

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Determine a Clearance Boundary

JPM Number: JPM-A1.1R Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

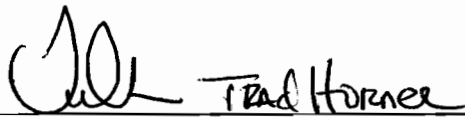
  
Technical Reviewer

02/03/11  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date

  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-A1.1R Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-A1.1R Rev. 0

Task Title: Determine a Clearance Boundary

System: Auxiliary Feedwater

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 25

Task No.(s): \_\_\_\_\_

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

K/A No. 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:

*At the completion of this JPM, examinee determines the required configuration of system components to provide boundary isolation for maintenance on 2-FW-8B.*

### Required Materials

(procedures, equipment, etc.):

- 25203-26005 SH.3 (Condensate Storage and Aux Feed).
- 25203-30005 (Single Line Meter & Relay Diagram 4.16KV Emerg. Buses 24C, 24D (A3, A4))
- OP 2322-001.
- OP-AA-200 (Equipment Clearance)
- Blank clearance section form.

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

*normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

Initiating Cues:

- Determine the proper safety clearance boundary for an inspection and possible repair/replacement of 2-FW-8B, "B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve.

Initial Conditions:

- Unit-2 is in Mode 5 for a refueling outage.
- The Work Control SRO has asked for your help determining a proper clearance boundary and tag type (color) for an emergent inspection of 2-FW-8B ("B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve).
- There is evidence that this valve may be leaking by, and the Maintenance Department will be performing a seating surface and general condition inspection.

SimulatorRequirements:

- Not applicable.

**\*\*\* NOTES TO 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 the 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: JPM-A1.1R

Rev.. 0

## Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	Obtain the required material for determination of clearance boundary.	<p>Examinee determines and requests the required material for determination of clearance boundary.</p> <ul style="list-style-type: none"> <li>P&amp;ID 25203-26005 SH.3 (Condensate Storage and Aux Feed).</li> <li>P&amp;ID25203-30005 (Single Line Meter &amp; Relay Diagram 4.16KV Emerg. Buses 24C, 24D)</li> <li>Aux Feed Valve line-up, OP 2322-001</li> <li>OP-AA-200, Equipment Clearance</li> </ul>	N	
Cue:	<p><b>Provide examinee with P&amp;ID's 25203-26005 SH.3 (Condensate Storage and Aux Feed). 25203-30005 (Single Line Meter &amp; Relay Diagram 4.16KV Emerg. Buses 24C, 24D (A3, A4)) valve line-up OP 2322-001, and procedure OP-AA-200 (Equipment Clearance)</b></p> <p><b><i>IF REQUESTED</i>, provide the following drawing (s): 25203-29008 SH 26 (Seal &amp; Mainfold Piping), 25203-3044 SH 8 (SCHMATIC DIAGRAM 4.16KV BUS 24D (A4)), and/or 25203-30012 SH.13 (MOTOR HEATER DISTRIBUTION PANEL SCHEDULE LH62 (MCC B62-CUB. DF3).</b></p>			
Comments:	The <i>requested</i> drawings are NOT required for completion of this task.			

# PERFORMANCE INFORMATION

JPM Number: JPM-A1.1R

Rev.. 0

## Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	<p>(OP-AA-200 3.2.2g). <b>ESTABLISH</b> the tagging sequence. <b>WHEN</b> procedural guidance exists, <b>THEN</b> the procedure takes precedence over the normal sequence of isolation. The normal sequence of isolation is as follows:</p> <ul style="list-style-type: none"> <li><b>POSITION</b> control switch</li> <li><b>REMOVE</b> power from component(s)</li> </ul>	<p>Examinee establishes a clearance boundary with the following components and sequencing. (See attached Answer Key)</p> <ul style="list-style-type: none"> <li>Examinee CAUTION tags "P9B-HS (HANDSWITCH FOR "B" AUXILIARY FEEDWATER PUMP" control switch indicating that the breaker is racked down</li> <li>Examinee removes power from "B" MDAFP by "RACKING DOWN" 4160VAC breaker (A406).</li> </ul>	<p>N</p> <p>Y</p>	
Cue:				
Comments:	The Yellow CAUTION tag on P9B-HS is for information use and is NOT required to be sequenced first. However, the pump must have its power removed prior to tagging any fluid system components.			

# PERFORMANCE INFORMATION

JPM Number: JPM-A1.1R

Rev.. 0

## Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	<ul style="list-style-type: none"> <li><b>ISOLATE</b> component/system from high pressure side to low pressure side</li> </ul>	<p><b>ISOLATE</b> component/system from high pressure side to low pressure side by Danger Tagging "CLOSED":</p> <p>2-FW-9B ("B" AUX FEED DISCHARGE STOP VALVE)</p> <p>2-FW-52C ("B" AUX FEED RECIRCULATION STOP VALVE)</p> <p>2-CN-29B ( "B" AUX FEED PUMP SUCTION ISOLATION)</p> <p>2-FIRE-94B ("B" AUX FEED PUMP EMERGENCY FIRE WATER SUPPLY VALVE)</p>	<p>Y</p> <p>Y*</p> <p>Y*</p> <p>Y*</p>	
Cue:				
Comments:	* The exact sequence of suction side/recirculation alignment is NOTcritical. However, the discharge stop must be closed first.			

## PERFORMANCE INFORMATION

JPM Number: JPM-A1.1R

Rev.. 0

### Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	<ul style="list-style-type: none"> <li><b>OPEN</b> drain valve(s)</li> <li><b>OPEN</b> vent valve(s)</li> </ul>	<p>Examinee tags open one or both of the following drain valves and one or both of the following vent valves:</p> <p>2-CN-332 ( "B" AUX FEED PUMP SUCTION HEADER DRAIN)</p> <p>2-CN 331 ( "B" AUX FEED PUMP DISCHARGE HEADER DRAIN VALVE)</p> <p>2-CN-330 ("B" AUX FEED PUMP CASING VENT VALVE)</p> <p>2-CN-329 ("B" AUX FEED PUMP CASING VENT VALVE)</p>	<p>Y*</p> <p>Y*</p> <p>Y*</p> <p>Y*</p>	
Cue:				
Comments:	*Examinee may choose to tag open all vent and drains, or only one vent and drain. To provide proper depressurization and draining, <u>only one</u> vent and <u>one</u> drain are <i>required</i> to be open.			

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

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

JPM Number: JPM-A1.1RRev. 0**VERIFICATION OF JPM COMPLETION**Title: Determine a Clearance Boundary

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No XValidated Time (minutes): 25

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

**Initiating Cues:**

- Determine the proper safety clearance boundary for an inspection and possible repair/replacement of 2-FW-8B, "B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve.

**Initial Conditions:**

- Unit-2 is in Mode 5 for a refueling outage.
- The Work Control SRO has asked for your help determining a proper clearance boundary and tag type (color) for an emergent inspection of 2-FW-8B ("B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve).
- There is evidence that this valve may be leaking by, and the Maintenance Department will be performing a seating surface and general condition inspection.

**Section Coversheet****Millstone Station****Tagout: 2C19****Section: 2322X00-002A****03/20/11 1935****Component to be Worked**

2-FW-8B

2\_TB \_00106\_ AFRV AREA\_

**Notes:****Reason Tagged**

2-FW-8B CHECK VALVE INSPECTION

**Instructions/Cautions:****Additional Information:**

25203-26005 SH.3/ Condensate Storage and Aux Feed

25203-30005 Single Line Meter &amp; Relay Diagram 4.16KV Emerg. Buses 24C,24D (A3,A4)

**Section Attributes:****Work Order List:**

Number / Equipment ID	Description
2-FW-8B	Perform Check Valve Inspection

**Section Verification:**

Status	Description	Name	Verification Date
Prepared	Prepared By:		
Approved	Approved By:		
Authorized	Authorized By:		
Work Released	Work Released By:		
To Clear	Authorize Tags to clear:		
System Restored	Restoration Complete		

# ANSWER KEY

## JPM-A1.1R

# ANSWER KEY

Millstone Station

Section Coversheet

Tagout: 2C19

Section: 2322X00-002A

03/20/11 1935

Tag Serial No.	Tag Type	Equipment ----- * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration ----- * Notes	Place. 1st Verif Time/Date	Ver Req	Pla Seq	Restoration Configuration ----- * Notes	As Left Configuration	Rest. 1st Verif Time/Date	Rest. 2nd Verif Time/Date
	Yellow	P9B-HS * HANDSWITCH FOR "B" AUXILIARY FEEDWATER PUMP * 2_CB _03606_ CNTRL RM C05	IV	1	N/A * BREAKER RACKED DOWN			5	N/A	N/A		
	Red	A 406 * 4.16KV BREAKER P9B AUXILARY FEEDWATER PUMP 24D5-2 * 2_TB _05606_UPR_ SWGR_BUS 24D	IV	2	RACKED DOWN			4	RACKED UP	RACKED UP		
	Red	2-FW-9B * "B" AUX FEED PUMP DISCHARGE STOP VALVE * 2_TB _00106_ AFW RM	IV	3	CLOSED			3	OPEN	OPEN		
	Red	2_FW-52C * "B" AUX FEED PUMP RECIRCULATION STOP VALVE * 2_TB _00106_ABOVE "B"AFP	IV	4	CLOSED			2	OPEN	OPEN		
	Red	2-CN-29B * "B" AUX FEED PUMP SUCTION ISOLATION * 2_TB _00106_AFW RM	IV	4	CLOSED			2	OPEN	OPEN		
	Red	2-FIRE-94B * "B" AUX FEED PUMP EMERGENCY FIRE WATER SUPPLY VALVE * 2_TB _00106_AFW RM	IV	4	CLOSED			2	CLOSED	CLOSED		
	Red	2-CN-330 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB _00106_	IV	5	OPEN/UNCAPPED			1	CLOSED	CLOSED		*

ANSWER KEY

Page 2 of 3



# ANSWER KEY

Red	2-CN-329 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB_00106_	IV	5	OPEN/UNCAPPED	1	CLOSED	CLOSED	*
Red	2-CN-331 * "B" AUX FEED PUMP DISCHARGE HEADER DRAIN VALVE * 2_TB_00106_	IV	5	OPEN/UNCAPPED	1	CLOSED	CLOSED	*
Red	2-CN-332 * "B" AUX FEED PUMP SUCTION HEADER DRAIN * 2_TB_00106_	IV	5	OPEN/UNCAPPED	1	CLOSED	CLOSED	*

**\* Note: only one vent and one drain is required to be open to provide proper venting and draining.**

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Calculate Spent Fuel Pool Time To Boil

JPM Number: JPM-A2R Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/04/11  
Date

III. Reviewed:

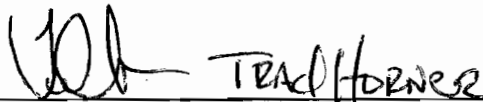
  
Technical Reviewer

02/04/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

  
Nuclear Training Supervisor

2/4/11  
Date

## JOB PERFORMANCE MEASURE

### SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-A2R Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-A2R Rev. 0

Task Title: Calculate Spent Fuel Pool Time To Boil

System: Equipment Control

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 2.2.37 K/A Rating 3.6/4.6

### 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 successfully determined SFP Heatup Rate and time to reach 150°F.*

### Required Materials

(procedures, equipment, etc.):

OU-M2-201 Section 3.2, "Heatup Calculations"  
OU-M2-201 Attachment 3, "Millstone Unit 2 SFP Time to 150°F Calculation"

### General References:

OU-M2-201 "Shutdown Safety Assessment Checklist"

### \*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**Initiating Cues:

- The US has directed you to calculate when the Spent Fuel Pool will reach the Technical Specification temperature limit.

Initial Conditions:

- Unit-2 is in day 12 of a refueling outage.
- Unit-2 is in Mode 6 performing a full core offload with 105 fuel assemblies currently transferred to the Spent Fuel Pool.
- Unit-2 has just experienced a Station Blackout.
- Present Spent Fuel Pool temperature as read on TR-7030 is 93F.

Simulator

- N/A

Requirements:**\*\*\* NOTES TO 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 the 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: JPM-A2R

Rev.. 0

Calculate Spent Fuel Pool Time To Boil

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

# PERFORMANCE INFORMATION

JPM Number: JPM-A2R

Rev.. 0

Calculate Spent Fuel Pool Time To Boil

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
1.	<p><b>NOTE:</b> The SSA Checklist or Heatup Calculations may be completed by any licensed Operator (except the on-duty SM) or the STA using, at a minimum, the main control board system status.</p> <p><b>NOTE:</b> Systems planned to be removed from service in the next 24 hours may be assumed to be out of service, and, therefore, not credited.</p> <p><b>NOTE:</b> Attachment 4 through Attachment 8 provide further guidance while performing SSA Checklist. <b>NOTE:</b> SSA Checklists are completed as follows:</p> <ul style="list-style-type: none"> <li>• Daily</li> <li>• Prior to removing any equipment required to support the KSFs unless daily review already assumed equipment is out of service</li> <li>• Equipment available to support the KSFs unexpectedly becomes unavailable</li> <li>• Prior to performing plant MODE changes when shutdown</li> <li>• A system/component is restored to available status and is desired to either immediately credit the system/component for Shutdown Risk or it is more than six hours until the next SSA Checklist is to be performed</li> </ul>	Examinee reads and acknowledges notes	N	
Cue:	<p><b>Provide examinee with the following:</b></p> <ul style="list-style-type: none"> <li>• <b>OU-M2-201" Shutdown Safety Assessment Checklist"</b></li> <li>• <b>A calculator</b></li> </ul>			
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A2R

Rev.. 0

Calculate Spent Fuel Pool Time To Boil

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	<p>3.2 Heatup Calculations</p> <p>3.2.1 IF a Time to Core Boil determination is desired, THEN PERFORM the following:  a. REFER to Attachment 2, Millstone Unit 2 RCS Time to Boil Calculation, and FOLLOW instructions.  b. RECORD results on Attachment 2.</p> <p>3.2.2 IF a time to reach 150°F SFP design temperature determination is desired THEN PERFORM the following:  a. REFER to Attachment 3, Millstone Unit 2 SFP Time to 150°F Calculation, and FOLLOW instructions.  b. RECORD results on Attachment 3.</p>	<p>Examinee determines that this step is not applicable.</p> <p>Examinee refers to Attachment 3, Millstone Unit 2 SFP Time to 150°F Calculation.</p>	<p>N</p> <p>N</p>	
Cue:				
Comments:				
3.	<p><b>NOTE:</b> SFP temperature should be obtained from TR-7030 pt 1. Otherwise, portable dip probe may be used (if TR-7030 is unavailable). If SFP temperature is expected to increase, a SFP temperature of up to 5°F greater than the current SFP temperature can be used to bound expected conditions.</p>	Examinee reads and acknowledges note.	N	
Cue:				
Comments:	Examinee may choose to add up to 5F to current SFP temperature based on the above note and expected SFP temperature rise.			



# PERFORMANCE INFORMATION

JPM Number: JPM-A2R

Rev.. 0

Calculate Spent Fuel Pool Time To Boil

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	<p>Instructions:</p> <p>1. Record time after reactor shutdown (in days), and current SFP temperature (°F).</p>	<p>Examinee records <b>12 days</b> after shutdown on Attachment 3</p> <p>Examinee records current Spent Fuel pool temperature of <b>93F to 98F</b> on Attachment 3</p>	<p>Y</p> <p>Y</p>	
Cue:				
Comments:	Examinee may choose to add up to 5F to current SFP temperature based on the above note and expected SFP temperature rise.			
5.	<p>2. Record SFP Heatup Rate from Table 1 based on SFP Offload Condition (&gt; 80 fresh fuel assemblies transferred to SFP).</p>	Examinee refers to Table 1 to obtain SFP Heatup Rate	N	
Cue:				
Comments:				
6.	<p>Table 1 SFP Heatup Rates</p> <p>NOTE: When using this table, the more conservative value should be used, so interpolation is not necessary (i.e., on the 23rd day shutdown, use day 20 heatup rate).</p>	Examinee reads and acknowledges note	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A2R

Rev.. 0

Calculate Spent Fuel Pool Time To Boil

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	Record SFP Heatup Rate	Examinee records a SFP Heatup Rate of <b>17.7 F/Hr</b> based on End-of-Cycle Core Offload using Time from Shutdown (days) of 10 days on Attachment 3.	Y	
Cue:				
Comments:				
8.	3. Calculate and record SFP Time to 150°F Calculation: SFP Time to 150°F = { (150°F - SFP Temperature (°F)) / SFP Heatup Rate (°F/hour) ]	Examinee performs the following calculation to determine SFP temperature to 150F:  SFP Time to 150°F = { (150°F - SFP Temperature (°F)) / SFP Heatup Rate (°F/hour) ]  Examinee records a SFP time to 150F as <b>2.9 to 3.2 Hr</b> (based on initial temperature imputed in step 1 on Attachment 3.	Y	
Cue:				
Comments:				
9.	4. Sign Performed by (STA or Licensed Operator).	Examinee signs "Performed by" block on Attachment 3	N	
Cue:				

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

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

JPM Number: JPM-A2RRev. 0

## **VERIFICATION OF JPM COMPLETION**

Title: Calculate Spent Fuel Pool Time To Boil

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No XValidated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions:

- The US has directed you to calculate when the Spent Fuel Pool will reach the Technical Specification temperature limit.

Initiating Cues:

- Unit-2 is in day 12 of a refueling outage.
- Unit-2 is in Mode 6 performing a full core offload with 105 fuel assemblies currently transferred to the Spent Fuel Pool.
- Unit-2 has just experienced a Station Blackout.
- Present Spent Fuel Pool temperature as read on TR-7030 is 93F.

**Calculation:**

$$\text{SFP Time to 150°F} = \{(150^\circ\text{F} - \text{SFP Temperature}(^\circ\text{F})) / \text{SFP Heatup Rate } (^\circ\text{F}/\text{Hour})\}$$

Date/Time	Time From Shutdown (Days)	SFP Temperature (°F)	SFP Heatup Rate (°F/hour)	SFP Time to 150 °F	Performed by	Checked by
Today/now	12	93	17.7	3.2	examinee	
Today/now	12	98	17.7	2.9	examinee	

# JPM –A2R Answer Key

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Review RWP and Survey Map

JPM Number: JPM-A3R Revision: 0

II. Initiated:



Marc R. Pucel

Developer

02/01/11

Date

III. Reviewed:



Technical Reviewer

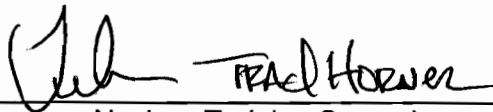
2/4/11

Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date



Nuclear Training Supervisor

2/3/11

Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-A3R Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-A3R Rev. 0

Task Title: Review RWP and Survey Map

System: Radiation Protection

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 2.3.7 K/A Rating 3.5/3.6

### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee has determined all of the radiological requirements for entering the CLRW filter skid area to assist The Radwaste Coordinator*

### Required Materials

(procedures, equipment, etc.):

Health Physics Survey Map

Operations blanket RWP

### 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*



## JOB PERFORMANCE MEASURE WORKSHEET (continued)

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Initiating Cues:

State the radiological requirements for entering this area. Include in your discussion:

- Which RWP task (job step) is appropriate for this assignment
- Highest loose contamination level in the work area
- Protective clothing required in the work area
- Highest general area radiation level in the work area
- Dose rate alarm setting
- Maximum time that the operator can remain at the filter skid without exceeding any dose limit

The examiner will act as Health Physics (HP) for any related questions.

