NOT be restored, THEN perform the following actions:		Determines step is applicable
CUE:	Once power level evaluated, inform operator that RO will maintain power less than 1%.	
<div>NOTE</div> <div>This step should be performed concurrently with the remaining steps.</div>		
<input type="checkbox"/> VI.B.7.a. - Reduce power to less than 1%		Determines power less than 1%
<input type="checkbox"/> VI.B.7.b. - Shut the S/G BD valves: <div><input type="checkbox"/> 1-BD-4010-CV</div> <div><input type="checkbox"/> 1-BD-4011-CV</div> <div><input type="checkbox"/> 1-BD-4012-CV</div> <div><input type="checkbox"/> 1-BD-4013-CV</div>		Same as element
<input type="checkbox"/> VI.B.7.c. - Initiate AFW using 13 AFW PP as follows:		Same as element.
<input type="checkbox"/> VI.B.7.c.(1) - Verify open the motor driven SG AFW Block Valves: <div><u>11 SG</u></div> <div><input type="checkbox"/> 1-AFW-4522-CV</div> <div><input type="checkbox"/> 1-AFW-4523-CV</div> <div><u>12 SG</u></div> <div><input type="checkbox"/> 1-AFW-4532-CV</div> <div><input type="checkbox"/> 1-AFW-4533-CV</div>		Same as element.
<div>EVALUATOR NOTE</div> <div>COORDINATE with Simulator Driver to <b>Activate Event 1</b> (13 AFW Pump trip) approximately 30 seconds after 13 AFW Pump is started.</div>		
<input type="checkbox"/> VI.B.7.c.(2) - Start 13 AFW PP		Same as element.
CUE:	Acknowledge report that 13 AFW Pump has tripped and alternate actions being taken.	

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>BEGIN ALTERNATE ACTIONS</b>	
<input type="checkbox"/> VI.B.7.c.1 - Initiate AFW using 11 or 12 AFW PP as follows:	Determines step is applicable.
<input type="checkbox"/> VI.B.7.c.1(1) - Verify open the steam driven SG AFW Block Valves: <u>11 SG</u> <input type="checkbox"/> 1-AFW-4520-CV <input type="checkbox"/> 1-AFW-4521-CV <u>12 SG</u> <input type="checkbox"/> 1-AFW-4530-CV <input type="checkbox"/> 1-AFW-4531-CV	Same as element
<input type="checkbox"/> VI.B.7.c.1(2) - Open the SG AFW STM SUPP & BYPASS valves: <input type="checkbox"/> (11 SG) 1-MS-4070-CV <input type="checkbox"/> (11 SG) 1-MS-4070A-CV <input type="checkbox"/> (12 SG) 1-MS-4071-CV <input type="checkbox"/> (12 SG) 1-MS-4071A-CV	Same as element
<input type="checkbox"/> VI.B.7.c.1(3) - Adjust and maintain 11 or 12 AFW PP discharge pressure at least 100 PSI greater than SG pressure using the AFW PP SPEED CONTRs: <input type="checkbox"/> (11 AFW) 1-HC-3987A <input type="checkbox"/> (12 AFW) 1-HC-3989A	Same as element  No action required discharge pressure is >100psia above S/G pressure
<input type="checkbox"/> VI.B.7.c.1(4) - Ensure the feedwater flowrate does NOT cause RCS cooldown to exceed the following limits for any one hour: [B0126] <input type="checkbox"/> Greater than 256°F 100°F/hr <input type="checkbox"/> 106°F to 256°F 40°F/hr <input type="checkbox"/> Less than 106°F 35°F/hr	Monitors RCS temperature. Adjusts flow as necessary.
<p align="center"><b><u>CAUTION</u></b></p> <p align="center"><b>Total AFW flow should NOT exceed 600 GPM per unit (300 GPM per unit when feeding both Units from either Unit 1 OR Unit 2).</b></p>	

ELEMENT (shaded = CRITICAL STEP)STANDARD

<input type="checkbox"/> VI.B.7.c.1(5) - Adjust the SG FLOW CONTRs to maintain level at approximately zero inches: <input type="checkbox"/> (11 SG) 1-FIC-4511A <input type="checkbox"/> (12SG) 1-FIC-4512A	Monitors SG level. Adjusts flow to maintain SG level.
<input type="checkbox"/> VI.B.7.c.1(6) - Operate AFW Pump Room Ventilation, PER OI-32A, AUXILIARY FEEDWATER SYSTEM.	Dispatches Aux Bldg operator to verify AFW ventilation in service per OI-32A.
<b>END OF ALTERNATE ACTIONS</b>	
<input type="checkbox"/> VI.B.7.d. - Shut the SG FW ISOL valves: <input type="checkbox"/> (11 SG) 1-FW-4516-MOV <input type="checkbox"/> (12 SG) 1-FW-4517-MOV	Same as element
<input type="checkbox"/> VI.B.7.e. - Notify Plant Chemistry that the AFW System is in service.	Same as element
<input type="checkbox"/> VI.B.8. - <b>IF</b> AFW is maintaining SG levels between (-)24 inches and (+)30 inches, <b>THEN</b> , with the approval of SM/CRS, perform <b>ONE</b> of the following: <input type="checkbox"/> Maintain power less than 1% while attempting to restore the Main Feedwater System. <input type="checkbox"/> <b>IMPLEMENT OP-4, PLANT SHUTDOWN FROM POWER OPERATION TO HOT STANDBY to shutdown the Unit.</b>	Determines step is applicable. Monitors S/G levels and maintains a positive trend to restore between (-) 24 inches and (+) 30 inches.

**TERMINATING CUE:** This JPM is complete when S/G levels are trending toward between -24 inches and +30 inches using either steam driven AFW train. No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: SIM-4

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Applicant Response: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 is at ~0.5% power during plant startup from an extended outage.
2. 13 Condensate pump is tagged out.
3. Annunciator windows C-01 and C-02 "11 & 12 CONDS PUMP OIL FLOW LO" on 1C03 came into alarm. Shortly thereafter, 11 and 12 Condensate pumps tripped.
4. 11 & 12 SGFP's subsequently tripped on low suction pressure and annunciator windows C-25 "SGFP(S) SUCT PRESS LO" and C-26 "11 SGFPT TRIP" and C-30 "12 SGFPT TRIP" on 1C03 are in alarm.
5. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to respond to the Condensate Pump trip per AOP-3G, Main Feedwater Malfunctions, Section VI, Block Step A.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: SIM-5



Rev. 1

Incorporated comments from NRC validation of JPM

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SIM-5**Task Title:** Bleed and Feed to cool the quench tank**Task Number:** No specific CCNPP task**K/A Reference:** 007A1.01, A1.02, A1.03**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☐Simulator: ☒Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Alarm Window E-01, "QUENCH TK •TEMP •LVL •PRESS", has just come into alarm due to a long term slowly leaking safety valve which causes alarm every 8-10 hours (CR previously written).
2. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to respond to the Quench Tank alarm.

Are there any questions? You may begin.

**Task Standard:**

Verifies the Operator's Ability to Restore Quench Tank Parameters.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

OP-3, Power Operations  
OI-1B, Quench Tank Operations

**General References:**

Procedures and manuals normally available in the control room

**Time critical task:**

No

**Validation Time:**

10 minutes

**Simulator Setup:**

- \_\_\_\_\_ 1. **Reset** to IC-24 with both units at 100% in **FREEZE**.
- \_\_\_\_\_ 2. **Open** and start schedule Sim-5
  - a. **Override** P1C06\_1TIA116\_MT to 122 @ time zero,  
P1C06\_1TIA116\_LTHIGH to on @ time zero,  
P1C06\_E01\_LTON to On at time zero
  - b. **Override** P1C06\_1TIA to 115 over 30 seconds on Event 1,  
P1C06\_1TIA116\_LTHIGH to off after 10 seconds on Event 1,  
P1C06\_E01\_LTON to delete on Event 2
- \_\_\_\_\_ 3. Remove the Quench Tank Temperature computer point from scan
- \_\_\_\_\_ 4. Pump RCDT, then freeze.
- \_\_\_\_\_ 5. Have a blank Locked Valve Deviation Sheet available.
- \_\_\_\_\_ 6. **Acknowledge** all panel alarms and ensure "Horn On" for annunciators.
- \_\_\_\_\_ 7. **Select** "Clock" time.
- \_\_\_\_\_ 8. **WHEN** cued go to **RUN**.

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>CUE</b>	Have simulator driver place Simulator in <b>RUN</b>	
<b>TIME START:</b> _____		
<input type="checkbox"/>	Identifies Alarm Manual 1-C06, Window E-01	Same as Element
<b>1C06 ALM Window E-01</b>		
<input type="checkbox"/>	Determines which parameters are causing alarm.	Identifies the following: Temp is in alarm high at 122°
<b>BEGIN ALARM MANUAL ACTIONS</b>		
<input type="checkbox"/>	1.a -Shut any open valves listed under leaking or open Possible Causes	Verifies all valves shut
<input type="checkbox"/>	1.b - IF a PORV is leaking or open and fails to shut when RCS pressure is reduced below its lift setpoint, <b><u>THEN CONSIDER</u></b> placing the applicable PORV Override handswitch , 1-HS-1402 or 1-HS-1404, in OVERRIDE or SHUT PORV Block, 1-RC-403-MOV or 1-RC-405-MOV.	Determines step is N/A
<input type="checkbox"/>	1.c - <b>RETURN</b> parameter to within normal limits by venting, filling, draining or feed and bleed as necessary <b>PER</b> OI-1B, <u>Quench Tank Operations.</u>	Locates OI-1B, determines 6.5 is the correct section
<b>CUE</b>	CRS will Evaluate Tech Specs	
<input type="checkbox"/>	1.d - <b>REFER</b> to Technical Specifications 3.4.11 and 3.4.12 for PORV operability requirements.	Determines step is N/A
<b>CUE</b>	CRS Directs a Feed & Bleed to be performed per OI-1B	
<input type="checkbox"/>	OI-1B - Section 6.5, Bleed & Feed the Quench Tank	

ELEMENT (shaded = CRITICAL STEP)STANDARD

CUE	All Initial Conditions Are Satisfied	
<input type="checkbox"/> 6.5.A - Initial Conditions		
<input type="checkbox"/> 6.5.A.1. - RCS Pressure is greater than 50 PSIA.		Satisfied per CUE
<input type="checkbox"/> 6.5.A.2. - Quench Tank temperature is higher than normal due to leakage or discharge from any of the following:  <input type="checkbox"/> Pressurizer Power Operated Relief Valve <input type="checkbox"/> Pressurizer Safety Valve <input type="checkbox"/> Safety Injection System Relief Valve <input type="checkbox"/> Pressurizer Vents <input type="checkbox"/> Reactor Vessel Head Vents		Satisfied per CUE
<input type="checkbox"/> 6.5.A.3. - No relief or safety valve discharge to the Quench Tank is in progress.		Satisfied per CUE
<input type="checkbox"/> 6.5.B - Procedure		
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>Steps 6.5.B.1 through 6.5.B.4 may be performed in any order to minimize the amount of liquid or gaseous waste.</p>		
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <ul style="list-style-type: none"><li>• Do <b>NOT</b> attempt to adjust the Quench Tank parameters until after the relief or safety valve has completed lifting.</li><li>• The Sparger Nozzles will become uncovered at approximately 24 inches indicated level and the Quench Tank may experience a rapid increase in pressure if this occurs. The amount of time the Sparger Nozzles will be uncovered should be minimized.</li></ul>		
<input type="checkbox"/> 6.5.B.1 - Drain the Quench Tank as follows:		
<input type="checkbox"/> 6.5.B.1.a. - <b>PUMP</b> the RCDT <b>PER</b> OI-17C as necessary while draining the Quench Tank to maintain RCDT level below the Hi level alarm setpoint (45 inches)		Determines step is not necessary
<input type="checkbox"/> 6.5.B.1.b. - <b>OPEN</b> QUENCH TK DRN, RC-401-CV.		Same as element

ELEMENT (shaded = CRITICAL STEP)STANDARD**CAUTION**

- Quench Tank pressure should be continuously monitored to ensure pressure does **NOT** exceed 10 psig
- Maintain Quench Tank pressure greater than 0 psig to prevent flashing in the discharge piping

- ☐ 6.5.B.1.c. - **IF** a lowering pressure develops in the Quench Tank that prevents draining, **THEN** **PERFORM** one of the following:

- ☐ **OPEN** the applicable Containment Nitrogen Supply Valve, 0-N<sub>2</sub>-238

**OR**

- ☐ **THROTTLE OPEN** N2-6318-PCV Bypass Isolation, 0-N<sub>2</sub>-591, while monitoring pressure at PI-6318 so as not to exceed 10 PSIG

Determines step is N/A

**NOTE**

Draining the Quench Tank below the low level alarm is acceptable during the bleed and feed due to the tank being refilled immediately

**CUE**

If student asks or starts draining CRS directs "DO NOT Drain below 20 inches"

- ☐ 6.5.B.1.d. - **DRAIN** the Quench Tank to the desired level but not less than 15 inches

Same as element

- ☐ 6.5.B.1.e. - **SHUT QUENCH TK DRN**, RC-401-CV

Same as element

**CAUTION**

Quench Tank pressure should be continuously monitored to ensure pressure does **NOT** exceed 10 PSIG

- ☐ 6.5.B.2 - **PERFORM** one of the following:
- ☐ **OPEN** the Containment Nitrogen Supply Valve, 0-N<sub>2</sub>-238

**OR**

- ☐ **THROTTLE OPEN** O-N<sub>2</sub>-591 Bypass Isolation while monitoring pressure at PI-6318 so as not to exceed 10 PSIG

Determines step is N/A

ELEMENT (shaded = CRITICAL STEP)STANDARD

<u>CAUTION</u>	
<ul style="list-style-type: none"> <li>Quench Tank pressure should be continuously monitored to ensure pressure does <b><u>NOT</u></b> exceed 10 psig</li> <li>Maintain Quench Tank pressure greater than 0 psig to prevent flashing in the discharge piping</li> </ul>	
<input type="checkbox"/> 6.5.B.3. - <b>WHEN</b> QT pressure is at the desired pressure, <b>THEN SHUT</b> Containment Nitrogen Supply Valve 0-N <sub>2</sub> -238 or Bypass Isolation Valve 0-N <sub>2</sub> -591	Determines step is N/A
<u>NOTE</u>	
DW-5460-CV may be opened on an intermittent basis under administrative control <b>PER</b> T/S 3.6.3.1. This shall be controlled PER NO-1-205.	
<input type="checkbox"/> 6.5.B.4. - <b>FILL</b> the Quench Tank as follows:	Same as element
<b>CUE</b>	Provide applicant with Locked Valve Deviation Sheet, to document manipulation of DW-5460-CV, when requested
<input type="checkbox"/> Completes Locked Valve Deviation Sheet prior to opening DW-5460-CV	Same as element
<input type="checkbox"/> 6.5.B.4.a. - <b>OPEN</b> DI WTR CNTMT ISOL, DW-5460-CV.	Same as element <b>When fill begins have driver insert Event 1, after 30 seconds when TIA-116 High Temp Alarm clears insert Event 2</b>
<input type="checkbox"/> 6.5.B.4.b - <b>IF</b> Quench tank pressure approaches 0 PSIG while filling tank <b>THEN PERFORM</b> the following ...	Determines step is N/A
<input type="checkbox"/> 6.5.B.4.c - <b>FILL</b> the Quench Tank to the desired level but <b><u>NOT</u></b> greater than 35 inches	Same as element
<input type="checkbox"/> 6.5.B.4.d - <b>SHUT</b> DI WTR CNTMT ISOL, DW-5460-CV.	Same as element
<input type="checkbox"/> 6.5.B.5. - <b>REPEAT</b> Steps 6.5.B.1 through 6.5.B.4 until Quench Tank temperature is less than 120°F AND the Quench Tank high temperature alarm is clear.	Determines step is N/A

ELEMENT (shaded = CRITICAL STEP)		STANDARD
<input type="checkbox"/> 6.5.B.6. - <b>FILL OR DRAIN</b> the Quench Tank to approximately 28.5 inches (between the high and low level alarm).	Same as element (if performed)	
<input type="checkbox"/> 6.5.B.7. - <b>ENSURE SHUT</b> the Containment Nitrogen Supply Valve 0-N2-238 or Bypass Isolation Valve 0-N2-591	Same as element	
<input type="checkbox"/> 6.5.B.8. - <b>IF</b> the Quench Tank is going to be vented <b>THEN</b> NOTIFY Rad Con Supervision	Determines step is N/A	
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>When lowering pressure in the Quench Tank following an energy release event (for example, any event that may have caused steam/condensation buildup in the discharge piping), the venting shall occur in small pressure increments (approximately 2 psi increments), with a wait of approximately 20 minutes in between vents. This is to prevent thermal changes on the Code Safety valve discs (caused by flashing the liquid to steam which has a cooling effect). Too large of a thermal change will cause the Code Safety to leak.</p>		
<input type="checkbox"/> 6.5.B.9. - <b>ESTABLISH</b> Quench Tank pressure of less than 10 psig by venting to the Waste Gas header as follows:	Same as element (if performed)  Candidate may see pressure >3 psig and decide to lower pressure based on Note in the Procedure	
<input type="checkbox"/> 6.5.B.9.a. - <b>OPEN</b> the following valves: <div><input type="checkbox"/> WGS CNTMT ISOL      WGS-2180-CV <input type="checkbox"/> WGS CNTMT B/U ISOL   WGS-2181-CV <input type="checkbox"/> QUENCH TK VENT      RC-400-CV</div>	Same as element (if performed)	
CUE	CRS directs that quench tank pressure anywhere between 3-10 psig is acceptable	
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p style="text-align: center;">Quench Tank normal operating pressure is 3 PSIG</p>		
<input type="checkbox"/> 6.5.B.9.b. - <b>WHEN</b> the Quench Tank is at the desired pressure, <b>THEN SHUT</b> the following valves:	Same as element (if performed)	
<div><input type="checkbox"/> WGS CNTMT ISOL      WGS-2180-CV <input type="checkbox"/> WGS CNTMT B/U ISOL   WGS-2181-CV <input type="checkbox"/> QUENCH TK VENT      RC-400-CV</div>	Same as element (if performed)	



ELEMENT (shaded = CRITICAL STEP)STANDARD

**TERMINATING CUE:** The JPM is complete when the CRS is informed that Quench Tank parameters are returned to normal. No further actions are required. The examinee is expected to end the JPM. If the examinee performs Step 9, the examiner may end the JPM due to extended time required to vent the Quench Tank.

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

**Verification of Completion**Job Performance Measure Number: **SIM-5**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Applicant Response: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**CONFIGURATION CONTROL OF LOCKED VALVES, ADMINISTRATIVELY CONTROLLED VALVES,  
AND CONTROLLERS**

**NO-1-205  
Revision 01302  
Page 19 of 19**

**Attachment 2, Locked Valve / Controller Deviation Sheet**

UNIT: \_\_\_\_\_

REASON FOR DEVIATION: \_\_\_\_\_

CRS APPROVAL

*DfL*

Initial for original  
start of an evolution.

**This Attachment shall be completed per Subsections 5.5, Locked Valve Deviations, and 5.6, Controller Deviations, of this procedure.**

EQUIPMENT		VALVE/CONTROLLER PLACED <u>OUT OF NORMAL</u> POSITION						VALVE/CONTROLLER RETURNED TO <u>NORMAL</u> POSITION					
VALVE/ CONTROLLER NUMBER	VALVE/ CONTROLLER DESCRIPTION	CRS INIT. (1)	DATE	ABNORMAL POSITION	CRO INFORM INIT.	QUAL OPER INIT.	T.S. FLOW PATH SECOND CHECK INITIALS	NORMAL POSITION	CRO INFORM INIT.	QUAL OPER INIT.	2 <sup>ND</sup> CHECK (VERIFIER) INIT.	DATE	CRS INIT.
I-DW-5460-CV	DI Water Containment Isolation	N/A		Open			N/A						

(1) The Control Room Supervisor (CRS) initial column for individual valve/controller positioning shall be blank for the original valves/controllers listed.

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Alarm Window E-01, "QUENCH TK •TEMP •LVL •PRESS", has just come into alarm due to a long term slowly leaking safety valve which causes alarm every 8-10 hours (CR previously written).
2. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

The CRS directs you to respond to the Quench Tank alarm.

Are there any questions? You may begin

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: SIM-6 (Alt Path)

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SIM-6**Task Title:** Verify the Vital Auxiliaries Safety Function is Satisfied**Task Number:** 201.013**K/A Reference:** 062A4.01 (3.3, 3.1)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☐Simulator: ☒Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. EOP-0 has been implemented and Turbine Trip has been verified.
2. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

You are to perform EOP-0-1, Step IV.C - Verify the Vital Auxiliaries Safety Function is Satisfied.

**Task Standard:**

Candidate energizes 14 4KV Bus via its Alternate Feeder and reports Vital Auxiliaries as complete.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

EOP-0, Post Trip Immediate Actions

**General References:**

Procedures and manuals normally available in the control room

**Time critical task:**

No

**Validation Time:**

10 minutes



**Simulator Setup:**

- \_\_\_\_\_ 1. Reset to IC-24
- \_\_\_\_\_ 2. Insert the following malfunctions:
  - \_\_\_\_\_ a. 11 4KV bus fault: **4kv001\_01** at **time zero**.
  - \_\_\_\_\_ b. 1B DG start failure: **dg001\_02** at **time zero**.
- \_\_\_\_\_ 3. Insert the following override:
  - \_\_\_\_\_ a. OC DG 14 4KV Bus Fdr Bkr H/S: **P1C18B\_KF1406** to **TRIP** at **time zero**.
- \_\_\_\_\_ 4. Place in **RUN** for approximately one (1) minute, then trip the reactor.
- \_\_\_\_\_ 5. After turbine trips **SHUT** the MSIVs to prevent uncontrolled cooldown of the RCS.
- \_\_\_\_\_ 6. **OPEN** the normal feeder to 14 4KV bus and match its flag back to red (i.e. take its handswitch to close without the synch stick).
- \_\_\_\_\_ 7. Place simulator in **FREEZE**.
- \_\_\_\_\_ 8. Obtain an Independent Verification for steps 2 thru 6.
  - \_\_\_\_\_ 2. Malfunctions are correctly inserted
  - \_\_\_\_\_ 3. Override is correctly inserted
  - \_\_\_\_\_ 4. Reactor is tripped
  - \_\_\_\_\_ 5. MSIVs are shut
  - \_\_\_\_\_ 6. 14 4KV Bus Normal Breaker is open with a "red" flag
- \_\_\_\_\_ 9. When cued, by the evaluator, place the simulator in **RUN**.

