

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


**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

JPM Number: 2K15 RO A.1.1 Revision: 0

Initiated:


John Follett

  
Developer

7-14-15  
Date

Reviewed:

Bob Royce

  
Technical Reviewer

7/14/15  
Date

Approved:

Paul Scott

  
Facility Reviewer

7-15-15  
Date

JPM Number: 2K15 RO A.1.1

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## **JPM WORKSHEET**

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 RO A.1.1                      Revision: 0

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

System: A.C. Electrical Distribution

Time Critical Task:                      ☐ YES    ☒ NO

Validated Time (minutes): 8

Task Number(s): 062-04-004

Applicable To:                      SRO \_\_\_\_\_    STA \_\_\_\_\_    RO X    PEO \_\_\_\_\_

K/A Number: 2.1.31                      K/A Rating: 4.6 / 4.3

Method of Testing:    Simulated Performance: \_\_\_\_\_                      Actual Performance: X

Location:                      Classroom: \_\_\_\_\_                      Simulator: X                      In-Plant: \_\_\_\_\_

Task Standards:                      Correctly complete AC Electrical Source Inoperability Surveillance for one EDG inoperable

Required Materials:                      SP 3646A.7, "AC Electrical Sources Inoperability" Rev 009-03

(procedures, equipment, etc.)                      SP 3646A.7-002, "T/S 3.8.1.1 ACTION b. – One EDG Inoperable" Rev 005-02

General References:

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 RO A.1.1

Revision : 0

Initial Conditions: 10 minutes ago, ROCKER ARM LUBE OIL LEVEL HIGH alarm came in on 'B' EDG. PEO investigated and reported that level could not be maintained less than 2/3 full. Water is draining from 3EGO\*V7B, Oil Reservoir Drain. The 'B' EDG was declared inoperable, effective at time of discovery due to the jacket water leak into rocker arm lube oil. T/S 3.8.1.1 was entered.  
Plant status is provided on attached turnover sheet.

Initiating Cues: You are the On-Shift Reactor Operator. Your task is to complete SP 3646A.7, "AC Electrical Sources Inoperability" for the "B" EDG. The US has provided you a copy of the procedure and Surveillance Form, which is authorized.

Simulator Requirements:

1. Reset to **IC-356**, 100% steady-state power.
2. Load schedule **NRC-04.sch**.
3. Place **YCT on 3MSS\*MOV17A, B, D** for TDAFW pump out of service.
4. Place **YCT on 3MSS\*AOV31A, B, D** for TDAFW pump out of service.
5. Place the simulator in "RUN", check for a stable IC condition, and acknowledge/clear annunciators.

Approximate setup time is 4 minutes.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

**PERFORMANCE INFORMATION**

JPM Number: 2K15 RO A.1.1

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Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

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

<b>STEP # 1</b>	Performance: <b>SP 3646A.7, PREREQUISITES</b> 2.1.1 The SM/US has signed the "Test Authorized By" block on the appropriate form.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews Prerequisites from SP 3646A.7, then reviews cover sheet of SP 3646A.7-002. Confirms "Test Authorized By" has been signed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2</b>	Performance: <b>SP 3646A.7-002, Cover Sheet</b> Initial for "Prerequisites Completed" on cover sheet.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Verifies all prerequisites met, then initials for "Prerequisites Completed" on cover sheet.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 3</b>	Performance: <b>SP 3646A.7-002, Cover Sheet</b> Initial for "Precautions Noted" on cover sheet.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews Precautions from SP 3646A.7 are listed as "N/A". Initials for "Precautions Noted" on cover sheet.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

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Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

<b>STEP # 4</b>	Performance: <b>SP 3646A.7</b> <b>4.2 T/S 3.8.1.1 ACTION b. – One EDG Inoperable</b>  <p style="text-align: center;"><b>NOTE</b></p> <p>Verification of the offsite sources must be performed as follows:</p> <ul style="list-style-type: none"><li>• Within one hour prior to or one hour after entering the ACTION statement</li><li>• At least once every eight hours while in the ACTION statement</li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews NOTE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 5</b>	Performance: 4.2.1 Refer To SP 3646A.7-002 and PERFORM the following for each vital 4160 volt bus: <ul style="list-style-type: none"><li>• CHECK that both RSST A <u>AND</u> NSST A are energized with <i>no</i> valid alarms.</li><li>• VERIFY that the breaker alignment for supplying the vital 4,160V bus from both offsite sources is OPERABLE.</li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1. Initials each row on SP 3646A.7-002 for Step 4.2.1 in space provided for Bus 34C (pg 2). 2. Marks or initials SAT for Bus 34C capable of being powered from both off-site sources (pg 2). 3. Initials each row on SP 3646A.7-002 for Step 4.2.1 in space provided for Bus 34D (pg 3). 4. Marks or initials SAT for Bus 34D capable of being powered from both off-site sources (pg 3).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

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Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

<b>STEP #6</b>	Performance: 4.2.2 Within two hours, Refer To SP 3646A.7-002 and PERFORM the following for the OPERABLE EDG: a. REVIEW LCO ACTION statements in effect for each OPERABLE system, subsystem, train, component, or device.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1 Reviews the Turnover Sheet, recognizing that only T/S 3.7.1.2 is listed. 2 Reviews LCO ACTION statements for T/S 3.7.1.2. 3 Initials every row of the "EDG A OPERABLE" column for step 4.2.2.a (pg 4). 4 Leaves the "EDG B OPERABLE" column blank or documents all rows N/A for step 4.2.2.a (pg 4).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP #7</b>	Performance: b. VERIFY equipment associated with the listed bypass annunciators is OPERABLE.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1 Observes status of Train A bypass annunciator windows at MB1, none are LIT for Train A. 2 Initials each row of the "OPERABLE" column for step 4.2.2.b for "EDG A OPERABLE" (pg 5). 3 Documents N/A for the "OPERABLE" column for step 4.2.2.b for "EDG B OPERABLE" (pg 6).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Examinee may perform a Lamp Test to confirm annunciator status.	

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<b>STEP #8</b>	Performance: c. VERIFY associated equipment is OPERABLE.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1 Reviews the Turnover Sheet, recognizing that none of the MOVs listed on pg 5 for step 4.2.2.c for "EDG A OPERABLE" are out of service. 2 Initials each row of the "OPERABLE" column for step 4.2.2.c for "EDG A OPERABLE" (pg 5). 3 Documents N/A for the "OPERABLE" column for step 4.2.2.c for "EDG B OPERABLE" (pg 6).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP #9</b>	Performance: 4.2.3 IF in MODE 1, 2, or 3, within two hours, VERIFY the turbine driven auxiliary feedwater pump is OPERABLE and DOCUMENT on SP 3646A.7-002.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: 1. Recognizes from the Turnover Sheet that the TDAFW pump is out of service. 2. Marks or initials the "Unsat" column for step 4.2.3 (pg 6).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP #10</b>	Performance: 4.2.4 Refer To LCO 3.8.1.1, "A.C. Sources – Operating," ACTION b.3 and DETERMINE if any additional ACTION requirements are applicable based on performance of steps 4.2.2 and 4.2.3.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Requests US to determine if action requirements are applicable.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The US will review if there any additional ACTION requirements, continue on with procedure.</b>	
	Comments:	



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Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

<b>STEP # 1 1</b>	Performance:	Critical:
	4.2.5 <u>IF</u> the EDG became inoperable due to pre-planned maintenance or testing, PERFORM the following:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade:
	Recognizes step is not applicable.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 2</b>	Performance:	Critical:
	<b>NOTE</b> An independently testable component is one which can be tested without running the EDG. Examples would be I&C loops out of calibration, valves found out of alignment, leaks on piping, breaker failures, and other similar items.	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade:
	Reviews NOTE.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1

Revision: 0

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

<b>STEP # 1 3</b>	<p>Performance:</p> <p>4.2.6 <b>IF</b> the EDG became inoperable due to an inoperable support system OR an independently testable component, <b>PERFORM</b> <i>one</i> the following within 24 hours and <b>DOCUMENT</b> on SP 3646A.7-002:</p> <ul style="list-style-type: none"> <li>VERIFY <i>no</i> potential Common Mode Failure exists and GoTo step 4.2.7</li> <li>Refer To the applicable procedure below and <b>PERFORM</b> actions for starting the <b>OPERABLE</b> EDG from MB8 without loading: <ul style="list-style-type: none"> <li>SP 3646A.1, "Emergency Diesel Generator A Operability Test"</li> </ul> </li> </ul>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard:</p> <ol style="list-style-type: none"> <li>Based on NOTE, examinee determines that the 'A' EDG has no symptoms of jacket water leak.</li> <li>Checks the box for "Common Mode Failure Determination" for step 4.2.5/4.2.6 (pg 7).</li> <li>Marks or initials the "Sat" column for step 4.2.5/4.2.6 (pg 7).</li> </ol>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p> <p>If requested assistance to assess the status of the 'A' EDG for Common Mode Failure, provide the cue:  <b>The System Engineer and PEO have inspected the 'A' EDG, no symptoms of jacket water leak exist.</b></p>	
	<p>Comments:</p>	
<b>STEP # 1 4</b>	<p>Performance:</p> <p>4.2.7 <b>IF</b> the EDG may be subject to an extended on-line maintenance window of more than 72 hours, <b>PERFORM</b> the following to ensure Tech Spec 14 day on-line maintenance requirements are met:</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard:</p> <p>Recognizes step is not applicable.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p>	
	<p>Comments:</p>	
<b>STEP # 1 5</b>	<p>Performance:</p> <p>4.2.8 Refer To LCO 3.8.1.1, "A.C. Sources – Operating," ACTION b. and <b>DETERMINE</b> if any additional ACTION requirements are applicable.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard:</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p> <p>Provide the cue: <b>The US will perform the LCO review, continue on with SP 3646A.7.</b></p>	
	<p>Comments:</p>	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.1

Revision: 0

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

<b>STEP # 1 6</b>	Performance: 4.2.9 REPEAT step 4.2.1 through 4.2.4 at least once every eight hours until both EDGs are restored to OPERABLE status.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Informs the US that surveillance must be repeated at least once every eight hours until both EDGs are restored to OPERABLE status.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 7</b>	Performance: Review Surveillance Form for Acceptance Criteria and document status on cover sheet.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: 1. Marks the "NO" box on the cover sheet for Acceptance Criteria Satisfied, or leaves both boxes empty. 2. Signs and dates the cover sheet as "Performed By" 3. Informs the US that Acceptance Criteria is <u>NOT</u> satisfied.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**TERMINATION CUE:** The evaluation for this JPM is concluded.

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.1.1

Revision: 0

Task Title: Perform AC Electrical Source Inoperability Surveillance Requirements.

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

**EVALUATION SECTION:**

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

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## APPLICANT HANDOUT

JPM Number: 2K15 RO A.1.1

Revision: 0

Initial Conditions: 10 minutes ago, ROCKER ARM LUBE OIL LEVEL HIGH alarm came in on 'B' EDG. PEO investigated and reported that level could not be maintained less than 2/3 full. Water is draining from 3EGO\*V7B, Oil Reservoir Drain. The 'B' EDG was declared inoperable, effective at time of discovery due to the jacket water leak into rocker arm lube oil. T/S 3.8.1.1 was entered.

Plant status is provided on attached turnover sheet.

Initiating Cues: You are the On-Shift Reactor Operator. Your task is to complete SP 3646A.7, "AC Electrical Sources Inoperability" for the "B" EDG. The US has provided you a copy of the procedure and Surveillance Form, which is authorized.

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

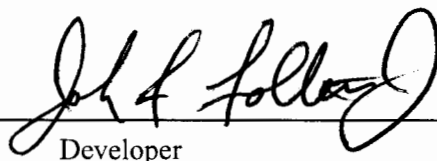
**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Determine the Required Boration Time and Final Control Rod Height For  
a Rapid Downpower.

JPM Number: 2K15 RO A.1.2 Revision: 0

Initiated:

John Follett

  
Developer

7-10-15

Date

Reviewed:

Bob Royce

  
Technical Reviewer

7/15/15  
13

Date

Approved:

Paul Scott



Facility Reviewer

7-15-15

Date

JPM Number: 2K15 RO A.1.2

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 RO A.1.2                      Revision: 0

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

System: N/A

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 10

Task Number(s): 009-01-004

Applicable To:            SRO \_\_\_\_\_ STA \_\_\_\_\_ RO X    PEO \_\_\_\_\_

K/A Number: 2.1.20            K/A Rating: 4.6 / 4.6

Method of Testing:    Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:            Classroom: X            Simulator: \_\_\_\_\_            In-Plant: \_\_\_\_\_

Task Standards:            Correctly determine the required boration time and final control rod height for a rapid downpower.

Required Materials:            Cycle 17 RE Curve and Data Book  
(procedures, equipment, etc.)    July 2015 Monthly Reactivity Data Sheet.

General References:            AOP 3575, Rapid Downpower, Rev 020

Setup Requirements:            **Ensure applicant copy of Curve and Data Book does NOT contain Reactivity Plans (RE-H-01 thru RE-H-17) prior to commencing JPM.**

### \*\*\* READ TO THE EXAMINEE \*\*\*

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.



## JPM WORKSHEET

JPM Number: 2K15 RO A.1.2

Revision : 0

Initial Conditions: Plant status is as follows:

- 100% power
- 1285 MWe
- Core burnup is 9,500 MWD / MTU
- Boron concentration is 1200 ppm
- Control Bank D position is 218 steps

You are the Extra Licensed Operator on shift. CONVEX has requested MP3 conduct an emergency load reduction of 450 MWe.

Initiating Cues: The US has directed you to calculate the required boration time in accordance with AOP 3575.

Assume a boration flow rate of 80 gpm.

You are also directed to determine the final control rod height for the rapid downpower.

Use the Cycle 17 Curve and Data Book with the July 2015 Monthly Reactivity Data Sheet exclusively, and use curves when possible.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2

Revision: 0

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

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

<b>STEP # 1</b>	Performance: Obtain proper Abnormal Operating Procedure, Curve Book, and July 2015 Monthly Reactivity Data Sheet.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Obtains a copy of AOP 3575, "Rapid Downpower", MP3 Cycle 17 RE Curve and Data Book, and July 2015 Monthly Reactivity Data Sheet.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Provide copies of AOP 3575, "Rapid Downpower", MP3 Cycle 17 RE Curve and Data Book, and July 2015 Monthly Reactivity Data Sheet.</b>	
	Comments:	
<b>STEP # 2</b>	Performance: Determine required boration time.	
	Standard: Correctly determines the total power change:  $450 \text{ Mwe} \div 1285 \text{ Mwe per } 100\% \text{ power} = 35\%$	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Locates the formula and values in AOP 3575 at steps 4.k and 4.l. Correctly determines the required boration time using the following formula:  $\frac{\text{Total Power Change (\%)} \times 18 \text{ (gal BA/\% Power)}}{\text{BA Flow Rate}} = \text{Time (min)}$  $[35\% \times 18] \div 80 \text{ gpm} = 7.875 \text{ min (7 min 53 sec)}$	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: A range of 34 to 36% is acceptable. A range of 7.5 to 8 min is acceptable.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2

Revision: 0

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

<b>STEP # 3</b>	Performance: Determine the total power defect associated with the 35% power change.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Refers to the "Total Power Defect vs Percent Power for MOL" curves (RE-E-01). Selects the 1200 ppm curve and determines the power defect associated with a power change from 100% to 65% power.  $1975 - 1325 = \mathbf{650\ pcm}$ (1978 - 1332 = 656 pcm calculated)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: A range of 630 to 670 pcm is acceptable.	
<b>STEP # 4</b>	Performance: Determine boron concentration change associated with the boration.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Calculates the volume of boric acid added:  $\text{Power Change (\%)} \times 18 \text{ (gal BA/\% Power)} = \text{gal BA}$ $35 \times 18 = \mathbf{630\ gal}$	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Refers to the July 2015 Monthly Reactivity Data Sheet for the "Gallons boric acid per ppm RCS [B] increase": <b>(10.4 gal BA / ppm)</b>  Calculates RCS boron concentration change:  $630\ gal \div 10.4\ gal/ppm \approx \mathbf{61\ ppm}$	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: A range of 615 to 650 gal is acceptable. A range of 59 to 63 ppm is acceptable.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2

Revision: 0

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

<b>STEP # 5</b>	Performance: Determine the negative reactivity added as a result of the boration.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Refers to the "Differential Boron Worth vs Burnup" curves (RE-F-02). Selects the HFP DBW curve and determines differential boron worth for 9,500 MWD/MTU.  <b>- 6.375 pcm/ppm</b> (-6.31 pcm/ppm calculated)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Calculates the negative reactivity added:  <b>61 ppm x (- 6.375 pcm /ppm) ≈ - 389 pcm</b> (385 pcm calculated)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: A range of -6.30 and -6.40 pcm /ppm is acceptable. A range of 382 to 390 pcm is acceptable.	
<b>STEP # 6</b>	Performance: Determine the negative reactivity added as a result of rod insertion.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Calculates the negative reactivity due to rod insertion by subtracting the reactivity change due to boron from the reactivity change for total power defect:  <b>650 pcm - 389 pcm = 261 pcm</b>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: A range of 250 to 285 pcm is acceptable.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.1.2

Revision: 0

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

<b>STEP # 7</b>	Performance: Determine the predicted final control rod height.	
	Standard: Refers to the "Integral Rod Worth versus Steps Withdrawn" curve for control banks D and C in overlap, MOL, HFP, equilibrium Xe (RE-D-02). Determines the rod worth for the initial rod height of 218 steps:  CB D at 218 steps = <b>12 pcm</b> (9 pcm computed)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Computes rod worth value: 261 pcm + 12 pcm = <b>273 pcm</b> (282 pcm computed)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Refers to the "Integral Rod Worth versus Steps Withdrawn" curve for control banks D and C in overlap, MOL, HFP, equilibrium Xe (RE-D-02). Determines the predicted final control rod height for an integral rod worth of 275 pcm:  275 pcm = <b>CB D at 138 steps</b> (135 steps computed)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:  Comments: A range of 8 to 15 pcm is acceptable. A range of 130 to 140 steps is acceptable.	
<b>STEP # 8</b>	Performance: Examinee Reports Task Completion.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reports to the US that the required boration time and final control rod height has been determined.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Please turn in all notes and calculations. The evaluation for this JPM is complete.</b>	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.1.2

Revision: 0

Task Title: Determine the Required Boration Time and Final Control Rod Height For a Rapid Downpower.

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.  
If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

**EVALUATION SECTION:**

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

## APPLICANT HANDOUT

JPM Number: 2K15 RO A.1.2

Revision: 0

Initial Conditions: Plant status is as follows:

- 100% power
- 1285 MWe
- Core burnup is 9,500 MWD / MTU
- Boron concentration is 1200 ppm
- Control Bank D position is 218 steps

You are the Extra Licensed Operator on shift. CONVEX has requested MP3 conduct an emergency load reduction of 450 MWe.

Initiating Cues: The US has directed you to calculate the required boration time in accordance with AOP 3575.

Assume a boration flow rate of 80 gpm.

You are also directed to determine the final control rod height for the rapid downpower.

Use the Cycle 17 Curve and Data Book with the July 2015 Monthly Reactivity Data Sheet exclusively, and use curves when possible.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Recommend a clearance boundary for 3CCI\*P1A

JPM Number: 2K15 RO A.2 Revision: 0


Initiated:

John Follett  7-14-15  
Developer Date

Reviewed:

Bob Royce  7/14/15  
Technical Reviewer Date

Approved:

Paul Scott  7-15-15  
Facility Reviewer Date



JPM Number: 2K15 RO A.2

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 RO A.2                      Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

System: Tagging and Clearance

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 15

Task Number(s): 341-01-079

Applicable To:            SRO X    STA \_\_\_\_\_    RO X    PEO X

K/A Number: GEN 2.2.13    K/A Rating: 4.1 / 4.3

Method of Testing:    Simulated Performance: \_\_\_\_\_    Actual Performance: X

Location:            Classroom: X            Simulator: \_\_\_\_\_            In-Plant: \_\_\_\_\_

Task Standards:            Develop and review a tag clearance.

Required Materials:            1) P&IDs; EM-113B Rev. 042, EM-114A Rev. 018  
(procedures, equipment,  
etc.)                                2) EE One-Line diagrams  
   3) ESK Power Supply Book  
   4) OP 3330E, *Safety Injection Pump Cooling System* Rev. 007-05  
   5) OP 3308-006, *Electrical Checklist for High Pressure Safety Injection* Rev. 002

General References:            1) OP-AA-200 *Equipment Clearance* Rev. 021  
   2) OP 3250 *Removing Equipment from Service for Maintenance* Rev. 014-08

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 RO A.2

Revision : 0

Initial Conditions: The mechanical seal on 3CCI\*P1A, "SI PP A COOLING PP", has to be replaced. Repair efforts are planned and the maintenance first line supervisor has made a work package tag-out request for the repair.

Initiating Cues: Your task is to develop a clearance boundary for this repair activity. **Using page 2 of this handout, RECORD the components to be tagged, the required tagged position(s), and the tag color.** Tag sequence is not required.

Simulator Requirements: None.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2

Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

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

<b>Examiner Actions Before Start</b>	<p>Prior to start, ensure OP-AA-200 Att. 5 "Tag-Out Request" is marked-up with the following information:</p> <p>Issued to: Unit Supervisor, Unit 3 OPS, x6200</p> <p>Unit: 3</p> <p>Reason: Corrective Maintenance &amp; write in AWO number: 53102476838</p> <p>Equip Affected: 3CCI*P1A</p> <p>Work to be Done: pump seal replacement on 3CCI*P1A</p> <p>Assist in Defining Work Scope: Full Tagout</p> <p>Tagout Request Submitted By: John Franklin</p> <p>Tagout Request Verified By: Jeff Moore</p> <p><b>Attachment 5 is on page 3 of the APPLICANT HANDOUT. Once marked up with the above information, it may be passed out.</b></p> <p><b>Note: JPM STEPs may be performed in any order.</b></p> <p>At this point, the JPM may begin.</p>				
<b>STEP #1</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 85%; padding: 5px;"> <p>Performance:</p> <p>Identifies correct piping isolation boundary for 3CCI*P1A, "SI PP A COOLING PP".</p> </td><td style="width: 15%; padding: 5px; text-align: center;"> <p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p> </td></tr> <tr> <td style="padding: 5px;"> <p>Standard:</p> <p>Candidate uses P&amp;ID EM-114A and other appropriate references (listed in required materials) and identifies the correct isolation boundary:</p> <ul style="list-style-type: none"> <li>Pump Discharge (3CCI*V2) CLOSED and danger (red) tagged</li> <li>Pump Suction (3CCI*V7) CLOSED and danger (red) tagged</li> </ul> </td><td style="padding: 5px; text-align: center;"> <p>Grade:</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p> </td></tr> </table>	<p>Performance:</p> <p>Identifies correct piping isolation boundary for 3CCI*P1A, "SI PP A COOLING PP".</p>	<p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>	<p>Standard:</p> <p>Candidate uses P&amp;ID EM-114A and other appropriate references (listed in required materials) and identifies the correct isolation boundary:</p> <ul style="list-style-type: none"> <li>Pump Discharge (3CCI*V2) CLOSED and danger (red) tagged</li> <li>Pump Suction (3CCI*V7) CLOSED and danger (red) tagged</li> </ul>	<p>Grade:</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>
<p>Performance:</p> <p>Identifies correct piping isolation boundary for 3CCI*P1A, "SI PP A COOLING PP".</p>	<p>Critical:</p> <p>Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>				
<p>Standard:</p> <p>Candidate uses P&amp;ID EM-114A and other appropriate references (listed in required materials) and identifies the correct isolation boundary:</p> <ul style="list-style-type: none"> <li>Pump Discharge (3CCI*V2) CLOSED and danger (red) tagged</li> <li>Pump Suction (3CCI*V7) CLOSED and danger (red) tagged</li> </ul>	<p>Grade:</p> <p>S <input type="checkbox"/> U <input type="checkbox"/></p>				
	<p>Cue:</p>				
	<p>Comments:</p>				

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2

Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

<b>STEP #2</b>	<b>Performance:</b> Identifies correct vent configuration for 3CCI*P1A, "SI PP A COOLING PP".	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Candidate uses P&ID EM-114A and identifies <b>at least ONE</b> of the following vent valves: <ul style="list-style-type: none"> <li>Vent valve (3CCI*V992) OPEN and danger (red) tagged</li> <li>Pump Suction Test Valve (3CCI*V29) OPEN and danger (red) tagged</li> <li>Pump Suction Test Valve (3CCI*V30) OPEN and danger (red) tagged</li> </ul>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	
<b>STEP #3</b>	<b>Performance:</b> Identifies correct drain configuration for 3CCI*P1A, "SI PP A COOLING PP".	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Candidate uses P&ID EM-114A and identifies the following drain valve: <ul style="list-style-type: none"> <li>Pump Casing Drain (3CCI*V32) OPEN and danger (red) tagged</li> </ul>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	
<b>STEP #4</b>	<b>Performance:</b> Identifies correct electrical isolation boundary for 3CCI*P1A, "SI PP A COOLING PP".	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Candidate uses EE-1AH or other appropriate references and identifies the correct electrical isolation point: <ul style="list-style-type: none"> <li>At MCC 32-4T (F2F), OFF and danger (red) tagged</li> </ul>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2

Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

<b>STEP #5</b>	<b>Performance:</b> Identifies correct electrical isolation boundary for 3CCI*P1A, "SI PP A COOLING PP".	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> Candidate uses EE-1AH or other appropriate references and identifies the correct electrical isolation point: 3CCI*P1A Control Switch <b>Auto after Stop</b> (or blank) and caution (yellow) tagged (at MB2)	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b> 1. Tagging the pump control switch is not required to meet the critical nature of this step. 2. 3CCI*P1A control switch does not have a Pull to Lock position.	
<b>STEP #6</b>	<b>Performance:</b> Identifies correct electrical isolation boundary for 3SIH*P1A, "SI PP A".	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Candidate prevents SI pump start by using either of the following: <ul style="list-style-type: none"> <li>• 3SIH*P1A Control Switch in PTL and danger (red) tagged (at MB2)</li> </ul> <p style="text-align: center;"><b><u>OR</u></b></p> <ul style="list-style-type: none"> <li>• At Bus 34C (34C8-2), Racked Down and danger (red) tagged  3SIH*P1A Control Switch in PTL and caution (yellow) tagged (at MB2)</li> </ul>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b> 1. Isolating cooling water (3CCI*P1A) to the 'A' Safety Injection Pump (3SIH*P1A) lube oil system will inop 3SIH*P1A. The critical nature of this step is to prevent pump start to preclude damage to this pump. 2. OP 3250, <i>Removing Equipment from Service for Maintenance</i> , step 1.6.3 discusses use of a red tag to the "PTL" position for non-electrical isolation. 3. If the candidate chooses to rack down the breaker for 3SIH*P1A, it would also be considered acceptable. With the breaker racked down, a caution (yellow) tag is acceptable with the switch in PTL, but is <b><u>NOT</u></b> a critical tag. 4. OP 3308-006 or other appropriate references can be used to identify the associated breaker for 3SIH*P1A, which is 34C8-2.	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 RO A.2

Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

<b>STEP #7</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate submits completed Page 2 of the APPLICANT HANDOUT to the examiner. (Tagout should include all critical components previously identified.)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>TERMINATION CUE:</b> Acknowledge the Candidate's tagout submittal. <b>The evaluation for this JPM is complete.</b>	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

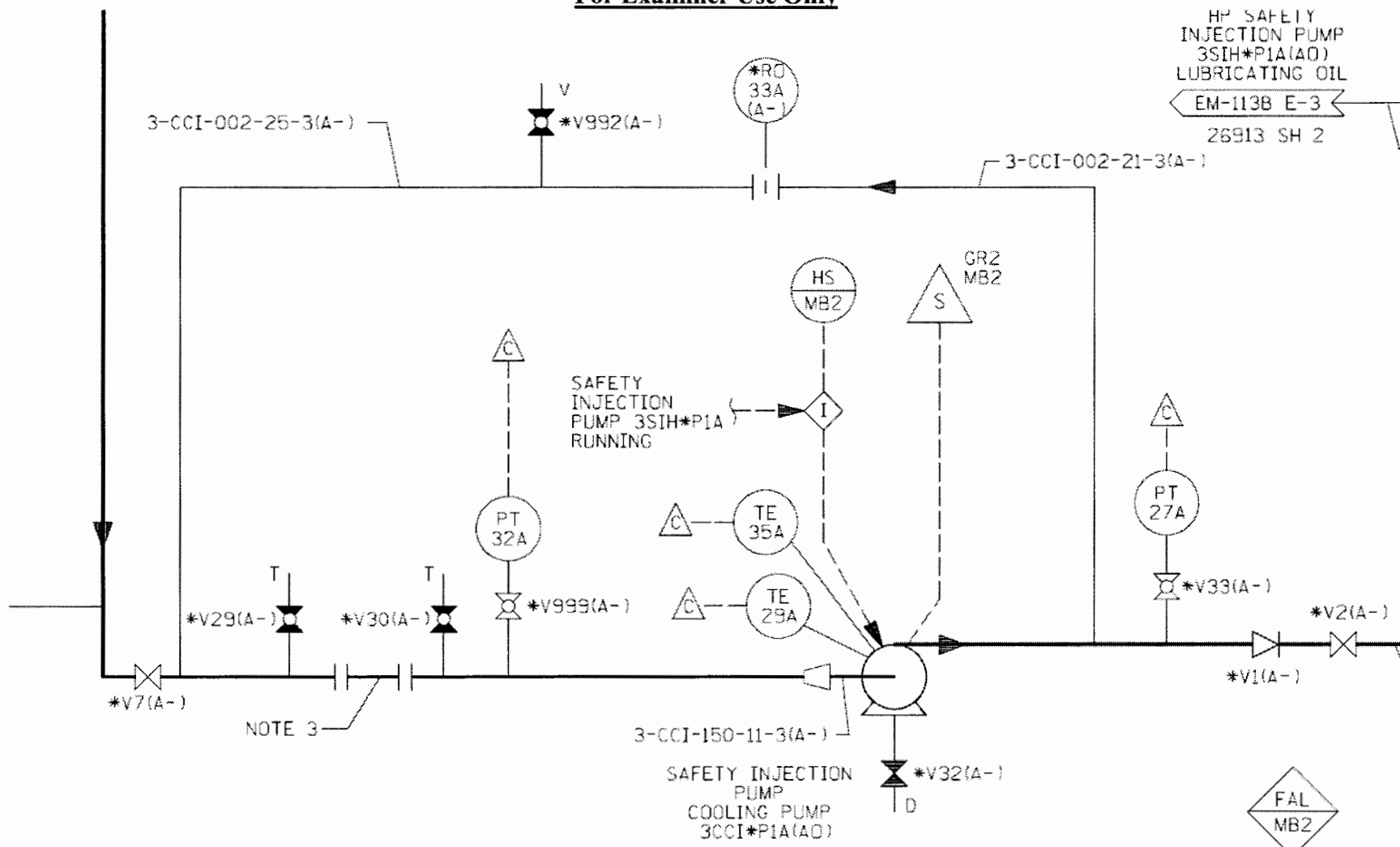
## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.2

Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

### For Examiner Use Only





**KEY for Examiner Use Only**

<b>Component</b>	<b>Tagged Position</b>	<b>Tag Color</b>
3CCI*V2 Pump Discharge	CLOSED	RED
3CCI*V7 Pump Suction	CLOSED	RED
<u>One of the following:</u> <ul style="list-style-type: none"> <li>3CCI*V992 Vent</li> <li>3CCI*V29 Pump Suction Test</li> <li>3CCI*V30 Pump Suction Test</li> </ul>	OPEN OPEN OPEN	RED RED RED
3CCI*V32 Pump Casing Drain	OPEN	RED
MCC 32-4T (F2F)	OFF	RED
3CCI*P1A Control Switch (MB2)	Auto After Stop	YELLOW
<u>Either of the following:</u> <ul style="list-style-type: none"> <li>3SIH*P1A Control Switch (MB2)</li> <li>Bus 34C (34C8-2)</li> <li>3SIH*P1A Control Switch (MB2)</li> </ul>	Pull to Lock  Racked Down Pull to Lock	RED  RED YELLOW

Tag sequence is **NOT** critical.

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.2

Revision: 0

Task Title: Recommend a clearance boundary for 3CCI\*P1A

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

**APPLICANT HANDOUT (page 1 of 3)**

JPM Number: 2K15 RO A.2

Revision: 0

Initial Conditions: The mechanical seal on 3CCI\*P1A, "SI PP A COOLING PP", has to be replaced. Repair efforts are planned and the maintenance first line supervisor has made a work package tag-out request for the repair.

Initiating Cues: Your task is to develop a clearance boundary for this repair activity. **Using page 2 of this handout, RECORD the components to be tagged, the required tagged position(s), and the tag color.** Tag sequence is not required.

**APPLICANT HANDOUT** (page 2 of 3)

Component	Tagged Position	Tag Color

# APPLICANT HANDOUT (page 3 of 3)

DOMINION

OP-AA-200  
REVISION 21  
PAGE 60 OF 70



## Tag-Out Request

OP-AA-200 - Attachment 5

Page 1 of 1

Issued To (Name) <b>UNIT SUPERVISOR</b>	Extension <b>6200</b>	Department <b>UNIT 3 OPS</b>																						
Tag-Out Requested On Unit: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> Common																								
Reason For Tag-Out <input checked="" type="checkbox"/> Corrective Maintenance <input type="checkbox"/> Preventive Maintenance <input type="checkbox"/> Trouble Shooting <input type="checkbox"/> Testing <input type="checkbox"/> Engineering Work Package <input type="checkbox"/> Other	Initiating Document Work Order Number <b>53102476838</b> Design Change Package Number Other																							
Equipment Affected <b>3CCIXPIA</b>																								
Work To Be Done <b>PUMP SEAL REPLACEMENT ON 3CCIXPIA</b>																								
Assist in Defining Work Scope and establishing safe work boundaries, review the following and check all that apply: <table border="0"><tr><td><input type="checkbox"/> "NO ROTATION" Tags (Equipment de-energized and prevented from turning; Non-intrusive maintenance.)</td><td><input type="checkbox"/> Heat Trace (consider if removing insulation)</td></tr><tr><td><input type="checkbox"/> "NO FLOW" Tags (System isolated to allow equipment to be manipulated without affecting the plant. Non-intrusive maintenance.)</td><td><input type="checkbox"/> Purge Path Required (Describe Below)</td></tr><tr><td><input checked="" type="checkbox"/> "FULL TAGOUT" Tags (Equipment isolated from all energy sources and depressurized. Intrusive maintenance.)</td><td><input type="checkbox"/> System in-service for Freon removal</td></tr><tr><td><input type="checkbox"/> "ELECTRICAL ONLY" (Equipment electrically isolated, the craft will use LOCKOUT, if required, for all other energy sources.)</td><td><input type="checkbox"/> Steam removed from air handler</td></tr><tr><td><input type="checkbox"/> Controlling Procedure, which defines energy sources (OP, MOP, PT, ICP, MCM, etc. List in remarks.)</td><td><input type="checkbox"/> Hazardous Chemicals Involved</td></tr><tr><td><input type="checkbox"/> Personnel entering a piping system or plant equipment (List in remarks.) (Operations will assist in determining applicable OPS procedures.)</td><td><input type="checkbox"/> Control Power fuses removal required</td></tr><tr><td><input type="checkbox"/> Auxiliary Components associated with equipment: <input type="checkbox"/> Seal Water <input type="checkbox"/> Oil sub-system <input type="checkbox"/> Cooling Water (i.e., BC, SW, CD, CC)</td><td><input type="checkbox"/> Grounds required</td></tr><tr><td></td><td><input type="checkbox"/> Motor Heater fuses</td></tr><tr><td></td><td><input type="checkbox"/> MOV motor/grease heater fuse</td></tr><tr><td></td><td><input type="checkbox"/> MOV internal power supplies on LS/Rotor Contacts</td></tr><tr><td></td><td><input type="checkbox"/> PMT requires Danger Tags (MOV testing, Flow Scan)</td></tr></table>			<input type="checkbox"/> "NO ROTATION" Tags (Equipment de-energized and prevented from turning; Non-intrusive maintenance.)	<input type="checkbox"/> Heat Trace (consider if removing insulation)	<input type="checkbox"/> "NO FLOW" Tags (System isolated to allow equipment to be manipulated without affecting the plant. Non-intrusive maintenance.)	<input type="checkbox"/> Purge Path Required (Describe Below)	<input checked="" type="checkbox"/> "FULL TAGOUT" Tags (Equipment isolated from all energy sources and depressurized. Intrusive maintenance.)	<input type="checkbox"/> System in-service for Freon removal	<input type="checkbox"/> "ELECTRICAL ONLY" (Equipment electrically isolated, the craft will use LOCKOUT, if required, for all other energy sources.)	<input type="checkbox"/> Steam removed from air handler	<input type="checkbox"/> Controlling Procedure, which defines energy sources (OP, MOP, PT, ICP, MCM, etc. List in remarks.)	<input type="checkbox"/> Hazardous Chemicals Involved	<input type="checkbox"/> Personnel entering a piping system or plant equipment (List in remarks.) (Operations will assist in determining applicable OPS procedures.)	<input type="checkbox"/> Control Power fuses removal required	<input type="checkbox"/> Auxiliary Components associated with equipment: <input type="checkbox"/> Seal Water <input type="checkbox"/> Oil sub-system <input type="checkbox"/> Cooling Water (i.e., BC, SW, CD, CC)	<input type="checkbox"/> Grounds required		<input type="checkbox"/> Motor Heater fuses		<input type="checkbox"/> MOV motor/grease heater fuse		<input type="checkbox"/> MOV internal power supplies on LS/Rotor Contacts		<input type="checkbox"/> PMT requires Danger Tags (MOV testing, Flow Scan)
<input type="checkbox"/> "NO ROTATION" Tags (Equipment de-energized and prevented from turning; Non-intrusive maintenance.)	<input type="checkbox"/> Heat Trace (consider if removing insulation)																							
<input type="checkbox"/> "NO FLOW" Tags (System isolated to allow equipment to be manipulated without affecting the plant. Non-intrusive maintenance.)	<input type="checkbox"/> Purge Path Required (Describe Below)																							
<input checked="" type="checkbox"/> "FULL TAGOUT" Tags (Equipment isolated from all energy sources and depressurized. Intrusive maintenance.)	<input type="checkbox"/> System in-service for Freon removal																							
<input type="checkbox"/> "ELECTRICAL ONLY" (Equipment electrically isolated, the craft will use LOCKOUT, if required, for all other energy sources.)	<input type="checkbox"/> Steam removed from air handler																							
<input type="checkbox"/> Controlling Procedure, which defines energy sources (OP, MOP, PT, ICP, MCM, etc. List in remarks.)	<input type="checkbox"/> Hazardous Chemicals Involved																							
<input type="checkbox"/> Personnel entering a piping system or plant equipment (List in remarks.) (Operations will assist in determining applicable OPS procedures.)	<input type="checkbox"/> Control Power fuses removal required																							
<input type="checkbox"/> Auxiliary Components associated with equipment: <input type="checkbox"/> Seal Water <input type="checkbox"/> Oil sub-system <input type="checkbox"/> Cooling Water (i.e., BC, SW, CD, CC)	<input type="checkbox"/> Grounds required																							
	<input type="checkbox"/> Motor Heater fuses																							
	<input type="checkbox"/> MOV motor/grease heater fuse																							
	<input type="checkbox"/> MOV internal power supplies on LS/Rotor Contacts																							
	<input type="checkbox"/> PMT requires Danger Tags (MOV testing, Flow Scan)																							
Tag-Out Request Submitted By (Name) <b>JOHN FRANKLIN</b>	Date <b>TODAY</b>	Time <b>2 HOURS AGO</b>																						
Tag-Out Request Verified By (Name) <b>JEFF MOORE</b>	Date <b>TODAY</b>	Time <b>1 HOUR AGO</b>																						
Recommended Isolations or Remarks (If possible, include tag type and position.)																								

Form No. 721716(Aug 2011)



JPM Number: 2K15 RO A.3

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 RO A.3 Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

System: N/ATime Critical Task: ☐ YES ☒ NOValidated Time (minutes): 15

Task Number(s): 073-01-003

Applicable To: SRO \_\_\_\_\_ STA \_\_\_\_\_ RO X PEO \_\_\_\_\_

K/A Number: 2.3.5 K/A Rating: 2.9 / 2.9

Method of Testing:      Simulated Performance: \_\_\_\_\_      Actual Performance:   X  

Location: Classroom: X Simulator: \_\_\_\_\_ In-Plant: \_\_\_\_\_

Task Standards:

- Applicant determines the requirements of OP 3250.62.

Required Materials: (procedures, equipment, etc.)

- Shift Manager Log – Simulation

General References:

- OP 3250.62, Removal and Restoration of Radiation Monitors Rev. 13
- MP-22-REC-BAP01, REMODCM Rev. 027-01

**\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.



## JPM WORKSHEET

JPM Number: 2K15 RO A.3

Revision : 0

Initial Conditions:                      You are the Balance of Plant Operator. I&C is required to perform emergent maintenance on 3HVR\*RE10B, Ventilation Vent Stack radiation monitor.

Initiating Cues:                      The US directs you to make preparations for removing 3HVR\*RE10B from service.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3

Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

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

<b>STEP # 1</b>	Performance: Obtains/requests OP 3250.62, <i>Removal and Restoration of Radiation Monitors</i> and enters Section 4.1, "Remove RMS Radiation Monitors from Service"	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Refers to OP 3250.62, Section 4.1	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2</b>	Performance:  <div style="text-align: center;"><b>NOTE</b></div> When Maintenance is performed on any Kaman Radiation Monitor, there is a potential that communications between the radiation monitors on that effected loop and the RMS computer will be interrupted such that all monitors on that loop will be taken off-line. The LCO that will be entered due to this communication loss during maintenance should be considered a planned LCO. Attachment 4 lists the loops and their respective radiation monitors.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
NOTE prior to step 4.1.1	Standard: Reads Note; and informs US of note.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	<b>The US acknowledges the note and directs you to proceed with preparations to remove 3HVR*RE10B from service.</b>	
	Comments:	
<b>STEP # 3</b>	Performance: NOTIFY Health Physics Department which radiation monitor will be off line.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
4.1.1	Standard: Notifies Health Physics that 3HVR*RE10B will be removed from service.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	<b>All notifications to Health Physics are complete.</b>	
	Comments:	
	Telephone call or request for US to make notification is acceptable.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3

Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

<b>STEP # 4</b>  4.1.2	Performance: Refer to Attachment 3 and PERFORM specified responses for the radiation monitor being removed from service.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>						
	Standard: Refers to OP 3250.62, Attachment 3 " Response to Removal of Radiation Monitors From Service"	Grade: S <input type="checkbox"/> U <input type="checkbox"/>						
	Cue: 							
	Comments: 							
<b>STEP # 5</b>  Att 3, Monitor Response Table	Performance:  <div style="text-align: center;"><b>NOTE</b></div> Actions may <i>not</i> be required if using the 12 hour maintenance window per REMODCM.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>						
	Standard: Reads Note; and informs US of note.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>						
	Cue: <b>US acknowledges the note and directs you to proceed with preparations to remove 3HVR*RE10B from service.</b>							
	Comments: 							
<b>STEP # 6</b>  Att 3, Table	Performance: <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;"><u>MONITOR</u></td> <td style="text-align: left;"><u>SAMPLE AREA</u></td> <td style="text-align: left;"><u>RESPONSE</u></td> </tr> <tr> <td>3HVR*RE10B</td> <td>Ventilation Vent Stack</td> <td>2, 5, 6, 7, 17, 19, 20</td> </tr> </table>	<u>MONITOR</u>	<u>SAMPLE AREA</u>	<u>RESPONSE</u>	3HVR*RE10B	Ventilation Vent Stack	2, 5, 6, 7, 17, 19, 20	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
<u>MONITOR</u>	<u>SAMPLE AREA</u>	<u>RESPONSE</u>						
3HVR*RE10B	Ventilation Vent Stack	2, 5, 6, 7, 17, 19, 20						
	Standard: Determines responses 2, 5, 6, 7, 17, 19, and 20 are required	Grade: S <input type="checkbox"/> U <input type="checkbox"/>						
	Cue: 							
	Comments: 							

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3

Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

<b>STEP</b> <b>#7</b> Att 3, Response 2	Performance: Response 2: REQUEST Chemistry Department perform sampling to meet REMODCM requirements.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Notifies Chemistry	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>All notifications to Chemistry are complete.</b>	
	Comments: Telephone call or request for US to make notification is acceptable.	
<b>STEP</b> <b>#8</b> Att 3, Response 5	Performance: Response 5: IF radiation monitor indicates "OFF-LINE," that rad monitor is inoperable, RECORD all applicable actions in the SM Log.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Recognizes that Response 5 is not applicable.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The Radiation Monitor does NOT indicate OFF-LINE.</b>	
	Comments:	
<b>STEP</b> <b>#9</b> Att A, Response 6	Performance: Response 6: COMPLETE SP 3670.1-013, "3HVR*RE10B Temporary Sampling Surveillance."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Informs US that SP 3670.1-013 is required to be performed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>SP 3670.1-013 will be performed.</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3

Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

<b>STEP # 10</b>  Att 3, Response 7	Performance: Response 7: COMPLETE SP 3670.1-003, "3HVR*RE10A & 3HVR*RE10B Stack Flow Surveillance."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Informs US that SP 3670.1-003 is required to be performed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>SP 3670.1-003 will be performed.</b>	
	Comments:	
<b>STEP # 11</b>  Att 3, Response 17	Performance: Response 17: Refer To REMODCM Section V.C.2 and Table V.C-3, "Radioactive Gaseous Effluent Instrumentation," and PERFORM applicable actions.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Informs US to refer to REMODCM and perform applicable actions.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The US will reference the REMODCM.</b>	
	Comments:	
<b>STEP # 12</b>  Att 3, Response 19	Performance: Response 19: Refer To EP-AA-303, "Equipment Important to Emergency Response," and PERFORM applicable actions.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: States that EP-AA-303 is required to be performed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>EP-AA-303 will be performed.</b>	
	Comments: EP-AA-303 compensatory measures: None. Expedite repair in accordance with WM-AA-100.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 RO A.3

Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

<b>STEP # 13</b> Att 3, Response 20	Performance: Response 20: Refer to Attachment 6 and PERFORM required notifications.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Refers to Attachment 6.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>US will perform Attachment 6 notifications.</b>	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 RO A.3

Revision: 0

Task Title: Make Preparations Required to Remove a Radiation Monitor from Service

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

**EVALUATION SECTION:**

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

[illegible]

## **APPLICANT HANDOUT**

JPM Number: 2K15 RO A.3

Revision: 0

Initial Conditions: You are the Balance of Plant Operator. I&C is required to perform emergent maintenance on 3HVR\*RE10B, Ventilation Vent Stack radiation monitor.

Initiating Cues: The US directs you to make preparations for removing 3HVR\*RE10B from service.



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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Loss of CTMT Closure

JPM Number: 2K15 SRO A.1.1 Revision: 0

Initiated:

John Follett

  
Developer

7-10-15  
Date

Reviewed:

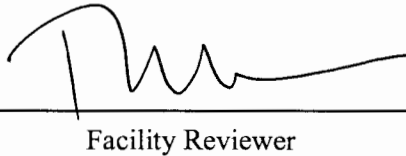
Bob Royce

  
Technical Reviewer

7/13/15  
Date

Approved:

Paul Scott

  
Facility Reviewer

7/13/15  
Date

JPM Number: 2K15 SRO A.1.1

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3 Examinee: \_\_\_\_\_

JPM Number: 2K15 SRO A.1.1 Revision: 0

Task Title: Loss of CTMT Closure

System: N/A

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): 119-03-003, 119-03-013

Applicable To: SRO X STA \_\_\_\_\_ RO \_\_\_\_\_ PEO \_\_\_\_\_

K/A Number: 2.1.36 K/A Rating: 4.1

Method of Testing: Simulated Performance: \_\_\_\_\_ Actual Performance: X

Location: Classroom: X Simulator: \_\_\_\_\_ In-Plant: \_\_\_\_\_

Task Standards: At the completion of this JPM, the examinee will have identified a loss of CTMT closure and direct actions to suspend all operations involving movement of irradiated fuel assemblies in the containment.

Required Materials: P&ID EM-123E (25212-26923 sht 5 of 7)  
(procedures, equipment, etc.) P&ID EM-145A (25212-26945 sht 1 of 3)  
UNIT 3 TECHNICAL SPECIFICATIONS

General References: AOP 3565, Loss of Containment Vacuum / Integrity  
SP 3613F.3, CTMT Boundary During Movement of Fuel within the CTMT Building  
OP 3250.12, Establishing CTMT Boundary for Movement of Fuel within the CTMT Building  
OU-AA-200 Shutdown Risk Management  
OP 3260A Conduct of Outages

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 SRO A.1.1

Revision : 0

Initial Conditions:      The plant is in MODE 6 with refuel shuffle in progress.

Containment closure is set with closure plans (administrative controls) established for the following:

- CTMT Equipment Hatch
- CTMT Personnel Hatch
- CTMT Purge Valves

The following plant conditions exist:

- 'A' train of RHR in service in the cooldown mode.
- RHR return temperature 90°F
- 'D' SG secondary side manways are open for inspection with hoses and cables run into the steam generator.

You are the Unit Supervisor on watch in the Control Room..

Initiating Cues:      The Primary Rounds PEO calls to report that workers erecting scaffolding in the Main Steam Valve Building 60' have accidentally broken off a main steamline drain valve. He is holding 3DTM-V119 and the broken pipe nipple in his hands.

You inform the Shift manager.

Determine the impact of the broken pipe on refueling operations..

### **\*\*\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.1

Revision: 0

Task Title: Loss of CTMT Closure

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

<b>Comments:</b> If the candidate requests a particular reference, all of the general references have been copied and may be handed to the candidate upon request. Alternatively, DocTop may be used on the designated LORP EXAM Computers.		
<b>Cue:</b> If the candidate questions whether a closure plan exists for the 'D' SG manways, provide the following Cue: <b>A closure plan is not in place for the 'D' SG.</b>		
<b>STEP # 1</b>	<b>Performance:</b> Obtain and refer to the appropriate drawings or other documentation to determine that a breach of CTMT closure has occurred.	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> SRO Applicant refers to P&ID EM-123E (Main Steam system) and EM-145A (Turbine Plant Miscellaneous Drains).	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Standard:</b> SRO Applicant determines that the 3DTM-V119 drain path is a breach of CTMT closure.	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> If asked for valve ID name, provide the cue: <b>#4 MSIV Upstream Drain Standpipe LS28D Low Point Drain.</b>	
	<b>Comments:</b> Entry into AOP 3565, <i>Loss of CTMT Vacuum / Integrity</i> is not required for success in this JPM but may be referenced by the candidate.	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.1.1

Revision: 0

Task Title: Loss of CTMT Closure

<b>STEP # 2</b>	Performance: Refer To Technical Specification 3.9.4 for Containment Building Penetrations and DETERMINE Limiting Condition for Operation.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Refers to T.S. LCO 3.9.4 for Containment Building Penetrations, and enters LCO ACTION statement (ACTION: With the requirements of the above specification not satisfied, immediately suspends all operations involving movement of fuel in the containment building.)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: SRO Applicant directs the Refueling SRO to immediately suspend all operations involving movement of fuel in the containment building.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If directed to "immediately suspend" all operations involving movement of irradiated fuel assemblies in the containment, <b>provide examinee with Handout 2.</b>	
	Comments: Entry into LCO 3.9.4 ACTION requirement is required for success in this JPM. SRO applicant should state or otherwise indicate recognition of LCO requirement.	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.1.1

Revision: 0

Task Title: Loss of CTMT Closure

<b>STEP # 3</b>	Performance: Correct recognition that Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Applicant recognizes that fuel movement is in progress in CTMT and in transit to the Fuel Building.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: SRO Applicant directs the Refueling SRO to complete both moves and then stop all operations involving CORE ALTERATIONS or movement of fuel in the containment building.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Definitions: 1.9 CORE ALTERATIONS shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. <b>Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.</b>	

**TERMINATION CUE:** The evaluation for this JPM is concluded.

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.1.1

Revision: 0

Task Title: Loss of CTMT Closure

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

[illegible]



## **EXAMINEE HANDOUT 2**

**DO NOT provide this handout until cued**

Initial Conditions:

- In the Containment a used fuel assembly is over its new core location and is ready to be lowered.
- In the Spent Fuel Pool, a used fuel assembly is in transit to its final SFP location.

Initiating Cues:

- The Refueling SRO requests guidance on what to do with the fuel assemblies.

## EXAMINEE HANDOUT

JPM Number: 2K15 SRO A.1.1

Revision: 0

Initial Conditions: The plant is in MODE 6 with refuel shuffle in progress.

Containment closure is set with closure plans (administrative controls) established for the following:

- CTMT Equipment Hatch
- CTMT Personnel Hatch
- CTMT Purge Valves

The following plant conditions exist:

- 'A' train of RHR in service in the cooldown mode.
- RHR return temperature 90°F
- 'D' SG secondary side manways are open for inspection with hoses and cables run into the steam generator.

You are the Unit Supervisor on watch in the Control Room..

Initiating Cues: The Primary Rounds PEO calls to report that workers erecting scaffolding in the Main Steam Valve Building 60' have accidentally broken off a main steamline drain valve. He is holding 3DTM-V119 and the broken pipe nipple in his hands.

You inform the Shift manager.

Determine the impact of the broken pipe on refueling operations..

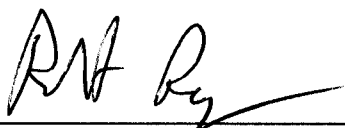
Examinee: \_\_\_\_\_

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Review and Approve Reactivity Calculation

JPM Number: 2K15 SRO A.1.2 Revision: 0


Initiated:

Robert Royce  7-13-15  
Developer Date

Reviewed:

John Follett  7-13-15  
Technical Reviewer Date

Approved:

Paul Scott  7/13/15  
Facility Reviewer Date

JPM Number: 2K15 SRO A.1.2

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 SRO A.1.2                      Revision: 0

Task Title: Review and Approve Reactivity Calculation

System: N/A

Time Critical Task:              ☐ YES    ☒ NO

Validated Time (minutes): 22

Task Number(s): 009-01-004

Applicable To:              SRO X      STA \_\_\_\_\_      RO \_\_\_\_\_      PEO \_\_\_\_\_

K/A Number: 2.1.37              K/A Rating: 4.3 / 4.6

Method of Testing:      Simulated Performance: \_\_\_\_\_              Actual Performance: X

Location:              Classroom: X              Simulator: \_\_\_\_\_              In-Plant: \_\_\_\_\_

Task Standards:              Using RE Curve and Data Book and OP 3304C, calculate the amount of boric acid needed to perform a rod withdrawal.

Required Materials:              1. Attachment 2 of OP 3304C, Rev 24-03, Primary Makeup and Chemical  
(procedures, equipment, etc.)      Addition (**handout**)  
   2. RE Curve and Data Book, Cycle 17 (**handout put on reference cart**)  
   3. Calculator

General References:

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 SRO A.1.2

Revision : 0

Initial Conditions: The plant was initially in steady state conditions at 100% power. You are the Unit Supervisor, and the following sequence of events occurs:

1. At 0830, the grid becomes unstable.
2. At 0830, the crew rapidly reduces reactor power to 88% using the "Standby Load Set" pot at the EHC insert.
3. At 0833, MB4C, 3-9 "ROD CONTROL BANK LIMIT LO" annunciator illuminates.
4. The crew determines they will use OP 3304C, *Primary Makeup and Chemical Addition* to restore rod position to greater than the alarm setpoint.

At 0840, the current plant conditions are:

- Reactor power is at 88%
- Control Bank D is at 145 steps withdrawn
- Current RCS boron concentration is 1131 ppm
- Tavg is presently 584 °F
- The Plant Process Computer is NOT available.
- Core burn-up is 10,000 MWD/MTU (MOL)

In order to clear MB4C 3-9, the plan is to withdraw Control Bank D to 160 steps withdrawn while maintaining RCS temperature and Reactor Power stable.

The pre-job brief with the RO includes the following information:

- The RO is to determine the quantity of boric acid OR primary grade water needed to maintain stable conditions during the rod withdrawal.
- The RO is to use OP 3304C, Attachment 2 to make the determination.
- The RO is to use curves rather than thumbrules for the calculation.

The calculation from the RO includes:

- The amount of boric acid OR primary grade water over the next hour
- Per RE, the Hot Full Power Differential Boron Worth should be used.
- Per RE, the RO is to use a value of 1 for K (Correction Factor) in OP 3304C, Attachment 2.

Per RE, Xenon is expected to change core reactivity by 40 pcm during the course of the event (PPC is not available).

Initiating Cues: The RO completes the calculation, and determines that 248 gallons of boric acid is required to be added.

You are to review and approve the attached calculation.

**\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.1.2

Revision: 0

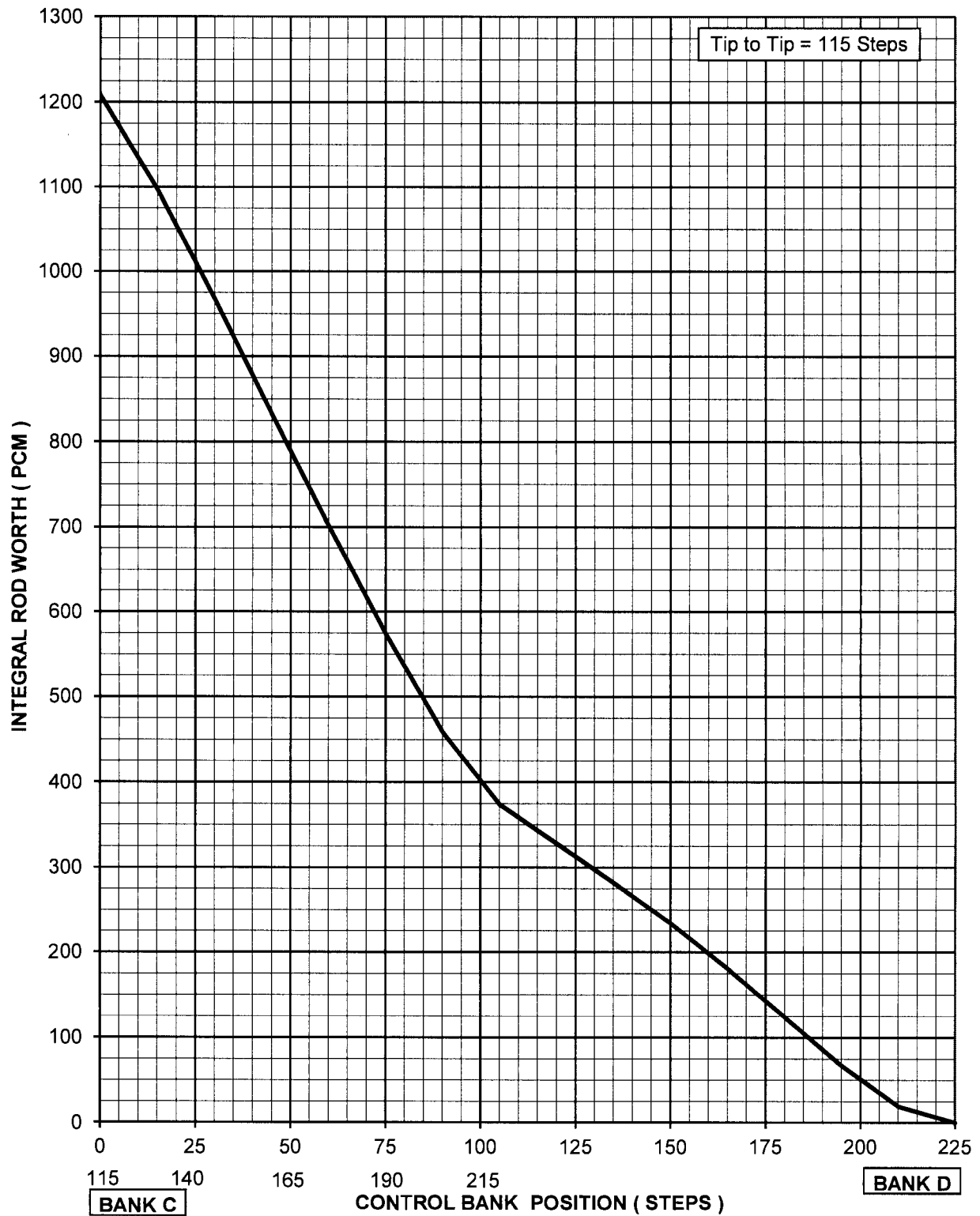
Task Title: Review and Approve Reactivity Calculation

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

<b>STEP # 1</b>	Performance: Reviews attached reactivity calculation (Applicant Handout, page 2 of 2)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Determines the RO made an error:  The RO failed to calculate the change in Rod Worth from 145 steps to 160 steps, incorrectly using the Rod Worth for 160 steps.  Using RE-D-02, Integral Rod Worth vs Steps Withdrawn, MOL-HFP, Equilibrium Xenon: Rod Worth @ 145 steps = 250 pcm Rod Worth @ 160 steps = 200 pcm Change in Rod Worth = 50 pcm	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Determines the RO made an error:  The RO incorrectly used the Hot Zero Power Boron Worth value of 6.7 pcm/ppm versus the Hot Full Power value of 6.4 pcm/ppm.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: After the SRO identifies calculation problems with Rod Worth and Boron Worth, <b>direct the candidate to perform the calculation and document references used for each calculation.</b>	
	Comments: The SRO must perform two critical actions to PASS this JPM. First they must recognize there is a mistake with the calculation. Secondly, they must perform the calculation correctly. <b>The correct answer of 14 to 18 gallons of Boric Acid</b> is calculated in the attached JPM steps.	