Initial Conditions:

- You are the BOP operator.
- Unit-2 is at 80%
- You are preparing a brief for a PEO who will assist the Radwaste Coordinator by performing valve manipulations on the Clean Liquid Radwaste Filter Skid
- The operator has 450 mrem of annual dose exposure remaining

Simulator  
Requirements:

N/A

**\*\*\* NOTES TO 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 the 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: JPM-A3R

Rev.. 0

## Review RWP and Survey Map

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1 .	Which RWP task (job step) is appropriate for this assignment	Examinee states that the appropriate RWP task ( job step) for this assignment is Job Step1	Y	
Cue:				
Comments:				
2 .	Highest loose contamination level in the work area	Examinee states that the highest loose contamination level in the work area is 22000 DPM/100cm2	Y	
Cue:				
Comments:				
3 .	Protective clothing required in the work area	Examinee states that the protective clothing required in the work area is "Full PC's" (consisting of Cotton liners, Booties, Coveralls, Shoe covers, Rubber gloves, Modesty garments)	Y	
Cue:				
Comments:				
4 .	Highest radiation level in the work area	Examinee states that the highest radiation level in the work area is 100 mrem/hr	Y	
Cue:				
Comments:				
5 .	Dose rate alarm	Examinee states that the Dose rate alarm is set at 300 mrem/hr	Y	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-A3R

Rev.. 0

**Review RWP and Survey Map**

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6.	Maximum time that the operator can remain at the filter skid without exceeding any dose limit	Examinee states that the maximum allowed stay time at the filter skid without exceeding any dose limit is 4.5 hrs	Y	
Cue:				
Comments:				

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

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

JPM Number: JPM-A3R

Rev. 0

## **VERIFICATION OF JPM COMPLETION**

Title: Review RWP and Survey Map

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions: State the radiological requirements for entering this area. Include in your discussion:

- Which RWP task (job step) is appropriate for this assignment
- Highest loose contamination level in the work area
- Protective clothing required in the work area
- Highest general area radiation level in the work area
- Dose rate alarm setting
- Maximum time that the operator can remain at the filter skid without exceeding any dose limit

The examiner will act as Health Physics (HP) for any related questions.

- Initiating Cues:
- You are the BOP operator.
  - Unit-2 is at 80%
  - You are preparing a brief for a PEO who will assist the Radwaste Coordinator by performing valve manipulations on the Clean Liquid Radwaste Filter Skid
  - The operator is has 450 mrem of annual dose exposure remaining

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Determine Shutdown Margin for EOP 2530 "Station Blackout"

JPM Number: JPM-A4R Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11

Date

III. Reviewed:



Technical Reviewer

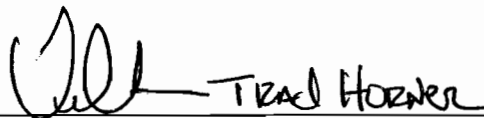
02/03/11

Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date



Brad Horner  
Nuclear Training Supervisor

2/3/11

Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-A4R Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-A4R Rev. 0

Task Title: Determine Shutdown Margin for EOP 2530 "Station Blackout"

System: Reactivity Control

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 25

Task No.(s): \_\_\_\_\_

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

K/A No. 055-EK 3.02 K/A Rating 4.3/4.6

### 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 successfully determined whether SDM is being satisfied for a postulated SBO event.

### Required Materials

(procedures, equipment, etc.):

EOP 2530 "Station Blackout"  
EOP 2541, Appendix 17 "Shutdown Margin"  
"Reactor Engineering Curve and Data Book ( Cycle 20)

### 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*



**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

- Initiating Cues:
- The Unit Supervisor has directed you to perform EOP 2530 (Step 30) and determine if SDM is being satisfied.
  - Additionally, if it is determined that SDM is not being satisfied, calculate the amount of boric acid that must be added to the RCS.
  - Document data used and values calculated.

- Initial Conditions:
- Unit-2 has experienced a plant trip with a concurrent Station Blackout one half hour ago.
  - Unit-2 had been operating at 100% power for one month prior to the trip.
  - The crew is performing EOP 2530.
  - Power is just being restored to Unit-2 from the SBO Diesel.
  - Tavg is being maintained at 530F.
  - Chemistry has determined present RCS Boron concentration to be 770 ppm.
  - Present Core Burnup is 5000 MWD/MTU.

- Simulator Requirements:
- N/A

**\*\*\* NOTES TO 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 the 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: JPM-A4R

Rev.. 0

Determine Shutdown Margin for EOP 2530 "Station Blackout"

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1.	EOP 2530 Step 30. CHECK Shutdown Margin is satisfied. Refer To Appendix 17, "Shutdown Margin."	Examinee reads EOP 2530 Step 30 and determines that he/she needs to refer to Appendix 17 to determine Shutdown Margin.	N	
Cue:				
Comments:				
2.	EOP 2541, Appendix 17 1. IF desired to calculate required shutdown boron concentration, PERFORM Attachment 17-A, "Required Shutdown Boron Concentration."	Examinee refers to EOP 2541, Appendix 17 to calculate required shutdown boron concentration.	N	
Cue:				
Comments:				
3.	Attachment 17A Required Shutdown Boron Concentration  NOTE The initial calculation is used to determine that SDM is met at the current conditions. The subsequent calculation determines if SDM will be met for anticipated temperatures when cooling down the RCS.	Examinee reads and acknowledges note about initial and subsequent calculations of SDM.	N	
Cue:				
Comments:				
4.	1. REQUEST Chemistry to sample the RCS for boron.	Examinee states from Initial Conditions that RCS Boron concentration is 770 ppm.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A4R

Rev.. 0

Determine Shutdown Margin for EOP 2530 "Station Blackout"

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5 .	2. RECORD the current RCS TAVE.	Examinee records current RCS TAVE as 530F from Initial Conditions.	Y	
Cue:				
Comments:				
6 .	3. RECORD core burnup from ONE of the following: _ "CVBURNUP" (PPC) _ Control Room Daily Surveillance _ Reactor Engineering _____ MWD/MTU	Examinee records core burnup as 5000 MWD/MTU as given in Initial Conditions.	Y	
Cue:	Provide examinee with "Reactor Engineering Curve and Data Book ( Cycle 20)"			
Comments:				
7 .	4. Refer To the applicable curve in Reactor Engineering Curve and Data Book and DETERMINE the required shutdown boron concentration for the core burnup and the current TAVE as follows:  a. IF directed to this Appendix by SBO or Functional Recovery EOPs use "1.0% Shutdown Boron Concentration vs. Moderator Temperature" (RE-B-02)  _ IF more than one CEA is not fully inserted, INCREASE the required shutdown boron concentration 350 ppm per CEA, greater than one, not fully inserted.	Examinee uses "1.0% Shutdown Boron Concentration vs. Moderator Temperature" (RE-B-02) and determines the required shutdown boron concentration for the core burnup and the current TAVE as ~790.71 ppm  Examinee states that there is no indication that more than one CEA is not fully inserted and that this step is not applicable.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A4R

Rev.. 0

Determine Shutdown Margin for EOP 2530 "Station Blackout"

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	b. IF directed to this Appendix by any other EOP use "3.6% Shutdown Boron Concentration vs. Moderator Temperature" (RE-B-01) _ IF any CEA is not fully inserted, INCREASE the required shutdown boron concentration 350 ppm per CEA not fully inserted.	Examinee states that this step is not applicable.	N	
Cue:				
Comments:				
9.	5. RECORD the required shutdown boron concentration and the TAVE for which it was calculated. _____ ppm _____ °F	Examinee records the required shutdown boron concentration and the TAVE for which it was calculated. ~790.71 ppm 530 °F	Y	
Cue:				
Comments:				
10.	6. DETERMINE Inverse Boron Worth at present core burnup. Refer To Reactor Engineering Curve and Data Book. (RE-F-02) _____ MWD/MTU (step 3.) _____ IBW	Examinee determines Inverse Boron Worth at present core burnup (5000 MWD/MTU ) as ~116.8 IBW	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A4R

Rev.. 0

Determine Shutdown Margin for EOP 2530 "Station Blackout"

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	7. DETERMINE smallest xenon reactivity worth expected within the time frame being evaluated. Refer To ANY of the following: _ "Xenon-Samarium Post Trip Report" _ Reactor Engineering Curve and Data Book (RE-C-01) _ "XENON-SAMARIUM DEMAND" program on PPC _ Reactor Engineering	Examinee determines smallest xenon reactivity worth expected within the time frame being evaluated by use of "Reactor Engineering Curve and Data Book (RE-C-01)" as <u>2.669</u> XRW (range 2.65 to 2.67).	N	
Cue:				
Comments:				
12.	8. RECORD xenon reactivity worth. _____ XRW	Examinee records xenon reactivity worth of <u>2.669</u> XRW (range 2.65 to 2.67).	Y	
Cue:				
Comments:				
13.	9. CALCULATE Boron Equivalent of Xenon Reactivity Worth (BE of XRW) as follows:  $\frac{\text{Xenon Reactivity Worth}}{\text{X}} \times \frac{\text{Inverse Boron Worth}}{\text{Boron Worth}} = \frac{\text{Boron Equivalent of Xenon Reactivity Worth}}{\text{Reactivity Worth}}$	Examinee calculates Boron Equivalent of Xenon Reactivity Worth (BE of XRW) as follows: (2.65-2.67) (309-311.9) $\frac{2.669}{\text{Xenon Reactivity Worth}} \times \frac{116.8}{\text{Inverse Boron Worth}} = \frac{311.7}{\text{Boron Equivalent of Xenon Reactivity Worth}}$ (Range of 3.09-311.9)	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A4R

Rev.. 0

Determine Shutdown Margin for EOP 2530 "Station Blackout"

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
14.	<p>10. CALCULATE Xenon Corrected Required Shutdown Boron</p> $\frac{\text{Required Shutdown Boron Concentration}}{\text{Xenon Corrected Required Shutdown Boron Concentration}} = \frac{\text{Boron Equivalent of Xenon Reactivity Worth}}{\text{Boron Equivalent of Xenon Reactivity Worth}}$	<p>Examinee calculates Xenon Corrected Required Shutdown Boron</p> $\frac{\sim 790.71}{\text{Required Shutdown Boron Concentration}} = \frac{(309-311.9) \cdot 311.7}{\text{Boron Equivalent of Xenon Reactivity Worth}}$ $\frac{479.0}{\text{Xenon Corrected Required Shutdown Boron Concentration}} = \frac{(478-481)}{\text{Boron Equivalent of Xenon Reactivity Worth}}$	Y	
Cue:				
Comments:				
15.	<p>11. Record ANY of the following: RCS boron concentration at the time of the reactor trip _____ ppm at time of Rx trip RCS boron sample results obtained from Chemistry _____ ppm from Chemistry sample</p>	<p>Examinee records RCS boron sample results obtained from Chemistry <u>770</u> ppm from Chemistry sample ( Initial Conditions)</p>	Y	
Cue:				
Comments:				
16.	<p>12. CHECK RCS boron concentration greater than Xenon Corrected Required Shutdown Boron concentration.</p>	<p>Examinee determines that RCS boron concentration is greater than Xenon Corrected Required Shutdown Boron concentration.</p>	Y	
Cue:				
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

## PERFORMANCE INFORMATION

JPM Number: JPM-A4R

Rev.. 0

Determine Shutdown Margin for EOP 2530 "Station Blackout"

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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STOP TIME: \_\_\_\_\_

JPM Number: JPM-A4RRev. 0

## VERIFICATION OF JPM COMPLETION

Title: Determine Shutdown Margin for EOP 2530 "Station Blackout"

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  Validated Time (minutes):       25      

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation:                      SAT                      UNSAT                      NA                      (circle one)

Overall Result of JPM:                      SAT                      UNSAT                      (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

### **Initial Conditions:**

- The Unit Supervisor has directed you to perform EOP 2530 (Step 30) and determine if SDM is being satisfied.
- Additionally, if it is determined that SDM is not being satisfied, calculate the amount of boric acid that must be added to the RCS

### **Initiating Cues:**

- Unit-2 has experienced a plant trip with a concurrent Station Blackout one half hour ago.
- Unit-2 had been operating at 100% power for one month prior to the trip.
- The crew is performing EOP 2530.
- Power is just being restored to Unit-2 from the SBO Diesel.
- Tavg is being maintained at 530F.
- Chemistry has determined present RCS Boron concentration to be 770 ppm.
- Present Core Burnup is 5000 MWD/MTU.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Determine RCS Leakage Action Level**

JPM Number: JPM-A1.1S Revision: 0

11. Initiated:

\_\_\_\_\_  
 R. J. Ashe  
 Developer

\_\_\_\_\_  
 11/30/2011  
 Date

III. Reviewed:

*[Signature]*  
Technical Reviewer

*02/03/11*  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date

Paul Tread Horn 2/3/11  
Nuclear Training Supervisor Date

## JOB PERFORMANCE MEASURE

### SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
11/30/2011	Created JPM for LOIT 2011 NRC Exam	0/0

Facility: MP-2                      Examinee: \_\_\_\_\_

JPM Number: JPM-A1.1S                      Rev. 0

Task Title: **Determine RCS Leakage Action Level**

System: Conduct of Operations

Time Critical Task:    Yes           No   N  

Validated Time (minutes):       15      

Task No.(s):       N/A      

Applicable To:            SRO   X              RO                   PEO       

K/A No.       2.1.7                  K/A Rating       4.4/4.7      

Method of Testing:

Simulated Performance:       X                  Actual Performance:       

Location:

Classroom:       X                  Simulator:                   In-Plant:       

Task Standards:

At the completion of this JPM, the SRO will determine the appropriate Action Level for an RCS leak and determine the appropriate actions that must be taken.

Required Materials

(procedures, equipment, etc.):

C OP 200.15, RCS Leakage Trending and Investigation  
OPS Form 2619A-001, Control Room Daily Surveillance, MODES 1 & 2

General References:

C OP 200.15, RCS Leakage Trending and Investigation  
OPS Form 2619A-001, Control Room Daily Surveillance, MODES 1 & 2

**\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

Initiating Cues:

- Review the Unit 2 RCS Unidentified Leakage and Unit 2 RCS Identified Leakage graphs.

Initial Conditions:

- You are the Night Crew Shift Manager.
- The plant is in MODE 1 and stable at 100% power.
- The crew began its 12 hour shift at 1800
- The latest RCS Leak Rate has been determined has been entered into the Operation Trending database. (See attached graphs)
- There is NO indication of PRESSURE BOUNDARY LEAKAGE.
- The present RCS leak rate calculation has been confirmed.
- All input parameters have been evaluated and are valid.

Simulator  
Requirements:

N/A

**\*\*\* NOTES TO 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 the 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: JPM-A1.1S

Rev. 0

## Determine RCS Leakage Action Level

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1.	Observes the attached graphs and obtains C OP 200.15, RCS Leakage Trending and Investigation.	Examinee reviews the attached graphs and obtains C OP 200.15, RCS Leakage Trending and Investigation.	Y	
Cue:	When asked, provide the examinee with COP 200.15, RCS Leakage Trending and Investigation			
Comments:				
2.	<b>Section 4.1</b> <b>Step 4.1.1</b> If leakage is PRESSURE BOUNDARY LEAKAGE, perform the following: a. Refer to Technical specification 3.4.6.2 for required ACTIONS.	Examinee determines from Initial Conditions that NO PRESSURE BOUNDARY LEAKAGE exists and this step is NOT applicable.	N	
Cue:				
Comments:				

PERFORMANCE INFORMATION

JPM Number: JPM-A1.1S Rev. 0

**Determine RCS Leakage Action Level**

Rev. 0

### Determine RCS Leakage Action Level

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	<b>Step 4.1.2</b> If any of the following Action Level 1 limits are exceeded, Go To Section 4.2 <ul style="list-style-type: none"> <li>One seven (7) day rolling average of daily RCS UNIDENTIFIED LEAKAGE rates greater than 1.0 gpm.</li> <li>Nine (9) consecutive daily RCS IDENTIFIED LEAKAGE rates greater than the baseline mean.</li> </ul>	<ul style="list-style-type: none"> <li>Examinee determines that NO seven (7) day rolling average of daily RCS UNIDENTIFIED LEAKAGE rates is greater than 1.0; therefore, this does NOT require entry into Action Level 1.</li> <li>Examinee determines that, the last nine consecutive RCS UNIDENTIFIED LEAKAGE rates are greater than the baseline mean.               <ul style="list-style-type: none"> <li>Examinee determines that Action Level 1 is applicable.</li> </ul> </li> <li>Examinee proceeds to Section 4.2.</li> </ul>	<p>N</p> <p>Y</p> <p>Y</p> <p>N</p>	
Cue:				
Comments:				

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

STOP TIME:

JPM Number: JPM-A1.1S

Rev. 0

## VERIFICATION OF JPM COMPLETION

Title: Determine RCS Leakage Action Level

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Overall Result of JPM: SAT UNSAT (circle one)