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_

- ☐ Identifies & locates EOP-0-1, Step IV.C or uses plaque located on DG panel

Same as element.

**IV.C. - VERIFY THE VITAL AUXILIARIES SAFETY FUNCTION IS SATISFIED**

- ☐ IV.C.1. - Check 11 **OR** 14 4KV Vital Bus is energized.

Determines neither 4KV bus is energized.

**CAUTION**Attempts should **NOT** be made to re-energize a bus if a fault is suspected.**PERFORM ALTERNATE ACTIONS**

- ☐ IV.C.1.1. - **IF BOTH** 4KV Vital Buses are de-energized, **THEN** energize 11 **OR** 14 4KV Vital Bus from a DG by performing the following:

Determines step is applicable.

**EVALUATOR NOTE:**

The report of taking Alternate Actions can be made at the discretion of the operator but should be reported as soon as practical.

- ☐ IV.C.1.1.a. - Start the 0C DG using the 0C DG EMERGENCY START PB, 0-HS-0707.

Same as element

**CUE:**

Report 4KV Bus/DG status if requested: TBO reports an apparent fault on 11 4KV bus. OSO reports 1B DG tripped, on start, due to a mechanical problem.

- ☐ IV.C.1.1.b. - Verify 1A or 1B DG is running.

Checks 1A DG voltage and frequency on 1C18A. Determines 1A DG is running but did not close in on 11 4KV bus due to fault. May contact OSO to emergency S/D as no power to auxiliaries.

Determines 1B DG is not running. Pushes 1B Start pushbutton (1-HS-1424). Determines both DGs have failed to energize their respective 4KV bus.

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> IV.C.1.1.b. (1) - Verify the associated DG OUT BKR closed: <input type="checkbox"/> 11 Bus - 152-1703 <input type="checkbox"/> 14 Bus - 152-1403		Determines that 1A DG breaker will not close due to a fault on the 11 4KV bus and 1B DG will not start due to a DG issue.
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>The actions of Step IV.C.1.2 may be performed on 11 4KV bus but the alternate feeder will not close due to the existing ground fault.</p>		
<b>CUE</b>	TBO reports there are no dropped flags on the 14 4KV Bus Feeder Breaker	
<input type="checkbox"/> IV.C.1.2. - <b>IF</b> 1A and 1B DGs can <b>NOT</b> be loaded <b>AND</b> 13KV is available, <b>THEN</b> energize 11 <b>OR</b> 14 4KV Vital Bus as follows:		Determines 13KV power is available and the step is applicable.
<input type="checkbox"/> IV.C.1.2.a. - Verify the DG OUT BKR is open.		Checks DG output breaker position or may take the breakers to PTL.
<input type="checkbox"/> IV.C.1.2.b. - Place the 4KV BUS LOCI/SD SEQUENCER MANUAL INITIATE keyswitch in ON.		Places <b>14 4KV</b> Bus LOCI/SD sequencer manual initiate keyswitch to "ON".
<input type="checkbox"/> IV.C.1.2.c. - Insert the sync stick <b>AND</b> close the alternate 4KV feeder breaker.		Inserts sync stick into jack for 14 4KV alternate feeder breaker (152-1401) and operates 1-CS-152-1401 handswitch to close the breaker and energize the bus. May acknowledge the annunciator window "SEQUENCER INITIATED" alarm on 1C08.
<p style="text-align: center;"><b><u>NOTE</u></b></p> <p>Exit from EOP-0 shall NOT be delayed in anticipation of 0C DG availability.</p>		
<input type="checkbox"/> IV.C.1.3. - <b>IF</b> 11 and 14 4KV Buses are deenergized, <b>THEN</b> use the 0C DG to energize 11 <b>OR</b> 14 4KV Bus as follows:		Determines step is N/A.
<b>END OF ALTERNATE ACTIONS</b>		

<u>ELEMENT (shaded = CRITICAL STEP)</u>	<u>STANDARD</u>
<input type="checkbox"/> IV.C.2 - IF <b>EITHER</b> 11 <b>OR</b> 14 4KV Vital Bus is <b>NOT</b> energized and the 0C DG is <b>NOT</b> running ...	Determines step is N/A.
<input type="checkbox"/> IV.C.3 - Check <b>ALL</b> 125V DC BUS VOLTS greater than 105 volts: <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 21 <input type="checkbox"/> 22	Checks 125V DC bus voltages on 1C24A.
<input type="checkbox"/> IV.C.4 - Check at least THREE 120V AC Vital Buses are energized: <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14	Checks 120V AC bus voltages on 1C24A.
<input type="checkbox"/> IV.C.5 - Check <b>EITHER</b> 1Y09 <b>OR</b> 1Y10 is energized:	Checks 208/120V instruments AC bus voltage on 1C24A. Determines that 1Y10 is energized.
<input type="checkbox"/> IV.C.6 - Verify Component Cooling flow to the RCPs.	Starts 12 or 13 CC Pump.
<input type="checkbox"/> Checks CC flow to RCPs by also ensuring 1-CC-3832-CV and 1-CC-3833-CV are open. The RCPs are not tripped.	Same as element
<input type="checkbox"/> IV.C.7 - <b>IF ANY</b> electrical bus perturbations have occurred, <b>THEN</b> dispatch an operator to verify Switchgear Room Ventilation operating <b>PER</b> OI-22H, SWITCHGEAR VENTILATION AND AIR CONDITIONING.	Dispatches operator to verify Switchgear Room Ventilation operating per OI-22H.
<input type="checkbox"/> Reports Vital Auxiliaries are complete.	Makes appropriate Safety Function Report to the CRS with information regarding status of electrical system.

ELEMENT (shaded = CRITICAL STEP)STANDARD

**TERMINATING CUE:** This JPM is complete when 14 4Kv bus is powered from its Alternate Feeder, a Component Cooling Pump is started and the Vital Auxiliaries Safety Function is reported as complete. No further actions are required. The applicant is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: SIM-6

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**APPLICANT'S CUE SHEET****Initial Conditions:**

1. EOP-0 has been implemented and Turbine Trip has been verified.
2. You are performing the duties of the Unit-1 CRO.

**Initiating Cue:**

You are to perform EOP-0-1, Step IV.C - Verify the Vital Auxiliaries Safety Function is Satisfied.

APPLICANT: \_\_\_\_\_

CALVERT CLIFFS  
NUCLEAR POWER PLANT

2014 NRC

INITIAL LICENSED

OPERATOR EXAM

JPM #: SIM-7



**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** SIM-7**Task Title:** Shift Component Cooling Heat Exchangers**Task Number:** 015.003**K/A Reference:** 008.A4.01(3.3, 3.1)**Method of testing:**Simulated Performance: ☐Actual Performance: ☒Classroom: ☐Simulator: ☒Plant: ☐**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Both Units are at 100% power
2. 11 & 12 Component Cooling Heat Exchanger are in service.

**Initiating Cue:**

You are performing the duties of Unit 1 CRO. The CRS directs you to secure 11 Component Cooling Heat Exchangers IAW the Operating Instruction in preparation for tagging out 11 Salt water Header.

**Task Standard:**

Place 11 CCHX in standby in accordance with OI-16 Sect. 6.6

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

None

**General References:**

OI-16 Component Cooling System

**Time critical task:**

No

**Validation Time:**

10 minutes

**Simulator Setup:**

- \_\_\_\_\_ 1. Reset to IC-24, both units at 100% power.
- \_\_\_\_\_ 2. Ensure 11 CCHX in service and 12 CC pump running.
- \_\_\_\_\_ 3. Place simulator in **RUN**.
- \_\_\_\_\_ 4. Ensure 1-HIC-5208 at 0% output
- \_\_\_\_\_ 5. Acknowledge all panel and plant computer alarms.
- \_\_\_\_\_ 6. Ensure the "HORN ON" is selected for annunciators.
- \_\_\_\_\_ 7. Place in **FREEZE**.
- \_\_\_\_\_ 8. Obtain Independent Verification for completion of step 2.
- \_\_\_\_\_ 9. When cued by evaluator, go to **RUN**.

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>CUE</b>	Initial Conditions and General Precautions are satisfied.	
<b>TIME START:</b> _____		
<input type="checkbox"/>	Identifies OI-16, Section 6.6	Same as element.
<input type="checkbox"/>	6.6 - SHIFTING FROM 2 COMPONENT COOLING HEAT EXCHANGER OPERATION TO SINGLE COMPONENT COOLING HEAT EXCHANGER OPERATION [CONTINUOUS USE]	
<input type="checkbox"/>	6.6.A - Initial Conditions	
<input type="checkbox"/>	6.6.A.1 - Two Component Cooling Heat Exchangers are in service.	
<p style="text-align: center;"><b><u>CAUTION:</u></b></p> <p>RCS boron concentration will be affected when CVCS ion exchangers are returned to service if the Letdown heat exchanger outlet temperature has changed since they were bypassed. [B0270]</p> <ul style="list-style-type: none"> <li>• Lower Letdown system temperature will add positive reactivity.</li> <li>• Higher Letdown system temperature will add negative reactivity.</li> </ul>		
<b>CUE</b>	The CRS desires the CVC Ion Exchangers to be bypassed.	
<b>CUE</b>	The RO will log stop time in the CVCS Ion Exchanger and Filter Log	
<input type="checkbox"/>	6.6.B - Procedure	
<input type="checkbox"/>	6.6.B.1. - <b>IF</b> it is desired to bypass the CVCS ion exchangers, <b>THEN</b> PLACE IX BYPASS, 1-CVC-520-CV, to BYPASS <b>AND</b> RECORD stop time in the CVCS Ion Exchanger and Filter Log. [B0018] [B0270]	Places 1-CVC-520-CV in Bypass RO will log stop time
<input type="checkbox"/>	6.6.B.2 - <b>IF</b> two Component Cooling pumps are in service <b>THEN STOP</b> the selected Component Cooling Pump.	Determines step is N/A
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>When 13 Component Cooling Pump is running, the associated Component Cooling Pump <input type="checkbox"/> aligned to the same power supply shall be placed in PTL. This is to prevent all three pumps from running on a SIAS signal without a UV signal, which could damage the tubes and/or baffle plates of the SDC Heat Exchangers. This Caution is <b>NOT</b> applicable when less than three Component Cooling Pumps are available. [B0590]</p>		
<input type="checkbox"/>	6.6.B.3 - <b>IF</b> 13 Component Cooling Pump is running and aligned to 11 480 V Bus, <b>AND</b> 11 and 12 Component Cooling Pumps are in AUTO, <b>THEN</b> PLACE 11 Component Cooling Pump in PTL. [B0590]	Determines step is N/A

ELEMENT (shaded = CRITICAL STEP)	STANDARD
<input type="checkbox"/> 6.6.B.4 - IF 13 Component Cooling Pump is running and aligned to 14 480 V Bus, AND 11 and 12 Component Cooling Pumps are in AUTO, THEN PLACE 12 Component Cooling Pump in PTL. [B0590]	Determines step is N/A
<input type="checkbox"/> 6.6.B.5 - IF 13 Component Cooling Pump is NOT running, THEN ENSURE all available Component Cooling Pumps are in AUTO.	Same as element
<p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Two CC Pumps SHALL <b>NOT</b> be operated with only one CCHX aligned for service, unless for a very short period of time as in bumping a pump or momentary pump shifting.</p>	
<input type="checkbox"/> 6.2.B.6. - SHUT the Component Cooling Heat Exchanger outlet on the heat exchanger being removed from service: <ul style="list-style-type: none"> <li>• 11 CC HX CC OUT, 1-CC-3824-CV</li> <li>• 12 CC HX CC OUT, 1-CC-3826-CV</li> </ul>	Shuts 1-CC-3824-CV
<p style="text-align: center;"><b><u>NOTE:</u></b></p> <p>To minimize biological growth in the Saltwater System, Saltwater flow should <b>NOT</b> be aligned to BOTH in-service CCHXs during low heat conditions, unless required to maintain SW PP minimum flow requirements.</p>	
<input type="checkbox"/> 6.2.B.7 - <b>SHUT</b> the Component Cooling Heat Exchanger saltwater outlet controller for the heat exchanger being removed from service: (N/A if needed OPEN to maintain SW PP minimum flow) <ul style="list-style-type: none"> <li>• 11 COMP CLG HX SALTWATER FLOW CONTR, 1-HIC-5206</li> <li>• 12 COMP CLG HX SALTWATER FLOW CONTR, 1-HIC-5208</li> </ul>	Shuts 1-HIC-5206
<p style="text-align: center;"><b><u>NOTE:</u></b></p> <ul style="list-style-type: none"> <li>• For optimum Reactor Coolant Pump seal life and performance, controlled bleed-off temperature must be maintained between 110°F and 180°F.</li> <li>• Maintaining RCP OUT TEMPs at approximately 100°F on 1C13 will ensure optimal seal life and performance, as well as maintain RCP CBO temperatures between 110°F and 180°F.</li> </ul>	
<input type="checkbox"/> 6.2.B.8 - <b>ADJUST</b> the in-service CCHX SW outlet CV to maintain approximately 100°F on the RCP outlet temperature indications on 1C13. <ul style="list-style-type: none"> <li>• 11 COMP CLG HX SALTWATER FLOW CONTR, 1-HIC-5206</li> </ul> <p><b><u>OR</u></b></p> <ul style="list-style-type: none"> <li>• 12 COMP CLG HX SALTWATER FLOW CONTR, 1-HIC-5208</li> </ul>	Monitors CC temperature and opens 1-HIC-5208 to some minimum value (approximately where 1-HIC-5206 was previously positioned)

ELEMENT (shaded = CRITICAL STEP)STANDARD**CAUTION:**

RCS boron concentration will be affected when CVCS ion exchangers are returned to service if the Letdown heat exchanger outlet temperature has changed since they were bypassed.

**[B0270]**

- Lower Letdown system temperature will add positive reactivity.
- Higher Letdown system temperature will add negative reactivity.

**CUE**

The RO will log start time in the CVCS Ion Exchanger and Filter Log

- ☐ 6.2.B.9 - **IF** the CVCS ion exchangers were bypassed in Step B.1, **THEN PERFORM** the following:
- ☐ 6.2.B.9.a. - **CHECK** the Letdown heat exchanger outlet temperature has stabilized less than or equal to 120°F.
- ☐ 6.2.B.9.b. - **PLACE** IX BYPASS, 1-CVC-520-CV, to AUTO.
- ☐ 6.2.B.9.c. - **RECORD** the flowrate in the CVCS Ion Exchanger and Filter Log for the in service ion exchanger and filter. **[B0018]**

Same as element

**TERMINATING CUE:** This JPM is complete when 11 CCHX is removed from service. No further actions are required. The examinee is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: SIM-7

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Both Units are at 100% power
2. 11 & 12 Component Cooling Heat Exchanger are in service.

**Initiating Cue:**

You are performing the duties of Unit 1 CRO. The CRS directs you to secure 11 Component Cooling Heat Exchangers IAW the Operating Instruction in preparation for tagging out 11 Salt water Header.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: SIM-8



Rev. 1

Incorporated comments from NRC validation of JPM

**Facility:** Calvert Cliffs 1 & 2  
SIM-8

**Job Performance Measure No.:**

**Task Title:** Test Gaseous Waste Discharge RMS Channel RI-2191

**Task Number:** 079.018

**K/A Reference:** 071A4.09 (3.3, 3.5)

**Method of testing:**

Simulated Performance: ☐

Actual Performance: ☒

Classroom: ☐

Simulator: ☒

Plant: ☐

**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Both Units are at 100% power
2. You are performing the duties of an extra Licensed Operator.
3. A pre-job brief has been completed for the performance of STP-O-101-0 Gaseous Waste Discharge RMS Channel RI-2191, Semi-Annual Functional Test.
4. The Prerequisites, Section 4.0 of STP-O-101-0, have been completed.
5. Steps 6.1.J. and 6.1.K were previously completed. A step deletion form has been completed so these steps do not have to be performed again.

**Initiating Cue:**

The Unit-1 CRS directs you to complete performance of STP-O-101-0, Gaseous Waste Discharge RMS Channel RI-2191, Semi-Annual Functional Test, beginning with a review of the Precautions, Section 5, and continuing through Section 6.1, Functional Test Of RMS Channel RI-2191.

**Task Standard:**

Successfully complete STP-O-101-0 Sect. 6.1.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

STP-O-101-0, Gaseous Waste Discharge RMS Channel RI-2191, Semi-Annual Functional Test

**General References:**

Procedures and manuals normally available in the control room

**Time critical task:**

No

**Validation Time:**

15 minutes

**Simulator Setup:**

- \_\_\_\_\_ 1. Reset to IC-24, both units at 100% power
- \_\_\_\_\_ 2. Place simulator in **RUN**.
- \_\_\_\_\_ 3. Acknowledge all panel and plant computer alarms.
- \_\_\_\_\_ 4. Ensure the "HORN ON" is selected for annunciators.
- \_\_\_\_\_ 5. Place in **FREEZE**.
- \_\_\_\_\_ 6. When cued by evaluator, go to **RUN**.

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>TIME START:</b> _____		
<b>CUE:</b>	Provide candidate with a marked up copy of STP-O-101-0, Gaseous Waste Discharge RMS Channel RI-2191, Semi-Annual Functional Test	
6.1 - Functional Test of RMS Channel RI-2191		
<b>CUE:</b>	ABO reports Waste Gas Discharge Filter Outlet Isolation, 0-WGS-629 is SHUT and has been peer checked	
<input type="checkbox"/>	6.1.A. - <b>/PC/ SHUT</b> Waste Gas Discharge Filter Outlet Isolation, 0-WGS-629.	Requests ABO to shut valve and obtain a peer check.
<b>CUE:</b>	ABO reports Waste Gas Discharge Filter Outlet Isolation, 0-WGS-630 has been checked shut.	
<input type="checkbox"/>	6.1.B. - <b>CHECK SHUT</b> Waste Gas Discharge Filter Bypass, 0-WGS-630.	Requests ABO to shut valve.
<input type="checkbox"/>	6.1.C. - <b>OPEN</b> the following valves at 1C33:	
<input type="checkbox"/>	WASTE GAS DISCH, 0-WGS-2191-CV	Same as element.
<input type="checkbox"/>	WASTE GAS DISCH, 0-WGS-2192-CV	Same as element.
<input type="checkbox"/>	6.1.D - <b>PLACE</b> the operation selector switch for Gaseous Discharge RMS 0-RI-2191 to CHECK SOURCE.	Same as element.
<input type="checkbox"/>	6.1.D.1 - <b>CHECK</b> proper channel response by observing upscale meter deflection.	Same as element.
<input type="checkbox"/>	6.1.E. - <b>PLACE</b> Gaseous Waste Discharge Channel 0-RI-2191 operation selector switch to PULSE CAL AND CHECK the following:	Same as element.
<input type="checkbox"/>	6.1.E.1. - 0-RI-2191 Channel HIGH ALARM light illuminated.	Same as element.
<input type="checkbox"/>	6.1.E.2. - "0-RE-2191", RMS STATUS PNL 1C22H, amber light (ALARM) illuminates.	Same as element.
<input type="checkbox"/>	6.1.E.3. - 1C17 "RAD MON PANEL 1C22" annunciator alarms.	Same as element.
<input type="checkbox"/>	6.1.E.4. - 0-WGS-2191-CV shuts.	Same as element.

<u>ELEMENT (shaded = CRITICAL STEP)</u>	<u>STANDARD</u>
<input type="checkbox"/> 6.1.E.5. - 0-WGS-2192-CV shuts.	Same as element.
<input type="checkbox"/> 6.1.F. - <b>POSITION</b> the following handswitches as follows:	Same as element.
<input type="checkbox"/> 6.1.F.1. - 0-WGS-2191-CV, 0-HS-2191, to CLOSE.	Same as element.
<input type="checkbox"/> 6.1.F.2. - 0-WGS-2192-CV, 0-HS-2192, to CLOSE.	Same as element.
<input type="checkbox"/> 6.1.G. - <b>PLACE</b> operation selector switch for 0-RI-2191 to RESET, then to OPERATE.	Same as element.
<input type="checkbox"/> 6.1.G.1. - <b>CHECK</b> 1C17 "RAD MON PANEL 1C22" annunciator clears.	Same as element.
<input type="checkbox"/> 6.1.G.2. - <b>CHECK</b> HIGH ALARM and RMS Status lights extinguished.	Same as element.
<input type="checkbox"/> 6.1.H. - <b>PLACE</b> operation selector switch for 0-RI-2191 to RESET and <b>CHECK</b> the following:	Same as element.
<input type="checkbox"/> 6.1.H.1. - 0-RI-2191 Channel LOW ALARM light illuminated.	Same as element.
<input type="checkbox"/> 6.1.H.2. - "0-RE-2191", RMS STATUS PNL 1C22H, amber light (ALARM) illuminates.	Same as element.
<input type="checkbox"/> 6.1.H.3. - 1C17 "RAD MON PANEL 1C22" annunciator alarms.	Same as element.
<input type="checkbox"/> 6.1.I. - <b>PLACE</b> operation selector switch for 0-RI-2191 to OPERATE and <b>CHECK</b> the following:	Same as element.
<input type="checkbox"/> 6.1.I.1. - <b>CHECK</b> 1C17 "RAD MON PANEL 1C22" annunciator clears.	Same as element.
<input type="checkbox"/> 6.1.I.2. - <b>CHECK</b> LOW ALARM and RMS Status lights extinguished.	Same as element.
<p align="center"><b><u>NOTE TO EVALUATOR</u></b></p> <p>Simulator equipment is not modeled such that Steps "J" and "K" can be completed as written. Cues are provided to have the candidate omit the performance of Step "J" and to perform only the applicable portion of Step "K"</p>	

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>CUE:</b>	Steps 6.1.J & K. are to be skipped in its entirety.	
<input type="checkbox"/> 6.1.J. - <b>DEENERGIZE</b> 0-RI-2191 Channel by removing one of the fuses from the drawer front at 1C22.		Step skipped per Evaluator CUE
<input type="checkbox"/> 6.1.K. - <b>INSTALL</b> the fuse removed in the previous step.		Step skipped per Evaluator CUE
<input type="checkbox"/> 6.1.K.1. - <b>PLACE</b> operation selector switch for 0-RI-2191 to RESET, then to OPERATE.		Step skipped per Evaluator CUE
<input type="checkbox"/> 6.1.K.2. - <b>CHECK</b> 1C17 "RAD MON PANEL 1C22" annunciator clears.		Step skipped per Evaluator CUE
<input type="checkbox"/> 6.1.K.3. - <b>CHECK</b> normal operation of 0-RI-2191 by observing normal channel behavior.		Step skipped per Evaluator CUE.
<input type="checkbox"/> 6.1.L. - <b>CHECK</b> all RMS channels to ensure no new alarms actuated during this test.		Same as element.
<b>CUE:</b>	ABO reports Waste Gas Discharge Filter Outlet Isolation, 0-WGS-629 is OPEN and has been peer checked	
<input type="checkbox"/> 6.1.M. - <b>[PC] OPEN</b> 0-WGS-629.		Same as element.