**Integral Rod Worth versus Steps Withdrawn  
Control Banks D and C in Overlap  
Cycle 17, MOL-HFP, Equilibrium Xenon**



**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.1.2

Revision: 0

Task Title: Review and Approve Reactivity Calculation

<b>STEP</b> # 2	Performance: Calculate the total reactivity change in pcm.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Adds reactivity change from (1) rod withdrawal and (2) Xenon, as follows:  <b>A. Using RE-D-02, Integral Rod Worth vs Steps Withdrawn, MOL-HFP, Equilibrium Xenon:</b> Rod Worth @ 145 steps = 250 pcm <u>Rod Worth @ 160 steps = 200 pcm</u> Change in Rod Worth = 50 pcm  <b>Integral Rod Worth = 50 pcm (allowable band of 45 to 55 pcm)</b>  Options on how value can be calculated: <ul style="list-style-type: none"><li>• <u>Approximately 50 pcm</u>: Derives integral rod worth of from graph on page 1 of RE-D-02 "Integral Rod Worth vs Steps Withdrawn Cycle 17, MOL-HFP, Equilibrium Xenon"</li><li>• <u>Approximately 50 pcm</u>: Uses differential rod worth (RE-D-02 page 2) to calculate a pcm per step at an average of approximately 3.25 to 3.55. Then multiplies 3.4 by 15 steps = 51 pcm.</li></ul> <b>B. Xenon:</b> - 40 pcm (given in initial conditions)  <b>C. TOTAL REACTIVITY CHANGE = 10 pcm positive reactivity (50 + -40 pcm = 10 pcm)</b> <b>(allowable band of 7 – 13 pcm)</b>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.1.2

Revision: 0

Task Title: Review and Approve Reactivity Calculation

<b>STEP # 3</b>	Performance: Determine a boron worth value.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: <b>Boron worth = -6.4 pcm / ppm</b>  <b>(Allowable band of -6.3 to -6.5)</b>  <u>-6.3 to -6.5 pcm/ppm</u> : Derives from RE-F-02 "Differential Boron Worth vs Core Average Burnup Cycle 17" page 1	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 4</b>	Performance: Calculates reactivity worth of boron change.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Calculates reactivity worth by dividing total reactivity derived in Step #1 by boron worth derived in Step #2.  Total reactivity (pcm) / Boron worth (pcm / ppm): $\frac{10 \text{ pcm}}{6.4 \text{ pcm/ppm}} = 1.56 \text{ ppm}$  <b>(Allowable band of 1.5 – 1.7 ppm)</b>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.1.2

Revision: 0

Task Title: Review and Approve Reactivity Calculation

<b>STEP # 5</b>	<p><b>Performance:</b> Calculates the amount of boric acid needed for RCS addition.</p> <hr/> <p><b>Standard:</b></p> <ul style="list-style-type: none"> <li>Determines a boration is required to offset the positive net positive reactivity calculated in step #3.</li> <li>Uses step 4.7.1 of OP 3304C to go to Attachment 2 of OP 3304C.</li> <li>Calculates amount of boric acid using equation in Attachment 2</li> </ul> $\left(\frac{M}{8.33}\right) \left[ \ln \left( \frac{7000 - C_i}{7000 - C_f} \right) \right] K$ <p><b>Substituting values:</b>  M= 507,127 (Att 2 of OP 3304C)  Ci= 1131 ppm  Cf= 1132.56 ppm  (1131 ppm + 1.56 ppm (derived in step 4))  K = 1</p> <p><b>Calculation equals: 16.2 gallons of boric acid needed (allowable band is 14 gallons to 18 gallons)</b></p>	<p><b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p> <hr/> <p><b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p><b>Cue:</b></p>	
	<p><b>Comments:</b></p>	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.1.2

Revision: 0

Task Title: Review and Approve Reactivity Calculation

<b>STEP # 6</b>	Performance: When done with calculation, records value and reports to Examiner.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: <b>Records 16 gallons and circles boric acid (allowable band is 14 gallons to 18 gallons) * see comment below</b>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: This band is derived from approximating allowable ranges of boron concentrations (see step 3). In using these allowable values. Any further rounding or curve interpolation allowances will be evaluated by the examiner.	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.1.2

Revision: 0

Task Title: Review and Approve Reactivity Calculation

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Validated Time (minutes):	22	Actual Time to Complete (minutes):
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

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

Print / Sign

Areas for Improvement / Comments:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no text or other markings on the paper.

## APPLICANT HANDOUT

### Page 1 of 2

JPM Number: 2K15 SRO A.1.2

Revision: 0

Initial Conditions: The plant was initially in steady state conditions at 100% power. You are the Unit Supervisor, and the following sequence of events occurs:

1. At 0830, the grid becomes unstable.
2. At 0830, the crew rapidly reduces reactor power to 88% using the "Standby Load Set" pot at the EHC insert.
3. At 0833, MB4C, 3-9 "ROD CONTROL BANK LIMIT LO" annunciator illuminates.
4. The crew determines they will use OP 3304C, *Primary Makeup and Chemical Addition* to restore rod position to greater than the alarm setpoint.

At 0840, the current plant conditions are:

- Reactor power is at 88%
- Control Bank D is at 145 steps withdrawn
- Current RCS boron concentration is 1131 ppm
- Tavg is presently 584 °F
- The Plant Process Computer is NOT available.
- Core burn-up is 10,000 MWD/MTU (MOL)

In order to clear MB4C 3-9, the plan is to withdraw Control Bank D to 160 steps withdrawn while maintaining RCS temperature and Reactor Power stable.

The pre-job brief with the RO includes the following information:

- The RO is to determine the quantity of boric acid OR primary grade water needed to maintain stable conditions during the rod withdrawal.
- The RO is to use OP 3304C, Attachment 2 to make the determination.
- The RO is to use curves rather than thumbrules for the calculation.

The calculation from the RO includes:

- The amount of boric acid OR primary grade water over the next hour
- Per RE, the Hot Full Power Differential Boron Worth should be used.
- Per RE, the RO is to use a value of 1 for K (Correction Factor) in OP 3304C, Attachment 2.

Per RE, Xenon is expected to change core reactivity by 40 pcm during the course of the event (PPC is not available).

Initiating Cues: The RO completes the calculation, and determines that 248 gallons of boric acid is required to be added.

You are to review and approve the attached calculation.

**APPLICANT HANDOUT****Page 2 of 2****Reactor Operator's Calculation**

1. Rod Worth 200 pcm

2. Total Reactivity:

$$200 \text{ pcm (Rods)} - 40 \text{ pcm (Xenon)} = 160 \text{ pcm}$$

3. Reactivity Worth of Boron Change:

$$\frac{160 \text{ pcm}}{6.7 \text{ ppm/pcm}} = 23.88 \text{ ppm}$$

4. Final Boron Concentration is:

$$1131 \text{ ppm} + 23.88 \text{ ppm} = 1154.88 \text{ ppm}$$

5. Calculates the amount of boric acid needed for RCS addition (per OP 3304C, Att. 2):

$$\left( \frac{M}{8.33} \right) \left[ \ln \left( \frac{7000 - C_i}{7000 - C_f} \right) \right] K$$

**Substituting Values:**

M = 507,127 (Att. 2 of OP 3304C)

C<sub>i</sub> = 1131 ppmC<sub>f</sub> = 1154.88 ppm

K = 1

**Amount of Boric Acid Needed = 248 gallons**



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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Notifications and Reportability Associated with a Safety Limit Violation.

JPM Number: 2K15 SRO A.2

Revision: 0

Initiated:

John Follett

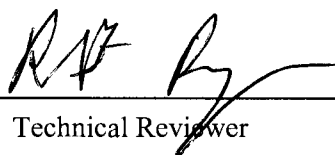
  
Developer

7-13-15

Date

Reviewed:

Bob Royce

  
Technical Reviewer

7/13/15

Date

Approved:

Paul Scott



Facility Reviewer

7/13/15

Date

JPM Number: 2K15 SRO A.2

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 SRO A.2                      Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

System: N/A

Time Critical Task:                      ☐ YES    ☒ NO

Validated Time (minutes): 22

Task Number(s): 119-03-003

Applicable To:                      SRO X    STA \_\_\_\_\_    RO \_\_\_\_\_    PEO \_\_\_\_\_

K/A Number: 2.2.22                      K/A Rating: 4.7

Method of Testing:    Simulated Performance: \_\_\_\_\_                      Actual Performance: X

Location:                      Classroom: X                      Simulator: \_\_\_\_\_                      In-Plant: \_\_\_\_\_

Task Standards:                      Determine if the plant is operating outside the requirements of the MP3 Technical Specifications and as a result, the proper notifications and event reporting requirements.

Required Materials:                      MP3 Technical Specifications  
(procedures, equipment, etc.)    RAC 14, *Non-Emergency Station Events* Rev.003-10

General References:                      RAC 05, *Reportability Determinations and Licensee Event Reports* Rev. 004

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 SRO A.2

Revision : 0

Initial Conditions:      The plant is shutdown in MODE 4, cooling down to MODE 5 following a significant transient and subsequent uncomplicated reactor trip. Known post-trip reporting requirements were met.

                                    The Event Review Team (ERT) has reported that just prior to the trip, with the reactor at 80% power, RCS pressure had dropped to 2000 psia and Tave elevated to 620°F.

Initiating Cues:            The Operations Manager, sponsor of the ERT, asks you to evaluate this new information and identify applicable reporting requirements.

Write down your response(s) below:

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2

Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

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

<b>STEP # 1</b>	Performance: Obtains and refers to proper procedure.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee obtains and refers to a copy of MP3 Technical Specifications.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2</b>	Performance: Refer To Technical Specification 2.1.1 for SAFETY LIMITS: Reactor Core, to determine the Limiting Condition for Operation.  <div style="text-align: center;">OR</div> Determine if a Safety Limit has been violated.	
	Standard: Examinee Refers to T.S. 2.1.1 for SAFETY LIMITS; Reactor Core, determines the LCO is specified as follows: "The combination of THERMAL POWER, Reactor Coolant System highest loop average temperature, and pressurizer pressure shall not exceed the limits specified in the CORE OPERATING LIMITS REPORT."	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee Refers to the CORE OPERATING LIMITS REPORT (COLR) and correctly determines that the locus of points as given in the cue for RCS pressure and temperature is in the "unacceptable region" of Figure 1 (Reactor Core Safety Limit), and is therefore a Safety limit violation.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee refers to T.S. LCO 2.1.1 for SAFETY LIMITS; Reactor Core, and enters LCO ACTION statement (ACTION: Whenever the Reactor Core Safety Limit is violated, restore compliance and be in HOT STANDBY within 1 hour.) SRO Examinee should state or otherwise indicate recognition of LCO requirement.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: The COLR is located in the Technical Requirements Manual (TRM).	

# PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2

Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

<b>STEP # 3</b>	Performance: Obtains proper procedure to determine required notifications.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Obtains and refers to a copy of RAC 14, <i>Non-Emergency Station Events</i> .	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 4</b>	Performance: Review Precautions. (RAC 14, Section 3)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee reviews precautions 3.1 through 3.8.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 5</b>	Performance: <b>Initial Event Reportability Determination</b> IF sufficient cause exists for reporting a non-emergency event, PERFORM the following: (RAC 14, step 4.1.1.a)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee recognizes that cause exists for reporting this event.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If the Examinee requests additional personnel to track the event, or requests additional assistance, provide the cue: <b>Additional assistance will be available shortly. Continue with your task.</b>	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.2

Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

<b>STEP # 6</b>	Performance: As required, REQUEST Station Duty Officer (typically the non-affected unit STA) and Emergency Communicator (typically the non-affected unit WC SRO) report to the Control Room and prepare to send a Non Emergency Event Report. (RAC 14, step 4.1.1.d)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee recognizes the need to call Unit 2 to request the Station Duty Officer and Emergency Communicator report to the Unit 3 Control Room.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: RAC 14, steps 4.1.1.e through 4.1.1.i pertain to event types NOT related to the event in progress. The Examinee should recognize that these steps do not apply and move to step 4.1.1.j.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.2

Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

<b>STEP # 7</b>	Performance: For all events, Refer To appropriate Attachment 1 through 7 and DETERMINE State and NRC reporting requirements. (RAC 14, step 4.1.1.j)	
	Standard: Examinee refers to Attachments 1 through 7 and determines that Attachment 1, "Plant Operation / Equipment / Technical Specification Events", is the applicable attachment.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee matches the event in progress with the following event description in attachment 1: "Safety Limit Violation"	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee correctly determines the NRC Reporting Requirement for the event is as follows: <b>"Within 4 hours via ENS" (10CFR50.72(b)(2)(i)**</b>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee correctly determines the State posture code for the event is an <b>"Echo"</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee correctly determines the State Reporting Requirement for the event is as follows: <b>"Within 1 hour of report to NRC if not already reported"</b> (State Reg. 22a-135-1)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If the Examinee questions whether an Emergency Action Level Classification has been made as a result of the event leading to the Safety Limit violation, provide the following cue: <b>NO Emergency Action Level Classification has been made.</b>	
Comments:		



**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.2

Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

<b>STEP # 8</b>	Performance: Determine Additional Notifications.	
	Standard: Examinee correctly determines that NOTE 8 to Attachment 1 of RAC 14 applies and that there are additional notifications. NOTES are located in Attachment 7 to RAC 14.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee verbalizes or otherwise notes that The SVP/CNO - Dominion Nuclear Connecticut, Inc. shall be notified within 24 hours.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee verbalizes or otherwise notes that the Senior Vice President - Nuclear Operations shall be notified within 24 hours.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee verbalizes or otherwise notes that the Site Vice President - Millstone shall be notified within 24 hours.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The Emergency Communicator will prepare and send the Non Emergency Event Report and the Station Duty Officer will complete the remaining required notifications.</b>	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.2

Revision: 0

Task Title: Notifications and Reportability Associated with a Safety Limit Violation.

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

**EVALUATION SECTION:**

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	22	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

## APPLICANT HANDOUT

JPM Number: 2K15 SRO A.2

Revision: 0

**Initial Conditions:** The plant is shutdown in MODE 4, cooling down to MODE 5 following a significant transient and subsequent uncomplicated reactor trip. Known post-trip reporting requirements were met.

The Event Review Team (ERT) has reported that just prior to the trip, with the reactor at 80% power, RCS pressure had dropped to 2000 psia and Tave elevated to 620°F.

**Initiating Cues:** The Operations Manager, sponsor of the ERT, asks you to evaluate this new information and identify applicable reporting requirements.

Write down your response(s) below:

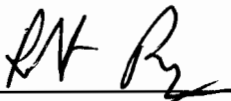
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**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

JPM Number: 2K15 SRO A.3 Revision: 0

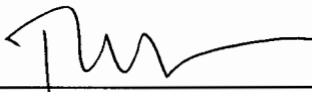
Initiated:

Robert Royce  07/10/15  
Developer Date

Reviewed:

John Follett  07/14/15  
Technical Reviewer Date

Approved:

Paul Scott  7.15.15  
Facility Reviewed Date

JPM Number: 2K15 SRO A.3

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 SRO A.3 Revision: 0

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

System: Radioactive Liquid Waste System

Time Critical Task: ( ) YES (X ) NO

Validated Time (minutes): 10

Task Number(s): 068-01-064, 068-03-001

Applicable To:           SRO    X           RO           PEO

K/A Number: 2.3.6 K/A Rating: 2.0 / 3.8

Method of Testing:      Simulated Performance:      Actual Performance:      X

Location: Classroom: X Simulator: In-Plant:

Task Standards:

Required Materials: OP 3335D, Radioactive Liquid Waste System Rev. 018-10

(procedures, equipment, etc.)

## Liquid Discharge Permit

Screen Print of Rad Monitor LWS70-1

General References: None

**\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## **JPM WORKSHEET**

JPM Number: 2K15 SRO A.3

Revision : 0

**Initial Conditions:**

The unit is in MODE 5 in day 2 of a refueling outage. The following plant conditions exist:

- The 'A' train electrical busses are deenergized for planned maintenance.
- Three (3) circulating water pumps are in operation.
- One (1) service water pump is in operation.

**Initiating Cues:**

The Radwaste PEO has presented OP 3335D sign off copy and a Liquid Discharge Permit for discharging the "B" Waste Test Tank to the Circulating Water discharge tunnel for your approval. Review and approve the permit and report to the examiner when complete.

**\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.3

Revision: 0

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

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

<b>STEP # 1</b>	<p>Performance: Go to the correct procedure step, OP3335D, Section 4.25.5.q</p> <p>Standard: Applicant locates procedure step 4.25.5.q.</p> <p>Cue: The candidate may review previous steps. If necessary provide the following cue: <b>Steps 4.25.1 through 4.25.5.p have been completed.</b></p> <p>Comments:</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p> <p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
<b>STEP # 2</b>	<p>Performance: PERFORM Independent Verification of liquid effluent monitor alarm and alert settings. [step 4.25.5.q.1)]</p> <p>Standard: Applicant locates liquid effluent monitor alarm and alert settings on Liquid Discharge Permit and on RMS screen printout for LWS70-1. Compares permit settings and RMS information and <b>identifies that RMS is incorrect.</b> Recommends changing RMS to match the permit.</p> <p>Cue: When candidate identifies error, provide the following cue: <b>“The setpoints have been corrected,” then hand the candidate the corrected RMS screen printout.</b></p> <p>Standard: Candidate verifies setpoints are correct and initials permit after receiving the cue.</p> <p>Comments:</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p> <p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>



**PERFORMANCE INFORMATION**

JPM Number: 2K15 SRO A.3

Revision: 0

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

<b>STEP # 3</b>	Performance: Refer to CHEM Form 3800P-001 and CHECK "EST Activity this Discharge (Ci)" on Liquid Discharge Permit is less than action level specified. [step 4.25.5.q.2)]	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate compares CHEM Form 3800P-001 Action Level for activity per discharge to the "Estimated activity this discharge (Ci)" on the Discharge permit "Estimated activity this discharge (Ci)". Determines that the estimated activity for the discharge is less than the Action Level.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Candidate Initials permit.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 4</b>	Performance: IF action levels or goals are met or exceeded, Refer To CP 3800P, "Unit 3 Liquid Waste Management," for guidance on further processing of the affected tank. [step 4.25.5.q.3)]	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate recognizes that NO action levels or goals are met or exceeded and moves on to step 4.25.5.q.4).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Step 4.25.6.i.3) is N/A since no limits are exceeded.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.3

Revision: 0

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

<b>STEP # 5</b>	Performance: CHECK required dilution flowrate is met. [step 4.25.5.q.4)]	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Candidate compares discharge permit requirement of 3 circ water and 2 service water pumps, to actual plant condition of 3 circ water and <b>1</b> service water pumps. Identifies that the <b>required dilution flow rate is NOT met.</b>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Once the candidate identifies that the required dilution flow rate is not met provide the termination cue.	

**Termination Cue: The Evaluation of this JPM is Complete**

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

## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.3

Revision: 0

Task Title: Review and Approve a Radioactive Liquid Waste Discharge Permit

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

[illegible]

JPM Number: 2K15 SRO A.3

Revision: 0

**DO NOT HANDOUT UNTIL INSTRUCTED**

Health	Loop Status: 1 2 3 4 5 6 7 8	DRMS Database					Alarm	Rad Alert	Rad High	Trouble	Master	DRMS B	
Monitor #	Monitor Name	Area Monitored	Loop #	Drop #	Monitor Class	Channel Number	Channel Type	ONLINE					
68	LWS70	LWS DISCHARGE	5	8	NON-1E	1 of 1	LIQUID	REACHABLE					
								NO ALARM					
Levels: Current Radiation		0.00E+00	μC/ML	1 Minute Average =		1.88E-07	μC/ML	1 Hour Average =		7.36E-07	μC/ML		
				10 Minute Average		3.85E-08	μC/ML	1 Day Average =		6.76E-07	μC/ML		
10 Minute Average				10 Minute Average									
Sample Flow =		0.00E+00	GPM	Process Flow =		1.00E-05	GPM						
Current Temperature =		9.34E+01	°F	Current Pressure =		8.22E+01	PSI						
Trip Setpoints:		High Level =	6.65E-05	μC/ML	High Pressure =		1.50E+02	PSI	High Temperature =		1.40E+02	°F	
		Alert Level =	4.95E-05	μC/ML	Low Pressure =		0.00E+00	PSI	Low Temperature =		4.10E+01	°F	
		Rate Increase =	1.00E+10	μC/ML/SEC	Low Sample Flow =		5.00E-01	GPM					
Conversion Factor:		Radiation Level =	1.19E-08	μC/ML/CPM	Sample Flow =		0.00E+00	GPM	Process Flow =		1.00E-05	GPM	
Purge:		Duration =	480	SECS									
Check Source:		Expected =	1.00E-06	μC/ML	Response =		1.18E-05	μC/ML	Activation Period		0	MINS	
Background Check:		Last Check =	07/14/15	04:40:17	Level =		1.27E-05	μC/ML					
Level Alarms		Equipment Failure Alarms		Condition Alarms		Activities							
High Level = NO		Aux Equipment = NO		In Local Mode = NO		Purge / Back Flush = NO							
Alert Level = NO		Check Source = NO		Alarms Relays Off = NO		Filter Step = N/A							
Rate Increase = NO		Filter Step = N/A		Detector Saturated = NO		Check Source On = NO							
High Pressure = NO		Out of Paper = N/A		High Conductivity = NO		Pumps On = YES							
Low Pressure = NO		High Voltage = NO		Background Level Δ = NORMAL		Auto-Test On = N/A							
High Temperature = NO		Detector = NO		Annunciator = ENABLED		Active Mode = YES							
Low Temperature = NO													
High Flow = NO													
Low Flow = NO													
		Database Maintenance		Request Monitor Trend		Real Time Trend		Filter Step Monitor		REQ/ CMD Statuses			
		Loop Overview		Floor Plan		Status Grid		Signal Generator Tube Rupture		Message Summary		Groups	

JPM Number: 2K15 SRO A.3

Revision: 0

**JPM QUESTIONS**

JPM Number: 2K15 SRO A.3

Revision: 0

**APPLICANT HANDOUT**

**Page 1 of 4**

**Initial Conditions:**

The unit is in MODE 5 in day 2 of a refueling outage. The following plant conditions exist:

- The 'A' train electrical busses are deenergized for planned maintenance.
- Three (3) circulating water pumps are in operation.
- One (1) service water pump is in operation.

**Initiating Cues:**

The Radwaste PEO has presented OP 3335D sign off copy and a Liquid Discharge Permit for discharging the "B" Waste Test Tank to the Circulating Water discharge tunnel for your approval. Review and approve the permit and report to the examiner when complete.

JPM Number: 2K15 SRO A.3Revision: 0**APPLICANT HANDOUT**

Page 2 of 4

10/13/11

Approval Date

10/13/11

Effective Date

**Unit 3 Liquid Radwaste Discharge Goals**Year: 2015

	Normal at Power Operations		Refueling and Cold Shutdown Outages		Annual Goal
	Action Level	Monthly Goal	Action Level	Monthly Goal	
Volume	100,000 gal/month	120,000 gal/month	120,000 gal/month	130,000 gal/month	1.0E+06 gal
Activity	3.0E-03 Ci/month	4.0E-03 Ci/month	5.0E-03 Ci/month	5.0E-03 Ci/month	0.06 Ci
	0.001 Ci/discharge		0.001 Ci/discharge		

Anton Chemistrini / 1/6/2015

Radwaste Coordinator / Date

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Page 1 of 1

JPM Number: 2K15 SRO A.3

Revision: 0

## APPLICANT HANDOUT

Page 3 of 5

Health	Loop Status:	DRMS Database				Alarm	Rad Alert	Rad High	Trouble	DRMS D MASTER DRMS S 07/14/15 04:40:17
Monitor #	Monitor Name	Area Monitored	Loop #	Drop #	Monitor Class	Channel Number	Channel Type	ONLINE		
68	LWS70	LWS DISCHARGE	5	8	NON-1E	1 of 1	LIQUID	REACHABLE		
								NO ALARM		
Levels: Current Radiation		0.00E+00	µC/ML	1 Minute Average =		1.88E-07	µC/ML	1 Hour Average =		7.36E-07 µC/ML
				10 Minute Average		3.85E-08	µC/ML	1 Day Average =		6.76E-07 µC/ML
10 Minute Average				10 Minute Average						
Sample Flow =		0.00E+00	GPM	Process Flow =		1.00E-05	GPM			
Current Temperature =		9.34E+01	°F	Current Pressure =		8.22E+01	PSI			
Trip Setpoints:		High Level =	6.56E-05 µC/ML	High Pressure =		1.50E+02	PSI	High Temperature =		1.40E+02 °F
		Alert Level =	4.59E-05 µC/ML	Low Pressure =		0.00E+00	PSI	Low Temperature =		4.10E+01 °F
		Rate Increase =	1.00E+10 µC/ML/SEC	Low Sample Flow =		5.00E-01	GPM			
Conversion Factor: Radiation Level =		1.19E-08	µC/ML/CPM	Sample Flow =		0.00E+00	GPM	Process Flow =		1.00E-05 GPM
Purge:		Duration =	480	SECS						
Check Source:		Expected =	1.00E-06	µC/ML	Response =		1.18E-05	µC/ML	Activation Period 0 MINS	
Background Check:		Last Check =	07/14/15 04:40:17		Level =		1.27E-05 µC/ML			
Level Alarms		Equipment Failure Alarms			Condition Alarms			Activities		
High Level = NO		Aux Equipment = NO			In Local Mode = NO			Purge / Back Flush = NO		
Alert Level = NO		Check Source = NO			Alarms Relays Off = NO			Filter Step = N/A		
Rate Increase = NO		Filter Step = N/A			Detector Saturated = NO			Check Source On = NO		
High Pressure = NO		Out of Paper = N/A			High Conductivity = NO			Pumps On = YES		
Low Pressure = NO		High Voltage = NO			Background Level Δ = NORMAL			Auto-Test On = N/A		
High Temperature = NO		Detector = NO			Annunciator = ENABLED			Active Mode = YES		
Low Temperature = NO										
High Flow = NO										
Low Flow = NO										
		<div> <div>Database Maintenance</div> <div>Request Monitor Trend</div> <div>RTM Trend</div> <div>RTM Trend</div> <div>View Another Monitor</div> <div>REQ/ CMD Statuses</div> </div>								
		<div> <div>Loop Overview</div> <div>Floor Plan</div> <div>Status Grid</div> <div>Steam Generator Tube Rupture</div> <div>Message Summary</div> <div>Groups</div> </div>								

Revision: 0

## APPLICANT HANDOUT

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09/07/10

Approval Date

09/07/10

Effective Date

## Millstone Unit 3

**Liquid Discharge Permit Number : 6883 (2015-31047)**

Tank: WTT-B

Date and time sampled: Today 1 hour ago

Sampled by: Anton Chemistrini

Date and time on recirc: Today 4 hours ago

NPDES Requirements Satisfied: A. C.

Independent samples taken >>> yes/no (circle one)

Chemistry Supervision approval required for dilution flow less than 100,000 gpm.

Isotope	(A) Activity ( $\mu\text{Ci/ml}$ )	(B) 10 X EC ( $\mu\text{Ci/ml}$ )	(C) Activity/ 10 X EC	(D) Radmonitor Response Factor (cpm/ $\mu\text{Ci/ml}$ )	(E) Monitor Response ccpm
H-3	3.750E-01	1.000E-02	3.750E+01		
MN-54	1.798E-07	3.000E-04	5.993E-04	7.300E+07	1.312E+01
CO-58	3.185E-07	2.000E-04	1.592E-03	9.800E+07	3.121E+01
CO-60	1.256E-06	3.000E-05	4.185E-02	1.300E+08	1.632E+02
NB-97	1.524E-07	3.000E-03	5.079E-05	7.400E+07	1.128E+01
AG-110M	1.249E-07	6.000E-05	2.082E-03	2.300E+08	2.874E+01
SN-117M	6.518E-08	3.000E-04	2.173E-04	1.200E+08	7.821E+00
CS-137	1.297E-07	1.000E-05	1.297E-02	6.400E+07	8.301E+00
Totals	*2.226E-06(F)		3.756E+01(G)		2.637E+02 (H)

\* Not including activity due to tritium or noble gas

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JPM Number: 2K15 SRO A.3Revision: 0**APPLICANT HANDOUT****Page 5 of 5**Dissolved gas conc ( $\mu\text{Ci/ml}$ ) ..... 0.000E+00 (Limit =  $1.3\text{E}-02 \mu\text{Ci/ml}$ ) A. C. TechMinimum recirculation time(min) .... 175 MIN

Sample acidified and saved for composite

Date: TodayTech: A. C.Release limit (Ci) ..... 4.000E-03Total activity released to date (Ci) .... 2.567E-03Estimated volume this discharge (Gal) . 21000Estimated activity this discharge (Ci) .. 1.769E-04 \*Estimated total activity released (Ci) .. 2.744E-03 \*(1) Reduction factor ..... 2.662E-02Circ water pumps: ..... 3Service water pumps: ..... 2

SM/US Initials

(2) Required dilution flow rate ..... 330,000 (gpm) \_\_\_\_\_(3) Normal rate limit(flow rate =  $\#1 \cdot \#2 \cdot 0.1$ ) ..... 150 (gpm) \_\_\_\_\_(4) Liquid effluent monitor alert setting ..... 4.95E-05 ( $\mu\text{Ci/ml}$ ) \_\_\_\_\_(5) Liquid effluent monitor alarm setting ..... 6.65E-05 ( $\mu\text{Ci/ml}$ ) \_\_\_\_\_(6) Rad monitor source check completed at 1 hour ago T. G. Operator initials

Maximum approved rate ..... \_\_\_\_\_ (gpm) \_\_\_\_\_

(Authorization required to exceed normal rate limit)

Dual verification of release rate calculation Yes /No (Circle One) \_\_\_\_\_

---DISCHARGE---

DATE	TIME	DILUTION FLOW RATE (gpm)	TANK LEVEL (gallons)	DISCHARGE RATE (gpm)	OPERATOR
START	_____	_____	_____	_____	_____
END	_____	_____	_____	_____	_____

Liquid effluent monitor reading 15 minutes after start of discharge \_\_\_\_\_  $\mu\text{Ci/ml}$   
(this shall be a 10 minute average reading)Liquid effluent monitor reading after chamber flush ..... \_\_\_\_\_  $\mu\text{Ci/ml}$ Total liquid waste discharged = \_\_\_\_\_ (gal)  $\cdot 3785$  = \_\_\_\_\_ ml

Shift Manager \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_

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Rev. 004-01  
Page 2 of 2

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**


JPM Title: Emergency Plan Classification and Protective Action Recommendation for  
a General Emergency

JPM Number: 2K15 SRO A.4 Revision: 0

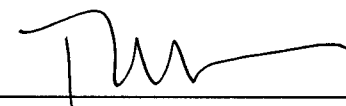
Initiated:

Robert Royce  7/14/15  
Developer Date

Reviewed:

John Follett  7-14-15  
Technical Reviewer Date

Approved:

Paul Scott  7.15.15  
Facility Reviewer Date

JPM Number: 2K15 SRO A.4

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 SRO A.4                      Revision: 0

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

System: N/A

Time Critical Task:            ☒ YES    ☐ NO

Validated Time (minutes): 30

Task Number(s): 301-05-366, 301-05-449

Applicable To:            SRO X    STA \_\_\_\_\_    RO \_\_\_\_\_    PEO \_\_\_\_\_

K/A Number:            2.4.41                      K/A Rating:            2.9 / 4.6  
                                 2.4.44                                           2.4 / 4.4

Method of Testing:    Simulated Performance: \_\_\_\_\_                      Actual Performance: X

Location:                      Classroom: X                      Simulator: \_\_\_\_\_                      In-Plant: \_\_\_\_\_

Task Standards:                      

- Determine the EAL and State Posture Code
- Determine the minimum required PAR

Required Materials:  
(procedures, equipment, etc.)                      

- MP-26-EPI-FAP06-003, Millstone Unit 3 Emergency Action Levels Rev. 009
- MP-26-EPI-FAP01-001, Control Room Director Of Station Emergency Operation (CR DSEO) Rev. 013
- MP-26-EPI-FAP06, Classification and PARs Rev.010
- MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations Rev. 005
- MP-26-EPI-FAP-07-001, Nuclear Incident Report Form (IRF) Rev. 001-03

General References:

**\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 SRO A.4

Revision : 0

Initial Conditions: The "A" RHR pump is tagged out for an oil change.

The following sequence of events occurs:

Time   Event

- |      |  |
|------|--|
| 0245 | An earthquake (0.10g ZPA) occurs.  |
| 0245 | Reactor trip and Safety Injection on low pressurizer pressure.   |
| 0245 | The "B" RHR pump does not start.   |
| 0255 | The following plant conditions currently exist:  |
|      | <ul style="list-style-type: none"><li>• RCS pressure is 60 psia</li><li>• RCS subcooling is 0°F</li><li>• Core exit thermocouples are 293°F</li><li>• RVLMS (plenum) is 19%</li><li>• Containment pressure is 15 psia</li><li>• RMS*RE04A/05A are stable at 4 R/hr</li><li>• Current wind speed is 5 mph</li><li>• Current wind direction is from 040 and into 220 degrees</li></ul> |

Initiating Cues: You are the Shift Manager at Millstone.

Determine the required:

1. Emergency Action Level
2. State Posture Code
3. Protective Action Recommendation (assume MRDA reports zero (0) Rem dose rate at the 5-mile boundary at the time the PAR decision is being made).
4. Determine the method of communicating this PAR Recommendation to the State.

**This is a time critical task.**

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the applicant states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question applicant for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the applicant be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4

Revision: 0

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

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

<b>STEP # 1</b>	Performance: Obtain Proper procedure.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Obtains or requests copy of MP-26-EPI-FAP06-003, MP3 Emergency Action Levels.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: The CR DSEO Notebook contains applicable procedures.	
<b>STEP # 2</b>	Performance: Classify the Event.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Recognizes a potential loss of the Fuel Clad Barrier, based on RVLMS $\leq$ 19% (plenum) (FCB4).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Recognizes a loss of the RCS Barrier based on RCS Subcooling $<$ 32°F Due to RCS Leak (RCB2).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Recognizes a loss of the CTMT Barrier based on No CTMT Pressure Increase when Expectation exists. (CNB3)	<input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Reviews MP-26-EPI-FAP06-003 and determines that a NRC EAL of GENERAL EMERGENCY, BG1 exists. Fuel Clad Barrier (P), RCS Barrier (L) and CTMT Barrier (L)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4

Revision: 0

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

<b>STEP # 3</b>	Performance: Determine State Posture Code.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Reviews MP-26-EPI-FAP06-003 and determines that the block for BG1 is the same color as State Posture ALPHA Tables are color coded to reflect the State Posture.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Record the Time Classification is Completed:	
<b>STEP # 4</b>  FAP06 -005, Step 1	Performance: Refer to Section B, "CR PAR Process Flowchart" and determine the appropriate PAR.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Refers to MP-26-EPI-FAP06-005, Section B, "Control Room PAR Process Flowchart" and determines a General Emergency has been declared and moves to the "GE-ALPHA" decision box.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Reviews flowchart and determines a GE-ALPHA has been declared and moves to the "Rapidly Progressing Severe Incident" decision box.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Reviews Table 3 and determines a "Rapidly Progressing Severe Incident" is NOT in progress (Core Exit Thermocouples are NOT greater than 1200°F), and moves to the "Does CTMT Radiation Exceed Table 1 Values?" decision box.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Reviews Table 1, and determines Containment Radiation has NOT exceeded Table 1 Values, and moves to the "Do 5-Mile Doses Exceed Table 2 PAGs?" decision box.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Reviews Table 2, determines 5-mile doses do NOT exceed the Table 2 PAGs, and moves to the "Hostile Action Imminent" decision box.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Reviews the "Hostile Action Imminent" decision box, determines a hostile action impediment does NOT exist, and determines the required GE-ALPHA PAR is to Evacuate a 5-mile Radius and all other Zones Monitor and Prepare.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 SRO A.4

Revision: 0

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

<b>STEP # 5</b>	Performance: Refer to Section B, "CR PAR Process Flowchart", NOTE 2 and determine method of communicating the PAR to the State.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Determines that for a General Emergency-Alpha with actions only necessary out to 5 miles, the Incident Report Form serves as PAR notification.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: <ul style="list-style-type: none"><li>• The IRF will serve as the necessary PAR notification to the state so no additional DEP communication is required.</li><li>• 15 minutes to determine Emergency Action Level and State Posture Code.</li><li>• 15 minutes after classifying event to determine minimum required PAR.</li></ul> Record the Time Classification is Completed: _____	

TERMINATION CUE: The evaluation for this JPM is concluded.

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



## VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 SRO A.4

Revision: 0

Task Title: Emergency Plan Classification and Protective Action Recommendation for a General Emergency

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

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

For the applicant to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Validated Time (minutes):	30	Actual Time to Complete (minutes):	
Overall Result of JPM:		<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:

[illegible]

## APPLICANT HANDOUT

JPM Number: 2K15 SRO A.4

Revision: 0

Initial Conditions: The "A" RHR pump is tagged out for an oil change.

The following sequence of events occurs:

Time   Event

- 0245   An earthquake (0.10g ZPA) occurs.
- 0245   Reactor trip and Safety Injection on low pressurizer pressure.
- 0245   The "B" RHR pump does not start.
- 0255   The following plant conditions currently exist:
- RCS pressure is 60 psia
  - RCS subcooling is 0°F
  - Core exit thermocouples are 293°F
  - RVLMS (plenum) is 19%
  - Containment pressure is 15 psia
  - RMS\*RE04A/05A are stable at 4 R/hr
  - Current wind speed is 5 mph
  - Current wind direction is from 040 and into 220 degrees

Initiating Cues:   You are the Shift Manager at Millstone.

Determine the required:

1.   Emergency Action Level
2.   State Posture Code
3.   Protective Action Recommendation (assume MRDA reports zero (0) Rem dose rate at the 5-mile boundary at the time the PAR decision is being made).
4.   Determine the method of communicating this PAR Recommendation to the State.

**This is a time critical task.**

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: PERFORM A BORATION AT POWER

JPM Number: 2K15 S.1 Revision: 0

Initiated:

John Follett

Developer

7-1-15

Date

Reviewed:

Robert Royce

Technical Reviewer

7-1-15

Date

Approved:

P.H. Scott

Facility Reviewer

7/8/15

Date

JPM Number: 2K15 S.1

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## **JPM WORKSHEET**

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.1                      Revision: 0

Task Title: PERFORM A BORATION AT POWER

System: CVCS

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 6

Task Number(s): 009-01-001

Applicable To:            SRO \_\_\_\_\_    STA \_\_\_\_\_    RO X    PEO \_\_\_\_\_

K/A Number: 004-A4.03            K/A Rating: 3.9 / 3.7

Method of Testing:    Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:            Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:            Satisfactorily complete a boration addition to the RCS while at power in accordance with OP 3304C, Section 4.7.

Required Materials:            OP 3304C, Primary Makeup and Chemical Addition, Rev. 24-03  
(procedures, equipment, etc.)

General References:

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## **JPM WORKSHEET**

JPM Number: 2K15 S.1

Revision : 0

**Initial Conditions:** The plant is at 100% power. The RCS boron concentration is 984 ppm. The in-service BRS tank is at 25%. The computer program for boration has been checked and the amount and flow rate for a boration have been determined.

**Initiating Cues:** The US has directed you to add 50 gallons of boric acid at 25 gpm based on the computer program using OP 3304C, Section 4.7, steps 4.7.2 through 4.7.10. You have a peer checker.

**Simulator Requirements:**

1. Reset to IC-18, 100% steady-state power.
2. Place the simulator in "RUN", check for a stable IC condition, and acknowledge/clear annunciators.
3. Press STOP and then START on reactor coolant makeup start switch to reset delivered counters to 0.
4. Set Boric Acid Batch preset quantity to 1.
5. RCS boron is 984 ppm, 2.81 turns = 11.246 gpm

Approximate setup time is 4 minutes.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

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





<b>STEP #1</b>	Performance: 4.7.2 IF necessary, ADJUST 3CHS-FK110, "BORIC ACID BLEND FLOW CONT," to provide flow rate determined in step 4.7.1 by applying the following formula:  $3CHS-FK110 \text{ pot setting} = \text{Required boric acid flow rate} \times \left( \frac{10 \text{ turns}}{40 \text{ gpm}} \right)$	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Calculates that a potentiometer setting of 6.25 on 3CHS*FK110 is required to obtain a 25 GPM flow rate. Sets the 3CHS*FK110 potentiometer to a reading of 6.25.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

<b>STEP # 2</b>	<p>Performance:</p> <div style="border: 1px solid black; padding: 10px; text-align: center; margin: 10px 0;"> <b>NOTE</b>  Attachment 7 provides guidance on adjusting batch counter preset quantity. </div> <p>4.7.3 At 3CHS-FY110B, "BORIC ACID" "BATCH" counter, SET preset quantity to desired value.</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>
	<p>Standard: Sets batch counter preset quantity to 50 gallons.</p> <p>PUSH the  key to access the preset quantity value and select the first digit, as indicated by in the upper display.</p> <p>PUSH the  key, as necessary, to increment the digit to the desired value.</p> <p>PUSH the  key, as necessary, to select the next digit that needs to be changed.</p> <p>REPEAT steps 2. and 3. until the desired preset quantity is shown.</p> <p>PUSH the  key to enter the value.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:	
	Comments:	
<b>STEP # 3</b>	<p>Performance:</p> <p>4.7.4 PLACE "REAC CLNT MAKEUP START SW" in "STOP."</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>
	<p>Standard:</p> <p>On the "REAC CLNT MAKEUP START SW", presses the "stop" push-button and observes that the stop button illuminates and the start button backlight goes out.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:	
	Comments:	



## PERFORMANCE INFORMATION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

<b>STEP # 4</b>	Performance: 4.7.5 PLACE "REAC CLNT MAKEUP SELECT SW" in "BORATE."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Depresses the "borate" push button on the reactor coolant makeup control mode switch and observes the "borate" light illuminates and the "auto" light extinguishes.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 5</b>	Performance: 4.7.6 To commence boration of the RCS, PLACE "REAC CLNT MAKEUP START SW" in "START."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Depresses the "START" push button on the reactor coolant makeup start switch and observes the "start" light illuminates and the "stop" light extinguishes.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 6</b>	Performance: 4.7.7 ENSURE the following counters reset to "0": <ul style="list-style-type: none"> <li>• 3CHS-FY110B, "BORIC ACID" "BATCH" counter</li> <li>• 3CHS-FY111B, "PRI WTR" "BATCH" counter</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Observes that the boric acid batch counter and the primary water batch counter reset to "000000".	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

<b>STEP # 7</b>	Performance: 4.7.8 During the boration, PERFORM the following: <ul style="list-style-type: none"><li>• MONITOR reactor power, T<sub>ave</sub>, and boration flow rate, and <u>IF</u> necessary, ADJUST boration flow rate per step 4.7.2.</li><li>• MONITOR VCT level and MAINTAIN below 66% by <i>either</i> of the following means:<ul style="list-style-type: none"><li>• As required, PLACE 3CHS*LCV112A, "L/D DIVERT," to "GWS" and RETURN to "AUTO".</li><li>• CHECK 3CHS*LCV112A, "L/D DIVERT," aligns automatically to maintain proper VCT level.</li></ul></li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1. Periodically observes reactor power and T <sub>ave</sub> indications on MB4 to ensure the boration is having the proper affect. 2. Observes the position of the VCT high level dump valve (3CHS*LCV112A) and ensures it is consistent with VCT level.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:  For this JPM step, the operator may not check reactor power and T <sub>ave</sub> immediately due to the delay time in boron reaching the RCS. However, these parameters should be checked once the boron begins to take effect.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

<b>STEP # 8</b>	<b>Performance:</b> 4.7.9 WHEN boration operation is complete, ENSURE the following: <ul style="list-style-type: none"> <li>• The in-service boric acid transfer pump (aligned for AUTO), is OFF:             <ul style="list-style-type: none"> <li>• 3CHS*P2A, "BA PP A"</li> <li>• 3CHS*P2B, "BA PP B"</li> </ul> </li> <li>• 3CHS*FCV110B, "MAKE-UP TO CHG," closed.</li> <li>• 3CHS*FCV110A, "BORIC ACID SPLY VV TO BLENDER," closed.</li> <li>• 3CHS*LCV112A, "L/D DIVERT," in "AUTO"</li> </ul>	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> <ol style="list-style-type: none"> <li>1. Observes the boric acid transfer pump stops by noting the "START" light extinguishes and the "STOP" light illuminates.</li> <li>2. Checks that the "MAKE-UP TO CHG" outlet valve (3CHS*FCV110B) is closed by observing the indicating lights shift to green ON, red OFF.</li> <li>3. Checks that the "BORIC ACID SPLY VV TO BLENDER" valve (3CHS*FCV110A) is closed by observing that the "OPEN" light extinguishes and the "CLOSE" light remains illuminated.</li> <li>4. Checks the VCT high level dump valve (3CHS*LCV112A) is in "AUTO."</li> </ol>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

<b>STEP # 9</b>	Performance: 4.7.10 RESTORE automatic makeup control as follows:  a. IF boric acid flow controller was adjusted in step 4.7.2, Refer To Attachment 1 and ADJUST 3CHS-FK110, "BORIC ACID BLEND FLOW CONT," to provide required boric acid flow rate based on RCS boron concentration.  b. PLACE "REAC CLNT MAKEUP SELECT SW" in "AUTO."  c. PLACE "REAC CLNT MAKEUP START SW" in "START."  d. ENSURE the following counters reset to "0": <ul style="list-style-type: none"><li>• 3CHS-FY110B, "BORIC ACID" "BATCH" counter</li><li>• 3CHS-FY111B, "PRI WTR" "BATCH" counter</li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1. Sets the 3CHS*FK110 potentiometer to a reading of 2.81. 2. Places the "REAC CLNT MAKEUP SELECT SW" in "AUTO." 3. Places "REAC CLNT MAKEUP START SW" in "START." 4. Observes that the boric acid batch counter and the primary water batch counter reset to "000000".	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**TERMINATION CUE:** The evaluation for this JPM is concluded.

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.1

Revision: 0

Task Title: PERFORM A BORATION AT POWER

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	6	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A
JPM Question Portion Overall [ <i>NLO only</i> ]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 S.1

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.1

Revision: 0

**Initial Conditions:** The plant is at 100% power. The RCS boron concentration is 984 ppm. The in-service BRS tank is at 25%. The computer program for boration has been checked and the amount and flow rate for a boration have been determined.

**Initiating Cues:** The US has directed you to add 50 gallons of boric acid at 25 gpm based on the computer program using OP 3304C, Section 4.7, steps 4.7.2 through 4.7.10. You have a peer checker.

**JOB PERFORMANCE MEASURE APPROVAL SHEET**


JPM Title: VENT UNISOLATED SI ACCUMULATORS

JPM Number: 2K15 S.2 Revision: 0


Initiated:

John Follett  7-1-15  
Developer Date

Reviewed:

Robert Royce  7-1-15  
Technical Reviewer Date

Approved:

 P. H. SCOTT 7/8/15  
Facility Reviewer Date



JPM Number: 2K15 S.2

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## **JPM WORKSHEET**

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.2                      Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

System: ECC

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 10

Task Number(s): 000-05-322, 006-01-057

Applicable To:            SRO \_\_\_\_\_ STA \_\_\_\_\_ RO X    PEO X

K/A Number:            006-A1.13            K/A Rating:            3.5 / 3.7  
                                  006-A4.07                                    4.4 / 4.4

Method of Testing:    Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:            Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:            Vent Any Unisolated SI Accumulators IAW ES-1.2, Post LOCA Cooldown and Depressurization, Step 22

Required Materials:            ES-1.2, Post LOCA Cooldown and Depressurization, Rev.019-00  
(procedures, equipment, etc.)    GA-7, Isolating Accumulators, Rev 000-01

General References:

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.2

Revision : 0

**Initial Conditions:** The plant has experienced a Loss of Coolant Accident. The control room crew has responded by using the Emergency Operating Procedures and has just completed step 21 of ES-1.2, Post LOCA Cooldown and Depressurization. Shutdown Margin has been verified adequate and ECCS flow is NOT required.

**Initiating Cues:** The US has directed you to complete step 22, "Check If SI Accumulators Should Be Isolated," of ES-1.2, "Post LOCA Cooldown and Depressurization".

**Simulator Requirements:** Preferred:

1. Reset to **IC-228** Post LOCA, 710 psia (cycle 13, 2011)

2. Insert schedule **JPM027.sch**.

SIDI0054 = OPEN

Trig 1: SIR15, SIR16, SIR17, SIR18 = RI @ 15 sec delay each

Trig 3: SIR15, SIR16, SIR17, SIR18 = RO @ 15 sec delay each

Approximate simulator setup time is 5 minutes.

Optional:

1. Reset to any 100% power IC. Insert MALF RC03A, Severity 0.08 and go to run.

2. Carry out the actions specified in E-0, E-1 and ES1.2 up to step 21 of ES-1.2.

3. Insert override SIDI0054 3SIL\*MV8808B, to OPEN to prevent the "B" Accumulator outlet isolation valve from closing.

4. If necessary, remove or modify malfunction (RC03A), to fill the PZR to greater than 16%. Acknowledge the annunciators and place the simulator in "FREEZE".

5. After the examinee has received the initial conditions and initiating cues, place the simulator in "RUN".

Approximate simulator setup time is 25 minutes.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

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

<b>STEP # 1</b>	Performance: <b>22 Check If SI Accumulators Should Be Isolated</b> 22.a Verify RCS subcooling based on core exit TCs—GREATER THAN 32°F (115°F ADVERSE CTMT)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee checks that RCS subcooling based on CETCs greater than 32°F using PPC, ICCM, or MB indications.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2</b>	Performance: 22.b VERIFY PZR level Greater than - 16% (50% ADVERSE CTMT)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee verifies PZR level - Greater than - 16% at MB4 or with PPC.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 3</b>	Performance: 22.c Using GA-7, Isolate SI Accumulators	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee obtains a copy of GA-7, Isolate SI Accumulators.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

<b>STEP # 4</b>	Performance: <b>GA-7, Isolating Accumulators</b> <b>1. Locally Unlock and Place the SI accumulator isolation valve breakers to ON.</b> <ul style="list-style-type: none"><li>• 32-2R-F4M</li><li>• 32-2R-R5F</li><li>• 32-2W-F4M</li><li>• 32-2W-R3J</li></ul>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Examinee contacts PEO to locally unlock and place the SI accumulator isolation valve breakers to ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When trigger 1 is complete, call Control Room and report: <b>SI accumulator isolation valve breakers are ON, step 1 of GA-7 is complete.</b>	
	Comments: Simulator instructor: Use the Trigger 1 to sequentially activate the following REMOTES: SIR15, SIR 6, SIR17, SIR18 to RI, and insert OVERRIDE SIDI0054, 3SIL*MV8808B to OPEN.	
<b>STEP # 5</b>	Performance: <b>2. RESET SI, If Necessary</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee recognizes from the initiating cue that SI has already been reset.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If the examinee asks whether SI has been reset, provide the following cue: <b>SI has already been reset.</b>	
	Comments: Acceptable for examinee to reset SI.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

<b>STEP # 6</b>	Performance: <b>3. CLOSE All SI Accumulator Isolation Valves</b>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<ul style="list-style-type: none"> <li>• 3SIL*MV8808A</li> <li>• 3SIL*MV8808B</li> <li>• 3SIL*MV8808C</li> <li>• 3SIL*MV8808D</li> </ul>	
	Standard: Examinee turns the control switch for 3SIH*MV8808A to the close position and observes that the indicating lights for 3SIH*MV8808A are green ON, red OFF. The valve is CLOSED.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee turns the control switch for 3SIH*MV8808C to the close position and observes that the indicating lights for 3SIH*MV8808C are green ON, red OFF. The valve is CLOSED	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee turns the control switch for <u>3SIH*MV8808B</u> to the close position and observes that the indicating lights for <u>3SIH*MV8808B</u> are green <b>OFF</b> , red <b>ON</b> . The valve position does not change. The valve is still <b>OPEN</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee turns the control switch for 3SIH*MV8808D to the close position and observes that the indicating lights for 3SIH*MV8808D are green ON, red OFF. The valve is CLOSED	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments: Valves in this step are bulleted and <b>can be performed in any order</b> . Order given for this performance step is from left to right on MB2.		

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

<b>STEP # 7</b>	Performance: Step 3RNO: Vent any unisolated accumulator(s): a. Verify SI accumulator nitrogen supply valves (3SIL*CV8880 and 3SIL*CV8968) closed on MB2.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee observes SI accumulator nitrogen supply valves (3SIL*CV8880 and 3SIL*CV8968) closed on MB2. Green CLOSED indicating lights are ON and red OPEN indicating lights are OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 8</b>	Performance: Step 3 RNO: b. For each accumulator requiring venting, OPEN one from each pair of the following isolation valves: • For tank B (3SIL*SV8875B or 3SIL*SV8875F)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Examinee pushes the controller for <b>EITHER</b> 3SIL*SV8875B or 3SIL*SV8875F to the open position and observes that the indicating lights are green OFF, red ON. The valve is OPEN.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

<b>STEP #9</b>	Performance: Step 3 RNO: c. OPEN one SI accumulator vent control valve (3SIL*HC943A or 3SIL*HC943B).	
	Standard: Examinee operates <b>EITHER</b> 3SIL*HC943A or 3SIL*HC943B to the open position and observes that the up arrow light is on. The valve position is >0%.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee observes pressure in accumulator decreasing on SIL-PI962 or 963.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Examinee observes ANN MB2A, 4-7B, SI ACC B PRESSURE LO is lit.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	



**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

<b>STEP #10</b>	Performance: <b>4. Locally Place the SI Accumulator Isolation Valve Breakers To OFF And Lock.</b> <ul style="list-style-type: none"><li>• 32-2R-F4M</li><li>• 32-2R-R5F</li><li>• 32-2W-F4M</li><li>• 32-2W-R3J</li><li>– FINAL –</li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Examinee contacts PEO to locally unlock and place the SI accumulator isolation valve breakers to OFF and Lock.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Simulator instructor: Use trigger 3 to reset the following REMOTES: SIR 15, SIR 16, SIR 17 and SIR 18 to RO.	
<b>STEP #12</b>	Performance: CONFIRM power removed from SI accumulator isolation valves.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: OBSERVE “power on” white lights for SI Accumulator Isolation valves extinguished at MB2	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When trigger 3 is complete, call Control Room and report: <b>SI accumulator isolation valve breakers are Locked OFF, step 4 of GA-7 is complete.</b>	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.2

Revision: 0

Task Title: VENT UNISOLATED SI ACCUMULATORS

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Work Practice Performance:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A
Operator Fundamentals:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A
JPM Question Portion Overall [ <i>NLO only</i> ]:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A
Attached Question #1		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Attached Question #2		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT
Overall Result of JPM:		<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 S.2

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.2

Revision: 0

**Initial Conditions:** The plant has experienced a Loss of Coolant Accident. The control room crew has responded by using the Emergency Operating Procedures and has just completed step 21 of ES-1.2, Post LOCA Cooldown and Depressurization. Shutdown Margin has been verified adequate and ECCS flow is NOT required.

**Initiating Cues:** The US has directed you to complete step 22, "Check If SI Accumulators Should Be Isolated," of ES-1.2, "Post LOCA Cooldown and Depressurization".

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

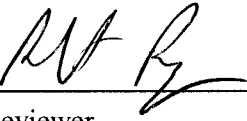
JPM Title: ARM COPPS

JPM Number: 2K15 S.3 Revision: 0


Initiated:

John Follett  7-1-15  
Developer Date

Reviewed:

Robert Royce  7-1-15  
Technical Reviewer Date

Approved:

 P.H. SCOTT 7/8/15  
Facility Reviewer Date

JPM Number: 2K15 S.3

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.3                      Revision: 0

Task Title: ARM COPPS

System: \_\_\_\_\_

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 15 minutes

Task Number(s): 010-01-041

Applicable To:            SRO \_\_\_\_\_    STA \_\_\_\_\_    RO X    PEO \_\_\_\_\_

K/A Number: 010-000-K4.03    K/A Rating: 3.8/4.1

Method of Testing:    Simulated Performance: \_\_\_\_\_    Actual Performance: X

Location:            Classroom: \_\_\_\_\_    Simulator: X    In-Plant: \_\_\_\_\_

Task Standards:

Required Materials:  
(procedures, equipment, etc.)

General References:    OP 3208, Plant Cooldown, Rev. 022-09  
                                 OP 3301I, Operation of the Cold Overpressure Protection System, Rev. 007-02  
                                 OP 3301I-001, Cold Overpressure Protection System (COPPS) Arming  
                                 Checklist, Rev. 008-02

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.3

Revision : 0

Initial Conditions: The control room team is progressing through OP 3208, Plant Cooldown.

Initiating Cues: The US has directed you to arm COPPS in accordance with OP 3208 step 4.3.33.a.

Simulator Requirements:

1. Reset to **IC-356**
2. Place the simulator in "run".
3. Call up the subcooling screen at the RO desk.
4. Adjust plant parameters to obtain 700 psia and 250 °F.
5. Acknowledge and reset annunciators and place the simulator in "freeze".
6. Place the simulator in run when the examinee has received the initial conditions and initiating cues.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).



## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

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

<b>STEP # 1</b>	Performance: Obtains a copy of OP 3301I, "Operation of the Cold Overpressure Protection System "and form OP 3301I-001, "Cold Overpressure Protection System (COPPS) Arming Checklist". <b>4.1 Arming COPPS Train A</b> 4.1.1 VERIFY the General Prerequisites are met.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide the cue: <b>General Prerequisites are met.</b>	
	Comments:	
<b>STEP # 2</b>	Performance: <b>NOTE</b> A key (Shift Manager key locker) is required to open Train A Safeguards Test Cabinet.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reads NOTE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 3</b>	<b>Performance:</b> 4.1.2 CHECK the following conditions and INITIAL OP 3301I-001 for Train A: <ul style="list-style-type: none"> <li>3RCS*PCV455A, pressurizer PORV, OPERABLE</li> <li>3RCS*MV8000A, PORV block valve, open</li> <li>“PORV LOSS OF POWER TRAIN A/B” (MB4C 1-2), not lit</li> <li>The red “GENERAL WARNING” indicator lamp on the front of Train A SSPS logic cabinet is not lit</li> <li>No work in progress on Train A SSPS</li> <li>Lamp 022 in cabinet 1 of 3RPS*PNLSAFA1, Train A safeguards test cabinet, lit</li> </ul>	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> 1. Checks 3RCS*PCV455A, pressurizer PORV indicating lights are green ON, red OFF and initials checklist. 2. Checks 3RCS*MV8000A, PORV block valve indicating lights are green OFF, red ON and initials checklist. 3. Checks MB4C 1-2 is <u>NOT</u> lit and initials checklist. 4. Checks the red “GENERAL WARNING” indicator lamp on the front of Train A SSPS logic cabinet is <u>NOT</u> lit and initials checklist. 5. Checks there is no work in progress on Train A SSPS and initials checklist. 6. Checks Lamp 022 in cabinet 1 of 3RPS*PNLSAFA1, Train A safeguards test cabinet is ON and initials checklist.	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> When examinee reaches #4 provide the cue: <b>Red General Warning light is OFF.</b> When examinee reaches #5 provide the cue: <b>No work is in progress on Train A of SSPS.</b> When examinee reaches #6 provide the cue: <b>Lamp 022 is ON.</b>	
	<b>Comments:</b>	
<b>STEP # 4</b>	<b>Performance:</b> 4.1.3 PERFORM CHANNEL CHECK on all wide range Thot channels and INITIAL OP 3301I-001.	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> Uses the MB indications or the plant process computer and verifies the CHANNEL CHECK is satisfactory and initials checklist.	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

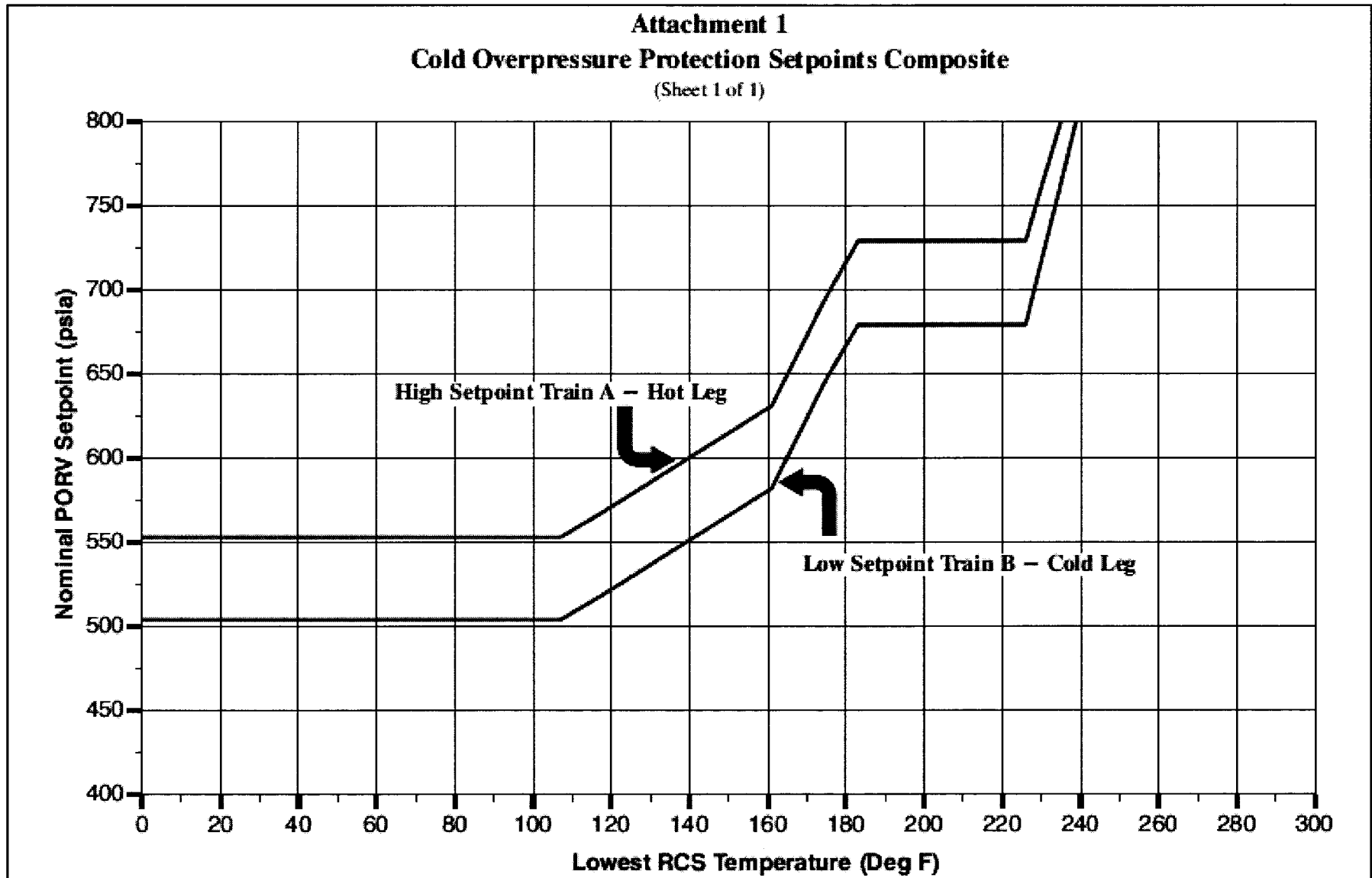
<b>STEP # 5</b>	Performance: 4.1.4 PERFORM CHANNEL CHECK on wide range RCS pressure channel 405 and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Uses the MB indications or the plant process computer and verifies the CHANNEL CHECK is satisfactory and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 6</b>	Performance: 4.1.5 Refer To Attachment 1 and CHECK RCS pressure less than the nominal PORV setpoint for the lowest RCS hot leg temperature as indicated by the "High Setpoint Train A – Hot Leg" curve and INITIAL OP 3301I-001.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Checks RCS temperature and pressure and compares these values to Attachment1. Concludes the acceptance criteria is met and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS



## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 7</b>	Performance: 4.1.6 CHECK at least one RCS loop stop valve open in at least three loops and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Checks the valve position indication lights on MB4 and observes all loop stop valves indicate green OFF, red ON and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 8</b>	Performance: 4.1.7. CHECK "PRESSURE APPROACHING COPS SETPOINT (PCV-455A)" annunciator (MB4A 1-2), <u>not</u> lit and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Checks that annunciator MB4A 1-2 is not lit and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 9</b>	Performance: 4.1.8 PERFORM Independent Verification of the following and INITIAL OP 3301I-001:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Moves on to step 4.1.9.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If requested to perform an Independent Verification, provide the cue: <b>Independent Verification is complete and initialed on checklist.</b>	
	Comments:	
<b>STEP # 10</b>	Performance: 4.1.9 PLACE 3RCS*PCV455A, "PORV" (MB4), in "AUTO" and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Observes that the control switch for 3RCS*PCV455A is aligned to the "auto" position and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 1 1</b>	Performance: 4.1.10 PERFORM the following to arm COPPS Train A:	
	Performance: a. PLACE "COPPS" "ARM/BLOCK TR A" switch (MB4) in "ARM."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the train A COPPS ARM/BLOCK switch (MB4) to the "ARM" position.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Performance: b. CHECK "COPPS" "ARM/BLOCK TR A" white "ARM" light, lit.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Confirms the white "ARM" light is lit for train A.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Performance: c. INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Initials the checklist	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 1 2</b>	Performance: 4.1.11 PERFORM Independent Verification of the following and INITIAL OP 3301I-001:	
	Standard: Moves on to step 4.2.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>  Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When requested, provide the cue: <b>Independent Verification is complete and has been initialed on the checklist.</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 1 3</b>	Performance: <b>4.2 Arming COPPS Train B</b>  4.2.1 VERIFY the General Prerequisites are met.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide the cue: <b>General Prerequisites are met.</b>	
	Comments:	
<b>STEP # 1 4</b>	Performance: 4.2.2 CHECK the following conditions and INITIAL OP 3301I-001 for Train B: <ul style="list-style-type: none"> <li>3RCS*PCV456, pressurizer PORV, OPERABLE</li> <li>3RCS*MV8000B, PORV block valve, open</li> <li>“PORV LOSS OF POWER TRAIN A/B” (MB4C 1-2), not lit</li> <li>The red “GENERAL WARNING” indicator lamp on the front of Train B SSPS logic cabinet is not lit</li> <li>No work in progress on Train B SSPS</li> <li>Lamp 022 in cabinet 1 of 3RPS*PNLSAFB1, Train B safeguards test cabinet, lit</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1. Checks 3RCS*PCV456, pressurizer PORV indicating lights are green ON, red OFF and initials checklist. 2. Checks 3RCS*MV8000B, PORV block valve indicating lights are green OFF, red ON and initials checklist. 3. Checks MB4C 1-2 is <u>NOT</u> lit and initials checklist. 4. Checks the red “GENERAL WARNING” indicator lamp on the front of Train B SSPS logic cabinet is <u>NOT</u> lit and initials checklist. 5. Checks there is no work in progress on Train B SSPS and initials checklist. 6. Checks Lamp 022 in cabinet 1 of 3RPS*PNLSAFB1, Train B safeguards test cabinet is ON and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When examinee reaches #4 provide the cue: <b>Red General Warning light is OFF.</b> When examinee reaches #5 provide the cue: <b>No work is in progress on Train B of SSPS.</b> When examinee reaches #6 provide the cue: <b>Lamp 022 is ON.</b>	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 1 5</b>	Performance: 4.2.3 PERFORM CHANNEL CHECK on all wide range Tcold channels and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Uses the MB indications or the plant process computer and verifies the CHANNEL CHECK is satisfactory and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 6</b>	Performance: 4.2.4 PERFORM CHANNEL CHECK on wide range RCS pressure channel 403 and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Uses the MB indications or the plant process computer and verifies the CHANNEL CHECK is satisfactory and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 7</b>	Performance: 4.2.5 Refer To Attachment 1 and CHECK RCS pressure less than the nominal PORV setpoint for the lowest RCS cold leg temperature as indicated by the "Low Setpoint Train B – Cold Leg" curve and INITIAL OP 3301I-001.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Checks RCS temperature and pressure and compares these values to Attachment1. Concludes the acceptance criteria is met and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	



## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 1 8</b>	Performance: 4.2.6 CHECK at least one RCS loop stop valve open in at least three loops and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Checks the valve position indication lights on MB4 and observes all loop stop valves indicate green OFF, red ON and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 9</b>	Performance: 4.2.7. CHECK "PRESSURE APPROACHING COPS SETPOINT (PCV-456)" annunciator (MB4A 1-3), <u>not</u> lit and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Checks that annunciator MB4A 1-3 is not lit and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2 0</b>	Performance: 4.2.8 PERFORM Independent Verification of the following and INITIAL OP 3301I-001:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Moves on to step 4.2.9.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When requested, provide the cue: <b>Independent Verification is complete and has been initialed on the checklist.</b>	
	Comments:	
<b>STEP # 2 1</b>	Performance: 4.2.9 PLACE 3RCS*PCV456, "PORV" (MB4), in "AUTO" and INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Observes that the control switch for 3RCS*PCV456 is aligned to the "auto" position and initials checklist.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 2 2</b>	Performance: 4.2.10 PERFORM the following to arm COPPS Train B:	
	Performance: a. PLACE "COPPS" "ARM/BLOCK TR B" switch (MB4) in "ARM."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the train B COPPS ARM/BLOCK switch (MB4) to the "ARM" position.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Performance: b. CHECK "COPPS" "ARM/BLOCK TR B" white "ARM" light, lit.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Confirms the white "ARM" light is lit for train B.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Performance: c. INITIAL OP 3301I-001.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Initials the checklist	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 2 3</b>	Performance: 4.2.11 PERFORM Independent Verification of the following and INITIAL OP 3301I-001:	
	Standard:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>  Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When requested, provide the cue: <b>Independent Verification is complete and initialed on the checklist.</b>	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

<b>STEP # 2 4</b>	Performance: Notify the US that COPPS is armed in accordance with OP3301I sections 4.1 and 4.2.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Informs the US that sections 4.1 and 4.2 of OP3301I have been completed, Trains A and B of COPPS are armed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Terminating Cue:      The evaluation for this JPM is concluded.</b>	
	Comments:	

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.3

Revision: 0

Task Title: ARM COPPS

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15 minutes	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 S.3

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.3

Revision: 0

Initial Conditions: The control room team is progressing through OP 3208, Plant Cooldown.

Initiating Cues: The US has directed you to arm COPPS in accordance with OP 3208 step 4.3.33.a.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Aligning RHR for SDR Inventory Control

JPM Number: 2K15 S.4 Revision: 0

Initiated:

John Follett  7-1-15  
Developer Date

Reviewed:

Robert Royce  7-1-15  
Technical Reviewer Date

Approved:

TH P.H. Scott 7/8/15  
Facility Reviewer Date

JPM Number: 2K15 S.4

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE



## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.4                      Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

System: \_\_\_\_\_

Time Critical Task:                      ☐ YES    ☒ NO

Validated Time (minutes): 8

Task Number(s): 005-01-002/019

Applicable To:                      SRO \_\_\_\_\_    STA \_\_\_\_\_    RO X    PEO \_\_\_\_\_

K/A Number: 005-A4.01; 005-4.02    K/A Rating: 3.6 / 3.4; 3.4 / 3.1

Method of Testing:    Simulated Performance: \_\_\_\_\_    Actual Performance: X

Location:                      Classroom: \_\_\_\_\_    Simulator: X    In-Plant: \_\_\_\_\_

Task Standards:                      Satisfactorily align RHR Train A for shutdown risk inventory control.

Required Materials:  
(procedures, equipment, etc.)

General References:                      OP 3310A, Residual Heat Removal System, Rev. 017-08

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.4

Revision : 0

Initial Conditions:      The plant is in MODE 5 post refueling, with various maintenance activities being completed prior to plant heat up.  
All RCS loops are full, both trains of RHR are in Cooldown mode, and all steam generators have adequate level.  
The annunciators are in Master Silence.

Initiating Cues:      The US has directed you to align RHR Train A for shutdown risk inventory control using OP3310A section 4.21.

Simulator Requirements:

- Set for **IC-351**
- Hang Mode 5 Tags
- Ensure Caution tag on 3SIL\*MV8812A reading:  
    **"Maintain valve closed unless needed for inventory control."**
- Ensure 3CCP\*FV66A is closed (100%)
- Ensure key 35 is in 3RHS\*MV8701B (simulates normal practice when valve is open in this mode)

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.4

Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

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

<b>Comments: Candidate may review OP 3310A precautions prior to starting the task. This is acceptable.</b>		
<b>STEP # 1</b>	<p>Performance:</p> <p><b>4.21 Aligning RHR Train A for Shutdown Risk Inventory Control</b></p> <p style="text-align: center;"><b>NOTE</b></p> <p>This section aligns Train A of RHR for injection from the RWST for:</p> <ul style="list-style-type: none"> <li>Inventory Control requirement of OU-M3-201 "Shutdown Safety Assessment Checklist". This alignment assumes RHR Train A is initially in the cooldown alignment and is not required for Technical Specification requirements or Decay Heat Removal defense in depth.</li> <li>EOP 3505 direction to restore RCS inventory using RHR.</li> </ul>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard:</p> <p>Reviews NOTE.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p> <p>If asked about COPPS, provide the following cue: <b>Both trains of COPPS are being credited for cold overpressure protection.</b></p>	
	<p>Comments:</p> <p>RHR A is initially in cooldown alignment.</p>	
<b>STEP # 2</b>	<p>Performance:</p> <p><b>4.21.1 ENSURE one of the following conditions met:</b></p> <ul style="list-style-type: none"> <li>Plant in MODE 5 with at least two RCS loops filled and T/S 3.4.1.4.1 LCO satisfied without crediting RHR Train A</li> <li>Plant in MODE 6 with water level greater than or equal to 23 feet above the top of the RV flange</li> <li>Actual loss of RCS inventory and use of RHR is directed by EOP 3505, "Loss of Shutdown Cooling"</li> </ul>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard:</p> <ul style="list-style-type: none"> <li>RO will request of US whether T/S 3.4.1.4.1 is satisfied.</li> <li>SRO will check TS and verify from the initial prompt information that T/S 3.4.1.4.1 is met.</li> </ul>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p> <ul style="list-style-type: none"> <li>If requested, provide the following cue: <b>RCS has been filled in accordance with applicable procedure</b></li> <li>If requested by RO only, provide the following cue: <b>TS 3.4.1.4.1 is satisfied without crediting RHR train A.</b></li> </ul>	
	<p>Comments:</p>	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.4

Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

<b>STEP # 3</b>	Performance:	Critical:
	4.21.2 PLACE 3RHS*P1A, "RHR PP A," in "STOP" and then in "PULL-TO-LOCK" (MB2).	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard:	Grade:
	3RHS*P1A is taken to stop, green light is observed, then taken to P-T-L, and all lights observed to extinguish.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 4</b>	Performance:	Critical:
	4.21.3 CLOSE 3RHS*V20, RHR loop A CVCS letdown isolation.	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade:
	Contacts PEO to close 3RHS*V20.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	<ul style="list-style-type: none"> <li>BOOTH: When requested, Trigger 1 to close RHS*V20 using <b>RHR01 to CLOSE</b>. When completed, call the control room and report: <b>3RHS*V20 is closed</b>.</li> </ul>	
	Comments:	
<b>STEP # 5</b>	Performance:	Critical:
	4.21.4 Using key lock switch, CLOSE 3RHS*MV8701B, "A ISOL (OUT)" (MB2):	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard:	Grade:
	Confirms key is in switch 3RHS*MV8701B, then rotates switch to the CLOSE direction. Confirms only GREEN light lit.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
	Switch does <u>NOT</u> have to be held. Valve takes several minutes to close.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.4

Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

<b>STEP # 6</b>	Performance: 4.21.5 PERFORM the following (MB2): a. PLACE 3RHS-FK618, "RHR HDR FLOW," in "MAN."	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: MANUAL selected on controller 3RHS-FK618.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 7</b>	Performance: b. CLOSE the following: • 3RHS-FK618, "RHR HDR FLOW" (100% output) • 3RHS-HC606, "HX A FLOW"	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: 3RHS-FK618 taken to 100% output (Down arrow required.)	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: 3RHS-HC606 taken to 0% output.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 8</b>	Performance: 4.21.6 ADJUST 3CCP-HK66A1, "RPCCW HX FLOW" (MB2) as necessary to maintain RPCCW Train A flow requirements.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Recognizes that 3CCP*FV66A is closed as an initial condition. (no actions are necessary).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.4

Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

<b>STEP # 9</b>	<p>Performance: 4.21.7 To align 3SIL*MV8809A, "PP A COLD LEG INJ," PERFORM the following:</p> <p style="margin-left: 40px;">a. <u>IF</u> RCS pressure is greater than 100 psia, <u>OR IF</u> actual loss of RCS inventory is in progress, PERFORM the following:</p> <p style="margin-left: 80px;">1) ENSURE 3SIL*MV8809A, "PP A COLD LEG INJ," open (MB2). 2) Go to step 4.21.8.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard: Verifies pressure &gt; 100 psia and 3SIL*MV8809A is OPEN (red light lit, green light off). Proceeds to step 4.21.8.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:	
	Comments:	
<b>STEP # 10</b>	<p>Performance: 4.21.8 To open 3SIL*MV8812A, "RWST/PP A SUCT ISOL," PERFORM the following (MB2):</p> <p style="margin-left: 40px;">a. REMOVE the following Caution Tag from 3SIL*MV8812A, "RWST/PP A SUCT ISOL," control switch. <b>"Maintain valve closed unless needed for inventory control."</b></p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard: Removes the caution tag on 3SIL*MV8812A.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue: Provide the cue: <b>You have been given a Tag Removal Sheet for the yellow Caution tag on 3SIL*MV8812A.</b>	
	Comments:	
<b>STEP #11</b>	<p>Performance: b. OPEN 3SIL*MV8812A, "RWST/PP A SUCT ISOL."</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>
	<p>Standard: Opens 3SIL*MV8812A, confirms RED light lit, GREEN light out.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.4

Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

<b>STEP #12</b>	Performance: 4.21.9 PLACE 3RHS*P1A, "RHR PP A," in "AUTO" after "STOP" (MB2).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Removes 3RHS*P1A from P-T-L, which places it in the AUTO after STOP position. Only green light is illuminated.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP #13</b>	Performance: 4.21.10 <u>IF</u> actual loss of RCS inventory is in progress, START 3RHS*P1A, "RHR PP A" (MB2).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Recognizes loss of RCS inventory is <u>NOT</u> in progress, does <u>NOT</u> start 3RHS*P1A.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**TERMINATION CUE:** The evaluation for this JPM is concluded.

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.4

Revision: 0

Task Title: Aligning RHR for SDR Inventory Control

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

#### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	8	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [NLO only]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:




JPM Number: 2K15 S.4

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.4

Revision: 0

Initial Conditions: The plant is in MODE 5 post refueling, with various maintenance activities being completed prior to plant heat up.

All RCS loops are full, both trains of RHR are in Cooldown mode, and all steam generators have adequate level.

The annunciators are in Master Silence.

Initiating Cues: The US has directed you to align RHR Train A for shutdown risk inventory control using OP3310A section 4.21.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**


JPM Title: Natural Circulation Cooldown using GA-26

JPM Number: 2K15 S.5 Revision: 0


Initiated:

John Follett  7-1-15  
Developer Date

Reviewed:

Robert Royce  7-1-15  
Technical Reviewer Date

Approved:

 P.H. Scott 7/8/15  
Facility Reviewer Date

JPM Number: 2K15 S.5

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.5 Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

System: Main SteamTime Critical Task: ☐ YES ☒ NOValidated Time (minutes): 20

Task Number(s): 000-05-101

Applicable To: SRO X STA        RO X PEO       

K/A Number: 039-A1.05 K/A Rating: 3.2\* / 3.3

Method of Testing:      Simulated Performance: \_\_\_\_\_      Actual Performance:          X    

Location: Classroom: \_\_\_\_\_ Simulator:   X   In-Plant: \_\_\_\_\_

**Task Standards:** Initiate an RCS cooldown, using ES-0.2, Natural Circulation Cooldown.

**Required Materials:**  
(procedures, equipment, etc.)

General References: ES-0.2, Natural Circulation Cooldown, Rev. 019-01  
GA-26, Dumping Steam to Condenser or Atmosphere, Rev. 001

**\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.5

Revision : 0

Initial Conditions: A loss of offsite power has occurred and the reactor tripped. It's reported that offsite power will not be restored for an extended period of time. The following conditions exist:

- The control room team has completed through step 4 of ES-0.2, Natural Circulation Cooldown.
- GA - 15, Establishing Boron Concentration For Natural Circulation Cooldown, has been completed and RCS boron concentrations are satisfactory.
- All four MSIV's are closed
- AFW flow has been isolated to the SGs  
(w/ SG levels approximately 50%)

Initiating Cues: The US has directed you to commence a natural circulation cooldown using ES-0.2 Step 5.

The US directs you to:

- Target a cooldown rate of 20 – 45 °F per hour
- Maintain SG NR level at 40 – 60%

**Report when you have established a controlled cooldown of ALL SG's.**

A floor instructor will be responsible for all annunciators **EXCEPT** for MB5. You may silence MB5 annunciators as necessary.

PPC trends have been set-up on the BOP station and may be adjusted, as needed.

Simulator Requirements:

1. **Reset to IC-352 Mode 5 OR**
2. Reset to IC 13 or any 100% power IC
3. Place Simulator in RUN
4. Insert ED01 (Loss of Offsite Power)
5. Insert IA02B (IAS-C1B trip)
6. Reset LOP at MB2
7. Perform all actions in ES-0.1 and ES-0.2 (through step 4) (excluding performance of GA-26)
8. Restart PPC by inserting the following remotes
  - EDR 18 (MCC1A3 Reset)
  - EDR 44 (Battery 6 inverter 6 trouble reset)
  - PCR01 (Restart Realtime) (start)
  - PCR02 (Ready to start Rtime 58 sec)
  - PCR03 (Rtime start delay) (final value 0)
9. **Build a trend** on the BOP station of SG levels, pressures, and RCS cold leg temperatures.

**\* \* \* \* NOTES TO TASK PERFORMANCE EVALUATOR \* \* \* \***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

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

<b>Cue:</b>	The simulator set-up is relatively unstable (SG safety valves are beginning to lift). <b>PRIOR to placing the simulator in RUN, ask the candidate if they want to establish (or adjust) PPC trends.</b> Allow the candidate time to do this before placing the simulator in run and beginning the JPM.	
<b>STEP # 1</b>	Performance:  <div style="text-align: center;"><b><u>CAUTION</u></b></div> <p>RCS cold leg WR temperature must NOT be reduced below 520 °F until main steam line low pressure SI is blocked (P-11).</p> <div style="text-align: center;"><b><u>NOTE</u></b></div> <p>If this procedure is being performed during a loss of offsite power with the wind speed GREATER THAN 90 mph anticipated, the following conditions should be established using this procedure:</p> <ul style="list-style-type: none"> <li>RCS cold leg WR temperature of LESS THAN 400°F</li> <li>RCS pressure of GREATER THAN 850 psia</li> <li>SI accumulator isolation valves all open</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reads caution and note.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2</b>	Performance: <b>5. Initiate RCS Cooldown To Cold Shutdown</b> a. Verify boration as specified by GA-15 - COMPLETED	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Recognizes from initiating cue that GA-15 has been completed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If requested, report: <b>GA-15 has been completed. Cooldown can commence with current RCS boron concentrations.</b>	
	Comments:	



## PERFORMANCE INFORMATION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

<b>STEP # 3</b>	Performance:	Critical:
	b. Maintain cooldown rate in RCS cold legs – LESS THAN 50 °F/hr	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reads step and proceeds to next step.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments: This limit will be met by the US direction to maintain cooldown rate at approximately 30 °F/hr (initiating cue). If needed, ensure examinee understands desired cooldown rate is per US direction.		
<b>STEP # 4</b>	Performance:	Critical:
	c. Using GA-26, Dump steam to initiate RCS cooldown	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reads step and proceeds to GA-26.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 5</b>	Performance:	Critical:
	GA-26, Dumping Steam to Condenser or Atmosphere	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>Auxiliary feed flow directly impacts RCS heatup and cooldown rates and must be considered along with dumping steam.</li> <li>Steam line pressure changes more rapidly if fewer than four SGs are used.</li> <li>After Low Steamline Pressure Safety Injection signal is BLOCKED, MSI will occur if the High Steam Pressure Rate setpoint is exceeded.</li> <li>Instrument air compressor B is tripped by SI, CDA and LOP.</li> </ul>	
	Standard: Reads note and proceeds to next step.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

<b>STEP # 6</b>	Performance: <b>1. Verify Plant Conditions</b> a. Check instrument air compressors – AT LEAST ONE RUNNING	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: At MB1, observes 3IAS-C1A and 3IAS-C1B are not running (Green lights 'On', Red lights 'Off'). Moves to the RNO column.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 7</b>	Performance: RNO 1.a. Perform the following: 1) IF SI or CDA present, <u>THEN</u> Place both trains of steam dump interlock selector switches in OFF and Proceed to step 6.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Observes the following annunciators not lit: <ul style="list-style-type: none"> <li>MB2B 5-5 "CDA"</li> <li>MB2B 5-9 "SI"</li> </ul>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Proceeds to next step.	
	Cue:	
	Comments:	
<b>STEP # 8</b>	Performance: 2) RESET LOP if required.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Recognizes that LOP has been reset from initiating cue (or cue below) and proceeds to next step.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: As needed, report; <b>LOP has been reset.</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

<b>STEP # 9</b>	<b>Performance:</b> 3) START one instrument air compressor. <u>IF</u> instrument air can <u>NOT</u> be restored, <u>THEN</u> Place both trains of steam dump interlock selector switches in OFF and Proceed to step 6.	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> 1. At MB2, closes breaker for 3IAS-C1B and observes breaker remaining open, green light ON and amber light ON. 2. Recognizes failure of 3IAS-C1B and places both trains of steam dump interlock selector switches in OFF. 3. Proceeds to step 6.	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	
<b>STEP # 10</b>	<b>Performance:</b> <b>6. Dump Steam to Atmosphere Using SG Atmospheric Relief Bypass Valves</b> a. Place the desired SG atmospheric relief bypass valves' CONTROL LOCKOUT switches in NORMAL (MB5R) <ul style="list-style-type: none"> <li>• 3MSS*MOV74A</li> <li>• 3MSS*MOV74B</li> <li>• 3MSS*MOV74C</li> <li>• 3MSS*MOV74D</li> </ul>	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Places Control Lockout switches (MB5R) in Normal for: <ul style="list-style-type: none"> <li>• 3MSS*MOV74A</li> <li>• 3MSS*MOV74B</li> <li>• 3MSS*MOV74C</li> <li>• 3MSS*MOV74D</li> </ul>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b>	
	<b>Comments:</b>	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

**Notes to Evaluator :**

During upcoming cycling of the atmospheric relief bypass valves, thermal overloads may actuate causing an annunciator, MB8B 2-8, MCC LOSS OF CNTL POWER, to alarm. This alarm is generated when motor thermal limits are exceeded. An overloaded condition does not render the valve inoperable, but serves as a warning to the operator that the motor may reach a point where damage can occur that will render the valve motor inoperable.

Every time the valve is positioned, the motor is subjected to starting current, which is typically 6 to 8 times normal running current. The valve motors are designed to withstand 7 starts per hour with a cool down period of 1.5 hours after the seventh start. Caution should be used when cycling a valve to control RCS temperature or steam generator pressure to prevent exceeding design start conditions of the valve motor.

<b>STEP #11</b>	<b>Performance:</b> b. Throttle the desired SG atmospheric relief bypass valves to reduce or maintain RCS temperature or SG pressures as specified by the procedure in effect <ul style="list-style-type: none"><li>• 3MSS*MOV74A</li><li>• 3MSS*MOV74B</li><li>• 3MSS*MOV74C</li><li>• 3MSS*MOV74D</li></ul>	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Momentarily depresses Open pushbutton (throttles) the following valves: <ul style="list-style-type: none"><li>• 3MSS*MOV74A</li><li>• 3MSS*MOV74B</li><li>• 3MSS*MOV74C</li><li>• 3MSS*MOV74D</li></ul> <ol style="list-style-type: none"><li>1. Monitors RCS temperatures (may use MB indications for RCS Tcold or PPC trends for RCS Tcold).</li><li>2. Makes adjustments to bypass valves as necessary to obtain approx. 30 °F per hour cooldown rate.</li><li>3. Monitors SG levels. Adjusts AFW throttle valves to maintain SG levels between 40 – 60%.</li></ol>	<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> If requested to use two handed operation provide the cue: <b>You have permission to use two handed operation.</b>	
	<b>Comments:</b> <ol style="list-style-type: none"><li>1. If P19 actuates on MB4D 4-5, the floor instructor should reset both trains of “Steam Line Isol SI” signals on MB2.</li><li>2. If MB8B 2-8, MCC Loss of Control Power actuates, examinee should refer to ARP and inform US.</li><li>3. Takes 2-3 seconds with OPEN button pressed to position valves for the desired cooldown rate. Further adjustments will be necessary.</li></ol>	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

### Notes to evaluator:

1. The critical nature of this step is not to exceed a 50 °F/hr cooldown rate (as measured using individual loop Tcold temperatures) over a 15 minute period. If this rate is exceeded over 15 minutes, candidate may still PASS if they take action to reduce the cooldown such that the 50 °F/hr limit would not be exceeded. Otherwise, a JPM failure will occur.
2. Under these plant conditions (MSIV's closed, Natural Circulation), it will be very difficult to achieve exactly 30 °F/hr cooldown per SG. The goal is establish a controlled cooldown less than 50 °F/hr (head voiding concerns). The JPM does not have to continue until a cooldown of exactly 30 °F/hr is established. When the examiner has observed a controlled cooldown, he or she may end the JPM.
3. A PASS will be given for any cooldown rate, provided ALL of the following are met:
  - 1) 50 °F/hr is not exceeded (see earlier discussion).
  - 2) All RCS temperatures are trending down.
  - 3) SG inventory control is maintained within an allowable band of greater than 8% NR and less than 80% NR.

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.5

Revision: 0

Task Title: Natural Circulation Cooldown using GA-26

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

#### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	20	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 S.5

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## STUDENT HANDOUT

JPM Number: 2K15 S.5

Revision: 0

Initial Conditions: A loss of offsite power has occurred and the reactor tripped. It's reported that offsite power will not be restored for an extended period of time. The following conditions exist:

- The control room team has completed through step 4 of ES-0.2, Natural Circulation Cooldown.
- GA - 15, Establishing Boron Concentration For Natural Circulation Cooldown, has been completed and RCS boron concentrations are satisfactory.
- All four MSIV's are closed
- AFW flow has been isolated to the SGs  
(w/ SG levels approximately 50%)

Initiating Cues: The US has directed you to commence a natural circulation cooldown using ES-0.2 Step 5.

The US directs you to:

- Target a cooldown rate of 20 – 45 °F per hour
- Maintain SG NR level at 40 – 60%

**Report when you have established a controlled cooldown of ALL SG's.**

A floor instructor will be responsible for all annunciators **EXCEPT** for **MB5**. You may silence MB5 annunciators as necessary.

PPC trends have been set-up on the BOP station and may be adjusted, as needed.



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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

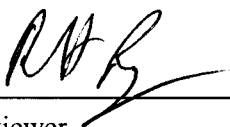
JPM Title: Respond to an Inadvertent Containment Isolation Phase 'A'

JPM Number: 2K15 S.6 Revision: 0/1


Initiated:

John Follett  7-1-15  
Developer Date

Reviewed:

Robert Royce  7-1-15  
Technical Reviewer Date

Approved:

 P.H. Scott 7/8/15  
Facility Reviewer Date

JPM Number: 2K15 S.6

Revision: 0/1

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE
6-25-15	Changed to alternate path at step 17 per NRC suggestion. Confirmed Safety Function 5 is accurate.	0 / 1

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.6                      Revision: 0/1

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

System: ESF

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 12

Task Number(s): 013-04-012

Applicable To:            SRO X    STA \_\_\_\_\_    RO X    PEO \_\_\_\_\_

K/A Number: 013-A4.02            K/A Rating: 4.3 / 4.4

Method of Testing:    Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:            Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:            All critical steps are performed satisfactorily. All sequential steps are performed in proper procedural sequence.

Required Materials:  
(procedures, equipment, etc.)

General References:            AOP 3578, Response to an Inadvertent Containment Isolation Phase A, Rev. 003

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.6

Revision : 0/1

Initial Conditions: The plant was at 100% power when an Inadvertent Containment Isolation Phase A (CIA) occurred while conducting SSPS surveillance testing.

Initiating Cues: The US has directed you to carry out the actions of AOP 3578, *Response to an Inadvertent Containment Isolation Phase A*, starting with step 1.

- Simulator Requirements:
1. Reset to **IC-353 OR**
  2. Reset to IC 18, 100% steady state, MOL (or any 100% Power IC), and carry out steps 3 – 5 below.
  3. Insert malfunctions RP03A/B (Containment Isolation phase A, train A and B).
  4. Place the simulator in RUN, wait for all CIA actuated components to fully reposition.
  5. Remove malfunctions RP03A/B (This will allow the examinee to reset CIA).
  6. **Close 3CCP\*AOV178C.**
  7. **Throttle RCP seals** with CVR42/43/44/45 for seal injection flows in the band of 8 – 13 gpm or higher.
  8. Place the simulator in "Freeze."
  9. If applicable, **remove the YCT** on PGS valves.

Approximate setup time is 5 minutes.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

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

<b>STEP # 1</b>	<p>Performance:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p style="text-align: center;">If a Reactor Trip occurs or is required, go to E-0, Reactor Trip or Safety Injection.</p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p style="text-align: center;">A functioning relief valve on the CVC seal return (CBO) line is adequate for maintaining CVC seal return (CBO) flow.</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard: Obtains a copy of AOP 3578 and reviews the CAUTION and NOTE prior to step 1.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p>	
	<p>Comments:</p>	
<b>STEP # 2</b>	<p>Performance:</p> <p><b>1. Verify Containment Isolation – NOT REQUIRED</b></p> <p style="margin-left: 20px;">a. Check safety injection signal – NOT ACTUATED</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard: Observes that safety injection actuation annunciators are NOT lit at MB2B 5-9 or MB4D 1-6.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p>	
	<p>Comments:</p>	

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<b>STEP # 3</b>	Performance: b. Check letdown containment isolation valves – CLOSED	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<ul style="list-style-type: none"> <li>3CHS*CV8152</li> <li>OR</li> <li>3CHS*CV8160</li> </ul>	
	Standard: Observes 3CHS*CV8152 and 3CHS*CV8160 closed (indicating lights are red OFF and green ON).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 4</b>	Performance: c. Simultaneously Perform the following:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<ul style="list-style-type: none"> <li>CLOSE letdown orifice isolation valves</li> <li>CLOSE the charging flow control valve</li> </ul>	
	Standard: Simultaneously presses CLOSE on 3CHS*AV8149C <u>AND</u> the ↓ pushbutton for 3CHS-FK121. Observes 3CHS*AV8149C indicating lights shift to red OFF and green ON. Observes flow indicator 3CHS-FI121 indicates 0%.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 5</b>	Performance: d. Adjust seal injection flow, as necessary to control pressurizer level – 8 TO 13 GPM	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Throttles 3CHS-HCV182 as necessary by rotating potentiometer of 3CHS-HC182 (MB3).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Candidate should throttle to the low end of the band to minimize the increase in PZR level. Flow within 8 to 13 GPM is adequate to satisfy the critical nature of this step.	

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<b>STEP # 6</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>NOTE</b> The isolation of Instrument Air to Containment will eventually fail the Pressurizer Spray valves closed.	
	Standard: Reviews the note.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 7</b>	Performance:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>2. Establish Plant Control and Monitoring</b> a. Reset CIA	
	Standard: Resets CIA by depressing the Train A and Train B CIA reset push buttons on MB2.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 8</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	b. Notify I&C to investigate and repair the cause of the inadvertent CIA signal	
	Standard: Calls I&C to investigate or requests the US make the call to I&C.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		
<b>STEP # 9</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	c. Proceed to step 4.	
	Standard: Proceeds to step 4.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		

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<b>STEP # 1 0</b>	Performance: <b>4. Establish Instrument Air To Containment</b> a. Check instrument air compressors – AT LEAST ONE RUNNING	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Confirms the 'B' instrument air compressor is running by observing indicating lights green OFF, red ON (MB1).	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 1</b>	Performance: b. OPEN instrument air Ctmt isolation valves: <ul style="list-style-type: none"> <li>• 3IAS*PV15</li> <li>• 3IAS*MOV72</li> </ul>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Presses the OPEN push button for 3IAS*PV15 and observes indicating lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Presses the OPEN push button for 3IAS*MOV72 and observes indicating lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: Valves can be opened in any order.	



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<b>STEP # 1 2</b>	<b>Performance:</b> <b>5. Align RCP Seal Return Flow To Charging Pump Suction</b> a. OPEN seal return containment isolation valves: <ul style="list-style-type: none"> <li>• 3CHS*MV8100</li> <li>• 3CHS*MV8112</li> </ul>		<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<b>Standard:</b> Presses the OPEN push button for 3CHS*MV8100 and observes indicating lights shift to green OFF, red ON.		<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Standard:</b> Presses the OPEN push button for 3CHS*MV8112 and observes indicating lights shift to green OFF, red ON.		<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> 		
	<b>Comments:</b> Valves can be opened in any order.		
<b>STEP # 1 3</b>	<b>Performance:</b> <b>6. Check If Normal Letdown Can Be Established</b> a. Check pressurizer level – GREATER THAN 22%		<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> Checks PZR level greater than 22% by observing CVCS trend for RCS-L461 on the PPC, OR checking meters RCS*LI459A, LI460A and LI461A on MB4.		<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> 		
	<b>Comments:</b> 		
<b>STEP # 1 4</b>	<b>Performance:</b> b. Check head vent letdown to PRT – IN SERVICE		<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>Standard:</b> Observes head vent isolation valves 3RCS*SV8095A & B and 3RCS*SV8096A & B (MB3) indicate closed, confirming head vent letdown is not in service. Transitions to the RNO column.		<b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> 		
	<b>Comments:</b> 		

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<b>STEP # 1 5</b>	Performance: RNO b. Proceed to step 6.d.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Moves on to step 6.d.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 6</b>	Performance: d. Establish normal letdown flow using GA-13	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Once the Candidate obtains GA-13, provide the following cue: <b>Another RO will establish normal letdown flow using GA-13, continue with AOP 3578.</b>	
	Comments:	
<b>STEP # 1 7</b>	Performance: <b>7. Restore RPCCW System To Normal</b> a. Check RCP thermal barrier cooling – ESTABLISHED TO ALL RCPs	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Determines that there is <u>NOT</u> adequate thermal barrier cooling for RCP C by observing either of the following: <ul style="list-style-type: none"> <li>Thermal barrier flow low annunciator MB4B 3-6A is lit.</li> <li>Valve 3CCP*AOV178C (MB1) indicates closed (indicating lights are green ON, red OFF).</li> </ul>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Transitions to the RNO column.	
	Cue:	
	Comments:	

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<b>STEP # 1 8</b>	Performance:	Critical:
	RNO a. Open affected thermal barrier return isolation valve(s):	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<ul style="list-style-type: none"> <li>RCP C – 3CCP*AOV178C</li> </ul>	
	Standard:	Grade:
	Opens 3CCP*AOV178C, observes indicating lights change to green OFF, red ON. Confirms annunciator MB4B 3-6A is <u>NOT</u> lit.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
	This is an Alternate Path.	
<b>STEP # 1 9</b>	Performance:	Critical:
	b. Restore Reactor Plant Chill Water System:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	1) Refer to the following and Perform applicable actions:	
	<ul style="list-style-type: none"> <li>T/S 3.6.1.4, Containment Pressure</li> <li>T/S 3.6.1.5, Air Temperature</li> <li>T/S 3.7.14.</li> </ul>	
	Standard:	Grade:
	Candidate informs the US to Refer to T/S 3.6.1.4, 3.6.1.5 and 3.7.14.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2 0</b>	Performance:	Critical:
	2) Refer to OP 3330C, "Recover from Loss Of Power, Containment Isolation Phase A, or Loss of Instrument Air" and Restore containment and non-safety headers	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade:
		S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Provide the cue: <b>Another RO will restore containment and non-safety headers, and complete step 7. Continue in AOP 3578 at step 8.</b>	
	Comments:	

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<b>STEP # 2 1</b>	Performance:  <div style="text-align: center;"><b><u>NOTE</u></b> 3DGS*CTV24 and 3DAS*CTV24 need to be reset following CIA by momentarily depressing AUTO / OPEN. When momentarily depressing AUTO / OPEN, 3DGS*CTV24 or 3DAS*CTV24 may stay open until the next pumping operation occurs.</div>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews the note.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2 2</b>	Performance: <b>8. Restore Affected Systems</b> a. Check RCS leakage monitor, 3CMS*RE 22 – IN SERVICE WITH THE FOLLOWING VALVES OPEN: <ul style="list-style-type: none"><li>• 3CMS*CTV 20</li><li>• 3CMS*CTV 21</li><li>• 3CMS*CTV 23</li><li>• 3CMS*MOV 24</li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: <ul style="list-style-type: none"><li>• Determines that 3CMS*CTV20, 21, 23 and MOV24 are CLOSED (MB1) by observing indicating lights as green ON, red OFF.</li><li>• Transitions to the RNO column.</li></ul>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

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<b>STEP # 2 3</b>	Performance:	Critical:
	RNO a. Place 3CMS*RE 22 in service as follows:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	1) Refer to the following and Perform applicable actions:	
	<ul style="list-style-type: none"> <li>T/S 3.3.3.1 Radiation Monitoring for Plant Operation</li> <li>T/S 3.4.6.1, Reactor Coolant System Leakage Detection System</li> </ul>	
	Standard:	Grade:
	Candidate informs the US to refer to T/S 3.3.3.1 and 3.4.6.1.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Provide the following cue: <b>Tech Spec review is complete, no applicable action is necessary. Continue on in AOP 3578.</b>	
	Comments:	
<b>STEP # 2 4</b>	Performance:	Critical:
	2) OPEN the following	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	<ul style="list-style-type: none"> <li>3CMS*CTV 20</li> <li>3CMS*CTV 21</li> <li>3CMS*CTV 23</li> <li>3CMS*MOV 24</li> </ul>	
	Standard:	Grade:
	Opens 3CMS*CTV20 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	S <input type="checkbox"/> U <input type="checkbox"/>
	Standard:	Grade:
	Opens 3CMS*CTV21 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	S <input type="checkbox"/> U <input type="checkbox"/>
	Standard:	Grade:
Opens 3CMS*CTV23 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	S <input type="checkbox"/> U <input type="checkbox"/>	
Standard:	Grade:	
Opens 3CMS*MOV24 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	S <input type="checkbox"/> U <input type="checkbox"/>	
	Cue:	
	Comments:	
	The CMS containment isolation valves can be opened in any order.	

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<b>STEP # 2 5</b>	Performance:	Critical:
	3) Refer to OP 3312B and Restore 3CMS*RE22 to service.	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard:	Grade:
		S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Provide the following cue: <b>Another RO will restore 3CMS*RE22 to service. Continue on in AOP 3578.</b>	
	Comments:	
<b>STEP # 2 6</b>	Performance:	Critical:
	b. Check Reactor Plant Gaseous Drains - IN SERVICE WITH THE FOLLOWING VALVES OPEN:	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<ul style="list-style-type: none"> <li>• 3DGS*CTV24</li> <li>• 3DGS*CTV25</li> </ul>	
	Standard:	Grade:
	Candidate determines that 3DGS*CTV24 and 25 CLOSED by observing indicating lights as green ON, red OFF. Transitions to the RNO column.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2 7</b>	Performance:	Critical:
	RNO b. Perform the following:	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	1) OPEN 3DGS*CTV25.	
	Standard:	Grade:
	Opens 3DGS*CTV25 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

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<b>STEP # 2 8</b>	Performance: 2) Momentarily press 3DGS*CTV24 AUTO / OPEN.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Momentarily depresses the 3DGS*CTV24 AUTO / OPEN push button and observes the valve remains closed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2 9</b>	Performance: c. Check Reactor Plant Aerated Drains – IN SERVICE WITH THE FOLLOWING VALVES OPEN: <ul style="list-style-type: none"> <li>• 3DAS*CTV24</li> <li>• 3DAS*CTV25</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Determines that 3DGS*CTV24 and 25 CLOSED by observing indicating lights as green ON, red OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Transitions to the RNO column.	
	Cue:	
	Comments:	
<b>STEP # 3 0</b>	Performance: RNO c. Perform the following: 1) Refer to T.S. 3.4.6.1.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Informs the US to refer to T.S. 3.4.6.1.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Tech Spec review is complete, continue on in AOP 3578.</b>	
	Comments:	

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<b>STEP</b> # 3 1	Performance: 2) OPEN 3DAS*CTV25.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Opens 3DAS*CTV25 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP</b> # 3 2	Performance: 3) Momentarily press 3DAS*CTV24 AUTO / OPEN.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Momentarily depresses the 3DAS*CTV24 AUTO / OPEN push button and observes the valve remains closed.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP</b> # 3 3	Performance: 4) Verify 3DAS*P2A/B and 3DAS-P10 automatic operation.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate calls up Reactor Plant Aerated Drains – Containment Drains on R*Time (or corollary display on PPC) to monitor CTMT sump level, 3DAS*P2A/B, and 3DAS-P10 activity.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Once the Candidate displays Reactor Plant Aerated Drains on the PPC, provide the following cue: <b>Another RO will monitor CTMT sump pump activity. Continue on in AOP 3578.</b>	
	Comments:	



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<b>STEP</b> <b># 3 4</b>	Performance: d. Check Reactor Plant Gaseous Vents – IN SERVICE WITH THE FOLLOWING VALVES OPEN: <ul style="list-style-type: none"><li>• 3VRS*CTV20</li><li>• 3VRS*CTV21</li></ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate determines that 3VRS*CTV20 and 21 CLOSED by observing indicating lights as green ON, red OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Transitions to the RNO column.	
	Cue:	
Comments:		
<b>STEP</b> <b># 3 5</b>	Performance: RNO d. Perform the following: 1) OPEN 3VRS*CTV20.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Opens 3VRS*CTV20 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP</b> <b># 3 6</b>	Performance: 2) OPEN 3VRS*CTV21.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Opens 3VRS*CTV21 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

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<b>STEP # 3 7</b>	Performance: e. Check fire protection water to containment valves - OPEN: <ul style="list-style-type: none"> <li>3FPW*CTV48</li> <li>3FPW*CTV49</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Determines that 3FPW*CTV48 and 49 are CLOSED by observing indicating lights as green ON, red OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Transitions to the RNO column.	
	Cue:	
	Comments:	
<b>STEP # 3 8</b>	Performance: RNO e. Perform the following: 1) Refer to the following and Perform applicable actions: <ul style="list-style-type: none"> <li>TRM 3.7.12.2, Spray and/or Sprinkler Systems</li> <li>TRM-3.7.12.5, Fire Hose Stations</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate informs the US to refer to TRM 3.7.12.2 and 3.7.12.5.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Tech Spec review is complete, continue on in AOP 3578.</b>	
	Comments:	
<b>STEP # 3 9</b>	Performance: 2) OPEN 3FPW*CTV48.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Opens 3FPW*CTV48 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

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<b>STEP # 4 0</b>	Performance: 3) OPEN 3FPW*CTV49.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Opens 3FPW*CTV49 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 4 1</b>	Performance: f. Check PGS to containment valves – OPEN: <ul style="list-style-type: none"> <li>• 3PGS*CV8046</li> <li>• 3PGS*CV8028</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate determines that 3PGS* CV8046 and CV8028 are CLOSED by observing indicating lights as green ON, red OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Transitions to the RNO column.	
	Cue:	
	Comments:	
<b>STEP # 4 2</b>	Performance: RNO f. OPEN valves as directed by SM/ US.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate requests from the US whether to open the PGS valves to containment.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When asked, provide the following cue: <b>Open the PGS valves to containment.</b>	
	Comments:	

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<b>STEP # 4 3</b>	Performance: OPEN the PGS valves to containment as directed.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Opens 3PGS* CV8046 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Standard: Opens 3PGS* CV8028 by depressing the OPEN push button and observing lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide the following cue: <b>OPEN 3PGS*CV8046 and 3PGS*CV8028.</b>	
	Comments: The PGS to containment valves can be opened in any order.	
<b>STEP # 4 4</b>	Performance: <b>9. If Necessary, Refer To OP 3219, "Post-Transient MCB Walkdown," And Verify Normal Component Position</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Informs the US to refer to OP 3219, "Post-Transient MCB Walkdown" to verify normal component position.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: Provide the following cue: <b>Another RO will carry out OP 3219, "Post-Transient MCB Walkdown".</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.6

Revision: 0/1

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

<b>STEP # 4 5</b>	Performance: <b>10. Determine If Plant Operation Can Continue</b> <ul style="list-style-type: none"><li>• T/S 3.3.2, Engineered Safety Features Actuation System Instrumentation</li><li>• T/S 3.3.3.1, Radiation Monitoring For Plant Operation</li><li>• T/S 3.4.5, Relief Valves</li><li>• T/S 3.4.6.1, Reactor Coolant System Leakage Detection System</li></ul>	Critical: Y <input type="checkbox"/> N <input type="checkbox"/>
	Standard: Candidate informs the US to refer to T/S 3.3.2, 3.3.3.1, 3.4.5 and 3.4.6.1.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.6

Revision: 0/1

Task Title: Respond to an Inadvertent Containment Isolation Phase 'A'

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

#### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	12	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	<input checked="" type="checkbox"/> N/A
Operator Fundamentals:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	<input checked="" type="checkbox"/> N/A
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	<input checked="" type="checkbox"/> N/A
Attached Question #1	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
Attached Question #2	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
Overall Result of JPM:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 S.6

Revision: 0/1

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.6

Revision: 0/1

Initial Conditions: The plant was at 100% power when an Inadvertent Containment Isolation Phase A (CIA) occurred while conducting SSPS surveillance testing.

Initiating Cues: The US has directed you to carry out the actions of AOP 3578, *Response to an Inadvertent Containment Isolation Phase A*, starting with step 1.



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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Transferring 34D To Offsite Power

JPM Number: 2K15 S.7 Revision: 0

Initiated:

John Follett

  
Developer

7-1-15

Date

Reviewed:

Robert Royce Art Royce  
Technical Reviewer

7-1-15

Date

Approved:

 P.H. Scott

Facility Reviewer

7/8/15

Date

JPM Number: 2K15 S.7

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## **JPM WORKSHEET**

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.7                      Revision: 0

Task Title: Transferring 34D To Offsite Power

System: AC Electrical Distribution

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 15

Task Number(s): 062-01-049

Applicable To:            SRO \_\_\_\_\_ STA \_\_\_\_\_ RO X    PEO \_\_\_\_\_

K/A Number: 062-A2.12            K/A Rating: 3.2 / 3.6

Method of Testing:    Simulated Performance: \_\_\_\_\_            Actual Performance: X

Location:            Classroom: \_\_\_\_\_            Simulator: X            In-Plant: \_\_\_\_\_

Task Standards:            Satisfactorily complete restoring off site power to a 4.16 KV bus during the recovery from a loss of power.

Required Materials:  
(procedures, equipment, etc.)

General References:            GA-2, Transferring 34C Or 34D to Offsite Power, Rev. 003

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.7

Revision : 0

Initial Conditions: A temporary UV condition has resulted in bus 34D being powered by the "B" EDG. Bus 34B is powered by the NSSA.

Initiating Cues: The US has directed you to transfer emergency bus 34D to offsite power using GA-2. The diesel is to remain loaded.

- Simulator Requirements:
1. Reset to **IC-354**, Cold Shutdown RCS Pressure  $\cong$  75 psia, temperature  $\cong$  100°F.
  2. Insert malfunction ED04D (34D bus differential lockout). Place the simulator in "RUN".
  3. After the plant stabilizes, remove the malfunction. The "B" EDG output breaker will auto close and energize bus 34D. Adjust "B" EDG frequency to 60 Hz.
  4. Match flags for 34D - 34B tie breaker. Close the breakers for the "B" train emergency load centers.
  5. **Match Bus Voltage, 34D to 34B.**
  6. Acknowledge the clear/reset alarms and place the simulator in "FREEZE".
  7. After the examinee has received the initiating cues and initial conditions, place the simulator in "RUN".
- Approximate setup time is 4 minutes.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

PERFORMANCE INFORMATION

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

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

<b>STEP # 1</b>	Performance: Obtain a copy of GA-2.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Obtains a copy of GA-2.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 2</b>	Performance: <b>1. Check Transfer Of Bus 34C – DESIRED</b> RNO– Proceed to step 11.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Recognizes from turnover that transfer of Bus 34D desired, proceeds to step 11.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 3</b>	Performance: <b>11. Check Transfer Of Bus 34D – DESIRED</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Confirms that transfer of bus 34D is desired, proceeds to step 12.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

<b>STEP # 4</b>	Performance: <b>12. Check Source Supplying Bus 34D – EDG B</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Confirms that EDG B is supplying Bus 34D by one of the following methods: <ul style="list-style-type: none"> <li>Recalls that Initiating Cue stated EDG B is supplying Bus 34D.</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>Confirms that EDG B SPLY breaker DGB*34D-2 is closed by observing indicating lights are green OFF, red ON.</li> <li>Confirms that 34D–34B TIE breaker 34D*1T-2 is open by observing indicating lights are green ON, red OFF.</li> </ul>	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 5</b>	Performance: <p style="text-align: center;"><b><u>NOTE</u></b> Switching from “UNIT” to “PARALLEL” will cause diesel generator frequency to decrease.</p>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews NOTE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 6</b>	Performance: <b>13. Prepare For EDG B Parallel Operations</b> <ul style="list-style-type: none"> <li>a. Reset LOP (MB2)</li> </ul>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Depresses the train "B" LOP RESET pushbutton on MB2.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments: The examinee may also push the Train A LOP reset pushbutton.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

<b>STEP # 7</b>	Performance: b. Verify annunciator BUS 34D UNDERVOLTAGE (MB8C 3-2) – <u>NOT</u> LIT	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Confirms annunciator MB8C 3-2 is <u>NOT</u> in alarm and proceeds to step c.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 8</b>	Performance: c. Press BYPASS for 34D undervoltage block pushbutton (MB8R)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Presses the BYPASS pushbutton for 34D U/V block.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 9</b>	Performance: d. Observe undervoltage block white light – <u>NOT</u> LIT	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Observes the UNDERVOLT RLY OPER white light is OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 10</b>	Performance: e. Adjust diesel SPEED/LOAD switch to obtain frequency 60.8 Hz	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the EDG B "SPEED/LOAD" switch to RAISE or LOWER as necessary to obtain a diesel frequency of 60.8 Hz.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

<b>STEP # 1 1</b>	Performance: f. Place B diesel Mode Selector in PARALLEL	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the EDG B "MODE SEL" switch to PARALLEL.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 2</b>	Performance: g. Adjust diesel SPEED/LOAD switch to maintain frequency between 59.9 to 60.1 Hz	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the EDG B "SPEED/LOAD" switch to RAISE or LOWER as necessary to obtain a diesel frequency of 59.9 to 60.1 Hz.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 3</b>	Performance: <div style="text-align: center;"><u><b>NOTE</b></u> The RSSA is "INCOMING" and the EDG is "RUNNING."</div>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews NOTE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	



**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

<b>STEP # 1 4</b>	Performance: <b>14. Check EDG B Parallel To RSSA – DESIRED</b> <b>RNO– Proceed to step 15.</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Recalls from the Initiating Cue that Bus 34B is powered by the NSSA and proceeds to step 15.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 5</b>	Performance: <div style="text-align: center;"><b><u>NOTE</u></b> The NSSA is “INCOMING” and the EDG is “RUNNING.”</div>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews NOTE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 1 6</b>	Performance: <b>15. Parallel EDG B Diesel To NSSA Through 34B–34D Tie Breaker</b> a. Check 34B energized from NSST	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Confirms that NSSA – SPLY breaker NSSA – 34B-2 is closed by observing indicating lights are green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

<b>STEP</b> # 1 7	Performance: b. Place 34B–34D tie Sync Selector switch in ON	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Places Sync Selector key into the lock for SYNC SEL switch 34D–34B TIE (if necessary) and rotates the switch to ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP</b> # 1 8	Performance: c. Synchronize and CLOSE – 34B–34D tie breaker (34D*1T–2)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Synchronizes the incoming and running sources, then rotates the 34B-34D TIE breaker 34D*1T-2 to the CLOSE position and observes the lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP</b> # 1 9	Performance: d. Place 34B–34D tie synchronizing selector switch in OFF	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Rotates the SYNC SEL switch 34D–34B TIE to OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

<b>STEP</b> <b># 2 0</b>	Performance: e. Release BYPASS pushbutton at MB8R, if required	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Marks the step N/A.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.7

Revision: 0

Task Title: Transferring 34D To Offsite Power

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 S.7

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.7

Revision: 0

Initial Conditions: A temporary UV condition has resulted in bus 34D being powered by the "B" EDG.  
Bus 34B is powered by the NSSA.

Initiating Cues: The US has directed you to transfer emergency bus 34D to offsite power using GA-2.  
The diesel is to remain loaded.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Stop Auxiliary Building Filtration (Lower Levels)

JPM Number: 2K15 S.8 Revision: 0

Initiated:

John Follett

  
Developer

7-1-15

Date

Reviewed:

Robert Royce R.R. Royce  
Technical Reviewer

7-1-15

Date

Approved:

P.H. Scott  
Facility Reviewer

7/8/15

Date

JPM Number: 2K15 S.8

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE



## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 S.8                      Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

System: Reactor Plant Ventilation

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 10

Task Number(s): 088-01-005

Applicable To:            SRO \_\_\_\_\_    STA \_\_\_\_\_    RO X    PEO \_\_\_\_\_

K/A Number:    APE: 060-AA2.06    K/A Rating:    3.6 / 3.8  
                         APE: 060-AA1.02                      2.9 / 3.1

Method of Testing:    Simulated Performance: \_\_\_\_\_    Actual Performance: X

Location:            Classroom: \_\_\_\_\_    Simulator: X    In-Plant: \_\_\_\_\_

Task Standards:            Satisfactorily complete stopping filtered exhaust of the lower levels of the Auxiliary Building in accordance with OP 3314A, "Auxiliary Building Heating, Ventilation and Air Conditioning"

Required Materials:    Simulator  
(procedures, equipment, etc.)

General References:    OP 3314A, Auxiliary Building Heating, Ventilation and Air Conditioning,  
Rev. 023-13

### \*\*\* READ TO THE EXAMINEE \*\*\*

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 S.8

Revision : 0

Initial Conditions: Maintenance activities on the boron evaporator are complete, radiation monitor HVR-RE12 is no longer in alarm. The Aux Building Filter is no longer required to be in service.

Initiating Cues: The US has directed you to stop manual area filtration of the lower levels of the Auxiliary Building per OP 3314A, Section 4.5.