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## **STUDENT HANDOUT**

### **Initiating Cues:**

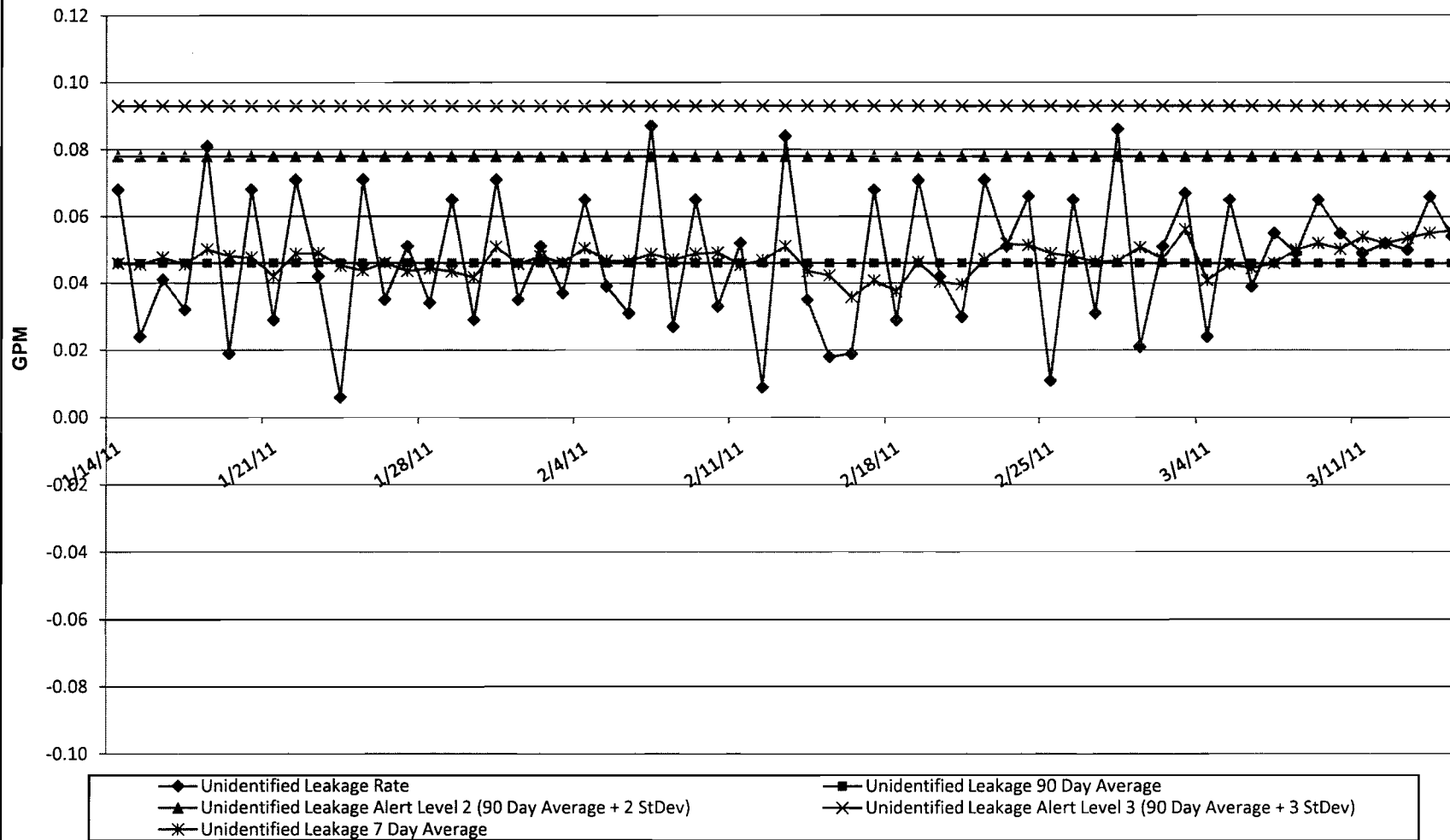
- Review the Unit 2 RCS Unidentified Leakage and Unit 2 RCS Identified Leakage graphs.

### **Initial Conditions:**

- You are the Night Crew Shift Manager.
- The plant is in MODE 1 and stable at 100% power.
- The crew began its 12 hour shift at 1800
- The latest RCS Leak Rate has been determined has been entered into the Operation Trending database. (See attached graphs)
- There is NO indication of PRESSURE BOUNDARY LEAKAGE.
- The present RCS leak rate calculation has been confirmed.
- All input parameters have been evaluated and are valid.

## Unit 2 RCS Unidentified Leakage

Training Use Only



## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Approve and Authorize a Clearance Boundary

JPM Number: JPM-A1.2S Revision: 0

II. Initiated:



Marc R. Pucel

Developer

02/01/11

Date

III. Reviewed:



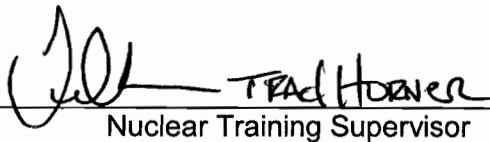
Technical Reviewer

02/02/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date



Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-A1.2S Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-A1.2S Rev. 0

Task Title: Approve and Authorize a Clearance Boundary

System: Auxiliary Feedwater

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 2.2.14 K/A Rating 3.9/4.3

### 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 determine whether the Tag Clearance can be approved and authorized and if not, why.*

### Required Materials

(procedures, equipment, etc.):

- The following P&ID's available: (25203-26005 SH.3/ Condensate Storage and Aux Feed), 25203-30005 Single Line Meter & Relay Diagram 4.16KV Emerg. Buses 24C,24D (A3,A4), and 25203-29008 SH 26 ( Seal & Manifold Piping)
- OP 2322-001

### General References:

- OP-AA-200 (Equipment Clearance)

### \*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**Initiating Cues:

- Your task is to review, approve, and authorize the attached Tag Clearance Sheet.

Initial Conditions:

- Unit-2 is in Mode 5
- There is evidence of leak-by of 2-FW-8B, the "B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve.
- Mechanical Maintenance will be inspecting the overall condition and seating surfaces of the valve and making recommendations for repair or replacement of the valve.

SimulatorRequirements:

- N/A

**\*\*\* NOTES TO 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 the 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: JPM-A1.2S

Rev.. 0

Approve and Authorize a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	<p>OP-AA-200 "Equipment Clearance"</p> <p>3.2.3c. <b>REVIEW</b> the completed Tagging Record for accuracy and completeness, referencing controlled documents as necessary. The reviewing SRO or designee shall:</p> <ul style="list-style-type: none"> <li>• <b>ENSURE</b> that the tag-out is adequate for the tasks and hazards involved.</li> <li>• <b>ENSURE</b> that the proper sequence of component alignment and tag placement is specified.</li> <li>• <b>ENSURE</b> that the appropriate entries have been made in the comment section of the Tagging Record.</li> <li>• <b>DETERMINE</b> if support is required from Maintenance Personnel to execute the tag-out.</li> </ul>	<p>Examinee reviews the completed Tagging Record for accuracy and completeness, using controlled drawings: (25203-26005 SH.3/ Condensate Storage and Aux Feed) For fluid systems. (25203-30005 Single Line Meter &amp; Relay Diagram 4.16KV Emerg. Buses 24C,24D (A3,A4)) for electrical isolation.</p> <p>Examinee identifies that the incorrect 4160 VAC breaker ( A307) is Danger Tagged and that the correct breaker (A406) is required to be Danger Tagged "Racked Down"</p> <p>Examinee identifies that 2-FIRE-94B. "B" AUX FEED PUMP EMERGENCY FIRE WATER SUPPLY VALVE" has been incorrectly omitted from the tagging sheet. This alternate suction for the "B" Auxiliary Feed Pump is required to be Danger Tagged "Closed"</p> <p>Examinee determines that this tag clearance cannot be approved or authorized as written.</p>	<p>N</p> <p>Y</p> <p>Y</p> <p>Y</p>	
Cue:				
Comments:	<p>Examinee may desire to tag open only one casing vent valve (2-CN-329 or 2-CN-330). Additionally, examinee may desire to tag open only one header drain valve (2-CN-331 or 2-CN-332). At least one casing vent valve and one header drain valve <i>must</i> be tagged open. Examinee may desire to tag open the motor heater breaker for "B" MDAFW pump. This is not required.</p>			

## PERFORMANCE INFORMATION

JPM Number: JPM-A1.2S

Rev.. 0

Approve and Authorize a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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**TERMINATION CUE:** The evaluation for this JPM is concluded.

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



**VERIFICATION OF JPM COMPLETION**Title: Approve and Authorize a Clearance Boundary

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No XValidated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

**Initiating Cues:**

- Your task is to review, approve, and authorize the attached Tag Clearance Sheet.

**Initial Conditions:**

- Unit-2 is in Mode 5
- There is evidence of leakby of 2-FW-8B, the "B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve.
- Mechanical Maintenance will be inspecting the overall condition and seating surfaces of the valve and making recommendations for repair or replacement of the valve.

**Section Coversheet****Millstone Station****Tagout: 2C19****Section: 2322X00-002A****03/20/11 1935****Component to be Worked**

2-FW-8B

2\_TB \_00106\_ AFRV AREA\_

**Notes:****Reason Tagged**

2-FW-8B CHECK VALVE INSPECTION

**Instructions/Cautions:****Additional Information:**

25203-26005 SH.3/ Condensate Storage and Aux Feed

25203-30005 Single Line Meter &amp; Relay Diagram 4.16KV Emerg. Buses 24C,24D (A3,A4)

**Section Attributes:****Work Order List:**

Number / Equipment ID	Description
2-FW-8B	Perform Check Valve Inspection

**Section Verification:**

Status	Description	Name	Verification Date
Prepared	Prepared By:	"Qualified Operator"	"This Morning"
Approved	Approved By:		
Authorized	Authorized By:		
Work Released	Work Released By:		
To Clear	Authorize Tags to clear:		
System Restored	Restoration Complete		

# ANSWER KEY

# ANSWER KEY

## Millstone Station

**Section Coversheet**

**Tagout: 2C19**

**Section: 2322X00-002A**

**03/20/11 1935**

Tag Serial No.	Tag Type	Equipment * Equipment Description * Equipment Location	Ver Req	Pla Seq	Placement Configuration * Notes	Place. 1st Verif Time/Date	Ver Req	Pla Seq	Restoration Configuration * Notes	As Left Configuration	Rest. 1st Verif Time/Date	Rest. 2nd Verif Time/Date
	Yellow	P9B-HS * HANDSWITCH FOR "B" AUXILIARY FEEDWATER PUMP * 2_CB _03606_ CNTRL RM C05	IV	1	N/A * BREAKER RACKED DOWN			4	N/A	N/A		
	Red	A 406 * 4.16KV BREAKER P9B AUXILIARY FEEDWATER PUMP 24D5-2 * 2_TB _05606_UPR_ SWGR_BUS 24D	IV	2	RACKED DOWN			3	RACKED UP	RACKED UP		
	Red	2-FW-9B * "B" AUX FEED PUMP DISCHARGE STOP VALVE * 2_TB _00106_AFW RM	IV	3	CLOSED			2	OPEN	OPEN		
	Red	2-FW-52C * "B" AUX FEED PUMP RECIRCULATION STOP VALVE * 2_TB _00106_ABOVE "B"AFP	IV	3	CLOSED			2	OPEN	OPEN		
	Red	2-CN-29B * "B" AUX FEED PUMP SUCTION ISOLATION * 2_TB _00106_AFW RM	IV	3	CLOSED			2	OPEN	OPEN		
	Red	2-FIRE-94B * "B" AUX FEED PUMP EMERGENCY FIRE WATER SUPPLY VALVE * 2_TB _00106_AFW RM	IV	3	CLOSED			2	CLOSED	CLOSED		
	Red	2-CN-330 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB _00106_	IV	4	OPEN/UNCAPPED			1	CLOSED	CLOSED		

This is the correct  
breaker to be tagged  
for "B" AFW Pump

This is an alternate  
suction that must be  
tagged

**ANSWER KEY**

**Page 2 of 3**

# ANSWER KEY

Red	2-CN-329 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB _00106_	IV	4	OPEN/UNCAPPED	1	CLOSED	CLOSED
Red	2-CN-331 * "B" AUX FEED PUMP DISCHARGE HEADER DRAIN VALVE * 2_TB _00106_	IV	4	OPEN/UNCAPPED	1	CLOSED	CLOSED
Red	2-CN-332 * "B" AUX FEED PUMP SUCTION HEADER DRAIN * 2_TB _00106_	IV	4	OPEN/UNCAPPED	1	CLOSED	CLOSED

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Tech. Spec. Applicability with Embedded Surveillance

JPM Number: JPM-A2S Revision: 0

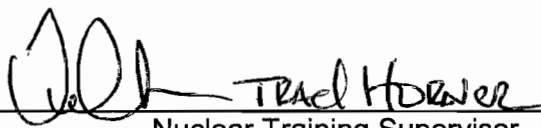
II. Initiated:

Robert L. Cimmino, Jr. 02/03/11  
Developer Date

III. Reviewed:

 2/3/11  
Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date  
 2/4/11  
Nuclear Training Supervisor Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
02/03/11	Created JPM for LOIT 2011 NRC Exam	0/0

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**Initiating Cues:

- As the RO withdrew Group 7 CEAs, he noted that CEAPDS did not track the last couple steps of CEA #1 in Group 7.
- CEA Pulse Counting, the Backup Scanner and the Core Mimic all tracked motion as designed.
- I&C investigated the problem and explained that the CEAPDS computer is operating as designed, but the input from CEA #1 is not capable of tracking any CEA motion at this time.
- I&C testing indicates the reed switch input card to CEAPDS for CEA #1, located on the rear of C05, needs to be replaced with a spare from the warehouse.
- Testing and replacement will take approximately six hours.
- Perform the Administrative duties of the US for this malfunction.

Initial Conditions:

- You are the on-shift US.
- The plant is at 100% power, having just completed Control Valve Testing.
- Group 7 CEAs were inserted 10 steps for power control, but have all just been fully withdrawn, as indicated by the Core Mimic.

Simulator  
Requirements:**N/A****\*\*\* NOTES TO 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 the 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).



JPM Number: JPM-A2S Rev. 0/0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-A2S Rev. 0

Task Title: **Tech. Spec. Applicability with Embedded Surveillance**

System: Administrative

Time Critical Task: Yes \_\_\_\_\_ No **X**

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 2.2.40 K/A Rating 3.4/4.7

### Method of Testing:

Simulated Performance: **X** Actual Performance: **X**

### Location:

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

### Task Standards:

At the completion of this JPM, the SRO should analyze the given conditions and state the required Tech. Spec. entry and surveillance.

### Required Materials

(procedures, equipment, etc.):

- Plant Technical Specifications Manual
- AOP-2556; CEA Malfunctions
- SP-2619A-001; Control Room Daily Surveillance, Mode 1 & 2

### General References:

- Plant Technical Specifications Manual
- AOP-2556; CEA Malfunctions

### **\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

# PERFORMANCE INFORMATION

JPM Number: JPM-A2S

Rev. 0

Tech. Spec. Applicability with Embedded Surveillance

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	<p>Given a copy of the plant Technical Specifications Manual and, if requested, AOP-2556, CEA Malfunctions:</p> <ul style="list-style-type: none"> <li>Review the Initial Conditions and Initiating Cue.</li> <li>Review Tech. Specs. and, as needed, AOP-2556 for any required entries and additional surveillance requirements.</li> </ul>	<p><i>Examinee reviews the following:</i></p> <ul style="list-style-type: none"> <li>A copy of the plant Technical Specifications Manual</li> </ul> <p><i>If requested:</i></p> <ul style="list-style-type: none"> <li>A copy of AOP-2556; CEA Malfunctions and/or SP-2619A-001, Control Room Daily Surveillance.</li> </ul>	N  N	
Cue:	<b>Provide a copy of Plant Technical Specifications Manual and, if requested, AOP-2556; CEA Malfunctions.</b>			
Comments:				
2.	<p>Explain the necessary Tech. Spec. entry requirements and the Tech. Spec. surveillance that must be performed.</p>	<ul style="list-style-type: none"> <li><i>During the review of the plant Technical Specifications Manual, the examinee should state the need to enter into Tech. Spec. 3.1.3.1B (B.1 or B.2), 3.1.3.1C and perform required actions.</i></li> <li><i>The examinee should also state the need to record CEA Position Indication at least once every four (4) hours.</i></li> </ul>	Y  Y	
Cue:	<b>None</b>			
Comments:	<p>The examinee may note that Tech. Spec. 3.1.3.6.D applies. This input is not a Critical item because the requirements of this TS is <b>less</b> restrictive than the Critical required TS. However, the examinee should <b>NOT</b> log into Tech. Spec. 3.1.3.3 or 3.0.3 as they are <b>NOT</b> applicable with the Backup Scanner operating as designed.</p>			

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

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

JPM Number: JPM-A2S

Rev. 0

## **VERIFICATION OF JPM COMPLETION**

Title: Tech. Spec. Applicability with Embedded Surveillance

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  

Validated Time (minutes):                        15  

Actual Time to Complete (minutes):        \_\_\_\_\_

Overall Result of JPM:                      SAT                      UNSAT                      (*circle one*)

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## **STUDENT HANDOUT**

### **Initiating Cues:**

- As the RO withdrew Group 7 CEAs, he noted that CEAPDS did not track the last couple steps of CEA #1 in Group 7.
- CEA Pulse Counting, the Backup Scanner and the Core Mimic all tracked motion as designed.
- I&C investigated the problem and explained that the CEAPDS computer is operating as designed, but the input from CEA #1 is not capable of tracking any CEA motion at this time.
- I&C testing indicates the reed switch input card to CEAPDS for CEA #1, located on the rear of C05, needs to be replaced with a spare from the warehouse.
- Testing and replacement will take approximately six hours.
- Perform the Administrative duties of the US for this malfunction.

### **Initial Conditions:**

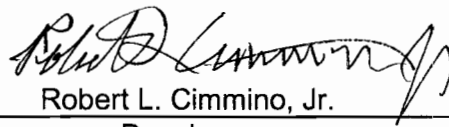
- You are the on-shift US.
- The plant is at 100% power, having just completed Control Valve Testing.
- Group 7 CEAs were inserted 10 steps for power control, but have all just been fully withdrawn, as indicated by the Core Mimic.

# JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Radiological Assessment and Task Supervision

JPM Number: JPM-A3S Revision: 0

II. Initiated:

  
Robert L. Cimmino, Jr.  
Developer

02/03/11  
Date

III. Reviewed:

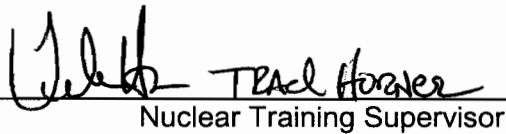
  
Technical Reviewer

2/4/11  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date

  
Trace Horner  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
12/07/10	Created JPM for LOIT 2011 NRC Exam	0/0

JPM Number: JPM-A3S Rev. 0/0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-A3S Rev. 0

Task Title: **Radiological Assessment and Task Supervision**

System: Administrative

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 2.3.12 K/A Rating 3.2/3.7

### Method of Testing:

Simulated Performance: X Actual Performance: X

### Location:

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

### Task Standards:

At the completion of this JPM, the SRO should analyze the given conditions and designate which PEO should perform each of the two specified tasks, based on the radiological concerns of each.

### Required Materials

(procedures, equipment, etc.):

If requested, RPM 5.2.2; Basic Radiation Worker Responsibilities.

### General References:

- RPM 5.2.2; Basic Radiation Worker Responsibilities
- Radiation Worker CBT

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**Initiating Cues:

- Determine which PEO (#1 or #2) you are going to direct to perform the task of clearing the tag-out and perform the initial valve lineup and which PEO you are going to assign to perform the required valve lineup Independent Verification.