**TERMINATING CUE:** This JPM is complete when the candidate receives the report stating "0-WGS-629 is OPEN and has been peer checked". No further actions are required. The evaluator is expected to end the JPM.

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

**Verification of Completion**Job Performance Measure Number: **SIM-8**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Both Units are at 100% power
2. You are performing the duties of an extra Licensed Operator.
3. A pre-job brief has been completed for the performance of STP-O-101-0 Gaseous Waste Discharge RMS Channel RI-2191, Semi-Annual Functional Test.
4. The Prerequisites, Section 4.0 of STP-O-101-0, have been completed.
5. Steps 6.1.J. and 6.1.K were previously completed. A step deletion form has been completed so these steps do not have to be performed again.

**Initiating Cue:**

The Unit-1 CRS directs you to complete performance of STP-O-101-0, Gaseous Waste Discharge RMS Channel RI-2191, Semi-Annual Functional Test, beginning with a review of the Precautions, Section 5, and continuing through Section 6.1, Functional Test Of RMS Channel RI-2191.



APPLICANT: \_\_\_\_\_

CALVERT CLIFFS  
NUCLEAR POWER PLANT

2014 NRC

INITIAL LICENSED

OPERATOR EXAM

JPM #: PLANT-1

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** PLANT-1**Task Title:** Align the Reserve Battery to 11 DC Bus**Task Number:** XXXXXX**K/A Reference:** 058 AA1.03 (3.1, 3.3)**Method of Testing:**Simulated Performance: ☒Actual Performance: ☐Classroom: ☐Simulator: ☐Plant: ☒**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. You are performing the duties an extra Licensed Operator.

**Initiating Cue:**

The Control Room Supervisor has directed you to align the Reserve Battery to 11 DC Bus per OI-26A, Section 6.10. Are there any questions? You may begin.

**Task Standard:**

Locates and simulates manual operation of plant components to align the Reserve Battery to 11 DC Bus, per OI-26A, Section 6.10.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

OI-26A, 125 Volt Vital DC

**General References:**

OI-26A, 125 Volt Vital DC  
Industrial Safety Manual Chapter 12, Electrical Safety

**Time critical task:**

No

**Validation Time:**

12 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_☐ **6.10.A - INITIAL CONDITIONS****CUE:**

All Initial Conditions have been completed. The Reserve Battery is available for use on 11 125 VDC Bus, Tech Specs 3.8.4 and 3.8.1 have been reviewed for applicability, Risk level change has been reviewed ( Risk goes from Green to Yellow) and the pre-job briefing has been completed.

- ☐ 6.10.A 1 - The Reserve Battery is available for use on 11 125 VDC Bus
- ☐ 6.10.A 2 -The following Tech Specs have been reviewed for applicability for both units:
  - 3.8.4 DC Sources-Operating
  - 3.8.1 AC Sources-Operating
- ☐ The Risk Level change has been reviewed and briefing completed.

**NOTE TO EVALUATOR**

Candidate should determine PPE requirements using the Industrial Safety Manual, Chapter 12. For Operating disconnects with enclosure doors closed (opening and closing) the following are required:

- No Minimum Arc Rating Required for FR Clothing 100% Cotton Long Sleeve Shirt and Pants, OR 100% cotton short sleeve shirt and pants under FR Lab Coat, Safety Glasses

**NOTE**

Ask candidate where and how to obtain the Kirk keys for the Disconnect Switches to be operated. Candidate should describe the process of signing out the keys from the Operations Work Control SRO whose office is located in the North Service Building

☐ **6.10.B - PROCEDURE****CUE:**

Inform candidate they have obtained the required keys from the OWC Office

- ☐ 6.10.B.1 - **OBTAIN** the Kirk keys for Disconnect Switches ISC1D67-1 RESERVE BATTERY TO DC BUS 11 and 0DISC1D67-2 RESERVE BATTERY TO DC BUS 11 from OWC.

Same as element

ELEMENT (shaded = CRITICAL STEP)STANDARD**NOTE**

Annunciator U-16 11 12 BATT OPEN CIRCUIT DISCONNECTED at 1C34 may alarm.

<b>CUE:</b>	Acknowledge candidates request for a Peer Check	
<input type="checkbox"/>	6.10.B.2 - <b>[PC] PLACE</b> Disconnect Switch 95-1103 11 125 VDC BUS FROM 11 BATTERY to OFF.	Same as element
<b>CUE:</b>	<b>If</b> there is a labeling issue, inform applicant a Temporary Label Request has been submitted. <b>Acknowledge</b> candidates request for a Peer Check	
<input type="checkbox"/>	6.10.B.3 - <b>[PC] ENSURE</b> ON Disconnect Switch 0DISC1D50 125V BATTERY 01 DISC SW (Located on Panel 1D50).	Same as element
<b>CUE:</b>	<b>If</b> there is a labeling issue, inform applicant a Temporary Label Request has been submitted. <b>Acknowledge</b> candidates request for a Peer Check	
<input type="checkbox"/>	6.10.B.4 - <b>[PC] PLACE</b> 0HS1D54 125V BATTERY 01 XFER SW (Located on Panel 1D54) to LOAD position.	Same as element
<b><u>NOTE</u></b> The Kirk Keys are captured when the interlock for 0DISC1D67-1 and 0DISC1D67-2 have been removed and the disconnects are closed.		
<input type="checkbox"/>	6.10.B.5 - <b>INSERT</b> Kirk Key into Disconnect Switch:0DISC1D67-1 RESERVE BATTERY TO DC BUS 11 (Located on Panel 0PNL1D67).	Same as element
<input type="checkbox"/>	6.10.B.6 - <b>INSERT</b> Kirk Key into Disconnect Switch 0DISC1D67-2 RESERVE BATTERY TO DC BUS 11 (Located on Panel 0PNL1D67).	Same as element
<input type="checkbox"/>	6.10.B.7 - <b>ROTATE</b> the Kirk Key for Disconnect Switch 0DISC1D67-1 RESERVE BATTERY TO DC BUS 11 180 degrees in the clockwise direction.	Same as element
<input type="checkbox"/>	6.10.B.8 - <b>ROTATE</b> the Kirk Key for Disconnect Switch 0DISC1D67-2 RESERVE BATTERY TO DC BUS 11 180 degrees in the clockwise direction.	Same as element

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>CUE:</b>	Acknowledge candidates request for a Peer Check	
<input type="checkbox"/> 6.10.B.9 - <b>[PC] PLACE</b> Disconnect Switch 0DISC1D67-1 RESERVE BATTERY TO DC BUS 11 to ON.	Same as element	
<b>CUE:</b>	Acknowledge candidates request for a Peer Check	
<input type="checkbox"/> 6.10.B.10 - <b>[PC] PLACE</b> Disconnect Switch 0DISC1D67-2 RESERVE BATTERY TO DC BUS 11 to ON.	Same as element	

**TERMINATING CUE:** This JPM is complete when the Reserve Battery is aligned to 11 DC BUS per OI-26A, Section 6.10. No Other Actions Are Required. The student is expected to this JPM.

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

**Verification of Completion**Job Performance Measure Number: **PLANT-1**

Examinee: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_



### EXAMINEE'S CUE SHEET

**Initial Conditions:**

1. You are performing the duties of an extra Licensed Operator

**Initiating Cue:**

The Control Room Supervisor has directed you to align the Reserve Battery to 11 DC Bus per OI-26A, Section 6.10. Are there any questions? You may begin. Are there any questions? You may begin.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: PLANT-2

Rev. 1	Incorporated comments from NRC validation of JPM
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**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** PLANT-2**Task Title:** Isolate Fire Effects for 11 Cavity Cooling Fan Damper & Restore Switchgear Room Ventilation**Task Number:** 078.009**K/A Reference:** 015 A2.02 (3.1, 3.5)**Method of testing:**Simulated Performance: ☒Actual Performance: ☐Classroom: ☐Simulator: ☐Plant: ☒**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. A severe fire has resulted in a Control Room evacuation.
2. You are performing the duties of the Unit-1 ABO
3. You have obtained the Safe Shutdown key ring and equipment from the Safe Shutdown Key and Equipment Lockers.

**Initiating Cue:**

You have just completed Step "BI" and are directed to continue AOP-9A. Step "BJ", Isolate Fire Effects for the 11 Cavity Cooling Fan Damper is your next step.

Are there any questions? You may begin.

**Task Standard:**

Isolates Fire Effects from Cavity Cooling Fan Damper and Restores Switchgear Ventilation to Service.

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

AOP-9A-1, Control Room Evacuation and Safe Shutdown Due To A Severe Control Room Fire  
Key to Safe Shutdown hose locker

**General References:**

AOP-9A-1, Control Room Evacuation and Safe Shutdown Due To A Severe Control Room Fire

**Time Critical Task:**

No

**Validation Time:**

15 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD**TIME START:** \_\_\_\_\_**NOTE**

Candidate should comply with all RP procedures and policies for entering the RCA.

**CUE:**

Once the candidate describes how they would obtain a copy of the procedure provide them with a copy of AOP-9A-1, Block Step IV.BJ.

☐ Locates AOP-9A-1, Block Step IV.BJ.

Same as element

☐ Candidate proceeds to Unit-1 69' Electrical Penetration Room (69' Aux Bldg)

Same as element

**BJ. ISOLATE FIRE EFFECTS FOR 11 CAVITY COOLING FAN DAMPER****NOTE**

11 Cavity Cooling Fan Damper Isolation Switch, 1-HS-5303A is located on breaker 52-11454.

☐ BJ.1. - Insert Key into Cavity Cooling Fan Damper Isolation Switch, 1-HS-5303A**Simulates** inserting key☐ BJ.2. - Place 11 Cavity Cooling Fan Damper Isolation Switch, 1-HS-5303A, to CR ISOL.**Simulates** rotating the key to the CR ISOL position☐ BJ.3. - Notify the RO 11 Cavity Cooling Fan is available to start **PER** Step BT.

Same as element.

☐ BJ.4 - **GO TO** 69" Fan Room to Perform Step BK

Same as element.

**BK. RESTORE SWITCHGEAR ROOM VENTILATION****NOTE**

Equipment to tie the damper is located at 11 SWGR HVAC

**CUE**

Once ATMOS DISCH GRAVITY DMPR, 1-HVAC-230 is located, inform applicant damper is tied open.

☐ BK.1. - Tie open ATMOS DISCH GRAVITY DMPR, 1-HVAC-230

Locates damper

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>CUE</b>	Inform applicant the Unit-2 ABO has completed steps BK.2 and BK.3	
<input type="checkbox"/> BK.2. - <b>GO TO</b> the Auxiliary Building roof		N/A based on cue provided
<input type="checkbox"/> BK.3 - Open the Roof Duct Cover, U-1 SWGR HVAC COMMON SUPPLY DUCT COVER DAMPER, 1-HVAC-5426E.		N/A based on cue provided
<input type="checkbox"/> BK.4 - Return to the 69" Unit-1 Fan Room		Same as element
<input type="checkbox"/> BK.5. - Place 11 Switchgear Room Vent Fan handswitch, 1-HS-5426, to START.		<b>Simulates</b> placing 1-HS-5426 to START
<input type="checkbox"/> BK.6. - Notify 1C43 that 11 Switchgear HVAC Fan has been started.		Same as element

**TERMINATING CUE:** This task is complete when steps BJ.1 thru BK.6 have been completed. Task completion will be signaled by the evaluator. No further actions are necessary.

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

**Verification of Completion**Job Performance Measure Number: **PLANT-2**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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\_\_\_\_\_

Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_



**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. A severe fire has resulted in a Control Room evacuation.
2. You are performing the duties of the Unit-1 ABO
3. You have obtained the Safe Shutdown key ring and equipment from the Safe Shutdown Key and Equipment Lockers.

**Initiating Cue:**

You have just completed Step "BI" and are directed to continue AOP-9A. Step "BJ", Isolate Fire Effects for the 11 Cavity Cooling Fan Damper is your next step.

Are there any questions? You may begin.

APPLICANT: \_\_\_\_\_

# CALVERT CLIFFS NUCLEAR POWER PLANT

## 2014 NRC

## INITIAL LICENSED

## OPERATOR EXAM

## JPM #: PLANT-3

Rev. 1

Incorporated comments from NRC validation of JPM

**Facility:** Calvert Cliffs 1 & 2**Job Performance Measure No.:** PLANT-3**Task Title:** Startup the Instrument Air System using the Fire Main for Compressor cooling**Task Number:** 019.014**K/A Reference:** 2.1.30 (4.4, 4.0)**Method of testing:**Simulated Performance: ☒Actual Performance: ☐Classroom: ☐Simulator: ☐Plant: ☒**Read to the examinee:**

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

**Initial Conditions:**

1. Unit-1 is in Mode 3.
2. 11 Instrument Air Compressor is in service.
3. The Fire System Booster Jockey Pump is in Auto.
4. Service Water System maintenance requires isolating Service Water to the Unit-1 Instrument Air Compressors.
5. You have received your pre-job brief from the CRS and are performing the duties of an extra TBO qualified operator.
6. The OSO is standing by to assist as necessary

**Initiating Cue:**

The CRS directs you to align the Fire Main for Compressor Cooling to the Instrument Air Compressors per OI-19 Section 6.4.

**Task Standard:**

Correctly aligns the Fire Main to Air Compressors IAW OI-19

**Evaluation Criteria:**

1. All critical steps completed (denoted by shading).
2. All sequential steps completed in order.
3. All time-critical steps completed within allotted time.
4. JPM completed within validated time. Completion time may exceed the validated time if satisfactory progress is being made.

**Critical Step Basis:**

Critical steps are those that when not performed correctly, in the proper sequence, and/or at the proper time, will prevent the system from functioning properly or preclude successful completion of the task.

**Required Materials:**

OI-19, Instrument Air, Section 6.4, System Operation Using Fire Main for Compressor Cooling

**General References:**

Procedures and manuals normally available in the Control Room

**Time Critical Task:**

No

**Validation Time:**

15 minutes

**Simulator Setup:**

None

ELEMENT (shaded = CRITICAL STEP)STANDARD

<b>TIME START:</b> _____	
<input type="checkbox"/> Identify & locate OI-19, Section 6.4	Same as element
<b>CUE:</b>	<u>ALL</u> initial conditions and precautions are met. Proceed to Step 6.4.B. A Fire System Use Permit has been obtained.
<b>OI-19, System Operation Using Fire Main For Compressor Cooling, Section 6.4.B</b>	
<input type="checkbox"/> 6.4.B.1. - <b>OBTAIN</b> a Fire System Use Permit.	Determines from Cue that a Fire System Use Permit has been obtained.
<input type="checkbox"/> 6.4.B.2. - <b>ALIGN</b> the Fire Booster Pumps as follows:	
<input type="checkbox"/> 6.4.B.2.a. - <b>PLACE</b> BOOSTER JOCKEY PUMP FIRE PROT/SYS, 0-HS-9600, in AUTO.	Same as element.
<b>CUE:</b>	<b>WHEN</b> requested, acknowledge as OSO that 0-HS-6227 has been placed in PTL.
<input type="checkbox"/> 6.4.B.2.b. - <b>PLACE</b> MAIN PRESSURIZER #13, 0-HS-6227 in PTL.	Requests the OSO or FASW to place 0-HS-6227 in PTL.
<b>CUE:</b>	<b>WHEN</b> each valve is operated properly report stem has lowered and valve travel has stopped.
<input type="checkbox"/> 6.4.B.3. - <b>SHUT</b> the following valves <b>AND MONITOR</b> AFW room temperature <b>PER</b> TBO log notes: <input type="checkbox"/> INLET TO AUX FD PP RM CLR, 1-SRW-502. <input type="checkbox"/> OUT FROM AUX FD PP RM CLR, 1-SRW-503.	Locates each valve and shuts it. Initiates AFW Pp RM temperature monitoring.
<p style="text-align: center;"><b><u>NOTE:</u></b></p> <ul style="list-style-type: none"> <li>Compliance with MN-1-110, <u>PROCEDURE CONTROLLED ACTIVITIES</u>, is required when using temporary hose connections.</li> <li>The supply and discharge fire hoses are located in the AOP/EOP locker outside the SRW Room.</li> </ul>	
<input type="checkbox"/> 6.4.B.4. - <b>ALIGN</b> Fire Main to supply cooling water to the Instrument Air Compressors as follows:	Locates AOP/EOP locker containing required fire hoses.

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
<input type="checkbox"/> 6.4.B.4.a. - <b>CONNECT</b> a fire hose to the nearest available Fire Hose Station adjacent to AUX WTR SUPP TO I&P/A COMPR, 1-SRW-182.		Same as element
<b>CUE:</b>	Once Fire Main Supply to the hose has been simulated to be cracked open: a clear stream of water is being discharged from fire hose.	
<input type="checkbox"/> 6.4.B.4.b. - <b>CRACK OPEN</b> Fire Main Supply to the hose connected in Step above <b>AND</b> purge fire main to a drain until clear water is discharged <b>AND THEN SHUT</b> the supply valve.		Flushes the Fire Hose until clear water is discharged and then shuts valve.
<b><u>EVALUATOR NOTE</u></b> 1-SRW-182 and fire hose pipe connection is located above 11 IAC north end.		
<input type="checkbox"/> 6.4.B.4.c. - <b>CONNECT</b> the fire hose to Auxiliary Water Supply to Air Compressors, 1-SRW-182		Same as element
<b>CUE:</b>	<b>WHEN</b> valve is operation is properly simulated report: stem has risen and valve travel has stopped and hose is pressurized.	
<input type="checkbox"/> 6.4.B.4.d. - <b>OPEN</b> the Fire Main Supply valve at the Fire Hose Station that was connected to in step 4.a.		Same as element
<input type="checkbox"/> 6.4.B.4.e. - <b>CONNECT</b> a separate fire hose to AUX WTR FROM TO I & P/A DISCH COMPR, 1-SRW-184, to act as drain line.		Same as element
<input type="checkbox"/> 6.4.B.4.f. - <b>ENSURE</b> the open end of the Fire Hose just connected is <b>DIRECTED</b> to a floor drain and properly secured.		Same as element
<b>CUE:</b>	<b>WHEN</b> requested, acknowledge, as other TBO, the request to verify that hoses have been connected properly.	
<input type="checkbox"/> 6.4.B.4.g. - <b>ENSURE</b> that another TBO qualified operator INDEPENDENTLY <b>VERIFIES</b> the hoses connected properly.		Same as element
<input type="checkbox"/> 6.4.B.4.h. - <b>LOG</b> the connection of hose in the Turbine Building Operator's Log		Verbalizes logging the hose connections in the TBO Log.
<b><u>CAUTION:</u></b>		

<u>ELEMENT (shaded = CRITICAL STEP)</u>		<u>STANDARD</u>
Steps 4.i, 4j, 4.k and 4.l must be completed in a timely manner due to the Fire Main and Service Water System being cross-connected.		
<b><u>EVALUATOR NOTE</u></b>		
1-SRW-184 is located above 11 IAC north end.		
<b>CUE:</b>	<b>WHEN</b> valve is operation is properly simulated report: Stem has risen and valve travel has stopped.	
<input type="checkbox"/> 6.4.B.4.i. - <b>OPEN</b> AUX WTR FROM I & P/A DISCH COMPR, 1-SRW-184.	Same as element	
<b><u>EVALUATOR NOTE</u></b>		
1-SRW-182 is located above 11 IAC north end.		
<b>CUE:</b>	<b>WHEN</b> valve is operation is properly simulated report: stem has risen and valve travel has stopped.	
<input type="checkbox"/> 6.4.B.4.j. - <b>OPEN</b> AUX WTR SUPP TO I & P/A COMPR, 1-SRW-182.	Same as element	
<b><u>EVALUATOR NOTE</u></b>		
1-SRW-181 is located above and northeast of 11 IAC.		
<b>CUE:</b>	<b>WHEN</b> valve is operation is properly simulated report: stem has lowered and valve travel has stopped.	
<input type="checkbox"/> 6.4.B.4.k. - <b>SHUT</b> SRW SUPP HDR STOP TO I & P/A COMPR, 1-SRW-181.	Same as element	
<b><u>EVALUATOR NOTE</u></b>		
1-SRW-183 is located above 11 IAC north end.		
<b>CUE:</b>	<b>WHEN</b> valve is operation is properly simulated report: stem has lowered and valve travel has stopped.	
<input type="checkbox"/> 6.4.B.4.l. - <b>SHUT</b> SRW DISCH HDR STOP FROM I & P/A COMPR, 1-SRW-183.	Same as element	
<b>CUE:</b>	11 Instrument Air Compressor is running.	
<input type="checkbox"/> 6.4.B.5. - <b>IF</b> the Instrument Air Compressors are shutdown, <b><u>THEN</u></b> <b>START</b> the Instrument Air Compressors as follows ...	Determines step is N/A from Initiating Cue.	