Simulator Requirements:

1. Reset to **IC-355**.
2. Place the simulator in "RUN".
3. Verify 3HVR\*FN14A and 3HVR\*FN14B, charging and RPCCW pump supply fans, in "AUTO"(VP1) with the "A" train running.

### **\* \* \* \* NOTES TO TASK PERFORMANCE EVALUATOR \* \* \* \***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.8

Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

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

<b>STEP # 1</b>	Performance:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
	<b>4.5 Stopping Manual Area Filtration of Auxiliary Building General Area Lower Levels</b>		
	4.5.1 STOP 3HVR-HVU2B, "AUX BLDG" HVU's" (VP1).		
	Standard: Rotates control switch to STOP for 3HVR-HVU2B and observes green ON red OFF indications		Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:		
	Comments:		
<b>STEP # 2</b>	Performance:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>	
	4.5.2 STOP 3HVR-FN7, "AUX BLDG" "EXH FANS" (VP1).		
	Standard: Rotates control switch to STOP for 3HVR-FN7 and observes green ON red OFF indications.		Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:		
	Comments:		
<b>STEP # 3</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	
	<b><u>NOTE</u></b> 3HVR*AOD44A and 3HVR*AOD44B have a cycle time of approximately 45 seconds.		
	Standard: Reviews Note.		Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:		
	Comments:		

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.8

Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

<b>STEP # 4</b>	<p>Performance:</p> <p>4.5.3 <u>IF</u> stopping 3HVR*FN6A, filter exhaust fan unit, PERFORM the following (VP1):</p> <p style="margin-left: 20px;">a. PRESS “NORMAL” for 3HVR*AOD44A, charging and RPCCW pump normal exhaust for Train A, and ENSURE 3HVR*AOD44A, normal exhaust, opens.</p>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>
	<p>Standard:</p> <p>Presses “NORMAL” pushbutton for 3HVR*AOD44A and confirms the following indications are observed:</p> <ul style="list-style-type: none"> <li>3HVR*AOD44A, green light OFF, red light ON</li> </ul>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:	
	Comments:	
<b>STEP # 5</b>	<p>Performance:</p> <p style="margin-left: 20px;">b. PLACE 3HVR*FN6A, filter exhaust fan unit, in “STOP” and HOLD.</p> <p style="margin-left: 20px;">c. <u>WHEN</u> the following occurs, RELEASE 3HVR*FN6A control switch:</p> <ul style="list-style-type: none"> <li>3HVR*AOD20A, filter supply, closes</li> <li>3HVR*MOD28A, filter exhaust, closes</li> <li>3HVR*FN6A, exhaust fan, stops</li> <li>Filter bank heater, deenergizes</li> </ul>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>
	<p>Standard:</p> <p>Presses and holds “FILTER” pushbutton for 3HVR*AOD44A until the following indications are observed:</p> <ul style="list-style-type: none"> <li>3HVR*AOD20A, green light ON, red light OFF</li> <li>3HVR*MOD28A, green light ON, red light OFF</li> <li>3HVR*FN6A, green light ON, red light OFF</li> <li>FLT1A HTR1 red light OFF</li> <li>FLT1A HTR2 red light OFF</li> </ul>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.8

Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

<b>STEP # 6</b>	Performance: 4.5.4 <u>IF</u> stopping 3HVR*FN6B, filter exhaust fan unit, PERFORM the following (VP1):	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Marks step "NA" and moves to next step.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP # 7</b>	Performance: 4.5.5 To shift Auxiliary Building filters to unfiltered alignment, PERFORM the following (VP1): a. PRESS and HOLD "NORMAL" pushbutton for the following dampers: <ul style="list-style-type: none"><li>• 3HVR*AOD40A, normal exhaust damper</li><li>• 3HVR*AOD42A, filter supply damper</li></ul> b. <u>WHEN</u> the following dampers reposition, RELEASE "NORMAL" pushbutton <ul style="list-style-type: none"><li>• 3HVR*AOD40A, normal exhaust damper, opens</li><li>• 3HVR*AOD42A, filter supply damper, closes</li></ul>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Presses and holds the "NORMAL" pushbutton for filter/normal exhaust dampers 3HVR*AOD40A/42A until the indicating lights shift to 3HVR*AOD40A, green OFF, red ON and 3HVR*AOD42A indicating lights shift to green ON, red OFF, THEN releases the pushbutton.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 S.8

Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

<b>STEP</b> # 8	Performance: c. PRESS and HOLD "NORMAL" pushbutton for the following dampers: <ul style="list-style-type: none"><li>• 3HVR*AOD40B, normal exhaust damper</li><li>• 3HVR*AOD42B, filter supply damper</li></ul> d. <u>WHEN</u> the following dampers reposition, <u>RELEASE</u> "NORMAL" pushbutton: <ul style="list-style-type: none"><li>• 3HVR*AOD40B, normal exhaust, opens</li><li>• 3HVR*AOD42B, filter supply damper, closes</li></ul>	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Presses and holds the "NORMAL" pushbutton for filter/normal exhaust dampers 3HVR*AOD40B/42B until the indicating lights shift to 3HVR*AOD40B, green OFF, red ON and 3HVR*AOD42B indicating lights shift to green ON, red OFF, THEN releases the pushbutton.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	
<b>STEP</b> # 9	Performance: 4.5.6 START 3HVR-FN7, "AUX BLDG" "EXH FANS" (VP1).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the control switch for 3HVR-FN7 to "START" and observes the indicating lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 S.8

Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

<b>STEP # 1 0</b>	Performance: 4.5.7 START 3HVR-HVU2B, "AUX BLDG" "HVU's" (VP1)	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates the control switch for 3HVR-HVU2B to "START" and observes the indicating lights shift to green OFF, red ON.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 S.8

Revision: 0

Task Title: Stop Auxiliary Building Filtration (Lower Levels)

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

#### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	10	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	<input checked="" type="checkbox"/> N/A
Operator Fundamentals:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	<input checked="" type="checkbox"/> N/A
JPM Question Portion Overall [NLO only]:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	<input checked="" type="checkbox"/> N/A
Attached Question #1	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
Attached Question #2	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	
Overall Result of JPM:	<input type="checkbox"/> SAT	<input type="checkbox"/> UNSAT	

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

Print / Sign

Areas for Improvement / Comments:




JPM Number: 2K15 S.8

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**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## **STUDENT HANDOUT**

JPM Number: 2K15 S.8

Revision: 0

Initial Conditions: Maintenance activities on the boron evaporator are complete, radiation monitor HVR-RE12 is no longer in alarm. The Aux Building Filter is no longer required to be in service.

Initiating Cues: The US has directed you to stop manual area filtration of the lower levels of the Auxiliary Building per OP 3314A, Section 4.5.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

JPM Number: 2K15 P.1 Revision: 0

Initiated:

John Follett

  
Developer

7-8-15

Date

Reviewed:

Bob Royce

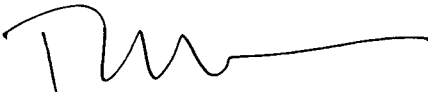
  
Technical Reviewer

7-8-15

Date

Approved:

Paul Scott

  
Facility Reviewer

7/8/15

Date

JPM Number: 2K15 P.1

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## JPM WORKSHEET

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 P.1                      Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

System: \_\_\_\_\_

Time Critical Task:                      ☐ YES    ☒ NO

Validated Time (minutes): 16

Task Number(s): 344-05-017

Applicable To:                      SRO X      STA \_\_\_\_\_      RO X      PEO X

K/A Number: 065-AA1.04                      K/A Rating: 3.5/3.4

Method of Testing:      Simulated Performance: X                      Actual Performance: \_\_\_\_\_

Location:                      Classroom: \_\_\_\_\_                      Simulator: \_\_\_\_\_                      In-Plant: X

Task Standards:                      Satisfactorily perform the local actions on a loss of instrument air as specified in AOP 3562, *Loss of Instrument Air*, Attachment A and OP 3332A, *Instrument Air System*.

Required Materials:                      None.  
(procedures, equipment, etc.)

General References:                      AOP 3562, Loss of Instrument Air, Rev. 011  
OP 3332A, Instrument Air System, Rev. 015-05  
ARP 3353.IS 3-2, Air Dryer Reactivation Blower Fail, Rev. 001-03

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## **JPM WORKSHEET**

JPM Number: 2K15 P.1

Revision : 0

Initial Conditions: A loss of instrument air has occurred and the Control Room Team is carrying out the actions of AOP 3562, *Loss of Instrument Air*. Steps 1 and 2.a are complete, but instrument air pressure continues to decrease. Actions in accordance with the "Response Not Obtained" column are required.

Initiating Cues: The US has directed you to locally start air compressors and perform filter and dryer checks using Attachment A of AOP 3562, *Loss of Instrument Air*.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

4. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
5. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
6. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
7. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

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

**Comments to Evaluator:**

- 1) Step 1 of Attachment A (AOP 3562) makes the examinee aware of an alarm condition for a *dryer* failure. The examinee may be expecting to find *air compressor* failures and may choose to ignore the alarm condition. As a result, different procedural flow paths may be followed. The candidate may elect to perform the Annunciator Response Procedure (ARP) for the dryer failure, or move through steps 1 and 2 of Attachment A to address compressor issues. Either path will result in placing the emergency dryer in service, so either path is acceptable.
- 2) Mark unused steps with "N/A" in the "Grade" area when directed.
- 3) If requested for status of receiver pressure 3IAS-PI23A, provide the cue: **Pressure is approximately 110 psi.**
- 4) If requested for status of receiver pressure 3IAS-PI23B, provide the cue: **Pressure is approximately 110 psi.**
- 5) If requested for status of dryer inlet pressure 3IAS-PI39A, provide the cue: **Pressure is approximately 110 psi.**
- 6) If requested for status of dryer inlet pressure 3IAS-PI39B, provide the cue: **Pressure is approximately 0 psi.**
- 7) If requested for status of the 'A' air compressor, provide the cue: **The 'A' compressor is running with the control switch in CS.**
- 8) If requested for status of the 'B' air compressor, provide the cue: **The 'B' compressor is running with the control switch in CS.**

**STEP Performance: AOP 3562 Attachment A:**

**# 1**

**1. Perform The Following:**

- a. Refer To appropriate instrument and service air compressor annunciator response procedures and Restore air compressors to service.

**Standard:**

Locates panel IS (Turbine Building 14' elev. SW corner facing west wall) and observes alarm status.

**Cue:**

- When requested provide the cue: **Window IS 3-2 AIR DRYER REACTIVATION BLOWER FAIL is in alarm. All other windows are NOT lit.**
- When requested, **provide the ARP for OP 3353.IS window 3-2.**

**Comments:**

If examinee does not perform ARP IS 3-2 instructions, document "N/A" on STEP #2 and proceed to STEP #3.

**Critical:**

Y ☐ N ☒

**Grade:**

S ☐ U ☐

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 2</b>	<b>Performance: ARP OP 3353.IS 3-2, AIR DRYER REACTIVATION BLOWER FAIL:</b> <b><u>CORRECTIVE ACTIONS</u></b> 1. Refer To OP 3332A, "Instrument Air System," and PLACE 3IAS-DRY2, emergency instrument air dryer, in service.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Proceeds to OP 3332A.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: When requested, <b>provide a copy of OP 3332A, Instrument Air System.</b>	
	Comments: If examinee is proceeding to OP 3332A, document "N/A" on STEP #3 through STEP #8 and proceed to OP 3332A instructions at STEP #9.	
<b>STEP # 3</b>	<b>Performance: AOP 3562 Attachment A step 1:</b> b. Place both instrument air compressor control switches to CS (continuous service)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates control switch for 3IAS-C1A (North of 'A' compressor on top of panel) and checks switch position.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: <b>The control switch is in the CS position.</b>	
	Standard: Locates the control switch for 3IAS-C1B (North of 'B' compressor on top of panel), checks switch position.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: <b>The control switch is in the CS position.</b>	
	Comments: These switches may be addressed in any order.	
<b>STEP # 4</b>	<b>Performance: AOP 3562 Attachment A step 1:</b> c. Place the service air compressor control switch to CS (continuous service)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates control switch for 3SAS-C1 (North of SA compressor on top of panel) and checks switch position.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: <b>The control switch is in the CS position.</b>	
	Comments:	



## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 5</b>	Performance: <b>AOP 3562 Attachment A step 1:</b> d. CLOSE service air header supply valve (3SAS-AOV33)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates valve 3SAS-AOV33 control switch (on IAS Panel) and positions switch to CLOSE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: <b>Green light is OFF and red light is ON.</b>	
	Comments:	
<b>STEP # 6</b>	Performance: <b>AOP 3562 Attachment A step 1:</b> e. OPEN service air to instrument air cross-connect valve (3IAS-AOV14)	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates valve 3IAS-AOV14 control switch (on IAS Panel) and and positions switch to OPEN.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: <b>Green light is ON and red light is OFF.</b>	
	Comments:	
<b>STEP # 7</b>	Performance: <b>AOP 3562 Attachment A:</b> <b>2. Verify The Following Instrument Air Dryer Annunciators – NOT LIT</b> <ul style="list-style-type: none"> <li>AIR DRYER REACTIVATION BLOWER FAIL (IS 3-2)</li> <li>AIR DRYER HEATER TEMP HI (IS 3-3)</li> <li>AIR DRYER DISCHARGE MOIST HI (IS 3-4)</li> <li>ALARM BLOWER FAILURE (Dryer Skid, 3IAS-PNLCP1)</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates panel IS (Turbine Building 14' elev. SW corner facing west wall) and verifies the alarms are not lit.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: 1) When requested provide the cue: <b>Window IS 3-2 AIR DRYER REACTIVATION BLOWER FAIL is in alarm. All other windows are NOT lit.</b> 2) If requested, <b>provide the ARP for OP 3353.IS window 3-2.</b>	
	Standard: Locates panel CP1 (behind air dryer) and verifies the ALARM BLOWER FAILURE lamp is not lit.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: When requested provide the cue: <b>ALARM BLOWER FAILURE lamp is lit.</b>	
	Comments: The examinee may verify alarm/lamp status in any order.	

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

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Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 8</b>	Performance: <b>AOP 3562 Attachment A</b> <b>RNO for step 2.</b> – Using OP 3332A, “Instrument Air System,” Place 3IAS-DRY1 or 3IAS-DRY2, emergency instrument air dryer, in service.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Proceeds to OP 3332A.	Grade: S <input type="checkbox"/> U <input type="checkbox"/> N/A <input type="checkbox"/>
	Cue: When requested, <b>provide a copy of OP 3332A, Instrument Air System.</b>	
	Comments:	
<b>STEP # 9</b>	Performance: <b>OP 3332A, Instrument Air System:</b> <b>4.3 Operation of Instrument Air Dryers 3IAS-DRY1 and 3IAS-DRY2</b>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates section 4.3, Operation of Instrument Air Dryers 3IAS-DRY1 and 3IAS-DRY2.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

## PERFORMANCE INFORMATION

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Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 1 0</b>	<p>Performance:</p> <p style="text-align: center;"><b>NOTE</b></p> <ol style="list-style-type: none"> <li>1. Instrument air dryer is only removed from service for maintenance.</li> <li>2. When 3IAS-DRY2, emergency instrument air dryer, will be in service during cold weather, evaluate the need for compensatory measures due to moisture in the air lines. Air supply lines to 3BDG-HV20A, B, C, &amp; D have been susceptible to freezing. Periodic blowdown of air supply regulators to 3BDG-HY20A2, 3BDG-HY20B2, 3BDG-HY20C2, &amp; 3BDG-HY20D2, blowdown flow control valve current/pneumatic converters may be necessary.</li> <li>3. 3IAS-DRY2 is capable of drying air to 55% relative humidity. The dew point will change as the temperature of air entering the dryer changes Over the normal range of instrument air temperatures at the outlet of the aftercooler, dew point of the instrument air is not expected to be &lt; 40°F. This is significantly higher than the dew point provided by the normal dryer. Moisture will begin to condense out of the instrument air when ambient temperature (where the instrument air pipe is located) drops below the dew point of the instrument air. Blowing down the air header will not improve air quality, it will only remove accumulated condensation from the header.</li> </ol>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard: Reviews NOTE.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue:</p>	
	<p>Comments:</p>	
<b>STEP # 1 1</b>	<p>Performance:</p> <p>4.3.1 <u>IF</u> outside air temperature is expected to drop to less than 50°F AND 3IAS-DRY2 has been in service for at least 24 hours, Refer To SP 3670.3, "Control of Temporary Logs," and CREATE a Temporary Log to document component blowdown:</p>	<p>Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/></p>
	<p>Standard: Reads the step and moves on.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: Provide the cue: <b>The control room will handle creation of all applicable Temporary Logs.</b></p>	
	<p>Comments:</p>	

## PERFORMANCE INFORMATION

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Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 1 2</b>	Performance: 4.3.2 <u>IF</u> desired to place 3IAS-DRY2, emergency instrument air dryer, in service <u>AND</u> remove 3IAS-DRY1, instrument air dryer, from service, <b>PERFORM</b> the following:  a. ENSURE 3IAS-DRY2, emergency instrument air dryer, chemical drying agent is visible in bulls eye.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Locates bulls eye and observes chemical drying agent is visible.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If necessary, provide the cue: <b>Chemical drying agent is visible in bulls eye.</b>	
	Comments:	
<b>STEP # 1 3</b>	Performance: b. THROTTLE open 3IAS-V991, emergency instrument air dryer inlet isolation valve.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates handwheel in the CCW direction until air is heard issuing into the dryer.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>You hear air rapidly issuing into the dryer, after several minutes the rate slows until it can no longer be heard.</b>	
	Comments:	

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Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 1 4</b>	Performance:	
	c. WHEN pressure stops increasing on 3IAS-PI 105 (local), fully OPEN 3IAS-V991, emergency instrument air dryer inlet isolation valve.	
	Standard: Locates 3IAS-PI 105 and observes pressure.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When requested provide the cue: <b>Pressure indicates approximately 110 psi and stable.</b>	
	Standard: Rotates 3IAS-V991CCW until a hard stop is met, then rotates handwheel CW 1/4 turn.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/> Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The handwheel rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</b>	
Comments:		
<b>STEP # 1 5</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>NOTE</b>	
	The air dryer blowdown liquid (a salt slurry) cannot be discharged to floor drains. This salt slurry contains a sodium/magnesium chlorite mixture (MSDS No. 00000129, "DRY-O-LITE") which is not permitted for discharge through DSN 006 (storm drains). It should be collected in a non-metallic container.	
	Standard: Reviews NOTE.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
Comments:		

## PERFORMANCE INFORMATION

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Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 1 6</b>	Performance: d. To blowdown 3IAS-DRY2, emergency instrument air dryer, PERFORM the following: 1) OBTAIN a non-metallic drum to contain blowdown liquid.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Describes the location of a non-metallic drum.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: 1. Question examinee as follows: <b>Where is a non-metallic drum located?</b> 2. Once satisfied with the response, provide the cue: <b>You have a non-metallic drum.</b>	
	Comments:	
<b>STEP # 1 7</b>	Performance: 2) CONNECT a hose to 3IAS-V810, emergency dryer inlet drain, and DIRECT other end into a non-metallic container.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: 1. Describes the location of a drain hose, fittings and tools. 2. Locates 3IAS-V810 and connects hose between valve and non-metallic drum.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: 1. Question examinee as follows: <b>Where are hoses, fittings and tools located?</b> 2. When satisfied with the response, provide the cue: <b>You have a hose, fittings and tools.</b> 3. When examinee describes connection, provide the cue: <b>The hose is connected.</b>	
	Comments:	
<b>STEP # 1 8</b>	Performance: 3) THROTTLE open 3IAS-V810, emergency dryer inlet drain.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates handwheel in the CCW direction until air is heard issuing into the non-metallic drum.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>You hear air and moisture issuing into the non-metallic drum, after several minutes only air can be heard.</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 1 9</b>	Performance: 4) WHEN moisture-free air issues, CLOSE 3IAS-V810, emergency dryer inlet drain.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates 3IAS-V810CW until a hard stop is met.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The handwheel rotates CW until a hard stop is met.</b>	
	Comments:	
<b>STEP # 2 0</b>	Performance: 5) CONNECT a hose to 3IAS-V488, emergency dryer drain, and DIRECT other end into a non-metallic container.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Disconnects hose from 3IAS-V810. Locates 3IAS-V488 and connects hose between valve and non-metallic drum.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: When examinee describes connection, provide the cue: <b>The hose is connected.</b>	
	Comments:	
<b>STEP # 2 1</b>	Performance: 6) THROTTLE open 3IAS-V488, emergency dryer drain.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates handwheel in the CCW direction until air is heard issuing into the non-metallic drum.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>You hear air and moisture issuing into the non-metallic drum, after several minutes only air can be heard.</b>	
	Comments:	
<b>STEP # 2 2</b>	Performance: 7) WHEN moisture-free air issues, CLOSE 3IAS-V488, emergency dryer drain.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Rotates 3IAS-V488 CW until a hard stop is met.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The handwheel rotates CW until a hard stop is met.</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP # 2 3</b>	Performance: 8) WHEN collection container is near full, REQUEST Waste Services Department dispose of contents.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Checks contents of collection container and moves on to next step.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The non-metallic drum is nearly empty.</b>	
	Comments:	
<b>STEP # 2 4</b>	Performance: e. OPEN 3IAS-V990, emergency instrument air dryer outlet isolation valve.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates 3IAS-V990, rotates handwheel CCW until a hard stop is met, then rotates handwheel CW 1/4 turn.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The handwheel rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</b>	
	Comments:	
<b>STEP # 2 5</b>	Performance: f. CLOSE 3IAS-V989, instrument air dryer inlet isolation valve.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates 3IAS-V989 and rotates handwheel CW until a hard stop is met.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The handwheel rotates CW until a hard stop is met.</b>	
	Comments:	
<b>STEP # 2 6</b>	Performance: g. CLOSE 3IAS-V988, instrument air dryer outlet isolation valve.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates 3IAS-V988 and rotates handwheel CW until a hard stop is met.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The handwheel rotates CW until a hard stop is met.</b>	
	Comments:	



## PERFORMANCE INFORMATION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

<b>STEP</b> <b># 2 7</b>	Performance: h. PLACE 3IAS-SWDRY1, instrument air dryer, "DISCONNECT SWITCH" in "OFF" (3IAS-PNLDS).	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates DISCONNECT SWITCH 3IAS-SWDRY1 and places the switch in OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>The switch is in OFF.</b>	
	Comments:	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 P.1

Revision: 0

Task Title: LOCAL ACTIONS ON LOSS OF INSTRUMENT AIR

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

#### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	16	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 P.1

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## STUDENT HANDOUT

JPM Number: 2K15 P.1

Revision: 0

Initial Conditions: A loss of instrument air has occurred and the Control Room Team is carrying out the actions of AOP 3562, *Loss of Instrument Air*. Steps 1 and 2.a are complete, but instrument air pressure continues to decrease. Actions in accordance with the "Response Not Obtained" column are required.

Initiating Cues: The US has directed you to locally start air compressors and perform filter and dryer checks using Attachment A of AOP 3562, *Loss of Instrument Air*.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

JPM Number: 2K15 P.2 Revision: 0


Initiated:

John Follett  7-8-15  
Developer Date

Reviewed:

Bob Royce  7/8/15  
Technical Reviewer Date

Approved:

Paul Scott  7/8/15  
Facility Reviewer Date

JPM Number: 2K15 P.2

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## **JPM WORKSHEET**

Facility: MP3                      Examinee: \_\_\_\_\_

JPM Number: 2K15 P.2                      Revision: 0

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

System: AC Electrical Distribution

Time Critical Task:            ☐ YES    ☒ NO

Validated Time (minutes): 15

Task Number(s): 000-05-051, 600-05-019

Applicable To:            SRO X      STA \_\_\_\_\_      RO X      PEO X

K/A Number:            062-A4.04            K/A Rating:            2.6 / 2.7  
                                 EPE-011-EA2.08    3.4 / 3.9

Method of Testing:      Simulated Performance: X                      Actual Performance: \_\_\_\_\_

Location:                      Classroom: \_\_\_\_\_                      Simulator: \_\_\_\_\_                      In-Plant: X

Task Standards:            Satisfactorily complete Attachment D to ES-1.3, *Transfer To Cold Leg Recirculation*, for ESF and Auxiliary Building sump pumps.

Required Materials:  
(procedures, equipment, etc.)

General References:      ES-1.3, Transfer To Cold Leg Recirculation, Rev. 016-00  
                                 SA-AA-125, Electrical Safety, Rev. 015

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 P.2

Revision : 0

Initial Conditions: A Loss of Coolant Accident has occurred which resulted in a reactor trip and safety injection. The Control Room team has carried out the applicable EOPs, and is currently performing step 8 and Attachment D of ES-1.3, *Transfer To Cold Leg Recirculation*. The plant is aligned for Cold Leg Recirculation.

Initiating Cues: The US has directed you to perform Step 3 of Attachment D to ES-1.3, for ESF and Auxiliary Building sump pumps.  
The control Room team will carry out steps 1 and 2 of Attachment D to verify proper operation of the ESF building Groundwater Sump Pump, 3SRW-P5.  
You have been briefed and have checked out with the Control Room DSEO and RMT1.  
You will be accompanied by an HP Technician.

### **\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).



## PERFORMANCE INFORMATION

JPM Number: 2K15 P.2

Revision: 0

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

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

Comments for Evaluator:

1. Breakers may be performed in any order.
2. Examinee may elect to bypass the Loss of Control Power Alarm by taking the Bypass switch from "Normal" to "Bypass" on steps associated with MCC breakers. This is NOT required for successful completion of this JPM.
3. If requested, **Provide examinee with a copy of SA-AA-125.**
4. If examinee uses SA-AA-125, "Electrical Safety" to look up required electrical safety PPE, they should conclude that minimum PPE is leather gloves, natural fiber clothing, and long sleeve shirt. It is acceptable for examinee to go beyond the minimum.
5. Examinee is NOT required to don electrical safety PPE for this JPM. If necessary, provide the cue: **You have donned all required electrical safety PPE.**
6. WHEN the examinee is at the RCA HP desk and has concluded their entry brief, provide the cue: **The HP Technician informs you that radiological conditions preclude access to the ESF Building.**

<b>STEP # 1</b>	Performance: <b>ES-1.3 Attachment D, NOTE prior to step 1:</b> <div style="text-align: center;"><u><b>NOTE</b></u></div> <ul style="list-style-type: none"> <li>3., de-energize ESF and Auxiliary Building sump pumps should be performed within 24 hours following event initiation using HP coverage.</li> </ul>	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reviews NOTE for Step 3.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If requested, provide the cue: <b>An HP Tech will accompany you on your task.</b>	
	Comments:	
<b>STEP # 2</b>	Performance: <b>ES-1.3 Attachment D:</b> 3. Place the breakers for the sump pumps listed in Table 1 to OFF.  <u>IF</u> radiological conditions preclude access to the MCC, <u>THEN</u> using Table 2, deenergize the associated MCC at its load center.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Reads step 3 and skips over MCC breakers located in the ESF building.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If examinee attempts to go to the ESF building provide the cue: <b>The HP Technician informs you that radiological conditions preclude access to the ESF Building.</b>	
	Comments:	

**PERFORMANCE INFORMATION**

JPM Number: 2K15 P.2

Revision: 0

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

<b>STEP #3</b>	Performance: At MCC 32-3G, PLACE breaker 2H to OFF.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates breaker 2H on MCC 32-3G (Aux Building, 24'), switches breaker 2H to OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Breaker handle is aligned to OFF.</b>	
	Comments:	
<b>STEP #4</b>	Performance: At MCC 32-3H, PLACE breaker 4D to OFF.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates breaker 4D on MCC 32-3H (Aux Building, 24'), switches breaker 4D to OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Breaker handle is aligned to OFF.</b>	
	Comments:	
<b>STEP #5</b>	Performance: At MCC 32-3H, PLACE breaker 4B to OFF.	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	Standard: Locates breaker 4B on MCC 32-3H (Aux Building, 24'), switches breaker 4B to OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Breaker handle is aligned to OFF.</b>	
	Comments:	
<b>STEP #6</b>	Performance: Move on to Table 2.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate recognizes that MCCs 32-2F and 32-2J will have to be deenergized at their respective load centers.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue:	
	Comments:	

# PERFORMANCE INFORMATION

JPM Number: 2K15 P.2

Revision: 0

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

<b>STEP # 7</b>	Performance:	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	<b>NOTE</b> Deenergizing MCC 32-2F will render ESF building ventilation monitor 3HVQ*RE49 inoperable.	
	Standard: Candidate reviews NOTE prior to Table 2 and recognizes that it <u>DOES</u> apply.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: If the examinee reports that deenergizing MCC 32-2F will render 3HVQ*RE49 inoperable, provide the following cue: <b>The control room has been notified.</b>	
	Comments:	
<b>STEP # 8</b>	Performance:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	At Bus 32F, OPEN breaker 8 - 2.	
	Standard: Locates feeder breaker for MCC 32-2F (8 - 2) on load center 32F (Service Building, 4'), rotates breaker control switch 8-2 to OPEN.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Control switch is in the OPEN position, breaker indicating lights switch to Green ON, Red OFF.</b>	
	Comments:	
<b>STEP # 9</b>	Performance:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	At Bus 32J, OPEN breaker 8 - 2.	
	Standard: Locates feeder breaker for MCC 32-2J (8 - 2) on load center 32J (Service Building, 4'), rotates breaker control switch 8-2 to OPEN.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Control switch is in the OPEN position, breaker indicating lights switch to Green ON, Red OFF.</b>	
	Comments:	

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.2

Revision: 0

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

<b>STEP # 1 0</b>	Performance: Notify the Control Room that Step 3 of Attachment D to ES-1.3 is complete.	Critical: Y <input type="checkbox"/> N <input checked="" type="checkbox"/>
	Standard: Candidate informs the US that step 3 of Attachment D to ES-1.3 is complete.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>TERMINATION CUE: The evaluation for this JPM is concluded.</b>	
	Comments:	

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 P.2

Revision: 0

Task Title: Align ESF and Auxiliary Building Sump Pumps, Post LOCA

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	15	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 P.2

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

## STUDENT HANDOUT

JPM Number: 2K15 P.2

Revision: 0

**Initial Conditions:** A Loss of Coolant Accident has occurred which resulted in a reactor trip and safety injection. The Control Room team has carried out the applicable EOPs, and is currently performing step 8 and Attachment D of ES-1.3, *Transfer To Cold Leg Recirculation*. The plant is aligned for Cold Leg Recirculation.

**Initiating Cues:** The US has directed you to perform Step 3 of Attachment D to ES-1.3, for ESF and Auxiliary Building sump pumps.  
The control Room team will carry out steps 1 and 2 of Attachment D to verify proper operation of the ESF building Groundwater Sump Pump, 3SRW-P5.  
You have been briefed and have checked out with the Control Room DSEO and RMT1.  
You will be accompanied by an HP Technician.

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

**JOB PERFORMANCE MEASURE APPROVAL SHEET**

JPM Title: Cross-Connect Service Water to East Switchgear Ventilation

JPM Number: 2K15 P.3 Revision: 0

Initiated:

John Follett

  
Developer

7-8-15

Date

Reviewed:

Bob Royce

  
Technical Reviewer

7/8/15

Date

Approved:

Paul Scott

  
Facility Reviewer

7/8/15

Date



JPM Number: 2K15 P.3

Revision: 0

**SUMMARY OF CHANGES**

DATE	DESCRIPTION	REV/CHANGE

## **JPM WORKSHEET**

Facility: MP3 Examinee: \_\_\_\_\_

JPM Number: 2K15 P.3 Revision: 0

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

System: Service Water System

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 12

Task Number(s): 000-05-171

Applicable To: SRO X STA \_\_\_\_\_ RO X PEO X

K/A Number: 076-K1.19 K/A Rating: 3.6 / 3.7  
APE 068-AA1.21 3.9 / 4.1

Method of Testing: Simulated Performance: X Actual Performance: \_\_\_\_\_

Location: Classroom: \_\_\_\_\_ Simulator: \_\_\_\_\_ In-Plant: X

Task Standards: All critical steps are performed satisfactorily. All sequential steps are performed in proper procedural sequence.

Required Materials:  
(procedures, equipment, etc.)

General References: EOP 3509.1, Control Room, Cable Spreading Area or Instrument Rack Room Fire, Rev. 019

### **\*\*\* READ TO THE EXAMINEE \*\*\***

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

## JPM WORKSHEET

JPM Number: 2K15 P.3

Revision : 0

Initial Conditions: A fire occurred in the MP3 Control Room requiring evacuation. The crew is controlling the plant from the Auxiliary Shutdown Panel in accordance with EOP 3509.1.

Initiating Cues: The US has directed you to perform local actions to Align Equipment Ventilation for the East Switchgear Room by performing Steps 28.a and 28.b of EOP 3509.1. You have two 3095 keys and a locked valve key.

### **\*\*\*\*\* NOTES TO TASK PERFORMANCE EVALUATOR \*\*\*\*\***

1. Critical steps for this JPM are indicated by checking "Y". For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.
2. When the student states what his/her simulated action/observation would be, read the appropriate "Cue".
3. If necessary, question student for details of simulated actions/observations (i.e. "What are you looking at?" or "What are you observing?").
4. Under **NO** circumstances must the student be allowed to manipulate any devices during the performance of this JPM (in-plant only).

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.3

Revision: 0

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

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

**Evaluator Comments:**

1. If examinee asks for current ACU indicating light status, provide the following cue: **Cubicle 3J, green light lit. Cubicle 3M, red light lit.**
2. Bulleted procedure steps can be performed in any order.

<b>STEP # 1</b>	<b>Performance: EOP 3509.1</b>  <b>28. Align Equipment Ventilation</b>  a. START east switchgear ACUs: <ul style="list-style-type: none"><li>Using 3095 key at breaker 32-2T-3J, START 3HVC*ACU3A</li><li>Using 3095 key at breaker 32-2T-3M, START 3HVC*ACU4A</li></ul>	
	<b>Standard:</b> Locates 32-2T -3J in East Switchgear Room, 4'-6" elevation and simulates inserting 3095 key into key lock. Rotates key CW to START, verifies green indicating light OFF, red light ON.	<b>Critical:</b> Y <input checked="" type="checkbox"/> N <input type="checkbox"/> <b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> <b>Breaker is closed and 3HVC*ACU3A is running.</b>	
	<b>Standard:</b> Locates 32-2T -3M in East Switchgear Room, 4'-6" elevation and simulates inserting 3095 key into key lock. Rotates key CW to START, verifies green indicating light OFF, red light ON.	<b>Critical:</b> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> <b>Grade:</b> S <input type="checkbox"/> U <input type="checkbox"/>
	<b>Cue:</b> <b>Breaker is closed and 3HVC*ACU4A is running.</b>	
<b>Comments:</b>		

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.3

Revision: 0

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

<b>STEP # 2</b>	Performance:	Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
	b. Cross-connect service water to the switchgear room ACUs	
	1) At 3SCV*PNLR1(O) (Control Building 4'-6") Place breakers 19 and 22 to OFF	
	Standard: Locates 3SCV*PNLR1(O) in East Switchgear Room, opens panel door. Locates breaker 19, simulates sliding breaker 19 to OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
	Cue: <b>Breakers is OFF.</b>	
	Standard: Locates breaker 22, simulates sliding breakers 22 to OFF.	Grade: S <input type="checkbox"/> U <input type="checkbox"/>
Cue: <b>Breakers is OFF.</b>		
Comments:		

## PERFORMANCE INFORMATION

JPM Number: 2K15 P.3

Revision: 0

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

<b>STEP # 3</b>	<p>Performance:</p> <p>2) Locally Open service water cross-connect valves (W. Swgr, SW Encl Tube):</p> <ul style="list-style-type: none"> <li>• 3SWP*V745</li> <li>• 3SWP*V747</li> <li>• 3SWP*V744</li> <li>• 3SWP*V746</li> </ul>	<p>Critical: Y <input checked="" type="checkbox"/> N <input type="checkbox"/></p>
	<p>Standard: Locates valve 3SWP*V745. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until valve comes to a hard stop. Rotates valve CW 1/4 turn.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: <b>The handwheel (or handle) rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</b></p>	
	<p>Standard: Locates valve 3SWP*V747. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until valve comes to a hard stop. Rotates valve CW 1/4 turn.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: <b>• The handwheel (or handle) rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</b></p>	
	<p>Standard: Locates valve 3SWP*V744. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until valve comes to a hard stop. Rotates valve CW 1/4 turn.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: <b>• The handwheel (or handle) rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</b></p>	
	<p>Standard: Locates valve 3SWP*V746. Using locked valve key unlocks and removes chain. Rotates valve handwheel (or handle) CCW until valve comes to a hard stop. Rotates valve CW 1/4 turn.</p>	<p>Grade: S <input type="checkbox"/> U <input type="checkbox"/></p>
	<p>Cue: <b>• The handwheel (or handle) rotates CCW until a hard stop is met, then rotates CW 1/4 turn.</b></p>	
	<p>Comments:</p> <ul style="list-style-type: none"> <li>• Positioning valve off of the backseat is not a critical task.</li> <li>• For the two valves with position indication, provide cue: <b>Pointers are aligned vertically.</b></li> </ul>	

**TERMINATION CUE: The evaluation for this JPM is concluded.**

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

### VERIFICATION OF JPM COMPLETION

JPM Number: 2K15 P.3

Revision: 0

Task Title: Cross-Connect Service Water to East Switchgear Ventilation

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

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

For the student to achieve a satisfactory grade, **ALL** critical steps must be completed correctly.

If task is Time Critical, it **MUST** be completed within the specified time to achieve a satisfactory grade.

#### EVALUATION SECTION:

Time Critical Task?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Validated Time (minutes):	12	Actual Time to Complete (minutes):	
Work Practice Performance:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Operator Fundamentals:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
JPM Question Portion Overall [ <i>NLO only</i> ]:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT <input checked="" type="checkbox"/> N/A		
Attached Question #1	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Attached Question #2	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		
Overall Result of JPM:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT		

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

Print / Sign

Areas for Improvement / Comments:


JPM Number: 2K15 P.3

Revision: 0

**JPM QUESTIONS**

Question #1:	
Answer #1:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT

Question #2:	
Answer #2:	
Examinee Response:	
Grade:	<input type="checkbox"/> SAT <input type="checkbox"/> UNSAT



## **STUDENT HANDOUT**

JPM Number: 2K15 P.3


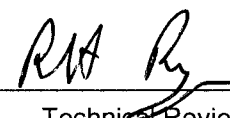

Revision: 0

Initial Conditions: A fire occurred in the MP3 Control Room requiring evacuation. The crew is controlling the plant from the Auxiliary Shutdown Panel in accordance with EOP 3509.1.

Initiating Cues: The US has directed you to perform local actions to Align Equipment Ventilation for the East Switchgear Room by performing Steps 28.a and 28.b of EOP 3509.1. You have two 3095 keys and a locked valve key.

SEG# 2K15 NRC-01 Rev ; 0

<b>SITE:</b>	<b>Millstone Power Station</b>	
<b>PROGRAM:</b>	<b>Unit 3 ILT</b>	
<b>COURSE:</b>	<b>N/A</b>	
<b>EXAM TITLE:</b>	<b>Four Faulted SG's – New Scenario</b>	<b>EXAM #: 2K15 NRC-01</b>
<b>Total Time</b>	<b>90 Minutes</b>	

Prepared by:	<u>John Follett</u> Printed Name	<u></u> Developer	<u>7-2-15</u> Date
Reviewed by:	<u>Bob Royce</u> Printed Name	<u></u> Technical Reviewer	<u>7-2-15</u> Date
Approved by:	<u>Paul Scott</u> Printed Name	<u></u> Facility Reviewer	<u>7/8/15</u> Date

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SUMMARY OF CHANGES

A/I & DATE	DESCRIPTION	REV/CHANGE

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## SECTION 3

### EXAM OVERVIEW

Title: Four Faulted SG's New Scenario

1. The crew takes the shift with the plant at 74% power due to intake conditions. Last shift performed a downpower and entered AOP 3569, *Severe Weather*, for a hurricane watch. Last shift also performed OP 3301G section 4.5 "Induce Pressurizer Spray to Equalize Boron Concentration". Additionally, the 'B' Stator Cooling Pump is out of service for a bearing replacement. The crew has direction to maintain power stable as Management evaluates hurricane tracking.

Event 1: The primary pressurizer level control channel (RCS\*LT459) will fail high, causing the charging flow control valve to reduce flow, pressurizer level will lower. The RO will place the charging flow control valve in manual and correct charging flow. The US will enter AOP 3571, *Instrument Failure Response*. The crew will swap backup channels and direct I&C to trip bistables. The US will refer to and enter Technical Specification 3.3.1 Action 6 (FU# 11). The US will review Technical Specifications 3.3.3.5 and 3.3.3.6 and Technical Requirement 7.4.1

Event 2: Based on hurricane tracking, Station management will direct a downpower to 60% at 1% per minute. The crew will enter AOP 3575, *Rapid Downpower*, and perform the downpower.

Event 3: 3FWS-PT508 "Feed Header Pressure Transmitter" will fail high requiring the BOP to take manual control of the feedwater master speed controller. Once the plant is stable the crew will enter and complete actions in AOP 3571, *Instrument Failure Response*.

Event 4: The 'A' train emergency bus, 34C, will become faulted (& unrecoverable). The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to simultaneously close the letdown orifice isolation valves and the charging flow control valve. The US will enter AOP 3581, confirm immediate actions are complete, and transition to AOP 3577, *Loss of Normal and Offsite Power to a 4kv Emergency Bus*, and perform multiple, time critical actions to keep the plant on-line. The following Technical Specifications are in effect; 3.8.1.1 Action a, 3.8.2.1, 3.8.3.1. The following Technical Requirements are in effect: 7.4.1, 7.6.1.

Event 5: After the crew has stabilized the plant, a Main Generator trip will occur causing an automatic Reactor trip. A steam line break will occur outside of containment, upstream of 'C' MSIV. The 'C' & 'D' MSIV's fail open while 'A' & 'B' low set safety valves fail open. All four SG's will be faulted.

While in E-0, *Reactor Trip or Safety Injection*, the crew will have to identify and mitigate two separate failures while dealing with complications of only having the 'B' train emergency bus available:

Event 6: No Aux Feed pumps will auto start. The 'A' MDAFW pump is not available due to the prior loss of bus 34C and the 'B' MDAFW pump will trip on over current once manually started. Steam supply valves must be opened to start the Turbine Driven AFW pump. **[Critical Task B.4]** – Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.

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Event 7: 3SIH\*MV8801B, Charging to Cold Leg Injection Valve, fails to open after the SI signal coincident with P-19 (1900 psia). The parallel valve, 3SIH\*MV8801A, will be closed based on the earlier 34C bus failure. The crew will need to identify this and open 3SIH\*MV8801B to provide Charging flow to the core. **[Critical Task B.6]** – Manually open valves to establish injection flow from at least one Charging/SI pump before transition out of E-0.

The crew will transition to ECA-2.1, Uncontrolled Depressurization of all Steam Generators. Once the crew establishes aux feed water flow, they will need to limit flow to 100 gpm per faulted SG. **[Critical Task B.33]** – Control AFW flow rate to not less than 100 gpm per SG in order to minimize the RCS cooldown rate before a severe (orange-path) challenge develops to the integrity CSF. The crew will have to work through complications of not having the 'A' train emergency bus and ultimately terminate safety injection. During SI termination, the 'A' SG safety valve reseats. The crew must notice this and wait on transition (per prior CAUTION) to E-2 until after SI is terminated. The scenario may end after the crew makes the proper transition to E-2.

2. The SRO candidate (US) should classify this event as an **ALERT Charlie One** based on Unisolable Steam Line Break outside CTMT (BA2).
3. Duration of Exam: 90 minutes

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## SECTION 4

### EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-357

Either **INPUT** or **Load** Schedule **NRC-01.sch** **AND** Event file **NRC-01.evt**, **THEN VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
<b>MALFUNCTIONS</b>						
CW05A	Cndsr Tube Sheet Plugged (CW-A Side)					40% Block
CW05B	Cndsr Tube Sheet Plugged (CW-B Side)					40% Block
CW05C	Cndsr Tube Sheet Plugged (CW-C Side)					40% Block
CW05D	Cndsr Tube Sheet Plugged (CW-D Side)					40% Block
CW05E	Cndsr Tube Sheet Plugged (CW-E Side)					40% Block
CW05F	Cndsr Tube Sheet Plugged (CW-F Side)					40% Block
FW18B	MDAFW Pp Trip (P1B)					--
FW20A	MDAFW PP Fails to Auto Start (P1A)					--
FW20C	TDAFW PP Fails to Auto Start (P2)					--
MS12C	MS ISO Valve CTV27C Stuck Open					--
MS12D	MS ISO Valve CTV27D Stuck Open					--
RX10A	PZR Level LT459 Fail	1				100% Lvl
RX19	3FWS-PT508 Failure	3				2000 PSIG
ED04C	Loss of 4160V Bus 34C	4				--
EG01	Main Generator Trip	5				--



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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-357

Either **INPUT** or **Load** Schedule **NRC-01.sch** **AND** Event file **NRC-01.evt**, **THEN VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MS02C	MS LN C RUP O.S. CTMT UP MSIV	30				50,000 LB
MS07A	MS Safety Valve RV22A Fail	30				100 %VWO
MS07B	MS Safety Valve RV22B Fail	30				100 %VWO

### REMOTE FUNCTIONS

CHR17	TS 374 Wind Direction					205 deg
CHR18	TS 142 Wind Direction					198 deg
CHR19	TS 33 Wind Direction					192 deg
CHR20	TS 374 Wind Speed					42 mph
CHR21	TS 142 Wind Speed					39 mph
CHR22	TS 33 Wind Speed					35 mph
CWR05	Wave Intensity Increases Screen D/P (Inches)					5
CWR06	TWS A Speed – Traveling Screen					SLOW 1
CWR07	TWS B Speed – Traveling Screen					SLOW 1
CWR08	TWS C Speed – Traveling Screen					SLOW 1
CWR09	TWS D Speed – Traveling Screen					SLOW 1
CWR10	TWS E Speed – Traveling Screen					SLOW 1

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-357

Either **INPUT** or **Load Schedule NRC-01.sch** **AND** Event file **NRC-01.evt**, **THEN VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
CWR11	TWS F Speed – Traveling Screen					SLOW 1
MSR40	MSIV CTV27C TRAIN-A FUSE INDICATION ONLY	7	3 min			OUT
MSR42	MSIV CTV27D TRAIN-A FUSE INDICATION ONLY	7	4 min			OUT
MSR41	MSIV CTV27C TRAIN-B FUSE INDICATION ONLY	8	3 min			OUT
MSR43	MSIV CTV27D TRAIN-B FUSE INDICATION ONLY	8	4 min			OUT
RXR106	Prot Set Door 1 (open)	10				OPEN
RXR25	RCS-LT459 Bistable	10	15 sec			TRIP
RXR106	Prot Set Door 1 (close)	10	20 sec			CLOSE
SWR25	TPCCW Supply Valve MOV71A (LOP)	12	4 min	60 sec		0%
CCR08	TRA RPCCW to Chiller B (V167, V186)	14	5 min			OPEN
CCR09	TRB RPCCW to Chiller B (V177, V187)	14	6 min			OPEN
SIR15	MV8808A BKR RO	16	4 min			RI
SIR17	MV8808C BKR RO	16	4:10 min			RI
SIR16	MV8808B BKR RO	16	4:50 min			RI
SIR18	MV8808D BKR RO	16	5:00 min			RI
SIR15	MV8808A BKR RO	17	1 min			RO
SIR17	MV8808C BKR RO	17	1:10 min			RO

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-357

Either **INPUT** or **Load** Schedule **NRC-01.sch** AND Event file **NRC-01.evt**, THEN **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
SIR16	MV8808B BKR RO	17	1:50 min			RO
SIR18	MV8808D BKR RO	17	2:00 min			RO
SIR14	SIH*MV8801B Bkr RO					RO
SIR14	SIH*MV8801B Bkr RO	20	1 sec			RI

### OVERRIDES

CVLO0338	3SIH*MV8801B Green Cold Leg Injection					ON
CVLO0338	3SIH*MV8801B Green Cold Leg Injection	20			1 sec	ON

### EVENTS

Event Code	Description	Event Number
ZMSIHMV8801BDI(1)	3SIH*MV8801B COLD LEG INJECTION = OPEN	20

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<ul style="list-style-type: none"> <li>❑ COMPLETE Simulator Setup and Readiness Checklist.</li> <li>❑ SELECT appropriate IC (IC-303)</li> <li>❑ LOAD and RUN applicable Schedule.</li> <li>❑ As necessary, VERIFY the following Initial Malfunctions / I/Os / Remote Functions, as specified on previous '<b>Input Summary</b>' page</li> <li>❑ As necessary, PERFORM verification of Initial Malfunctions / I/Os / Remote Functions entered.</li> <li>❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable: <ul style="list-style-type: none"> <li>▪ <b>Pressurizer spray valves 50% setpoint</b></li> <li>▪ <b>Backup heaters ON</b></li> </ul> </li> <li>❑ As necessary, REMOVE the following Equipment from service and tag accordingly: <ul style="list-style-type: none"> <li>▪ <b>3GMC-P1B, 'B' Stator Cooling Pp, in PTL with YCT</b></li> </ul> </li> </ul>		N/A
<ul style="list-style-type: none"> <li>❑ CONDUCT briefing with evaluators.</li> </ul>	<b>PRE-SCENARIO:</b> <ul style="list-style-type: none"> <li>❑ BRIEF the crew initial plant conditions and provide a shift turnover.</li> <li>❑ <u>IF</u> this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew.</li> <li>❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.</li> </ul>	
		(All) Walk down control boards and conduct shift briefing.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
The Crew will take the watch at step 16 in AOP 3569, <i>Severe Weather Conditions</i> . The previous crew performed all steps up to 16.		
***** EVENT 1 *****		
<b>Event 1</b>  <b>Trigger 1</b> <b>T = <math>\approx</math> 1 min after taking the shift</b>  (RX10A)      3RCS*LT459 fails high	Notes on Event 1: (1) The primary PZR level channel failure (high) will cause the control system to reduce charging flow in an attempt to restore level. (2) If no operator action is taken, actual level will lower. Automatic letdown isolation will occur at 22%.	<b>RO:</b> Identifies level deviation alarm due to failed level instrument.
		<b>US: Enters AOP 3571, <i>Instrument Failure Response</i> (Rev 011-01)</b>
		<b>US:</b> Reads Caution / Note to crew: <div style="text-align: center;"><b><u>CAUTION</u></b></div> Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. <div style="text-align: center;"><b><u>NOTE</u></b></div> If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
	RO should identify a failure of 3RCS*LT459. RO will adjust 3CHS*FCV121 in manual to restore pressurizer level to setpoint, $\approx$ 56%.	<b>RO:</b> <b>1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL</b>

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SCENARIO TIME LINE										
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS								
	Pressurizer level will be lowering due to net seal injection flow. If Pressurizer level drops 6% below program level, the RO should communicate this to the US. The US should then enter T/S 3.4.3.1 Action b (2 hours to correct).	RO: 2. Stabilize The Plant Parameters								
		US: Reads Note to crew: <b>NOTE</b> It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.								
		US: 3. Perform Corrective Actions Using Appropriate Attachment <table><tr><td><u>Instrument Failure</u></td><td><u>Attachment</u></td></tr><tr><td>PZR Level Channel Failure</td><td>C</td></tr></table>	<u>Instrument Failure</u>	<u>Attachment</u>	PZR Level Channel Failure	C				
<u>Instrument Failure</u>	<u>Attachment</u>									
PZR Level Channel Failure	C									
	RO directed to place 3RCS-LS459D in Channel 3-2.  RO directed to place 3RCS-LS459E in any channel other than 1.	RO: 1. Defeat the failed channel input. <table><tr><td>Pressurizer Level</td><td>3RCS-LS459D</td></tr><tr><td>Select – Control</td><td></td></tr><tr><td>Pressurizer Level</td><td>3RCS-LS459E</td></tr><tr><td>Select – Record</td><td></td></tr></table>	Pressurizer Level	3RCS-LS459D	Select – Control		Pressurizer Level	3RCS-LS459E	Select – Record	
Pressurizer Level	3RCS-LS459D									
Select – Control										
Pressurizer Level	3RCS-LS459E									
Select – Record										
		RO: 2. Restore PZR level to normal.								

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Letdown isolation should not have occurred.	RO: 3. If necessary, using OP 3304A, "Charging and Letdown," Restore letdown.
		RO: 4. Place PZR level controller in automatic.
	Crew took the shift with PZR Spray induced for earlier downpower (on turnover report). Backup heaters should remain energized.	RO: 5. Reset pressurizer heaters as necessary.
		RO: 6. When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the SM.
		US: 7. Trip the associated Reactor Protection System bistable(s): a. Place a check mark in the box above the appropriate channel that requires tripping on the last page of this Attachment.
	The US should enter: <b>[Tech Specs]</b> 3.3.1, Functional Unit 11, Action 6	US: b. Refer to Technical Specification 3.3.1, 3.3.3.5, and 3.3.3.6.
	The RO should do a lamp check to ensure all bistable lights are functional, then verify no coincidence would be met when bistables are tripped.	RO: c. Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> Reads Caution/Note to crew:</p> <p><b><u>CAUTION</u></b></p> <p>If the General Warning lamp is lit on 3RPS*RAKLOGB, Placing train A SSPS "Multiplexer Test" switch in "A+B" will cause the reactor to trip.</p> <p><b><u>NOTE</u></b></p> <p>The following step will distinguish whether the failure is within SSPS or the Protection channel.</p>
	Channel indication is <u>not</u> normal. The US should N/A this section and proceed to next step.	<p><b>US:</b></p> <p>d. <u>If</u> bistable status light(s) (MB4F) indicate that a single bistable input has tripped and channel indication is normal, PERFORM the following:</p>
<p><b>T = When requested:</b></p> <p><b>Report to the Control Room as I&amp;C.</b></p>		<p><b>US:</b></p> <p>e. Request the I&amp;C Department place the appropriate master test and bistable trip switches in "TEST" using Attachment C and Attachment S.</p>
<p><b>Trigger 10 T = After I&amp;C brief</b></p> <p>Trip Bistables (RXR106, RXR25)</p>		<p><b>RO:</b></p> <p>f. Verify the appropriate bistable status light(s) are lit.</p>
	Indicator 3RCS*LI459C is affected by the failure of 3TCS*LT459. Appendix R transmitter 3RCS-LT459C is not affected and therefore can be used to meet the TRM requirement. Entry into TRM 7.4.1 is not required.	<p><b>US:</b></p> <p>8. <u>If</u> indicator 3RCS*LI459C is failed, Refer to TRM Table 7.4.1, Fire Related Safe Shutdown Components, "Reactor Coolant System."</p>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> 9. Request I&C perform corrective maintenance on failed instrument.
***** EVENT 2 *****		
<b>Event 2</b>  <b>T = after crew brief or when directed by Chief Examiner</b>  <b>Call US as OMOC and REPORT:</b> "Due to hurricane tracking, station management directs a downpower to 60% power at 1% per minute. AOP 3575 should be used."	<b>OMOC DIRECTED DOWNPOWER</b>	<b>US:</b> Receives phone call, briefs crew, and <b>enters AOP 3575, Rapid Downpower</b> (Rev 020-00)
		<b>US:</b> Reads Note to crew: <div style="text-align: center;"><b><u>NOTE</u></b></div> If at any time either of the following annunciators is received Immediately perform step 7.: <ul style="list-style-type: none"> <li>• ROD CONTROL BANKS LIMIT LO (MB4C 3-9)</li> <li>• ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9)</li> </ul>
		<b>RO:</b> <b>1. Check Rod Control – IN AUTO</b>
	Load set is normally desired.	<b>BOP:</b> <b>2. Align EHC Panel</b> 2.a. Check load reduction using load set – DESIRED

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 2.b. Using Attachment E align EHC panel for LOAD SET operation
		<b>BOP: uses Attachment E</b> <b>1. Align EHC Panel</b> a. Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light – NOT LIT b. Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction c. Select DECREASE LOADING RATE to ON
	This Note is NA. The US may not read it.	<b>US: resumes at step 3 and Reads Note to crew:</b> <b>NOTE</b> ISO-NE requested load reductions should be performed at 5%/min and completed within 25 minutes of notification.
	Proceeds to step 5 for 1% / min downpower.	<b>US:</b> <b>3. Determine Power Reduction Rate (% / min)</b> 3.a. Check desired power reduction rate – 3%/min OR 5%/MIN <b>RNO– Perform the following:</b> 1) <u>IF</u> desired power reduction rate is 1 %/min <u>THEN</u> Proceed to step 5.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>5. Align RCS Makeup System For Boration</b> 5.a. Check Rod Control – AVAILABLE FOR ROD INSERTION 5.b. Proceed to step 5.e.
	US will use RNO. Curve and Data Book contains rapid downpower reactivity plans; however they all begin at 100% power.	<b>RO:</b> 5.e. Check use of "Rapid Downpower Summary Sheet" (RE-H-17) in the RE Curve and Data Book – DESIRED <b>RNO</b> —Proceed To step 5.h.
		<b>RO:</b> 5.h. Using table, Determine gal BA/% Power for current time in core life  <div style="display: flex; justify-content: space-around;"> <div> <u>Core Burnup</u>                          &lt;7000 MWD/MTU                     </div> <div> <u>Gal BA/% Power</u>                          19 gal/%                     </div> </div>
		<b>RO:</b> 5.i. Using formula, Determine boration amount
Numbers may vary slightly....  14% (pwr change) x 19 (gal per % pwr) <b>EQUALS 266 gallons</b>	Total Power Change ( $\Delta\%$ )x (gal BA/% Power) = gal Boration Amount	
		<b>RO:</b> 5.j. Set the boric acid batch counter to the boration amount determined.
		<b>RO:</b> 5.k. Using table, adjust boric acid blend flow controller pot setting

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Core Burnup <7000 MWD/MTU	Pot Setting 7.25 Expected Boric Acid Flow Rate (gpm) 29
		RO: 5.l. Select BORATE on the reactor coolant makeup select switch
		RO: 5.m. Select START on the reactor coolant makeup start switch
		RO: 5.n. Verify boric acid flow – INDICATED
	Boration will auto stop when counter reaches zero.	RO: 5.o. Proceed To step 6. and <u>WHEN</u> Boration time has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: <ul style="list-style-type: none"> <li>• Attachment G</li> <li>• OP 3304C, Primary Makeup and Chemical Addition</li> </ul>
		US: Reads Note to crew: <u>NOTE</u> If at any time the power reduction rate or final desired power level must be changed, Return to step 1.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Hold point until effects of boron are demonstrated	<b>US:</b> <b>6. Initiate Load Reduction</b> 6.a. Check Rapid or gravity boration – IN PROGRESS <b>RNO—WHEN</b> Any of the following change due to boration: <ul style="list-style-type: none"> <li>• Tavg</li> <li>• Reactor power</li> </ul> <b>THEN</b> Proceed to step 6.b.
		<b>BOP:</b> 6.b. Check turbine OPERATING MODE – MANUAL
	Load set desired.	<b>BOP:</b> 6.c. Check load reduction using load set – DESIRED
	1% expected.	<b>BOP:</b> 6.d. Select LOAD RATE LIMIT % /MIN to the desired value (1%, 3%, or 5%)
	870 MWe on load set meter = 700 MWe desired load.	<b>BOP:</b> 6.e. Using Attachment H and the DECREASE LOAD pushbutton, Adjust LOAD SET to desired final MWe
	Pressurizer heaters were on when crew took the shift. No actions necessary.	<b>RO:</b> 6.f. Energize all PZR heaters
	Pressurizer spray valves were set to 50% when crew took the shift. No actions necessary.	<b>RO:</b> 6.g. Adjust Pzr Spray Valves to 50% setpoint (RCS-PK 455B and RCS-PK 455C)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 6.h. Adjust boration time, flow rate and/or rod position as necessary to maintain: <ul style="list-style-type: none"> <li>• Rods above the Rod Insertion Limit (RIL)</li> <li>• Tavg – Tref error/deviation -5°F to +5°F</li> <li>• AFD within COLR limits</li> <li>• Desired downpower rate</li> </ul>
<b>Answer phone as CONVEX:</b>  Inform caller to maintain VAR loading at 100 MVARs out		<b>US:</b> 6.i. Check power reduction – CONVEX REQUESTED <b>RNO</b> – Inform CONVEX of load reduction rate (MWe/min) and final MWe level.
		<b>RO:</b> <b>7. Verify Rod Position Above RIL</b> 7.a. Check ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9) annunciator – LIT <b>RNO</b> – Proceed to step 7.j. and, <u>IF</u> at any time, the annunciator is received, <u>THEN</u> Perform steps 7.c. through 7.h.
		<b>RO:</b> 7.j. Check ROD CONTROL BANKS LIMIT LO (MB4C 3-9) annunciator – LIT <b>RNO</b> – Proceed to step 8. and, <u>IF</u> the annunciator is received, <u>THEN</u> Perform step 7.k. and 7.l.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO and BOP:</b> <b>8. Using Attachment C, "Rapid Downpower Parameters" MONITOR parameters</b>
		<b>US:</b> <b>9. Degrade Condenser Backpressure</b> 9.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 70% (907 MWe)
<b>T = when requested</b>  Modify FW01 as necessary to keep condenser backpressure between 2.0 to 4.0 in. HgA.		<b>BOP:</b> 9.b. Using OP 3329, "Condenser Air Removal", Degrade condenser backpressure to between 2.0 in. HgA and 4.0 in. HgA.
		<b>BOP:</b> <b>10. Align One Feedwater Pump For Removal from Service</b> 10.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 50% (648 MWe) <b>RNO</b> – Proceed to step 11.
		<b>RO:</b> <b>11. Verify Power Related Interlock Status</b> 11.a. Check reactor power – LESS THAN THE P-9 SETPOINT <b>RNO</b> – Proceed to step 12. and, <u>WHEN</u> Power LESS THAN P-9, <u>THEN</u> Return to step 11.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b></p> <p><b>12. Align Plant Systems for less than 30% Power Operation</b></p> <p>12.a. Verify Final Desired Power Level – LESS THAN 30%</p> <p><b>RNO</b>– Proceed to step 13.</p>
		<p><b>US:</b></p> <p><b>13. Check Plant Status</b></p> <p>13.a. Verify – AT FINAL DESIRED POWER LEVEL</p> <p><b>RNO</b>– Continue power reduction and, <u>WHEN</u> Actual load is within 200 MWe of final desired load, <u>THEN</u></p> <ul style="list-style-type: none"> <li>Adjust "LOAD SET" to decrease loading rate as necessary to stabilize power level.</li> <li>Check the following "LOAD MONITORING" indications" <ul style="list-style-type: none"> <li>"AT SET LOAD" light <i>lit</i></li> <li>"DECREASING LOAD" light <i>not lit</i></li> </ul> </li> </ul>
		<p><b>RO:</b></p> <p>13.b. Refer to OP 3304C, "Primary Makeup and Chemical Additions." and Borate or Dilute as necessary to maintain the following:</p> <ul style="list-style-type: none"> <li>Tavg – Tref error/deviation -1.5°F to +1.5°F</li> <li>AFD within the target band</li> </ul>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 13.c. If desired, Place rod control SEL switch in AUTO
		<b>RO:</b> 13.d. Using GA-9, Align for auto makeup
		<b>RO: uses GA-9 (Rev 000-02)</b>
		<b>1. Check Aligning For Auto Makeup – Desired</b>
		<b>RO reads NOTE</b> <div style="text-align: right;"><u>Note</u></div> Boric acid flow of 0 to 40 gpm corresponds to 0 to 10 turns on 3CHS-FK110, boric acid makeup flow controller as determined on page 8.
<b>T = if contacted for RCS boron concentration</b>  Report: <b>RCS boron concentration is 1765 pcm.</b>	<b>RO</b> uses current RCS boron concentration (or chemistry recent sample) and table on page 8 to select desired pot setting.	<b>RO:</b> <b>2. Align For Auto Makeup</b> 2.a. Check pot setting for boric acid flow rate – DETERMINED BY EOP IN EFFECT <b>RNO–</b> Determine pot setting for boric acid flow for current conditions using the B.A. Flow Rate table on page 8.
		<b>RO:</b> 2.b. Adjust boric acid blended flow controller (3CHS-FK110) to determined pot setting
		<b>RO:</b> 2.c. Verify total makeup flow controller (3CHS-FK111) pot – SET FOR 80 gpm

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 2.d. Check boric acid transfer pump (3CHS*P2A or 3CHS*P2B) – ONE PUMP IN AUTO
		<b>RO:</b> 2.e. Place total makeup flow controller (3CHS-FK111) in AUTO
		<b>RO:</b> 2.f. Place boric acid blended flow controller (3CHS-FK110) in AUTO
		<b>RO:</b> 2.g. Place REAC CLNT MAKEUP SELECT SW in AUTO
		<b>RO:</b> 2.h. Place REAC CLNT MAKEUP START SW in START
		<b>RO:</b> 2.i. Verify batch counters – RESET TO "000000" <ul style="list-style-type: none"> <li>• Boric acid batch counter (3CHS-FY110B)</li> <li>• Primary water batch counter (3CHS-FY111B)</li> </ul>
		<b>RO:</b> 2.j. Go to procedure and step in effect
		<b>RO:</b> Reports that GA-9 is complete for aligning for auto makeup.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US: resumes AOP 3575</b>
<b>Move on to Event 3 when GA-9 is complete.</b>		<b>BOP:</b> 13.e.If desired, Using OP 3323A, "Main Turbine" PLACE turbine in "Load Limit" operation
***** EVENT 3 *****		
<b>Event 3</b>  <b>Trigger 3</b> <b>T = when GA-9 is complete</b>  (RX19)      3FWS-PT508 fails high	<u>Notes on Event 3:</u> (1) This failure will slowly raise the feedwater pressure input the feed pump master speed controller, 3FWS-SK509A. Controller output will decrease slowing both turbine driven main feed pumps. Feedwater regulating valves will slowly open, maintaining generator level on program. (2) No immediate actions are necessary, the crew is not expected to enter AOP 3581, however doing so is acceptable.	<b>BOP:</b> Responds to failure by taking manual control of 3FWS-SK509A and informing US of associated annunciators.  <b>US:</b> Based on diagnosis of an instrument failure, <b>Enters AOP 3571 (Rev 011-01)</b>
		<b>US:</b> Reads Caution / Note to crew: <b><u>CAUTION</u></b> Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback.  <b><u>NOTE</u></b> If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.