Initial Conditions:

- You are the Work Control SRO.
- The plant has been shut down to repair a leak in the CVCS Regenerative Heat Exchanger.
- The work is complete and the Heat Exchanger is ready to be returned to service, following the clearing of the tags and subsequent required valve lineups.
- The following additional conditions exist:
  - The area around the Heat Exchanger has been posted as a "Locked High Radiation Area".
  - The area is at the minimum radiation level to meet the required posting.
  - All valves on the valve lineup are in the posted area.
  - There are two PEOs available to do the tag removal, initial valve lineup and the second check of the valve lineup.
  - PEO #1, an experienced Operator, has 400 mRem of remaining exposure.
  - PEO #2, a newly qualified Operator, has 850 mRem of remaining exposure.
  - It will take PEO #1 approximately 30 minutes of stay time in the posted area to clear the tags and perform the initial valve lineup. It will take PEO #2 approximately 45 minutes of stay time to perform the same task.
  - It will take PEO #1 approximately 15 minutes of stay time in the posted area to perform the valve lineup Independent Verification. It will take PEO #2 approximately 25 minutes of stay time to perform the same task.

Simulator

N/A

Requirements:**\*\*\* NOTES TO 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 the 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: JPM-A3S

Rev. 0

Radiological Assessment and Task Supervision

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
<b>START TIME:</b> _____				
1.	<ul style="list-style-type: none"> <li>Review the Initial Conditions and Initiating Cue.</li> <li>Using known exposure rate in the area, calculate the maximum available stay time for each PEO.</li> <li>Based on available stay time, decide which PEO must perform each task.</li> </ul>	<ul style="list-style-type: none"> <li>PEO #1 only has 400 mR of exposure left and PEO #2 has 850 mR of exposure left.</li> <li>The minimum radiation level for a Locked High Radiation area is 1000 mR/hr.</li> <li>Therefore, based on the available exposure for each PEO and the expected radiation levels at the job site, the maximum stay time for PEO #1 is approximately 24 minutes. (400 mR / 1000 mR/hr. * 60 min/hr. = 24 minutes) And 51 minutes for PEO #2 (850 mR / 1000 mR/hr * 60 min/hr. = 51 minutes)</li> </ul>	<p>N</p> <p>N</p> <p>N</p>	
Cue:	If requested, provide examinee with a copy of RPM 5.2.2; Basic Radiation Worker Responsibilities.			
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-A3S

Rev. 0

### Radiological Assessment and Task Supervision

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	<ul style="list-style-type: none"> <li>PEO #1 does not have enough exposure left to clear the tags and perform the initial valve lineup.</li> <li>PEO #2 has enough exposure to clear the tags and perform the initial valve lineup. Then, PEO #1 will have enough exposure left to perform the valve lineup Independent Verification.</li> </ul> <p>The examinee may also state the following, but it is not required:</p> <ul style="list-style-type: none"> <li>PEO #2 does <u>not</u> have enough exposure left to perform both tasks, clearing the tagout and performing both valve lineups (this would also <u>not</u> meet the "Independent Verification" Administrative Requirements).</li> </ul>	Based on the calculated stay times for each PEO and the individual task requirements, PEO #2 is assigned to clear the tags and perform the initial valve lineup, while PEO #1 is assigned to perform the valve lineup Independent Verification.	Y	
Cue:	None			
Comments:				

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

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

JPM Number: JPM-A3S

Rev. 0

## **VERIFICATION OF JPM COMPLETION**

Title: Radiological Assessment and Task Supervision

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

Overall Result of JPM:                      SAT                      UNSAT                      (*circle one*)

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

### **Initiating Cues:**

- Determine which PEO (#1 or #2) you are going to direct to perform the task of clearing the tag-out and perform the initial valve lineup and which PEO you are going to assign to perform the required valve lineup Independent Verification.

### **Initial Conditions:**

- You are the Work Control SRO.
- The plant has been shut down to repair a leak in the CVCS Regenerative Heat Exchanger.
- The work is complete and the Heat Exchanger is ready to be returned to service, following the clearing of the tags and subsequent required valve lineups.
- The following additional conditions exist:
  - The area around the Heat Exchanger has been posted as a "Locked High Radiation Area".
  - The area is at the minimum radiation level to meet the required posting.
  - All valves on the valve lineup are in the posted area.
  - There are two PEOs available to do the tag removal, initial valve lineup and the second check of the valve lineup.
  - PEO #1, an experienced Operator, has 400 mRem of remaining exposure.
  - PEO #2, a newly qualified Operator, has 850 mRem of remaining exposure.
  - It will take PEO #1 approximately 30 minutes of stay time in the posted area to clear the tags and perform the initial valve lineup. It will take PEO #2 approximately 45 minutes of stay time to perform the same task.
  - It will take PEO #1 approximately 15 minutes of stay time in the posted area to perform the valve lineup Independent Verification. It will take PEO #2 approximately 25 minutes of stay time to perform the same task.

## JOB PERFORMANCE MEASURE APPROVAL SHEET


I. JPM Title: EAL Classification and PARs

JPM Number: JPM-A4S Revision: 0

II. Initiated:

R. J. Ashe 01/20/2011  
Developer Date

III. Reviewed:

 02/03/11  
Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

 2/3/11  
Nuclear Training Supervisor Date

## JOB PERFORMANCE MEASURE

### SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
01/20/2011	Create for use on LOIT-2011 NRC Exam	0

JPM Number: \_\_\_\_\_ JPM- \_\_\_\_\_ Rev. \_\_\_\_\_

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP-2 Examinee: \_\_\_\_\_

JPM Number: JPM-A4S Rev. 0

Task Title: **EAL Classification and PARs**

System: Emergency Plan

Time Critical Task: Yes ☒ No \_\_\_\_\_

Validated Time (minutes): 30 minutes

Task No.(s): NUTIMS #000-05-205

Applicable To: SRO ☒ RO \_\_\_\_\_ PEO \_\_\_\_\_

K/A No. 2.4.41 K/A Rating 2.9/4.6

### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: ☒

### Location:

Classroom: ☒ Simulator: ☒ In-Plant: ☒

### Task Standards:

At the completion of this JPM, the examinee has correctly classified the proposed event and provided the appropriate Protective Action Recommendation.

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

- MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels
- MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.
- MP-26-EPI-FAP06, Classification and PARs

### General References:

- MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels
- MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.
- MP-26-EPI-FAP06, Classification and PARs

### \*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

- Initiating Cues:
- You are the on-duty SM.
  - Your task is to determine the final NRC classification and state posture code for the event described on the attached form. In addition, determine any Protective Action Recommendations (PARs).

Initial Conditions: See attached form.

Simulator N/A  
Requirements:

**\*\*\* NOTES TO 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 the 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: JPM-A4S

Rev.. 0

## EAL Classification and PARs

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1 .	<b>MP-26-EPI-FAP06, Step 2.1, Event Classification based on EAL Tables</b>  Obtain MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels	The examinee obtains Millstone 2 MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels	N	
Cue:	Provide the examinee with MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels and the completed IDA.			
Comments:	Time starts when the examinee obtains the required procedures			
2 .	Perform the initial classification for this event, per the existing conditions.	Based on a "top to bottom, left to right" technique, the examinee will determine that this event is classified as a GENERAL EMERGENCY, State Posture Code, ALPHA.	Y	
Cue:				
Comments:				
3 .	<b>MP-26-EPI-FAP06, Step 2.4.1</b> For Control Room PARs, Refer To EPI-FAP06-005, "Control Room Protective Action recommendations" and determine the proper PAR.	Examinee obtains: <ul style="list-style-type: none"> <li>MP-26-EPI-FAP06, Classification and PARs</li> <li>MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.</li> </ul>	N	
Cue:	Provide the examinee with MP-26-EPI-FAP06, Classification and PARs, and MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.			
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-A4S

Rev.. 0

## EAL Classification and PARs

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4 .	<b>MP-26-FAP06-005 (Flowchart)</b> Are All Three Fission Product Barriers Lost?	NO Examinee determines that all 3 Fission Product Barriers are NOT lost. <ul style="list-style-type: none"> <li>FCB3 (Loss)</li> <li>RCS Barrier RCB2 (Loss)</li> <li>CNB2 (Potential Loss)</li> </ul>	Y	
Cue:				
Comments:				
5 .	Does Containment Radiation Exceed Table 1 Values?	NO Examinee determines that Table 1 values are NOT exceeded.	Y	
Cue:				
Comments:				
6 .	Do 5 Mile doses Exceed Table 2 Values?	YES Examinee determines from the provided IDA Form that Table 2 values are exceeded.	Y	
Cue:				
Comments:				
7 .	Is there a Release in Progress?	NO Examinee determines that there is NOT a release in progress	Y	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-A4S

Rev.. 0

### EAL Classification and PARs

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8 .	Check the appropriate wind direction from the 142 ft. level for zone(s) to evacuate: <b>A and B and C and Lyme in D.</b>	<ul style="list-style-type: none"> <li>Examinee observes wind direction table and checks 139°-154°.</li> <li>Examinee determines from the wind direction table that Zones to be Evacuated include <b>A and B and C and Lyme in D.</b></li> </ul>	<p style="text-align: center;"><b>N</b></p> <p style="text-align: center;"><b>Y</b></p>	
Cue:				
Comments:				
9 .	<ul style="list-style-type: none"> <li>Shelter all other zones.</li> <li>Recommend state officials implement Potassium Iodide (KI) strategy for general public.</li> </ul>	<ul style="list-style-type: none"> <li>Examinee determines that all other zones must be sheltered.</li> <li>Examinee determines that actual dose is equal to or greater than 5 REM thyroid (CDE) at site boundary and recommends state officials implement Potassium Iodide (KI) strategy for the general public.</li> </ul>	<p style="text-align: center;"><b>Y</b></p> <p style="text-align: center;"><b>Y</b></p>	
Cue:				
Comments:	<p><b>The classification is a GENERAL EMERGENCY, ALPHA, based on either OG1 or loss of all three barriers (BG1) on the Barrier Failure Reference Table (FCB3, RCB2, and CNB2)</b></p> <p><b>The PAR should state, "Evacuate zones A and B and C and Lyme in D. Shelter all other zones. " Additionally, recommend state officials implement Potassium Iodine (KI) strategy for the general public.</b></p>			

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

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

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## VERIFICATION OF JPM COMPLETION

Title: EAL Classification and PARs

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes X No \_\_\_\_\_

Validated Time (minutes): 30

Actual Time to Complete (minutes): \_\_\_\_\_

Overall Result of JPM: SAT UNSAT (circle one)

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initiating Cues:

- You are the on-duty SM.
- Your task is to determine the final NRC classification and state posture code for the event described on the attached form. In addition, determine any Protective Action Recommendations (PARs), if applicable.

Initial Conditions: See attached form.

NRC Classification: \_\_\_\_\_

State Posture Code: \_\_\_\_\_

PAR: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Initiating Cue:** Plant is at 100% power. "B" Containment Spray pump has seized during a surveillance run. The pump is presently tagged out for repair. Wind speed is 16 mph from 142°.

<b>CRITICAL PLANT PARAMETERS</b>		
<b>TIME</b>	<b>INFORMATION</b>	<b>SOURCE</b>
0	<ul style="list-style-type: none"> <li>Reactor trip occurs.</li> <li>EOP 2525 is commenced.</li> </ul>	RO/BOP
14 min.	<p>EOP 2525 is complete, the following conditions exist:</p> <ul style="list-style-type: none"> <li>Reactor is tripped.</li> <li>Turbine is tripped.</li> <li>Buses 24A, 24B, and 24C are deenergized. ( The RSST is deenergized and "A" D/G will NOT start.)</li> <li>Bus 24D is energized by its associated D/G.</li> <li>Buses 25A, 25B are deenergized.</li> <li>Both D.C. Buses are energized.</li> <li>Facility 2 SW and RBCCW pumps are running.</li> <li>Pressurizer level is 0%.</li> <li>Head level is 61% and stable.</li> <li>RCS subcooling is 2°F and slowly lowering.</li> <li>Pressurizer pressure is 527 psia and lowering.</li> <li>SIAS, CIAS, EBFAS, MSI, and CSAS have actuated and available components are in their accident condition.</li> <li>S/G pressures are 840 psia and stable.</li> <li>Tave is 470° F and slowly lowering.</li> <li>AFW flow to both S/Gs at approximately 300 gpm each.</li> <li>SG levels are 46% and rising.</li> <li>Containment pressure is 42 psig and rising.</li> <li>Refuel Bridge and Personnel Access Rad Monitors are slowly rising, but NOT in alarm.</li> <li>CTMT gas and particulate Rad Monitors are in alarm, but are lowering.</li> <li>All other Rad Monitors are below their respective alarm setpoints.</li> </ul>	RO/BOP
21 min.	<ul style="list-style-type: none"> <li>Pressurizer pressure is 321 psia and lowering.</li> <li>"B" LPSI Pump discharge pressure indicates between 0 and 10 psig.</li> <li>"B" LPSI Pump is secured due to lack of flow and abnormally low discharge pressure.</li> </ul>	RO

38 min.	<p>The following conditions exist::</p> <ul style="list-style-type: none"><li>• Power has NOT been restored to Facility 1.</li><li>• Facility 2 SW and RBCCW pumps are still operating normally.</li><li>• Pressurizer level is 0%.</li><li>• Head level is 0% on both channels.</li><li>• RWST level is 37% and lowering.</li><li>• CET subcooling is -116 °F and becoming more negative.</li><li>• Pressurizer pressure is 19 psia and stable.</li><li>• SIAS, CIAS, EBFS and MSI, and CSAS are verified to the extent possible.</li><li>• CSAS has actuated.</li><li>• S/G pressures are 832 psia and stable.</li><li>• CETs are 342° F and slowly rising.</li><li>• AFW is being supplies to both S/Gs at approximately 200 gpm each.</li><li>• SG levels are 65% and stable.</li><li>• Containment pressure is 2 psig and lowering.</li><li>• Refuel Bridge and Personnel Access Rad Monitors are in alarm.</li><li>• CTMT gas and particulate Rad Monitors are in alarm.</li><li>• RM-8240 and 8241, CTMT High Range Rad Monitors, are reading 450 R/hr and slowly rising</li><li>• Steam Plant Rad Monitors are elevated, but NOT in alarm.</li><li>• The MP2 Kaman Vent Monitor, RM 8168, is reading 100 µCi/cc and rising.</li><li>• Several other Rad Monitors outside Containment are in alarm or elevated.</li></ul>	RO/BOP
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## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Align Charging Discharge Path

JPM Number: JPM-S1.1 Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

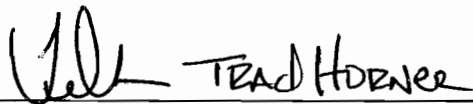
  
Technical Reviewer

02/03/11  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date

  
TEAD HORNER

Nuclear Training Supervisor

2/3/11  
Date



## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S1.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S1.1 Rev. 0

Task Title: Align Charging Discharge Path

System: CVCS

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 004 A4.18 K/A Rating 4.3/4.1

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

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

### Task Standards:

*At the completion of this JPM the examinee will determine that the normal Charging flow path is not available and will align Charging to Emergency Borate through the "A" HPSI Header (Alternate Charging Flow Path).*

### Required Materials

(procedures, equipment, etc.):

ARP 2590B-057 " CHARGING FLOW LO"

AOP 2512 " Loss of All Charging"

### General References:

AOP 2512 " Loss of All Charging"

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

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Initiating Cues:      • You are the Reactor Operator. Respond to all alarms

Initial Conditions:      • Unit-2 is at 100% power, all rods out. No equipment out of service.

Simulator      • IC- 30  
Requirements:

**\*\*\* NOTES TO 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 the 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: JPM-S1.1

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Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1.	Observe and respond to "CHARGING FLOW LO" (C-02/03,A-15)	Examinee observes annunciator on C-02/03 Examinee refers to ARP 2590B-057 for "CHARGING FLOW LO" (C-02/03,A-15)	Y N	
Cue:	<ul style="list-style-type: none"> <li>When the examinee has assumed the watch, insert I/O "02A1A2S11, Charging Header, CH-427 to CLOSE" to cause 2-CH-429, "Charging Header Isolation" to fail closed.</li> <li>Provide examinee ARP 2590B-057</li> </ul>			
Comments:	Examinee may recommend securing charging and letdown due to observed closure of 2-CH-429, low charging header flow and/or high charging header pressure to protect the plant equipment.			
2.	If requested, secure charging and letdown	Examinee secures charging and letdown by placing all charging pump hand switches in "PULL-TO-LOCK" and closing the following: (C-02) "LTDN ISOL, CH-515" "LTDN ISOL, CH-516"	N	
Cue:	If examinee recommends first securing charging and letdown prior to addressing the ARP for plant/equipment protection, agree to this action.			
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.. 0

### Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	<p style="text-align: center;"><b>CAUTION</b></p> <p>1. Prior to starting a standby pump, consider if charging flow low was caused by gas intrusion.[SOER 97-1, Potential Loss of High Pressure Injection and Charging Capability From Gas Intrusion"].</p> <p>2. Charging flow transmitter, FT-212, is unreliable at low RCS pressure (&lt; 1000 psi).</p>	Examinee reads and acknowledges caution.	N	
Cue:				
Comments:				
4.	<p>1. IF gas intrusion intrusion was indicated, PERFORM the following:</p> <p>1.1 PLACE all charging pump hand switches in "PULL-TO-LOCK."</p> <p>1.2 CLOSE the following: (C-02)</p> <p>1.2.1 "LTDN ISOL, CH-515"</p> <p>1.2.2 "LTDN ISOL, CH-516"</p> <p>1.3 Go To AOP 2512, "Loss of All Charging."</p>	Examinee observes no change in VCT level , determines that gas intrusion is not indicated, and that this step is not applicable.	N	
Cue:				
Comments:				
5.	<p>2. As necessary, START another charging pump and PLACE affected charging pump switch in "PULL TO LOCK" (C-02).</p>	Examinee determines that it is not necessary to start another charging pump and that this step is not applicable.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.. 0

## Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6 .	3. IF charging flow is restored to normal by shifting operating charging pumps, SEND operators to ensure piping integrity for pump which developed low flow and SUBMIT Trouble Report to Maintenance Department to investigate possible degradation of charging pump or discharge relief valve malfunction.	Examinee determines that this step is not applicable.	N	
Cue:				
Comments:				
7 .	4. IF "A" or "C" charging pump is the affected pump, as necessary, PERFORM the following: 4.1 IF available, Refer To OP 2304E, "Charging Pumps," and PERFORM applicable actions to align "B" charging pump, to serve as applicable facility OPERABLE charging pump. 4.2 IF "B" charging pump is not available AND "A" or "C" charging pump is made inoperable, LOG entry into appropriate T/S LCO ACTION Statements in SM Log.	Examinee states that this step is not necessary.	N	
Cue:				
Comments:				
8 .	5. IF "CHG HDR FLOW" is less than 40 gpm (C-02/3, F-212), Go To AOP 2512, "Loss of All Charging."	Examinee goes to AOP 2512, "Loss of All Charging."	N	
Cue:	<b>When requested, hand Examinee AOP 2512, "Loss of All Charging."</b>			
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.. 0

Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9.	<p>3.0 Assessment of Loss of All Charging NOTE</p> <p>1. If charging flow cannot be established prior to Pressurizer level lowering to 10% below programmed value (less than 55% PZR level at Tavg of 561.5 F), the RX must be tripped and actions to establish HPSI flow initiated.</p> <p>2. If the SM/US believe attempts to restore charging will be unsuccessful then the decision to trip the RX should not be delayed.</p> <p>3. Following a reactor trip, this procedure will be performed in parallel with EOP 2526, "Reactor Trip Recovery" and OP 2207, "Plant Cooldown"</p> <p>4. Power reduction should not be attempted with a loss of Charging as inventory continues to be lost and the potential for SIAS on plant trip increases</p>	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

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### Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
10.	3.1 IF PZR level lowers to 10% below programmed value or Charging restoration is determined unlikely, PERFORM the following: a. ENSURE the reactor is tripped. b. ENSURE EOP 2525, "Standard Post Trip Actions" are completed. c. IF desired, CONTINUE this procedure in parallel with EOPs. d. To Restore PZR level using HPSI, Refer To Section 8, "Restoration of PZR Level Using HPSI"	Examinee notes that this step is not required now but will keep this step open.	N	
Cue:				
Comments:				
11.	3.2 Refer To RAC 14, "Non-Emergency Station Events" and CLASSIFY the event under "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to shutdown the reactor and maintain it in a safe shutdown condition." (10CFR50.72(b)(3)(v)(A))	Examinee requests that the US/SM determine reportability/classification	N	
Cue:				
Comments:				



## PERFORMANCE INFORMATION

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Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	3.3 INITIATE forcing sprays, and MONITOR PZR pressure.	Examinee initiates forcing sprays by placing backup heaters to on and the lowering automatic setpoint on the controlling channel pressure controller to maintain RCS pressure at ~ 2500 psi.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.. 0

## Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	<p>3.4 CHECK charging flowpath as follows:</p> <p>Suction aligned from one of the following:</p> <p>_ "VCT OUT ISOL CH-501" open</p> <p>_ "BA ISOL CH-514" OR</p> <p>_ "GRAV FD ISOL BAST A, CH-509", OR "GRAV FD ISOL BAST B, CH-508"</p> <p>_ "RWST ISOL, CH-192" and "RWST TO CHGSUCT, CH-504", open</p> <p>_ Charging header isolation valves open:</p> <p>_ "CHG HDR ISOL, CH-429"</p> <p>_ "CHG ISOL, CH-518" OR</p> <p>_ "CHG ISOL, CH-519"</p> <p>_ NO indication of blockage in either the suction or discharge flowpath</p>	<p>Examinee checks charging flowpath by observing:</p> <p>Suction aligned from <b>one</b> of the following by red OPEN indication</p> <p>_ "VCT OUT ISOL CH-501"</p> <p>_ "BA ISOL CH-514" OR</p> <p>_ "GRAV FD ISOL BAST A, CH-509", OR</p> <p>_ "GRAV FD ISOL BAST B, CH-508"</p> <p>_ "RWST ISOL, CH-192" and "RWST TO CHGSUCT, CH-504", open</p> <p>Charging header isolation valves open:</p> <p>_ "CHG ISOL, CH-518" OR</p> <p>_ "CHG ISOL, CH-519"</p> <p>Examinee notes that "CHG HDR ISOL, CH-429" is closed by green CLOSE indication</p> <p>_ NO indication of blockage in either the suction or discharge flowpath</p>	<p>N</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p> <p>N</p> <p>Y</p> <p>N</p>	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

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### Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
14.	<p>3.4.1 PERFORM the following:</p> <p>a. PLACE all charging pump handswitches in "PULL-TO-LOCK."</p> <p>b. CLOSE</p> <ul style="list-style-type: none"> <li>• "LTDN ISOL, CH-515"</li> <li>• "LTDN ISOL, CH-516" (C-02)</li> </ul> <p>c. WHEN VCT level rises to 86% or as desired, PLACE letdown divert switch, "LTDN DIVERT CH-500 to "RWS" position.</p>	<p>Examinee places all charging pump handswitches in "PULL-TO-LOCK."</p> <p>Examinee closes the following valves by rotating their handswitches to the CLOSE direction</p> <ul style="list-style-type: none"> <li>• "LTDN ISOL, CH-515"</li> <li>• "LTDN ISOL, CH-516"</li> </ul> <p>WHEN VCT level rises to 86% or as desired, examinee places letdown divert switch, "LTDN DIVERT CH-500 to "RWS" position.</p>	<p>Y</p> <p>Y/N*</p> <p>Y/N*</p> <p>N</p>	
Cue:				
Comments:	<p>* Only one of these valves are required to be closed to isolate letdown Charging pump handswitches may have already placed in "PULL-TO-LOCK" prior to this step.</p>			

# PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

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Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	d. Refer To the following TS/TRM LCOs and DETERMINE applicability: <ul style="list-style-type: none"> <li>TRM 3.1.2.2</li> <li>TRM 3.1.2.4</li> <li>TRM 7.1.1</li> <li>TS 3.5.2.a (if PZR press &gt; 1750 psia)</li> <li>TS 3.5.3.a (if PZR press &lt; 1750 psia)</li> <li>TS 3.0.3</li> </ul>	Examinee requests that the US/SM refer to the listed TS/TRM LCOs and DETERMINE applicability:	N	
Cue:				
Comments:				
16.	e. Refer To the applicable section and PERFORM applicable actions. Section 4.0, "Suction Flowpath Restoration" Section 5.0, Discharge Flowpath Restoration" Section 7.0, "Charging System Leakage	Examinee refers to Section 5.0, Discharge Flowpath Restoration" due to observed closure of "CHG HDR ISOL, CH-429"	N	
Cue:				
Comments:				
17.	NOTE  If the normal charging flowpath is lost and cannot be reestablished, a plant shutdown is necessary. While shutting down, pressurizer level can be maintained by charging into the RCS through the alternate flow path.	Examinee reads and acknowledges note	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

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### Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	5.1 IF the normal charging path is not available, ESTABLISH alternate charging flowpath as follows:  a. ENSURE the following are closed:(C-02). "LTDN ISOL, CH-515" "LTDN ISOL, CH-516"	Examinee ensures that the flowing valves are closed: "LTDN ISOL, CH-515" "LTDN ISOL, CH-516"	N N	
Cue:				
Comments:				
19.	b. ENSURE letdown flow has stopped as indicated on "LTDN FLOW, FI-202" (C-02).	Examinee ensures letdown flow has stopped by observing no flow on "LTDN FLOW, FI-202"	N	
Cue:				
Comments:				
20.	c. ENSURE all charging pumps are stopped and PLACE hand switches in "PULL TO LOCK" (C-02).	Examinee verifies all charging pumps handswitches are in "PULL TO LOCK"	N	
Cue:				
Comments:				
21.	d. Refer To the following TS/TRM LCOs and DETERMINE applicability: _ TS 3.0.3 _ TRM 3.1.2.2 _ TRM 7.1.1 _ TS 3.5.2.a, if PZR press > 1750 psia _ TS 3.5.3.a, if PZR press < 1750 psia	Examinee requests that the US/SM refer to the listed TS/TRM LCOs and DETERMINE applicability:	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.. 0

### Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
22.	e. OBTAIN key #39 from Operations key locker and CLOSE "HPSI HDR A STOP, SI-656" (C-01).	Examinee obtains key #39 from Operations key locker and closes "HPSI HDR A STOP, SI-656"	Y	
Cue:				
Comments:				
23.	f. OPEN both of the following valves (14'6" AB Boronometer Room): _ CH-340, "CHARGING PUMP DISCHARGE TO HPSI HEADER" _ CH-440, "CHARGING PUMP DISCHARGE TO HPSI HEADER"	Examinee requests plant operator to open the following valves: CH-340, "CHARGING PUMP DISCHARGE TO HPSI HEADER" _ CH-440, "CHARGING PUMP DISCHARGE TO HPSI HEADER"	Y Y	
Cue:	<b>When requested, the booth operator inserts remote "CVR01" to "OPEN" to simulate opening CH-340 and CH-440, and reports these valves open.</b>			
Comments:				
24.	g. CLOSE the following HPSI injection valves (C-01):  _ "LOOP 1A, SI-617" _ "LOOP 1B, SI-627" _ "LOOP 2B, SI-647"	Examinee closes the following valves by taking their handswitches to the "CLOSE" direction and observing a green CLOSE light:  _ "LOOP 1A, SI-617" _ "LOOP 1B, SI-627" _ "LOOP 2B, SI-647"	Y Y Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.: 0

Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
25.	h. ENSURE "LOOP 2A, SI-637," is open (C-01).	Examinee ensures "LOOP 2A, SI-637," is open by observing its red OPEN light	N	
Cue:				
Comments:				
26.	i. OBTAIN Key #50 from Operation Key Locker and UNLOCK and CLOSE "CHG HDR ISOL, CH-429" (C-02).	Examinee obtains Key #50 from Operation Key Locker and unlocks and closes "CHG HDR ISOL, CH-429" by rotating the key counter-clockwise and observing a green CLOSE light.	N	
Cue:				
Comments:	Examinee may state that this valve was already closed.			
27.	NOTE  Expected response will be that PZR level will not be maintained without letdown available. Reactor trip will be required prior to reaching 70% PZR level.	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S1.1

Rev.. 0

## Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
28.	<p>j. IF desired, ALIGN charging pump suction to RWST as follows (C-02):</p> <ol style="list-style-type: none"> <li>1) CLOSE "VCT MAKEUP BYPASS, CH-196."</li> <li>2) OPEN "RWST TO CHG SUCT, CH-504."</li> <li>3) OPEN "RWST ISOL, CH-192."</li> <li>4) CLOSE "VCT OUT ISOL, CH-501."</li> <li>5) Refer To AOP 2575, "Rapid Downpower," and SELECT borate from the RWST</li> </ol>	<p>Examinee aligns the charging pump suction to RWST as follows:</p> <p>Verifies "VCT MAKEUP BYPASS, CH-196." closed by green CLOSE indication.</p> <p>Verifies "RWST TO CHG SUCT, CH-504" open by red OPEN light</p> <p>Opens "RWST ISOL, CH-192" by rotating its handswitch clockwise and observing a red OPEN light.</p> <p>Closes "VCT OUT ISOL, CH-501" by rotating its handswitch counter-clockwise and observing a green CLOSE light.</p> <p>Examinee states that he/she will refer to AOP 2575, "Rapid Downpower," and SELECT borate from the RWST</p>	<p>N</p> <p>N</p> <p>Y</p> <p>Y</p> <p>N</p>	
Cue:	<ul style="list-style-type: none"> <li>• If asked, state that it is desired to align the charging pump suction to the RWST.</li> <li>• Upon completion of suction path alignment, the objective of this JPM is complete.</li> </ul>			
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

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



JPM Number: JPM-S1.1

Rev. 0

## VERIFICATION OF JPM COMPLETION

Title: Align Charging Discharge Path

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No \_\_\_\_\_

Validated Time (minutes):                      20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation:                      SAT                      UNSAT                      NA                      (circle one)

Overall Result of JPM:                      SAT                      UNSAT                      (circle one)

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions:

- You are the Reactor Operator. Respond to all alarms

Initiating Cues:

- Unit-2 is at 100% power, all rods out. No equipment out of service.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Failure of 2-MS-190B Controller

JPM Number: JPM-S4s.1 Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

  
Technical Reviewer

02/03/11  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date



Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S4s.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S4s.1 Rev. 0

Task Title: Failure of 2-MS-190B Controller

System: Foxboro IA

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 041 A4.06 K/A Rating 2.9/3.1

### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will attempt to operate the #2 ADV from C-05 and determine that the controller is failed. The examinee will take manual control of #2 ADV from the Foxboro Controller.*

### Required Materials

(procedures, equipment, etc.):

EOP 2528 (Step 29)

OP 2386 "Reactor Regulating System"

### 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

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Initiating Cues:

- You have been directed to commence an RCS cooldown per Step 29 of EOP 2528 at a controlled cooldown rate of between 40 to 50 F/hr. using both Steam Generators.

Initial Conditions:

- Unit-2 was manually tripped due to a loss of condenser vacuum
- Due to a small steam leak in the 38'-6" West Enclosure Building, the Shift Manager has restricted access to this area.
- Plant management has decided that the plant will go to MODE 5 to repair this steam leak.

Simulator

- IC-152

Requirements:

- Instructor to act as RO to address alarms

### \*\*\* NOTES TO 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 the 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: JPM- S4s.1

Rev.. 0

Failure of 2-MS-190B Controller

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1 .	EOP 2528 Loss Of Offsite Power/Loss of Forced Circulation	Examinee refers to EOP 2528 Loss Of Offsite Power/Loss of Forced Circulation step for direction	N	
Cue:				
Comments:	Instructor will act as RO to acknowledge and address alarms			
2 .	NOTE Technical Specification cooldown rates should be observed during the cooldown. The cooldown rates are as follows:  1. RCS TC greater than 220 F the cooldown rate is 100 F/hr. 2. RCS TC less than or equal to 220 F the cooldown rate is 50 F/hr.	Examinee reads and acknowledges note on cooldown rate limits.	N	
Cue:				
Comments:				
3 .	Perform Controlled Cooldown  29. INITIATE a controlled cooldown using the steam dumps to establish shutdown cooling entry conditions. 29.1 INITIATE a controlled cooldown using the ADVs to establish shutdown cooling entry conditions.	Examinee initiates a cooldown of the RCS using both ADV's per step 29.1 due to the condenser and steam dumps not available.	Y	
Cue:				
Comments:	Once examinee has commenced an RCS cooldown using both ADV's, trigger malfunction <b>RX20D to 0%</b> to fail PIC 4224 to the Foxboro IA.			

## PERFORMANCE INFORMATION

JPM Number: JPM- S4s.1

Rev.. 0

Failure of 2-MS-190B Controller

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4 .	#2 ADV fails closed	Examinee observes the following: <ul style="list-style-type: none"> <li>• #2 ADV red OPEN light is not lit</li> <li>• The cooldown rate lowers</li> <li>• Loop 2 Tc stabilizes or rises slightly</li> </ul>	Y*	
Cue:				
Comments:	*Any <u>one</u> of these is sufficient to indicate that the #2 ADV has gone closed			
5 .	4.1 Operation of Foxboro 762 Controllers	Examinee refers to OP 2386 for guidance on operation of Foxboro controllers.	N	
Cue:	<ul style="list-style-type: none"> <li>• <b>Deny any request to send a PEO to manually operate 2-MS-190B due to hazardous local conditions from steam leak.</b></li> <li>• <b>Deny any request for PEO/spare operator assistance for operation of # 2 ADV from C-21 panel</b></li> </ul>			
Comments:	The examinee may determine that the #2 ADV can be successfully operated from C-21. If he/she chooses to perform this success path, then proceed to JPM Step 19			



## PERFORMANCE INFORMATION

JPM Number: JPM- S4s.1

Rev.. 0

Failure of 2-MS-190B Controller

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6 .	4.1.2 Manual Operation			
	a. PUSH the "A/M" button until "M" is lit.	Examinee pushes the "M" on "ATMOS DUMP CTRL PIC 4224" in order to take manual control of 2-MS-190B	N	
	b. PRESS "SEL" button until cursor appears above output (right hand bar graph).	Examinee presses "SEL" button on "ATMOS DUMP CTRL PIC 4224" until cursor appears above output.	N	
	c. USING "up" and "down" buttons, ADJUST output as desired.	Examinee raises output on "ATMOS DUMP CTRL PIC 4224" in order to open 2-MS-190B	N	
Cue:				
Comments:	Examinee <u>may</u> first attempt to operate PIC 4224 in "MANUAL" to open 2-MS-190B. This will not be successful.			
7 .	4.5 Operation of Controller from Foxboro Screen	Examinee transitions to Section 4.5 in order to take control of 2-MS-190B from the Foxboro screen.	Y	
Cue:				
Comments:	Examinee may go to this step initially if he/she realizes that the Foxboro system has taken control of PIC 4224.			
8 .	NOTE Controlling from the Foxboro screen results in the setpoint of the controller failing high such that the valve will close or remain closed.	Examinee reads and acknowledges note on controller setpoint failure.	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM- S4s.1

Rev.. 0

Failure of 2-MS-190B Controller

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9 .	4.5.1 SELECT "Change Env" (Foxboro controls PPC).	Examinee selects "Change Env" on the PPC Foxboro screen.	Y	
Cue:				
Comments:				
10 .	4.5.2 SELECT "Reactor Reg" (environment selection screen PPC).	Examinee selects "Reactor Reg" on the PPC Foxboro screen.	Y	
Cue:				
Comments:				
11 .	4.5.3 CLICK on "OK."	Examinee selects "OK." on the PPC Foxboro screen.	Y	
Cue:				
Comments:				
12 .	4.5.4 SELECT "Dump Vlv Cntrl" screen (Foxboro control PPC).	Examinee selects "Dump Vlv Cntrl" on the PPC Foxboro screen.	Y	
Cue:				
Comments:				
13 .	4.5.5 SELECT controller to be bypassed and PRESS the associated "NORMAL" button.	Examinee selects PIC-4224 on the PPC Foxboro screen.	Y	
Cue:				
Comments:				
14 .	4.5.6 OBSERVE the "NORMAL" button changed to "BYPASSED."	Examinee observes the "NORMAL" button changed to "BYPASSED" for controller PIC-4224 on the PPC Foxboro screen.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM- S4s.1

Rev.. 0

Failure of 2-MS-190B Controller

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	4.5.7 To take manual control SELECT "MAN"	Examinee selects "MAN" for controller PIC-4224 on the PPC Foxboro screen.	Y	
Cue:				
Comments:				
16.	4.5.8 CHECK "MAN" button changes from grey to red.	Examinee checks "MAN" button changes from grey to red for controller PIC-4224 on the PPC Foxboro screen.	N	
Cue:				
Comments:				
17.	Select the "OUTPUT" box	Examinee selects the "OUTPUT" box on the PPC FOXBORO screen.	Y	
Cue:				
Comments:				
18.	4.5.9 USING up and down buttons, ADJUST controller output as desired.	Examinee adjusts controller PIC-4224 output as desired on the PPC Foxboro screen to continue plant cooldown.	Y	
Cue:	<b>If examinee has chosen the success path of manual operation of the #2 ADV controller from the FOXBORO screen, when the cooldown is being augmented by the #2 ADV, the objective of this JPM is complete.</b>			
Comments:				
19.	Proceed to C-21 Hot Shutdown Panel	Examinee locates and opens Hot Shutdown Panel (C-21)	Y	
Cue:				
Comments:				
20.	Place #2 ADV controller HIC 4224 in manual control	Examinee locates and places "HIC 4224" in the "MAN" position and establishes communication with the Control Room	Y	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM- S4s.1

Rev.. 0

Failure of 2-MS-190B Controller

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
21.	Operate #2 ADV controller in manual to open #2 ADV	Examinee rotates control knob to open #2 ADV to continue cooldown and maintain #2 S/G pressure approximately equal to #1 S/G	Y	
Cue:	<b>If examinee has chosen the success path of manual operation of the #2 ADV controller from the Hot Shutdown Panel (C-21), when the cooldown is being augmented by the #2 ADV, the objective of this JPM is complete.</b>			
Comments:				

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

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

**VERIFICATION OF JPM COMPLETION**Title: Failure of 2-MS-190B Controller

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No \_\_\_\_\_

Validated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

**Initial Conditions:**

- You have been directed to commence an RCS cooldown per Step 29 of EOP 2528 at a controlled cooldown rate of between 40 to 50 F/hr. using both Steam Generators.