ELEMENT (shaded = CRITICAL STEP)STANDARD**NOTE**

- Optimal Service Water return temperature is 110° F. SRW Return Temperature will be lower during colder months.
- The IA Compressor TCV bypass valve SHALL be a minimum of ½-turn open under all normal operating conditions.

**CUE:**

Using your pen/pencil or a laser pointer place on meter to indicate approximately 112° F allowing operator to interpret value.

- ☐ 6.4.B.6. - **IF** an Instrument Air Compressor is running, **THEN MONITOR** the Service Water Outlet Temperature maintaining at 110° F (+10° F)

Identifies proper TI and recognizes SRW outlet temperature is in the normal range.

**CUE:**

Acknowledge report that fire main water may have been introduced into the SRW system

- ☐ 6.4.B.7. - **NOTIFY** Chemistry that fire main water may have been introduced into the SRW system.

Same as element

**TERMINATING CUE:** This JPM is complete when the Fire Main has been aligned for Compressor Cooling and 11 Instrument Air Compressor Service Water Outlet Temperature has been checked. No further actions are required.

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

**Verification of Completion**Job Performance Measure Number: **PLANT-3**

Applicant: \_\_\_\_\_

NRC Examiner: \_\_\_\_\_

Date Performed: \_\_\_\_\_

Facility Evaluator: \_\_\_\_\_

Number of Attempts: \_\_\_\_\_

Time to Complete: \_\_\_\_\_

Follow up Question: \_\_\_\_\_

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Applicant Response: \_\_\_\_\_

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Result: SAT \_\_\_\_\_ UNSAT \_\_\_\_\_

Examiner's Signature and Date: \_\_\_\_\_

**EXAMINEE'S CUE SHEET****Initial Conditions:**

1. Unit-1 is in Mode 3.
2. 11 Instrument Air Compressor is in service.
3. The Fire System Booster Jockey Pump is in Auto.
4. Service Water System maintenance requires isolating Service Water to the Unit-1 Instrument Air Compressors.
5. You have received your pre-job brief from the CRS and are performing the duties of an extra TBO qualified operator.
6. The OSO is standing by to assist as necessary

**Initiating Cue:**

The CRS directs you to align the Fire Main for Compressor Cooling to the Instrument Air Compressors per OI-19 Section 6.4.

Facility: **Calvert Cliffs Nuclear Power Plant**      Scenario #: **1**      OP-Test #: **CCNPP 2014**

Examiners:

Operators:

Initial Conditions: **Unit-1 is at 100% power, MOC. Unit-2 is in Mode 1.**

Turnover: **12 MSL and N-16 Monitors, 12 AFW Pump, and the 1B DG are OOS. The 0C DG is aligned to 14 4KV Bus per OI-21B. 11 Charging Pump is the lead pump. Instructions for the crew are to maintain power at 100%**

Event #	Malfunction #	Event Type*	Event Description
1	152-1206	C - BOP/SRO R - ATC	11 Heater Drain Pump trip
2	rsc026_01	I- ATC T - SRO	1-LT-110X (selected channel) fails LOW
3	srw002_02	C - ALL	12 SRW Header leak in Turbine Bldg
4	fw006_02	C - BOP/SRO	12 MFRV fails as is (mechanical binding)
5	ceds010_19 ceds010_32	C - ATC	CEAs 19 and 32 fail to insert on Reactor trip. (Boration using normal path)
6	swyd002	M - ALL	Complete Loss of Offsite Power
7	dg002_02	C - BOP/SRO T - SRO	1A DG Start Failure
* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec			

**Critical Tasks: (shaded)**

- Notes two CEAs failed to insert, commences RCS boration before exit of EOP-0.
- Notes excessive Feed Flow, secures main feed & initiate auxiliary feed before exit of EOP-0
- Reenergizes a 4kV Bus with the 0C D/G prior to 125 VDC voltage < 106V.

Rev. 1	Incorporated comments from NRC validation of Scenario
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OP-Test #: 2014      Scenario #: 1

### **SCENARIO OVERVIEW**

#### **SRW LEAK IN TURBINE BLDG / LOSS OF OFFSITE POWER**

Units 1 and 2 are operating at 100% power. 12 MSL and N-16 Monitors, 12 AFW Pump, and the 1B DG are OOS. The 0C DG is aligned to 14 4KV Bus per OI-21B. 11 Charging Pump is the lead pump.

First, a trip of 11 HDP occurs causing crew to implement AOP-3G. The crew should control maximize SGFP suction pressure by bypassing precoats and demins. The crew should start the 3rd Condensate Booster pump then exit AOP-3G.

Next, the selected PZR level control channel will fail LOW requiring the crew to shift channels to regain plant control.

After these actions are completed, a large SRW leak will initiate in the turbine building and the crew will have to isolate turbine building SRW and trip the reactor. Two CEAs will fail to insert on the reactor trip and 12 S/G MFRV will fail to 30% open. Approximately 2 to 3 minutes after the trip, a loss of offsite power will occur. During EOP-0 the ATC is expected to commence boration for the 2 stuck CEA's per the Reactivity Control Plaque. The BOP should recognize that 12 MFRV has failed to close and take action per the Heat Removal Plaque and secure main feed and initiate auxiliary feed.

The crew is expected to initially implement EOP-2. Upon entry into EOP-2, the 1A DG is lost requiring the crew to reenergize 14 4KV bus with the 0C DG. If unable to restore power to any 4KV bus the crew will transition to EOP-7, Station Blackout. If plant conditions degrade or the crew is unsure of the diagnosis it is acceptable for them to enter EOP-8. If EOP-8 is entered all critical tasks still apply unless individual tasks are invalidated by the exam team.

Scenario ends after 0C D/G aligned to 14 4KV bus.

**INSTRUCTOR SCENARIO INFORMATION:**

- \_\_\_\_\_ 1. Reset to IC-24
- \_\_\_\_\_ 2. Perform “Switch Check”
- \_\_\_\_\_ 3. Place simulator in **RUN**, advance charts and clear alarm display.
- \_\_\_\_\_ 4. Place simulator in **FREEZE**.
- \_\_\_\_\_ 5. Enter Triggers:
  - \_\_\_\_\_ a. PZR Level <160” as **Event 10**
- \_\_\_\_\_ 6. Enter Malfunctions:
  - \_\_\_\_\_ a. 12 AFW Pump Tripped: **afw001\_02** at **time zero**
  - \_\_\_\_\_ b. 1B DG Start Failure: **dg001\_02** at **time zero**
  - \_\_\_\_\_ c. 2B DG Start Failure: **dg001\_03** at **time zero**
  - \_\_\_\_\_ d. Stuck CEA # 19: **ceds010\_19** at **time zero**
  - \_\_\_\_\_ e. Stuck CEA # 32: **ceds010\_32** at **time zero**
  - \_\_\_\_\_ f. 11 Heater Drain Pump trip: **152-1206** to **TRIP** on **Event 1**.
  - \_\_\_\_\_ g. PZR lvl control channel 1-LT-110X fails: **rcs026\_01** to **LOW** on **Event 2**.
  - \_\_\_\_\_ h. 12 SRW Hdr Turb Bldg leak: **srw002\_02** at **30%**, with a **3 minute ramp time**, on **Event 3**.
  - \_\_\_\_\_ i. Complete Loss of Offsite Power: **swyd002** on **Event 4**.
  - \_\_\_\_\_ j. 1A DG Start Failure: **dg002\_02** on **Event 5**
- \_\_\_\_\_ 7. Enter Panel Overrides:
  - \_\_\_\_\_ a. 12 AFW PP TURB TRIP SW: **P1C04\_1HS3988\_LTWHIT** to **OFF** at **time zero**.
  - \_\_\_\_\_ b. 12 AFW PP TURB TRIP SW: **P1C04\_1STP3988\_LTRED** to **OFF** at **time zero**.
  - \_\_\_\_\_ c. 12 AFW PP TURB TRIP SW: **P1C04\_1STP3988\_LTWHI** to **OFF** at **time zero**.
  - \_\_\_\_\_ d. Mn Stm Eff RMS Alarm window: **P1C03\_C43\_LTON** to **Off** at **time zero**.
  - \_\_\_\_\_ e. Mn Stm N-16 RMS Alarm window: **P1C03\_C47\_LTON** to **Off** at **time zero**.

- \_\_\_\_\_ 8. Enter Remote Functions / Administrative:
- \_\_\_\_\_ a. **189-1406** (DG0C BUS 14 DISC) to **CLOSED** at **time zero** and place a pink tag on control room indication for disconnect.
  - \_\_\_\_\_ b. Non-Essential 4KV Motor Overload **P1C17\_L19\_LTON** to **ON** on **Event 1**
  - \_\_\_\_\_ c. 12 S/G MFRV: **1-FW-1121-CV** to **30%** on **Event 10**
  - \_\_\_\_\_ d. Tie MCC-104 to MCC-114 as follows:
    - \_\_\_\_\_ 1. **52-10401** (FDR to MCC 104R) to **OPEN** as **Event 7**.
    - \_\_\_\_\_ 2. **52-10420** (MCC TIE 104R TO 114R/INTERLOCK) to **CLOSED** with a **30 second delay** as **Event 7**.
  - \_\_\_\_\_ e. Tie MCC-114 to MCC-104 as follows:
    - \_\_\_\_\_ 1. **52-11401** (FDR TO MCC 114R) to **OPEN** as **Event 8**.
    - \_\_\_\_\_ 2. **52-10420** (MCC TIE 104R TO 114R/INTERLOCK) to **CLOSED** with a **30 second delay** as **Event 8**.
  - \_\_\_\_\_ f. 12 MSL and N-16 Rad Monitors to **BYPASS ON** using the key switch on the monitors (Key stored in lock box by simulator conference room door)
  - \_\_\_\_\_ g. Ensure PZR level control handswitch, 1-HS-110, selected to X on panel 1C06.
  - \_\_\_\_\_ h. Place Yellow Tag on 12 AFW Pump.
  - \_\_\_\_\_ i. Place Yellow Tag on 1B DG start pushbutton.
  - \_\_\_\_\_ j. Place 1B DG OUT BKR, 1-CS-152-1403, in PULL-TO-LOCK and caution tag handswitch.
  - \_\_\_\_\_ k. Place the 0C DG feeder breakers to 4KV Buses 11, 21, & 24 in PULL-TO-LOCK.
  - \_\_\_\_\_ l. Place pink tags on the 0C DG feeder breakers to 4KV Buses 11, 21, & 24.
  - \_\_\_\_\_ m. Place a Yellow Dot on 1C03 Alarm Windows C-43 & C-47
  - \_\_\_\_\_ n. Check all magnetic plaques are correct.
- \_\_\_\_\_ 9. **Independently** verify correct completion of the following:
- \_\_\_\_\_ a. Malfunctions and Event Triggers correctly entered
  - \_\_\_\_\_ b. Panel Overrides correctly entered
  - \_\_\_\_\_ c. Remote Functions / Administrative actions correctly entered/performed
- \_\_\_\_\_ 10. Select "**Clock**" time and ensure "**Horn On**" for annunciators.



\_\_\_\_\_ 11. Place simulator in **RUN** and reset/acknowledge panel and plant computer alarms.

\_\_\_\_\_ 12. Brief the Crew:

1. Present plant conditions:	Unit-1 @ 100% power MOC (10,885 MWD/MTU) Unit-2 @ 100% power EOC (17,800 MWD/MTU)
2. Power history:	100% power for previous 128 days
3. Equipment out of service:	<ul style="list-style-type: none"> <li>• 12 AFW Pump for past 4 hours for bearing replacement (back in 4 hours).</li> <li>• 1B DG for cylinder work (back in 1 day), 0C is pre-aligned to 14 4KV bus</li> </ul>
4. Abnormal conditions:	12 MSL & N16 Rad Monitors OOS for last 7 days. IM troubleshooting
5. Surveillances due:	OI-49 in 4 hrs.
6. Instructions for shift:	Maintain 100% power per OP-3.

\_\_\_\_\_ 13. Allow crew 3 to 5 minutes to walk down control panels.

\_\_\_\_\_ 14. Instructions for the Booth Operator:

- \_\_\_\_\_ a. Activate **Event 1** trip of 11 Heater Drain Pump, when cued by Lead Evaluator.
- \_\_\_\_\_ b. Activate **Event 2**, 1-LT-110X failure when cued by Lead Evaluator.
- \_\_\_\_\_ c. Activate **Event 3**, 12 SRW Header leak in the Turbine Bldg, when cued by Lead Evaluator.
- \_\_\_\_\_ d. Ensure **Event 10** triggered, 1-CV-1121 failure, immediately upon reactor trip.
- \_\_\_\_\_ e. Activate **Event 4**, Complete Loss of Offsite Power after EOP-0 Alternate Actions for excessive feed flow have been completed (AFW flow initiated, SGFPs tripped and MFIVs shut) due to the stuck open MFRV, when cued by Lead Evaluator.
- \_\_\_\_\_ f. Activate **Event 5**, 1A DG start failure, after implementing EOP-2, or when cued by Lead Evaluator.

\_\_\_\_\_ 15. Post Session - **Restore** panels to as found conditions by removing administrative aids applied to panels per step 7, Enter Remote Functions / Administrative.

**RESPONSES TO CREW REQUESTS**

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
1. TBO/PPO investigate loss of 11 Heater Drain Pump.	Acknowledge and after 2 minutes, report that 11 HDP bkr is tripped with overload flag dropped.  After 4 minutes report nothing abnormal at pump other than it is secured
2. OWC/I&C need assistance for failed PZR level control channel 1-LT-110X.	Acknowledge.
3. TBO investigate SRW Leak.	Acknowledge, wait <b>1 minute</b> then inform the crew that the leak is on the inlet to the Main Turbine oil cooler downstream of 1-SRW-252 TURB LO CLR SRW SUPP. (IF SRW not isolated to TB yet then leak is active, once isolated then flow lessened in pressure until stopping approx 2 min later)
4. Report status of offsite power.	Report that there was a major fault in this area and that it will take several hours to repair the damage.
5. TBO tie 1Y10 to 1Y09.	Acknowledge wait <b>1 minute</b> and use remote function <b>1SY09 (TIE 1Y09/1Y10 TO THE LIVE BUS) TO 1Y09</b> . Report complete.
6. ABO tie MCC-104 to MCC-114	Acknowledge and activate <b>Event 7</b> .
7. ABO tie MCC-114 to MCC-104	Acknowledge. If <b>Event 7</b> is inserted, <u>delete</u> it from the schedule and activate <b>Event 8</b> .
8. TBO tie 1Y09 to 1Y10.	Acknowledge. <b>WHEN</b> OC DG has reenergized 14 4KV bus then wait <b>1 minute</b> and use remote function <b>1SY09 (TIE 1Y09/1Y10 TO THE LIVE BUS) TO 1Y10</b> . Report complete.
9. OSO investigate loss of 1A DG.	After 5 minutes, report that there is no apparent cause for the 1A DG to have tripped.

Op-Test #: 2014	Scenario #: 1	Event #: 1	Page 7 of 20
Event Description: Trip of 11 Heater Drain Pump		Event Type:	C – BOP/SRO
Time	Position	Applicant's Actions or Behavior	
	BOP	<input type="checkbox"/> Announce "Non-Essential 4KV Motor Overload" alarm	
	BOP	<input type="checkbox"/> Recognize 11 Heater Drain Pump trip and report to SRO	
	BOP	<input type="checkbox"/> Refers to Alarm Manual	
	SRO	<input type="checkbox"/> Implement AOP-3G "Malfunction of Main Feedwater System" <input type="checkbox"/> Direct BOP/ATC to monitor for trip criteria (S/G level approaching -40")	
	SRO	<input type="checkbox"/> Direct BOP to perform block step V "Failure of a Pump >5% Power"	
	BOP	<input type="checkbox"/> Perform V.B.2 "Maximize SGFP Suction Pressure" as necessary <ul style="list-style-type: none"> <li>○ Condenser Hotwell Controller 1-LIC-4405 to 50%</li> <li>○ Open Precoat Bypass valve 1-CD-5818-CV</li> <li>○ Open Condensate Demin Bypass valve 1-CD-4439-MOV</li> </ul>	
	ATC	<input type="checkbox"/> Inserts CEAs to prevent exceeding thermal power limits	
	BOP	<input type="checkbox"/> Ask permission of SRO to attempt restart of HDP	
	SRO	<input type="checkbox"/> When asked by BOP to restart HDP respond by not allowing due to unknown reason for trip	
	BOP	<input type="checkbox"/> Start 13 Condensate Booster Pump	
	BOP	<input type="checkbox"/> Inform Chemistry of bypassing Demins & Precoats	
	SRO	<input type="checkbox"/> Exit AOP-3G and implement OP-3	
Examiner notes:			
Event concludes when actions in AOP-3G complete and crew transitions back to OP-3.			
<p align="center"><b><u>NOTE TO EXAMINER</u></b></p> <p align="center">Cue Booth Operator to insert next malfunction, 1-LT-110X (PZR Level) failing LOW</p>			

Op-Test #: 2014	Scenario #: 1	Event #: 2	Page 8 of 20
Event Description: LT-110X Failure		Event Type:	I - ATC T - SRO
Time	Position	Applicant's Actions or Behavior	
	ATC/BOP	<input type="checkbox"/> Recognizes multiple alarms and reports to SRO	
	SRO	<input type="checkbox"/> Directs ATC to monitor the primary and BOP to check Alarm Manual for E-33 & E35	
	ATC	<input type="checkbox"/> Reports PZR level Channel X instrument has failed low and actual PZR level is rising	
	ATC/BOP	<input type="checkbox"/> Refers to the Alarm Manual for following actions: <input type="checkbox"/> Shifts PZR LVL CH SEL switch, 1-HS-110, to Y. <input type="checkbox"/> Shifts PZR HTR LO LVL CUT-OFF SEL switch, 1-HS-100-3, to Y.	
	SRO	<input type="checkbox"/> Refers to NO-1-200 for common tap failure	
	ATC	<input type="checkbox"/> Resets Proportional Heaters and monitors primary pressure and level restoring to normal values.	
	SRO/BOP	<input type="checkbox"/> Directs BOP to check containment parameters, Channel X PZR Pressure, and PT-102B to look for common tap failures	
	SRO	<input type="checkbox"/> Contacts OWC/I&C to investigate LT-110X failure	
	SRO	<input type="checkbox"/> Evaluates T.S. 3.3.10 Post-Accident Monitoring (PAM) Instrumentation for applicability. May reference STP-0-63-1. Determines LCO 3.3.10, Condition "A" is applicable.	
Examiner notes:			
<p><b>Event concludes when ARM actions complete &amp; Common Tap Analysis complete.</b>  <b>If SRO's understanding of Technical Specifications applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.</b></p>			
<p align="center"><b><u>NOTE TO EXAMINER</u></b></p> <p align="center"><b>Cue Booth Operator to insert next malfunction, Large SRW Leak in TB, when desired</b></p>			

Op-Test #: 2014	Scenario #: 1	Event #: 3	Page 9 of 20
Event Description: Large SRW Leak in TB		Event Type:	M-All
Time	Position	Applicant's Actions or Behavior	
	BOP	<input type="checkbox"/> Acknowledges alarms. Determines both SRW Head Tanks are rapidly lowering.	
	SRO	<input type="checkbox"/> Implements AOP-7B, Loss of Service Water	
	SRO	<input type="checkbox"/> Determines Trip Criteria and assigns to ATC/BOP.	
	BOP	<input type="checkbox"/> Inform SO-TSO and reduces MVARs to zero.	
	BOP	<input type="checkbox"/> Isolates SRW to turbine building by shutting: 1-SRW-1600-CV 1-SRW-1637-CV 1-SRW-1638-CV 1-SRW-1639-CV	
	BOP	<input type="checkbox"/> Stops 12 SRW PP and place its handswitch in <b>PTL</b> (may not be performed if SRW head tank levels observed to be rising prior to stopping pump)	
	BOP	<input type="checkbox"/> Starts Salt Water Air Compressors	
	ATC	<input type="checkbox"/> Trips the reactor and implements EOP-0	
Examiner notes:			
Event concludes when the Reactor is tripped			
<b><u>NOTE TO EXAMINER</u></b> Next malfunctions already inserted (MFRV failure and CEA's 19 & 32 failure to insert)			

Op-Test #: 2014	Scenario #: 1	Event #: 3(cont)/4/5	Page 10 of 20
Event Description: Reactor Trip		Event Type:	<b>M - ALL</b> <b>R - ATC</b> <b>C - BOP/SRO</b>
Time	Position	Applicant's Actions or Behavior	
	ATC	<input type="checkbox"/> Trips the Reactor by depressing the Manual Reactor Trip pushbuttons at 1C05	
	ATC (CT)	<input type="checkbox"/> Performs Reactivity Control Safety Function <ul style="list-style-type: none"> <li><input type="checkbox"/> Depress Manual Reactor Trip Pushbutton on 1C05</li> <li><input type="checkbox"/> Check Reactor tripped using NI power indications on 1C05</li> <li><input type="checkbox"/> Verifies all CEAs fully inserted             <ul style="list-style-type: none"> <li><input type="checkbox"/> IF more than ONE CEA fails to fully insert, THEN borate the RCS to at least 2300 ppm as follows:                 <ul style="list-style-type: none"> <li><input type="checkbox"/> a. Shut the VCT M/U valve, 1-CVC-512-CV.</li> <li><input type="checkbox"/> b. Open the BA DIRECT M/U valve, 1-CVC-514-MOV.</li> <li><input type="checkbox"/> c. Open the BAST GRAVITY FD valves:                     <ul style="list-style-type: none"> <li><input type="checkbox"/> 1-CVC-508-MOV</li> <li><input type="checkbox"/> 1-CVC-509-MOV</li> </ul> </li> <li><input type="checkbox"/> d. Verify the M/U MODE SEL SW, 1-HS-210, is in MANUAL.</li> <li><input type="checkbox"/> e. Start a BA PP.</li> <li><input type="checkbox"/> f. Shut the VCT OUT valve, 1-CVC-501-MOV.</li> <li><input type="checkbox"/> g. Start ALL available CHG PPs.</li> </ul> </li> </ul> </li> <li><input type="checkbox"/> Verify DI Water Makeup is secured             <ul style="list-style-type: none"> <li><input type="checkbox"/> Check 11 &amp; 12 RC makeup Pumps secured on 1C07</li> <li><input type="checkbox"/> Check VCT M/U 1-CVC-512-CV is shut on 1C07</li> <li><input type="checkbox"/> If aligned for direct makeup to RCS then shut RWT Charging Pump Suction 1-CVC-504-MOV on 1C07</li> </ul> </li> </ul> <input type="checkbox"/> Reports Reactivity Control Safety Function Complete.	
Examiner notes:			