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SCENARIO TIME LINE								
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS						
	BOP places 3FWS-SK509A in manual.	<b>BOP:</b> <b>1. Determine The Initiating Parameter And Place The Affected Controller In MANUAL</b>						
	BOP restores output to achieve a program DP of 40-175 psid corresponding to the current power level. (Setpoint ≈ 120 psid @ 60% power)	<b>BOP:</b> <b>2. Stabilize The Plant Parameters</b>						
		<b>US:</b> Reads Note to self: <b><u>NOTE</u></b> It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.						
		<b>US:</b> <b>3. Perform Corrective Actions Using Appropriate Attachment</b> <table><tr><td><b><u>Instrument Failure</u></b></td><td><b><u>Attachment</u></b></td></tr><tr><td>Feedwater Header Pressure</td><td>K</td></tr><tr><td>Channel Failure (PT508)</td><td></td></tr></table>	<b><u>Instrument Failure</u></b>	<b><u>Attachment</u></b>	Feedwater Header Pressure	K	Channel Failure (PT508)	
<b><u>Instrument Failure</u></b>	<b><u>Attachment</u></b>							
Feedwater Header Pressure	K							
Channel Failure (PT508)								
	Action already in progress. Restoration to program DP will take time if feedwater regulation valves have moved significantly.	<b>BOP:</b> <b>1. Verify the feedwater pump A and B master speed control (3FWS-SK509A) is in MANUAL and Restore feed pump DP to normal (Program: 40 to 175 psid).</b>						

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 2. After conditions have stabilized, Observe MB annunciators and parameters and immediately report any unexpected or unexplained conditions to the Shift Manager.
		<b>US:</b> Reads Note to crew: <b>NOTE</b> There are no Technical Specifications or bistables associated with 3FWS-PT508.
		<b>US:</b> 3. Request I&C Department perform corrective maintenance on failed instrument.

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SCENARIO TIME LINE								
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS						
***** EVENT 4 *****								
<p align="center"><u>Notes on Event 4:</u></p> <p>A loss of Bus 34C will require timely crew response to avoid a Reactor trip. The following primary concerns exist:</p> <p>(a) 'A' train of component cooling water (CCP) is lost. 'A' &amp; 'D' RCPs need to be supplied with 'B' train CCP (foldout page trip criteria).</p> <p>(b) With the loss of 'A' train of CCP, letdown heat exchanger cooling will be lost. As a result, VCT temperature will rise rapidly. The RO will need to isolate Charging and letdown to avoid Reactor (&amp; RCP) trip criteria (foldout page).</p> <p>(c) With the loss of 'A' train Service Water; alignments to the secondary plant component cooling water (CCS) are necessary. If this is not done, a turbine runback will occur on high stator cooling water temperatures.</p>								
<p><b><u>Event 4</u></b></p> <p><b>Trigger 4      T = upon completion of crew brief or when directed by Chief Examiner</b></p> <p>(ED04C) Loss Of Emergency Bus 34C</p>	<p><b>US: may place annunciators in Master Silence.</b></p>	<p><b>RO:</b></p> <p>Identifies letdown isolation required on loss of 34C and performs Immediate Actions of AOP 3581, Attachment F, from memory:</p> <p><b>Att. F.1 Isolate Letdown And Charging</b></p> <p>a. Simultaneously perform the following:</p> <ul style="list-style-type: none"><li>• CLOSE letdown orifice isolation valves</li><li>• CLOSE the charging flow control valve</li></ul> <p>The RO will focus brief immediate actions are complete.</p>						
		<p><b>US:</b></p> <p><b>Enters AOP 3581 (Rev 001-00)</b></p> <p><b>1. Using Appropriate Attachment, Perform Immediate Actions</b></p> <table><tr><td><b><u>EVENT</u></b></td><td><b><u>Attachment</u></b></td></tr><tr><td>Events Requiring Isolation of Charging and Letdown</td><td>F</td></tr><tr><td><ul style="list-style-type: none"><li>• Loss of Bus 34C</li></ul></td><td></td></tr></table>	<b><u>EVENT</u></b>	<b><u>Attachment</u></b>	Events Requiring Isolation of Charging and Letdown	F	<ul style="list-style-type: none"><li>• Loss of Bus 34C</li></ul>	
<b><u>EVENT</u></b>	<b><u>Attachment</u></b>							
Events Requiring Isolation of Charging and Letdown	F							
<ul style="list-style-type: none"><li>• Loss of Bus 34C</li></ul>								

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> Proceeds to Attachment F and confirms with RO that step 1 Immediate Actions are complete.
		<b>US:</b> <b>Att. F.2 Check Initiating Event – INSTRUMENT FAILURE:</b> <ul style="list-style-type: none"> <li>Pressurizer Level</li> </ul> <b>RNO–</b> Go to procedure and step in effect.
		<b>US:</b> <b>Enters AOP 3577 (Rev 002-01)</b>
		<b>US:</b> Reads Note to crew: <b><u>NOTE</u></b> The Foldout page must be open.
		<b>BOP:</b> <b>1. Check If Letdown Should Be Isolated</b> 1.a. Check either 4.16 KV emergency bus – DE-ENERGIZED
		<b>BOP:</b> 1.b. Check <u>affected</u> bus -BUS 34C
	This step may already be complete.	<b>RO:</b> 1.c. Simultaneously Perform the following: <ul style="list-style-type: none"> <li>CLOSE letdown orifice isolation valves</li> <li>CLOSE the charging flow control valve</li> </ul>
		<b>RO:</b> 1.d. CLOSE charging header isolation valve (3CHS*MV8106)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p>Malfunction insertion will result in a massive bus failure resulting in bus differential relay actuation on bus 34C.</p> <p>Power will be unrecoverable to bus 34C.</p>	<p><b>BOP:</b></p> <p><b>2. Try To Restore Power To <u>Affected</u> Emergency Bus</b></p> <p>2.a. Check bus differential annunciator for the affected bus – LIT</p> <ul style="list-style-type: none"> <li>For bus 34C – BUS 34C BUS DIFF (MB8A 4-12)</li> </ul>
	BOP stops 'A' EDG	<p><b>BOP:</b></p> <p>2.b. Perform the following:</p> <ol style="list-style-type: none"> <li>1) STOP <u>affected</u> bus EDG by pressing both emergency stop pushbuttons.</li> <li>2) Proceed to step 3.</li> </ol>
	'B' Charging pump will be running	<p><b>RO:</b></p> <p><b>3. Check If A Charging Pump Should Be Started</b></p> <p>3.a. Check charging pumps – NONE RUNNING</p> <p><b>RNO</b>– Proceed to step 3c.</p>
		<p><b>RO:</b></p> <p>3.c. Throttle RCP seal injection flow to maintain BETWEEN 8 and 13 gpm.</p>
		<p><b>RO:</b></p> <p><b>4. Check Service Water Alignment</b></p> <p>4.a. Check <u>Affected</u> bus – DEENERGIZED</p>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<b>Trigger 12 T = when directed to close 3SWP*MOV71A</b> (SWR25 to 0%) Has 4 min timer  Wait 5 minutes and <b>call</b> control room to report 3SWP*MOV71A is closed.		<b>PEO:</b> 4.b. Locally Close service water supply valve to TPCCW from <u>affected</u> train <ul style="list-style-type: none"> <li>For Train A: 3SWP*MOV71A</li> </ul>
	RO starts the 'B' SW pump.	<b>RO:</b> 4.c. START the second SW pump in the non- <u>affected</u> Train
	RO opens 3SWP*MOV71B.	<b>RO:</b> 4.d. Verify service water supply valve to TPCCW from the operating SW train (3SWP*MOV71A or 3SWP*MOV71B) – OPEN <b>RNO</b> – OPEN valve.
	RPCCW flow in 'B' train is verified.	<b>RO:</b> <b>5. Cross-Connect RPCCW Containment Headers</b> 5.a. Verify the RPCCW containment supply and return header isolation valves in the operating train – OPEN <ul style="list-style-type: none"> <li>For Train B:                          Flow indicated –                          3CCP-FI15B, CTMT SPLY FLOW                          OR                          3CCP*MOV45B                          3CCP*MOV48B                          3CCP*MOV49B (ESF Status Group 4, 9-25, 10-24, and 11-25)</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 5.b. Simultaneously OPEN the RPCCW containment header cross-connect valves: 3CCP*AOV179A 3CCP*AOV179B 3CCP*AOV180A 3CCP*AOV180B
	This ends the time critical actions that needed to be done to avoid Reactor trip criteria (on the foldout page).	<b>RO:</b> 5.c. CLOSE RPCCW containment return header isolation valve in the <u>affected</u> train For Train A: 3CCP*MOV49A
	RO selects "STOP" then 'Auto' on 'B' Boric Acid Transfer Pump.	<b>RO:</b> <b>6. Check Boric Acid Transfer Pump Alignment</b> 6.a. Verify the boric acid transfer pump selected for AUTO-ENERGIZED <b>RNO</b> – Select AUTO on energized pump.
	Pot was adjusted per GA-9 coming out of downpower.	<b>RO:</b> 6.b. Adjust boric acid blend flow pot setting to the appropriate setpoint
		<b>US:</b> <b>7. Restore Containment Cooling</b>
		<b>US:</b> Reads Note to crew: <b>NOTE</b> LOP signal may take up to six minutes before it can be reset with the bus de-energized.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 7.a. RESET both trains LOP
		<b>BOP:</b> 7.b. Check <u>affected</u> bus – Bus 34C
		<b>RO:</b> 7.c. OPEN RPCCW non-safety header supply/return isolation valves Train B (3CCP*AOV197B/194B)
	Based on the Chief Examiner's decision, the next event may be initiated. In case the decision is to continue in AOP 3577, additional steps are provided. The T/S impact (covered in following text) may be asked as a follow-up.	<b>RO:</b> 7.d. CLOSE RPCCW non-safety header supply/return isolation valves Train A (3CCP*AOV197A/194A).
	'C' CDS chiller should be running.	<b>RO:</b> 7.e. Verify CDS chiller on train with power – AUTO STARTS <b>RNO</b> – START chiller.
		<b>RO:</b> 7.f. Using OP 3330A, Reactor Plant Component Cooling Water, Cross-connect non-safety related RPCCW headers
	This will allow the 'A' CDS chiller to restart.	<b>RO:</b> <b>Locates section 4.15 of OP 3330A (Rev 018-09)</b>  <b>4.15 Cross-Connect Non-Safety Related RPCCW Headers</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>RO:</b> reads Caution/NOTE</p> <p><b><u>CAUTION</u></b></p> <p>An evaluation of RPCCW System loads should be conducted prior to performing cross-connects or train split evolutions to avoid exceeding 8,100 gpm through any one RPCCW pump and heat exchanger.</p> <p><b><u>NOTE</u></b></p> <p>The RPCCW System non-safety related supply and return headers are normally split.</p>
<p><b>Trigger 14 T = immediately when directed</b></p> <p>(CCR08 &amp; CCR09) have 5 &amp; 6 min timers to open 'A' &amp; 'B' train RPCCW manual crossties IAW step 4.15.1 of OP 3330A</p>	RO should contact PEO to open valves.	<p><b>PEO:</b></p> <p>4.15.1 OPEN the following valves:</p> <ul style="list-style-type: none"> <li>• 3CCP-V186, Train A RPCCW to chilled water chiller 1B outlet</li> <li>• 3CCP-V167, Train A RPCCW to chilled water chiller 1B inlet</li> <li>• 3CCP-V187, Train B RPCCW to chilled water chiller 1B outlet</li> <li>• 3CCP-V177, Train B RPCCW to chilled water chiller 1B inlet</li> </ul>
		<p><b>RO:</b></p> <p>4.15.2 <u>IF</u> only Train B RPCCW System will be available, PERFORM the following:</p> <p>a. ENSURE 3CCP*AOV10B/19B, "SPLY/RTN ISOL TR B" (MB1), open.</p>
		<p><b>RO:</b></p> <p>b. ENSURE 3CCP*AOV197B/194B, "SPLY/RTN ISOL TR B" (MB1), open.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> c. CLOSE 3CCP*AOV197A/194A, "SPLY/RTN ISOL TR A" (MB1).
		<b>RO:</b> d. CLOSE 3CCP*AOV10A/19A, "SPLY/RTN ISOL TR A" (MB1).
	N/A	<b>RO:</b> 4.15.3 IF only Train A RPCCW System will be available, PERFORM the following:
		<b>RO:</b> Reports that OP 3330A is complete for performing Cross-Connecting the Non-Safety Related RPCCW headers.
		<b>US: resumes in AOP 3577</b>
	'A' CDS chiller should restart after a few minutes.	<b>RO:</b> 7.g. Verify associated CDS chiller – STARTS
		<b>BOP:</b> 7.h. Check CAR fans – TWO FANS RUNNING
	BOP starts 'B' CRDM fan.	<b>BOP:</b> 7.i. Check CRDM fans – TWO FANS RUNNING <b>RNO</b> – START fan(s), if available.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	If containment pressure is rising, RO may need to start the 'A' and 'B' CTMT Vacuum Pumps.	<b>RO:</b> 7.j. Check containment pressure – STABLE OR DECREASING <b>RNO</b> – Perform the following: 1) Using OP 3313E, "Containment Vacuum," Maintain normal operating containment pressure.
	Above 14.0 psia T/S 3.6.1.4 will be entered.	<b>US:</b> 2) Refer to Technical Specification 3.6.1.4, "Containment Pressure," for additional actions.
		<b>US:</b> Reads Note to crew: <b>NOTE</b> A functioning relief valve on the CVC seal return (CBO) line is adequate for maintaining CVC seal return (CBO) flow.
		<b>RO:</b> <b>8. Align Charging And Letdown</b> 8.a. Check the affected bus – Bus 34D <b>RNO</b> – Perform the following: 1) Using GA-14, Establish head vent letdown to the PRT. 2) Proceed to step 9.
		<b>RO: enters GA-14 (Rev. 001-01):</b> <b>1. Check Reactor Head Vent Valves – CLOSED</b> <ul style="list-style-type: none"> <li>3RCS*HC442A</li> <li>3RCS*HC442B</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>2. OPEN One Set Of Reactor Vessel Head Vent Isolation Valves</b> <ul style="list-style-type: none"> <li>3RCS*SV8095A</li> <li>3RCS*SV8096A</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>3RCS*SV8095B</li> <li>3RCS*SV8096B</li> </ul>
		<b>RO:</b> <b>3. Check Head Vent Letdown To VCT – DESIRED</b> <b>RNO– Proceed to Step 6.</b>
		<b>RO:</b> <b>6. Establish Head Vent Letdown To PRT</b> <p>6.a. Check head vent letdown – ALIGNED TO VCT</p> <b>RNO– Proceed to step 6.d.</b>
		<b>RO:</b> 6.d. Adjust head vent valve (3RCS*HC442A or 3RCS*HC442B) to establish desired flow to PRT.
		<b>RO:</b> 6.e. Go to procedure and step in effect
		<b>US: resumes in AOP 3577 at step 9 from RNO step 8.a.2)</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Move on to next event with the concurrence of the Chief Examiner	<b>BOP:</b> <b>9. Isolate Auxiliary Steam To Auxiliary Building</b> 9.a. CLOSE auxiliary steam isolation valves to the Auxiliary Building 3ASS*AOV102A 3ASS*AOV102B
		<b>BOP:</b> <b>10. Verify Service Water Flow To The Operating Control Building Chiller Heat Exchanger</b> <ul style="list-style-type: none"> <li>For chiller B (HVK*CHL1B)              Check annunciator CONTROL BLDG CHLR CNDSR B SW FLOW LO (VP1C 3-3) – NOT LIT</li> </ul>
	The 'B' Spent Fuel Pool Cooling Pump will be running.	<b>RO:</b> <b>11. Verify Spent Fuel Pool Cooling Alignment</b> 11.a. Check spent fuel cooling pumps – ONE RUNNING
		<b>RO:</b> 11.b. Check RPCCW to the in-service spent fuel pool cooling heat exchanger – FLOW INDICATED <ul style="list-style-type: none"> <li>RPCCW safety header flow indication greater than RHR HX RPCCW flow indication</li> </ul>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p>The T/S interpretation (step 16 of AOP 3577) may be asked as a follow-up. Given the loss of Bus 34C, the following T/S are in effect:</p> <ul style="list-style-type: none"> <li>• <b>T/S 3.8.1.1, AC Sources – Operating</b>  ACTIONS a. One offsite circuit  a.1 Perform Surveillance Requirement 4.8.1.1.1.a for remaining offsite circuit within 1 hour prior to or after entering this condition, and at least once per 8 hours thereafter.  AND  a.2 Restore the inoperable offsite circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.</li> <li>• <b>T/S 3.8.2.1, DC Sources – Operating</b>  a. With either Battery Bank 301A-1 or 301B-1, and/or one of the required full capacity chargers inoperable, restore the inoperable battery bank and/or full capacity charger to OPERABLE status within 2 hours or ...  b. With either Battery Bank 301A-2 or 301B-2 inoperable, and/or one of the required full capacity chargers inoperable, restore the inoperable battery bank and/or full capacity charger to OPERABLE status within 24 hours or ...</li> <li>• <b>T/S 3.8.3.1, Onsite Power Distribution – Operating</b>  a. With one of the required trains of A.C. emergency busses not OPERABLE, restore the inoperable train to OPERABLE status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.</li> <li>• <b>TRM 7.4.1, Fire Related Safe Shutdown Components 'A' train components.</b></li> <li>• <b>TRM 7.6.1, Equipment Required for Safety Grade Cold Shutdown for 'A' train components.</b></li> </ul>		
	Move on to next event	– End of AOP 3577 –

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
***** EVENT 5 *****		
<p align="center"><u>Details on Event 5:</u></p> <ol style="list-style-type: none"> <li>1. A Main Generator trip will occur causing an automatic Reactor trip. A steam line break will occur up-stream of 'C' MSIV. The 'C' &amp; 'D' MSIV's fail open while 'A' &amp; 'B' low set safety valves fail open. All four SG's will be faulted.</li> <li>2. While in E-0, Reactor Trip or Safety Injection, the crew will have to identify and mitigate two separate failures while dealing with complications of only having the 'B' train emergency bus available. RCP Trip criteria from the foldout page will be met. Tripping RCPs isn't a critical task based on the lack of plant impact if not performed.</li> </ol> <p><b>Event 6:</b> No Aux Feed pumps will auto start. The 'A' MDAFW pp is not available due to the prior loss of bus 34C and the 'B' MDAFW pump will trip on overcurrent once manually started. Steam supply valves for the Turbine Driven AFW pump must be opened to start the pump. <b>[Critical Task B.4]</b> – Establish 530 gpm AFW flow to the SGs before transition out of E-0.</p> <p><b>Event 7:</b> 3SIH*MV8801B, Charging to Cold Leg Injection Valve, will have failed to open on the SI signal coincident with P-19 (1900 psia). The parallel valve, 3SIH*MV8801A, will be closed based on the earlier 34C bus failure. The crew will need to identify this and open 3SIH*MV8801B to provide Charging flow to the core.</p>		
<p><b>Trigger 5</b>     <b>T = when directed by Chief Examiner</b> (EG01) Main Generator trip</p>	<p><u><b>Event 5</b></u></p>	<p><b>US:</b> Acknowledges report from RO or BOP on Reactor trip and <b>enters E-0 (Rev 29)</b> US does <u>not</u> read Caution/Notes to crew prior to Immediate Actions.</p> <p align="center"><b><u>CAUTION</u></b></p> <p>When throttling TD AFW and MD AFW pumps flow control valves, the valves should be throttled one at a time, at a rate that is greater than 15 seconds over the valve's full travel.</p> <p align="center"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Foldout page must be open.</li> <li>• ADVERSE CTMT is defined as GREATER THAN 180°F or GREATER THAN 10<sup>5</sup> R/hr in containment.</li> </ul> <p>The reactor can be interpreted as "tripped" when any two of three bulleted substeps of step 1. are satisfied.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>1. Verify Reactor Trip</b> <ul style="list-style-type: none"> <li>• Check reactor trip and bypass breakers – OPEN</li> <li>• Check rod bottom lights – LIT</li> <li>• Check neutron flux -DECREASING</li> </ul>
		<b>BOP:</b> <b>2. Verify Turbine Trip</b> <ul style="list-style-type: none"> <li>2.a. Check all turbine stop valves – CLOSED</li> <li>2.b. Check generator output breaker – OPEN</li> </ul>
	BOP recognizes 34C had a previous bus fault. The crew proceeds in E-0 with power available to only bus 34D (B train).	<b>BOP:</b> <b>3. Verify Power To AC Emergency Busses</b> <ul style="list-style-type: none"> <li>3.a. Check AC emergency busses 34C and 34D – BOTH ENERGIZED  <b>RNO</b>– Try to energize the affected AC emergency buss(es) from its associated EDG.  <b>IF</b> power can <b>NOT</b> be restored to at least one AC emergency bus,  <b>THEN</b>                          Go to ECA-0.0, Loss of All AC Power, step 3. (Observe NOTE prior to step 1.)                     </li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p>The RO should monitor for RCP Trip criteria and trip all four RCP's when RCS pressure less than 1500 psia (1800 psia ADVERSE) AND either an SI pump running or a CHS pump running with its cold leg injection MOV open.</p>	<p><b>RO:</b></p> <p><b>4. Check If SI Is Actuated</b></p> <p>4.a. Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) – LIT</p> <p><b>RNO–</b> Check if SI is required:</p> <ul style="list-style-type: none"> <li>• CTMT pressure GREATER THAN 18 psia <u>OR</u></li> <li>• PZR pressure LESS THAN 1890 psia <u>OR</u></li> <li>• PZR level LESS THAN 9% <u>OR</u></li> <li>• RCS subcooling LESS THAN 32°F <u>OR</u></li> <li>• SG pressure LESS THAN 660 psig</li> </ul> <p><u>IF</u> SI is required, <u>THEN</u> Initiate SI and Proceed to step 4.c.</p>
		<p><b>RO:</b></p> <p>4.c. Check reactor trip and bypass breakers – OPEN</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Based on the earlier bus 34C failure, there will be two 'B' train SW pumps running and no 'A' train pumps. This comment on the unavailability of 'A' train components is typical throughout the rest of the scenario. As such, each step will NOT be marked with this statement.	RO: 5. <b>Verify Service Water Pumps – AT LEAST ONE PER TRAIN RUNNING</b>
	RO should recognize the loss of CCP to the 'A' & 'D' RCPs and stop them.	RO: 6. <b>Verify RPCCW Pumps – ONE PER TRAIN RUNNING</b>
		RO: 7. <b>Verify ECCS Pumps Running</b> <ul style="list-style-type: none"> <li>• Check SI pumps – RUNNING</li> <li>• Check RHR pumps – RUNNING</li> <li>• Check two charging pumps – RUNNING</li> </ul>
<p>BOP may call requesting PEO investigate switchgear for the 'B' MDAFW pump.</p> <p><b>T = 5 min</b></p> <p><b>Call as Primary PEO and report:</b></p> <p>"The 'B' MDAFW pump breaker tripped on overcurrent."</p>	<p><b>Event 6: No aux feed pumps start</b></p> <p>NO AFW pumps will be running.</p> <p>'A' MDAFW: BUS 34C has no power</p> <p>'B' MDAFW: trips on over current once manually started</p> <p>'C' TDAFW: must be started by opening steam supply valves. <b>[Critical Task B.4]</b></p> <p>Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.</p>	<p><b>BOP:</b></p> <p>8. <b>Verify AFW Pumps Running</b></p> <p>8.a. Check MD pumps – RUNNING <b>RNO– START pump(s).</b></p> <p>8.b. Check turbine-driven pump – RUNNING, IF NECESSARY <b>RNO– OPEN steam supply valves.</b></p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP and RO:</b></p> <p><b>9. Verify FW Isolation</b></p> <ul style="list-style-type: none"> <li>• Check SG feed regulating valves – CLOSED</li> <li>• Check SG feed regulating bypass valves – CLOSED</li> <li>• Check FW isolation trip valves – CLOSED</li> <li>• Check TD FW pumps – TRIPPED</li> <li>• Check MD FW pump – STOPPED</li> <li>• Check SG blowdown isolation valves – CLOSED</li> <li>• Check SG blowdown sample isolation valves – CLOSED</li> <li>• Check SG chemical feed isolation valves – CLOSED</li> </ul> <p><b>RNO</b>– Align component(s) as necessary for minimum safety function.</p>
		<p><b>RO:</b></p> <p><b>10. Check If Main Steam Lines Should Be Isolated</b></p> <p>10.a. Check Ctmt pressure – GREATER THAN 18 psia</p> <p style="text-align: center;"><u>OR</u></p> <p>Any SG pressure – LESS THAN 660 psig</p> <p style="text-align: center;"><u>OR</u></p> <p>Annunciator “MAIN STEAMLINE ISOLATION” (MB2B 5-7) – LIT</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	'C' and 'D' MSIVs are failed open.	<b>BOP:</b> 10.b. Verify MSIVs and MSIV bypass valves – CLOSED <b>RNO</b> – Initiate MSI. <u>IF</u> MSI will <u>NOT</u> actuate, <u>THEN</u> CLOSE the MSIVs and MSIV bypass valves.
	'C' and 'D' MSIVs are failed open.	<b>RO:</b> 10.c. Check ESF Group 3 lights – LIT <b>RNO</b> —Align steam line drains for minimum safety functions
		<b>RO:</b> <b>11. Check If CDA Required</b> 11.a. Check Ctmt pressure -GREATER THAN 23 psia <u>OR</u> Annunciator “CONTAINMENT DEPRES ACTUATION” (MB2B 5-5) – LIT <b>RNO</b> – Proceed to step 12.
		<b>BOP:</b> <b>12. Verify CAR Fans Operating In Emergency Mode</b>
	BOP stops 'C' CAR fan. Powered from Bus 32M, which is fed from Bus 34B.	<b>BOP:</b> 12.a. Check CAR fan status: <ul style="list-style-type: none"> <li>CAR fans A and B – RUNNING</li> <li>CAR fan C – STOPPED</li> </ul> <b>RNO</b> – START/STOP CAR fans as necessary.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Only 'B' train valves are open.	<b>RO:</b> 12.b. Verify RPCCW Ctmt supply and return header isolations – OPEN
	Only 'B' train valves are open.	<b>RO:</b> 12.c. Verify Train A and B RPCCW supply and return to chill water valves – OPEN
	Minimum safety function should be met by the 'B' train.	<b>RO:</b> <b>13. Verify CIA</b> 13.a. Check ESF Group 2, columns 2 through 10 – LIT <b>RNO</b> – Initiate CIA. <u>IF</u> ESF Group 2, columns 2 through 10 are <u>NOT</u> lit, <u>THEN</u> Using Attachment A, Reposition valves as necessary for minimum safety function.
<b>RCS pressure may be below the fold-out page criteria for stopping all RCPs.</b>	<b>Event 7: Failure of 3SIH*MV8801B</b> 3SIH*MV8801B, Charging to Cold Leg Injection Valve, failed to open after the SI signal coincident with P-19 (1900 psia). The parallel valve, 3SIH*MV8801A, will be closed based on the earlier 34C bus failure. The crew will need to identify this and open 3SIH*MV8801B to provide Charging flow to the core. <b>[Critical Task B.6]</b> – Manually open valves to establish injection flow from at least one Charging/SI pump before transition out of E-0. <b>RO should verify RCS pressure is less than 1900 psia and OPEN 3SIH*MV8801B.</b>	<b>RO:</b> <b>14. Verify Proper ESF Status Panel Indication</b> <ul style="list-style-type: none"> <li>Verify ESF Group 1 lights – OFF</li> <li>Verify ESF Group 2 lights – LIT</li> </ul> <b>RNO</b> – Align component(s) as necessary for minimum safety function.



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>15. Determine If ADVERSE CTMT Conditions Exist</b> <ul style="list-style-type: none"> <li>Ctmt temperature – GREATER THAN 180°F</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>Ctmt radiation – GREATER THAN 10<sup>5</sup> R/hr</li> </ul> <b>RNO– DO NOT use ADVERSE CTMT parameters.</b>
		<b>RO:</b> <b>16. Verify ECCS Flow</b> <p>16.a. Check PZR pressure – GREATER THAN 1900 psia</p> <b>RNO– Proceed to step 16.d.</b>
	<b>Event 7:</b> This is a <b>second</b> chance for the RO to identify 3SIH*MV8801B failed to open. <b>The RO should verify RCS pressure is less than 1900 psia and OPEN 3SIH*MV8801B.</b>	<b>RO:</b> 16.d. Check charging pumps – FLOW INDICATED <b>RNO– START pumps and Align valves.</b>
		<b>RO:</b> 16.e. Check RCS pressure – LESS THAN 1650 psia (1950 psia ADVERSE CTMT)
		<b>RO:</b> 16.f. Check SI pumps – FLOW INDICATED
		<b>RO:</b> 16.g. Check RCS pressure – LESS THAN 300 psia (500 psia ADVERSE CTMT) <b>RNO– Proceed to step 17.</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	The US should conduct a short brief here.	<b>BOP:</b> <b>17. Verify Adequate Heat Sink</b> 17.a. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) <b>RNO</b> – Proceed to step 17.d.
		<b>BOP:</b> 17.d. Verify Total AFW Flow – GREATER THAN 530 gpm
		<b>BOP:</b> <b>18. Verify AFW Valve Alignment – PROPER EMERGENCY ALIGNMENT</b>
		<b>RO:</b> <b>19. Verify ECCS Valve Alignment – PROPER EMERGENCY ALIGNMENT</b>
	Will be lit due to manual SI or loss of power to 'A' train earlier.	<b>RO:</b> <b>20. Check If CBI Required</b> 20.a. Check annunciator "CONTROL BUILDING ISOLATION" (MB4D 3-6) – LIT
	If the crew does NOT manual SI, then the CBI alignment will be abnormal (due to 'A' train partial CBI on previous LOP). If this is the case, the crew will have to perform a RNO action to complete CBI alignment for Train 'B'. As such, the BOP will place the 'B' Control Building Filter Fan to ON.	<b>BOP:</b> 20.b. Check Train A Control Building filter fan (3HVC*FN1A) – RUNNING <b>RNO</b> – Perform the following: 1) <u>IF</u> Train B Control Building filter fan is running (3HVC*FN1B running), <u>THEN</u> Proceed to step 20.c. 2) Place one Control Building filter fan control switch in ON.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	3HVC*AOD119B opens.	<b>BOP:</b> 20.c. Check recirc damper for the running Control Building filter fan (3HVC*AOD119A or B) – OPEN
	Minimum safety function will be met.	<b>RO:</b> 20.d. Verify ESF Group 2 CBI lights – LIT <b>RNO</b> – Align HVAC components as necessary for minimum safety function.
		<b>BOP:</b> 20.e. Verify Control Building purge supply fan and purge exhaust fan – NOT RUNNING
		<b>BOP:</b> 20.f. Place kitchen exhaust fan in OFF
<b>T = when requested</b>  <b>Report:</b> “All Unit 3 SLCRS doors closed.”		<b>RO or BOP:</b> 20.g. Verify SLCRS doors – CLOSED <b>RNO</b> – Request Security Close all SLCRS doors.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T = when requested</b></p> <p><b>Call back in 10 minutes and report:</b>                      "Control Building pressure boundary doors are closed and dogged."</p>	<p>PEO will be dispatched.</p>	<p><b>RO or BOP:</b></p> <p>20.h.Perform the following:</p> <ul style="list-style-type: none"> <li>• CLOSE and DOG the following Control Building pressure boundary doors                             <ul style="list-style-type: none"> <li>○ CB west 47'6" (C-47-1A)</li> <li>○ CB east 64'6" (C-64-1B)</li> </ul> </li> <li>• Verify the following Control Building pressure boundary doors – CLOSED                             <ul style="list-style-type: none"> <li>○ CB west 47'6" (C-47-1)</li> <li>○ CB north 64'6" chiller room door (C-64-4)</li> <li>○ CB north 64'6" chiller room door (C-64-5)</li> <li>○ CB east 49'6"(C-49-1)</li> </ul> </li> </ul>
		<p><b>BOP:</b></p> <p><b>21. Check RCS Temperature</b></p> <p>21.a.Using GA-26, Dump steam as necessary to control RCS cold leg WR temperature – BETWEEN 550°F AND 560°F</p>
		<p><b>BOP:</b></p> <p>21.b.Verify RCS cold leg WR temperature – GREATER THAN 550°F</p> <p><b>RNO</b>– Proceed to step 21.d.</p>
		<p><b>BOP:</b></p> <p>21.d.Maintain total feed flow BETWEEN 530 and 600 gpm until NR level is GREATER THAN 8% (42% ADVERSE CTMT) in at least one SG</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 21.e. CLOSE SG atmospheric relief and relief bypass valves
	2 MSIV's are still failed open. RNO actions necessary.	<b>BOP:</b> 21.f. Check the following valves – CLOSED <ul style="list-style-type: none"> <li>• MSIVs</li> <li>• MSIV bypass valves</li> </ul> <b>RNO</b> – Place both condenser steam dump interlock selector switches to OFF.  <u>IF</u> unexpected cooldown continues, <u>THEN</u> CLOSE the MSIVs and MSIV bypass valves.
		<b>US:</b> reads notes to crew: <b><u>NOTE</u></b> <ul style="list-style-type: none"> <li>• If the SBO diesel auxiliaries are not repowered within an hour, the SBO diesel may be unavailable for starting.</li> <li>• Power to the SBO diesel auxiliaries should be monitored and if power is lost, GA-25 or GA-27, as applicable, should be used to re-establish power.</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	34A1-2 closed to Bus 34A which is energized	<b>BOP:</b> <b>22. Check Power To SBO Diesel Auxiliaries</b> 22.a. Verify any SBO bus tie breaker – CLOSED TO AN ENERGIZED BUS <ul style="list-style-type: none"> <li>• Bus 34A: 34A1-2</li> <li>• Bus 34B: 34B1-2</li> <li>• Bus 24E: A505 (Unit 2)</li> </ul>
		<b>RO:</b> <b>23. Check PZR Valves</b> 23.a. Verify PORVs – CLOSED
		<b>RO:</b> 23.b. Verify normal PZR spray valves – CLOSED
		<b>RO:</b> 23.c. Verify PORV block valves – AT LEAST ONE ENERGIZED VALVE OPEN
		<b>RO:</b> 23.d. Verify PZR safety valves – CLOSED
		<b>US:</b> Reads Caution to crew: <b><u>CAUTION</u></b> To prevent seal damage, seal injection flow should be maintained to all RCPs.
	The RCP's should have been stopped earlier based on foldout page criteria as written into guide on previous steps.	<b>RO:</b> <b>24. Check If RCPs Should Be Stopped</b> 24.a. Verify RCPs – ANY RUNNING <b>RNO–</b> Proceed to step 25.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	The crew will transition to E-2 here.	<p><b>BOP:</b>  <b>25. Check If SG Secondary Boundaries Are Intact</b>                  25.a. Check pressure in all SGs –</p> <ul style="list-style-type: none"> <li>• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER</li> <li>• NO SG COMPLETELY DEPRESSURIZED</li> </ul> <p><b>RNO</b>– Initiate monitoring of CSF Status Trees and Go to E-2, Faulted Steam Generator Isolation.</p>
		<p><b>US:</b>  <b>Enters E-2 (Rev 012) and reads Caution to crew:</b>  <b><u>CAUTION</u></b></p> <ul style="list-style-type: none"> <li>• At least one SG must be maintained available for RCS cooldown.</li> <li>• Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown or sampling is required.</li> <li>• If RWST level decreases to LESS THAN 520,000 gal, Go to ES-1.3, Transfer to Cold Leg Recirculation, to align the ECCS system.</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T = when requested to perform Attachment A</b></p> <p>Use applicable trigger as directed; (Note, triggers have delays included)</p> <p><b>Trigger 7 to remove Train A fuses</b> (MSR40 &amp; MSR42 to OUT) 3MSS*CTV27C Train A Grn &amp; Red OFF 3MSS*CTV27D Train A Grn &amp; Red OFF</p> <p><b>Trigger 8 to remove Train B fuses</b> (MSR41 &amp; MSR43 to OUT) 3MSS*CTV27C Train B Grn &amp; Red OFF 3MSS*CTV27D Train B Grn &amp; Red OFF</p>	<p>Attachment A will be unsuccessful in closing the MSIV's.</p>	<p><b>BOP:</b></p> <p><b>1. Check Main Steam Isolation And Bypass Valves – CLOSED</b></p> <p><b>RNO</b>– CLOSE valves. <u>IF</u> flow path(s) can <u>NOT</u> be isolated, <u>THEN</u> Using Attachment A, Perform actions as necessary to provide isolation.</p>
	<p>The crew will transition to ECA-2.1 here.</p>	<p><b>BOP:</b></p> <p><b>2. Check At Least One SG Secondary Boundary Is Intact</b></p> <p>2.a. Check pressures in all SGs – AT LEAST ONE STABLE OR INCREASING</p> <p><b>RNO</b>– <u>IF</u> all SG pressures decreasing in an uncontrolled manner, <u>THEN</u> Go to ECA-2.1, Uncontrolled Depressurization of All Steam Generators.</p>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US: Transitions to ECA-2.1 (Rev 018-00) and reads Caution / Note to crew:</b></p> <p><b><u>CAUTION</u></b></p> <ul style="list-style-type: none"> <li>• If the capability (e.g., open throttled valves or start TD AFW pump stopped in step 1.b.) to feed SGs at GREATER THAN 530 gpm is <u>NOT</u> available and Heat Sink status is RED, then Go to FR-H.1, Response to Loss of Secondary Heat Sink.</li> <li>• If the TD AFW pump is the only available source of feed flow, a steam supply to the TD AFW pump must be maintained from at least one SG.</li> </ul> <p><b><u>NOTE</u></b></p> <p>Foldout page must be open.</p>
	Already completed in E-2.	<p><b>BOP:</b></p> <p><b>1. Check Secondary Pressure Boundary</b></p> <p>1.a. Verify MSIVs and MSIV bypass valves – CLOSED</p> <p><b>RNO</b>– Initiate MSI.</p> <p><u>IF</u> MSI will <u>NOT</u> actuate,</p> <p><u>THEN</u></p> <p>CLOSE the MSIVs and MSIV bypass valves.</p> <p><u>IF</u> MSIVs OR MSIV bypass valves will <u>NOT</u> close,</p> <p><u>THEN</u></p> <p>Using Attachment B, Pull the affected valve(s) fuse block.</p>

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SCENARIO TIME LINE																								
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS																						
	<p>TDAFW is the only source of AFW.</p> <p>The crew should not isolate all steam supply valves to the TDAFW pump. This tests the previous CAUTION</p> <p>“If the TD AFW pump is the only available source of feed flow, a steam supply to the TD AFW pump must be maintained from at least one SG.”</p> <p>The US should leave one TD AFW pp steam supply valve open.</p>	<p><b>BOP &amp; RO:</b></p> <p>1.b. Check SG isolation</p> <ul style="list-style-type: none"><li>• Verify SG feed regulating valves – CLOSED</li><li>• Verify SG feed regulating bypass valves – CLOSED</li><li>• Verify FW isolation trip valves – CLOSED</li><li>• Verify the SG atmospheric relief and bypass valves – CLOSED</li><li>• Verify steam supply valves to TD AFW pump – CLOSED</li><li>• Verify SG blowdown isolation valves – CLOSED</li><li>• Verify SG blowdown sample isolation valves – CLOSED</li><li>• Verify SG chemical feed isolation valves – CLOSED</li><li>• Using table, Verify main steam line drains upstream of MSIVs and TD AFW pump – CLOSED</li></ul>																						
<table><tr><th>SG A</th><th>SG B</th><th>SG C</th><th>SG D</th></tr><tr><td>3DTM*AOV29A</td><td>3DTM*AOV29B</td><td>3DTM*AOV29C</td><td>3DTM*AOV29D</td></tr><tr><td>3DTM*AOV61A</td><td>3DTM*AOV61B</td><td>3DTM*AOV61C</td><td>3DTM*AOV61D</td></tr><tr><td>3DTM*AOV63A</td><td>3DTM*AOV63B</td><td></td><td>3DTM*AOV63D</td></tr><tr><td>3DTM*AOV64A</td><td>3DTM*AOV64B</td><td></td><td>3DTM*AOV64D</td></tr></table>					SG A	SG B	SG C	SG D	3DTM*AOV29A	3DTM*AOV29B	3DTM*AOV29C	3DTM*AOV29D	3DTM*AOV61A	3DTM*AOV61B	3DTM*AOV61C	3DTM*AOV61D	3DTM*AOV63A	3DTM*AOV63B		3DTM*AOV63D	3DTM*AOV64A	3DTM*AOV64B		3DTM*AOV64D
SG A	SG B	SG C	SG D																					
3DTM*AOV29A	3DTM*AOV29B	3DTM*AOV29C	3DTM*AOV29D																					
3DTM*AOV61A	3DTM*AOV61B	3DTM*AOV61C	3DTM*AOV61D																					
3DTM*AOV63A	3DTM*AOV63B		3DTM*AOV63D																					
3DTM*AOV64A	3DTM*AOV64B		3DTM*AOV64D																					

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> Reads Caution / Note to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>A minimum feed flow of 100 gpm must be maintained to each SG with a NR level LESS THAN 8% (42% ADVERSE CTMT).</p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>Shutdown margin must be monitored during RCS cooldown using GA-15, Establishing RCS Boron Concentration For Shutdown Margin.</p>
	<p>The BOP will decrease (&amp; maintain until directed otherwise) feed flow to 100 gpm (75–125 gpm) per SG. <b>[Critical Task B.33]</b> – Control AFW flow rate to not less than 100 gpm per SG in order to minimize the RCS cooldown rate before a severe (orange-path) challenge develops to the integrity CSF.</p> <p>Mainboard indicator scales for AFW flow are non-linear, and have only one subdivision below 100 gpm. To meet the Critical Task, the acceptable range for AFW flow is 75 to 125 gpm. This band accounts for the readability of the scale, keeps the S/G tubes from drying out, and minimizes the cooldown rate.</p>	<p><b>BOP:</b></p> <p><b>2. Control Feed Flow To Minimize RCS Cooldown</b></p> <p>2.a. Check cooldown rate in RCS cold legs – LESS THAN 80°F/hr</p> <p style="padding-left: 40px;"><b>RNO</b>– Decrease feed flow to 100 gpm to each SG and Proceed to step 2.c.</p>
		<p><b>RO:</b></p> <p>2.c. Check RCS hot leg WR temperatures – STABLE OR DECREASING</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> Reads Caution to crew, Note to self:</p> <p><b><u>CAUTION</u></b></p> <p>To prevent seal damage, seal injection flow should be maintained to all RCPs.</p> <p><b><u>NOTE</u></b></p> <p>The RCP trip criteria is applicable until SI is terminated in step 19.</p>
<p><b>REMOVE</b> malfunction <b>MS07B</b> (This reseats 'B' SG low set safety valve)</p> <p>The scenario may end with the transition to E-2 prior to Step 11, or with a demonstrated understanding of the upcoming transition if in SI termination steps 11 – 26.</p> <p><b>The scenario will end at the discretion of the Chief Examiner.</b></p> <p>This guide contains ECA-2.1 through step 26.</p>	<p>The last scenario item is for the crew to recognize that the 'B' SG is no longer faulted and to make (or show understanding of) the proper transition to E-2 (per foldout page).</p> <p>The crew has until Step 11 to notice pressure rising in the 'B' SG. The crew may transition to E-2 based upon foldout page criteria. After Step 11 is begun an upcoming Caution prevents the crew from transitioning until after SI is terminated in Step 26.</p>	<p><b>RO:</b></p> <p><b>3. Check If RCPs Should Be Stopped</b></p> <p>3.a. Check RCPs – ANY RUNNING <b>RNO</b>-Proceed to CAUTION prior to step 4.</p>
		<p><b>US:</b> Reads Caution to crew:</p> <p><b><u>CAUTION</u></b></p> <p>If any PZR PORV opens because of high PZR pressure, step 4.a. should be repeated after pressure decreases to LESS THAN 2350 psia.</p>
	<p>'A' PORV indicating light has no power or alarms.</p> <p>RO must use alternate indications (PRT conditions) to confirm PORV closure.</p>	<p><b>RO:</b></p> <p><b>4. Check PZR PORVs And Block Valves</b></p> <p>4.a. Verify PORVs – CLOSED</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 4.b. Verify block valves – AT LEAST ONE OPEN
		<b>RO:</b> <b>5. Check Secondary Radiation</b> 5.a. Using GA-30, Align RPCCW for RCS and SG sampling
	US continues on with ECA-2.1 on page 62.	<b>RO: enters GA-30 (Rev. 000)</b> <b>1. Check If RPCCW Can Be Restored</b> 1.a. Check annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5-5) – NOT LIT
	'B' CCP running	<b>RO:</b> 1.b. Check any RPCCW pumps – RUNNING
		<b>RO: reads Caution to self:</b> <b><u>CAUTION</u></b> After SI reset, manual operator action is required to: <ul style="list-style-type: none"> <li>• Open the charging pump cold leg injection valves when RCS pressure decreases to LESS THAN 1900 psia.</li> <li>• Restart safeguards equipment if offsite power is lost.</li> </ul>
		<b>RO:</b> <b>2. Reset ESF Actuation Signals</b> 2.a. RESET SI 2.b. RESET CIA

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p>RO: reads Note to self:</p> <p><b><u>NOTE</u></b></p> <p>Instrument air compressor B is tripped by SI, CDA and LOP.</p>
	<p>'A' instrument air compressor should still be running. 'B' was tripped on the SI and could be restarted.</p>	<p>RO:</p> <p><b>3. Verify Instrument Air Available</b></p> <p>3.a. Check instrument air compressors – AT LEAST ONE RUNNING</p> <p><b>RNO–</b> Perform the following:</p> <ol style="list-style-type: none"> <li>1) RESET LOP if required.</li> <li>2) START one instrument air compressor.</li> </ol>
<p><b>T = when contacted</b></p> <p>Report:</p> <p><b>RPCCW non-safety header cross connect valves 3CCP-V186, 167, 187 and 177 are still open.</b></p>	<p>These valves were previously opened during recovery from the loss of Bus 34C.</p>	<p>RO:</p> <p><b>4. Align RPCCW To Primary Sample Sink</b></p> <p>4.a. Check RPCCW pumps – TRAIN A PUMP RUNNING</p> <p><b>RNO–</b> Perform the following:</p> <ol style="list-style-type: none"> <li>1) OPEN RPCCW non-safety related header Train B isolation valves: <ul style="list-style-type: none"> <li>• 3CCP*AOV197B/194B</li> <li>• 3CCP*AOV10B/19B</li> </ul> </li> <li>2) Locally Open RPCCW non-safety header crossconnect valves: <ul style="list-style-type: none"> <li>• 3CCP-V186</li> <li>• 3CCP-V167</li> <li>• 3CCP-V187</li> <li>• 3CCP-V177</li> </ul> </li> <li>3) Proceed to step 5.</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>5. Obtain RCS and SG Samples</b> 5.a. RESET SG blowdown sample isolation 5.b. OPEN SG blowdown sample isolation valves
<b>T = when contacted</b>  <b>Inform</b> caller that sample results will take more than 30 minutes to produce.		<b>RO:</b> 5.c. Request chemistry obtain RCS and SG samples using HP coverage.
		<b>RO:</b> <b>6. Go To Procedure And Step In Effect</b>
		<b>US: resumes in ECA-2.1</b>
		<b>RO:</b> 5.b. Verify trend history and alarm status of radiation monitors <ul style="list-style-type: none"> <li>• Main steam line – NORMAL</li> <li>• Condenser air ejector – NORMAL</li> <li>• SG blowdown – NORMAL</li> </ul>
<b>T = when contacted</b>  <b>Inform</b> caller that sampling is in progress.		<b>RO:</b> 5.c. Verify SG chemistry activity sample results – AVAILABLE <b>RNO</b> – Proceed to step 6. and, <u>WHEN</u> SG sample results are available, <u>THEN</u> Perform step 5.d.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 5.d. Verify chemistry samples – NO SG INDICATES ABNORMAL RADIATION
		<b>US:</b> Reads Caution to crew: <b><u>CAUTION</u></b> After SI reset, manual operator action is required to: <ul style="list-style-type: none"> <li>• Open the charging pump cold leg injection valves when RCS pressure decreases to LESS THAN 1900 psia.</li> <li>• Restart the RHR pumps if RCS pressure decreases in an uncontrolled manner to LESS THAN 300 psia (500 psia ADVERSE CTMT).</li> <li>• Restart safeguards equipment if offsite power is lost.</li> </ul>
		<b>RO:</b> <b>6. Check If RHR Pumps Should Be Stopped</b> 6.a. Check RHR pumps – ANY RUNNING IN SI MODE
		<b>RO:</b> 6.b. Check RCS pressure – GREATER THAN 300 psia (500 psia ADVERSE CTMT)
		<b>RO:</b> 6.c. Check RCS pressure – STABLE OR INCREASING



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 6.d. RESET the following as required: <ul style="list-style-type: none"> <li>• SI</li> <li>• CDA</li> <li>• LOP</li> </ul>
		<b>RO:</b> 6.e. STOP RHR pumps and Place in AUTO
		<b>RO:</b> <b>7. Check If Containment Spray Should Be Stopped</b> 7.a. Verify quench spray pumps – RUNNING <b>RNO</b> – Proceed to step 8.
		<b>RO:</b> <b>8. Check RWST Level – GREATER THAN 520,000 gal</b>
	Temp remains > 440°F	<b>RO:</b> <b>9. Check If SI Accumulators Should Be Isolated</b> 9.a. Verify at least two RCS hot leg WR temperatures – LESS THAN 440°F <b>RNO</b> – Proceed to step 10. and, <u>WHEN</u> At least two RCS hot leg WR temperatures are LESS THAN 440°F, <u>THEN</u> Perform step 9.b.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>10. Check If ECCS Flow Should Be Reduced</b> 10.a. Verify RCS sub cooling based on core exit TCs – GREATER THAN 32°F (115°F ADVERSE CTMT)
		<b>RO:</b> 10.b. Verify RCS pressure – STABLE OR INCREASING
	This may be a hold step if Pressurizer level is less than 16%. If it is a hold step, eventually ECCS flow will cause Pressurizer level to rise above 16%.	<b>RO:</b> 10.c. Verify PZR level – GREATER THAN 16% (50% ADVERSE CTMT) <b>RNO–</b> Perform the following: 1) Try to stabilize PZR pressure using normal PZR spray. 2) Return to step 10.a.
		<b>US:</b> Reads Caution to crew: <b><u>CAUTION</u></b> After SI reset, manual operator action is required to: <ul style="list-style-type: none"> <li>• Open the charging pump cold leg injection valves when RCS pressure decreases to LESS THAN 1900 psia.</li> <li>• Restart safeguards equipment if offsite power is lost.</li> </ul> If any SG pressure increases, Complete steps 11. through 26., then go to E-2, Faulted Steam Generator Isolation.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>11. RESET ESF Actuation Signals If Required</b> 11.a.RESET SI 11.b.RESET the following: <ul style="list-style-type: none"> <li>• CDA</li> <li>• LOP</li> <li>• CIA</li> <li>• CIB</li> </ul>
<b>T = Step 11 complete</b>  <b>REMOVE MS07A</b> (Safety relief valve MSS-RV22A closes)	Crew should eventually recognize that pressure in SG 'A' is increasing.  Crew must complete steps 11 – 26 before transitioning back to E-2.	<b>BOP:</b> <b>12. Restore MCC 32-3T</b> 12.a.Check emergency bus 34C – ENERGIZED <b>RNO</b> – Proceed to step 13. and, <u>WHEN</u> Power is restored to emergency bus 34C, <u>THEN</u> Perform step 12.b.
		<b>RO:</b> <b>13. Establish Instrument Air To Cmt</b> 13.a.Check instrument air compressors – AT LEAST ONE RUNNING
		<b>RO:</b> 13.b.OPEN instrument air Cmt isolation valves
		<b>RO:</b> <b>14. STOP All But One Charging Pump And Place In AUTO</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>15. Check RCS Pressure – STABLE OR INCREASING</b>
		<b>US:</b> <b>16. Establish Normal Charging Flow Path</b> 16.a. Fully Open charging line flow control valve
	RO will close one of two charging loop isolation valves.	<b>RO:</b> 16.b. Verify charging loop isolation valves (3CHS*AV8146 or 3CHS*AV8147) – ONE OPEN <b>RNO</b> – Re-position valves to establish only one open.
	RO has to realize 8105 was previously open before power was lost OR use status panel indication.	<b>RO:</b> 16.c. OPEN charging isolation valves <ul style="list-style-type: none"> <li>• 3CHS*MV8106</li> <li>• 3CHS*MV8105</li> </ul>
	3CHS*MV8511A was already closed.	<b>RO:</b> 16.d. CLOSE the charging pump miniflow isolations to the RWST <ul style="list-style-type: none"> <li>• 3CHS*MV8511A</li> <li>• 3CHS*MV8511B</li> </ul>
	3SIH*MV8801A was already closed.	<b>RO:</b> 16.e. CLOSE both charging pump cold leg injection valves <ul style="list-style-type: none"> <li>• 3SIH*MV8801A</li> <li>• 3SIH*MV8801B</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	3CHS*MV8110 was already open.	<b>RO:</b> 16.f. OPEN the charging pump recirculation isolation valves <ul style="list-style-type: none"> <li>• 3CHS*MV8111A</li> <li>• 3CHS*MV8111B</li> <li>• 3CHS*MV8111C</li> <li>• 3CHS*MV8110</li> </ul>
		<b>RO:</b> <b>17. Verify PZR Level</b> 17.a. Check PZR level – STABLE OR INCREASING
	Charging flow will be throttled back to match total flow with head vent letdown.	<b>RO:</b> 17.b. Control charging flow to maintain PZR level
		<b>RO:</b> <b>18. Check If SI Pumps Should Be Stopped</b> 18.a. Check SI pumps – RUNNING
		<b>RO:</b> 18.b. Check RCS pressure: <ul style="list-style-type: none"> <li>• Pressure – STABLE OR INCREASING</li> <li>• Pressure – GREATER THAN 1650 psia (1950 psia ADVERSE CTMT)</li> </ul>
		<b>RO:</b> 18.c. STOP SI pumps and Place in AUTO
		<b>RO:</b> <b>19. Check If RHR Pumps Should Be Stopped</b> 19.a. Check RHR pumps – ANY RUNNING IN SI MODE 19.b. STOP RHR pumps and Place in AUTO