**Initiating Cues:**

- Unit-2 was manually tripped due to a loss of condenser vacuum.
- Due to a small steam leak in the 38'-6" West Enclosure Building, the Shift Manager has restricted access to this area.
- Plant management has decided that the plant will go to MODE 5 to repair this steam leak.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Containment Isolation due to Fuel Handling Accident

JPM Number: JPM-S5.1

Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

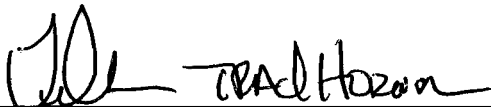
  
Technical Reviewer

02/03/11  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date

  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	



JPM Number: JPM-S5.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S5.1 Rev. 0

Task Title: Containment Isolation due to Fuel Handling Accident

System: Containment

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 103 A2.04 K/A Rating 3.5/3.6

### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will take the required actions in the Control Room to isolate Containment due to a Fuel Handling Accident.*

### Required Materials

(procedures, equipment, etc.):

OP 2315A "Control Room Air Conditioning System"  
AOP 2557 "Fuel Handling Accident"

### General References:

OP 2315A "Control Room Air Conditioning System"  
AOP 2557 "Fuel Handling Accident"

### \*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

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Initiating Cues:      • You are the RO. Respond to all alarms or direction as normal.

Initial Conditions:      • Unit-2 is in a Refueling outage with fuel movement occurring in Containment.

Simulator Requirements:      • IC-153  
• Train "A" CRACS is operating in "NORMAL" mode.  
• Containment purge valves are open to maintain containment habitability.  
• Mon 1 ( SDC), Mon 2 (STR), Mon 3 ( PAV)

**\*\*\* NOTES TO 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 the 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: JPM-S5.1

Rev.. 0

Containment Isolation due to Fuel Handling Accident

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	Millstone Unit 2 Fuel Handling Accident AOP 2577	Examinee states that the Fuel Handling Accident ( AOP 2577) procedure has guidance for this event	N	
Cue:	<ul style="list-style-type: none"> <li>• Upon examinee assuming the watch, the booth operator acting as the Refueling SRO in Containment will report to the Unit Supervisor that "a fuel bundle has dropped from the refueling machine in CTMT and that a fuel handling accident has occurred"</li> <li>• Direct examinee to carry out AOP 2577 actions using the proper procedure section.</li> <li>• When requested, provide examinee with a copy of AOP 2577</li> </ul>			
Comments:				
2.	3.0 Fuel Handling Accident in the Containment	Examinee refers to Section 3.0 (Fuel Handling Accident in the Containment)	N	
Cue:				
Comments:				
3.	3.1 REQUEST Health Physics Department perform the following: _ Evacuate personnel from SG primary sides and loop areas _ Coordinate an evacuation of personnel in containment	Examinee requests Health Physics Department perform the following: _ Evacuate personnel from SG primary sides and loop areas _ Coordinate an evacuation of personnel in containment	N	
Cue:	Booth operator will report that these actions are in progress.			
Comments:				
4.	3.2 SOUND the Containment Evacuation Alarm for approximately 30 seconds.	Examinee locates and sounds the Containment Evacuation Alarm for approximately 30 seconds.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S5.1

Rev.. 0

Containment Isolation due to Fuel Handling Accident

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5.	3.3 ANNOUNCE the following over plant page system:  "Attention all personnel, a fuel handling accident has occurred inside Unit 2 containment. All personnel evacuate Unit 2 containment."	Examinee announces the following over plant page system:  "Attention all personnel, a fuel handling accident has occurred inside Unit 2 containment. All personnel evacuate Unit 2 containment."	Y	
Cue:	<b>If asked, report that all personnel have exited containment.</b>			
Comments:				
6.	3.4 IF purging of containment is in progress, VERIFY the following are closed: _ AC-4, Containment Outboard Isolation Damper _ AC-5, Containment Inboard Isolation Damper _ AC-6, Containment Inboard Isolation Damper _ AC-7, Containment Outboard Isolation Damper	Examinee closes the following by rotating their switches to the "CLOSE" position and verifying by green "CLOSE" light indication only that the dampers are closed: _ AC-4, Containment Outboard Isolation Damper _ AC-5, Containment Inboard Isolation Damper _ AC-6, Containment Inboard Isolation Damper _ AC-7, Containment Outboard Isolation Damper	Y  Y  Y  Y	
Cue:				
Comments:				
7.	3.5 VERIFY Containment Closure is established.	Examinee states or requests that assigned personnel establish containment closure.	N	
Cue:	<b>US acknowledges need to establish CTMT closure</b>			
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S5.1

Rev.. 0

Containment Isolation due to Fuel Handling Accident

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	<p>3.6 VERIFY at least one train of CRACS operating in recirculation mode. (C25)</p> <p>Facility 1</p> <p>_ HV-203A, Fan F-21A exhaust damper is open.</p> <p>_ Fan F-21A, supply fan is running.</p> <p>_ HV-206A, Fan F-31A exhaust damper is open.</p> <p>_ Fan F-31A, exhaust fan is running.</p> <p>_ HV-212A, Fan F-32A exhaust damper is open.</p> <p>_ Fan F-32A, filter fan is running.</p> <p>_ HV-202, minimum fresh air damper is closed.</p> <p>_ HV-207, cable vault exhaust damper is closed.</p> <p>_ HV-208, exhaust air damper is closed.</p>	<p>Examinee verifies "A" train of CRACS in the recirculation mode by:</p> <p>Starting "CRACS FLTR FANF-32A" by rotating its handswitch to the "ON" position.</p> <p>Examinee verifies:</p> <p>_ HV-203A, Fan F-21A exhaust damper is open by red "OPEN" light lit only.</p> <p>_ Fan F-21A, supply fan is running by red "ON" light lit only.</p> <p>_ HV-206A, Fan F-31A exhaust damper is open by red "OPEN" light lit only.</p> <p>_ Fan F-31A, exhaust fan is running by red "ON" light lit only.</p> <p>_ HV-212A, Fan F-32A exhaust damper is open by red "OPEN" light lit only.</p> <p>_ Fan F-32A, filter fan is running by red "ON" light lit only.</p> <p>_ HV-202, minimum fresh air damper is closed by green "CLOSE" light lit only.</p> <p>_ HV-207, cable vault exhaust damper is closed by green "CLOSE" light lit only.</p> <p>_ HV-208, exhaust air damper is closed by green "CLOSE" light lit only.</p>	<p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>	
Cue:	If examinee desires to refer OP 2315A for placing CRACS in recirculation mode, hand him/her OP 2315A.			
Comments:	Examinee will observe that both HV -207 and HV-208 remain open if handswitches "NORM/RECIRC MODE, HS-8346" and "NORM/RECIRC MODE, HS-8359" are not placed in "RECIRC". Examinee may refer to OP 2315A for placing CRACS in recirculation mode which provides direction for placing "NORM/RECIRC MODE, HS-8346" and "NORM/RECIRC MODE, HS-8359" in "RECIRC" thus allowing HV-207 and HV-208 to go closed			

## PERFORMANCE INFORMATION

JPM Number: JPM-S5.1

Rev.. 0

Containment Isolation due to Fuel Handling Accident

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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**TERMINATION CUE:** The evaluation for this JPM is concluded.

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

JPM Number: \_\_\_\_\_ JPM-S5.1

Rev. \_\_\_\_\_ 0

## **VERIFICATION OF JPM COMPLETION**

Title: Containment Isolation due to Fuel Handling Accident

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  

Validated Time (minutes):                        15  

Actual Time to Complete (minutes):        \_\_\_\_\_

JPM Work Practice Evaluation:                      SAT                      UNSAT                      NA                      (circle one)

Overall Result of JPM:                      SAT                      UNSAT                      (circle one)

<b>During the TPE, the trainee</b>	<b>Evaluation</b>
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions:      • You are the RO. Respond to all alarms or direction as normal

Initiating Cues:      • Unit-2 is in a Refueling outage with fuel movement occurring in Containment.



## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Actuation Test of Various ESF Components, Facility 1  
(AM-515) - Monthly

JPM Number: JPM-S7.1

Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

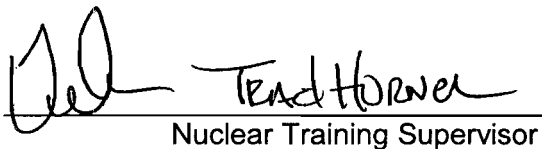
  
Technical Reviewer

02/03/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S7.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S7.1 Rev. 0

Task Title: Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

System: ESAS

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 013 A4.03 K/A Rating 4.5/4.7

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will have performed the required actions to test actuation of ESAS component AM-515, per surveillance procedure SP 2604T.*

### Required Materials

(procedures, equipment, etc.):

SP 2604T "Actuation Tests of Various ESF Components"

SP 2604T-001 "Actuation Tests of Various ESF Components-Facility 1)

### 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**Initiating Cues:

- You have been assigned to perform SP 2604T, (Section 4.1) Testing Actuation Module, AM515 for monthly surveillance testing.

Initial Conditions:

- Unit-2 is at 100% power, ARO
- You are the BOP operator
- A second licensed operator is available to assist you.

Simulator

- IC-30 or IC-20

Requirements:

- An instructor to act as the second licensed operator as required.

**\*\*\* NOTES TO 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 the 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: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 ( AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1.	<p>SP 2604T (4.1) INSTRUCTIONS</p> <p>4.1 Testing Actuation Module, AM515</p> <p style="text-align: center;">NOTE</p> <p>The following alarms may be received during the performance of this section:</p> <p>— "ESAS COMPONENT UNDER TEST FAILURE" (C-01 B41)</p> <p>— "SIAS OR UV ACTUATION SIG CH 1 TRIP" (C-01 A34)</p> <p>— "CONT PRESS HI A" (C-01 A21)</p> <p>— "CTMT AIR RECIRC FAN A VIBRATION HI" (C-01 A4)</p> <p>— "CTMT AIR RECIRC FAN C VIBRATION HI" (C-01 C4)</p> <p>— "SIAS CH 1 TROUBLE" (C-01X AA5)</p>	Examinee reads and acknowledges note about expected alarms for test of AM515.	N	
Cue:	Provide examinee with SP 2604T " Actuation Tests of Various ESF Components" and SP 2604T-001 "Actuation Tests of Various ESF Components-Facility 1)			
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	4.1.1 VERIFY the following: _ "A" Service Water Pump is operating OR hand switch P5A, "SERVICE WATER PP A," is in "PULL TO LOCK" (C-06) _ "F-14A, CAR FAN A," and "F-14C, CAR FAN C," are operating in fast speed (C-01) _ No boration or dilution to VCT or charging pumps in progress	Examinee verifies initial equipment alignments are met by verifying: "A" Service Water Pump is operating by amp indication and red operating light lit, OR hand switch P5A, "SERVICE WATER PP A," is in "PULL TO LOCK" (C-06)  "F-14A, CAR FAN A," and "F-14C, CAR FAN C," are operating in fast speed by red light indication (C-01).  No boration or dilution to VCT or charging pumps in progress.	N	
Cue:				
Comments:				
3.	<b>CAUTION</b> PMW or boric acid flow may commence if the respective controllers are not in manual closed or set to "0" when CH-196, "VCT MAKEUP BYPASS," is opened.	Examinee reads and acknowledges caution statement.	N	
Cue:				
Comments:				
4.	4.1.2 VERIFY "FC-210X PRI MAKEUP WTR FLOW CONTROLLER" and "FC-210Y BA MAKEUP FLOW CONTROLLER," are each in one of the following conditions: _ In manual mode and set fully closed _ Integrator set for "0"	Examinee verifies that FC-210X and FC-210Y meet one of the following conditions: _ In manual mode and set fully closed _ Integrator set for "0"	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5.	4.1.3 OPEN CH-196, "VCT MAKEUP BYPASS," (C-02).	Examinee opens CH-196, "VCT MAKEUP BYPASS,"	Y	
Cue:				
Comments:				
6.	<p>4.1.4 Depending on current condition, PERFORM applicable action:</p> <p>_ IF SIAS is not "Blocked" (*pzs pressure greater than or equal to 1,850 psia), CHECK all "1/5" lights or bistable "TRIP" lights not lit for SIAS, CIAS, EBFAS, CSAS, or SG on Facility 1 and Facility 2 ESAS actuation and sensor cabinets.</p> <p>_ IF SIAS is "Blocked" (pressurizer pressure less than 1,850 psia) CHECK all lower "1/5" lights (from containment pressure input) not lit for SIAS, CIAS, EBFAS, CSAS, or SG on Facility 1 and Facility 2 ESAS actuation and sensor cabinets.</p> <p>_ IF MSI is "Blocked" (SG pressure less than 700 psia) all lower "1/5" lights (from containment pressure input) not lit for SIAS, CIAS, EBFAS, CSAS, or SG on Facility 1 and Facility 2 ESAS actuation and sensor cabinets.</p>	Examinee determines that SIAS is not "Blocked" (*pzs pressure greater than or equal to 1,850 psia), and checks all "1/5" lights or bistable "TRIP" lights not lit for SIAS, CIAS, EBFAS, CSAS, or SG on Facility 1 and Facility 2 ESAS actuation and sensor cabinets.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7 .	4.1.5 PLACE "S-501, TEST PERMISSIVE SWITCH," in "TEST SIAS" (ESAS actuation cabinet 5).	Examinee places "S-501, TEST PERMISSIVE SWITCH," in "TEST SIAS"	Y	
Cue:				
Comments:				
8 .	4.1.6 PLACE "S-502, TEST GROUP SWITCH," in "GROUP 1" (ESAS actuation cabinet 5).	Examinee places "S-502, TEST GROUP SWITCH," in "GROUP 1"	Y	
Cue:				
Comments:				
9 .	4.1.7 PLACE "S-102, TRIP TEST" switch in "CONT PRESS SIAS/CIAS/EBFAS/MSI." (ESAS Sensor Cabinet 'A')	Examinee places "S-102, TRIP TEST" switch in "CONT PRESS SIAS/CIAS/EBFAS/MSI."	Y	
Cue:				
Comments:				
10 .	<p><b>NOTE</b></p> <p>1. When the next step is performed, many "1/5" lights illuminate on the actuation modules.</p> <p>2. Due to the distance between bistable, BA101, and actuation module, AM 515, two people are required to initiate the test.</p>	Examinee reads and acknowledges note about 1/5 lights and requirement for additional person requirement for test initiation.	N	
Cue:	<b>Trainer will act as second person for purpose of initiating this test as required/requested. Trainer will take direction from examinee for performance of discrete action(s).</b>			
Comments:				



## PERFORMANCE INFORMATION

JPM Number: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	4.1.8 PRESS and HOLD "TRIP TEST" button on bistable, BA101. (ESAS Sensor Cabinet 'A')	Examinee either performs or directs pressing and holding of "TRIP TEST" button on bistable, BA101 at ESAS Sensor Cabinet 'A'.	Y	
Cue:	<b>This action should be performed by a "second person" as directed by the examinee</b>			
Comments:				
12.	4.1.9 CHECK lower "1/5" light lit on actuation module, AM515 (ESAS actuation cabinet 5).	Examinee checks lower "1/5" light lit on actuation module, AM515 on ESAS actuation cabinet 5.	Y	
Cue:				
Comments:				
13.	4.1.10 To initiate start signal, PRESS lower "1/5" "TEST" button on actuation module, AM515 (ESAS actuation cabinet 5).	Examinee either performs or directs the pressing of lower "1/5" "TEST" button on actuation module, AM515 on ESAS actuation cabinet 5.	Y	
Cue:	<b>This action could be performed by a "second person" as directed by the examinee</b>			
Comments:				
14.	4.1.11 RELEASE "TRIP TEST" button on bistable BA101.	Examinee either performs or directs the releasing of "TRIP TEST" button on bistable BA101.	Y	
Cue:	<b>This action should be performed by a "second person" as directed by the examinee</b>			
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	4.1.12 OBSERVE the following and INITIAL for the "Results" on SP 2604T-001: _ Actuation module, AM515, red "TRIP" light is lit (ESAS actuation cabinet 5) _ "F-14A, CAR FAN A," shifted to slow speed (C-01) _ "F-14C, CAR FAN C," shifted to slow speed (C-01) _ "CH-196, VCT MAKEUP BYPASS," closed (C-02)	Examinee observes and initials for proper actuation of equipment on SP 2604T-001 by observing:  F-14A slow speed red light lit. F-14C slow speed red light lit. CH-196 green light lit.	Y	
Cue:				
Comments:				
16.	4.1.13 PLACE the following switches to "START LOW/PULL TO LOCK" (C-01): _ "F-14A, CAR FAN A" _ "F-14C, CAR FAN C"	Examinee places "F-14A, CAR FAN A" and "F-14C, CAR FAN C" switches to "START LOW/PULL TO LOCK."	Y	
Cue:				
Comments:				
17.	4.1.14 PRESS "ACTUATION RESET SIAS" button (ESAS Actuation Cabinet 5).	Examinee presses "ACTUATION RESET SIAS" button at ESAS Actuation Cabinet 5.	Y	
Cue:				
Comments:				
18.	4.1.15 PRESS red "TRIP" light on bistable, BA101. (ESAS Sensor Cabinet 'A')	Examinee presses red "TRIP" light on bistable, BA101. (ESAS Sensor Cabinet 'A').	Y	
Cue:				
Comments:	Examinee may note that red "TRIP" light has gone out.			