Op-Test #: 2014	Scenario #: 1	Event #: 3/4/5 (cont.)	Page 11 of 20
Event Description: <b>Reactor Trip</b>		Event Type:	<b>M - ALL</b> <b>R - ATC</b> <b>C - BOP/SRO</b>
Time	Position	Applicant's Actions or Behavior	
	BOP	<input type="checkbox"/> <u>Performs Turbine Trip</u> <input type="checkbox"/> Checks Reactor tripped then: <input type="checkbox"/> Depresses both Turbine Trip Pushbuttons on 1C02 <input type="checkbox"/> Checks Main Turbine stop Valves shut on MK VI screen <input type="checkbox"/> Checks Turbine Speed drops on MK VI screen <input type="checkbox"/> Checks Turbine Generator Output Breakers open <input type="checkbox"/> 11 GEN BUS BKR 0-CS-552-22 on 1C01 <input type="checkbox"/> 11 GEN TIE BKR 0-CS-552-23 on 1C01 <input type="checkbox"/> Checks Generator Field Breaker open on 1C01 <input type="checkbox"/> Checks Generator Exciter Field breaker open on 1C01 <input type="checkbox"/> Ensures MSR 2 <sup>nd</sup> Stage Steam source Valves are shut <input type="checkbox"/> Reports <u>Turbine Trip Complete</u>	
	BOP	<input type="checkbox"/> <u>Performs Vital Auxiliaries Safety Function</u> <input type="checkbox"/> Checks 11 or 14 4KV bus energized. <input type="checkbox"/> Checks <b>ALL</b> 125V DC BUS VOLTS greater than 105 volts on 1C24: (notes failed voltmeter for 11 125V DC Bus) <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> Checks at least THREE 120V AC Vital Buses are energized on 1C24: <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> Checks EITHER 1Y09 OR 1Y10 energized on 1C24. <input type="checkbox"/> Verifies Component Cooling Flow to the RCP's <input type="checkbox"/> Reports <u>Vital Auxiliaries Safety Function Complete</u>	
Examiner notes:			

Op-Test #: 2014		Scenario #: 1		Event #: 3/4/5 (continued)		Page 12 of 20	
Event Description: <b>Reactor Trip</b>				Event Type:		<b>M – ALL</b> <b>R – ATC</b> <b>C – BOP/SRO</b>	
<b>Time</b>	<b>Position</b>	<b>Applicant's Actions or Behavior</b>					
	ATC	<input type="checkbox"/> <u>Performs Pressure &amp; Inventory Control Safety Function, including alternate actions</u> <input type="checkbox"/> Checks pressurizer pressure stabilizes between 1850 and 2300 PSIA <b>AND</b> is trending to 2250 PSIA. <input type="checkbox"/> Determines PORVs not leaking by checking Acoustic Monitor and Quench Tank parameters <input type="checkbox"/> Reports <u>Pressure and Inventory Safety Function Complete</u>					
	BOP (CT)	<input type="checkbox"/> <u>Performs Core &amp; RCS Heat Removal Safety Function</u> <input type="checkbox"/> Checks TBVs/ADV's controlling S/G pressure 850-920 PSIA and T <sub>COLD</sub> 525-535°F <input type="checkbox"/> Shuts both MSIVs if S/G pressure drops to 800 PSIA <input type="checkbox"/> Verifies SGIS actuated if S/G pressure drops below 685 PSIA <input type="checkbox"/> Checks S/G level (-)170" to (+) 50" on 1C03 <input type="checkbox"/> <b>IF</b> Feedwater flow is lost <b>OR</b> excessive, <b>THEN</b> perform the following actions: <input type="checkbox"/> Start an AFW PP <input type="checkbox"/> Trip the SGFPs <input type="checkbox"/> Shut the SG FW ISOL valves <input type="checkbox"/> Operate the AFW System to restore S/G levels to between (-)170 and (+)30 inches <input type="checkbox"/> Checks at least one RCP is in a loop with a S/G available for heat removal (on 1C06) <input type="checkbox"/> Checks T <sub>HOT</sub> minus T <sub>COLD</sub> is less than 10°F by checking indicators on 1C06 <input type="checkbox"/> Reports <u>Core &amp; RCS Heat Removal Safety Function Complete</u> .					
Examiner notes:							
Event concludes when the 11 4KV bus is lost due to Loss of Offsite Power							
<b><u>NOTE TO EXAMINER</u></b> <b>Cue Booth Operator to insert next malfunction, Loss of Offsite Power, when desired</b>							



Op-Test #: 2014	Scenario #: 1	Event #: 6	Page 13 of 20
Event Description: EOP-0 (LOOP)		Event Type:	C – ALL
Time	Position	Applicant's Actions or Behavior	
	SRO	<input type="checkbox"/> Notes Loss of Offsite Power. Informs SM, directs the RO and CRO to reevaluate safety functions.	
	ATC	<input type="checkbox"/> RE-evaluates Reactivity Control safety function: <input type="checkbox"/> Restarts a charging pumps to restore boration <input type="checkbox"/> Reports Reactivity Control safety function is still <b>Complete</b> .	
	ATC	<input type="checkbox"/> Re-evaluates PIC safety function: <input type="checkbox"/> Check pressurizer pressure between 1850 and 2300 PSIA <b>AND</b> trending to 2250 PSIA <input type="checkbox"/> Check pressurizer level stabilizes between 80 and 180 inches <b>AND</b> is trending to 160 inches <input type="checkbox"/> Reports Pressure and Inventory safety function as still <b>Complete</b> .	
	BOP	<input type="checkbox"/> Re-evaluates VA safety function <input type="checkbox"/> Check 11 <b>OR</b> 14 4KV Vital Bus is energized <input type="checkbox"/> <b>IF EITHER</b> 11 <b>OR</b> 14 4KV Bus is not energized <b>AND</b> the 0C DG is <b>NOT</b> running, <b>THEN</b> depress the 0C DG EMERGENCY START PB, 0-HS-0707: <input type="checkbox"/> Check ALL 125V DC BUS VOLTS >105 volts <input type="checkbox"/> Check at least THREE 120V AC Vital Buses energized <input type="checkbox"/> Check <b>EITHER</b> 1Y09 <b>OR</b> 1Y10 energized <input type="checkbox"/> Verify Component Cooling flow to the RCP's o Restarts 11 Component Cooling Pump <input type="checkbox"/> IF <b>ANY</b> electrical bus perturbations have occurred, <b>THEN</b> dispatch an operator to verify Switchgear Ventilation in service per OI-22H <input type="checkbox"/> Reports VA is <b>Complete</b> (notes 14 4kV bus and 1Y10 are deenergized).	
Examiners notes:			

Op-Test #: 2014		Scenario #: 1	Event #:6 (cont.)	Page 14 of 20
Event Description: EOP-0 (LOOP)			Event Type:	C – ALL
Time	Position	Applicant's Actions or Behavior		
	BOP	<input type="checkbox"/> Re-evaluates Core and RCS Safety Function <input type="checkbox"/> Reestablishes RCS Heat Sink by operating the TBVs or ADVs to maintain: (may exceed these bands initially but actions taken to return) <ul style="list-style-type: none"> <li>○ S/G pressure between 850 and 920 PSIA.</li> <li>○ TCOLD between 525° F and 535° F.</li> <li>○ Restart AFW flow if 13 AFW PP started initially</li> </ul> <input type="checkbox"/> Reports HR safety function <b>Cannot Be Met</b> due to NO RCPs operating.		
	BOP	<input type="checkbox"/> <u>Performs Containment Environment Safety Function</u> <input type="checkbox"/> Checks Containment Pressure < 0.7 PSIG using narrow range pressure on 1C10 <input type="checkbox"/> Checks Containment Temperature < 120°F using cavity and dome temperature indicators on 1C10. <input type="checkbox"/> Checks Containment Gaseous RMS at 1C22 not in alarm with no abnormal rising trend <input type="checkbox"/> Reports <u>Containment Environment Safety Function</u> <b>Complete</b> or <b>Cannot be Met</b> due Loss of Power Effects (based on timing of LOOP)		
	BOP	<input type="checkbox"/> <u>Perform Rad Levels External to Containment Safety Function</u> <input type="checkbox"/> Check the following RMS alarms are clear with no unexplained rise: <ul style="list-style-type: none"> <li><input type="checkbox"/> U-1 Wide Range Noble Gas Monitor</li> <li><input type="checkbox"/> U-1 Condenser Off Gas @ 1C22</li> <li><input type="checkbox"/> U-1 S/G Blowdown @ 1C22</li> <li><input type="checkbox"/> U-1 Main Vent Gaseous @ 1C22</li> </ul> <input type="checkbox"/> Reports <u>Rad Levels External to Containment Safety Function</u> <b>Complete</b> or <b>Cannot be Met</b> due to Loss of Power Effects (based on timing of LOOP)		
Examiner's notes:				

Op-Test #: 2014		Scenario #: 1	Event #:6 (cont.)	Page 15 of 20
Event Description: EOP-0 (LOOP)			Event Type:	C – ALL
Time	Position	Applicant's Actions or Behavior		
	SRO	<input type="checkbox"/> Perform EOP-0 brief <input type="checkbox"/> Ensures all are attentive <input type="checkbox"/> Reviews Safety Functions not met <input type="checkbox"/> HR not met due to no operating RCP's <input type="checkbox"/> CE (potential) due to loss of power effects <input type="checkbox"/> RLEC (potential) due to loss of power effects <input type="checkbox"/> Reviews Safety system Actuations <input type="checkbox"/> UV <input type="checkbox"/> SIAS or SGIS if slow to recognize overfeed condition <input type="checkbox"/> Solicits Input <input type="checkbox"/> Concludes the brief directing the crew to continue to monitor Safety Functions while the event is diagnosed.		
	SRO	<input type="checkbox"/> Refers to EOP-0 flowchart <input type="checkbox"/> Core and RCS Heat Removal not met due to no operating RCP's - Flowchart leads to EOP-2 <input type="checkbox"/> CE and RLEC potentially not met due loss of power effects - Flowchart leads to EOP-2 <input type="checkbox"/> Implements EOP-2		
Examiner notes:				
Event conclusion is implementation of EOP-2, Loss of Offsite Power				

Op-Test #: 2014		Scenario #: 1	Event #: 7	Page 16 of 20
Event Description: EOP-2 entry LOOP			Event Type:	C – BOP/SRO T - SRO
Time	Position	Applicant's Actions or Behavior		
	SRO	<input type="checkbox"/> Perform EOP-2 Entry Brief		
	BOP	<input type="checkbox"/> Verify Shutdown Sequencer loads are operating <input type="checkbox"/> IF 13 AFW PP starts AND 11 or 12 AFW PP is operating, THEN secure 13 AFW PP.		
	BOP	<input type="checkbox"/> IF COMPONENT COOLING FLOW HAS BEEN LOST, THEN RESTORE FLOW <ul style="list-style-type: none"> <li>○ If CC pump not started in EOP-0 then should be started (not expected)</li> </ul>		
	BOP	<input type="checkbox"/> IF 500KV OFFSITE POWER HAS BEEN LOST, THEN PROTECT THE CONDENSER FROM OVERPRESSURE AND MINIMIZE S/G INVENTORY LOSS <ul style="list-style-type: none"> <li><input type="checkbox"/> Shut BOTH MSIVs.</li> <li><input type="checkbox"/> Shut the S/G B/D valves:</li> </ul>		
	BOP	<input type="checkbox"/> ESTABLISH RCS HEAT SINK <input type="checkbox"/> Operate the ATMOSPHERIC DUMP VALVES to maintain the following: <ul style="list-style-type: none"> <li><input type="checkbox"/> S/G pressures between 850 and 920 psia</li> <li><input type="checkbox"/> TCOLD between 525 and 535°F</li> </ul> <input type="checkbox"/> Establish Auxiliary Feedwater flow to at least ONE S/G using 11 or 12 AFW PP as follows: <ul style="list-style-type: none"> <li><input type="checkbox"/> Verify the S/G steam driven train S/G AFW BLOCK valves are open with the handswitches in AUTO</li> <li><input type="checkbox"/> Open the SG AFW STM SUPP &amp; BYPASS valves</li> </ul> <input type="checkbox"/> IF Main Feedwater is NOT available, THEN secure the Main Feedwater System		
	ATC	<input type="checkbox"/> Operate Charging and Letdown to restore and maintain pressurizer level between 101 and 180 inches		
Examiner notes:				
<b><u>NOTE TO EXAMINER</u></b> <b>Cue driver to Initiate Loss of 1A D/G as desired after EOP-2 Implementation</b>				

Op-Test #: 2014		Scenario #: 1	Event #: 7 (cont.)	Page 17 of 20
Event Description: EOP-2 entry LOOP			Event Type:	C – BOP/SRO T - SRO
Time	Position	Applicant's Actions or Behavior		
	ATC	<input type="checkbox"/> MAINTAIN RCS SUBCOOLING BETWEEN 30 AND 140°F <input type="checkbox"/> Operate Pressurizer HTRs and SPRAY as necessary to maintain RCS subcooling between 30 and 140°F based on CET temperatures:		
	BOP (CT)	<input type="checkbox"/> ATTEMPT TO RESTORE POWER <input type="checkbox"/> IF 11 OR 14 4KV Bus is NOT energized, AND 500KV offsite power is NOT available, THEN perform ANY of the following: <input type="checkbox"/> IF the 0C DG is NOT supplying a vital 4KV bus AND it is desired to place the 0C DG on 14 4KV Bus THEN perform the following: <input type="checkbox"/> IF the 0C DG is NOT running, THEN direct an operator to perform an emergency start from the local panel PER OI-21C, 0C DIESEL GENERATOR. <input type="checkbox"/> WHEN the 0C DG is up to rated speed and voltage, THEN verify the 0C DG OUT BKR, 152-0703 is closed. <input type="checkbox"/> WHEN disconnect 189-1406 is closed AND breaker 152-0703 is closed, THEN perform the following: <input type="checkbox"/> Close 07 4KV BUS TIE, 152-0701 <input type="checkbox"/> Insert the sync stick AND close the 0C DG 14 4KV BUS FDR, 152-1406		
Examiner notes:				
<p>The scenario will end when crew has restored power to 14 4KV Bus and Evaluators are satisfied with crews plant control (Crew may take time to restore 11 4KV bus, this would meet the critical task, but not optimal)</p> <p>If SRO's understanding of Technical Specification applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.</p> <p>TS LCO 3.8.1.A, 3.8.1.B, 3.8.1.D, 3.8.1.G, 3.8.1.H, 3.8.1.I, 3.8.1.K &amp; 3.0.3</p>				
<p>After scenario ends ask SRO for ERPIP call. The correct Emergency Action Level declaration for this scenario is:</p> <p><b>ALERT</b>, per S.A.1.1 for AC Power capability (1 source from Station Blackout)</p> <p><b>SITE AREA EMERGENCY</b>. Per S.S.1.1 possible if 0C DG not on 14 4KV bus ( or 11 4KV bus) within 15 min of 1A DG loss</p>				

# SHIFT TURNOVER INFORMATION SHEET [B0459]

DATE: Today

ON-COMING SHIFT: DAYS

UNIT STATUS				
PARAMETER	UNIT 1		UNIT 2	
MODE OF OPERATION	1		1	
REACTOR POWER (%)	100		100	
GENERATION NET (MWe)	890		876	
RCS LEAKAGE (gpm)	.06		0.05	
RCS BORON (ppm)	902		118	
UNIT RISK (HIGHEST FOR DAY)	CDF: MED	LERF: MED	CDF: LOW	LERF: LOW
BULK POWER NOTIFICATIONS	Normal			

## NON-ROUTINE SURVEILLANCE REQUIREMENTS and ACTION STATEMENTS [B0125]

List action statements expiring during the oncoming shift, non-routine, conditional, & mode dependent surveillances (e.g. chemistry samples, operability verifications, ETPs, <7 day STPs)


## OD's/RECO's/FA's and REF's requested by OPS

Unit	Description	Date Requested	Type Requested	Resp. Group	ECD

## Surveillances coming Due

Unit 1		Unit 2	
DATE	STP	DATE	STP

D. F. Lavato

Shift Manager

# SHIFT TURNOVER INFORMATION SHEET [B0459]

EQUIPMENT AVAILABILITY				
ELECTRICAL SYSTEM	UNIT 1			UNIT 2
500KV High Lines	<input checked="" type="checkbox"/> 5051	<input checked="" type="checkbox"/> 5072	<input checked="" type="checkbox"/> 5052	
500KV Buses	<input checked="" type="checkbox"/> BLACK			<input checked="" type="checkbox"/> RED
13KV Supplies	<input checked="" type="checkbox"/> P-13000-1			<input checked="" type="checkbox"/> P-13000-2
SMECO Bkr Status	<input checked="" type="checkbox"/> 252-2301	<input type="checkbox"/> 0SH301	<input checked="" type="checkbox"/> 0SH302	
Site Self Power Feeders	<input type="checkbox"/> 252-1106			<input type="checkbox"/> 252-2106
13KV Buses	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/> 23	<input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 22
Voltage Regulators	Auto 1102    Auto 2102 Auto 1101			Auto 1103    Auto 2103 Auto 2101
4KV Transformers	<input checked="" type="checkbox"/> U-4000-11 <input checked="" type="checkbox"/> U-4000-21 <input checked="" type="checkbox"/> U-4000-13			<input checked="" type="checkbox"/> U-4000-12 <input checked="" type="checkbox"/> U-4000-22 <input checked="" type="checkbox"/> U-4000-23
4KV Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 14			<input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 23 <input checked="" type="checkbox"/> 24
Diesel Generators	<input type="checkbox"/> 1A <input type="checkbox"/> 1B <input type="checkbox"/> 0C			<input type="checkbox"/> 2A <input type="checkbox"/> 2B <input type="checkbox"/> 0C
480V Buses	<input checked="" type="checkbox"/> 11A <input checked="" type="checkbox"/> 11B <input checked="" type="checkbox"/> 14A <input checked="" type="checkbox"/> 14B			<input checked="" type="checkbox"/> 21A <input checked="" type="checkbox"/> 21B <input checked="" type="checkbox"/> 24A <input checked="" type="checkbox"/> 24B
125VDC Battery Chargers	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 23	<input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 24	<input checked="" type="checkbox"/> 14 <input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 21
125VDC Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12			<input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 21
120VAC Vital Buses	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 21	<input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 23	<input checked="" type="checkbox"/> 14 <input checked="" type="checkbox"/> 24 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 22

OOS SR EQUIPMENT		OOS NSR EQUIPMENT	
UNIT 1 & COMMON	UNIT 2	UNIT 1 & COMMON	UNIT 2
12 AFW Pump			
1B DG			
12 MSL Rad Mon			
12 N <sup>16</sup> Rad Mon			

# SHIFT TURNOVER INFORMATION SHEET [B0459]

<b>GENERAL INFORMATION</b>				
<b>UNIT 1</b>				
			11 HEADER	12 HEADER
Max Header Pressure PE1-12-21-O-M	SW PUMP	11	35 psig (yesterday)	
		12		33.5 psig (yesterday)
		13	34 psig (yesterday)	32 psig (yesterday)

## **LONG TERM NOTES**

1. IAW OD-09-005, maintain containment pressure less than 1.0 psig in order to ensure the containment response to a Design Basis Loss of Coolant Accident inside containment remains within design limits.

## **SHORT TERM NOTES**

1. DO NOT place 13 SWS Pump in service until 1-SWS-126 (13 SWS PP DISCHARGE VENT) is replaced (CR-2012-007257).
2. IF11 SGFP B/U Lube Oil Pump spurious auto start occurs, notify I&C to retrieve data from the recorder during the next business day.
3. 12 MSL & N-16 Rad Monitors OOS
4. 1B DG for cylinder work, OI-49 due in 4 hours.
5. 12 AFW Pump for past 4 hours for bearing replacement



Facility: **Calvert Cliffs Nuclear Power Plant**

Scenario #: **2**

OP-Test #: **CCNPP 2014**

Examiners:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Operators:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Initial Conditions: **Unit-1 is at 100% power, EOC. Unit-2 is in Mode 5.**

Turnover: **13 Cond Booster Pump is tagged out for inspection of high vibrations (expect back at end of shift), 12 AFW Pump OOS for governor work (out for 2 hours, back in in 4 hours) Instructions for the crew are to maintain power at 100%**

Event #	Malfunction #	Event Type*	Event Description
1	<b>Rapid Downpower</b>	R - ATC N - BOP/SRO	Call from ESO to reduce load to 800 MWE in <15 min
2	<b>120v003_01</b>	C - All T - SRO	Loss of 1Y01
3	<b>ms018_04 ms010_01</b>	C - BOP/SRO T - SRO	S/G Level LT-1114-D variable leg leak in containment
4	<b>ms010_01</b>	M - All	Steam line break in containment / Reactor Trip
5	<b>esfa004_01 esfa004_02 esfa012</b>	I - All	CSAS A&B Automatic Failure SGIS Automatic Actuation Failure
6	<b>Emergency Airlock</b>	T - SRO	Containment Integrity breached
* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec			

Critical Tasks: (shaded)

1. Trips all RCP's within 10 minutes of CIS actuation (no CC flow to RCP's).
2. Determines CSAS failure and manually actuates CSAS prior to exiting EOP-0.
3. Identifies and isolates 11 S/G prior to RCS subcooling exceeding 140°F.