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> Reads Note to self: <b>NOTE</b> RCP trip criteria associated with step 3. are no longer applicable.
		<b>RO:</b> <b>20. Verify ECCS Flow Not Required</b> 20.a. Check RCS subcooling based on core exit TCs – GREATER THAN 32°F (115°F ADVERSE CTMT) 20.b. Check PZR level – GREATER THAN 16% (50% ADVERSE CTMT)
		<b>RO:</b> <b>21. Check RCS Hot Leg WR Temperatures – STABLE OR DECREASING</b>
		<b>BOP:</b> <b>22. Check NR Level In All SGs – LESS THAN 50%</b>
		<b>RO:</b> <b>23. Check If Letdown Can Be Established</b> 23.a. Verify PZR level – GREATER THAN 25% (50% ADVERSE CTMT)
		<b>RO:</b> 23.b. Perform the following: <ul style="list-style-type: none"> <li>Verify Train A RPCCW pump – RUNNING</li> </ul> <b>RNO</b> – Proceed to step 23.d.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Head vent letdown previously aligned to the PRT. Crew may elect to swap letdown over to the VCT as shown here, or may determine letdown is already in service and move on to step 26. Either is acceptable.	<b>RO:</b> 23.d.Perform the following: 1) Verify Train B RPCCW pump – RUNNING 2) Using GA-14, Establish head vent letdown to VCT. 23.e.Proceed to step 26.
	This procedure will align head vent letdown to the outlet of the VCT, upstream of the charging pump suction.	<b>RO: enters GA-14 (Rev. 001-01):</b> <b>1. Check Reactor Head Vent Valves – CLOSED</b> • 3RCS*HC442A • 3RCS*HC442B <b>RNO– CLOSE Valves.</b>
		<b>RO:</b> <b>2. OPEN One Set Of Reactor Vessel Head Vent Isolation Valves</b> • 3RCS*SV8095A • 3RCS*SV8096A <u>OR</u> • 3RCS*SV8095B • 3RCS*SV8096B
		<b>RO:</b> <b>3. Check Head Vent Letdown To VCT – DESIRED</b>
		<b>RO:</b> <b>4. Check Instrument Air – IN SERVICE</b>
		<b>RO:</b> <b>5. Establish Head Vent Letdown to VCT</b> 5.a. Check Train B RPCCW – IN SERVICE

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 5.b. Check RCP seal leakoff containment inner and outer isolation valves (3CHS*MV8112 and 3CHS*MV8100) – OPEN <b>RNO–</b> Perform the following: 1) RESET CIA, if required. 2) OPEN valves.
		<b>RO:</b> 5.c. Open reactor vessel head to excess letdown valve (3RCS*MV8098)
		<b>RO:</b> 5.d. Place excess letdown divert valve (3CHS*AV8143) to VCT position
		<b>RO:</b> 5.e. Adjust excess letdown flow control valve (3CHS-HC123) to obtain the desired flow rate while maintaining: <ul style="list-style-type: none"> <li>Excess letdown heat exchanger outlet temperature LESS THAN OR EQUAL TO 165° F (3CHS-TI 122)</li> <li>VCT Pressure LESS THAN OR EQUAL TO 65 psia (3CHS-PI 115)</li> <li>No.1 seal leak rates in the normal operating range for running RCPs B and C, using graph on page 7.</li> <li>CBO flow within normal operating range for running RCPs A and D, using graph on page 8.</li> </ul>
		<b>RO:</b> 5.f. Go to procedure and step in effect



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		US: resumes in ECA-2.1 at step 26
	Based on no RCP's (no spray flow) and no letdown, crew will use RNO control RCS pressure using one PORV.	<p><b>RO:</b></p> <p><b>26. Maintain PZR Pressure Stable</b></p> <p>26.a. Operate PZR heaters and normal spray as necessary to maintain PZR pressure stable</p> <p><b>RNO– IF</b> normal PZR spray is <b>NOT</b> available <b>AND</b> letdown is in service, <b>THEN</b></p> <p>Using GA-28, Control RCS pressure using auxiliary spray.</p> <p><b>IF</b> auxiliary spray is <b>NOT</b> available, <b>THEN</b></p> <p>Control RCS pressure using one PORV.</p>
	Crew should have recognized by now that pressure is rising in the 'A' SG, and level is increasing.	With step 26 complete, crew can exit ECA-2.1 and transition to E-2.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Session can be terminated.	<p><b>US: Transitions back to E-2 step 1 and reads Caution to crew</b></p> <p><b><u>CAUTION</u></b></p> <ul style="list-style-type: none"> <li>At least one SG must be maintained available for RCS cooldown.</li> <li>Any faulted SG or secondary break should remain isolated during subsequent recovery actions unless needed for RCS cooldown or sampling is required.</li> <li>If RWST level decreases to LESS THAN 520,000 gal, go to ES-1.3, Transfer to Cold Leg Recirculation, to align the ECCS system.</li> </ul>
<p><b>T = when US announces transition back to E-2</b></p> <p><b>FREEZE simulator</b></p>	<p><b>SCENARIO END:</b> When objectives for session have been met OR at discretion of floor instructor or lead evaluator, direct simulator be placed in FREEZE.</p>	
<p>RESTORE simulator to "training ready" conditions by cleaning/replacing marked up procedures, removing placekeeping tabs or marks from all references and control panel indicators, etc.</p>	<p><b>POST-SCENARIO:</b></p> <p>a. ENSURE simulator problems encountered during the scenario are documented IAW site specific process.</p>	

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SECTION 5  
EXAM GUIDE SUMMARY

Title: Four Faulted SG's

**Critical Tasks**

<b><u>TASK DESCRIPTION</u></b>	<b><u>TASK #</u></b>	<b><u>K/A &gt;= 3.0</u></b>	<b><u>BASIS SELECTION</u></b>
Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.	E-0 – B.4	061-A2.04 (3.4 / 3.8)	Failure results in “adverse consequence(s) or a significant degradation in the mitigative capability of the plant.” This would result in a demonstrated inability of the crew to recognize a failure / incorrect auto actuation of an ESF system or component.
Manually open valves to establish injection flow from at least one Charging/SI pump before transition out of E-0.	E-0 – B.6	006-A4.07 (4.4 / 4.4)	Failure to establish injection flow from at least one Charging/SI pump under the postulated conditions constitutes misoperation or incorrect crew performance in which the crew does not prevent “degraded emergency core cooling system (ECCS) ... capacity.”
Control AFW flow rate to not less than 100 gpm per SG in order to minimize the RCS cooldown rate before a severe (orange-path) challenge develops to the integrity CSF.	ECA-2.1 – B.33	040-AA1.10 (4.1 / 4.1)  Westinghouse EPE E12–EK3.3 (3.5 / 3.7)	Failure to control the AFW flow rate to the SGs leads to an unnecessary and avoidable severe challenge to the integrity CSF. Also, failure to perform challenges subcriticality and the containment CSF's beyond those irreparably introduced by the postulated plant conditions.
<b>NOTE Critical Tasks are not required for Progress Review Exams.</b>			

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Appendix D	Scenario Outline	Form ES-D-1	
<p>Facility: <u>Millstone 3</u>    Scenario No.: <u>2K15 NRC-01</u>    Op-Test No.: <u>2K15</u></p> <p>Examiners: _____ Operators: _____</p> <p>_____</p> <p>_____</p> <p>Initial Conditions: <u>IC-357, 74% Power, Beginning of Life</u></p> <p>_____</p> <p>Turnover:</p> <p><u>The last shift performed a downpower to 74% power due to intake conditions.</u></p> <p><u>AOP 3569, Severe Weather, has been entered for a hurricane watch. Additionally, last shift performed OP 3301G to induce pressurizer sprays. The 'B' Stator Cooling Pump is out of service for bearing replacement. Orders are to maintain power stable as management evaluates hurricane tracking.</u></p>			
Event No.	Malfunction No	Event Type*	Event Description
1	RX10A	I (RO) T/S (US)	Primary Pressurizer Level control channel (RCS*LT459) fails high causing level to decrease (AOP 3571). <i>(Tech Spec entry)</i>
2	—	R (RO) N (BOP) R (US)	Due to hurricane tracking, Management directs downpower to 60% @ 1% per minute (AOP 3575).
3	RX19	I (BOP)	3FWS-PT508 fails high requiring manual control of the Master Speed Controller (AOP 3571).
4	ED04C	C (RO) T/S (US)	Loss of emergency bus 34C. Isolate letdown (AOP 3581). Recover from loss of 34C (AOP 3577). <i>(Tech Spec entry)</i>
5	EG01 MS02C MS07A MS07B MS12C MS12D	M (RO) M (BOP) M (US)	A main generator trip occurs, causing a steam line break outside of containment, upstream of 'C' MSIV. On the plant trip, the 'C' & 'D' MSIV's fail open and the 'A' & 'B' low set SG safety valves fail open. All four SG's are faulted (ECA-2.1). Later in event, one S/G safety reseats (will transition to E-2).
6	FW20C FW18B	C (BOP)	No Aux Feed Pumps auto start. The Turbine Driven Aux Feed Pump can be started from MB5.
7	SIR14	C (RO)	Charging injection valve (3SIH*MV8801B) fails to open below P-19 requiring actions to open.
<p>* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor</p>			

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SHIFT TURNOVER REPORT			
<b>DATE-TIME</b> Today 0515		<b>PREPARED BY</b> Unit Supervisor / "NIGHT" Shift	
		<b>SHIFT</b> 18:00 - 06:00	
<b>PLANT STATUS:</b>			
Mode: 1	Rx Power: 74%		
Megawatts: Thermal: 2726 MWTH	PZR Pressure: 2250 psia		
Electric: 892 MWe	RCS T-AVE: 580 degF		
RCS Leakage: Identified: 0.078 gpm	Core Burnup: 150 MWD/MTU		
Unidentified: 0.108 gpm	Protected Train/Facility: "A" (Orange)		
Date/Time: Today 0015	Intake: GREEN		

Active Tracking Records and Action Statements					
Equipment/Reason					
LCO	Action	Date	Time in LCO	Action Requirement	Time Left

OD Compensatory Actions / Temp Logs			
Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC	
System	Notes
3GMC-P1B	Stator cooling pump tagged out of service for a bearing replacement.


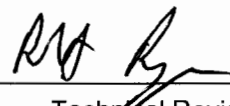
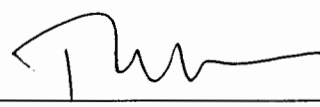
CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS	
	<ol style="list-style-type: none"> <li>1. A hurricane watch is in effect. AOP 3569 is in progress, the previous crew carried out all actions through step 16.</li> <li>2. An intake structure co-coordinator is stationed at the Intake and has responsibility to perform steps 8b, 8c, and 8d of AOP 3569.</li> <li>3. SM and STA are monitoring OP 3215, Response to Intake Structure Degraded Conditions, and SP 3665.1, Flood Level Determination.</li> <li>4. Last shift reduced power to 74% due to intake conditions. Maintain power stable unless conditions change. Xenon is building in (-90 pcm / hr). Withdraw control rods to maintain Tav<sub>g</sub> within + / - 1°F of T<sub>ref</sub> as Xenon builds in.</li> <li>5. Pressurizer sprays have been induced to support earlier downpower per OP 3301G sect 4.5.</li> </ol>

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADTL INFO)	
Current Rod Height	202 steps
Xenon Trend	building in -90 pcm / hr
Current Boron	1765 pcm
Boron Pot Setting / Blend Ratio	5.04 turns / 20 gpm

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<b>SITE:</b>	<b>Millstone Power Station</b>	
<b>PROGRAM:</b>	<b>Unit 3 ILT</b>	
<b>COURSE:</b>	<b>N/A</b>	
<b>EXAM TITLE:</b>	<b>LOCA Outside Containment – Bank</b>	<b>EXAM#: 2K15 NRC-02</b>
<b>Total Time</b>	<b>75 Minutes</b>	

Prepared by:	<u>John Follett</u>		<u>7-3-15</u>
	Printed Name	Developer	Date
Reviewed by:	<u>Bob Royce</u>		<u>7/8/15</u>
	Printed Name	Technical Reviewer	Date
Approved by:	<u>Paul Scott</u>		<u>7/6/15</u>
	Printed Name	Facility Reviewer	Date

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SUMMARY OF CHANGES

A/I & DATE	DESCRIPTION	REV/CHANGE

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TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

1. Cover Page
2. Table of Contents
3. Exam Overview
4. Exam Guide
5. Exam Guide Summary

Attachments:

- Scenario Outline (ES-D-1)
- Shift Turnover Report



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## SECTION 3 EXAM OVERVIEW

Title: LOCA Outside Containment      Bank scenario, sequence modified.

1. The Scenario will begin with the plant at 100% power and at middle of life. The "B" HVR SLCRS unit is out of service for planned maintenance. This scenario is intended to be used 4 times in the same day, with the BOP position filled by an SRO-I or a surrogate. As such, Instrument/Component malfunctions have been omitted from the BOP side in an effort to reduce run time.

Event 1: A PZR power operated relief valve (PORV), 3RCS\*PCV455A, will begin to leak. The crew will carry out the actions of the Annunciator Response Procedure (or AOP 3555, *Reactor Coolant Leak*) and block the affected PORV. The US will refer to and enter Technical Specification 3.4.4 Action a.

Event 2: ISO – NE will direct the crew to begin an Emergency Load Reduction decreasing unit electrical output by 300 MWe. The crew will use AOP 3575, *Rapid Downpower* to accomplish this down power at 5%/min.

Event 3: Once the downpower is complete and the plant stable, an unisolable leak in the "B" RPCCW train will result in the crew entering AOP 3561, *Loss of Reactor Plant Cooling*. The leak will be small enough such that surge tank make-up fill will be able to keep up with the leak rate. The crew will carry out the leak isolation steps in AOP 3561, and ultimately determine that the leak is unisolable. This will require taking the affected train (B) of RPCCW out of service. The US will refer to and enter Technical Specification 3.7.3 and Technical Requirement 7.4.1 Action A.

Event 4: After the affected train of RPCCW is taken out of service, an Inter-System LOCA will occur. The location of the rupture will be downstream of 3SIH\*MV8835 and be unisolable (rupture is in the ESF building, 'A' RHR pump cubicle). The crew should carry out the actions specified in AOP 3555, *Reactor Coolant Leak*, and determine the leak rate is beyond the capacity of two charging pumps. The crew will be required to initiate a manual Reactor Trip and Safety Injection. The crew will enter E-0, *Reactor Trip Or Safety Injection*.

Event 5: SLCRS "A" HVR EXH FAN/SPLY DMPR (3HVR\*FN12A) fails to auto start and must be manually started. **[Critical Task]** – Manually start at least one train of SLCRS ventilation system (3HVR\*FN12A) to minimize radiation release to the public.

Event 6: The crew should proceed through E-0 to step 27 and then transition to ECA-1.2, *LOCA Outside CTMT*, in an attempt to locate and isolate the leak. The crew will not be successful in isolating the leak by closing 3SIH\*MV8835.

Event 7: Once indications of the inability to isolate the leak are obtained, the crew should transition to ECA-1.1, *Loss of Emergency Coolant Recirculation*, to minimize the amount of safety injection flow to that required for the decay heat load **[Critical Task B.29]** –Reduce quench spray and ECCS flow to only 1 train running and establish minimum ECCS flow rate per attachment one prior to reaching 100,000 gallons in RWST. The session will end upon completing the minimization of ECCS injection flow.

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- . The SRO candidate (US) should classify this event as a **Site Area emergency**, based on a loss of both the RCS and CTMT barriers.
- 3. Duration of Exam: 75 minutes

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## SECTION 4

### EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-18

Either **INPUT** or **Load**: Schedule **NRC02.sch** AND Event file **NRC-2.evt**, THEN **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
<b>MALFUNCTIONS</b>						
RC07A	Pzr PORV PCV455A Leak	1		60 sec		2.0 klbm/hr
CC04B	RPCCW Pipe Leak Hdr B	3				100 gpm
CC04B	RPCCW Pipe Leak Hdr B	4		60 sec		60 gpm
SI06A	RCS to SI Inner Sys LOCA	10		60 sec		350 gpm
<b>REMOTE FUNCTIONS</b>						
CCR50	Trn B Safety Hdr Isol Man (V108/121)	5	7 min			CLOSE
CVR95	RCP Seal Water Return	6	3 min			VCT
CCR07	RPCCW to SF Cooler B (V112)	7				0%
CCR06	RPCCW to SF Cooler A (V110)	8				50%
CCR34	RE31 Sample Hdr	9				HDR A
RCR23	RCP 1 Overcurrent Trip Setpoint	11	1 min			COLD
RCR24	RCP 2 Overcurrent Trip Setpoint	11	2 min			COLD
RCR25	RCP3 Overcurrent Trip Setpoint	11	3 min			COLD
RCR26	RCP 4 Overcurrent Trip Setpoint	11	4 min			COLD
WDR03	Rad Liq/Das Loc Panel Acknowledge	14				ACKNW

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-18

Either **INPUT** or **Load**: Schedule **NRC02.sch** AND Event file **NRC-2.evt**, THEN **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
<b>OVERRIDES</b>						
CHLO0411	FN12A RED SLCRS EXH FN12A RUNNING					OFF
CHLO0410	FN12A GREEN SLCRS EXH FN12A RUNNING					ON
CHLO0695	MOD87A RED SLCRS FILTER EXH DMPR					OFF
CHLO0694	MOD87A GREEN SLCRS FILTER EXH DMPR					ON
CHLO0399	FLT3A RED SLCRS FILTER HEATER					OFF
ANLO1103	SLCRS EXH HVR FN12A RUNNING					OFF
CHLO0411	FN12A RED SLCRS EXH FN12A RUNNING	20				ON
CHLO0410	FN12A GREEN SLCRS EXH FN12A RUNNING	20	9 sec			OFF
CHLO0695	MOD87A RED SLCRS FILTER EXH DMPR	20	9 sec			ON
CHLO0694	MOD87A GREEN SLCRS FILTER EXH DMPR	20	9 sec			OFF
CHLO0399	FLT3A RED SLCRS FILTER HEATER	20	9 sec			ON
ANLO1103	SLCRS EXH HVR FN12A RUNNING	20	9 sec			ON
<b>EVENTS</b>						
Event Code	Description	Event Number				
ZVHVRFN12ADI(5)	HVR*FN12A SLCRS EXH FAN/SPLY DMPR A = START	20				

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<ul style="list-style-type: none"> <li><input type="checkbox"/> COMPLETE Simulator Setup and Readiness Checklist.</li> <li><input type="checkbox"/> SELECT appropriate IC</li> <li><input type="checkbox"/> LOAD and RUN applicable Schedule.</li> <li><input type="checkbox"/> As necessary, ENTER or VERIFY the following Initial Malfunctions / I/Os / Remote Functions, <u>OR</u>, as specified on previous 'Input Summary' page: <ul style="list-style-type: none"> <li>▪</li> </ul> </li> <li><input type="checkbox"/> As necessary, PERFORM verification of Initial Malfunctions / I/Os / Remote Functions entered.</li> <li><input type="checkbox"/> When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable: <ul style="list-style-type: none"> <li>▪</li> </ul> </li> <li><input type="checkbox"/> As necessary, REMOVE the following Equipment from service and tag accordingly: <ul style="list-style-type: none"> <li>▪ "B" HVR EXH FAN/SPLY DMPR (3HVR*FN12B) (Caution Tag on control switch and place in PTL)</li> </ul> </li> <li><input type="checkbox"/></li> </ul>		N/A
<ul style="list-style-type: none"> <li><input type="checkbox"/> CONDUCT briefing with evaluators.</li> </ul>	<p><b>PRE-SCENARIO:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> BRIEF the crew initial plant conditions and provide a shift turnover.</li> <li><input type="checkbox"/> <u>IF</u> this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew.</li> <li><input type="checkbox"/> As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.</li> </ul>	
		(All) Walk down control boards and conduct shift briefing.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
***** EVENT 1 *****		
<b>Event 1</b>	<b>'A' Pressurizer PORV Leak</b>	<b>RO:</b> Identifies alarms lit on:
<b>Trigger 1</b> <b>T ≈ 1 minute after turnover</b>	Setpoint is 20°F > ambient.	<ul style="list-style-type: none"> <li>• MB4A 3-5, "PZR RELIEF VALVE DIS TEMP HI"</li> <li>• MB4A 4-5, "PZR SAFETY VALVE DISCH FLOW"</li> </ul>
(RC07A)      3RCS*PCV455 leak at 2 klbm/hr (1%), 60 sec ramp	Setpoint is flow detected, which is known to occur with a leaking PORV.	
		<b>US: Enters ARP MB4A 3-5 (Rev 002-20)</b> <b>CORRECTIVE ACTIONS</b>
	MB4B 4-9 is not lit.	<b>RO:</b> 1. <u>IF</u> (MB4B 4-9) "PORV OPEN" is lit, Go to OP 3353.MB4B 4-9, "PORV OPEN."
	MB4A 3-4 is not lit.	<b>RO:</b> 2. <u>IF</u> (MB4A 3-4) "PRESSURIZER PRESSURE HI" is lit, Go to MB4A 3-4, "PRESSURIZER PRESSURE HI."
	Verifies PORV outlet temperature high, reading above ambient on 3RCS-TI463 (about 150°F and increasing).	<b>RO:</b> 3. CONFIRM high PORV outlet temperature on 3RCS-TI 463, "PORV OUTLET TEMPS" (MB4).
	Both PORV position indication lights show closed.	<b>RO:</b> 4. <u>IF</u> 3RCS*PCV455A or 3RCS*PCV456, "PORV," (MB4), is <u>not</u> fully closed, CLOSE PORVs.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 5. IF 3RCS*PCV455A or 3RCS*PCV456, "PORV", (MB4), fail to close, CLOSE associated PORV block (MB4): <div style="display: flex; justify-content: space-around;"> <div> <u>PORV</u>                          3RCS*PCV455A                          3RCS*PCV456                     </div> <div> <u>PORV BLOCK</u>                          3RCS*MV8000A                          3RCS*MV8000B                     </div> </div>
	<u>Data logger is located in:</u> PPC Top Menu EEQ Monitor Menu (Page 2) Reactor Coolant System	<b>RO:</b> 6. IF pressurizer pressure is <u>not</u> high <u>AND</u> both pressurizer power relief valves are closed, PERFORM the following to determine leaking PORV: 6.1 MONITOR PORV outlet temperatures on data logger.
	PRT Press ≈ 16 psia, rising PRT Temp ≈ 70°F, rising Tailpipe Temp ≈ 208°F	<b>RO:</b> 6.2 IF data logger indicates 3RCS*PCV455A, "PORV" is leaking, TEST 3RCS*PCV455A, "PORV," as follows:
<b>T = when contacted</b> <b>Inform the US that the STA will perform the risk review.</b>  <b>Call back after several minutes and report:</b> "Risk review is complete, risk profile is green."	MP-13-PRA-FAP01.1 superseded by NF-AA-PRA-370, <i>Probabilistic Risk Assessment Procedures and Methods: MRule (a)(4) Risk Monitor Guidance</i>	<b>US:</b> 6.2.1 Refer To MP-13-PRA-FAP01.1, "Performing (a)(4) Risk Reviews," and PERFORM risk review.
		<b>RO:</b> 6.2.2 CLOSE 3RCS*MV8000A, "PORV BLOCK" (MB4).



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Crew should notice PORV outlet temps lowering	<b>RO:</b> 6.2.3 MONITOR 3RCS-TI 463, "PORV" "OUTLET TEMPS" (MB4).
	The US should enter: <ul style="list-style-type: none"> <li>3.4.4, Action a (3.4.6.2 – leakage Blocked &amp; identified)</li> <li>(3.4.9.3 – Applies to Mode 4)</li> <li>TRM 3.4.11, Action C defers to TS 3.4.4.</li> </ul>	<b>US:</b> 6.2.4 IF 3RCS-TI 463, "PORV" "OUTLET TEMPS" (MB4), decreases, PERFORM the following: <ul style="list-style-type: none"> <li>a. Refer To the following and PERFORM applicable actions:               <ul style="list-style-type: none"> <li>T/S 3.4.4, "Relief Valves"</li> <li>T/S 3.4.6.2, "Operational Leakage"</li> <li>T/S 3.4.9.3, "Overpressure Protection Systems"</li> <li>TRM 3.4.11, "Reactor Coolant System Vents"</li> </ul> </li> </ul>
When Tech Specs are addressed, move on to Event 2.	This step does not apply. The Block valve should remain closed.	<b>US:</b> 6.2.5 IF 3RCS-TI 463, "PORV" "OUTLET TEMPS" (MB4), remains high, Refer To OP 3301G, "Pressurizer Pressure Control," and OPEN 3RCS*MV8000A, "PORV BLOCK" (MB4).
***** EVENT 2 *****		
<b>T = when Tech Specs are addressed</b> <b>Call as ISO – NE and REPORT:</b> "ISO – NE is requesting Millstone Unit 3 to perform an Emergency Load Reduction of 300 MWe in the next 25 minutes due to Grid Instabilities. Maintain current VAR loading."	<b>ISO – NE directed Emergency Load Reduction of 300 MWe.</b>  Crew will use AOP 3575, Rapid Downpower.	<b>US:</b> Receives phone call, briefs crew, and enters AOP 3575 (Rev 020-00)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> Reads Note to crew:</p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>If at any time either of the following annunciators is received Immediately perform step 7.:</p> <ul style="list-style-type: none"> <li>• ROD CONTROL BANKS LIMIT LO (MB4C 3-9)</li> <li>• ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9)</li> </ul>
		<p><b>RO:</b></p> <p><b>1. Check Rod Control – IN AUTO</b></p>
	Load set is normally desired.	<p><b>BOP:</b></p> <p><b>2. Align EHC Panel</b></p> <p>2.a. Check load reduction using load set</p> <p style="padding-left: 40px;">– DESIRED</p>
		<p><b>BOP:</b></p> <p>2.b. Using Attachment E align EHC panel for LOAD SET operation</p> <p style="text-align: center;"><b><u>Att E Align EHC Panel</u></b></p> <ol style="list-style-type: none"> <li>1. Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light – NOT LIT</li> <li>2. Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction</li> <li>3. Select DECREASE LOADING RATE to ON</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> Reads Note to self <b>NOTE</b> ISO-NE requested load reductions should be performed at 5%/min and completed within 25 minutes of notification.
		<b>US:</b> <b>3. Determine Power Reduction Rate (% / min)</b> 3.a. Check desired power reduction rate – 3%/min OR 5%/MIN
		<b>US:</b> reads Caution to crew: <b>CAUTION</b> If SI actuation occurs during this procedure, Go to E-0, Reactor Trip or safety Injection, and restore from rapid boration lineup.
		<b>4. RO: Initiate Rapid Boration</b> 4.a. Verify RCS makeup system in – AUTO
		<b>RO:</b> 4.b. START one boric acid transfer pump
		<b>RO:</b> 4.c. OPEN emergency boration valve (3CHS*MV8104)
		<b>RO:</b> 4.d. Verify direct boric acid flow (3CHS-FI 183A) – INDICATED
		<b>RO:</b> 4.e. OPEN charging line flow control valve, to match indicated boric acid flow (3CHS-FI 183A)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> 4.f. Record time boration started Time _____
		<b>RO:</b> 4.g. Check Rod Control – AVAILABLE FOR ROD INSERTION
	A decrease of 300 MWE is $\approx$ 23% power @ $\approx$ 985 MWe. Crew will probably decrease power to 75% using the Rapid Downpower Summary Sheet (RE-H-17) for 5%/min	<b>RO:</b> 4.h. Check use of “Rapid Downpower Summary Sheet” (RE-H-17) in the RE Curve and Data Book – DESIRED <b>RNO</b> – Proceed To step 4.k.
	<u>Per RE-H-17:</u> Final Power Level = 75% Generator Output = 941 MWe Boric Acid Required = 450 gal Boration Time = 6 min Reactivity Plan = RE-H-05	<b>RO:</b> 4.i. Using the “Rapid Downpower Summary Sheet” (RE-H-17), Determine approximate boration time
	Normally use Attachment G.	<b>RO:</b> 4.j. Proceed To step 6. and <u>WHEN</u> Boration time has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: <ul style="list-style-type: none"> <li>• Attachment G</li> <li>• OP3304C, Primary Makeup and                          Chemical Addition</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 4.k. Use 18 gal BA/% Power to determine boration time in step 4.l
	Assuming a 23% decrease...	<b>RO:</b> 4.l. Using formula, Determine boration time (If gravity borating, use net charging flow (chg + seal inj – seal return total flow) for BA flow rate:
Numbers may vary slightly.... $23\% \times 18 \text{ gal/\%} = 414 \text{ gal}$ $414 \text{ gal} \div 75 \text{ gpm} = 5.5 \text{ min}$	$\frac{\text{Total Power Change } (\Delta\%) \times (\text{gal BA/\% Power})}{\text{BA Flow Rate}} = \text{min Boration Time}$	
	Will use Attachment G.	<b>RO:</b> 4.m. Proceed to step 6. and <u>WHEN</u> Boration has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: <ul style="list-style-type: none"> <li>• Attachment G</li> <li>• OP 3304C, Primary Makeup and Chemical Addition</li> </ul>
		<b>US:</b> Reads Note to crew: <u>NOTE</u> If at any time the power reduction rate or final desired power level must be changed, Return to step 1.

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SCENARIO TIME LINE														
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS												
		<b>US:</b> <b>6. Initiate Load Reduction</b> 6.a. Check Rapid or gravity boration – IN PROGRESS												
		<b>BOP:</b> 6.b. Check turbine OPERATING MODE – MANUAL												
		<b>BOP:</b> 6.c. Check load reduction using load set – DESIRED												
	5% /min	<b>BOP:</b> 6.d. Select LOAD RATE LIMIT % /MIN to the desired value (1%, 3%, or 5%)												
	Numbers may vary slightly.... <table> <tr> <td><u>Desired MWe</u></td><td><u>Load Set Mwe</u></td><td><u>≈ Rx Power</u></td></tr> <tr> <td>950</td><td>1080</td><td>77</td></tr> <tr> <td>* 941</td><td>1068</td><td>76</td></tr> <tr> <td>900</td><td>1050</td><td>75</td></tr> </table> * Extrapolated value	<u>Desired MWe</u>	<u>Load Set Mwe</u>	<u>≈ Rx Power</u>	950	1080	77	* 941	1068	76	900	1050	75	<b>BOP:</b> 6.e. Using Attachment H and the DECREASE LOAD pushbutton, Adjust LOAD SET to desired final MWe
<u>Desired MWe</u>	<u>Load Set Mwe</u>	<u>≈ Rx Power</u>												
950	1080	77												
* 941	1068	76												
900	1050	75												
		<b>RO:</b> 6.f. Energize all PZR heaters												
		<b>RO:</b> 6.g. Adjust Pzr Spray Valves to 50% setpoint (RCS-PK 455B and RCS-PK 455C)												

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 6.h. Adjust boration time, flow rate and/or rod position as necessary to maintain: <ul style="list-style-type: none"> <li>• Rods above the Rod Insertion Limit (RIL)</li> <li>• Tavg – Tref error/deviation –5°F to +5°F</li> <li>• AFD within COLR limits</li> <li>• Desired downpower rate</li> </ul>
<b>Answer phone as CONVEX:</b>  Inform caller to maintain VAR loading at 100 MVARs out		<b>US:</b> 6.i. Check power reduction – CONVEX REQUESTED <b>RNO</b> – Inform CONVEX of load reduction rate (MWe/min) and final MWe level.
		<b>RO:</b> <b>7. Verify Rod Position Above RIL</b> 7.a. Check ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9) annunciator – LIT <b>RNO</b> – Proceed to step 7.j. and, <u>IF</u> at any time, the annunciator is received, <u>THEN</u> Perform steps 7.c. through 7.h.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 7.j. Check ROD CONTROL BANKS LIMIT LO (MB4C 3-9) annunciator – LIT <b>RNO</b> – Proceed to step 8. and, <u>IF</u> the annunciator is received, <u>THEN</u> Perform step 7.k. and 7.l.
		<b>RO and BOP:</b> <b>8. Using Attachment C, “Rapid            Downpower Parameters” MONITOR            parameters</b>
		<b>US:</b> <b>9. Degrade Condenser Backpressure</b> 9.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 70% (907 MWe) <b>RNO</b> – Proceed to step 11.
		<b>RO:</b> <b>11. Verify Power Related Interlock Status</b> 11.a. Check reactor power – LESS THAN THE P-9 SETPOINT <b>RNO</b> – Proceed to step 12. and, <u>WHEN</u> Power LESS THAN P-9, <u>THEN</u> Return to step 11.



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b></p> <p><b>12. Align Plant Systems for less than 30% Power Operation</b></p> <p>12.a. Verify Final Desired Power Level – LESS THAN 30%</p> <p><b>RNO</b>– Proceed to step 13.</p>
		<p><b>US:</b></p> <p><b>13. Check Plant Status</b></p> <p>13.a. Verify – AT FINAL DESIRED POWER LEVEL</p> <p><b>RNO</b>– Continue power reduction and,</p> <p><u>WHEN</u></p> <p>Actual load is within 200 MWe of final desired load,</p> <p><u>THEN</u></p> <ul style="list-style-type: none"> <li>• Adjust “LOAD SET” to decrease loading rate as necessary to stabilize power level.</li> <li>• Check the following “LOAD MONITORING” indications: <ul style="list-style-type: none"> <li>○ “AT SET LOAD” light <i>lit</i></li> <li>○ “DECREASING LOAD” light <i>not lit</i></li> </ul> </li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 13.b. Refer to OP 3304C, "Primary Makeup and Chemical Additions." and Borate or Dilute as necessary to maintain the following: <ul style="list-style-type: none"> <li>• Tavg – Tref error/deviation - 1.5°F to +1.5°F</li> <li>• AFD within the target band</li> </ul>
		<b>RO:</b> 13.c. If desired, Place rod control SEL switch in AUTO
	When the crew starts GA-9, move on to event 3.	<b>RO:</b> 13.d. Using GA-9, Align for auto makeup
***** EVENT 3 *****		
<b>Trigger 3</b> (CCO4B) <b>T = downpower complete</b> 'B' Train RPCCW pipe leak (100gpm)	<b>Loss of RPCCW</b> Notes on Event 3: <ol style="list-style-type: none"> <li>(1) The leak is between 3CCP*V6 and 3CCP*AOV197B and is unisolable.</li> <li>(2) The first indication of the CCP leak will be annunciator MB1C 2-7B 'RPCCW Surge Tank Level Lo.'</li> <li>(3) It takes about 5 minutes for this alarm to come in.</li> </ol>	
<b>Trigger 4</b> (CCO4B) <b>T = Alarm on MB1C 2-7B</b> <b>RPCCW Surge Tank Level</b> <b>Lo</b>  (CCO4B)      'B' Train RPCCW pipe leak (reduce to 60gpm)	This will reduce leak rate to 60 gpm. This will allow for the fill line to keep up with leakage.	<b>US: enters ARP MB1C 2-7B (Rev 007)</b>  <b>Setpoint: Less than 92.2%</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T = when contacted to investigate Rad Waste Alarm</b></p> <p><b>Trigger 14</b>    <b>T = wait ≈ 5 minutes</b> (WDR03)    Rad Liq/Das Loc Panel Acknowledge</p> <p><b>Call back as PEO:</b> The alarm is "AUX BLDG SUMP 5 HI-HI"</p>	<p>The "RAD WASTE TROUBLE" alarm will come in after several minutes and the crew should dispatch a PEO to investigate the alarm.</p>	<p><b>RO: <u>Corrective Actions</u></b></p> <ol style="list-style-type: none"> <li>CHECK 3CCP-LI 20A, "RPCCW SURGE TK LVL A" and 3CCP-LI 20B, "RPCCW SURGE TK LVL B," to confirm alarm (MB1).</li> </ol>
<p><b>T = when contacted</b></p> <p><b>Wait 3 minutes and call back as PEO:</b> "No visible leak around Rad Monitor."</p>	<p>Crew will dispatch a PEO to investigate leak at Rad Monitor.</p>	<p><b>RO:</b></p> <ol style="list-style-type: none"> <li><u>IF</u> leak is on Rad Monitor 3CCP-RE31, CLOSE the following: <ul style="list-style-type: none"> <li>3CCP*V965, Train A supply to Rad Monitor</li> <li>3CCP*V966, Train B supply to Rad Monitor</li> </ul> </li> </ol>
		<p><b>RO:</b></p> <ol style="list-style-type: none"> <li><u>IF</u> level decreased to less than 68 percent and recovered, then reset the following valves by momentarily depressing the CLOSE/AUTO pushbuttons: <ul style="list-style-type: none"> <li>3CCP*MOV223/225</li> <li>3CCP*MOV222/224</li> <li>3CCP*MOV226/228</li> <li>3CCP*MOV227/229</li> </ul> </li> </ol>
		<p><b>US:</b></p> <ol style="list-style-type: none"> <li>Go To AOP 3561, "Loss Of Reactor Plant Component Cooling Water."</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	The US should designate a board operator to 'own' Foldout Page criteria.	<p><b>US: enters AOP 3561 (Rev 015) and reads Note to crew:</b></p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• The Foldout Page must be open.</li> <li>• Water hammer can occur with a loss of Train A RPCCW flow to the non--regenerative heat exchanger. OP-AA-1900 contains guidance for addressing water hammer events and the Technical Specification (T/S 4.7.10.d) requirements.</li> </ul>
		<p><b>RO:</b></p> <p><b>1. Verify RPCCW System Alignment</b></p> <p>1.a. Check Train A RPCCW pump – RUNNING</p>
		<p><b>RO:</b></p> <p>1.b. Check RPCCW pumps – AT LEAST ONE RUNNING</p>
	Both pumps running	<p><b>RO:</b></p> <p>1.c. Check RPCCW pumps – ONLY ONE RUNNING</p> <p style="text-align: center;"><b>RNO</b>– Proceed to step 1.i.</p>
	Valves open	<p><b>RO:</b></p> <p>1.i. Check RPCCW containment supply and return header isolation valves – OPEN</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Valves closed	<b>RO:</b> 1.j. Check RPCCW containment header cross-connect valves – CLOSED 3CCP*AOV179A 3CCP*AOV179B 3CCP*AOV180A 3CCP*AOV180B
	Valves open	<b>RO:</b> <b>2. Check Service Water To RPCCW Heat Exchangers</b> 2.a. Verify RPCCW heat exchanger SW inlet isolation valves (3SWP*MOV50A and 3SWP*MOV50B) – OPEN
	Flow is at least 6200 gpm to each HX	<b>RO:</b> 2.b. Verify service water flow to each operating RPCCW heat exchanger – GREATER THAN 6200 gpm
		<b>US:</b> <b>3. Check IF RPCCW System Is Intact</b> 3.a. Verify RPCCW SURGE TANK LEVEL LOW annunciator (MB1C 2-7B) – NOT LIT <b>RNO</b> – Proceed to Attachment C.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US: proceeds to Attachment C and reads Note to crew:</b></p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>The train with surge tank level continuing to decrease below the top of divider plate, may be considered the affected RPCCW train.</li> <li>Changes in sump levels may assist in determining leak location.</li> </ul>
	<p>Crew will dispatch PEOs to investigate leak.</p> <p>Leak location is Aux Building which should have been reported as a result of having a PEO respond to Rad Waste alarm.</p>	<p><b>RO:</b></p> <p><b>1. Determine Affected RPCCW Train</b></p> <p>1.a. Locally Inspect the following locations for leaks:</p> <ul style="list-style-type: none"> <li>Auxiliary Building</li> <li>Fuel Building</li> <li>Containment (If accessible)</li> <li>Service Building</li> <li>ESF Building</li> </ul>
		<p><b>RO:</b></p> <p>1.b. Using PPC Aerated Drains screen, Monitor sump pump activity</p>
		<p><b>RO:</b></p> <p>1.c. CLOSE RPCCW surge tank fill valve (3CCP-LV20)</p>
	<p>Train 'B' has the leak which will be observed on the trend of CCP tank level.</p>	<p><b>RO:</b></p> <p>1.d. Check affected RPCCW train – NOT IDENTIFIED</p> <p><b>RNO– Go to step 1.h</b></p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 1.h. OPEN RPCCW surge tank fill valve (3CCP-LV20) and Place in AUTO
	The leak is relatively small. The crew has ample time to attempt leak isolation in the steps that follow.	<b>RO:</b> 1.i. Maintain surge tank level – BETWEEN 92% and 98%
		<b>US:</b> Reads Caution/Note to crew: <b><u>CAUTION</u></b> Isolating a RPCCW non-safety header may result in an uncontrolled radioactive release. <b><u>NOTE</u></b> <ul style="list-style-type: none"> <li>Steps 2 through 8 may be performed in any order.</li> <li>If the leak is located during performance of steps 2. through 8., the step in progress should be completed and recovery actions continue starting with the Note prior to step 9.</li> </ul>
		<b>RO:</b> <b>2. Isolate RPCCW Non-Safety Header</b> 2.a. CLOSE auxiliary steam isolation valves to the Auxiliary Building 3ASS*AOV102A 3ASS*AOV102B
	The “C” CDS Chiller will trip.	<b>RO:</b> 2.b. CLOSE the affected RPCCW train non-safety header isolation valves

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 2.c. CLOSE RPCCW surge tank fill valve (3CCP-LV20)
	Yes; level will still be decreasing.	<b>RO:</b> 2.d. Check RPCCW surge tank level – DECREASING
		<b>RO:</b> 2.e. OPEN the affected train non-safety header isolation valves
	Chiller should start, otherwise RNO starts chiller.	<b>RO:</b> 2.f. Verify CDS chiller on affected RPCCW train – STARTS
		<b>RO:</b> 2.g. OPEN RPCCW surge tank fill valve (3CCP-LV20) and Place in AUTO
		<b>RO:</b> 2.h. Maintain surge tank level BETWEEN 92% and 98%.
<b>T = when contacted for PEO support</b>  Inform caller that Work Control SRO will accomplish alignment of aux steam to the Aux Building.		<b>BOP:</b> 2.i. Using OP 3331A, "Auxiliary Boiler, Steam, and Condensate," Align auxiliary steam to the Auxiliary Building



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	CTMT sump level trends will be normal.	<b>RO:</b> <b>3. Check If RPCCW Ctmt Header Should Be Isolated</b> 3.a. Check Ctmt sump level trends (plant computer) – INCREASING IN AN UNEXPECTED MANNER <b>RNO</b> – Proceed to step 4.
		<b>US:</b> <b>4. Isolate RPCCW Train A Safety Header</b> 4.a. Check the affected RPCCW Train – TRAIN A <b>RNO</b> – Proceed to step 6.
		<b>US:</b> <b>6. Isolate RPCCW Train B Safety Header</b> 6.a. Check the affected RPCCW Train – TRAIN B
		<b>RO:</b> 6.b. Verify RHR pump B – NOT RUNNING

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T= 3 min after PEO dispatched to isolate safety header</b></p> <p><b>Report as PEO:</b>                      "Water is spraying out of the CCP header all over floor. The leak is between 3CCP*V6 and 3CCP*AOV197B on the mezzanine level in Aux building."</p> <p><b>Trigger 5      T = if requested</b>                      (CCR50)      Tm B Safety Hdr Isol Man (V108/121) <b>7 min delay</b></p>	<p><u>NOTE</u></p> <p>The Crew should refer to P&amp;ID EM-121A and determine <b>the leak is unisolable</b>. Based on step 2 note, crew should complete step 6 then proceed to Att C, NOTE prior to step 9.</p>	<p><b>RO:</b></p> <p>6.c. Locally Close Train B safety header isolation valves                      3CCP*V108                      3CCP*V121</p>
		<p><b>RO:</b></p> <p>6.d. CLOSE RPCCW surge tank fill valve (3CCP-LV20)</p>
	Yes; level will still be decreasing.	<p><b>RO:</b></p> <p>6.e. Check RPCCW surge tank level – DECREASING</p>
		<p><b>RO:</b></p> <p>6.f. Locally Open safety header isolation valves                      3CCP*V108                      3CCP*V121</p>
		<p><b>RO:</b></p> <p>6.g. OPEN RPCCW surge tank fill valve (3CCP-LV20) and Place in AUTO</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 6.h. Maintain surge tank level BETWEEN 92% and 98%
		<b>US: moves on to step 9</b>
		<b>US:</b> Reads Note to crew: <b><u>NOTE</u></b> An isolable leak is a leak that can be isolated without removing the entire affected RPCCW train from service.
	Yes, Train B	<b>RO:</b> <b>9. Check If RPCCW Leak Isolated</b> 9.a. Check leak – LOCATED
	<b><u>NO</u></b>	<b>RO:</b> 9.b. Check leak – ISOLABLE <b>RNO–</b> Proceed to CAUTION prior to step 10.
		<b>US:</b> Reads Caution/Note to crew: <b><u>CAUTION</u></b> If the RPCCW Ctmt header cross-connect valves close due to low surge tank level (approximately 68%), step 10.c. RNO should be performed. <b><u>NOTE</u></b> A functioning relief valve on the CVC seal return (CBO) line is adequate for maintaining CVC seal return (CBO) flow.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p>Train B affected</p> <p>Train A non affected</p>	<p><b>RO:</b></p> <p><b>10. Remove Affected RPCCW Train From Service</b></p> <p>10.a. Verify the RPCCW containment supply and return header isolation valves in the non affected train – OPEN</p>
	CTMT sump level trends are still normal	<p><b>RO:</b></p> <p>10.b. Check containment sump level trends (plant computer) – NORMAL</p>
		<p><b>RO:</b></p> <p>10.c. Simultaneously OPEN the RPCCW containment header cross-connect valves:</p> <p>3CCP*AOV179A 3CCP*AOV179B 3CCP*AOV180A 3CCP*AOV180B</p>
	Train B	<p><b>RO:</b></p> <p>10.d. CLOSE the RPCCW containment supply and return header isolation valves in the affected train</p>
		<p><b>BOP:</b></p> <p>10.e. CLOSE auxiliary steam isolation valves to the Auxiliary Building</p> <p>3ASS*AOV102A 3ASS*AOV102B</p>
	Train B	<p><b>RO:</b></p> <p>10.f. STOP the affected train RPCCW pump and Place in PULL-TO-LOCK</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Yes	<b>RO:</b> 10.g. Check the standby RPCCW pump – ALIGNED TO THE AFFECTED TRAIN
		<b>RO:</b> 10.h. Place the standby RPCCW pump in PULL-TO-LOCK
	Yes	<b>RO:</b> 10.i. Check the affected RPCCW train – TRAIN B
	Go to page 35 of sim guide to continue on in AOP 3561.	<b>US directs RO:</b> 10.j. Using OP 3304A, "Charging and Letdown," Perform shifting seal return flowpaths to shift seal return to the top of the VCT

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO: enters OP 3304A (Rev. 032-05), section 4.19 Shifting Seal Return Flowpaths</b>
		<b>RO: reads Caution and Note:</b> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <ol style="list-style-type: none"> <li>1. This section for shifting of seal return to the top of the VCT, shall <u>only</u> be performed as directed by an EOP/AOP <u>OR</u> Plant is in Mode 5,6, or 0.</li> <li>2. To avoid disrupting reactor coolant pump seal backpressure, care should be exercised when changing VCT pressure.</li> </ol> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>The <u>only</u> normal seal return flow path is to the charging pump suction.</p>
	AOP directed.	<b>RO:</b> <p>4.19.1 CHECK that it was directed to shift flow path by EOP/AOP <u>OR</u> Plant is in MODE 5, 6, or 0.</p>
	Hydrogen is in service.	<b>RO:</b> <p>4.19.2 <u>IF</u> nitrogen is in service, ENSURE 3CHS-PIC8155, VCT nitrogen regulator supply (local), set to maintain 35 psia.</p>
<b>T = if Chemistry contacted:</b> "Maintain 3GSH-PIC 48 set at 32 psig of hydrogen pressure on the VCT."  <b>T = if PEO contacted, report:</b> "3GSH-PIC 48 is set at 32 psig"	CP 3802A, "Primary Chemistry Control" step 4.4.11 directs a setting of 32 psig.	<b>RO:</b> <p>4.19.3 <u>IF</u> hydrogen is in service, ENSURE 3GSH-PIC48, "GSH to VCT H2 PRESSURE INDICATING CONTROLLER," set per Chemistry direction, between 15 and 40 psig (GW).</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 4.19.4 <u>IF</u> seal return/CBO is aligned to VCT, MONITOR VCT pressure on 3CHS-PI115, "VCT PRESS" (MB3), to ensure reactor coolant pump seal backpressure is greater than 30 psia.
	TRM 7.4.1	<b>US:</b> 4.19.5 <u>IF</u> shifting seal return flow path to the top of the VCT, PERFORM the following: a. Refer to TRM 7.4.1 and TRM 7.6.1 in MODES 1,2 or 3 <u>OR</u> TRM 3.1.2.1 in MODES 4, 5 or 6.
<b>T = 3 min after requested</b> <b>Call back as PEO:</b> "3CHS*V541 open."		<b>PEO:</b> b. UNLOCK and OPEN 3CHS*V541, degas aux spray to VCT.
<b>Trigger 6 T = 3 min after requested</b> (CVR95) RCP Seal Water Return to VCT <b>Call back as PEO:</b> "3CHS*V540 closed."		<b>PEO:</b> c. CLOSE 3CHS*V540, RCP sealwater return header isolation.
	Step is N/A.	<b>RO:</b> 4.19.6 <u>IF</u> shifting seal return flow path to the charging pump suction, PERFORM the following:

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US: continues with AOP 3561, Att. C. step 10.k</b>
		<b>RO:</b> 10.k. Throttle open the letdown heat exchanger RPCCW flow control valve to stabilize VCT temperature
		<b>RO:</b> 10.l. Check VCT temperature – STABLE OR DECREASING
	US should enter 3.6.1.4 if CTMT pressure exceeds <b>14.0 psia</b> .	<b>US:</b> 10.m. Using OP 3313E, "Containment Vacuum," Maintain normal operating containment pressure – BETWEEN 13.7 psia and 13.9 psia <b>RNO</b> – Refer to Technical Specification 3.6.1.4, Containment Pressure, for additional actions.
		<b>RO:</b> 10.n. Using the RPCCW safety header flow indication and RHR HX RPCCW flow indication, Check RPCCW to the in-service spent fuel pool cooling heat exchanger – FLOW INDICATED <b>RNO</b> – Using OP 3305, "Spent Fuel Pool Cooling and Purification," Perform Spent Fuel Pool Cooling System pump and HX shift.



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Go to page 38 to resume in AOP 3561.	<b>US: enters OP 3305 (Rev 022-01)</b> <b>4.3 Spent Fuel Pool Cooling System Pump and HX Shift</b>
	N/A	<b>RO:</b> 4.3.1 <u>IF</u> shifting from normal Train A alignment (pump A and HX A) to normal Train B alignment (pump B and HX B), PERFORM the following:
		<b>RO:</b> 4.3.2 <u>IF</u> shifting from normal Train B alignment (pump B and HX B) to normal Train A alignment (pump A and HX A), PERFORM the following: a. STOP 3SFC*P1B, "SPENT FUEL POOL PPS" "B" (MB1).
<b>Trigger 7 T = when requested</b> (CCR07 to 0%) RPCCW to SF Cooler B (V112)		<b>PEO:</b> b. UNLOCK and CLOSE 3SFC*V975, fuel pool cooler B outlet valve.
<b>Trigger 8 T = when requested</b> (CCR06 to 50%) RPCCW to SF Cooler A (V110)		<b>PEO:</b> c. THROTTLE open 3SFC*V976, fuel pool cooler A outlet valve, to approximately 50%.
		<b>RO:</b> d. Start 3SFC*P1A, SPENT FUEL POOL PPS" "A" (MB1).

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<b>T = when requested</b> Adjust CCR06 as necessary (May need to go to 100% to get flow in spec.)		<b>PEO:</b> e. THROTTLE 3SFC*V976, fuel pool cooler A outlet valve, to adjust spent fuel pool cooler outlet flowrate to between 3,450 and 3,550 gpm, as indicated on one of the following: <ul style="list-style-type: none"> <li>• SFC-F19 (computer)</li> <li>• 3SFC-FI19 (FP)</li> </ul>
		<b>PEO:</b> f. LOCK 3SFC*V976, fuel pool cooler A outlet valve.
		<b>RO:</b> reads Caution: <b><u>CAUTION</u></b> Do <u>not</u> exceed a flow of 8,100 gpm on any RPCCW Train.
<b>T ≈ 3 minutes after requested, Report:</b> "CCP flow through the 'A' RPCCW HX is about 1,825 gpm."		<b>PEO:</b> g. THROTTLE 3CCP*V111, fuel pool cooler A RPCCW outlet, to adjust flow to between 1,700 and 1,900 gpm, as indicated on 3CCP-FIS255A (Fuel Bldg. mezzanine above SFP cooling pumps).
<b>T ≈ 5 minutes after requested, Report:</b> "3CCP*V114 is closed."	This completes OP 3305	<b>PEO:</b> h. CLOSE 3CCP*V114, fuel pool cooler B RPCCW outlet.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US: continues in AOP 3561</b>
<p><b>When contacted, REPORT that:</b>                      “3CCP-RE31 aligned to Train ‘B’</p> <p><b>Trigger 9      T = when requested</b>                      (CCR34)      RE31 Sample Hdr to HDR A</p>		<p><b>PEO:</b></p> <p>10.o. Locally Check RPCCW process radiation monitor (3CCP-RE31) – ALIGNED TO NON-AFFECTED TRAIN</p> <p><b>RNO</b>– Locally Turn switch (3CCP-RE32) to non-affected train.</p>
	Yes	<p><b>US:</b></p> <p>10.p. Check leak – LOCATED</p>
	<p><u>The US should enter:</u></p> <ul style="list-style-type: none"> <li>• T/S 3.7.3 (72 hour action statement)</li> <li>• TRM 7.4.1 action a (14 day action statement)</li> </ul>	<p><b>11. US: Check RPCCW Leak Status</b></p> <p>11.a. Using the following, Determine any additional required actions:</p> <ul style="list-style-type: none"> <li>• Technical Specification 3.7.3, “Reactor Plant Component Cooling System”</li> <li>• 3TRM-7.4, Section I, “Fire Related Safe Shutdown Components”</li> <li>• Technical Specification for any affected component</li> <li>• OP 3260A, “Conduct of Outages”</li> </ul>
	Does not apply.	<p><b>US:</b></p> <p>11.b. EVALUATE the incident classification using MP-26-EPI-FAP06, “Classification and PARs”</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
Once Tech Specs are addressed, move on to the next event.	No, not repaired. The US should hold at this point until the Organization develops a plan for repair / shutdown.	<b>US:</b> 11.c. Verify the affected component or line segment – ISOLATED OR REPAIRED <b>RNO–</b> <u>WHEN</u> The affected component or line segment is isolated or repaired, <u>THEN</u> Proceed to step 12.
***** EVENT 4 *****		
<b>Trigger 10</b> <b>T = Tech Specs addressed, or as directed by Chief Examiner</b>  (SI06A)        RCS to SI Inner Sys LOCA 350 gpm, 60 sec ramp	<b>LOCA Outside Containment</b> This will cause an inter-system LOCA in the ESF Building (unisolable). First indications will be radiation alarms along with PZR level lowering. "Safeguards Area Flooding" and 'A' RHR cubicle sump alarms will be received.	<b>US: enters AOP 3555 (Rev 017-03)</b> <b>1. Check PZR Level – DECREASING</b>
		<b>US: reads Note to crew:</b> <p style="text-align: center;"><b><u>NOTE</u></b></p> Step 2. is a continuous action step and should be performed at any time additional charging flow is required to maintain pressurizer level.
	Normal lineup expected.	<b>RO:</b> <b>2. Increase Charging Flow</b> 2.a. Check charging lineup – NORMAL

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 2.b. Throttle Open charging line flow control valve to increase charging flow to maximum
	One letdown orifice isolation valve will be open.	<b>RO:</b> 2.c. Check letdown orifice isolation valves – ONLY ONE OPEN
	Lowering	<b>RO:</b> 2.d. Verify PZR level – STABLE OR INCREASING <b>RNO</b> – Perform the applicable action: <ul style="list-style-type: none"> <li>• IF in operational Mode 1, 2, or 3,  <u>THEN</u>                Proceed to step 2.g.</li> </ul>
		<b>RO:</b> 2.g. START second charging pump.
		<b>US:</b> 2.h. Proceed to step 6.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p>Lowering rapidly</p> <p>The US should direct a manual reactor trip and safety injection.</p> <p><b>NOTE:</b></p> <p><b><i>US should go to "Master Silence" with the reactor trip.</i></b></p>	<p><b>RO:</b></p> <p><b>6. Check PZR Level</b></p> <p>6.a. Verify PZR level – STABLE OR INCREASING</p> <p><b>RNO</b>– Perform the following:</p> <ol style="list-style-type: none"> <li>1) TRIP the reactor.</li> <li>2) Initiate SI.</li> <li>3) Go to E-0, Reactor Trip or Safety Injection.</li> </ol>
		<p><b>US: enters E-0 (Rev 029-00)</b></p> <p>US does <u>not</u> read Caution/Notes to crew prior to Immediate Actions.</p> <p><b><u>CAUTION</u></b></p> <p>When throttling TD AFW and MD AFW pumps flow control valves, the valves should be throttled one at a time, at a rate that is greater than 15 seconds over the valve's full travel.</p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Foldout page must be open.</li> <li>• ADVERSE CTMT is defined as GREATER THAN 180°F or GREATER THAN 10<sup>5</sup> R/hr in containment.</li> <li>• The reactor can be interpreted as "tripped" when any two of three bulleted substeps of step 1. are satisfied.</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>1. Verify Reactor Trip</b> <ul style="list-style-type: none"> <li>• Check reactor trip and bypass breakers – OPEN</li> <li>• Check rod bottom lights – LIT</li> <li>• Check neutron flux – DECREASING</li> </ul>
		<b>BOP:</b> <b>2. Verify Turbine Trip</b> 2.a. Check all turbine stop valves – CLOSED
		<b>BOP:</b> 2.b. Check generator output breaker – OPEN
		<b>BOP:</b> <b>3. Verify Power To AC Emergency Busses</b> 3.a. Check AC emergency busses 34C and 34D – BOTH ENERGIZED
	SI annunciator will be lit.	<b>RO:</b> <b>4. Check If SI Is Actuated</b> 4.a. Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) – LIT
		<b>RO:</b> 4.b. By observation of ESF Group 2 Status Panel lights, Verify both trains of SI – ACTUATED

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 4.c. Check Reactor trip and bypass breakers – OPEN
		<b>RO:</b> <b>5. Verify Service Water Pumps – AT LEAST ONE PER TRAIN RUNNING</b>
	No, the 'B' RPCCW pump is in PTL and should remain so.  Cross-connects go closed on SI, RO will recognize RCPs 2 & 4 need to be stopped per foldout page criteria from AOP 3561.	<b>RO:</b> <b>6. Verify RPCCW Pumps – ONE PER TRAIN RUNNING</b>
		<b>RO:</b> <b>7. Verify ECCS Pumps Running</b> <ul style="list-style-type: none"> <li>• Check SI pumps – RUNNING</li> <li>• Check RHR pumps – RUNNING</li> <li>• Check two charging pumps – RUNNING</li> </ul>
		<b>BOP:</b> <b>8. Verify AFW Pumps Running</b> 8.a. Check MD pumps – RUNNING
		<b>BOP:</b> 8.b. Check turbine-driven pump – RUNNING, IF NECESSARY



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP &amp; RO:</b></p> <p><b>9. Verify FW Isolation</b></p> <ul style="list-style-type: none"> <li>• Check SG feed regulating valves – CLOSED</li> <li>• Check SG feed regulating bypass valves – CLOSED</li> <li>• Check FW isolation trip valves – CLOSED</li> <li>• Check TD FW pumps – TRIPPED</li> <li>• Check MD FW pump – STOPPED</li> <li>• Check SG blowdown isolation valves – CLOSED</li> <li>• Check SG blowdown sample isolation valves – CLOSED</li> <li>• Check SG chemical feed isolation valves – CLOSED</li> </ul>
		<p><b>RO:</b></p> <p><b>10. Check If Main Steam Lines Should Be Isolated</b></p> <p>10.a. Check Ctmt pressure – GREATER THAN 18 psia</p> <p style="text-align: center;"><u>OR</u></p> <p>Any SG pressure – LESS THAN 660 psig</p> <p style="text-align: center;"><u>OR</u></p> <p>Annunciator "MAIN STEAMLINE ISOLATION" (MB2B 5-7) – LIT</p> <p><b>RNO</b>– Proceed to Step 11.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>11. Check if CDA Required</b> 11.a. Check Ctmt pressure – GREATER THAN 23 psia <u>OR</u> Annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5-5) – LIT <b>RNO–</b> Proceed to Step 12.
		<b>BOP:</b> <b>12. Verify CAR Fans Operating In Emergency Mode</b> 12.a. Check CAR fan status: <ul style="list-style-type: none"> <li>• CAR fans A and B – RUNNING</li> <li>• CAR fan C – STOPPED</li> </ul> <b>RNO–</b> START/STOP CAR fans as necessary.
	No – Train 'B' supply/return header isolations were closed when the RPCCW leak was identified. Crew should <u>not</u> open valves.  The safety Injection closed the RPCCW CTMT cross-connect valves. As a result, the 'B' and 'C' RCPs have no motor lube oil cooling and RCP bearing temperatures will start to increase. <b>The crew should identify this and trip the 'B' and 'C' RCPs.</b>	<b>RO:</b> 12.b. Verify RPCCW Ctmt supply and return header isolations – OPEN <b>RNO–</b> OPEN valves.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 12.c. Verify Train A and B RPCCW supply and return to chill water valves – OPEN
		<b>RO:</b> <b>13. Verify CIA</b> 13.a. Check ESF Group 2, columns 2 through 10 – LIT
	<b>EVENT 5</b> <b>SLCRS “A” HVR EXH FAN/SPLY DMPR (3HVR*FN12A) fails to auto start.</b> RO/BOP should manually start 3HVR*FN12A. <b>[Critical Task]</b> – Manually start at least one train of SLCRS ventilation system (3HVR-FN12A) to minimize radiation release to the public.	<b>RO:</b> <b>14. Verify Proper ESF Status Panel Indication</b> <ul style="list-style-type: none"> <li>Verify ESF Group 1 lights – OFF</li> <li>Verify ESF Group 2 lights – LIT</li> </ul> <b>RNO</b> – Align component(s) as necessary for minimum safety function.
	US may elect to use BOP for this while RO realigns for minimum safety function.	<b>RO/BOP:</b> <b>15. Determine If ADVERSE CTMT Conditions Exist</b> <ul style="list-style-type: none"> <li>Ctmt temperature – GREATER THAN 180°F</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>Ctmt radiation – GREATER THAN <math>10^5 \text{ R/hr}</math></li> </ul> <b>RNO</b> – DO NOT use ADVERSE CTMT parameters.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>16. Verify ECCS Flow</b> 16.a. Check PZR pressure – GREATER THAN 1900 psia
	Block valve 3RCS-MV8000A was previously closed due to leaking PORV. The other PORV is available, so US may decide this block valve should remain closed to minimize inventory loss. Open or closed is acceptable.	<b>RO:</b> 16.b. Check PORV block valves – OPEN <b>RNO</b> – OPEN energized block valves.
	CREW should perform a short brief and come out of "Master Silence" at the completion of Step 16.	<b>US:</b> 16.c. Proceed to step 17.
		<b>BOP:</b> <b>17. Verify Adequate Heat Sink</b> 17.a. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) <b>RNO</b> – Proceed to step 17.d.
		<b>BOP:</b> 17.d. Verify Total AFW Flow – GREATER THAN 530 gpm
		<b>BOP:</b> <b>18. Verify AFW Valve Alignment – PROPER EMERGENCY ALIGNMENT</b>
		<b>RO:</b> <b>19. Verify ECCS Valve Alignment – PROPER EMERGENCY ALIGNMENT</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	CBI lit	<b>RO/BOP:</b> <b>20. Check If CBI Required</b> 20.a. Check annunciator "CONTROL BUILDING ISOLATION" (MB4D 3-6) – LIT
		<b>BOP:</b> 20.b. Check Train A Control Building filter fan (3HVC*FN1A) – RUNNING
		<b>BOP:</b> 20.c. Check recirc damper for the running Control Building filter fan (3HVC*AOD119A or B) – OPEN
		<b>RO:</b> 20.d. Verify ESF Group 2 CBI lights – LIT
		<b>BOP:</b> 20.e. Verify Control Building purge supply fan and purge exhaust fan – NOT RUNNING
		<b>BOP:</b> 20.f. Place kitchen exhaust fan in OFF
<b>T = when contacted for the Security Shift Supervisor</b>  <b>Report:</b> "All SLCRS doors indicate closed."		<b>BOP:</b> 20.g. Verify SLCRS doors – CLOSED

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T = 3-5 min after contacted</b></p> <p><b>Report as PEO:</b></p> <p>"Control Building pressure boundary doors are Closed and Dogged or verified closed as directed."</p>		<p><b>BOP:</b></p> <p>20.h. Perform the following:</p> <ul style="list-style-type: none"> <li>• CLOSE and DOG the following Control Building pressure boundary doors <ul style="list-style-type: none"> <li>○ CB west 47'6" (C-47-1A)</li> <li>○ CB east 64'6" (C-64-1B)</li> </ul> </li> <li>• Verify the following Control Building pressure boundary doors – closed <ul style="list-style-type: none"> <li>○ CB west 47'6" (C-47-1)</li> <li>○ CB north 64'6" chiller room door (C-64-4)</li> <li>○ CB north 64'6" chiller room door (C-64-5)</li> <li>○ CB east 49'6" (C-49-1)</li> </ul> </li> </ul>
		<p><b>BOP:</b></p> <p><b>21. Check RCS Temperature</b></p> <p>21.a. Using GA-26, Dump steam as necessary to control RCS cold leg WR temperature – BETWEEN 550°F AND 560°F</p>
		<p><b>BOP:</b></p> <p>21.b. Verify RCS cold leg WR temperature – GREATER THAN 550°F</p> <p>21.c. Proceed to step 22.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> is <u>not</u> required to read Notes to crew:</p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• If the SBO diesel auxiliaries are not repowered within an hour, the SBO diesel may be unavailable for starting.</li> <li>• Power to the SBO diesel auxiliaries should be monitored and if power is lost, GA-25 or GA-27, as applicable, should be used to re-establish power.</li> </ul>
	Yes, breaker 34A1-2 is closed.	<p><b>BOP:</b></p> <p><b>22. Check Power To SBO Diesel Auxiliaries</b></p> <p>22.a. Verify any SBO bus tie breaker – CLOSED TO AN ENERGIZED BUS</p> <ul style="list-style-type: none"> <li>• Bus 34A: 34A1-2</li> <li>• Bus 34B: 34B1-2</li> <li>• Bus 24E: A505 (Unit 2)</li> </ul>
	<p>PORVs expected to be cycling on a solid primary.</p> <p>US expected to assign the RO to monitor for PORV closure and take actions as directed.</p>	<p><b>RO:</b></p> <p><b>23. Check PZR Valves</b></p> <p>23.a. Verify PORVs – CLOSED</p> <p><b>RNO– IF PZR pressure LESS THAN 2350 psia,</b></p> <p><b><u>THEN</u></b></p> <p>CLOSE PORVs.</p>
		<p><b>RO:</b></p> <p>23.b. Verify normal PZR spray valves – CLOSED</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 23.c. Verify PORV block valves – AT LEAST ONE ENERGIZED VALVE OPEN
	PZR safety valve indications are expected to be flashing due to flow from cycling PORV.  RO should verify safety valve discharge temperature is not elevated.	<b>RO:</b> 23.d. Verify PZR safety valves – CLOSED
		<b>US:</b> reads caution to crew: <b><u>CAUTION</u></b> To prevent seal damage, seal injection flow should be maintained to all RCPs.
	'A' and 'D' RCPs should be running.	<b>RO:</b> <b>24. Check If RCPs Should Be Stopped</b> 24.a. Verify RCPs – ANY RUNNING
		<b>RO:</b> 24.b. Verify RCS pressure – LESS THAN 1500 psia (1800 psia ADVERSE CTMT)  <b>RNO</b> – Proceed to Step 25.