# PERFORMANCE INFORMATION

JPM Number: JPM-S7.1

Rev.. 0

Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
19 .	4.1.16 PLACE "S-102, TRIP TEST" switch in "OPERATE." (ESAS Sensor Cabinet `A')	Examinee places "S-102, TRIP TEST" switch in "OPERATE." On ESAS Sensor Cabinet `A'.	Y	
Cue:				
Comments:				
20 .	4.1.17 PLACE "S-501, TEST PERMISSIVE SWITCH" in "OPERATE." (ESAS actuation cabinet 5)	Examinee places "S-501, TEST PERMISSIVE SWITCH" in "OPERATE." on ESAS actuation cabinet 5.	Y	
Cue:				
Comments:				
21 .	4.1.18 PRESS red "ATI FAULT PRESS TO RESET" light. (ESAS actuation cabinet 5)	Examinee presses red "ATI FAULT PRESS TO RESET" light on ESAS actuation cabinet 5.	Y	
Cue:				
Comments:				

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

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

JPM Number: JPM-S7.1

Rev. 0

## VERIFICATION OF JPM COMPLETION

Title: Actuation Test of Various ESF Components, Facility 1 (AM-515) - Monthly

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

**Initial Conditions:**

- You have been assigned to perform SP 2604T, (Section 4.1) Testing Actuation Module, AM515 for monthly surveillance testing.

**Initiating Cues:**

- Unit-2 is at 100% power, ARO
- You are the BOP operator
- A second licensed operator is available to assist you.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Manual Blended Makeup to Volume Control Tank ( Faulted)

JPM Number: JPM-S2.1

Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:


  
Technical Reviewer

02/03/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S2.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S2.1 Rev. 0

Task Title: Manual Blended Makeup to Volume Control Tank ( Faulted)

System: CVCS

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 004 A4.07 K/A Rating 3.9/3.7

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will initiate a blended makeup to the VCT, determine that the PMW Flow Control Valve failed open, and terminate the blended makeup to prevent a Boron Dilution event.*

### Required Materials

(procedures, equipment, etc.):

- Section 4.9, OP 2304C, Manual Blended Make Up to VCT
- Section 4.21, OP 2304C, Maintaining VCT Level and Pressure During Normal Operation
- ARP 2590C-060 " PMW FLOW HI/LO"

### General References:

OP 2304C " Make Up (Boration and Dilution) Portion of CVCS"

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral*



**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

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Initiating Cues:

- You have been directed to perform a blended makeup to the VCT to raise level 2%

Initial Conditions:

- The current blend ratio is 9:1 (corrected for Boron-10 depletion) calculated using "A" BAST
- The piping to the VCT is currently at blend concentration (no requirement for adjusting for water in the piping).

Simulator

- IC-30

Requirements:

- VCT level 78%

**\*\*\* NOTES TO 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 the 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: JPM-S2.1

Rev.. 0

Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
<b>START TIME:</b> _____				
1.	4.9 Manual Blended Make Up to VCT 4.9.1 Refer To Section 4.21, "Maintaining VCT Level and Pressure During Normal Operation," and PERFORM applicable actions.	Examinee refers to 4.21, "Maintaining VCT Level and Pressure During Normal Operation," and determines that during this manual blend that no VCT high level or pressure parameters will be exceeded.	N	
Cue:				
Comments:				
2.	<b>CAUTION</b> 1. Manual make up must be monitored closely as there is no automatic shutoff on a high level in the VCT. 2. When calculating the amount of boric acid required for neutral blend, the amount and effects of PMW in the pipe must be considered. 3. When calculating the ratio of boric acid to PMW, the effects of Boron-10 depletion must be considered.	Examinee reads and acknowledges caution statement. Examinee notes that the initial conditions explain that the amount and effects of PMW in the pipe have been considered, as well as the effects of Boron-10 depletion.	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S2.1

Rev.. 0

Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	<p>4.9.2 VERIFY the following (C-02):</p> <p>_ PMW is available (indicating lights for PMW transfer pumps).</p> <p>_ WHEN blend will be injected into the RCS, at least one charging pump running.</p>	<p>Examinee notes that red "ON" indicating light is lit for running PMW pump.</p> <p>Examinee notes red "ON" lit for running Charging pump and ~44 gpm indicated for charging header flow "F-212".</p>	N	
Cue:				
Comments:				
4.	<p>4.9.3 Refer To OP 2208, "Reactivity Calculations" or PPC and DETERMINE required ratio of boric acid flow to PMW flow, corrected for Boron-10 depletion.</p>	<p>Examinee notes that initial conditions have provided a blend ratio, corrected for Boron-10 depletion.</p>	N	
Cue:				
Comments:				
5.	<p>4.9.4 VERIFY the following are closed:</p> <p>_ CH-512, "MAKEUP VLV STOP," (C-04)</p> <p>_ CH-196, "VCT MAKEUP BYPASS," (C02)</p> <p>_ CH-192, "RWST ISOL," (C-02)</p>	<p>Examinee verifies the following valves closed by their green "CLOSE" lights lit only:</p> <p>CH-512, "MAKEUP VLV STOP," (C-04)</p> <p>CH-196, "VCT MAKEUP BYPASS,"(C02)</p> <p>CH-192, "RWST ISOL," (C-02)</p>	N	
Cue:				
Comments:				
6.	<p>4.9.5 DETERMINE desired VCT level change in % level.</p>	<p>Examinee notes that Initial Conditions requires a 2% level addition.</p>	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S2.1

Rev.. 0

Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	4.9.6 DETERMINE total gallons required to make desired level change as follows: Desired level change in % x 34 gallons = Total gallons for make up 1% level	Examinee determines that an addition of 68 gallons are required to raise VCT level 2%	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S2.1

Rev.. 0

Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	<p>4.9.7 RESET "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" and "BORIC ACID FLOW CONTROLLER FC-210Y" to 0 total gallons by performing the following (C-04):</p> <p>a. CHECK "R/L" light indicates "L."</p> <p>b. IF a manual leak rate determination is in progress AND flow controller totalizers are being used to track RCS makeup, PERFORM the following:</p> <p>1) PRESS "SEL" button until "PMW TOTAL" or "BA TOTAL" is displayed.</p> <p>2) OBSERVE total gallons added.</p> <p>3) Refer To SP 2602A-001, "Manual RCS Leak Rate Determination," and RECORD total gallons added.</p> <p>c. PRESS "SEL" button and HOLD until display indicates "TOTAL RST."</p> <p>d. PRESS "R/L" button to transfer to "R" mode to reset totalizer.</p> <p>e. PRESS "R/L" button to transfer to "L" mode.</p> <p>f. PRESS "SEL" button and HOLD until controller number (FC-210X or FC-210Y) total gallons is displayed.</p>	<p>Examinee resets "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" to 0 total gallons by performing the following:</p> <p>a. CHECK "R/L" light indicates "L" (FC-210X )</p> <p>b. determines that a manual leak rate determination is <u>not</u> in progress AND flow controller totalizers are <u>not</u> being used to track RCS makeup, and that this step is not applicable.</p> <p>c. PRESS "SEL" button and HOLD until display indicates "TOTAL RST." (FC-210X)</p> <p>d. PRESS "R/L" button to transfer to "R" mode to reset totalizer (FC-210X).</p> <p>e. PRESS "R/L" button to transfer to "L" mode (FC-210X).</p> <p>f. PRESS "SEL" button and HOLD until controller number (FC-210X) total gallons is displayed.</p>	<p>N</p> <p>N</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>	
Cue:				
Comments:				

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Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8. (cont)	4.9.7	<p>Examinee resets "BORIC ACID FLOW CONTROLLER FC-210Y" to 0 total gallons by performing the following:</p> <p>a. CHECK "R/L" light indicates "L" (FC-210Y)</p> <p>b. determines that a manual leak rate determination is <u>not</u> in progress AND flow controller totalizers are <u>not</u> being used to track RCS makeup, and that this step is not applicable.</p> <p>c. PRESS "SEL" button and HOLD until display indicates "TOTAL RST." (FC-210Y)</p> <p>d. PRESS "R/L" button to transfer to "R" mode to reset totalizer (FC-210Y).</p> <p>e. PRESS "R/L" button to transfer to "L" mode (FC-210Y).</p> <p>f. PRESS "SEL" button and HOLD until controller number (FC-210Y) total gallons is displayed.</p>	<p>N</p> <p>N</p> <p>Y</p> <p>Y</p> <p>Y</p> <p>Y</p>	
Cue:				
Comments:				
9.	4.9.8 START PPC trend of VCT level (L226).	Examinee starts/observes PPC trend of VCT level (L226).	N	
Cue:				
Comments:				

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Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
10.	NOTE Boric acid flow rates of greater than 30 gpm is achievable, but are not to be exceeded.	Examinee reads and acknowledges note for Boric Acid flow limitations.	N	
Cue:				
Comments:				
11.	4.9.9 ADJUST automatic setpoint of "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" and "BORIC ACID FLOW CONTROLLER FC-210Y" as follows (C04): a. VERIFY "AM" is lit. b. PRESS "SEL" button until cursor appears above setpoint (left hand bar graph). c. Using "up" and "down" buttons, ADJUST setpoint to desired flow rate.	Examinee adjusts automatic setpoint of "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" as follows (C04): a. VERIFY "AM" is lit. b. PRESS "SEL" button until cursor appears above setpoint (left hand bar graph). c. Using "up" and "down" buttons, ADJUST setpoint to desired flow rate to maintain proper blend ratio.	N  Y   Y	
Cue:				
Comments:				
11. (cont)	4.9.9	Examinee adjusts automatic setpoint of "BORIC ACID FLOW CONTROLLER FC-210Y" as follows (C04): a. VERIFY "AM" is lit. b. PRESS "SEL" button until cursor appears above setpoint (left hand bar graph). c. Using "up" and "down" buttons, ADJUST setpoint to desired flow rate to maintain proper blend ratio.	N  Y   Y	
Cue:				
Comments:				

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Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	4.9.10 PLACE "MAKEUP MODE SEL" in "MANUAL" (C-04).	Examinee places "MAKEUP MODE SEL" in "MANUAL" (C-04).	Y	
Cue:				
Comments:				
13.	4.9.11 START one boric acid pump (C-02). _ P-19A, "BA PP A" _ P-19B, "BA PP B"	Examinee starts "A" boric acid pump by placing its handswitch to "START"	Y	
Cue:				
Comments:				
14.	4.9.12 VERIFY the following: _ Boric acid pump starts (C-02) _ Boric acid pump develops discharge pressure of at least 98 psig, indicated "PP A DIS PRES, PI-206" or "PP B DIS PRES, PI-208" (C-02/PPC)	Examinee verifies "A" boric acid pump starts by observing its red running light lit. Examinee verifies "A" boric acid pump develops pressure of at least 98 psig, indicated "PP A DIS PRES, PI-206".	N	
Cue:				
Comments:				
15.	<b>NOTE</b> When CH-512, "MAKEUP VLV STOP," is opened, the "M" part of the "AM" light will extinguish, indicating the controller is activated.	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				



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STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
16.	4.9.13 OPEN CH-512 (C-04).	Examinee opens CH-512 by taking its handswitch to open and observing red "OPEN" light lit only.	Y	
Cue:				
Comments:	Examinee may announce expected "PMW FLOW HI/LO" (C-04, BB-8) and "BA MAKEUP FLOW HI/LO" 9C-04,BA-8) flow alarms prior to, (or after receiving alarm) upon initiating blend flow. It is expected that the ARP's for these alarms will be referenced.			
17.	4.9.14 VERIFY flows have stabilized at setpoint of flow controllers (C-04).	Examinee verifies flows have stabilized at setpoint of flow controllers FC-210X and FC-210Y by observing output of controller and/or FR-210 for flow values C-04).	N	
Cue:				
Comments:				
18.	4.9.15 MONITOR VCT level and pressure as indicated on the following: (C-02 or PPC). _ "VCT PRES, PI-225" _ "VCT LVL, LI-226"	Examinee monitors VCT level and pressure, by observing a PPC trend, computer trend recorder UR—243(C-04), and/or "VCT PRES, PI-225" and "VCT LVL, LI-226"(C-02/03)	Y	
Cue:	<b>When examinee is monitoring VCT level and pressure booth I/O "CVFIC-210X, "Foxboro controller (PMW) AO 0-50 GPM" to 0 GPM to fail FC-210X to open.</b>			
Comments:				
19.	ARP 2590C-060 AUTOMATIC FUNCTIONS 1. None	Examinee refers to ARP for PMW FLOW HI/LO" (C-04, BB-8) and takes corrective actions.	Y	
Cue:	<b>When examinee indicates that he/she will refer to the ARP for "PMW FLOW HI/LO" (C-04, BB-8), hand examinee ARP 2590C-060.</b>			
Comments:	Examinee may choose to terminate blended makeup to VCT prior to referencing ARP 2590-060			

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Manual Blended Makeup to Volume Control Tank ( Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
20.	2. CHECK flow rate on "PRI MAKEUP WTR FLOW, FC-210X," within 10 gpm of setpoint (C-04).	Examinee determines that indicated flow is greater than 10 gpm from setpoint.	Y	
Cue:				
Comments:				
21.	3. IF desired to terminate PMW flow, PERFORM the following:  3.1 PLACE "PRI MAKEUP WTR FLOW, FC-210X," to "MANUAL." 3.2 ADJUST "PRI MAKEUP WTR FLOW, FC-210X," to zero output. 3.3 VERIFY 2-CH-196, "VCT MAKEUP BYPASS," closed. 3.4 VERIFY 2-CH-512, "MAKEUP VLV STOP," closed.	Examinee determines that it is desired to terminate flow and:  3.1 Places "PRI MAKEUP WTR FLOW, FC-210X," to "MANUAL." 3.2 Adjusts "PRI MAKEUP WTR FLOW, FC-210X," to zero output. 3.3 Verifies 2-CH-196, "VCT MAKEUP BYPASS," closed by ensuring green "close" light only lit. 3.4 Verifies 2-CH-512, "MAKEUP VLV STOP," closed by placing valve handswitch in close and ensuring green "close" light only lit.	Y*  Y*  N  Y*	
Cue:				
Comments:	* A combination of steps 3.1 and 3.2 or step 3.4 alone will have the desired effect of securing the blended makeup to the VCT. The JPM is complete when the blended makeup is secured.			

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

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

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## **VERIFICATION OF JPM COMPLETION**

Title: Manual Blended Makeup to Volume Control Tank ( Faulted)

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  

Validated Time (minutes):                        20  

Actual Time to Complete (minutes):        \_\_\_\_\_

JPM Work Practice Evaluation:                      SAT                      UNSAT                      NA                      (*circle one*)

Overall Result of JPM:                                      SAT                      UNSAT                                      (*circle one*)

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

### Initial Conditions:

- You have been directed to perform a blended makeup to the VCT to raise level 2%

### Initiating Cues:

- The current blend ratio is 9:1 (corrected for Boron-10 depletion) calculated using "A" BAST
- The piping to the VCT is currently at blend concentration (no requirement for adjusting for water in the piping).

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Aligning RSST to Bus 24C (Faulted)

JPM Number: JPM-S6.1

Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:



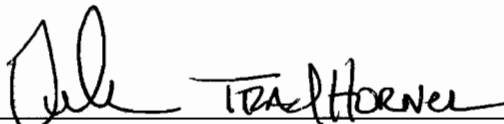
Technical Reviewer

02/03/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S6.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S6.1 Rev. 0

Task Title: Aligning RSST to Bus 24C (Faulted)

System: AC Electrical Distribution

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 062 A2.05 K/A Rating 2.9/3.3

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will attempt to restore power to Bus 24C from the RSST. The RSST supply breaker will fail to close and the examinee will restore power to Bus 24C from Unit 3.*

### Required Materials

(procedures, equipment, etc.):

EOP 2541, Appendix 23  
Attachment 23-B," Energizing 4.16 kV Bus 24C From the RSST"  
Attachment 23-N," Energizing 4.16 kV Bus 24E From Unit 3"

### General References:

EOP 2541, Appendix 23

### \*\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

*reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

Initiating Cues:

- The Unit Supervisor has directed you to repower Bus 24C from the RSST so that a Service Water Pump can be restored to Facility 1.

Initial Conditions:

- Unit-2 is in Mode 3 after experiencing a plant trip.
- All SPTA's of EOP 2525 have been carried out.
- Bus 24C failed to transfer to the RSST on the plant trip.
- There are no faults indicated on Bus 24C
- "A" EDG is out of service for maintenance

SimulatorRequirements:

- IC-154
- ED17A, EGR12, EGR17
- I/O 06A1A556 [ RSST TO 24C(A302) TRIP]
- Tag breaker A312 and START/STOP switch
- Additional operator to address board alarms

**\*\*\* NOTES TO 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 the 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: JPM-S6.1

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Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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START TIME: \_\_\_\_\_

1.	EOP 2541, Appendix 23 Attachment 23-B," Energizing 4.16 kV Bus 24C From the RSST"	Examinee states that he/she will choose EOP 2541, Appendix 23 (Attachment 23- B) "Energizing 4.16 kV Bus 24C From the RSST"	N	
Cue:	<b>Provide student with Attachment 23-B (EOP 2541)" Energizing 4.16 kV Bus 24C From the RSST"</b>			
Comments:				
2.	NOTE The following may indicate a fault on 4.16 kV Bus 24C: _ Annunciator "DIESEL GEN 12U BKR TRIP" lit (A-30, C08) _ Annunciator "DIESEL GEN 12U BKR CLOSING CKT BLOCKED" lit (C-36, C08) _ Annunciator "4KV BUS 24A/C TIE BKR A304 TRIP" lit (A-10, C08) _ Annunciator "4KV BUS 24C/E TIE BKR A305 TRIP" lit (B-10, C08)	Examinee reads and acknowledges note for fault indications on Bus 24C.	N	
Cue:				
Comments:				
3.	1. CHECK the Unit 2 RSST energized.	Examinee verifies Unit 2 RSST energized by checking " RSST VOLTS" reading ~4200 VAC	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S6.1

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Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	2. CHECK that no fault indications are present for 4.16 kV Bus 24C.	Examinee notes that : _ "DIESEL GEN 12U BKR TRIP"(A-30, C08) _ "DIESEL GEN 12U BKR CLOSING CKT BLOCKED" (C-36, C08), _ "4KV BUS 24A/C TIE BKR A304 TRIP" (A-10, C08) _ "4KV BUS 24C/E TIE BKR A305 TRIP"(B-10, C08) are not lit and determines that no fault exists on Bus 24C.	N	
Cue:				
Comments:				
5.	3. ENSURE ALL of the following breakers are open (C-08): _ A304, "24A/24C TIE BKR, 24C-1T-2" _ A305, "24C/24E TIE BKR, 24C-2T-2" _ A312, "DG A FDR BKR, 15G-12U-2"	Examinee ensures all of the following breakers are open (C-08): _ A304, "24A/24C TIE BKR, 24C-1T-2" _ A305, "24C/24E TIE BKR, 24C-2T-2" _ A312, "DG A FDR BKR, 15G-12U-2" by observing either green "OPEN" light, or no light lit ( racked down)for each breaker.	N	
Cue:				
Comments:				
6.	4. ENSURE A702, "RSS FDR BKR, 22S3-2-2", is closed. (C-08)	Examinee notes by red "CLOSE" light that A702, "RSS FDR BKR, 22S3-2-2", is closed. (C-08)	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S6.1