Rev. 1	Incorporated comments from NRC validation of JPM
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OP-Test #: 2014      Scenario #: 2

### **SCENARIO OVERVIEW**

#### **DOWNPOWER, 1Y01 FAILURE, S/G LEVEL INSTRUMENT FAILURE, STEAM LEAK**

Initial Conditions: Unit-1 is at 100% power. Core Burnup is 17,536 MWD/MTU. Unit-2 is in Mode 5. 13 Condensate Booster Pump is tagged out for inspection of high vibrations (expected back at end of shift) and 12 AFW Pump is tagged out for governor work (expected back in 4 hours). Instructions for the crew are to maintain power at 100%.

First a call from ESO directs power reduction to  $\leq 800$  MWe in  $\leq 15$  minutes, crew should perform this downpower and stop effectively, demonstrating good plant control.

Next, a loss of 1Y01 occurs, requiring implementation of AOP-7J. The crew is expected to determine associated T.S. LCOs. Affected RPS and ESFAS Channels will be de-energized using the appropriate Operating Instructions.

Next a small leak develops due to a crack in the weld of an instrument sensing leg tap on #11 S/G resulting in LR-1114D failing low. The crew is expected to review NO-1-200 for common tap analysis and associated T.S. LCO's. After several minutes the crack propagates to a major steam leak requiring a reactor trip.

SGIS and CSAS will fail to automatically actuate requiring the operator to manually actuate CSAS and take required actions for SGIS.

The crew is expected to implement EOP-4. If plant conditions degrade or the crew is unsure of the diagnosis it is acceptable for them to enter EOP-8. If EOP-8 is entered all critical tasks still apply unless individual tasks are invalidated by the exam team.

Scenario ends after containment pressure rapidly lowering is recognized and actions taken (EAL implications).

**INSTRUCTOR SCENARIO INFORMATION**

- \_\_\_\_\_ 1. Reset to IC-14.
- \_\_\_\_\_ 2. Perform switch check.
- \_\_\_\_\_ 3. Place simulator in CONTINUE, advance charts and clear alarm display.
- \_\_\_\_\_ 4. Place simulator in FREEZE.
- \_\_\_\_\_ 5. Enter Triggers
  - \_\_\_\_\_ a. None
- \_\_\_\_\_ 6. Enter Malfunctions
  - \_\_\_\_\_ a. SGIS Automatic Actuation failure: **esfa012** at **time zero**.
  - \_\_\_\_\_ b. CSAS "A" Automatic Actuation failure: **esfa004\_01** at **time zero**.
  - \_\_\_\_\_ c. CSAS "B" Automatic Actuation failure: **esfa004\_02** at **time zero**.
  - \_\_\_\_\_ d. 13 Cond Booster Pump Breaker failure: **cd005\_03** at **time zero**.
  - \_\_\_\_\_ e. Loss of 1Y01: **120v003\_01** on **Event 1**.
  - \_\_\_\_\_ f. S/G Level Transmitter (LT-1114D) failure: **ms018\_04** to **LOW** on **Event 2**.
  - \_\_\_\_\_ g. Steam leak inside Containment from 11 S/G: **ms010\_01** from **0.1** to **0.4** over a **3 minute ramp** on **Event 2**.
  - \_\_\_\_\_ h. Steam leak inside Containment from 11 S/G: **ms010\_01** from **0.4** to **8** over a **3 minute ramp** on **Event 3**.
  - \_\_\_\_\_ i. Containment Equipment Hatch Fails: **EQUIPMENT+HATCH** to **20%** on **Event 4**.
- \_\_\_\_\_ 7. Enter Panel Overrides
  - \_\_\_\_\_ a. 12 AFW PP TURB TRIP SW: **P1C04\_1HS3988\_LTWHIT** to **OFF** at **time zero**.
  - \_\_\_\_\_ b. 12 AFW PP TURB TRIP SW: **P1C04\_1STP3988\_LTRED** to **OFF** at **time zero**.
  - \_\_\_\_\_ c. 12 AFW PP TURB TRIP SW: **P1C04\_1STP3988\_LTWHI** to **OFF** at **time zero**.
  - \_\_\_\_\_ d. Main Steam supply to 12 AFW PP **1-MS-107 SHUT** at **time zero**
  - \_\_\_\_\_ e. Reactor Regulating System Chan X S1, **RRS-S1(X)** to **OFF** on **Event 5**
  - \_\_\_\_\_ f. Shift 11 ADV to 1C43, **1-MS-3938-HV** to **1C43** on **Event 6**

- \_\_\_\_\_ 8. Enter Remote Functions / Administrative
- \_\_\_\_\_ a. Place 13 Cond Booster Pump in PTL.
- \_\_\_\_\_ b. Place a Caution tag on 13 Cond Booster Pump.
- \_\_\_\_\_ c. Place a Caution tag on 12 AFW Pump.
- \_\_\_\_\_ 9. Set simulator time to real time, then place simulator in CONTINUE.
- \_\_\_\_\_ 10. Allow crew 3-5 minutes to acclimate themselves with their positions.
- \_\_\_\_\_ 11. Brief the Crew:

1. Present plant conditions:	100% load at EOC 18,250 MWD/MTU
2. Power history:	Long term steady state.
3. Equipment out of service:	<ul style="list-style-type: none"> <li>• 13 Cond Booster Pump is tagged out for inspection of high vibrations (expect back at end of shift)</li> <li>• 12 AFW Pump OOS for governor work (out for 2 hours, back in in 4 hours)</li> </ul>
4. Abnormal conditions:	None
5. Surveillances due:	None
6. Instructions for shift:	Maintain 100% Power

- \_\_\_\_\_ 12. Allow crew 3-5 minutes to acclimate themselves with their positions.
- \_\_\_\_\_ 13. Instructions for the Booth Operator.
- \_\_\_\_\_ a. Call as ESO and inform CRS that due to abnormal conditions at Waugh Chapel a power reduction to 800 MWe is required in <15 minutes.
- \_\_\_\_\_ b. Activate **Event 1** (Loss of 1Y01) on Lead Evaluators cue after power stabilized
- \_\_\_\_\_ c. Activate **Event 2** (Sensing Line leak on LT-1114D 11 S/G Level indicator) when cued by lead evaluator (when crew is sending PWS to downpower ESFAS & AFAS).
- \_\_\_\_\_ d. Activate **Event 3** (Modify Stm Leak from .4 to 8% over 3 min) to increase the size of the leak when cued by lead evaluator.(10-15 minutes after initial break)
- \_\_\_\_\_ e. Activate **Event 4** (Containment Boundary breach) on Lead Evaluators cue after peak containment pressure reached.

### Responses to Crew Request

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
1. PWS/TBO investigate loss of 1Y01.	After two minutes, report acrid smell from 11 Inverter.
2. EM investigate loss of 1Y01.	After ten minutes report inverter appears to have failed and that bus appears OK.
3. Place RCS loop 11 Instruments to RRS Channel Y switch, S1, to OFF.	After 1 minute, use <b>Event 5</b> .
4. Deenergize ESFAS AL cabinet	Acknowledge Request. After 10 minutes report complete.
5. Deenergize ESFAS ZD cabinet	Acknowledge Request. After 10 minutes use remote function to open and close ESFAS doors then report complete.
6. Deenergize AFAS AL cabinet	Acknowledge Request. After 10 minutes report complete
7. PWS bypass AFAS ZD sensor modules.	Acknowledge Request. After 10 minutes report complete
8. Verify SRW Pp Rm ventilation l/u per OI-15.	Acknowledge request. After 10 minutes report complete
9. PWS check AFAS cabinet for alarms	After 3 minutes report ZG 11 S/G level pegged low, also ZD and AL are de-energized.
10. Align the ADVs hand transfer valves for 11 S/G to the 1C43 position.	Acknowledge request. After 2-3 minutes, shift control to 1C43 using <b>EVENT 6</b> .
11. When Emergency Airlock opened per Evaluator cue	After 2 Minutes report as security that cameras show steam coming from emergency airlock on west road

Op-Test #: 2014

Scenario #: 2

Event #: 1

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Event Description: **Rapid Downpower**Event Type: **R – ATC**  
**N – BOP/SRO**

Time	Position	Applicant's Actions or Behavior
	SRO	<input type="checkbox"/> Order Rapid Downpower to $\approx 90\%$ in $<15$ min
	ATC	<input type="checkbox"/> Borate to RCS by performing the following: (This step may be omitted due to core burnup, downpower could be performed using CEA's only) <ul style="list-style-type: none"> <li><input type="checkbox"/> OPEN the BA Direct M/U Valve, 1-CVC-514-MOV</li> <li><input type="checkbox"/> VERIFY two charging pumps are running</li> <li><input type="checkbox"/> START a BA PP, AFTER 30 seconds, THEN STOP the operating BA PP</li> <li><input type="checkbox"/> SHUT the BA Direct M/U Valve, 1-CVC-514-MOV</li> <li><input type="checkbox"/> OPEN the RWT CHG PP Suct Valve, 1-CVC-504-MOV</li> <li><input type="checkbox"/> SHUT the VCT Outlet Valve, 1-CVC-501-MOV</li> </ul>
	SRO	<input type="checkbox"/> Review Pre-Prepared Rapid Downpower Plan and inform ATC of target CEA height
	ATC	<input type="checkbox"/> Insert CEA's per SRO direction
	ATC	<input type="checkbox"/> Equalize Pressurizer boron as follows: <ul style="list-style-type: none"> <li><input type="checkbox"/> ENERGIZE all Pressurizer Backup Heater Banks</li> <li><input type="checkbox"/> ADJUST the setpoint on the selected Pressurizer Pressure Controller, PIC-100X, to maintain Pressurizer pressure at 2250 PSIA</li> </ul>
	BOP	<input type="checkbox"/> REDUCE Turbine Generator load to maintain Tc within 5 °F of program
		<input type="checkbox"/>

Examiner notes

Op-Test #: 2014

Scenario #: 2

Event #: 1 (cont)

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Event Description: **Rapid Downpower**Event Type: **R – ATC**  
**N – BOP/SRO**

Time	Position	Applicant's Actions or Behavior
	SRO	<input type="checkbox"/> When approaching 800 MWe direct ATC/BOP to secure downpower
	ATC	<input type="checkbox"/> SECURE borating the RCS by: <input type="checkbox"/> VERIFY the VCT Outlet Valve, 1-CVC-501-MOV, is OPEN <input type="checkbox"/> VERIFY the RWT Suct Valve, 1-CVC-504-MOV, is SHUT
	BOP	<input type="checkbox"/> Place Turbine Control System back in Manual (if Auto used)
	ATC	<input type="checkbox"/> Withdraw CEA's as required to maintain Reactor Power (due to Xenon buildup)

Examiner notes

**Event concludes when Reactor Power is stabilized.**



**NOTE TO EXAMINER****Cue Booth Operator to insert next malfunction, Loss of 1Y01, when desired**

Op-Test #: 2014

Scenario #: 2

Event #: 2

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Event Description **Loss of 1Y01**Event Type: **C – All**  
**T- SRO**

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	<input type="checkbox"/> Recognizes multiple alarm(s) and reports to SRO
	BOP	<input type="checkbox"/> Checks RPS and reports "RPS <b>Not</b> Calling for Trip"
	BOP	<input type="checkbox"/> Check 1C24 and determine only 1Y01 lost and reports to SRO
	ATC/BOP	<input type="checkbox"/> Refer to Alarm Manuals
	SRO	<input type="checkbox"/> Implement AOP-7J and assign steps
	ATC	<input type="checkbox"/> Selects Channel "Y" on PZR Press, PZR Level, PZR Htr Cutoff, and RRS Channel Selector. Direct OWC to isolate RCS Loop 11 instruments by placing "S1" switch to off.
	ATC	<input type="checkbox"/> Reset Proportional Heaters
	ATC/SRO	<input type="checkbox"/> Isolate L/D (Shut CVC-515 & 516) and operate Chg Pp's to control level 201-225"
	BOP/SRO	<input type="checkbox"/> Restore 11 SW HDR <input type="checkbox"/> Verify 12 CCHX in service <input type="checkbox"/> Verify 11A/11B SRW HX OUT valve H/S's OPEN
	ATC/BOP	<input type="checkbox"/> Review alarms consistent with loss of 1Y01
	SRO	<input type="checkbox"/> Directs OWC to have EM investigate the loss of 1Y01 Bus
	SRO	<input type="checkbox"/> Review TS. 3.3.1.A & D, 3.3.3.A, 3.3.4.A & C, 3.3.5.A & C, 3.3.6.A, 3.3.9A & B, 3.3.10.A, 3.3.11.A, 3.4.14.B, 3.8.1.B, 3.8.7.A, 3.8.9.B

Examiner notes:

**Event concludes when crew directs de-energizing ESFAS & AFAS.**

**NOTE TO EXAMINER****Cue Booth Operator to insert next malfunction, 11 S/G Level sensing line leak**

Op-Test #: 2014

Scenario #: 2

Event #: 3

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Event Description: 11 S/G level sensing line leak

Event Type: C – BOP/ SRO  
T - SRO

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	<input type="checkbox"/> Notes "AFAS ACTUATED" alarm on 1C04 and reports to SRO <input type="checkbox"/> Reports 1-MS-4070A & 1-MS-4070 opening and 1-LT-1114D on 1C04 failed low
	SRO	<input type="checkbox"/> Directs OWC to check AFAS cabinet for alarms
	BOP/SRO	<input type="checkbox"/> SRO may direct securing AFW flow to S/G's by either shutting associated block valves or shutting 1-MS-4070
	SRO	<input type="checkbox"/> After report from OWC checks NO-1-200 common tap analysis, directs BOP to check containment parameters
	BOP	<input type="checkbox"/> Reports degrading containment parameters
	SRO	<input type="checkbox"/> Implement AOP-7K Overcooling in Mode 1
	BOP	<input type="checkbox"/> Adjust turbine load to maintain T <sub>COLD</sub> on program
	SRO	<input type="checkbox"/> Determine TS 3.3.4.A applicable

Examiner notes:

**Event concludes when crew determines the failure is causing small steam leak in containment.**

**NOTE TO EXAMINER****Cue Booth Operator to insert next malfunction, Steam Leak in containment worsens**

Op-Test #: 2014

Scenario #: 2

Event #: 4

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Event Description: **Steam Leak in Containment/Reactor Trip**Event Type: **M - All**

Time	Position	Applicant's Actions or Behavior
	ATC	<input type="checkbox"/> Recognizes lowering T <sub>COLD</sub> and reports to SRO
	BOP	<input type="checkbox"/> Recognizes degrading containment parameters and reports to SRO
	SRO	<input type="checkbox"/> Orders Reactor Trip prior to Auto Trip
	ATC	<input type="checkbox"/> <u>Performs Reactivity Control Safety Function</u> <input type="checkbox"/> Depress Manual Reactor Trip Pushbutton on 1C05 <input type="checkbox"/> Check Reactor tripped using NI power indications on 1C05 <input type="checkbox"/> Verifies all CEAs fully inserted <input type="checkbox"/> Verify DI Water Makeup is secured <input type="checkbox"/> Check 11 & 12 RC makeup Pumps secured on 1C07 <input type="checkbox"/> Check VCT M/U 1-CVC-512-CV is shut on 1C07 <input type="checkbox"/> If aligned for direct makeup to RCS then shut RWT Charging Pump Suction 1-CVC-504-MOV on 1C07 <input type="checkbox"/> Reports <u>Reactivity Control Safety Function Complete</u>
	BOP	<input type="checkbox"/> <u>Performs Turbine Trip</u> <input type="checkbox"/> Checks Reactor tripped then: <input type="checkbox"/> Depresses both Turbine Trip Pushbuttons on 1C02 <input type="checkbox"/> Checks Main Turbine stop Valves shut on MK VI screen <input type="checkbox"/> Checks Turbine Speed drops on MK VI screen <input type="checkbox"/> Checks Turbine Generator Output Breakers open <input type="checkbox"/> 11 GEN BUS BKR 0-CS-552-22 on 1C01 <input type="checkbox"/> 11 GEN TIE BKR 0-CS-552-23 on 1C01 <input type="checkbox"/> Checks Generator Field Breaker open on 1C01 <input type="checkbox"/> Checks Generator Exciter Field breaker open on 1C01 <input type="checkbox"/> Ensures MSR 2 <sup>nd</sup> Stage Steam source Valves are shut <input type="checkbox"/> Reports <u>Turbine Trip Complete</u>

Op-Test #: 2012

### Scenario #: 2

Event #: 4 (cont.)

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Event Description: **Steam Leak in Containment**      Event Type: **M-All**

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> <u>Performs Vital Auxiliaries Safety Function</u> <input type="checkbox"/> Checks 11 or 14 4KV bus energized. <input type="checkbox"/> Checks <b>ALL</b> 125V DC BUS VOLTS greater than 105 volts on 1C24: <div style="margin-left: 40px;"> <input type="checkbox"/> 11   <input type="checkbox"/> 12   <input type="checkbox"/> 21   <input type="checkbox"/> 22         </div> <input type="checkbox"/> Checks at least THREE 120V AC Vital Buses are energized on 1C24: <div style="margin-left: 40px;"> <input type="checkbox"/> 11   <input type="checkbox"/> 12   <input type="checkbox"/> 21   <input type="checkbox"/> 22         </div> <input type="checkbox"/> Checks EITHER 1Y09 OR 1Y10 energized on 1C24. <input type="checkbox"/> Verifies Component Cooling Flow to the RCP's <input type="checkbox"/> Reports <u>Vital Auxiliaries Safety Function</u> <b>Complete</b>
	ATC	<input type="checkbox"/> <u>Performs Pressure &amp; Inventory Control Safety Function, including alternate actions</u> <input type="checkbox"/> Operates heaters and spray to restore pressurizer pressure between 1850 and 2300 PSIA <b>AND</b> is trending to 2250 PSIA. <input type="checkbox"/> Operates charging and letdown to restore PZR level between 80 and 180 inches <input type="checkbox"/> Ensures RCS subcooling >30°F <input type="checkbox"/> Reports <u>Pressure and Inventory Safety Function</u> <b>Not Met due to negative trends on PZR level and pressure</b>

Examiner notes:

Op-Test #: 2014

Scenario #: 2

Event #: 5

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Event Description: **SGIS and CSAS failure**Event Type: **I - All**

BOP

- ☐ Performs Core & RCS Heat Removal Safety Function
  - ☐ Checks TBVs/ADVs controlling S/G pressure 850-920 PSIA and  $T_{COLD}$  525-535°F
  - ☐ Shuts both MSIVs when S/G pressure drops to 800 PSIA
  - ☐ Verifies SGIS actuated when S/G pressure drops below 685 PSIA (reports SGIS failure to SRO when recognized)
  - ☐ Verifies AFAS Block when 115 PSID pressure differential between 11 & 12 S/G's
  - ☐ **IF** Feedwater flow is lost **OR** excessive, **THEN** perform the following actions:
    - ☐ Start an AFW PP, Trip the SGFPs, Shut the SG FW ISOL valves (open block valve if shut earlier)
    - ☐ Operate the AFW System to restore S/G levels to between -170 and +30 inches
  - ☐ Checks at least one RCP is in a loop with a S/G available for heat removal (on 1C06)
  - ☐ Checks  $T_{HOT}$  minus  $T_{COLD}$  is less than 10°F by checking indicators on 1C06
- ☐ Reports Core & RCS Heat Removal Safety Function **Cannot be Met** due to Low  $T_{COLD}$ , Low S/G pressure and level and no RCP's.

Examiner notes:

Op-Test #: 2014

Scenario #: 2

Event #: 5 (cont)

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Event Description: **SGIS and CSAS failure**Event Type: **I - All**ATC  
(2 CT's)

- ☐ Performs Containment Environment Safety Function
  - ☐ Checks Containment Pressure < 0.7 PSIG
    - ☐ Verifies all CAC's operating with Emergency Outlet valves open
    - ☐ Verifies SIAS and CIS when pressure >2.8 PSIG
      - ☐ Trips all RCP's due to no CC flow
    - ☐ Verifies CSAS when pressure >4.25 PSIG (Manually initiates with pushbuttons)
  - ☐ Checks Containment Temperature, verifies CAC's operating
  - ☐ Checks Containment Gaseous RMS at 1C22 not in alarm with no abnormal rising trend.
- ☐ Reports Containment Environment Safety Function **Cannot be Met** due high containment pressure and temperature

Op-Test #: 2014

Scenario #: 2

Event #: 5 (cont.)

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Event Description: SGIS and CSAS failure

Event Type: I - ALL

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> <u>Perform Rad Levels External to Containment Safety Function</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Check the following RMS alarms are clear with no unexplained rise: <ul style="list-style-type: none"> <li><input type="checkbox"/> U-1 Wide Range Noble Gas Monitor</li> <li><input type="checkbox"/> U-1 Condenser Off Gas @ 1C22</li> <li><input type="checkbox"/> U-1 S/G Blowdown @ 1C22</li> <li><input type="checkbox"/> U-1 Main Vent Gaseous @ 1C22</li> </ul> </li> </ul> <input type="checkbox"/> Reports <u>Rad Levels External to Containment Safety Function Complete</u>
	SRO	<input type="checkbox"/> Perform EOP-0 brief <ul style="list-style-type: none"> <li><input type="checkbox"/> Ensures all are attentive</li> <li><input type="checkbox"/> Reviews Safety Functions not met <ul style="list-style-type: none"> <li><input type="checkbox"/> PIC not met due to low PZR level and pressure</li> <li><input type="checkbox"/> HR not met due low S/G press and level and no operating RCP's</li> <li><input type="checkbox"/> CE due to high Containment pressure and temperature</li> </ul> </li> <li><input type="checkbox"/> Reviews Safety system Actuations <ul style="list-style-type: none"> <li><input type="checkbox"/> SGIS (failed), SIAS, CIS, CSAS (failed), AFAS, AFAS Block</li> </ul> </li> <li><input type="checkbox"/> Solicits Input</li> </ul> <input type="checkbox"/> Concludes the brief directing the crew to continue to monitor Safety Functions while the event is diagnosed.
	BOP	<input type="checkbox"/> Refers to EOP-0 flowchart <ul style="list-style-type: none"> <li><input type="checkbox"/> PIC, HR and CE not met - Flowchart leads to EOP-4</li> <li><input type="checkbox"/> Implements EOP-4</li> </ul>

Examiners notes:

Op-Test #: 2014

Scenario #: 2

Event #: 5 (cont.)