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>25. Check If SG Secondary Boundaries Are Intact</b> 25.a. Check pressure in all SGs – <ul style="list-style-type: none"> <li>• NO SG PRESSURE DECREASING IN AN UNCONTROLLED MANNER</li> <li>• NO SG COMPLETELY DEPRESSURIZED</li> </ul>
		<b>BOP:</b> <b>26. Check If SG Tubes Are Intact</b> 26.a. Check steam generator levels – NO SG LEVEL INCREASING IN AN UNCONTROLLED MANNER
		<b>BOP:</b> 26.b. Verify trend history and alarm status of radiation monitors <ul style="list-style-type: none"> <li>• Main steam line – NORMAL</li> <li>• Condenser air ejector – NORMAL</li> <li>• SG blowdown – NORMAL</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	CTMT parameters will be normal.	<p>RO:</p> <p><b>27. Check If RCS Is Intact</b></p> <ul style="list-style-type: none"> <li>• Verify Ctmt radiation using 3CMS*RE22 (pre-trip) – NORMAL</li> <li>• Verify Ctmt radiation using radiation monitoring group histogram (CTMT) – NORMAL</li> <li>• Verify Ctmt pressure – NORMAL</li> <li>• Verify Ctmt recirculation sump level – NORMAL</li> </ul>
		<p>US: reads Caution to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Consult with ADTS and RMT prior to performing any local inspections in the Aux Building or ESF Building.</p>
		<p>RO:</p> <p><b>28. Check for RCS Leakage Outside CTMT</b></p> <p>28.a. Check Auxiliary Building and ESF Building radiation (radiation monitoring group histograms)</p> <ul style="list-style-type: none"> <li>• Verify Auxiliary Building (AUX) – NORMAL</li> <li>• Verify ESF Building (ESF) – NORMAL</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p>Train 'A' ESF RHR CUB SUMP LEVEL HI light will be lit.</p> <p>SAFEGUARDS AREA FLOODING will be lit.</p>	<p><b>RO:</b></p> <p>28.b. Check for Auxiliary Building or ESF Building flooding</p> <p>1) Verify SUMP LEVEL HI lights (MB1) – NOT LIT</p> <ul style="list-style-type: none"> <li>• AUX BLDG PIPE TNL</li> <li>• ECCS PIPE CUB</li> <li>• ESF RHR CUB</li> <li>• ESF RSS CUB</li> </ul> <p>2) Verify Annunciator "SAFEGUARDS AREA FLOODING" (MB1C 2-8) – NOT LIT</p> <p><b>RNO– IF</b> the cause is a loss of RCS inventory outside containment,</p> <p><u>THEN</u></p> <p>Initiate monitoring of CSF Status Tress and Go to ECA-1.2, LOCA Outside Containment.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p><b><u>Event 6</u></b></p> <p>The US should conduct a short transition brief and then <b>transition to ECA-1.2, LOCA Outside Containment.</b></p>	<p><b>US: enters ECA-1.2 (Rev 008-00)</b></p>
		<p><b>US: reads Note to crew:</b></p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>For some breaks, ECCS flow may cause an RCS pressure increase without break isolation, or a pressure increase may not be indicated, for example, if the RCS is cycling on the PORVs or if a cooldown is in progress.</li> <li>Other means of verifying break isolation should be checked such as pressurizer level increase, reports from the field, decrease in area radiation, or an increase in PORV cycling frequency.</li> </ul>
		<p><b>US:</b></p> <p><b>1. Verify Loss Of Coolant Location</b></p> <p>1.a. Check loss of RCS inventory determined to be – IN THE AUXILIARY BUILDING</p> <p><b>RNO– Proceed to CAUTION</b> prior to step 3.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> reads Caution to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Consult with the ADTS and RMT prior to performing any local RHR System operations.</p>
		<p><b>RO:</b></p> <p><b>3. Verify Proper Valve Alignment In ESF Building</b></p> <p>3.a. Verify RHR suction isolation valves – CLOSED</p> <ul style="list-style-type: none"> <li>• 3RHS*MV8701A</li> <li>• 3RHS*MV8701B</li> <li>• 3RHS*MV8701C</li> <li>• 3RHS*MV8702A</li> <li>• 3RHS*MV8702B</li> <li>• 3RHS*MV8702C</li> </ul>
		<p><b>RO:</b></p> <p>3.b. Verify RHR hot leg injection valve (3SIL*MV8840) – CLOSED</p>
		<p><b>RO:</b></p> <p>3.c. Verify SI pump hot leg injection valves – CLOSED</p> <ul style="list-style-type: none"> <li>• 3SIH*MV8802A</li> <li>• 3SIH*MV8802B</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>4. Try To Identify And Isolate Break</b> 4.a. Turn the power lockout switch to ON for the following valves (MB2R): <ul style="list-style-type: none"> <li>• RHR pump A cold leg injection valve (3SIL*MV8809A)</li> <li>• RHR pump B cold leg injection valve (3SIL*MV8809B)</li> <li>• SI cold leg injection valve (3SIH*MV8835)</li> </ul>
	The leak will NOT be isolable. The leak is downstream of 3SIH*MV8835.	<b>RO:</b> 4.b. CLOSE one of the following: <ul style="list-style-type: none"> <li>• RHR pump A cold leg injection valve (3SIL*MV8809A)</li> <li>• RHR pump B cold leg injection valve (3SIL*MV8809B)</li> <li>• SI cold leg injection valve (3SIH*MV8835)</li> </ul>
	RCS pressure will NOT be increasing.	<b>RO:</b> 4.c. Check RCS pressure – INCREASING <b>RNO</b> – Perform the following: <ol style="list-style-type: none"> <li>1) OPEN valve closed in step 4.b.</li> <li>2) <u>IF</u> all lines have been checked, <u>THEN</u> Proceed to step 4.d.</li> <li>3) Return to step 4.b.</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>RO:</b></p> <p>4.d. Turn the power lockout switch to OFF for the following valves (MB2R):</p> <ul style="list-style-type: none"> <li>• RHR pump A cold leg injection valve (3SIL*MV8809A)</li> <li>• RHR pump B cold leg injection valve (3SIL*MV8809B)</li> <li>• SI cold leg injection valve (3SIH*MV8835)</li> </ul>
		<p><b>US:</b></p> <p><b>5. Check If Break Is Isolated</b></p> <p>5.a. Check RCS pressure – INCREASING.</p> <p><b>RNO</b>– Return to any desired step to locate break.</p> <p><u>IF</u> the break can <u>NOT</u> be located <u>OR</u> isolated,</p> <p><u>THEN</u></p> <p>Go to ECA-1.1, Loss of Emergency Coolant Recirculation.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p><b><u>Event 7</u></b></p> <p>The US should conduct a short transition brief and then <b>transition to ECA-1.1</b>.</p>	<p><b>US: enters ECA-1.1 Actions (Rev 017-00)</b> and reads Caution/Notes to crew:</p> <p><b><u>CAUTION</u></b></p> <p>If the suction source is lost to any ECCS or containment spray pump, the pump must be stopped. Stop any pump receiving suction from an RSS pump before stopping the RSS pump.</p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Containment sump blockage is NOT recoverable and no return to the procedure in effect is made.</li> <li>• If emergency coolant recirculation capability is restored, further recovery actions should continue by going to the procedure and step in effect.</li> <li>• If containment sump blockage is indicated, CSF Status Trees should be monitored for EAL classification. DO NOT implement Functional Response Procedures.</li> </ul>
		<p><b>US:</b></p> <ol style="list-style-type: none"> <li><b>1. Continue Attempts To Restore Emergency Coolant Recirculation Equipment</b></li> </ol>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> reads Caution to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>After SI reset, manual operator action is required to:</p> <ul style="list-style-type: none"> <li>• Open the charging pump cold leg injection valves when RCS pressure decrease to LESS THAN 1900 psia.</li> <li>• Restart safeguards equipment if offsite power is lost.</li> </ul>
		<p><b>RO:</b></p> <p><b>2. RESET ESF Actuation Signals If Required</b></p> <p>2.a. RESET SI</p>
		<p><b>RO:</b></p> <p>2.b. RESET the following:</p> <ul style="list-style-type: none"> <li>• CDA</li> <li>• LOP</li> <li>• CIA</li> <li>• CIB</li> </ul>
	There is no sump blockage.	<p><b>US:</b></p> <p><b>3. Check If Ctmt Recirculation Sump Blockage Indicated</b></p> <p>3.a. Check any pump(s) taking a suction from the Ctmt recirculation sump – STOPPED DUE TO INDICATION OF CAVITATION</p> <p><b>RNO</b>– Proceed to step 3.c.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	No pumps take suction from sump.	<p><b>RO:</b></p> <p>3.c. Check any pump taking a suction from the Ctmt recirculation sump –</p> <ul style="list-style-type: none"> <li>• AMPS OSCILLATING</li> <li>• FLOW OSCILLATING</li> <li>• DISCHARGE PRESSURE OSCILLATING</li> </ul> <p><b>RNO</b>– Proceed to CAUTION prior to step 4. and,  <u>IF</u> recirculation sump blockage is indicated,  <u>THEN</u>  Return to step 3.</p>
		<p><b>US:</b> reads Caution to crew:</p> <p><b><u>CAUTION</u></b></p> <p>RWST level should be monitored and if level decreases to LESS THAN 100,000 gal any time following step 4., immediately proceed to step 36.</p>
		<p><b>RO:</b></p> <p><b>4. Check RWST Level – GREATER THAN 100,000 gal</b></p>
		<p><b>RO:</b></p> <p><b>5. Check Quench Spray Pump Requirements</b></p> <p>5.a. Verify Ctmt high range radiation monitors (3RMS*RE04A and 3RMS*RE05A) – NOT IN ALERT OR ALARM</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 5.b. Check Ctmt spray – INITIATED <b>RNO</b> – Proceed to step 6 and, <u>IF</u> Ctmt spray initiates, <u>THEN</u> Return to step 5.
		<b>RO:</b> <b>6. Verify CAR Fan Status</b> 6.a. Check Ctmt WR sump level (3RSS*LI22A or 3RSS*LI2B) – LESS THAN 4 ft,
		<b>BOP:</b> 6.b. Check CAR fans A and B – RUNNING
		<b>RO:</b> 6.c. Verify Train A and B RPCCW supply and return to chill water valves – OPEN
		<b>US:</b> <b>7. Verify Plant Status</b> 7.a. Check loss of emergency coolant recirculation – DUE TO INDICATIONS OF CTMT SUMP BLOCKAGE <b>RNO</b> – Proceed to CAUTION prior to step 17.

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> reads Caution to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>DO NOT perform the next step if:</p> <ul style="list-style-type: none"> <li>• if it will disrupt efforts to align the Recirculation Spray System for emergency coolant recirculation, or</li> <li>• if sump blockage is indicated, unless directed by the ADTS.</li> </ul>
		<p><b>RO:</b></p> <p><b>17. Check If RSS Pumps Should Be Aligned For Containment Spray</b></p> <p>17.a. Check Ctmt pressure – GREATER THAN 17.5 psia</p> <p style="padding-left: 40px;"><b>RNO</b>– Proceed to step 18. and,</p> <p style="padding-left: 40px;"><u>IF</u> Ctmt pressure increases to GREATER THAN 17.5 psia,</p> <p style="padding-left: 40px;"><u>THEN</u></p> <p style="padding-left: 40px;">Perform step 17.</p>
		<p><b>RO/BOP:</b></p> <p><b>18. Add Makeup to RWST</b></p> <p>18.a. Using GA-10, Initiate filling the RWST</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>RO/BOP: enters GA-10 (Rev. 002)</b> and reads Caution to self:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <ul style="list-style-type: none"> <li>DO NOT exceed 1,189,000 gallons in the RWST.</li> <li>When evaluating filling the RWST from the Spent Fuel Pool, the following should be considered:</li> </ul>
<p><b>T = when contacted</b> Inform caller: <b>The Tech Support Center will perform GA-10 to fill the RWST.</b></p>		<p><b>RO/BOP:</b> <b>1. Request ADTS Evaluate Using The Spent Fuel Pool To Fill The RWST</b></p>
		<p><b>US: continues in ECA-1.1</b> 18.b. Check RWST level – GREATER THAN 100,000 gal</p>
		<p><b>BOP:</b> <b>19. Check AFW Suction Source</b> 19.a. Check DWST level – LESS THAN 80,000 gal <b>RNO</b>– Proceed to step 20. and, <u>IF</u> DWST level decreases to LESS THAN 80,000 gal <u>THEN</u> Perform step 19.b.</p>
		<p><b>BOP:</b> <b>20. Check Intact SG Levels</b> 20.a. Verify NR level – GREATER THAN 8% (42% ADVERSE CTMT)</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 20.b. Control feed flow to maintain NR level – BETWEEN 8% and 50% (42% and 50% ADVERSE CTMT)
		<b>US:</b> reads Note to crew: <b>NOTE</b> <ul style="list-style-type: none"> <li>Shutdown margin must be monitored during RCS cooldown using GA-15, Establishing RCS Boron Concentration For Shutdown Margin.</li> <li>Ensure Low Steam Line Pressure SI is blocked when pressurizer pressure is LESS THAN 2000 psia.</li> </ul>
		<b>RO:</b> <b>21. Initiate RCS Cooldown To Cold Shutdown</b> 21.a. Check RCPs – ANY RUNNING
<b>Trigger 11 T = when requested</b> (RCR 23 – 26) RCP Overcurrent Trip Setpoint to COLD (1 min delay timer each) <b>Call back after 4 min and report:</b> “All 8 RCP overcurrent trip switches in COLD position.”		<b>PEO:</b> 21.b. Locally, Place the eight RCP overcurrent trip switches (43PP and 43PB) in the COLD position using CO Key Locker Key #7
	US will continue on in ECA 1.1 on page 70.	<b>BOP:</b> 21.c. Using GA-26, Dump steam from intact SG(s) at a maximum rate NOT to EXCEED 80°F/hr in the RCS cold legs

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP: enters GA-26 (Rev. 001)</b></p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Auxiliary feed flow directly impacts RCS heatup and cooldown rates and must be considered along with dumping steam.</li> <li>• Steam line pressure changes more rapidly if fewer than four SGs are used.</li> <li>• After Low Steamline Pressure Safety Injection signal is BLOCKED, MSI will occur if the High Steam Pressure Rate setpoint is exceeded.</li> <li>• Instrument air compressor B is tripped by SI, CDA and LOP.</li> </ul>
		<p><b>BOP:</b></p> <p><b>1. Verify Plant Conditions</b></p> <p>1.a. Check instrument air compressors – AT LEAST ONE RUNNING</p>
		<p><b>BOP:</b></p> <p>1.b. Check Annunciator "MAIN STEAM LINE ISOLATION" (MB2B 5-7) – NOT LIT</p>
		<p><b>BOP:</b></p> <p><b><u>NOTE</u></b></p> <p>Condenser steam dump is preferred unless otherwise directed by the procedure in effect.</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP:</b></p> <p><b>2. Determine Condenser Steam Dump Availability</b></p> <p>2.a. Check the following:</p> <ul style="list-style-type: none"> <li>Using condenser steam dumps – DESIRED</li> <li>Annunciator “CONDENSER AVAIL FOR STM DUMP C-9” (MB4D 5-6) – LIT</li> <li>AT LEAST ONE INTACT SG MSIV OR BYPASS VALVE – OPEN</li> </ul>
		<p><b>BOP:</b></p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>If RCS temperature increases above 553°F, the Lo-Lo Tave interlock (P-12) will be reinstated.</p>
		<p><b>BOP:</b></p> <p><b>3. Dump Steam to Main Condenser Using Steam Pressure Mode</b></p> <p>3.a. Place steam pressure controller in MANUAL and Adjust to obtain zero output</p>
		<p><b>BOP:</b></p> <p>3.b. Place condenser steam dump mode selector switch to STEAM PRESSURE mode</p>
		<p><b>BOP:</b></p> <p>3.c. Place both trains of steam dump interlock selector switches to ON</p>



SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 3.d. Check annunciator "LO-LO TAVE BLOCK P-12" (553°F) (MB4D 5-1) – LIT <b>RNO</b> – Proceed to step 3.f. and, <u>WHEN</u> Annunciator is lit, <u>THEN</u> 1) Adjust steam pressure controller to obtain zero output. 2) Return to step 3.e
		<b>BOP:</b> 3.e. Momentarily Place both steam dump interlock selector switches in BYPASS
	Maximum rate, not to exceed 80°F/hr	<b>BOP:</b> 3.f. Check the procedure in effect requires steam dump - AT A MAXIMUM RATE
		<b>BOP:</b> 3.g. Adjust the steam pressure controller evenly over an approximate one minute time period to obtain 33% output (MSS-PK507 or MSS-UI500)
		<b>BOP:</b> 3.h. Proceed to step 8.

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP:</b></p> <p><b>8. Check If RCS Temperature Or Steam Generator Pressures Should Be Stabilized</b></p> <p>8.a. Check RCS temperature or SG pressures – AT DESIRED VALUE  <b>RNO</b>– Continue dumping steam as specified by the procedure in effect and,  <u>WHEN</u>  RCS temperature or SG pressures are at the desired value,  <u>THEN</u>  Proceed to step 8.b.</p>
		<p><b>BOP:</b></p> <p>8.b. Check condenser steam dumps - IN USE</p>
		<p><b>BOP:</b></p> <p><b>9. Stabilize Using Condenser Steam Dumps</b></p> <p>9.a. Adjust steam pressure controller as necessary to stabilize and maintain RCS temperature or SG pressures as specified by the procedure in effect</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	ECCS is in service.	<p><b>US: continues on in ECA 1.1</b></p> <p><b>22. Check If ECCS Is In Service</b></p> <ul style="list-style-type: none"> <li>• Verify SI pumps – ANY RUNNING <u>OR</u></li> <li>• Verify charging pump cold leg injection valves – EITHER VALVE OPEN <u>OR</u></li> <li>• Verify RHR pumps – ANY RUNNING IN SI MODE</li> </ul>
		<p><b>US: reads Note to crew:</b></p> <p><b><u>NOTE</u></b></p> <p>The charging and SI pumps should be stopped on alternate ECCS trains when possible.</p>
	<p><b>[Critical Task B.29]</b> – Make up to the RWST and reduce Quench Spray and ECCS flow to only 1 train running and establish minimum ECCS flow rate per attachment one prior to reaching 100,000 gallons in RWST.</p> <p>The Crew should identify that procedurally, only one train of ECCS needs to be injecting, and as a result stop one SI pump and both RHR pumps.</p>	<p><b>US:</b></p> <p><b>23. Establish One Train Of ECCS Flow</b></p> <p>23.a. Check Ctmt recirculation sump blockage – NOT INDICATED</p>
		<p><b>US:</b></p> <p>23.b. Check charging pumps – ONLY ONE RUNNING</p> <p><b>RNO</b>– START or STOP a charging pump to establish only one running.</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	<p>No, both SI pumps are running.</p> <p>Crew should stop the SI pump on the train opposite the running charging pump.</p>	<p><b>RO:</b></p> <p>23.c. Check SI pumps – ONLY ONE RUNNING</p> <p><b>RNO</b>– START or STOP an SI pump to establish only one running.</p>
		<p><b>RO:</b></p> <p>23.d. Check RCS pressure – LESS THAN 300 psia (500 psia ADVERSE CTMT)</p> <p><b>RNO</b>– STOP RHR pumps and Proceed to CAUTION prior to Step 24.</p>
		<p><b>US:</b> reads Caution/Note to crew:</p> <p><b><u>CAUTION</u></b></p> <p>If RCP seal cooling has previously been lost, DO NOT start a RCP prior to requesting the ADTS perform a status evaluation.</p> <p><b><u>NOTE</u></b></p> <p>RCPs should be operated in the following order of priority to ensure optimum PZR spray flow:</p> <p>First: RCP B</p> <p>Second: RCP A and one other RCP</p> <p>Third: RCP C and D</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Only 'A' and 'D' RCPs are running, second priority met. No pumps need to be started/stopped.	<p><b>RO:</b></p> <p><b>24. Check If RCP(s) Should Be Started</b></p> <p>24.a. Check RCPs – ALL STOPPED</p> <p><b>RNO–</b> Perform the following:</p> <ol style="list-style-type: none"> <li>1) STOP all but preferred RCP(s).</li> <li>2) <u>IF</u> RCP A is stopped, <u>THEN</u> CLOSE the associated spray valve (3RCS-PK455B).</li> <li>3) Proceed to NOTE prior to step 25.</li> </ol>
		<p><b>US:</b> reads Caution/Note to crew:</p> <p><b><u>NOTE</u></b></p> <p>Maintain one charging pump operating to supply seal injection flow to the RCPs.</p>
		<p><b>RO:</b></p> <p><b>25. Check If ECCS Flow Should Be Terminated</b></p> <p>25.a. Check RVLMS plenum level – GREATER THAN 19%</p>

SEG# 2K15 NRC-02 Rev ; 0

SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	The scenario may be terminated once minimum ECCS flow is determined.	<p><b>US:</b></p> <p>25.b. Check RCS subcooling based on core exit TCs – GREATER THAN 82°F (165°F ADVERSE CTMT)</p> <p><b>RNO</b>– Establish minimum ECCS flow to remove decay heat:</p> <p>1) Using Attachment A, Determine minimum ECCS flow required</p>
a. When directed, FREEZE simulator.	<b>SCENARIO END:</b> When objectives for session have been met OR at discretion of Lead Examiner, direct simulator be placed in FREEZE.	
RESTORE simulator to “training ready” conditions by cleaning/replacing marked up procedures, removing placekeeping tabs or marks from all references and control panel indicators, etc.	<p><b>POST-SCENARIO:</b></p> <p>a. ENSURE simulator problems encountered during the scenario are documented IAW site specific process.</p>	

SEG# 2K15 NRC-02 Rev ; 0

SECTION 5

EXAM GUIDE SUMMARY

Title: Steam Generator Tube Rupture

**Critical Tasks**

<b>TASK DESCRIPTION</b>	<b>TASK #</b>	<b>K/A &gt;= 3.0</b>	<b>BASIS SELECTION</b>
Manually start at least one train of SLCRS ventilation system (3HVR-FN12A) to minimize radiation release to the public.	Site specific task	013-A4.01 (4.5 / 4.8)	Failure to monitor and operate ESFAS equipment which failed to actuate results in unmonitored release to the environment.
Reduce Quench Spray and ECCS flow to only 1 train running and establish minimum ECCS flow rate per attachment one prior to reaching 100,000 gallons in RWST.	ECA-1.1 – B.29	011-EA1.11 (4.2 / 4.2)	Under the postulated plant conditions, failure to minimize RWST outflow leads to (or accelerates) depletion of RWST inventory to the point at which ECCS pumps taking suction on the RWST must be stopped. Loss of pumped injection (coincident with loss of emergency cooling recirculation) will lead to a severe or an extreme challenge to the core cooling CSF.
<b>Note: Critical Tasks are not required for Progress Review Exams.</b>			

SEG# 2K15 NRC-02 Rev ; 0

**Appendix D** **Scenario Outline** **Form ES-D-1**

Facility: Millstone 3 Scenario No.: 2K15 NRC-02 Op-Test No.: 2K15

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Initial Conditions: IC-18, 100% Power, Middle of life

\_\_\_\_\_

Turnover:

The plant is at 100% power and at middle of life. The "B" HVK Chiller unit is out of service for planned maintenance.

\_\_\_\_\_

Event No.	Malf. No	Event Type*	Event Description
1	RC07A	C (RO) T/S (US)	'A' PZR PORV (3RCS*PCV455A) leak. Results in closing the PORV block valve. (Annunciator response) <i>(Tech Spec entry)</i>
2	—	R (US) R (RO) N (BOP)	ISO-NE directed 300 MWe Emergency Load Reduction. (AOP 3575, <i>Rapid Downpower</i> at 5%/min)
3	CC04B	C (RO) T/S (US)	Respond to a RPCCW leak (AOP 3561, <i>Loss of RPCCW</i> ). Results in taking the 'B' train of RPCCW out of service. <i>(Tech Spec entry)</i>
4	SI06A	M (ALL)	RCS to Inter-System LOCA (outside CTMT). AOP 3555, <i>Reactor Coolant Leak</i> requires a manual Reactor Trip and Safety Injection.
5	CHLO0411 CHLO0410 CHLO0695 CHLO0694 CHLO0399 CHLO0410 ANLO1103	C (RO)	SLCRS 'A' HVR EXH FAN/SPLY DMPR (3HVR*FN12A) fails to auto start.
6	—	—	Transition to ECA-1.2, <i>LOCA Outside CTMT</i> .
7	—	—	LOCA determined to be unisolable. Transition to ECA-1.1, <i>Loss of Emergency Coolant Recirculation</i> .
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			



SEG# 2K15 NRC-02 Rev ; 0

SHIFT TURNOVER REPORT			
<b>DATE-TIME</b> Today 0515		<b>PREPARED BY</b> Unit Supervisor / "NIGHT" Shift	
		<b>SHIFT</b> 18:00 - 06:00	
<b>PLANT STATUS:</b>			
Mode: 1	Rx Power: 100%		
Megawatts: Thermal: 3649 MWTH	PZR Pressure: 2250 psia		
Electric: 1284 MWe	RCS T-AVE: 587 degF		
RCS Leakage: Identified: 0.015 gpm	Core Burnup: 10,000 MWD/MTU		
Unidentified: 0.036 gpm	Protected Train/Facility: "A" (Orange)		
Date/Time: Today 0015	Intake: GREEN		

Active Tracking Records and Action Statements					
Equipment/Reason					
LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.6.6.1	ACTION	yesterday	23 hours	Restore within 7 days	6 days

OD Compensatory Actions / Temp Logs			
Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC	
System	Notes
	The "B" SLCRS filter unit is out of service for planned maintenance. T/S LCO 3.6.6.1 ACTION has been entered. There are 6 days left on the 7 day allowed outage time.

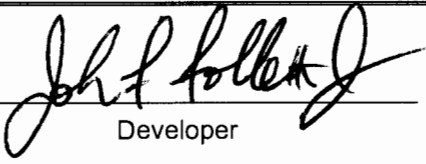
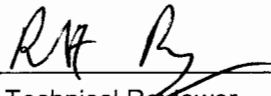
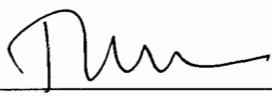
CROSS UNIT SYSTEM STATUS	

SURVEILLANCES / EVOLUTIONS IN PROGRESS	
	Steady State Operation

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)	
Current Rod Height	CBD @ 219
Xenon Trend	Stable
Current Boron	984 ppm
Boron Pot Setting / Blend Ratio	2.81 turns / 11.25 gpm

SEG# 2K15 NRC-04 Rev ; 0 / 1

<b>SITE:</b>	<b>Millstone Power Station</b>	
<b>PROGRAM:</b>	<b>Unit 3 ILT</b>	
<b>COURSE:</b>	<b>N/A</b>	
<b>EXAM TITLE:</b>	<b>Loss of Heat Sink – Modified Bank</b>	<b>EXAM #: 2K15 NRC-04</b>
<b>Total Time</b>	<b>90 Minutes</b>	

Prepared by:	<u>John Follett</u>	<u></u>	<u>7-6-15</u>
	Printed Name	Developer	Date
Reviewed by:	<u>Bob Royce</u>	<u></u>	<u>7/8/15</u>
	Printed Name	Technical Reviewer	Date
Approved by:	<u>Paul Scott</u>	<u></u>	<u>7/8/15</u>
	Printed Name	Facility Reviewer	Date

SEG# 2K15 NRC-04 Rev ; 0 / 1

SUMMARY OF CHANGES

A/I & DATE	DESCRIPTION	REV/CHANGE
6-26-15	Changed method of plant shutdown from manual reactor trip to automatic trip per NRC recommendation. Crew could have interpreted a First Out without automatic trip as a T/S 3.0.3 entry with 1 hour to commence an orderly shutdown based upon a failed RPS. Replaced BOP Component Malfunction and Critical Task for manual reactor trip with new RO Component Malfunction and Critical Task for manual start of service water pumps.	0/1

SEG# 2K15 NRC-04 Rev ; 0 / 1

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

1. Cover Page
2. Table of Contents
3. Exam Overview
4. Exam Guide
5. Exam Guide Summary

Attachments:

- Scenario Outline (ES-D-1)
- Shift Turnover Report

SEG# 2K15 NRC-04 Rev ; 0 / 1

## SECTION 3

### EXAM OVERVIEW

Title: Loss of Heat Sink Modified bank scenario.

1. The Session will begin with the plant at 74% power. The Turbine Driven Auxiliary Feedwater Pump has - been out of service for 12 hours for governor maintenance and is expected back in 11 hours.

Event 1: Loop 4 Thot instrument (RCS-TE441A) will fail high causing rods to step in and Pressurizer Level setpoint to increase by 13%. The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to confirm a turbine runback is not in progress and place rods in manual. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The US will direct the RO to take manual control of Charging Flow to stabilize pressurizer level. Next the crew will defeat the failed temperature channel, restore pressurizer level to setpoint, restore  $T_{AVE} - T_{REF}$  error to within 1°F, and request I&C to trip bistables. The US will refer to Technical Specification 3.3.1 and log into Action 6 (FU# 7&8). The US will refer to Technical Specification 3.3.2 and log into Action 20 (FU# 5.d) and Action 21 (FU# 9.b).

Event 2: Once actions of AOP 3571 are complete, a leak will occur at condenser vacuum breaker 3ARC-MOV20C. The crew enters AOP 3559, *Loss Of Condenser Vacuum*, which will direct a rapid load reduction of 5%/min in accordance with AOP 3575, *Rapid Downpower*. Load will be lowered at least 15% before condenser backpressure will stabilize and the crew can stop the load reduction.

Event 3: Main steam header pressure transmitter, 3MSS-PT507, fails high. Turbine driven feedwater pumps will increase speed, steam generator water levels will rise, and steam dump valves will be inoperable in Auto while in the Steam Pressure Mode. The BOP will perform immediate actions of AOP 3581 to take feedwater pump speed control to manual and make corrections before significant transients occur. The US will enter AOP 3571, *Instrument Failure Response* and direct the BOP to restore feed pump differential pressure to the normal operating band of 40-175 psid. (Setpoint  $\approx$  110 psid @ 50% power.)

Event 4: The controlling channel of pressurizer pressure RCS\*PT455 will fail high. Pressurizer spray valves will open and RCS pressure will lower. The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to place the master pressure controller in manual and return the output to  $\geq$  50% to stabilize pressure. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The crew will defeat the failed pressure channel and restore pressurizer pressure to setpoint. The crew will be unable to trip bistables, since doing so would cause an automatic reactor trip on 2/4 channels of OTΔT. The US should recognize that Technical Specification 3.0.3 applies. The US should contact plant management for maintenance assistance and guidance. Other Technical Specifications applicable are 3.3.1 Action 6 (FU# 7, 9 & 10) and 3.3.2 Action 20 (FU# 1.d) and Action 21 (FU# 9.a).

Event 5: The faulted Pressurizer Pressure loop transitions from failed high to failed low, causing a 2/4 Reactor Trip on OTDT.

Event 6: The turbine will not trip. The BOP will attempt to run back the turbine but fail. Neither MSI pushbutton will function. The BOP must manually close the Main Steam Isolation Valves. Auto MSI is failed, manual isolation of steam line drains is required after safety injection actuation.

Event 7: A Safety Injection is expected to occur from low steamline pressure. Train 'B' of Safety Injection is failed requiring manual Safety Injection.

SEG# 2K15 NRC-04 Rev ; 0 / 1

Event 8: Running Service Water Pumps trip on the reactor trip. Stand-by Service Water Pumps fail to auto start and must be started manually. **[Critical Task B.9]** – Manually start one service water pump per train before exiting E-0.

Event 9: The 'A' MDAFW pump fails to start, and the 'B' MDAFW pump discharge valve is shut with a stem/disc separation. As previously stated, the TDAFW pump is out of service for governor maintenance.

Event 10: The crew should proceed through E-0 to step 17 and then transition to FR-H.1. The MDAFW pump will not start. The crew will reset Safety Injection and Feedwater Isolation circuits, open the feedwater isolation trip valves and feed at least one steam generator from the condensate pumps. **[Critical Task B.43]** – Establish condensate flow into at least one SG before RCS bleed and feed is required.

The session will end with condensate flow established.

2. The SRO candidate (US) should classify this event as **ALERT Charlie One** based on RCS Barrier failure, BA1: Heat Sink Red and required feedwater flow cannot be established within 15 minutes, RCB1.
3. Duration of Exam: 90 minutes

SEG# 2K15 NRC-04 Rev ; 0 / 1

## SECTION 4

### EXAM GUIDE

All Control Room Conduct, Operations and Communications shall be in accordance with OP-AA-100, Conduct of Operations.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.06)

SEG# 2K15 NRC-04 Rev ; 0 / 1

### INPUT SUMMARY

#### RESET SIMULATOR TO IC-356

Either **INPUT** or **Load Schedule NRC-04.sch** **AND VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
<b>MALFUNCTIONS</b>						
ED11E	D/G A Seq Fail 20.5 sec (Follow "A" Train SWP Pump Auto Start)					
ED12E	D/G B Seq Fail 20.5 sec (Follow "B" Train SWP Pump Auto Start)					
FW07A	FW Pump Trip (Motor) P1					
FW18A	MDAFW Pump Trip (P1A)					
FW19	TDAFW Pump Trip					
FW20A	MDAFW Pp Fails to Auto Start (P1A)					
FW21B	MDAFW Disch VV Closed P1B (V18)					
FW37	MD FW Pp Auto Start Failure					
RP07B	SI Train B Auto Actuate Fail					
RP08A	MSI Train A Auto Actuate Fail					
RP08B	MSI Train B Auto Actuate Fail					
SW02A	SW Pump Fail to Auto Start (P1A, low pressure)					
SW02B	SW Pump Fail to Auto Start (P1B, low pressure)					
TC03	Turbine Fails to Trip					
TC04	Turbine Fails to Runback					



SEG# 2K15 NRC-04 Rev ; 0 / 1

### INPUT SUMMARY

#### RESET SIMULATOR TO IC-356

Either **INPUT** or Load Schedule **NRC-04.sch** AND **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
TC06A	Turb Stop VV Fails in Pos MSV					
TC06B	Turb Stop VV Fails in Pos MSV					
TC06C	Turb Stop VV Fails in Pos MSV					
TC06D	Turb Stop VV Fails in Pos MSV					
RX05_4A	RCS Loop 4 NR HL TE441A Fail	1				650 °F
FW01	Lowering Condenser Vacuum (Initial)	2				600 CFM
RX15	MS Hdr Press PT507 Fail	3		30 sec		0%
RX09A	Pzr PT455 Fail (high)	4				2500 psi
RX09A	Pzr PT455 Fail (low)	5				1700 psi
TC07A	Turbine CV-1 FAI (Fail As Is)	5				37%
TC07B	Turbine CV-2 FAI (Fail As Is)	5				37%
TC07C	Turbine CV-3 FAI (Fail As Is)	5				37%
TC07D	Turbine CV-4 FAI (Fail As Is)	5				0%
MB4C-A04T	SSPS A Door Open (deletes in 45 sec to close door)	8			45 sec	ON
MB4C-A04B	SSPS B Door Open (deletes in 45 sec to close door)	9			45 sec	ON
FW07B	FW Pump Trip (Steam) P2A	30				
FW07C	FW Pump Trip (Steam) P2B	30				

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-356

Either **INPUT** or **Load Schedule NRC-04.sch** AND **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
SW01C	SW Pump Trip P1C	30				
SW01D	SW Pump Trip P1D	30				
REMOTE FUNCTIONS						
RXR05	OTDT Loop 1 B/S TB411C	5			2 sec	TRIP
RXR34	OTDT Loop 1 B/S TB411D (C3)	5			2 sec	TRIP
RPR44	RPS*RAKLOGA [Train A A213 Card]	8	30 sec			OUT
RPR45	RPS*RAKLOGB [Train B A213 Card]	9	30 sec			OUT
RXR109	Prot Set Door 4 (open)	10				OPEN
RXR04	OPDT Loop 4 B/S TB441G	10	14 sec			TRIP
RXR33	OPDT Loop 4 B/S TB441H (C4)	10	16 sec			TRIP
RXR08	OTDT Loop 4 B/S TB441C	10	18 sec			TRIP
RXR37	OTDT Loop 4 B/S TB441D (C3)	10	20 sec			TRIP
RXR113	RX: T442G Lo Tavq Loop4	10	25 sec			TRIP
RXR117	RX: T442D Lo Lo Tavq Loop4 (P12)	10	27 sec			TRIP
RXR109	Prot Set Door 4 (close)	10	35 sec			CLOSE
RXR106	Prot Set Door 1 (open)	14				OPEN

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-356

Either **INPUT** or **Load Schedule NRC-04.sch** AND **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
RXR40	RX:P455A PB455A Hi Pzr Press Trip	14	14 sec			TRIP
RXR120	PZR Press Lo PB-455B (P-11)	14	16 sec			TRIP
RXR48	RX:P455C PB455C Lo Pzr Press Trip	14	18 sec			TRIP
RXR44	RX:P455D PB455D Lo Pzr Press SI	14	20 sec			TRIP
RXR05	OTDT Loop 1 B/S TB411C (Trip)	14	30 sec			TRIP
RXR34	OTDT Loop 1 B/S TB411D (C-3)	14	32 sec			TRIP
RPR40	PB455H – Hi Press PORV Act (PS455E)	14	35 sec			TRIP
RXR106	Prot Set Door 1 (close)	14	40 sec			CLOSE
SGR01	SG "A" Drain 1%/min NR LVL	30				Start
SGR02	SG "B" Drain 1%/min NR LVL	30				Start
SGR03	SG "C" Drain 1%/min NR LVL	30				Start
SGR04	SG "D" Drain 1%/min NR LVL	30				Start

### OVERRIDES

RPDI0071	PB2 MSI Isolate -MB2					NACTUATE
RPDI0140	PB1 MSI 3MSS**SLI –MB5					NACTUATE
MSLO0069	3MSS*MOV17A Green AFD-TD Stm Sply Iso 1					OFF

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### INPUT SUMMARY

#### RESET SIMULATOR TO IC-356

Either **INPUT** or **Load Schedule NRC-04.sch** AND **VERIFY** the following functions:

ID	Description	Event Trigger	Delay Time	Ramp Time	Delete Time	Severity Or Value
MSLO0070	3MSS*MOV17A Red AFD-TD Stm Sply Iso 1					OFF
MDSI0027	3MSS*MOV17A AFD-TD Stm Sply Iso 1					CLOSE
MSLO0071	3MSS*MOV17B Green AFD-TD Stm Sply Iso 2					OFF
MSLO0072	3MSS*MOV17B Red AFD-TD Stm Sply Iso 2					OFF
MDSI0028	3MSS*MOV17B AFD-TD Stm Sply Iso 2					CLOSE
MSLO0073	3MSS*MOV17D Green AFD-TD Stm Sply Iso 4					OFF
MSLO0074	3MSS*MOV17D Red AFD-TD Stm Sply Iso 4					OFF
MDSI0029	3MSS*MOV17D AFD-TD Stm Sply Iso 4					CLOSE
MSLO0041	3MSS*AOV31A Green TDAFW Stm Sply S/G 1					OFF
MSLO0042	3MSS*AOV31A Red TDAFW Stm Sply S/G 1					OFF
MDSI0017	3MSS*AOV31A TDAFW Stm Sply S/G 1					CLOSE
MSLO0045	3MSS*AOV31B Green TDAFW Stm Sply S/G 2					OFF
MSLO0046	3MSS*AOV31B Red TDAFW Stm Sply S/G 2					OFF
MDSI0019	3MSS*AOV31B TDAFW Stm Sply S/G 2					CLOSE
MSLO0049	3MSS*AOV31D Green TDAFW Stm Sply S/G 4					OFF
MSLO0050	3MSS*AOV31D Red TDAFW Stm Sply S/G 4					OFF
MDSI0021	3MSS*AOV31D TDAFW Stm Sply S/G 4					CLOSE

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<ul style="list-style-type: none"><li>❑ COMPLETE Simulator Setup and Readiness Checklist.</li><li>❑ SELECT appropriate IC (IC-012)</li><li>❑ LOAD and RUN applicable Schedule.</li><li>❑ As necessary, ENTER or VERIFY the following Initial Malfunctions / I/Os / Remote Functions, <u>OR</u>, as specified on previous 'Input Summary' page:<ul style="list-style-type: none"><li>▪</li></ul></li><li>❑ As necessary, PERFORM verification of Initial Malfunctions / I/Os / Remote Functions entered.</li><li>❑ When the simulator is ready, PLACE to Run and VERIFY the simulator reflects the following Initial Conditions for the scenario and is stable:<ul style="list-style-type: none"><li>▪</li></ul></li><li>❑ <b>The MB4 Loop Temp Cutout switches (<math>\Delta T</math> and Tavg) are seldom used and require wiping/exercising during exam setup to ensure proper operation.</b> Steam Dump indications and alarms sometimes experience intermittent operation when switches are used in the Loop 4 position.</li><li>❑ As necessary, REMOVE the following Equipment from service and tag accordingly:<ul style="list-style-type: none"><li>▪ <b>YCT 3MSS*MOV17A, B, D for TDAFW pump out of service.</b></li><li>▪ <b>YCT 3MSS*AOV31A, B, D for TDAFW pump out of service.</b></li></ul></li></ul>		N/A
<ul style="list-style-type: none"><li>❑ CONDUCT briefing with evaluators.</li></ul>	<b>PRE-SCENARIO:</b> <ul style="list-style-type: none"><li>❑ BRIEF the crew initial plant conditions and provide a shift turnover.</li><li>❑ <u>IF</u> this is the first simulator scenario of the week, REVIEW the Plant/Simulator Differences List and Simulator Training Objectives with the crew.</li><li>❑ As necessary, REVIEW any scenario specific differences and any planned simulator freeze points.</li></ul>	
		(All) Walk down control boards and conduct shift briefing.

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SCENARIO TIME LINE						
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS				
***** EVENT 1 Loop 4 Th Fails Hi *****						
<b>Event 1</b>  <b>Trigger 1</b> <b>T = <math>\approx</math> 1 min after taking shift</b> (RX05_4A)      Loop 4 NR Thot TE441A fails hi  Alarms: MB4A 4-1      Pzr Lvl Dev MB4C 4-5 $\Delta$ T/Auct $\Delta$ T Dev MB4C 4-6      Overtemp $\Delta$ T MB4C 4-7      Overtemp $\Delta$ T Runback Rod Block  MB4C 5-5      Tave/Auct Tave Dev MB4C 5-5      Tref/Auct Tave Dev MB4D 5-7      Turb Byp VV Tripped Open	Notes on Event 1: (1) Rods will step in. (2) Pzr Level Setpoint will increase by approximately 13%, causing an alarm on MB4A 4-1, PRESSURIZER LEVEL DEVIATION. (3) The US may direct the RO to place 3CHS*FCV121 in manual IAW the Dominion Nuclear Operations Standards and Expectations Handbook, page 114.	<b>RO:</b> Identifies uncontrolled rod motion and performs Immediate Actions of AOP 3581, Attachment A, from memory: <b>Check Turbine Runback – IN PROGRESS</b> a. Check the following: <ul style="list-style-type: none"><li>• Main Generator MWE – NOT AT EXPECTED VALUE</li><li>• Main Generator MWE – CHANGING</li></ul> <b>RNO</b> – Perform the following: <ol style="list-style-type: none"><li>1) Place rod control SEL switch in MAN.</li><li>2) Proceed to step 2.</li></ol>				
		<b>RO:</b> <b>Check Rod Motion Stopped</b> The RO will focus brief immediate actions are complete.				
	The RO will report a failure of Loop 4 Tavg.	<b>US: Enters AOP 3581 (Rev 001-00)</b> <b>Using Appropriate Attachment, Perform Immediate Actions</b> <table><tr><td><b>EVENT</b></td><td><b>Attachment</b></td></tr><tr><td><b>Uncontrolled Rod Motion</b></td><td><b>A</b></td></tr></table>	<b>EVENT</b>	<b>Attachment</b>	<b>Uncontrolled Rod Motion</b>	<b>A</b>
<b>EVENT</b>	<b>Attachment</b>					
<b>Uncontrolled Rod Motion</b>	<b>A</b>					
		<b>US:</b> Proceeds to Attachment A and confirms with RO that step 1 Immediate Actions are complete.				

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> <b>Check Initiating Event – INSTRUMENT FAILURE</b> <ul style="list-style-type: none"> <li>• Tavg</li> <li>• Nuclear Instrument</li> <li>• Turbine Impulse Pressure</li> </ul>
		<b>US:</b> <b>Go to AOP 3571, “Instrument Failure Response”</b>
		<b>US: Enters AOP 3571 (Rev 011-01) and reads</b> Caution / Note to crew: <p style="text-align: center;"><b><u>CAUTION</u></b></p> Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. <p style="text-align: center;"><b><u>NOTE</u></b></p> If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
	Rods are already in manual.  RO should also identify an increase in pressurizer level setpoint and place 3CHS*FCV121 in manual.	<b>RO:</b> <b>Determine The Initiating Parameter And Place The Affected Controller In MANUAL</b>
	Pressurizer level will be rising due to the setpoint increase. If Pressurizer level rises 6% above program level before the event, the RO should communicate this to the US. The US should then enter T/S 3.4.3.1 Action b (2 hours to correct).	<b>RO:</b> <b>Stabilize The Plant Parameters</b>

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SCENARIO TIME LINE								
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS						
		<b>US:</b> Reads Note to crew: <b>NOTE</b> It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.						
		<b>US:</b> <b>Perform Corrective Actions Using Appropriate Attachment</b> <table><tr><td><b>Instrument Failure</b></td><td><b>Attachment</b></td></tr><tr><td>RCS Narrow Range Temperature</td><td>A</td></tr><tr><td>Channel Failure</td><td></td></tr></table>	<b>Instrument Failure</b>	<b>Attachment</b>	RCS Narrow Range Temperature	A	Channel Failure	
<b>Instrument Failure</b>	<b>Attachment</b>							
RCS Narrow Range Temperature	A							
Channel Failure								
		<b>BOP:</b> Place one condenser interlock selector switch to OFF.						
	Switch taken to Loop D and pulled out. Switch taken to Loop D and pulled out. Any position other than Chan 4.	<b>RO:</b> Defeat the failed channel input. <table><tr><td>Loop Temp Cutout – ΔT</td><td>3RCS–TS411F</td></tr><tr><td>Loop Temp Cutout – TAVG</td><td>3RCS–TS412T</td></tr><tr><td>OT/OPΔT Record Select</td><td>3RCS–TS411E</td></tr></table>	Loop Temp Cutout – ΔT	3RCS–TS411F	Loop Temp Cutout – TAVG	3RCS–TS412T	OT/OPΔT Record Select	3RCS–TS411E
Loop Temp Cutout – ΔT	3RCS–TS411F							
Loop Temp Cutout – TAVG	3RCS–TS412T							
OT/OPΔT Record Select	3RCS–TS411E							
		<b>RO:</b> Check the following annunciators NOT LIT: <table><tr><td>TREF/AUCT TAVE DEVIATION</td><td>MB4C 6–5</td></tr><tr><td>TAVE HI</td><td>MB4C 5–6</td></tr></table>	TREF/AUCT TAVE DEVIATION	MB4C 6–5	TAVE HI	MB4C 5–6		
TREF/AUCT TAVE DEVIATION	MB4C 6–5							
TAVE HI	MB4C 5–6							
		<b>BOP:</b> Check steam dump demand indicator indicating approximately 0%.						