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Event Description: SGIS and CSAS failure

Event Type: I - ALL

Time	Position	Applicant's Actions or Behavior
	SRO	<input type="checkbox"/> Assign step G Identify Isolate and Confirm affected S/G to BOP
	BOP (CT)	<input type="checkbox"/> Identify the affected S/G by observing the following: <ul style="list-style-type: none"> <li><input type="checkbox"/> S/G with the highest steam flow</li> <li><input type="checkbox"/> S/G with the lowest pressure</li> <li><input type="checkbox"/> RCS loop with the lowest T<sub>COLD</sub></li> <li><input type="checkbox"/> S/G with the most rapid downward level trend</li> </ul> <input type="checkbox"/> Isolate the affected S/G <ul style="list-style-type: none"> <li><input type="checkbox"/> Direct TBO to shut 11 ADV from SWGR Room</li> <li><input type="checkbox"/> Verify 11 SG FW ISOL shut FW-4516-MOV</li> <li><input type="checkbox"/> Verify 11 MSIV BYP shut MS-4045-MOV</li> <li><input type="checkbox"/> Shut 11 SG B/D Valves BD-4010 &amp; 4011-CV's</li> <li><input type="checkbox"/> Shut 11 SG AFW STM SUPP 7 BYP valves MS-4070A &amp; 4070</li> <li><input type="checkbox"/> Shut 11 SG AFW Block valves AFW-4520, 4521, 4522, 4523</li> <li><input type="checkbox"/> Shut MS UPSTREAM DRN ISOL valve by placing HS-6622 in close</li> <li><input type="checkbox"/> Direct ABO/OSO to observe no Safety Valves leaking on 11 S/G</li> </ul>

Examiner's notes:



Op-Test #: 2014

Scenario #: 2

Event #: 5 (cont.)

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Event Description: SGIS and CSAS failure

Event Type: I - ALL

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> Maintain RCS Temps <input type="checkbox"/> IF the difference between unaffected S/G temperature and CET temperature exceeds 25°F during the blowdown, THEN cool the unaffected S/G to within 25°F of CET temperature using the unaffected S/G ADV <input type="checkbox"/> WHEN the RCS cooldown due to blowdown of the affected S/G has stopped, THEN operate the unaffected S/G ADV to stabilize RCS temperatures as follows: <input type="checkbox"/> WHEN unaffected S/G temperature is within 25°F of the lowest CET temperature during blowdown, THEN maintain the following: <input type="checkbox"/> Unaffected S/G pressure approximately constant <input type="checkbox"/> T <sub>COLD</sub> approximately constant
	ATC	<input type="checkbox"/> Commence RCS Boration <input type="checkbox"/> Ensure VCT M/U shut CVC-512-CV <input type="checkbox"/> BA Direct M/U valve open CVC-514 <input type="checkbox"/> BAST Gravity FD valves open CVC-508 & 509-CV's <input type="checkbox"/> All BA Pumps running <input type="checkbox"/> VCT Outlet valve shut CVC-501-MOV <input type="checkbox"/> All Chg Pumps running

Examiner notes:

Op-Test #: 2014	Scenario #: 2	Event #: 6 (cont.)	Page 16 of 20
Event Description: <b>Containment Failure</b>		Event Type: <b>T - SRO</b>	
Time	Position	Applicant's Actions or Behavior	
<b><u>NOTE TO EXAMINER</u></b>			
<b>Cue Booth Operator to insert next malfunction, Containment Emergency Air Lock failure</b>			
	BOP	<input type="checkbox"/> Report Containment pressure rapidly dropped from Approximately 10 PSIG to 0 PSIG	
	SRO	<input type="checkbox"/> Recognize failure of containment emergency airlock triggers ERPIP Call of F.U.1.1 and Tech Spec 3.6.1.A & 3.6.2.C	
Examiner notes:			
Scenario concludes when crew recognizes the failure of the containment. SRO actions can be done as post scenario questioning			

# SHIFT TURNOVER INFORMATION SHEET [B0459]

DATE: Today

ON-COMING SHIFT: DAYS

## UNIT STATUS

PARAMETER	UNIT 1		UNIT 2	
MODE OF OPERATION	1		5	
REACTOR POWER (%)	100		10 <sup>-6</sup>	
GENERATION NET (MWe)	890		-14	
RCS LEAKAGE (gpm)	.06		N/A	
RCS BORON (ppm)	180		2452	
UNIT RISK (HIGHEST FOR DAY)	CDF: MED	LERF: MED	CDF: LOW	LERF: LOW
BULK POWER NOTIFICATIONS	Normal			

## NON-ROUTINE SURVEILLANCE REQUIREMENTS and ACTION STATEMENTS [B0125]

List action statements expiring during the oncoming shift, non-routine, conditional, & mode dependent surveillances (e.g. chemistry samples, operability verifications, ETPs, <7 day STPs)


## OD's/RECO's/FA's and REF's requested by OPS

Unit	Description	Date Requested	Type Requested	Resp. Group	ECD

## Surveillances coming Due

Unit 1		Unit 2	
DATE	STP	DATE	STP

L. C. Beavers

Shift Manager

# SHIFT TURNOVER INFORMATION SHEET [B0459]

EQUIPMENT AVAILABILITY				
ELECTRICAL SYSTEM	UNIT 1			UNIT 2
500KV High Lines	<input checked="" type="checkbox"/> 5051	<input checked="" type="checkbox"/> 5072	<input checked="" type="checkbox"/> 5052	
500KV Buses	<input checked="" type="checkbox"/> BLACK		<input checked="" type="checkbox"/> RED	
13KV Supplies	<input checked="" type="checkbox"/> P-13000-1		<input checked="" type="checkbox"/> P-13000-2	
SMECO Bkr Status	<input checked="" type="checkbox"/> 252-2301	<input type="checkbox"/> 0SH301	<input checked="" type="checkbox"/> 0SH302	
Site Self Power Feeders	<input type="checkbox"/> 252-1106		<input type="checkbox"/> 252-2106	
13KV Buses	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/> 23	<input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 22
Voltage Regulators	Auto 1102    Auto 2102 Auto 1101		Auto 1103    Auto 2103 Auto 2101	
4KV Transformers	<input checked="" type="checkbox"/> U-4000-11 <input checked="" type="checkbox"/> U-4000-21 <input checked="" type="checkbox"/> U-4000-13		<input checked="" type="checkbox"/> U-4000-12 <input checked="" type="checkbox"/> U-4000-22 <input checked="" type="checkbox"/> U-4000-23	
4KV Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 14		<input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 23 <input checked="" type="checkbox"/> 24	
Diesel Generators	<input type="checkbox"/> 1A <input type="checkbox"/> 1B <input type="checkbox"/> 0C		<input type="checkbox"/> 2A <input type="checkbox"/> 2B <input type="checkbox"/> 0C	
480V Buses	<input checked="" type="checkbox"/> 11A <input checked="" type="checkbox"/> 11B <input checked="" type="checkbox"/> 14A <input checked="" type="checkbox"/> 14B		<input checked="" type="checkbox"/> 21A <input checked="" type="checkbox"/> 21B <input checked="" type="checkbox"/> 24A <input checked="" type="checkbox"/> 24B	
125VDC Battery Chargers	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 23 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 24		<input checked="" type="checkbox"/> 14 <input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 21	
125VDC Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12		<input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 21	
120VAC Vital Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 23		<input checked="" type="checkbox"/> 14 <input checked="" type="checkbox"/> 24 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 22	

OOS SR EQUIPMENT		OOS NSR EQUIPMENT	
UNIT 1 & COMMON	UNIT 2	UNIT 1 & COMMON	UNIT 2
12 AFW Pump		13 Cond Booster PP	

# SHIFT TURNOVER INFORMATION SHEET [B0459]

## GENERAL INFORMATION

UNIT 1				
			11 HEADER	12 HEADER
Max Header Pressure PEI-12-21-O-M	SW PUMP	11	35 PSIG (yesterday)	
		12		33.5 PSIG (yesterday)
		13	34 PSIG (yesterday)	32 PSIG (yesterday)

### LONG TERM NOTES

1. IAW OD-09-005, maintain containment pressure less than 1.0 PSIG in order to ensure the containment response to a Design Basis Loss of Coolant Accident inside containment remains within design limits.

### SHORT TERM NOTES

1. **DO NOT** place 13 SWS Pump in service until 1-SWS-126 (13 SWS PP DISCHARGE VENT) is replaced (CR-2012-007257).
2. **IF** 11 SGFP B/U Lube Oil Pump spurious auto start occurs, notify I&C to retrieve data from the recorder during the next business day.
3. 12 AFW Pump OOS for past 4 hours for governor work
4. 13 Cond Booster PP OOS for vibration inspection

Facility: **Calvert Cliffs Nuclear Power Plant**      Scenario #: **4**      OP-Test #: **CCNPP 2014**

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

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

Initial Conditions: **Unit-1 is at 100% power, MOC. Unit-2 is at 100% power.**

Turnover: **12 CS Pump OOS for last hour for pump coupling Inspection (back in 2 hours).  
11 BA Pump OOS for last 6 hours (bearing seized) (back in 1 day). 23 Aux Feed Pump is  
OOS for motor bearing repair and is expected back in 10 hours.**

Event #	Malfunction #	Event Type*	Event Description
1	480v002_01	C - ALL T - SRO	Loss of MCC-104 (AOP-7I)
2	ms002_01	C - BOP/SRO R - ATC T - SRO	11 S/G Tube Leak (AOP-2A)
3	ms010_01	M - ALL	11 S/G MSLB in Cntmt (EOP-8)
4	esfa010_01 esfa010_02	C - BOP	CIS "A" and "B" Failure
5	1-SI-428 @ 12%	C - ATC/SRO	11 HPSI Discharge valve 12% open
* (N)ormal (R)eactivity (I)nstrument (C)omponent (M)ajor (T)ech Spec			

**Critical Tasks: (shaded)**

1. Recognizes failure of CIS "A" and CIS "B". Manually actuates CIS "A" and CIS "B" (prior to exiting EOP-0).
2. Trips all RCP's after CIS actuates and within 10 minutes of Component Cooling isolation to Containment.
3. Notes insufficient flow from 11 HPSI pump and starts 12 HPSI pump prior to RVLMS 3<sup>rd</sup> light lit

Rev. 1	Incorporated comments from NRC validation of Scenario
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OP-Test #: 2014      Scenario #: 4

**SCENARIO OVERVIEW**

**Loss MCC-104, S/G Tube Leak, Steam Line Break in Containment**

Initial Conditions: Unit-1 & Unit 2 are at 100% power. U-1 is MOC 10,885 MWD/MTU, U-2 is EOC 17,800 MWD/MTU. 12 CS Pump for last hour for pump coupling Inspection (back in 2 hours). 11 BA Pump OOS for last 6 hours (bearing seized, back in 1 day), 23 Aux Feed Pump is OOS for motor bearing repair (expected back in 10 hours).

First a loss of MCC 104 occurs. After the crew has stabilized the plant they should realize they have no operable BA Pumps.

A Steam Generator tube leak begins in 11 S/G. The crew should attempt to borate the unit to a Tave of <537°F using the RWT. The leak size is such that the crew may reach 537°F Tave or they may reach 101" in the PZR, either of which prompts the Reactor Trip.

The reactor will be tripped and EOP-0 implemented. During EOP-0 (approx. 6 min after trip) the steam line break into the containment manifests. CIS A fails to actuate requiring manual actuation. After the crew recognizes the CIS, all RCP's should be secured. The crew is expected to implement EOP-8.

In EOP-8 the crew should identify RLEC-2 is not met and worked immediately (which directs working HR-2). When crew works HR-2 they should isolate 11 S/G IAW HR-2. When ATC is performing PIC-4 the low flow from 11 HPSI must be recognized and 12 HPSI started. The crew will also isolate 11 S/G IAW HR-2.



**INSTRUCTOR SCENARIO INFORMATION**

- \_\_\_\_\_ 1. Reset to IC-24
- \_\_\_\_\_ 2. Perform "Switch Check"
- \_\_\_\_\_ 3. Place simulator in CONTINUE, advance charts and clear alarm display.
- \_\_\_\_\_ 4. Place simulator in FREEZE
- \_\_\_\_\_ 5. Enter Malfunctions:
  - \_\_\_\_\_ a. Event Triggers:
    - \_\_\_\_\_ 1. None
  - \_\_\_\_\_ b. #12 CS Pump Tripped: **si004\_02 at time zero**
  - \_\_\_\_\_ c. #11 BA Pump Tripped: **cvcs014\_01 at time zero**
  - \_\_\_\_\_ d. CIS Channel A Auto Failure: **esfa010\_01 at time zero**
  - \_\_\_\_\_ e. CIS Channel B Auto Failure: **esfa010\_02 at time zero**
  - \_\_\_\_\_ f. Loss of MCC-104: **480v002\_01 on Event 1**
  - \_\_\_\_\_ g. 11 S/G Tube Leak: **ms002\_01 from 0.1 to 0.4 over a 5 min ramp on Event 2**
  - \_\_\_\_\_ h. 11 S/G Rupture in Contmt: **ms010\_01 from 30% to 100% over a 5 min ramp on Event 3**
- \_\_\_\_\_ 6. Enter Panel Overrides:
  - \_\_\_\_\_ a. Alarm window H-30: **P1C09\_H30\_LTON (12CONTPP CSAS BLCKDAUTO) to OFF at time zero.**
  - \_\_\_\_\_ b. 11 BA PP green light: **P1C07\_1HS226X\_LTGREE to OFF at time zero.**
  - \_\_\_\_\_ c. Alarm window F-26: **P1C07\_F26\_LTON (11BA PP SIAS BLCKD AUTO) to OFF at time zero.**
  - \_\_\_\_\_ d. 11 HPSI discharge valve **1-SI-428 at 12% open on Event 4**
- \_\_\_\_\_ 7. Enter Remote Functions / Administrative:
  - \_\_\_\_\_ a. 12 CS Pp breaker: **152-1407\_B to RACKOUT at time zero.**
  - \_\_\_\_\_ b. Tying 1Y10 to 1Y09 with **1SY09 to 1Y09 on Event 5**
  - \_\_\_\_\_ c. 11 S/G ATM DUMP VALVE XFER: **1-MS-3938-HV to 1C43 on Event 6.**
  - \_\_\_\_\_ d. Yellow Tag 12 Containment Spray Pump in PTL.
  - \_\_\_\_\_ e. Yellow Tag 11 Boric Acid Pump in PTL.
  - \_\_\_\_\_ f. Place Red Dots on alarm windows F-26 and H-30.
  - \_\_\_\_\_ g. Check ALL magnetic plaques are correct.

- \_\_\_\_\_ 8. Independently verify correct completion of the following:
- \_\_\_\_\_ a. Malfunctions and Event Triggers correctly entered
- \_\_\_\_\_ b. Panel Overrides correctly entered
- \_\_\_\_\_ c. Remote Functions / Administrative actions correctly entered/performed
- \_\_\_\_\_ 9. Select "**Clock**" time and ensure "**Horn On**" for annunciators.
- \_\_\_\_\_ 10. Place simulator in **RUN** and reset/acknowledge panel and plant computer alarms.
- \_\_\_\_\_ 11. Brief the Crew:

1. Present plant conditions:	U-1 @ 100% power MOC 10,885 MWD/MTU U-2 @ 100% power EOC 17,800 MWD/MTU
2. Power history:	U1 @ 100% for previous 100 days
3. Equipment out of service:	<ul style="list-style-type: none"> <li>• 12 CS Pump for last hour for pump coupling Inspection expected back in 2 hours</li> <li>• 11 BA Pump for last 6 hours (bearing seized) expected back in 1 day</li> <li>• 23 AFW Pump OOS for motor bearing replacement, expected back in 10 hours</li> </ul>
4. Abnormal conditions:	None
5. Surveillances due:	None
6. Instructions for shift:	Maintain 100% Power

- \_\_\_\_\_ 12. Allow crew 3-5 minutes to acclimate themselves with their positions.
- \_\_\_\_\_ 13. Instructions for the Booth Operator:
- \_\_\_\_\_ a. Activate **Event 1**, Loss of MCC-104, on lead evaluator's cue.
- \_\_\_\_\_ b. Activate **Event 2**, 11 S/G tube leak, approximately 10 minutes after loss of MCC-104, on lead evaluator's cue.
- \_\_\_\_\_ c. Activate **Event 3** (11 S/G Rupture in Containment) 6 minutes after trip
- \_\_\_\_\_ d. Activate **Event 4** (11 HPSI discharge valve 15% open) after crew completes RAT in EOP-8

RESPONSES TO CREW REQUESTS

If a request and response is not listed, delay the response until reviewed with the examiner. If one request is dependent upon completion of another, then subsequent actions should not be responded to until the appropriate time delay has been observed. Responses to routine requests, which have no effect the scenario, do not require examiner clearance.

Allow 2-3 minutes to perform requests from or to give reports to the Control Room unless otherwise specified.

REQUEST	RESPONSE
1. PWS/E&C investigate the loss of MCC-104.	After three minutes report MCC-104 is grounded and putting together a troubleshooting plan to locate problem.
2. TBO tie 1Y10 to 1Y09.	After two minutes use <b>Event 5</b> to tie 1Y10 to 1Y09.
3. Chemistry sample both S/Gs for activity and Boron.	After approximately 15 minutes, report that there is activity in 11 S/G and none in 12 S/G.
4. TBO shift 11 ADV to 1C43.	After 2-3 minutes activate <b>Event 6</b> to shift 11 ADV control to 1C43.
5. ABO/OSO verify no steam coming from the safeties on the Auxiliary Building roof.	After 2-3 minutes report no steam coming from any safeties from Auxiliary Building roof.

Op-Test #: 2014

Scenario #: 4

Event #: 1

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Event Description: Loss of MCC-104

Event Type: C – All,  
T - SRO

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> Recognizes multiple alarm(s) and reports to SRO. Checks RPS not calling for a trip.
	SRO	<input type="checkbox"/> Implements AOP-7I, directs immediate actions per plaque. Shift Chg Pp suction back to VCT
	ATC	<input type="checkbox"/> Places 2 charging pumps in PTL, Opens CVC-501 VCT Outlet, Shuts CVC-504 RWT Outlet
	BOP	<input type="checkbox"/> Adjust Turbine Load to maintain T <sub>COLD</sub> on program
	SRO/ATC	<input type="checkbox"/> Operate Charging pumps as necessary to maintain within 15" of programmed level NOT to exceed 225"
	BOP	<input type="checkbox"/> Directs OWC to have E&C investigate loss of MCC-104
	SRO	<input type="checkbox"/> Directs OWC to tie 1Y10 to 1Y09 IAW AOP-7I.
	ATC	<input type="checkbox"/> ATC recognizes and reports to SRO that no BA Pumps are available
	SRO	<input type="checkbox"/> References Tech Specs and determines LCO 3.8.9, Condition A is applicable due to loss of MCC-104 and TNC 15.1.2, Nonconformance B is applicable due to the loss of 11 Boric Acid Pump.
	ATC	<input type="checkbox"/> After 1Y09 & 1Y10 are tied, Place CVC-501 & CVC-504 Handswitches in Auto
	ATC	<input type="checkbox"/> Restore Letdown to service IAW OI-2A

Examiner notes:

**NOTE TO EXAMINER**

**Cue Booth Operator to insert next malfunction, 11 S/G Tube Leak, when restoration of Letdown is directed**

**Event concludes when indications of S/G tube leakage.  
If SRO's understanding of Tech Specs and Technical Requirements Manual applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.**

Op-Test #: 2014

Scenario #: 4

Event #: 2

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Event Description: 11 S/G Tube Leak

Event Type: C – BOP/SRO

R – ATC, T - SRO

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> Recognizes RMS alarms and reports to SRO
	BOP	<input type="checkbox"/> Determines N-16 RMS readings are increasing
	ATC	<input type="checkbox"/> Notes PZR level lowering with no L/D and reports RCS leakage is in excess of 1 charging pump
	SRO	<input type="checkbox"/> Implement AOP-2A Section VI for RCS leakage exceeding capacity of 1 charging pump
	BOP	<input type="checkbox"/> Determine and report a S/G Tube Leak exists, isolates Blowdown
	SRO	<input type="checkbox"/> Direct downpower IAW AOP-2A to reduce $T_{AVE}$ to $<537^{\circ}\text{F}$
	SRO	<input type="checkbox"/> Give trip criteria of PZR level $<101''$ , $T_{AVE} <537^{\circ}$ , PZR Press reaches TM/LP pre-trip setpoint
	ATC	<input type="checkbox"/> Borate using Gravity Feed MOV's: <ul style="list-style-type: none"> <li>○ Start <b>ALL</b> available Charging Pumps</li> <li>○ Open at least <b>ONE</b> Gravity Feed Valve (CVC-508 &amp; 509-MOV's)</li> <li>○ Shut CVC-501-MOV VCT Outlet for approximately 1 minute, then re-open</li> <li>○ Verify <b>BOTH</b> Gravity Feed Valve (CVC-508 &amp; 509-MOV's) are shut</li> <li>○ Open CVC-504-MOV (RWT Outlet) and shut CVC-501-MOV (VCT Outlet)</li> <li>○ Obtain desired rate of power reduction by using ANY of the following methods: <ul style="list-style-type: none"> <li>▪ Adjust boration rate</li> <li>▪ Use CEA's</li> </ul> </li> </ul>
	BOP	<input type="checkbox"/> Reduce Turbine Load as necessary to maintain S/G Pressure approximately 800-825 PSIA

Examiner notes:

Op-Test #: 2014      Scenario #: 4      Event #: 2 Continued      Page 8 of 20  
Event Description: 11 S/G Tube Leak      Event Type: C – BOP/SRO  
R – ATC, T - SRO

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> Verify LPFW's High Level Dumps are Open
	BOP	<input type="checkbox"/> Monitor Feedwater System and adjust SGFP BIAS as necessary to maintain S/G Levels
	ATC	<input type="checkbox"/> When Trip Criteria met with CRS permission, TRIP Reactor.
	SRO	<input type="checkbox"/> Determine Tech Spec applicability. LCO 3.4.13.B Primary to Secondary Leakage >100 GPD

Examiner notes:

Event concludes when Reactor is tripped.  
If SRO's understanding of Tech Spec applicability is not clearly observable, follow-up questioning may be required upon completion of the scenario.

Op-Test #: 2014

Scenario #: 4

Event #: 3

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Event Description: Reactor Trip (EOP-0)

Event Type: M - ALL

Time	Position	Applicant's Actions or Behavior
	SRO	<input type="checkbox"/> Orders Reactor Trip prior to Auto Trip. Implements EOP-0
	ATC	<input type="checkbox"/> <u>Performs Reactivity Control Safety Function</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Depress Manual Reactor Trip Pushbutton on 1C05</li> <li><input type="checkbox"/> Check Reactor tripped using NI power indications on 1C05</li> <li><input type="checkbox"/> Verifies all CEAs fully inserted</li> <li><input type="checkbox"/> Verify DI Water Makeup is secured               <ul style="list-style-type: none"> <li><input type="checkbox"/> Check 11 &amp; 12 RC makeup Pumps secured on 1C07</li> <li><input type="checkbox"/> Check VCT M/U 1-CVC-512-CV is shut on 1C07</li> <li><input type="checkbox"/> If aligned for direct makeup to RCS then shut RWT Charging Pump Suction 1-CVC-504-MOV on 1C07</li> </ul> </li> </ul> <input type="checkbox"/> Reports <u>Reactivity Control Safety Function Complete</u>
	BOP	<input type="checkbox"/> <u>Performs Turbine Trip</u> <input type="checkbox"/> Checks Reactor tripped then: <ul style="list-style-type: none"> <li><input type="checkbox"/> Depresses both Turbine Trip Pushbuttons on 1C02</li> <li><input type="checkbox"/> Checks Main Turbine stop Valves shut on MK VI screen</li> <li><input type="checkbox"/> Checks Turbine Speed drops on MK VI screen</li> <li><input type="checkbox"/> Checks Turbine Generator Output Breakers open               <ul style="list-style-type: none"> <li><input type="checkbox"/> 11 GEN BUS BKR 0-CS-552-22 on 1C01</li> <li><input type="checkbox"/> 11 GEN TIE BKR 0-CS-552-23 on 1C01</li> </ul> </li> <li><input type="checkbox"/> Checks Generator Field Breaker open on 1C01</li> <li><input type="checkbox"/> Checks Generator Exciter Field breaker open on 1C01</li> <li><input type="checkbox"/> Ensures MSR 2<sup>nd</sup> Stage Steam source Valves are shut</li> </ul> <input type="checkbox"/> Reports <u>Turbine Trip Complete</u>
Examiner notes:		

Op-Test #: 2014

Scenario #: 4

Event #: 3 Continued

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Event Description: Reactor Trip (EOP-0)

Event Type: M - All

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> <u>Performs Vital Auxiliaries Safety Function</u> <input type="checkbox"/> Checks 11 or 14 4KV bus energized. <input type="checkbox"/> Checks <b>ALL</b> 125V DC BUS VOLTS greater than 105 volts on 1C24: (notes failed voltmeter for 11 125V DC Bus) <div style="margin-left: 40px;"> <input type="checkbox"/> 11   <input type="checkbox"/> 12   <input type="checkbox"/> 21   <input type="checkbox"/> 22 </div> <input type="checkbox"/> Checks at least THREE 120V AC Vital Buses are energized on 1C24: <div style="margin-left: 40px;"> <input type="checkbox"/> 11   <input type="checkbox"/> 12   <input type="checkbox"/> 21   <input type="checkbox"/> 22 </div> <input type="checkbox"/> Checks EITHER 1Y09 OR 1Y10 energized on 1C24. <input type="checkbox"/> Verifies Component Cooling Flow to the RCP's <input type="checkbox"/> Reports <u>Vital Auxiliaries Safety Function</u> <b>Complete</b>
	ATC	<input type="checkbox"/> <u>Performs Pressure &amp; Inventory Control Safety Function, including alternate actions</u> <input type="checkbox"/> Operates heaters and spray to restore pressurizer pressure between 1850 and 2300 PSIA <b>AND</b> is trending to 2250 PSIA. <input type="checkbox"/> <b>IF</b> PZR Press drops to 1725 psia, <b>THEN</b> verify SIAS <input type="checkbox"/> Perform RCP trip strategy: <div style="margin-left: 40px;"> <input type="checkbox"/> <b>IF</b> RCS Press &lt;1725 psia <b>THEN</b> trip 2 RCP's (inner or outer pair)  <input type="checkbox"/> <b>IF</b> subcooling &lt; 20°F <b>THEN</b> trip all RCP's  <input type="checkbox"/> <b>IF</b> pressure drops below ATT. 1 Limits, <b>THEN</b> trip all RCP's </div> <input type="checkbox"/> Operates charging and letdown to restore PZR level between 80 and 180 inches <input type="checkbox"/> Ensures RCS subcooling >30°F <input type="checkbox"/> Reports <u>Pressure and Inventory Safety Function</u> <b>Not Met due to negative trends on PZR level and pressure</b>

Examiner notes:



Op-Test #: 2014

Scenario #: 4

Event #: 3 Continued

Page 11 of  
20Event Description: **Reactor Trip (EOP-0)**Event Type: **M - All**

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> <u>Performs Core &amp; RCS Heat Removal Safety Function</u> <input type="checkbox"/> Checks TBVs/ADVs controlling S/G pressure 850-920 PSIA and T <sub>COLD</sub> 525-535°F <input type="checkbox"/> Shuts both MSIVs if S/G pressure drops to 800 PSIA <input type="checkbox"/> Verifies SGIS actuated if S/G pressure drops below 685 PSIA <input type="checkbox"/> Checks S/G level (-)170" to (+) 50" on 1C03 <input type="checkbox"/> <b>IF</b> Feedwater flow is lost <b>OR</b> excessive, <b>THEN</b> perform the following actions: <input type="checkbox"/> Start an AFW PP <input type="checkbox"/> Trip the SGFPs <input type="checkbox"/> Shut the SG FW ISOL valves <input type="checkbox"/> Operate the AFW System to restore S/G levels to between (-)170 and (+)30 inches <input type="checkbox"/> Checks at least one RCP is in a loop with a S/G available for heat removal (on 1C06) <input type="checkbox"/> Checks T <sub>HOT</sub> minus T <sub>COLD</sub> is less than 10°F by checking indicators on 1C06 <input type="checkbox"/> Reports <u>Core &amp; RCS Heat Removal Safety Function Complete</u> .
Examiner notes:		
Event concludes when the Main Steam Line Break in Containment occurs		
<p align="center"><b><u>NOTE TO EXAMINER</u></b></p> <p align="center"><b>Cue Booth Operator to insert next malfunction, Main Steam Line Break, when BOP reports Core and RCS Heat Removal Safety Function Complete</b></p>		

Op-Test #: 2014

Scenario #: 4

Event #: 4 &amp; 5

Page 12 of  
20Event Description: **Main Steam Line Break in  
Containment and CIS Failure**Event Type: **C – ALL  
C - BOP**

Time	Position	Applicant's Actions or Behavior
	ATC	<input type="checkbox"/> Recognize T <sub>COLD</sub> lowering and PZR level and pressure trends changing and report to SRO
	BOP	<input type="checkbox"/> <u>Re-Assess Core &amp; RCS Heat Removal Safety Function</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Checks TBVs/ADVs controlling S/G pressure 850-920 PSIA and T<sub>COLD</sub> 525-535°F</li> <li><input type="checkbox"/> Shuts both MSIVs when S/G pressure drops to 800 PSIA</li> <li><input type="checkbox"/> Verifies SGIS actuated when S/G pressure drops below 685 PSIA (reports SGIS failure to SRO when recognized)</li> <li><input type="checkbox"/> Verifies AFAS Block when 115 PSID between 11 &amp; 12 S/G's</li> <li><input type="checkbox"/> <b>IF</b> Feedwater flow is lost <b>OR</b> excessive, <b>THEN</b> perform the following actions:               <ul style="list-style-type: none"> <li><input type="checkbox"/> Start an AFW PP, Trip the SGFPs, Shut the SG FW ISOL valves</li> <li><input type="checkbox"/> Operate the AFW System to restore S/G levels to between (-)170 and (+)30 inches</li> </ul> </li> <li><input type="checkbox"/> Checks at least one RCP is in a loop with a S/G available for heat removal (on 1C06)</li> <li><input type="checkbox"/> Checks T<sub>HOT</sub> minus T<sub>COLD</sub> is less than 10°F by checking indicators on 1C06</li> <li><input type="checkbox"/> Reports <u>Core &amp; RCS Heat Removal Safety Function</u> <b>Cannot be Met</b> due to Low T<sub>COLD</sub>, Low S/G pressure and level and no RCP's.</li> </ul>

Examiners notes:

Op-Test #: 2014

Scenario #: 4

Event #: 4 &amp; 5

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Event Description: **Main Steam Line Break in  
Containment and CIS Failure**Event Type: **C – ALL  
C - BOP**

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> <u>Performs Containment Environment Safety Function</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Checks Containment Pressure &lt; 0.7 PSIG</li> <li><input type="checkbox"/> Verifies all CAC's operating with Emergency Outlet valves open</li> <li><input type="checkbox"/> Verifies SIAS and CIS when pressure &gt;2.8 psig</li> </ul>
	BOP (CT)	<input type="checkbox"/> Recognizes failure of CIS "A" and CIS "B". Manually actuates CIS "A" and CIS "B" (prior to exiting EOP-0).
	BOP/ATC (CT)	<input type="checkbox"/> Trips all RCP's after CIS actuates and within 10 minutes of Component Cooling isolation to the Containment.
	BOP	<ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies CSAS when pressure &gt;4.25 psig</li> <li><input type="checkbox"/> Checks Containment Temperature, verifies CAC's operating</li> <li><input type="checkbox"/> Checks Containment Gaseous RMS at 1C22 not in alarm with no abnormal rising trend.</li> <li><input type="checkbox"/> Reports <u>Containment Environment Safety Function</u> <b>Cannot be Met</b> due to high containment pressure and temperature</li> </ul>

Examiner's notes:

Op-Test #: 2014

Scenario #: 4

Event #: 4 &amp; 5

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Event Description: **Main Steam Line Break in  
Containment and CIS Failure**Event Type: **C - ALL  
C - BOP**

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> <u>Perform Rad Levels External to Containment Safety Function</u> <ul style="list-style-type: none"> <li><input type="checkbox"/> Check the following RMS alarms are clear with no unexplained rise: <ul style="list-style-type: none"> <li><input type="checkbox"/> U-1 Wide Range Noble Gas Monitor</li> <li><input type="checkbox"/> U-1 Condenser Off Gas @ 1C22</li> <li><input type="checkbox"/> U-1 S/G Blowdown @ 1C22</li> <li><input type="checkbox"/> U-1 Main Vent Gaseous @ 1C22</li> </ul> </li> <li><input type="checkbox"/> Perform Alternate Action to secure B/D due to Condenser Off-Gas and U-1 S/G B/D RMS alarms</li> <li><input type="checkbox"/> Reports <u>Rad Levels External to Containment Safety Function</u> <b>Cannot be Met</b> due to RMS alarms</li> </ul>
	SRO	<input type="checkbox"/> Perform EOP-0 brief <ul style="list-style-type: none"> <li><input type="checkbox"/> Ensures all are attentive</li> <li><input type="checkbox"/> Reviews Safety Functions not met <ul style="list-style-type: none"> <li><input type="checkbox"/> PIC not met due to low PZR level and pressure</li> <li><input type="checkbox"/> HR not met due low S/G press and level and no operating RCP's</li> <li><input type="checkbox"/> CE due to high Containment pressure and temperature</li> <li><input type="checkbox"/> RLEC not met due to RMS alarms</li> </ul> </li> <li><input type="checkbox"/> Reviews Safety system Actuations <ul style="list-style-type: none"> <li><input type="checkbox"/> SGIS, SIAS, CIS (failed), CSAS, AFAS, AFAS Block</li> </ul> </li> <li><input type="checkbox"/> Solicits Input</li> <li><input type="checkbox"/> Concludes the brief directing the crew to continue to monitor Safety Functions while the event is diagnosed.</li> </ul>
	SRO	<input type="checkbox"/> Refers to EOP-0 flowchart <ul style="list-style-type: none"> <li><input type="checkbox"/> Implements EOP-8</li> </ul>

Examiner notes:

Op-Test #: 2014      Scenario #: 4      Event #: 6      Page 15 of 20

Event Description: EOP-8 & HPSI discharge      Event Type: C – ATC & SRO

Time	Position	Applicant's Actions or Behavior
	ATC	<input type="checkbox"/> Identify Success Paths for Safety Functions performed in EOP-0 <ul style="list-style-type: none"> <li>○ RC-1 Met</li> <li>○ PIC-4 Met</li> </ul>
	BOP	<input type="checkbox"/> Identify Success Paths for Safety Functions performed in EOP-0 <ul style="list-style-type: none"> <li>○ VA-1 Met</li> <li>○ HR-2 Met</li> <li>○ CE-3 Met</li> <li>○ RLEC-2 Not Met, starts working RLEC-2 immediately</li> </ul>
	SRO	<input type="checkbox"/> Identifies Success Paths for all Safety Functions and determines Priority (CRS must perform CE & RLEC since ATC & BOP did not) <ul style="list-style-type: none"> <li>○ RLEC-2 Not Met</li> <li>○ PIC-4 Met</li> <li>○ HR-2 Met</li> <li>○ CE-3 Met</li> <li>○ RC-1 Met</li> <li>○ VA-1 Met</li> </ul>
	SRO	<input type="checkbox"/> Assigns BOP to perform RLEC-2 <input type="checkbox"/> Assigns ATC to perform PIC-4

Examiner's notes:

Op-Test #: 2014

Scenario #: 4

Event #: 6

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Event Description: EOP-8 &amp; HPSI discharge

Event Type: C – ATC &amp; SRO

Time	Position	Applicant's Actions or Behavior
	ATC (CT)	<input type="checkbox"/> Performs PIC-4 <ul style="list-style-type: none"><li>○ Verifies SIAS Actuation</li><li>○ Verifies HPSI Flow meets Attachment 10 and determines flow is inadequate (11 &amp; 13 running but Aux HPSI Hdr valves still shut due to loss of MCC-104)</li><li>○ Determines 11 HPSI pump failed due to inadequate flow</li><li>○ Starts 12 HPSI Pump</li></ul>
	BOP	<input type="checkbox"/> Performs RLEC-2 <ul style="list-style-type: none"><li>○ Verifies B/D isolations valves shut</li><li>○ Verifies no leakage into CC System</li><li>○ Verifies SIAS, CIS, and CSAS</li><li>○ Implements HR-2 to isolate 11 S/G</li></ul>

Examiner notes:

Op-Test #: 2014      Scenario #: 4      Event #: 6      Page 17 of 20

Event Description: EOP-8 & HPSI discharge      Event Type: : C – ATC & SRO

Time	Position	Applicant's Actions or Behavior
	BOP	<input type="checkbox"/> Performs HR-2 <ul style="list-style-type: none"> <li>○ Ensures ATC is verifying SIAS flow IAW Att. 10</li> <li>○ Ensures ATC has commenced boration</li> <li>○ Commences C/D of RCS using ADV's (100% Manual)</li> <li>○ Verifies Natural Circulation in at least 1 RCS loop</li> <li>○ Ensures ATC maintaining RCS Subcooling</li> <li>○ When T<sub>HOT</sub> is &lt;515°F then isolates 11 S/G               <ul style="list-style-type: none"> <li>▪ Directs TBO shut 11 ADV in 45' SWGR Room</li> <li>▪ Verifies 11 MSIV Shut</li> <li>▪ Verifies 11 MSIV Bypass Shut</li> <li>▪ Verifies 11 SG FW Isolation FW-4516-MOV Shut</li> <li>▪ Shuts 11 S/G AFW Steam Supplies Valves MS-4070 &amp; 4070A-CV's</li> <li>▪ Shuts 11 S/G AFW Block Valves AFW-4520, 4521, 4522, 4523-CV</li> <li>▪ Verifies 11 S/G B/D Valves BD-4010 7 4011-CV's</li> <li>▪ Closes MS Upstream Drain Isolation 1-HS-6622</li> <li>▪ Directs OSO to check no 11 S/G Safety Valves leaking</li> </ul> </li> </ul>
	ATC	<input type="checkbox"/> Maintains RCS subcooling between 25°F and 140°F
	SRO	<input type="checkbox"/> Directs ATC to maintain subcooling low in band to lower RCS leak rate
<p><b>The scenario will end when 11 S/G is isolated, and crew has evaluated HPSI flow IAW HR-2</b></p>		
<p>After scenario ends ask SRO for ERPIP call. The correct Emergency Action Level declaration for this scenario is:</p> <p><b>ALERT</b>, per F.A.1.1 for RCS Barrier loss (RCS subcooling &lt; 25° F) or potential loss (unisolable RCS leakage &gt; 50 GPM)</p>		

# SHIFT TURNOVER INFORMATION SHEET [B0459]

DATE: Today

ON-COMING SHIFT: DAYS

UNIT STATUS				
PARAMETER	UNIT 1		UNIT 2	
MODE OF OPERATION	1		1	
REACTOR POWER (%)	100		100	
GENERATION NET (MWe)	920		930	
RCS LEAKAGE (gpm)	0.01 (net)		0.02 (net)	
RCS BORON (ppm)	949		413	
UNIT RISK (HIGHEST FOR DAY)	CDF: MED	LERF: MED	CDF: LOW	LERF: LOW
BULK POWER NOTIFICATIONS	Normal			

## NON-ROUTINE SURVEILLANCE REQUIREMENTS and ACTION STATEMENTS [B0125]

List action statements expiring during the oncoming shift, non-routine, conditional, & mode dependent surveillances (e.g. chemistry samples, operability verifications, ETPs, <7 day STPs)


## OD's/RECO's/FA's and REF's requested by OPS

Unit	Description	Date Requested	Type Requested	Resp. Group	ECD

## Surveillances coming Due

Unit 1		Unit 2	
DATE	STP	DATE	STP

J. S. Heiska

Shift Manager



# SHIFT TURNOVER INFORMATION SHEET [B0459]

EQUIPMENT AVAILABILITY				
ELECTRICAL SYSTEM	UNIT 1			UNIT 2
500KV High Lines	<input checked="" type="checkbox"/> 5051		<input checked="" type="checkbox"/> 5072	<input checked="" type="checkbox"/> 5052
500KV Buses	<input checked="" type="checkbox"/> BLACK			<input checked="" type="checkbox"/> RED
13KV Supplies	<input checked="" type="checkbox"/> P-13000-1			<input checked="" type="checkbox"/> P-13000-2
SMECO Bkr Status	<input checked="" type="checkbox"/> 252-2301	<input type="checkbox"/> 0SH301		<input checked="" type="checkbox"/> 0SH302
Site Self Power Feeders	<input type="checkbox"/> 252-1106			<input type="checkbox"/> 252-2106
13KV Buses	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 12	<input checked="" type="checkbox"/> 23	<input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 22
Voltage Regulators	Auto 1102    Auto 2102 Auto 1101		Auto 1103    Auto 2103 Auto 2101	
4KV Transformers	<input checked="" type="checkbox"/> U-4000-11 <input checked="" type="checkbox"/> U-4000-21 <input checked="" type="checkbox"/> U-4000-13		<input checked="" type="checkbox"/> U-4000-12 <input checked="" type="checkbox"/> U-4000-22 <input checked="" type="checkbox"/> U-4000-23	
4KV Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 14		<input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 23 <input checked="" type="checkbox"/> 24	
Diesel Generators	<input type="checkbox"/> 1A <input type="checkbox"/> 1B <input type="checkbox"/> 0C		<input type="checkbox"/> 2A <input type="checkbox"/> 2B <input type="checkbox"/> 0C	
480V Buses	<input checked="" type="checkbox"/> 11A <input checked="" type="checkbox"/> 11B <input checked="" type="checkbox"/> 14A <input checked="" type="checkbox"/> 14B		<input checked="" type="checkbox"/> 21A <input checked="" type="checkbox"/> 21B <input checked="" type="checkbox"/> 24A <input checked="" type="checkbox"/> 24B	
125VDC Battery Chargers	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 23 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 24		<input checked="" type="checkbox"/> 14 <input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 21	
125VDC Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12		<input checked="" type="checkbox"/> 22 <input checked="" type="checkbox"/> 21	
120VAC Vital Buses	<input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 21 <input checked="" type="checkbox"/> 13 <input checked="" type="checkbox"/> 23		<input checked="" type="checkbox"/> 14 <input checked="" type="checkbox"/> 24 <input checked="" type="checkbox"/> 12 <input checked="" type="checkbox"/> 22	

OOS SR EQUIPMENT		OOS NSR EQUIPMENT	
UNIT 1 & COMMON	UNIT 2	UNIT 1 & COMMON	UNIT 2
11 BA Pump	23 AFW Pp		
12 CS Pump			

# SHIFT TURNOVER INFORMATION SHEET [B0459]

GENERAL INFORMATION				
UNIT 1				
			11 HEADER	12 HEADER
Max Header Pressure PE1-12-21-O-M	SW PUMP	11	33 psig (yesterday)	
		12		32 psig (yesterday)
		13	32.5 psig yesterday)	30 psig (yesterday)

## LONG TERM NOTES

1. IAW OD-09-005, maintain Containment pressure less than 1.0 PSIG in order to ensure the Containment response to a Design Basis Loss Of Coolant Accident inside the Containment remains within design limits

## SHORT TERM NOTES

1. 12 CS Pump for last hour for pump coupling Inspection expected back in 2 hours
2. 11 BA Pump for last 6 hours (bearing seized) expected back in 1 day
3. 23 AFW Pump OOS for motor bearing replacement, expected back in 10 hours