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> Place both steam dump interlock selector switches to "ON."
	"HOLD" light should not be lit.	<b>BOP:</b> If main turbine "HOLD" light lit, Refer To OP 3323A, "Main Turbine," and Perform recovery from main turbine hold condition.
		<b>RO:</b> Restore TAVE – TREF error to within 1°F and return rod control to automatic.
		<b>RO:</b> Monitor PZR level until stable. If PZR level controller is in manual, Restore pressurizer level to program level and Place PZR level controller in automatic.
		<b>US:</b> Reads Note to self:  <b>NOTE</b> If RCS loop 3 cold leg narrow range Temperature channel computer point (RCS-T431E) is X-tagged, the plant calorimetric program will automatically shift to an NI based output.
	Loop 4 failure, step is NA.	<b>US:</b> If RCS loop 3 cold leg narrow range temperature channel affected by instrument failure, Determine if plant calorimetric program should be shifted to NI based output or a point substitution performed using SP 31002, "Plant Calorimetric."
		<b>RO &amp; BOP:</b> When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the Shift Manager.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> Trip the associated Reactor Protection System bistable(s): a. Place a check mark in the box above the appropriate channel that requires tripping on page 6 or 7 of this Attachment.
	The US should enter: <ul style="list-style-type: none"> <li>3.3.1, Action 6 (FU# 7&amp;8)</li> <li>3.3.2, Action 20 (FU# 5.d) Action 21 (FU# 9.b)</li> </ul>	<b>US:</b> b. Refer to T/S 3.3.1 and T/S 3.3.2.
	The RO should do a lamp check to ensure all bistable lights are functional, then verify no coincidence would be met when bistables are tripped.	<b>RO:</b> c. Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.
		<b>US:</b> Reads Caution/Note to self: <b>CAUTION</b> If the General Warning lamp is lit on 3RPS*RAKLOGB, Placing train A SSPS "Multiplexer Test" switch in "A+B" will cause the reactor to trip. <b>NOTE</b> The following step will distinguish whether the failure is within SSPS or the Protection channel.
	Channel indication is <u>not</u> normal. The US should N/A this section and proceed to next step.	<b>US:</b> If bistable status light(s) ( MB4F) indicate that a single bistable input has tripped and channel indication is normal, PERFORM the following:
<b>T = When requested: Report to the Control Room as I&amp;C.</b>		<b>US:</b> Request the I&C Department place the appropriate master test and bistable trip switches in "TEST" using Attachment A and Attachment S.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<b>Trigger 10 T = After I&amp;C brief</b>  Trip Bistables (RXR109, RXR04, RXR33, RXR08, RXR37, RXR113, RXR117)	<b>Trigger 2 can be put in after crew requests B/S to be tripped</b>	<b>RO:</b> Verify the appropriate bistable status light(s) are lit.
	N/A until channel inspection results obtained.	<b>US:</b> Reads Note to self: <b><u>NOTE</u></b> Following corrective action by the I&C Department, the channel may be declared OPERABLE if it complies with the guidelines provided in the Table found on page 5 of this Attachment.
		<b>RO:</b> Request I&C perform corrective maintenance on failed instrument.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
***** EVENT 2 Loss of Condenser Vacuum *****		
<p><b>Trigger 2</b>      <b>T = after request for I&amp;C to trip bistables</b></p> <p>(FW01)      Lowering Condenser Vacuum (initial leak)</p> <p>Initial backpressure ≈ 2.7 INHG</p> <p><b>FW01 leak size may be modified to allow crew time to perform the downpower without reaching the Turbine Trip Setpoint of 7.6 INHG.</b></p>	<p><u>Notes for event 2:</u></p> <ol style="list-style-type: none"> <li>1) A leaking vacuum breaker, 3ARC-MOV20C, is the cause of the in-leakage.</li> <li>2) Backpressure will raise 1 INHG in ≈ 4 minutes.</li> <li>3) A computer priority alarm @ 3.5 INHG will be the first indication.</li> <li>4) Lo Vacuum alarms take about 10 min to come in @ 5.1 INHG increasing. <ul style="list-style-type: none"> <li>• Crew will reduce power IAW AOP 3575, Rapid Downpower, to reduce/stop the backpressure rise.</li> <li>• MB4D 5-6, Condenser Available for Steam Dump C-9 will go out with low vacuum alarms.</li> </ul> </li> <li>5) Crew may enter ARP or go straight to AOP 3559.</li> </ol>	<p><b>BOP:</b></p> <p>Identifies condenser backpressure increasing.</p> <p><b>Crew:</b> Enters one of the following ARP:</p> <ul style="list-style-type: none"> <li>• MB6A 4-4, Condenser A Vacuum Low</li> <li>• MB6A 4-5, Condenser A Vacuum Low</li> <li>• MB6A 4-6, Condenser A Vacuum Low</li> </ul> <p><b><u>CORRECTIVE ACTIONS</u></b></p> <ol style="list-style-type: none"> <li>1. CHECK 3CNM-PR21, condenser backpressure recorder, to confirm alarm (MB7).</li> <li>2. Go To AOP 3559, "Loss Of Condenser Vacuum."</li> </ol>
		<p><b>US: Enters AOP 3559, Loss Of Condenser Vacuum (Rev. 011-00) and reads Note to crew:</b></p> <p><b><u>NOTE</u></b></p> <p>The Foldout Page must be open.</p>
		<p><b>US:</b></p> <ol style="list-style-type: none"> <li>1. Check Reactor Power Greater Than 3%</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>2. Check If Turbine Load Should Be Reduced</b> 2.a. Verify condenser backpressure – LESS THAN OR EQUAL TO 7.5 inches Hg Absolute
	Flow path assumes crew will catch the backpressure increase with a computer priority alarm before the low vacuum alarm, and proceed to step 3. Once the alarm comes in the crew will have to go to step 2.c to reduce load.  <b>Go to step 2.c on page 24 for the downpower steps.</b>	<b>BOP:</b> 2.b. Verify condenser backpressure – GREATER THAN 5 inches Hg Absolute  <b>RNO–</b> Proceed to step 3. <u>AND</u> <u>IF</u> condenser backpressure increases to GREATER THAN 5 inches Hg Absolute <u>THEN</u> Proceed to step 2.c.
		<b>US:</b> Reads Note to crew: <div style="text-align: center;"><b><u>NOTE</u></b></div> Steps 3. through 10. May be performed in any order.
		<b>BOP:</b> <b>3. Check Circulating Water System Operation</b> 3.a. Verify circulating water pumps – ONE PER CONDENSER RUNNING
		<b>BOP:</b> 3.b. Verify water box outlet isolation valves – OPEN
		<b>BOP:</b> 3.c. Verify all circulating water pumps – RUNNING

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 3.d. Verify the traveling screen differential pressure – LESS THAN 12 inches H <sub>2</sub> O
	3ASS–AOV22 located on MB6, horizontal section, upper right.	<b>BOP:</b> <b>4. Check Condenser Air Removal Alignment</b> 4.a. Verify steam jet air ejector auxiliary steam supply valve (3ASS–AOV22) – OPEN
<b>T ≈ 6 min after request</b>  <b>Contact control room and report:</b> “Step 4.b of AOP 3559 is complete. No evidence of backfiring exists. Two first stage jets are in service for each SJAE.”	OP 3329: <ul style="list-style-type: none"> <li>Section 4.5, “Place a Second Steam Jet Air Ejector in Service”</li> </ul>	<b>PEO:</b> 4.b. Using OP 3329, “Condenser Air Removal,” locally Perform the following” 1) Verify both sets of steam jet air ejectors in service 2) Verify two first stage jets in service on each air ejector 3) Verify air ejectors – NOT BACKFIRING 4) Maintain condenser backpressure in the prescribed band determined by the procedure in effect
	Dampers located at VP1A and VP1B	<b>BOP:</b> 4.c. Verify isolation dampers for gaseous waste to Millstone stack (3GWS*AOD78A and 3GWS*AOD78B) – OPEN
<b>T ≈ 3 min after request</b>  <b>Contact control room and report:</b> “Fan 3GWS-FN1A is running; fan 3GWS-FN1B is stopped.”		<b>PEO:</b> 4.d. At Gas Waste Panel (3GWS-PNL01), Verify process vent fans (3GWS-FN1A or 3GWS-FN1B) – ONE RUNNING

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T ≈ 2 min after request</b></p> <p><b>Contact control room and report:</b>                      “Steam jet air ejector exhaust valves 3ARC-AOV36A and 3ARC-AOV36B are open.”</p>		<p><b>PEO:</b></p> <p>4.e. Locally (Turbine Bldg 38’ southwest) Verify steam jet air ejector exhaust valves (3ARC-AOV36A and 3ARC-AOV36B) – OPEN</p>
	3TME-PI27 located on MB7	<p><b>BOP:</b></p> <p><b>5. Check Gland Seal Pressure – BETWEEN 2 And 6 psig</b></p>
		<p><b>BOP:</b></p> <p><b>6. Verify Auxiliary Steam Pressure In Required Band</b></p> <p>a. Check Auxiliary Steam header pressure – 140 to 155 PSIG (MB6, ASS-PIC20)</p>
		<p><b>US:</b> reads Note to crew:</p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>Locked valve key is required for some local operations.</p>
		<p><b>BOP:</b></p> <p><b>7. Check Condensate Surge Tank Level</b></p> <ul style="list-style-type: none"> <li>• GREATER THAN 18,000 gal</li> <li>• NOT DECREASING IN AN UNEXPECTED MANNER</li> </ul>
		<p><b>US:</b> reads Note to crew:</p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>A turbine trip occurs if the exhaust hood temperature exceeds 225°F.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>8. Check Exhaust Hood Temperature Annunciators EXH HOOD A, B, And C TEMP HI (175°F) (MB6A 5-4, 5-5, And 5-6) – NOT LIT</b>
		<b>BOP:</b> <b>9. Check For Condenser In-Leakage</b> 9.a. Verify condenser vacuum breakers (MB7) (3ARC-MOV20A-B-C) – CLOSED
<b>T ≈ 5 minutes after crew dispatches PEO</b>  <b>Contact the control room and report:</b> <ul style="list-style-type: none"> <li>“Loop seal on vacuum breaker 3ARC-MOV20C found empty”</li> </ul> <b>IF downpower is complete, make the following report:</b> <ul style="list-style-type: none"> <li>“I refilled the seal and will monitor level.”</li> <li>“Air in-leakage noises stopped when the water seal was refilled.”</li> </ul> <b>T = downpower complete</b> (FW01) = zero      Stop backpressure rise in condenser.	<b>NOTE</b> <ul style="list-style-type: none"> <li>Crew must start the downpower before the empty loop seal can be reported.</li> <li>Crew must complete the downpower before reporting the vacuum breaker refilled.</li> </ul>	<b>PEO:</b> 9.b. Locally Check vacuum breaker loop seals (Turbine Bldg 60’ west) – FILLED <b>RNO</b> – Locally Fill loop seals.  9.c. Locally Check for no unusual noises indicative of air in-leakage
		<b>BOP:</b> 9.d. Check seal water supply pressure annunciator EXT STM NRV SEAL PRES LO (30 psig) (MB6A 3-6B) – NOT LIT



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 9.e. Contact Engineering to assist in locally checking condenser penetrations for air in-leakage
		<b>US:</b> 10. Review Current Maintenance And Testing Activities
FW01		<b>BOP:</b> 11. Verify Condenser Backpressure – STABLE OR DECREASING
		<b>RO &amp; BOP:</b> 12. Verify MB Annunciators And Parameters – AS EXPECTED
	Proceed to page 35 for Event 3	<b>US:</b> 13. Continue With Normal Plant Evolutions Using Applicable Plant Procedures –FINAL–
***** AOP 3559 is complete *****		
***** Commence Downpower using AOP 3575 *****		
	Crew will jump here to step 2.c of AOP 3559 to reduce load when backpressure increases above 5 inhgA	<b>BOP:</b> 2.c. Verify turbine load – GREATER THAN 389 Mwe.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> 2.d. Using AOP 3575, "Rapid Downpower," Lower turbine load at 5%/min. Proceed to step 3. <u>AND</u> <u>WHEN</u> one of the following occurs: <ul style="list-style-type: none"> <li>Backpressure LESS THAN OR EQUAL TO 5 inches Hg Absolute</li> <li><u>OR</u></li> <li>Turbine load at 389 Mwe</li> </ul> <u>THEN</u> Proceed to step 2.e.
		<b>US: enters AOP 3575 (Rev 020-00) and reads Note to crew:</b>  <b><u>NOTE</u></b> If at any time either of the following annunciators is received Immediately perform step 7.: <ul style="list-style-type: none"> <li>ROD CONTROL BANKS LIMIT LO (MB4C 3-9)</li> <li>ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9)</li> </ul>
		<b>RO:</b> <b>1. Check Rod Control - IN AUTO</b>
	Load set is normally desired.	<b>BOP:</b> <b>2. Align EHC Panel</b> 2.a. Check load reduction using load set – DESIRED
		<b>BOP:</b> 2.b. Using Attachment E align EHC panel for LOAD SET operation

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <u>Att E Align EHC Panel</u> <b>1. Align EHC Panel</b> a. Intermittently Press DECREASE LOAD pushbutton until LOAD LIMIT LIMITING light – NOT LIT b. Rotate LOAD LIMIT SET adjust knob at least one full turn in raise direction c. Select DECREASE LOADING RATE to ON – FINAL –
		<b>US:</b> Reads Note to self <u>NOTE</u> ISO-NE requested load reductions should be performed at 5%/min and completed within 25 minutes of notification.
	5% / min downpower required per AOP 3559.	<b>US:</b> <b>3. Determine Power Reduction Rate (% / min)</b> 3.a. Check desired power reduction rate – 3%/min OR 5%/MIN
		<b>US:</b> reads Caution to crew: <u>CAUTION</u> If SI actuation occurs during this procedure, go to E-0, Reactor Trip or Safety Injection and restore from rapid boration lineup.
		<b>RO:</b> <b>4. Initiate Rapid Boration</b> 4.a. Verify RCS makeup system in – AUTO 4.b. START one boric acid transfer pump 4.c. OPEN emergency boration valve (3CHS*MV8104)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 4.d. Verify direct boric acid flow (3CHS-FI183A) – INDICATED
		<b>RO:</b> 4.e. OPEN charging line flow control valve, to match indicated boric acid flow (3CHS-FI 183A)
		<b>US:</b> 4.f. Record time boration started Time _____
		<b>RO:</b> 4.g. Check Rod Control – AVAILABLE FOR ROD INSERTION
	US will use RNO. Curve and Data Book contains rapid downpower reactivity plans; however they all begin at 100% power.	<b>RO:</b> 4.h. Check use of “Rapid Downpower Summary Sheet” (RE-H-17) in the RE Curve and Data Book – DESIRED <b>RNO– Proceed To step 4.k.</b>
		<b>RO:</b> 4.k. Use 18 gal BA/% Power to determine boration time in step 4.l.
Crew will probably select 50% power as the point for this boration.	Numbers will vary with the power change selected by the crew....  24% (pwr change) x 18 (gal per % pwr)  equals <b>432 gallons</b>	<b>RO:</b> 4.l. Using formula, Determine boration time (If gravity borating, use net charging flow (chg + seal inj – seal return total flow) for BA flow rate:
432 gallons at 80 gpm equals ≈ <b>5:24 min</b>	Total Power Change ( $\Delta\%$ )x _____ (gal BA/% Power) = _____ min Boration Time BA Flow Rate	

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Normally use Attachment G.	<b>BOP:</b> 4.m. Proceed to step 6. and <u>WHEN</u> Boration has been performed for the desired time, <u>THEN</u> Stop boration using one of the following: <ul style="list-style-type: none"> <li>• Attachment G</li> <li>• OP 3304C, Primary Makeup and Chemical Addition</li> </ul>
		<b>US:</b> Reads Note to crew: <u>NOTE</u> If at any time the power reduction rate or final desired power level must be changed, Return to step 1.
		<b>US:</b> <b>6. Initiate Load Reduction</b> 6.a. Check Rapid or gravity boration – IN PROGRESS
		<b>BOP:</b> 6.b. Check turbine OPERATING MODE – MANUAL
		<b>BOP:</b> 6.c. Check load reduction using load set – DESIRED
	5% required in AOP 3559	<b>BOP:</b> 6.d. Select LOAD RATE LIMIT % /MIN to the desired value (1%, 3%, or 5%)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	730 MWe on load set meter = 550 MWe desired load	<b>BOP:</b> 6.e. Using Attachment H and the DECREASE LOAD pushbutton, Adjust LOAD SET to desired final MWe
		<b>RO:</b> 6.f. Energize all PZR heaters
		<b>RO:</b> 6.g. Adjust Pzr Spray Valves to 50% setpoint (RCS-PK 455B and RCS-PK 455C)
		<b>RO:</b> 6.h. Adjust boration time, flow rate and/or rod position as necessary to maintain: <ul style="list-style-type: none"> <li>• Rods above the Rod Insertion Limit (RIL)</li> <li>• Tavg – Tref error/deviation –5°F to +5°F</li> <li>• AFD within COLR limits</li> <li>• Desired downpower rate</li> </ul>
<b>Answer phone as CONVEX:</b>  Inform caller to maintain VAR loading at 100 MVARs out		<b>US:</b> 6.i. Check power reduction – CONVEX REQUESTED <b>RNO</b> – Inform CONVEX of load reduction rate (MWe/min) and final MWe level.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>7. Verify Rod Position Above RIL</b> 7.a. Check ROD CONTROL BANKS LIMIT LO-LO (MB4C 4-9) annunciator – LIT <b>RNO</b> – Proceed to step 7.j. and, <u>IF</u> at any time, the annunciator is received, <u>THEN</u> Perform steps 7.c. through 7.h.
		<b>RO:</b> 7.j. Check ROD CONTROL BANKS LIMIT LO (MB4C 3-9) annunciator – LIT <b>RNO</b> – Proceed to step 8. and, <u>IF</u> the annunciator is received, <u>THEN</u> Perform step 7.k. and 7.l.
<b>Monitor condenser backpressure and adjust FW01 as necessary</b> to drive crew to complete the downpower or until directed by NRC Lead Examiner to stabilize backpressure. <b>Ramp FW01 back to <math>\leq</math> 280 cfm</b>		<b>RO and BOP:</b> <b>8. Using Attachment C, “Rapid Downpower Parameters” MONITOR parameters</b>
		<b>US:</b> <b>9. Degrade Condenser Backpressure</b> 9.a. Verify Final Desired Turbine Load (MWe) - LESS THAN 70% (907 MWe)
	This step N/A since we are reducing power in an attempt to improve condenser backpressure.	<b>US:</b> 9.b. Using OP 3329, “Condenser Air Removal”, Degrade condenser backpressure to between 2.0 in. HgA and 4.0 in. HgA.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> <b>10. Align One Feedwater Pump For Removal from Service</b> 10.a. Verify Final Desired Turbine Load (MWe) – LESS THAN 50% (648 MWe) <b>RNO</b> – Proceed to step 11.
		<b>US:</b> 10.b. Verify removing a feedwater pump from service during the downpower – DESIRED <b>RNO</b> – Proceed to step 11.
		<b>US:</b> 10.c. Verify both TD FW pumps – OPERATING IN AUTO
		<b>US: directs BOP to perform Attachment A(B)</b> 10.d. Using the applicable Attachment, Remove one TD FW Pump from service: <ul style="list-style-type: none"> <li>• Attachment A (A TD FW Pump)</li> <li>• Attachment B (B TD FW Pump)</li> </ul>
	<ul style="list-style-type: none"> <li>• Steps shown for Attachment A</li> <li>• (B) signifies parameter from Attachment B</li> </ul>	<b>BOP:</b> performs Attachment A(B)  <p style="text-align: center;"><b><u>Attachment A</u></b>  <b><u>Removing A(B) TD FW Pump From Service</u></b></p>
		<b>BOP:</b> reads Note:  <p style="text-align: center;"><b><u>NOTE</u></b></p> The following step places B(A) TD FW pump in manual while allowing the A(B) TD FW pump to automatically unload during the downpower.



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>1. Align A(B) Feedwater Pump For Automatic Unloading</b> 1.a. Verify the feedwater pump master speed controller (3FWS–SK509A) – IN AUTO
		<b>BOP:</b> 1.b. Verify the turbine driven feedwater pumps – BOTH OPERATING IN AUTO
		<b>BOP:</b> 1.c. Place the B(A) speed controller, 3FWS–SK46B(A), in MAN
		<b>BOP:</b> 1.d. During the downpower, Adjust speed controller, 3FWS–SK46B(A), in MAN, as necessary to: <ul style="list-style-type: none"> <li>• Ensure speed and load reduction of the TD FW pump in Auto</li> <li>• Maintain SG NR levels – BETWEEN 45% and 55%</li> </ul>
	Hold point and end of Attachment A(B)	<b>BOP:</b> 1.e. Check reactor power – LESS THAN 50% <b>RNO</b> – Continue power reduction and, <u>WHEN</u> Power LESS THAN 50%, <u>THEN</u> Perform steps 2.  – FINAL –

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>RO:</b></p> <p><b>11. Verify Power Related Interlock Status</b></p> <p>11.a. Check reactor power - LESS THAN THE P-9 SETPOINT</p> <p><b>RNO</b>– Proceed to step 12. and,  <u>WHEN</u>  Power LESS THAN P-9,  <u>THEN</u>  Return to step 11.</p>
		<p><b>US:</b></p> <p><b>12. Align Plant Systems for less than 30% Power Operation</b></p> <p>12.a. Verify Final Desired Power Level - LESS THAN 30%</p> <p><b>RNO</b>– Proceed to step 13.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>Adjust FW01 as necessary</b> to stabilize backpressure to between 2.0 in. HgA and 4.0 in. HgA.</p> <p><b>Event 3, failure of 3MSS-PT507, takes up to 10 minutes to reveal itself. Insert Trigger 3 when Turbine is "At Set Load."</b></p>		<p><b>US:</b>  <b>13. Check Plant Status</b>  13.a. Verify – AT FINAL DESIRED POWER LEVEL</p> <p><b>RNO</b>– Continue power reduction and, <u>WHEN</u>  Actual load is within 200 MWe of final desired load,  <u>THEN</u></p> <ul style="list-style-type: none"> <li>Adjust "LOAD SET" to decrease loading rate as necessary to stabilize power level.</li> <li>Check the following "LOAD MONITORING" indications: <ul style="list-style-type: none"> <li>"AT SET LOAD" light <i>lit</i></li> <li>"DECREASING LOAD" light <i>not lit</i></li> </ul> </li> </ul>
		<p><b>RO:</b>  13.b. Refer to OP 3304C, "Primary Makeup and Chemical Additions." and Borate or Dilute as necessary to maintain the following:</p> <ul style="list-style-type: none"> <li>Tavg – Tref error/deviation -1.5°F to +1.5°F</li> <li>AFD within the target band</li> </ul>
	<p><b>US will resume AOP 3559 at step in progress.</b></p> <p><b>Step 3 is located on page 20.</b></p>	<p><b>US:</b>  13.c. If desired, Place rod control SEL switch in AUTO</p>
<p>***** Downpower is complete *****</p>		

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
***** EVENT 3 Main Steam Header Pressure Fails High *****		
<p><b>Trigger 3</b>      <b>T = Turbine “At Set Load” or as directed by Lead Examiner</b></p> <p>(RX15)      MS Hdr Press PT507 fails low over 30 sec</p>	<p><u>Notes on Event 3:</u></p> <ol style="list-style-type: none"> <li>(1) This event will develop slowly and may take more than 10 minutes to reveal itself.</li> <li>(2) MB5A 4-4, <i>TDFW PP A/B SPEED MISMATCH</i> will alarm on failure, but may already be in due to downpower.</li> <li>(3) Any turbine driven feedwater pump in Auto will very slowly reduce speed.</li> <li>(4) Feedwater regulating valves will open slowly, masking failure.</li> <li>(5) Steam generator water levels will eventually lower and cause level deviation alarms.</li> <li>(6) Feedwater regulating valves should not need to be taken out of AUTO.</li> <li>(7) Steam dump valves will be inoperable in Auto while in the Steam Pressure Mode. Plant Trip mode is unaffected.</li> </ol>	<p><b>BOP:</b></p> <p>Identifies alarm MB5A 4-4, TDFW PP A/B SPEED MISMATCH and performs Immediate Actions of AOP 3581, Attachment B, from memory:</p> <p><b>Check Steam Generator Narrow Range Level – STABLE AT 50%</b></p> <p><b>RNO</b>– IF SG level is changing in an uncontrolled manner,</p> <p><u>THEN</u></p> <p>Perform the following:</p> <ol style="list-style-type: none"> <li>a. As necessary, Shift affected SG feedwater flow control to MAN and Throttle affected SG feedwater flow control valve to maintain SG narrow range level stable between 45% and 55%: <ul style="list-style-type: none"> <li>• 3FWS–FK510 for SG A</li> <li>• 3FWS–FK520 for SG B</li> <li>• 3FWS–FK530 for SG C</li> <li>• 3FWS–FK540 for SG D</li> </ul> </li> </ol>
	<p>Placing the master speed control in MANUAL and restoring the output should correct the malfunction without need to take any feedwater regulating valve out of AUTO.</p>	<p><b>BOP:</b></p> <ol style="list-style-type: none"> <li>b. As necessary, Place feed pump MASTER SPEED CONTROL (3FWS–SK509A) in MANUAL and Restore Feed Pump differential pressure to normal operating band (program: 40–175 psid)</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP:</b></p> <p>c. As necessary, Shift affected feed pump speed controller to MANUAL and Restore feed pump differential pressure to normal operating band (program: 40–175 psid):</p> <ul style="list-style-type: none"> <li>• 3FWS–SK46A for TDFW pump A</li> <li>• 3FWS–SK46B for TDFW pump B</li> </ul> <p>The BOP will focus brief immediate actions are complete.</p>
	The BOP will report a failure of 3MSS-PT507, Main Steam Pressure.	<p><b>US: Enters AOP 3581 (Rev 001-00)</b></p> <p><b>Check Initiating Event – INSTRUMENT FAILURE</b></p> <ul style="list-style-type: none"> <li>• SG Narrow Range Level</li> <li>• SG Feedwater Flow</li> <li>• SG Steam Flow</li> <li>• SG Pressure</li> <li>• Main Steam Pressure</li> <li>• Main Feed Header Pressure</li> </ul>
		<p><b>US:</b></p> <p><b>Go to AOP 3571, “Instrument Failure Response”</b></p>
		<p><b>US: Enters AOP 3571 (Rev 011-01) and reads Caution / Note to crew:</b></p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <p>Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback.</p> <p style="text-align: center;"><b><u>NOTE</u></b></p> <p>If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.</p>

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SCENARIO TIME LINE								
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS						
		<b>RO:</b> <b>Determine The Initiating Parameter And Place The Affected Controller In MANUAL</b>						
		<b>RO:</b> <b>Stabilize The Plant Parameters</b>						
		<b>US:</b> Reads Note to crew: <div><b>NOTE</b> It is desired that I&amp;C personnel trip the bistables specified in this procedure. If, during off-hours, I&amp;C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.</div>						
		<b>US:</b> <b>Perform Corrective Actions Using Appropriate Attachment</b> <table><tr><td><b>Instrument Failure</b></td><td><b>Attachment</b></td></tr><tr><td>Main Steam Header Pressure</td><td>J</td></tr><tr><td>Channel Failure (PT507)</td><td></td></tr></table>	<b>Instrument Failure</b>	<b>Attachment</b>	Main Steam Header Pressure	J	Channel Failure (PT507)	
<b>Instrument Failure</b>	<b>Attachment</b>							
Main Steam Header Pressure	J							
Channel Failure (PT507)								
	BOP will have to use alternate indication for Main Steam Header Pressure. Master Pressure Controller will remain in MANUAL for remainder of scenario.	<b>BOP:</b> Verify feedwater pump A and B master speed control (3FWS-SK509A) in MANUAL and Restore feed pump differential pressure to normal operating band (Program: 40 to 175 psid).						
		<b>BOP:</b> Place steam generator pressure controller (3MSS-PK507) in MANUAL and reduce the output to minimum. (The steam dump STEAM PRESSURE mode is inoperable until the channel is restored.)						

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO &amp; BOP:</b> When conditions have stabilized, Observe MB annunciators and parameters and immediately report any unexpected or unexplained conditions to the Shift Manager.
		<b>US:</b> reads Note to self: <div style="text-align: center;"><b><u>NOTE</u></b></div> There are no Technical Specifications or bistables associated with 3MSS-PT507.
		<b>US:</b> Request I&C Department perform corrective maintenance on failed instrument.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
***** EVENT 4 Pressurizer Pressure Fails High *****		
<b>Trigger 4</b>  T = power increase complete  (RX09A) 3RCS*PT455 fails high	<u>Notes on Event 4:</u> (1) The controlling channel of pressurizer pressure RCS*PT455 will fail high. (2) Pressurizer spray valves will open, variable heaters will go to minimum current and RCS pressure will lower. (3) Returning Master Pressure Controller output to $\geq 50\%$ output will close the spray valves.	<b>RO:</b> Recognizes spray valves are open and performs Immediate Actions of AOP 3581, Attachment E, from memory: <b>Terminate Pressurizer Spray</b> a. Check pressurizer spray valves – BOTH CLOSED <ul style="list-style-type: none"> <li>• RCS*PCV455B</li> <li>• RCS*PCV455C</li> </ul> <b>RNO– IF</b> pressurizer pressure is less than 2270 psia, <u>THEN</u> Place Master Pressure Controller in “MAN” and Adjust to >50% output.  IF spray valves do NOT close, <u>THEN</u> Manually CLOSE spray valves (MB4): <ul style="list-style-type: none"> <li>• 3RCS*PCV455B</li> <li>• 3RCS*PCV455C</li> </ul> The RO will focus brief immediate actions are complete.
		<b>US: Enters AOP 3581</b> (Rev 001-00)  <b>Check Pressurizer Spray – TERMINATED</b> Check Pressurizer pressure – STABLE <u>OR</u> INCREASING
	The RO will report a failure of 3RCS*PT455.	<b>Check Initiating Event – INSTRUMENT FAILURE</b> <ul style="list-style-type: none"> <li>• Pressurizer pressure</li> </ul>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> <b>Go to AOP 3571, "Instrument Failure Response"</b>
		<b>US: Enters AOP 3571 (Rev-011-01) and reads</b> <b>Caution/Note to crew:</b> <p style="text-align: center;"><b><u>CAUTION</u></b></p> Do not leave the rod selector switch in AUTO while diagnosing a related instrument failure unless the reason for rod movement is a turbine runback. <p style="text-align: center;"><b><u>NOTE</u></b></p> If a reactor trip occurs, immediately go to E-0, Reactor Trip or Safety Injection.
		<b>RO:</b> <b>Determine The Initiating Parameter And Place The Affected Controller In MANUAL</b>
		<b>RO:</b> <b>Stabilize The Plant Parameters</b>
		<b>US:</b> Reads Note to crew: <p style="text-align: center;"><b><u>NOTE</u></b></p> It is desired that I&C personnel trip the bistables specified in this procedure. If, during off-hours, I&C personnel are not able to trip the necessary bistables within the time limitations required by the Technical Specifications, Operations Department personnel may trip the bistables using the guidance provided within this procedure.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> <b>Perform Corrective Actions Using</b> <b>Appropriate Attachment</b> <u>Instrument Failure</u> <u>Attachment</u> Pressurizer Pressure      B Channel Failure
	RO directed to select Channel 3–4  RO should select a channel other than Ch 1 (likely channel 3).  RO should select a channel other than Ch 1	<b>RO:</b> Defeat the failed channel input.  Pressurizer Press      3RCS-PS455F Select – Control  Pressurizer Press      3RCS-PS455G Select – Record  OT/OP Delta T      RCS-TS411E Record Select
		<b>RO:</b> Restore RCS pressure to normal, then Place PZR pressure control in automatic.
		<b>RO &amp; BOP:</b> When conditions have stabilized, Observe MB annunciators and parameters. Immediately report any unexpected or unexplained conditions to the Shift Manager.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> Trip the associated Reactor Protection System bistable(s):  Place a check mark in the box above the appropriate channel that requires tripping on pages 5 or 6 of this Attachment.
The US should contact plant management, report the failure and the T/S 3.0.3 entry, and request guidance.  <b>T = when contacted</b> Inform the US to make preparations to perform an orderly plant shutdown using OP 3204 at 1/2 %/min.	Log into 3.3.1 Action 6 (FU #7, 9 & 10) and 3.3.2 Actions 20 & 21 (FU #1.d, 9.a & 11).  <b>NOTE:</b> <ul style="list-style-type: none"> <li>T.S. 3.3.1 FU #7 Action 6 for Overtemperature <math>\Delta T</math> cannot be met, T.S. 3.0.3 applies.</li> <li>Bistables cannot be tripped without causing a reactor trip on 2/4 Overtemperature <math>\Delta T</math></li> </ul>	<b>US:</b> Refer to T/S 3.3.1, T/S 3.3.2, and T/S 3.3.3.5.
	Log into TRM 3.3.2.1, Action 27.A.	<b>US:</b> Refer to Technical Requirement 3.3.2.1.
	<ul style="list-style-type: none"> <li>The RO should do a lamp check to ensure all bistable lights are functional.</li> <li>If not previously recognized by the crew, the RO should identify at this time that tripping bistables will generate a reactor trip.</li> </ul>	<b>RO:</b> Check the existing bistable status to ensure a reactor trip will not occur when the failed channel is tripped.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> Reads Caution/Note to crew:</p> <p><b><u>CAUTION</u></b></p> <p>If the General Warning lamp is lit on 3RPS*RAKLOGB, placing train A SSPS "Multiplexer Test" switch in "A+B" will cause the reactor to trip.</p> <p><b><u>NOTE</u></b></p> <p>The following step will distinguish whether the failure is within SSPS or the Protection channel.</p>
	Channel indication is <u>not</u> normal. The US should N/A this section and proceed to next step.	<p><b>US:</b></p> <p>If bistable status light(s) (MB2D or MB4F) indicate that a single bistable input has tripped and channel indications are normal, PERFORM the following:</p>
<p><b>T = When requested:</b></p> <p><b>Report to the Control Room as I&amp;C.</b></p>	<p>When requested, report to the Control Room as I&amp;C.</p> <p>The crew should <u>NOT</u> request I&amp;C to trip bistables at this time, as doing so would generate a Reactor Trip.</p>	<p><b>US:</b></p> <p>Request the I&amp;C Department place the appropriate master test and bistable trip switches in "TEST" using Attachment B and Attachment S.</p>
<p><b>Trigger 14 T = Only if directed to trip bistables</b></p> <p>Trip Bistables (RXR106, RXR40, 120, 48, 44, 05, 34, 40)</p>	<p><b>IF PERFORMED, this trigger will cause a Reactor Trip.</b></p>	<p><b>RO:</b></p> <p>Verify the appropriate bistable status light(s) are lit.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
***** EVENT 5 Reactor Trip on OTDT *****		
<b>Trigger 5</b> <b>T = when directed by Lead Examiner</b> (RX09A) 1700 psi (RXR05) TRIP (2 sec then NORM) (RXR34) TRIP (2 sec then NORM) (TC07A) 37% (TC07B) 37% (TC07C) 37% (TC07D) 0%	<b>Notes on Event 5:</b> 1) The faulted PZR Press loop will fail low, causing a 2/4 Reactor Trip on OTDT. 2) Turbine Stop Valves fail open 3) 3 of 4 Turbine Control Valves fail as is at 37%. 4) Neither MSI pushbutton will function 5) Safety Injection is expected to occur from low steamline pressure	<b>Crew: recognizes Reactor Trip and perform immediate actions of E-0.</b>  <b>US: enters E-0 (Rev 029-00)</b> US does <u>not</u> read Caution/Notes to crew prior to Immediate Actions.  <p style="text-align: center;"><b><u>CAUTION</u></b></p> When throttling TD AFW and MD AFW pumps flow control valves, the valves should be throttled one at a time, at a rate that is greater than 15 seconds over the valve's full travel.  <p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Foldout page must be open.</li> <li>• ADVERSE CTMT is defined as GREATER THAN 180°F or GREATER THAN 10<sup>5</sup>R/hr in containment.</li> </ul> The reactor can be interpreted as "tripped" when any two of three bulleted substeps of step 1. are satisfied.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>Verify Reactor Trip</b> <ul style="list-style-type: none"> <li>• Check reactor trip and bypass breakers – OPEN</li> <li>• Check rod bottom lights – LIT</li> <li>• Check neutron flux – DECREASING</li> </ul>
	<b>Event 6</b> <b>Turbine fails to trip or runback.</b> <b>BOP must close MSIVs.</b>	<b>BOP:</b> <b>Verify Turbine Trip</b> Check all turbine stop valves – CLOSED <b>RNO</b> – TRIP the turbine. <u>IF</u> the turbine will <u>NOT</u> trip, <u>THEN</u> Runback the turbine to close the control valves. <u>IF</u> the turbine can <u>NOT</u> be runback, <u>THEN</u> CLOSE the MSIVs and MSIV bypass valves.
		<b>BOP:</b> Check generator output breaker – OPEN <b>RNO</b> – <u>IF</u> main generator output breaker is <u>NOT</u> open, <u>THEN</u> TRIP generator output breaker. <u>IF</u> main generator output breaker will <u>NOT</u> trip, <u>THEN</u> <i>simultaneously</i> Press both emergency trip pushbuttons.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>Verify Power To AC Emergency Busses</b> Check AC emergency busses 34C and 34D – BOTH ENERGIZED
	SI annunciator is expected to be lit.	<b>RO:</b> <b>Check If SI Is Actuated</b> Verify SAFETY INJECTION ACTUATION annunciator (MB4D 1-6 or MB2B 5-9) – LIT
	<u><b>Event 7</b></u> <b>Train 'B' of SI did not auto actuate, manual SI required.</b>	<b>RO:</b> By observation of ESF Group 2 Status Panel lights, Verify both trains of SI – ACTUATED <b>RNO–</b> Manually Initiate SI.
		<b>RO:</b> Check Reactor trip and bypass breakers – OPEN
	<u><b>Event 8</b></u> <b>No Service Water Pumps are running.</b> RO will manually start both stand-by pumps. <b>[Critical Task B.9]</b> – Manually start one service water pump per train before exiting E-0.	<b>RO:</b> <b>Verify Service Water Pumps – AT LEAST ONE PER TRAIN RUNNING</b> <b>RNO–</b> START pump(s).
		<b>RO:</b> <b>Verify RPCCW Pumps - ONE PER TRAIN RUNNING</b>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>Verify ECCS Pumps Running</b> <ul style="list-style-type: none"> <li>Check SI pumps – RUNNING</li> <li>Check RHR pumps – RUNNING</li> <li>Check two charging pumps – RUNNING</li> </ul>
	<b>EVENT 9</b> <ul style="list-style-type: none"> <li>'A' MDAFW pump fails to start.</li> <li>'B' MDADW pump discharge valve is shut with a stem/disc separation.</li> <li>TDAFW pump is out for governor maintenance.</li> </ul>	<b>BOP:</b> <b>Verify AFW Pumps Running</b> Check MD pumps – RUNNING <b>RNO–</b> START pump(s).  Check turbine–driven pump – RUNNING, IF NECESSARY <b>RNO–</b> OPEN steam supply valves.
		<b>BOP:</b> <b>Verify FW Isolation</b> <ul style="list-style-type: none"> <li>Check SG feed regulating valves – CLOSED</li> <li>Check SG feed regulating bypass valves – CLOSED</li> <li>Check TD FW pumps – TRIPPED</li> <li>Check MD FW pump – STOPPED</li> </ul>
		<b>RO:</b> <ul style="list-style-type: none"> <li>Check SG blowdown isolation valves – CLOSED</li> <li>Check SG blowdown sample isolation valves – CLOSED</li> <li>Check SG chemical feed isolation valves – CLOSED</li> </ul>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>Check If Main Steam Lines Should Be Isolated</b> Check Ctmt pressure – GREATER THAN 18 psia <u>OR</u> Any SG pressure – LESS THAN 660 psig <u>OR</u> Annunciator "MAIN STEAMLINE ISOLATION" (MB2B 5-7) – LIT
		<b>BOP:</b> Verify MSIVs and MSIV bypass valves – CLOSED
	<b>Event 6</b> <b>Auto MSI is failed, manual alignment of steam line drains required.</b>	<b>BOP:</b> Check ESF Group 3 lights – LIT <b>RNO</b> – Align steam line drains for minimum safety function.
		<b>RO:</b> <b>Check if CDA Required</b> Check Ctmt pressure – GREATER THAN 23 psia <u>OR</u> Annunciator "CONTAINMENT DEPRES ACTUATION" (MB2B 5-5) – LIT <b>RNO</b> – Proceed to Step 12.
		<b>BOP:</b> <b>Verify CAR Fans Operating In Emergency Mode</b> Check CAR fan status: <ul style="list-style-type: none"> <li>CAR fans A and B – RUNNING</li> <li>CAR fan C – STOPPED</li> </ul> <b>RNO</b> – START/STOP CAR fans as necessary.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> Verify RPCCW Ctmt supply and return header isolations - OPEN
		<b>RO:</b> Verify Train A and B RPCCW supply and return to chill water valves – OPEN <b>RNO</b> – OPEN valves.
		<b>RO:</b> <b>Verify CIA</b> Check ESF Group 2, columns 2 through 10 – LIT
		<b>RO:</b> <b>Verify Proper ESF Status Panel Indication</b> <ul style="list-style-type: none"> <li>• Verify ESF Group 1 lights – OFF</li> <li>• Verify ESF Group 2 lights – LIT</li> </ul>
		<b>RO/BOP:</b> <b>Determine If ADVERSE CTMT Conditions Exist</b> <ul style="list-style-type: none"> <li>• Ctmt temperature – GREATER THAN 180°F</li> </ul> <p style="text-align: center;"><u>OR</u></p> <ul style="list-style-type: none"> <li>• Ctmt radiation – GREATER THAN <math>10^5 R/hr</math></li> </ul> <b>RNO</b> – DO NOT use ADVERSE CTMT parameters.
		<b>RO:</b> <b>Verify ECCS Flow</b> Check PZR pressure - GREATER THAN 1900 psia
		<b>RO:</b> Check PORV block valves – OPEN

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	CREW should perform a short brief and come out of "Master Silence" at the completion of Step 16.	<b>US:</b> Proceed to step 17.
		<b>BOP:</b> <b>Verify Adequate Heat Sink</b> Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) <b>RNO</b> – Proceed to step 17.d.
		<b>BOP:</b> Verify Total AFW Flow – GREATER THAN 530 gpm <b>RNO</b> – START pumps and Align valves as necessary. <u>IF</u> AFW Flow GREATER THAN 530 gpm can NOT be established, <u>THEN</u> Initiate monitoring of CSF Status Trees and Go to FR–H.1, Response to Loss of Secondary Heat Sink.
	<b>Event 10</b> The US should conduct a short transition brief and then <b>transition to FR–H.1, Response to Loss of Secondary Heat Sink.</b>	<b>US: enters FR–H.1 (Rev 024-11) and reads Caution to crew:</b>  <b><u>CAUTION</u></b> <ul style="list-style-type: none"><li>• Feed flow must NOT be reestablished to any faulted SG if a non-faulted SG is available.</li><li>• With all steam generators faulted and total feed flow LESS THAN 530 gpm due to operator action, DO NOT perform this procedure.</li></ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>1. Check If Secondary Heat Sink Is Required</b> 1.a. Verify RCS pressure – GREATER THAN ANY NON-FAULTED SG PRESSURE
		<b>BOP:</b> 1.b. Verify RCS hot leg WR temperature – GREATER THAN 350°F
		<b>BOP:</b> 1.c. Verify a secondary heat sink established <ul style="list-style-type: none"> <li>• Check WR level in at least one SG – INCREASING</li> <li>• Check Core exit TCs – STABLE <u>OR</u> DECREASING</li> </ul> <b>RNO</b> – Proceed to step 2.
		<b>RO:</b> <b>2. Check Charging Pump Status – AT LEAST ONE RUNNING</b>
		<b>US:</b> reads Caution to crew: <b><u>CAUTION</u></b> <ul style="list-style-type: none"> <li>• Steps 10. through 14. (bleed and feed) of this procedure must be immediately initiated if either of the following occur:                WR level in any 3 SGs is LESS THAN 21% (24% ADVERSE CTMT)  <u>OR</u>                PZR pressure is GREATER THAN OR EQUAL TO 2350 psia due to loss of secondary heat sink             </li> <li>• If offsite power is lost after SI reset, manual action to restart safeguards equipment may be required.</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> <b>3. Try To Establish AFW Flow To At Least One SG</b> 3.a. Check SG blowdown isolation <ul style="list-style-type: none"> <li>• Verify SG blowdown isolation valves – CLOSED</li> <li>• Verify SG blowdown sample isolation valves – CLOSED</li> </ul>
		<b>BOP:</b> 3.b. Verify AFW valve alignment – PROPER EMERGENCY ALIGNMENT
		<b>BOP:</b> 3.c. Check DWST level – LESS THAN 80,000 gal <b>RNO</b> – Proceed to step 3.f. and, <u>IF</u> DWST level decreases to LESS THAN 80,000 gal, <u>THEN</u> Perform step 3.d.
		<b>BOP:</b> 3.f. Verify DWST suction valves – OPEN <ul style="list-style-type: none"> <li>• 3FWA*AOV61A</li> <li>• 3FWA*AOV61B</li> </ul>
<b>T ≈ 5 min after contacted</b>  <b>Call the control room and report:</b> “The breaker for the ‘A’ MDAFW pump tripped on overcurrent.”	<b><u>EVENT 9</u></b>  <b>‘A’ MDAFW pump fails to start.</b> Crew should dispatch PEO to investigate switchgear for ‘A’ pump.	<b>BOP:</b> 3.g. Check MD AFW pumps – RUNNING <b>RNO</b> – START pumps. <u>IF</u> the MD AFW pump(s) do <u>NOT</u> start, <u>THEN</u> Restore power to the pumps (MB or locally)

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<b>T = when contacted</b> <b>Report status as follows:</b> "The governor for the TDAFW pump is disassembled, estimated return is approximately 8 hours."	TDAFW pump is out for governor maintenance.	<b>BOP:</b> 3.h. Check TD AFW pump – RUNNING
<b>T ≈ 5 min after contacted</b> <b>Call the control room and report:</b> "The stem for discharge valve 3FWA*V18 for the 'B' MDAFW pump is in the up position, but it is vibrating as if it is not attached to the valve internals."	<b>EVENT 9</b> 'B' MDADW pump discharge valve is shut with a stem/disc separation.	<b>BOP:</b> 3.i. Check total feed flow to SGs – GREATER THAN 530 gpm <b>RNO</b> – Perform the applicable action: <ul style="list-style-type: none"> <li>• <u>IF</u> any AFW is flow indicated, <u>THEN</u>                              Proceed to step 3.k.</li> <li>• <u>IF</u> no AFW flow is indicated, <u>THEN</u> <ol style="list-style-type: none"> <li>1) Using GA-31, Locally Restore AFW flow, <i>if required</i></li> <li>2) Proceed to step 4. and, <u>IF</u> AFW flow is established prior to step 10. <u>THEN</u>                                      Return to step 3.i.</li> </ol> </li> </ul>
		<b>BOP:</b> 3.k. Check NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) <b>RNO</b> – Proceed to step 3.m.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP:</b></p> <p>3.m. Verify a secondary heat sink established</p> <ul style="list-style-type: none"> <li>• Check WR level in at least one SG – INCREASING</li> <li>• Check Core exit TCs – STABLE OR DECREASING</li> </ul> <p><b>RNO</b>– Perform the following:</p> <ol style="list-style-type: none"> <li>1) Maintain feed flow to restore NR level to GREATER THAN 8% (42% ADVERSE CTMT).</li> <li>2) Proceed to step 4. and,</li> </ol> <p><u>IF</u> a secondary heat sink is established prior to step 10. as indicated by:</p> <ul style="list-style-type: none"> <li>• WR level in at least one SG INCREASING</li> </ul> <p><u>AND</u></p> <ul style="list-style-type: none"> <li>• Core exit TCs STABLE <u>OR</u> DECREASING</li> </ul> <p><u>THEN</u></p> <p>Return to step 3.n.</p>
		<p><b>RO:</b></p> <p><b>4. STOP ALL RCPs</b></p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> reads Caution to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <ul style="list-style-type: none"> <li>DO NOT reinstall the A213 logic cards until an adequate heat sink has been made available. Reinstallation of a logic card may cause actuation of the FWI circuit.</li> <li>Removal of the A213 logic cards defeats the low steam pressure SI from Loops 1 and 2. Manual action may be required to initiate safety injection for a low steam pressure condition.</li> </ul>
		<p><b>BOP:</b></p> <p><b>5. Try To Establish Main FW Flow To At Least One SG</b></p> <p>5.a. Verify condensate pumps – AT LEAST ONE RUNNING</p>
		<p><b>BOP:</b></p> <p>5.b. Check FW isolation trip valves – OPEN</p> <p><b>RNO–</b> Perform the following:</p> <p>1) <u>IF</u> SI <u>OR</u> P–14 has actuated,  <u>WHEN</u> SG levels LESS THAN the P–14 setpoint,  <u>THEN</u>  RESET SI</p>



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
<p><b>T = when contacted</b>            (MB4C-A04T) SSPS A Door Open            (RPR44) Train A A213 Out</p> <p>(MB4C-A04B) SSPS B Door Open            (RPR45) Train B A213 Out</p> <ol style="list-style-type: none"> <li>1. Trigger 8</li> <li>2. Trigger 8</li> <li>3. Trigger 8</li> <li>4. Trigger 9</li> <li>5. Trigger 9</li> <li>6. Trigger 9</li> </ol>	<p>To remove the A213 cards, the candidate will proceed behind Mainboard 1 to a set of photographs showing the cabinet and card locations.</p> <p>A sign at the photographs instructs the candidate to <b>call x3333</b> on a nearby phone and state:</p> <ol style="list-style-type: none"> <li>1. I have opened 3RPS*RAKLOGA</li> <li>2. I have removed card A213</li> <li>3. I have closed the door</li> <li>4. I have opened 3RPS*RAKLOGB</li> <li>5. I have removed card A213</li> <li>6. I have closed the door</li> </ol>	<p><b>RO:</b></p> <ol style="list-style-type: none"> <li>2) Remove universal logic card A213 from the following:               <ul style="list-style-type: none"> <li>• 3RPS*RAKLOGA</li> <li>• 3RPS*RAKLOGB</li> </ul> </li> </ol>
		<p><b>RO:</b></p> <ol style="list-style-type: none"> <li>3) WHEN both A213 logic cards are removed,  <u>THEN</u>                RESET FWI at MB2.</li> </ol>
		<p><b>BOP:</b></p> <ol style="list-style-type: none"> <li>4) RESET FWI at MB5.</li> </ol>
		<p><b>BOP:</b></p> <ol style="list-style-type: none"> <li>5) Adjust SG feed regulating and SG feed regulating bypass valve controllers to zero output.</li> </ol>
		<p><b>BOP:</b></p> <ol style="list-style-type: none"> <li>6) OPEN the FW isolation trip valves.</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>US:</b> 7) <u>IF</u> a FW isolation trip valve can <u>NOT</u> be opened, <u>THEN</u> Proceed to step 9.
		<b>BOP:</b> 5.c. Adjust SG feed regulating and SG feed regulating bypass valve controllers to zero output.
		<b>BOP:</b> 5.d. CLOSE the FW control isolation valves: <ul style="list-style-type: none"> <li>• 3FWS–MOV35A</li> <li>• 3FWS–MOV35B</li> <li>• 3FWS–MOV35C</li> <li>• 3FWS–MOV35D</li> </ul>
	The MDFW pump will not start	<b>BOP:</b> 5.e. Perform the following to start the MD FW pump: <ol style="list-style-type: none"> <li>1) Place the FW pumps P4 trip bypass selector switch to BYPASS</li> <li>2) Place the MD FW pump control switch in STOP</li> <li>3) START the MD FW pump</li> </ol> <b>RNO</b> – Proceed to CAUTION prior to step 7.

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>US:</b> reads Caution/Note to crew:</p> <p style="text-align: center;"><b><u>CAUTION</u></b></p> <ul style="list-style-type: none"> <li>PZR level may decrease off scale low due to SG depressurization.</li> <li>Following block of automatic SI actuation, manual SI actuation may be required if conditions degrade beyond operator control.</li> </ul> <p style="text-align: center;"><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>If AFW flow is restored during the performance of the next step, stabilize RCS and SG pressures prior to returning to step 3.i.</li> <li>The number of SGs to depressurize may be limited to one or two, to reduce the likelihood of reaching the bleed and feed criteria.</li> </ul>
		<p><b>RO:</b></p> <p><b>7. Try To Establish Feed Flow From Condensate System</b></p> <p>7.a. Place control switches for all PZR heaters to OFF</p>
		<p><b>RO:</b></p> <p>7.b. Verify normal letdown – IN SERVICE</p> <p><b>RNO</b>– Perform the following:</p> <ol style="list-style-type: none"> <li>Depressurize the RCS to LESS THAN 1950 psia using one PORV.  <u>IF</u> a PZR PORV is <u>NOT</u> available,  <u>THEN</u>  Proceed to step 7.c.</li> <li>Proceed to step 7.e.</li> </ol>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 7.c. Using GA-28, Depressurize the RCS to LESS THAN 1950 psia using auxiliary spray
		<b>RO:</b> 7.d. Check the following: <ul style="list-style-type: none"> <li>• RCS pressure LESS THAN 1950 psia</li> <li>• Annunciator PRESSUREIZER PRESSURE LO INTERLOCK P-11 (MB4D 3-5) – LIT</li> </ul> <b>RNO</b> – Return to step 7.b
		<b>RO:</b> 7.e. Block SI actuations <ul style="list-style-type: none"> <li>• BLOCK Steam Line Isolation SI</li> <li>• BLOCK PZR Pressure SI</li> </ul>
		<b>RO:</b> 7.f. Maintain RCS pressure EQUAL TO OR LESS THAN 1950 psia
	Crew should depressurize 2 of 4 generators to ensure Bleed and Feed criteria are not met.	<b>US:</b> 7.g. Check limiting the number of SGs to be depressurized – DESIRED
		<b>BOP:</b> 7.h. CLOSE MSIV(s) for SG(s) to be conserved (SGs NOT selected for depressurization)
	US continues in FR-H.1 at step 7.j on page 63.	<b>BOP:</b> 7.i. Using GA-26, Dump steam at the maximum rate to depressurize the selected SG(s) to establish condensate flow

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<p><b>BOP: enters GA-26 (Rev. 001)</b></p> <p><b><u>NOTE</u></b></p> <ul style="list-style-type: none"> <li>• Auxiliary feed flow directly impacts RCS heatup and cooldown rates and must be considered along with dumping steam.</li> <li>• Steam line pressure changes more rapidly if fewer than four SGs are used.</li> <li>• After Low Steamline Pressure Safety Injection signal is BLOCKED, MSI will occur if the High Steam Pressure Rate setpoint is exceeded.</li> <li>• Instrument air compressor B is tripped by SI, CDA and LOP.</li> </ul>
		<p><b>BOP:</b></p> <p><b>1. Verify Plant Conditions</b></p> <p>1.a. Check instrument air compressors – AT LEAST ONE RUNNING</p>
		<p><b>BOP:</b></p> <p>1.b. Check Annunciator "MAIN STEAM LINE ISOLATION" (MB2B 5-7) – NOT LIT</p> <p><b>RNO</b>– Perform the following:</p> <p>1) <u>IF</u> shifting from condenser steam dump to atmospheric steam dump, <u>THEN</u> Proceed to NOTE prior to step 4.</p> <p>2) Place both trains of steam dump interlock selector switches in OFF.</p> <p>3) Proceed to NOTE prior to step 4.</p>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b>  <b><u>NOTE</u></b> Following MSI reset, an actuation signal will re-initiate MSI.
		<b>BOP:</b> <b>4. Determine SG Atmospheric Relief Valves Availability</b> 4.a. Check using SG atmospheric relief valves – DESIRED 4.b. Place SG atmospheric relief valve controllers in MANUAL and Adjust to zero output 4.c. Check Annunciator "MAIN STEAM LINE ISOLATION" (MB2B 5-7) – LIT <b>RNO</b> – Proceed to step 5.
		<b>BOP:</b>  <b><u>NOTE</u></b> If RCS temperature increases above 553°F, the Lo-Lo Tave interlock (P-12) will be reinstated.
		<b>BOP:</b> <b>5. Dump Steam to Atmosphere Using SG Atmospheric Relief Valves</b> 5.a. Check RCS cooldown or SG depressurization – DESIRED
	Maximum rate	<b>BOP:</b> 5.b. Check the procedure in effect requires steam dump - AT A MAXIMUM RATE

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
	Crew should depressurize 2 of 4 generators to ensure Bleed and Feed criteria are not met.	<b>BOP:</b> 5.c. Adjust each selected SG atmospheric relief valve controller evenly over an approximate one minute time period to open the associated valve <ul style="list-style-type: none"> <li>• 3MSS-PIC20A1</li> <li>• 3MSS-PIC20B1</li> <li>• 3MSS-PIC20C1</li> <li>• 3MSS-PIC20D1</li> </ul>
		<b>BOP:</b> 5.d. Proceed to step 8.
		<b>BOP:</b> <b>8. Check If RCS Temperature Or Steam Generator Pressures Should Be Stabilized</b> 8.a. Check RCS temperature or SG pressures – AT DESIRED VALUE <b>RNO</b> – Continue dumping steam as specified by the procedure in effect and, <u>WHEN</u> RCS temperature or SG pressures are at the desired value, <u>THEN</u> Proceed to step 8.b.
		<b>BOP:</b> 8.b. Check condenser steam dumps - IN USE <b>RNO</b> – Perform the applicable action: <ul style="list-style-type: none"> <li>• IF SG atmospheric relief valves are in use,                              <u>THEN</u>                                  Proceed to step 10.</li> </ul>

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> <b>10. Stabilize Using SG Atmospheric Relief Valves</b> 10.a. Adjust each selected SG atmospheric relief valve controller as necessary to stabilize and maintain RCS temperature or SG pressures as specified by the procedure in effect
	<b>Event 9</b> <b>[Critical Task B.43]</b> – Establish condensate flow into at least one SG before RCS bleed and feed is required.	<b>US continues in FR-H.1:</b> 7.j. Establish condensate flow alignment to selected SG(s) 1) OPEN the TD FW pump discharge isolation valves <ul style="list-style-type: none"> <li>• 3FWS-MOV23B</li> <li>• 3FWS-MOV23C</li> </ul> 2) Throttle OPEN (25%–50%) the FW regulating bypass valve(s) to selected SG(s) as desired
		<b>BOP:</b> 7.k. Verify condensate flow – ESTABLISHED <b>RNO–</b> Perform the Following: 1) <u>IF</u> selected SG(s) pressure is LESS THAN 400 psig, <u>THEN</u> Using GA–26, Stop dumping steam and Proceed to step 9. 2) Return to step 7.i



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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>BOP:</b> 7.l. Using GA-26, Control selected SG(s) pressure LESS THAN required to maintain desired condensate flow
		<b>BOP:</b> 7.m. Maintain condensate flow to the selected SG(s) using the FW regulating bypass valve(s)
		<b>BOP:</b> <b>8. Check SG Levels</b> 8.a. Verify NR level in at least one SG – GREATER THAN 8% (42% ADVERSE CTMT) <b>RNO</b> – Perform the following: 1) Verify a secondary heat sink established, • WR level in at least one SG is increasing <u>AND</u> • Core Exit TCs are stable <u>OR</u> decreasing <u>IF</u> a secondary heat sink can <u>NOT</u> be verified, <u>THEN</u> Proceed to step 9. 2) Maintain feed flow to restore NR level to GREATER THAN 8% (42% ADVERSE CTMT).

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SCENARIO TIME LINE		
BOOTH INSTRUCTOR	FLOOR INSTRUCTOR	STUDENTS
		<b>RO:</b> 8.b. Check PZR level – GREATER THAN 9% <b>RNO–</b> Perform the following: 1) <u>IF</u> SI is actuated, <u>THEN</u> Go to procedure and step in effect. 2) Control charging flow to restore PZR level and, <u>WHEN</u> PZR level is GREATER THAN 9%. <u>THEN</u> Go to procedure and step in effect. <u>IF</u> PZR level can NOT be restored, <u>THEN</u> Initiate SI and Go to E–0, Reactor Trip or Safety Injection.
		<b>BOP:</b> 8.c. Go to procedure and step in effect
<b>T = when directed</b>  <b>FREEZE simulator</b>	<b>SCENARIO END:</b> When objectives for session have been met OR at discretion of floor instructor or lead evaluator, direct simulator be placed in FREEZE.	
RESTORE simulator to “training ready” conditions by cleaning/replacing marked up procedures, removing placekeeping tabs or marks from all references and control panel indicators, etc.	<b>POST-SCENARIO:</b> a. ENSURE simulator problems encountered during the scenario are documented IAW site specific process.	

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SECTION 5  
EXAM GUIDE SUMMARY

Title: Loss of Heat Sink

**Critical Tasks**

<b><u>TASK DESCRIPTION</u></b>	<b><u>TASK #</u></b>	<b><u>K/A &gt;= 3.0</u></b>	<b><u>BASIS SELECTION</u></b>
Manually start one service water pump per train before exiting E-0.	E-0 – B.9	076-A2.01 (3.5 / 3.7)	<p>Failure to manually start the minimum required number of SW pumps in an operating safeguards train represents a failure by the crew to demonstrate the following abilities:</p> <ul style="list-style-type: none"> <li>Effectively direct or manipulate ESF controls that would prevent a significant reduction of safety margin beyond that irreparably introduced by the scenario</li> <li>Recognize a failure or an incorrect automatic actuation of an ESF system or component</li> </ul>
Establish condensate flow into at least one SG before RCS bleed and feed is required	FR-H.1 – B.43	002-A2.04 (4.3 / 4.6)	<p>Failure to establish feedwater flow to any SG results in the crew's having to rely upon the lower-priority action of establishing RCS bleed and feed to minimize core uncover. This constitutes incorrect performance that fails to prevent "degradation of any barrier to fission product release."</p>

**Note:** Critical Tasks are not required for Progress Review Exams.

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Appendix D

Scenario Outline

Form ES-D-1

Facility: Millstone 3 Scenario No.: 2K15 NRC-04 Op-Test No.: 2K15

Examiners: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Operators: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Initial Conditions: 74% Power, Beginning of life, Equilibrium Xe.

Turnover:

The plant is at 74% power. The Turbine Driven Auxiliary Feedwater Pump has been out of service for 12 hours for governor maintenance and is expected back in 11 hours.

Event No.	Malfunction No	Event Type*	Event Description
1	RX05_4A	I (RO) T/S (US)	Narrow Range Loop 4 Thot instrument (RCS-TE441A) fails high. (AOP 3581 / 3571) ( <i>Tech Spec entry</i> )
2	FW01	R (US) R (RO) N (BOP)	Condenser vacuum leak requiring load reduction. (AOP 3575 at 5%/min)
3	RX15	I (BOP)	Main Steam header pressure (MSS-PT507) fails low. (AOP 3571)
4	RX09A	I (RO) T/S (US)	Primary channel of Pressurizer Pressure (RCS*PT455) fails high. (AOP 3581 / 3571) ( <i>Tech Spec entry</i> )
5	RX09A RXR05 RXR34	M (ALL)	Pressurizer Pressure (RCS*PT455) fails low, causing 2/4 Reactor Trip on OTDT.
6	TC03 TC04 TC06A/B/C/D TC07A/B/C/D RP08AB RPDI0071 RPDI0140	C (BOP)	Automatic Turbine Trip failed, turbine will not run back. Auto MSI failed, both Manual MSI pushbuttons failed, MSIVs and steam traps must be closed manually. Results in automatic Safety Injection.
7	RP07B	C (RO)	Train 'B' of auto SI failed.
8	SW01C/D SW02A/B ED11E ED12E	C (RO)	Running Service Water pumps trip on the reactor trip. Stand-by Service Water Pumps fail to auto start.
9	FW20A FW18A FW21B FW19	—	The 'A' MDAFW pump fails to start in auto or manual. The 'B' MDAFW pump discharge valve is shut with a stem/disc separation. The TDAFW pump is out of service for governor maintenance.
10	FW07A FW37	C (BOP)	Crew enters FR-H.1. MDFW pump will not start; SG feedwater flow will be established from the condensate pumps.

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

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SHIFT TURNOVER REPORT			
<b>DATE-TIME</b> Today 0515		<b>PREPARED BY</b> Unit Supervisor / "NIGHT" Shift	
		<b>SHIFT</b> 18:00 - 06:00	
<b>PLANT STATUS:</b>			
Mode: 1		Rx Power: 74%	
Megawatts: Thermal: 2726 MWTH		PZR Pressure: 2250 psia	
Electric: 892 MWe		RCS T-AVE: 580 degF	
RCS Leakage: Identified: 0.078 gpm		Core Burnup: 150 MWD/MTU	
Unidentified: 0.108 gpm		Protected Train/Facility: "A" (Orange)	
Date/Time: Today 0015		Intake: GREEN	

Active Tracking Records and Action Statements					
Equipment/Reason					
LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.7.1.2.b	c	Today	12 hours	Restore within 72 hours	60 hours

OD Compensatory Actions / Temp Logs			
Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC	
System	Notes
3FWA*P2	TDAFW Pump has been out of service for 12 hours for governor maintenance and is expected back in 11 hours.

CROSS UNIT SYSTEM STATUS

SURVEILLANCES / EVOLUTIONS IN PROGRESS

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADTL INFO)	
Current Rod Height	202 steps
Xenon Trend	Building in at -90 pcm per hour
Current Boron	1765 pcm
Boron Pot Setting / Blend Ratio	5.04 turns / 20 gpm