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Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	NOTE Due to the "Dead Bus" state of 4.16 kV Bus 24C, the synchroscope will not move.	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				
8.	5. PLACE "SYN SW, 22S3-24C-2 (A302)" to "ON" and CHECK "INCOMING" voltage indicated. (C-08)	Examinee states that the synchroscope is not moving.  Examinee places "SYN SW, 22S3-24C-2 (A302)" to "ON" and checks "INCOMING" voltage indicated on	N  Y	
Cue:				
Comments:				
9.	6. PLACE ALL four "UV BUS A3" channel bypass keyswitches to the "INHIBIT" position. (Key 26) (ESF Sensor Cabinets)	Examinee obtains (4) "UV BUS A3" channel bypass keys ( key 26) and installs them in "UV BUS A3" locations on all (4) ESF sensor cabinets. Examinee rotates the keys to the "INHIBIT" position.	Y	
Cue:				
Comments:				
10.	7. PRESS Facility 1 "UV RESET" button. (ESF Actuation Cabinet 5)	Examinee locates and presses the Facility 1 "UV RESET" button. (ESF Actuation Cabinet 5)	Y	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S6.1

Rev.. 0

Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	8. PLACE BOTH of the following control switches in "PULL TO LOCK": _ Service Water Pump A _ RBCCW Pump A	Examinee rotates the following control switches to the left places in "PULL TO LOCK" _ Service Water Pump A _ RBCCW Pump A	Y	
Cue:				
Comments:				
12.	9. PLACE BOTH SG Auto Aux Feed Override Switches in "PULL TO LOCK."	Examinee places both S/G "OVERRIDE/MAN/START RESET" switches to "PULL TO LOCK"	Y	
Cue:				
Comments:				
13.	10. OVERRIDE ALL of the following control switches to prevent an inadvertent automatic start: _ HPSI Pump A _ LPSI Pump A _ Containment Spray Pump A	Examinee overrides the following control switches by to prevent an inadvertent automatic start: _ HPSI Pump A _ LPSI Pump A _ Containment Spray Pump A	N	
Cue:				
Comments:	Student may note that an override of these switches is not required and marks this step not applicable.			
14.	11.. CLOSE A302, "RSS SPLY BKR, 22S3-24C-2".	Examinee states that A302, "RSS SPLY BKR, 22S3-24C-2" failed to close.	Y	
Cue:	<ul style="list-style-type: none"> <li>Examinee will stop at this point due to failure of the breaker to close. State that the problem with A302 has been determined to be a mechanical issue with the breaker.</li> <li>Inform examinee that we need to restore a Facility 1 Service Water Pump and request an alternate power restoration path recommendation from the examinee.</li> </ul>			
Comments:	Student should recommend success path of energizing bus Bus 24E from Unit-3. This will allow energizing "B" Service Water Pump			

# PERFORMANCE INFORMATION

JPM Number: JPM-S6.1

Rev.. 0

Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	Attachment 23-N Energizing 4.16 kV Bus 24E From Unit 3	Student refers to Attachment 23-N for Energizing 4.16 kV Bus 24E From Unit 3	N	
Cue:	<b>Provide examinee with Attachment 23-N (EOP 2541) "Energizing 4.16 kV Bus 24E From Unit 3" when asked.</b>			
Comments:				
16.	<p><b>NOTE</b></p> <p>The following may indicate a fault on 4.16 kV Bus 24E:</p> <p>_ Annunciator "4KV BUS 24E/34B TIE BKR A505 TRIP" lit (A-9, C08)</p> <p>_ Annunciator "4KV BUS 24C/E TIE BKR A305 TRIP" lit (B-10, C08)</p> <p>_ Annunciator "4KV BUS 24D/E TIE BKR A408 TRIP" lit (D-10, C08)</p>	Examinee reads and acknowledges note for fault indications on Bus 24E.	N	
Cue:				
Comments:				
17.	1.CHECK that no fault indications are present for 4.16 kV Bus 24E.	<p>Examinee notes that:</p> <p>_ "4KV BUS 24E/34B TIE BKR A505 TRIP" (A-9, C08)</p> <p>_ "4KV BUS 24C/E TIE BKR A305 TRIP" (B-10, C08)</p> <p>_ "4KV BUS 24D/E TIE BKR A408 TRIP" (D-10, C08)</p> <p>lights are not lit, indicating no faults on bus 24E.</p>	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S6.1

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Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	2. ENSURE 4.16 kV Bus 24E "SPLY VOLTS" voltage is indicated.	Examinee verifies Bus 24E "SPLY VOLTS" indicate ~4200 VAC	N	
Cue:				
Comments:				
19.	3. ENSURE ALL of the following load breakers on 4.16 kV Bus 24E are open: _ A502, "SERVICE WTR PUMP B" _ A503, "HPSI PUMP B" _ A504, "RBCCW PUMP B"	Examinee verifies by green "OPEN" or no light indication that the following load breakers on 4.16 kV Bus 24E are open: _ A502, "SERVICE WTR PUMP B" _ A503, "HPSI PUMP B" _ A504, "RBCCW PUMP B"	N	
Cue:				
Comments:				
20.	4. ENSURE ALL of the following breakers are open: _ A305, "24C/24E TIE BKR, 24C-2T-2" _ A408, "24D/24E TIE BKR, 24D-2T-2"	Examinee ensures that the following breakers are open by observing green "OPEN" light indication only, or no light indication for the breaker: A305, "24C/24E TIE BKR, 24C-2T-2" A408 "24D/24E TIE BKR, 24D-2T-2"	N	
Cue:				
Comments:				
21.	5. REQUEST permission from Unit 3 Shift Manager or Unit Supervisor to energize Unit 2 4.16 kV Bus 24E from Unit 3 4.16 kV Bus 34A/34B.	Examinee either states that he/she will call Unit-3, or calls the booth operator and requests from Unit-3 SM/US permission to energize 24E from Unit-3.	N	
Cue:	Unit-3 SM authorizes energizing Bus 24E from Unit-3			
Comments:				

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Aligning RSST to Bus 24C (Faulted) Aligning RSST to Bus 24C (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
22.	NOTE Due to the "Dead Bus" state of 4.16 kV Bus 24E, the synchroscope will not move.	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				
23.	6. PLACE "SYN SEL SW, 34B-24E-2 (A505)" to "ON" and CHECK "INCOMING" voltage indicated.	Examinee places "SYN SEL SW, 34B-24E-2 (A505)" to "ON" and checks "INCOMING" voltage indicated.	Y	
Cue:				
Comments:	Student may pre-announce expected alarm for sync select switch.			
24.	7. CLOSE A505, "24E/34B TIE BKR, 34B-24E-2".	Examinee closes A505, "24E/34B TIE BKR, 34B-24E-2", by bringing switch to the close direction and notes red "CLOSE" light lit.	Y	
Cue:				
Comments:				
25.	8. CHECK voltage indicated on "RUNNING" voltmeter.	Examinee notes voltage indicated on "RUNNING" voltmeter.	N	
Cue:				
Comments:				
26.	9. PLACE "SYN SEL SW, 34B-24E-2 (A505)" to "OFF".	Examinee places "SYN SEL SW, 34B-24E-2 (A505)" to "OFF".	Y	
Cue:				
Comments:				

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

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

**VERIFICATION OF JPM COMPLETION**Title: Aligning RSST to Bus 24C (Faulted)

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  Validated Time (minutes):       20      

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation:                      SAT                      UNSAT                      NA                      (circle one)

Overall Result of JPM:                      SAT                      UNSAT                      (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions:

- The Unit Supervisor has directed you to repower Bus 24C from the RSST so that a Service Water Pump can be restored to Facility 1.

Initiating Cues:

- Unit-2 is in Mode 3 after experiencing a plant trip.
- All SPTA's of EOP 2525 have been carried out.
- Bus 24C failed to transfer to the RSST on the plant trip.
- There are no faults indicated on Bus 24C
- "A" EDG is out of service for maintenance

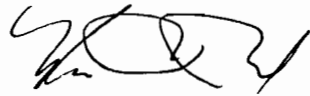
## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Filling #1 SIT tank with RCS pressure > 1750 psi

JPM Number: JPM-S3.1

Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:



Technical Reviewer

02/03/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date



Brad Horner  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S3.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S3.1 Rev. 0

Task Title: Filling #1 SIT tank with RCS pressure > 1750 psi

System: SIT

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 006 A4.07 K/A Rating 4.4/4.4

### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will raise #1 SIT level by 2% using the "A" HPSI Pump.*

### Required Materials

(procedures, equipment, etc.):

OP 2306O Section 4.1, "Raising SIT Level"  
OP 2306O Section 4.2, "Reducing SIS Loop High Pressure After Filling SIT"

### General References:

OP 2306O Safety Injection Tanks, RCS >1750 psi  
ARP 2590A-040 "SAFETY INJECTION TANK 1 PRES LO"

### \*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

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Initiating Cues:

- You have been directed to fill #1 SIT to a final level of ~58% using P41-A ("A" HPSI Pump) to makeup for some known leakage back to the Primary Drain Tank.

Initial Conditions:

- #1 SIT level is 56.7%
- Sampling of the #1 SIT is *not* required.

Simulator

- IC-151

Requirements:

- #1 SIT level is 56.7%
- "SAFETY INJECTION TANK 1 PRES LO" (C-01/D-10)

**\*\*\* NOTES TO 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 the 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: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	OP 2306O 4.1 Raising SIT Level  4.1.1 IF the cause of the SIT level reduction is unknown, Refer To SP 2604Z and PERFORM applicable steps to confirm the associated SIS header to Loop piping penetration(s) full. (UT Points 15, 16, 17, or 18)	Examinee notes that cause of level change is known and that this step is not required.	N	
Cue:	<b>When asked for, provide examinee with OP 2306O Section 4.1, " Raising SIT Level" and OP 2306O Section 4.2, " Reducing SIS Loop High Pressure After Filling SIT"</b>			
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	<p>4.1.2 DETERMINE desired SIT(s) level using one of the following criteria:</p> <p>_ IF sampling is not required, do not fill greater than 58.8% (alarm C-01 59%)</p> <p>_ IF sampling is required, do not fill greater than 59.6% (PPC high alarm 59.7%) the following alarms are expected (C-01):</p> <p>_ SAFETY INJECTION TANK 1 LEVEL HI" (A-10)</p> <p>_ SAFETY INJECTION TANK 2 LEVEL HI" (A-11)</p> <p>_ SAFETY INJECTION TANK 3 LEVEL HI" (A-12)</p> <p>_ SAFETY INJECTION TANK 4 LEVEL HI" (A-13)</p>	<p>Examinee determines that sampling is not required as given in initial conditions, and that desired stop level is &lt; 58.8% (alarm C-01 59%)</p>	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	<p><b>NOTE</b></p> <p>1. The facility one Header Stop (2-SI-656) is the only HPSI HDR Stop that can be opened with the D/P caused by having a running HPSI Pump. The HPSI HDR Stop must be closed, prior to starting a HPSI Pump, to prevent the pressure wave, which will cause perturbations in the downstream piping and valves.</p> <p>2. The following alarms are expected after reopening 2-SI-656:</p> <p>_ SIS TO LOOP 1A PRESS HI, (C-01, window A-14)</p> <p>_ SIS TO LOOP 1B PRESS HI, (C-01, window B-14)</p> <p>_ SIS TO LOOP 2A PRESS HI, (C-01, window C-14)</p> <p>_ SIS TO LOOP 2B PRESS HI, (C-01, window D-14)</p>	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				
4.	4.1.3 LOG entry into TSAS 3.5.2.a, Emergency Core Cooling Systems."	Examinee informs US to log into TSAS 3.5.2.a	N	
Cue:	<b>US informs examinee that he has entered into TSAS 3.5.2.a</b>			
Comments:				



# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5.	4.1.4 CLOSE 2-SI-656 "HPSI HDR A STOP."	Examinee closes 2-SI-656 "HPSI HDR A STOP" by rotating its keyswitch to the CLOSE direction and verifies closed by green CLOSE light lit only.	Y	
Cue:				
Comments:				
6.	4.1.5 WHEN HPSI pump is started, CHECK the following (C-01): _ Motor amperage 20 to 30 amps _ Nominal discharge pressure 1250 to 1300 psig	Examinee notes and acknowledges expected pump starting parameters.	N	
Cue:				
Comments:				
7.	4.1.6 START one of the following HPSI pumps (C-01). _ "P-41A, HPSI PP A" _ IF aligned to Facility 1, "P-41B, HPSI PP B"	Examinee starts "P-41A, HPSI PP A" as directed by initiating cue by taking its handswitch in the clockwise direction and verifies by light, amp, and/or discharge pressure that the pump is running.	Y	
Cue:	<b>If asked, direct examinee to use "P-41A, HPSI PP A"</b>			
Comments:				
8.	4.1.7 WAIT 10 seconds. 4.1.8 OPEN 2-SI-656 "HPSI HDR A STOP."	After 10 second wait, examinee opens 2-SI-656 "HPSI HDR A STOP" by rotating its keyswitch to the open direction and observing its red OPEN light lit.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9.	4.1.9 LOG out of TSAS 3.5.2.a, "Emergency Core Cooling Systems."	Examinee informs US to log out of TSAS 3.5.2.a	N	
Cue:	<b>US informs examinee that he has exited TSAS 3.5.2.a</b>			
Comments:				
10.	<p><b>CAUTION</b> Recirculation header must not be subjected to pressure above 300 psig as indicated on "RECIRC HDR PRESS, PI-305."</p> <p><b>NOTE</b> When raising pressure during reactor startup before containment reaches operating temperature, SIT pressure should be limited to 220 psig to allow for thermal expansion.</p>	<p>Examinee reads and acknowledges caution.</p> <p>Examinee reads and acknowledges note.</p>	<p>N</p> <p>N</p>	
Cue:				
Comments:				
11.	4.1.10 IF filling SIT 1, PERFORM the following (C-01): a. OPEN "SI-611, FILL & DRN."	Examinee opens "SI-611, FILL & DRN" by rotating its handswitch to the open direction and observing its red OPEN light lit.	Y	
Cue:				
Comments:				
12.	b. THROTTLE open "SI-618, HDR-1A CK VLV LKG DRN STOP" not to exceed 300 psig, indicated on "PI-305, RECIRC HDR PRESS."	Examinee throttles open "SI-618, HDR-1A CK VLV LKG DRN STOP" not to exceed 300 psig, indicated on "PI-305, RECIRC HDR PRESS" using its control knob.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	c. WHEN any of the following occur, CLOSE SI-618: _ "L311 SI TK 1 LVL" at desired level (PPC) _ "P311 SI TK 1 PRESS" pressure 225 psig (PPC) _ "PI-311, SIT 1 PRESS" pressure 225 psig _ PPC SIT high level alarm (59.7%)	Examinee closes SI-618 after filling to ~58% and < 58.8% (alarm C-01 59%) by rotating its control knob and observing its green CLOSE light lit.	Y	
Cue:	<b>Acknowledge closing of SI-618 if required</b>			
Comments:				
14.	d. CLOSE "SI-611, FILL & DRN."	Examinee closes "SI-611, FILL & DRN" by rotating its handswitch to the close direction and observing its green CLOSE light lit.	Y	
Cue:				
Comments:				
15.	4.1.11 IF filling SIT 2, PERFORM the following (C-01): 4.1.12 IF filling SIT 3, PERFORM the following (C-01): 4.1.13 IF filling SIT 4, PERFORM the following (C-01):	Examinee notes that these steps are not required, and N/A's these steps.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
16.	4.1.14 IF no longer required, STOP HPSI pump (C-01).	Examinee stops "P-41A, HPSI PP A" by rotating its handswitch to the counter-clockwise direction.	Y	
Cue:	Acknowledge stopping "P-41A, HPSI PP A" if required			
Comments:				
17.	4.1.15 IF any SIT fill was terminated due to pressure limit AND it is desired to continued filling, Refer To Section 4.5 to vent pressure.	Examinee states that this step is not applicable	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	<p>4.1.16 Refer To one of the following and RECORD new SIT level and if applicable, boron concentration.</p> <p>_ SP 2619A-001, "Control Room Daily Surveillance, Modes 1 and 2"</p> <p>_ SP 2619A-002, "Control Room Daily Surveillance, Modes 3 and 4"</p> <p>4.1.17 UPDATE applicable control board marker reference level(s).</p> <p>4.1.18 CHANGE applicable PPC temporary high alarm limit(s) for new reference level(s).</p>	<p>Examinee states or attempts to perform the following administrative actions prior to proceeding.</p> <p>Refers to SP 2619A-001, "Control Room Daily Surveillance, Modes 1 and 2" and records new SIT level and if applicable, boron concentration.</p> <p>Update applicable control board marker reference level(s).</p> <p>Change SIT#1 PPC temporary high alarm limit(s) for new reference level(s).</p>	N	
Cue:	<b>Inform the examinee that these administrative actions are being performed by the spare operator and that he/she can continue with the procedure.</b>			
Comments:				
19.	<p><b>CAUTION</b></p> <p>Pressure left trapped in the HPSI injection headers following pump operation may increase over time due to thermal expansion. If not vented before exceeding RCS pressure, this condition may result in a small addition of boron to the RCS.</p>	<p>Examinee reads and acknowledges caution.</p>	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

[illegible]

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
22.	<p>4.2.2 IF "SIS TO LOOP 1B PRESS HI," (B-14, C-01) is lit, PERFORM the following (C-01):</p> <p>a. OPEN "SI-621, FILL &amp; DRN."</p> <p>b. CRACK open "SI-628, HDR-1B CK VLV LKG DRN STOP."</p> <p>c. WHEN "P329 SIS TO LOOP 1B PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:</p> <p>1) "SI-628, HDR-1B CK VLV LKG DRN STOP"</p> <p>2) "SI-621, FILL &amp; DRN"</p>	<p>Examinee performs the following to clear "SIS TO LOOP 1B PRESS HI" alarm:</p> <p>a. OPEN "SI-621, FILL &amp; DRN" by rotating its switch to the "OPEN" direction and observing the red OPEN light lit</p> <p>b. CRACK open "SI-628, HDR-1B CK VLV LKG DRN STOP" by rotating its knob and observing the valve open by needle indication and red OPEN light indication</p> <p>c. WHEN "P329 SIS TO LOOP 1B PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:</p> <p>1) "SI-628, HDR-1B CK VLV LKG DRN STOP" by rotating its knob and observing the valve closed by needle indication and green CLOSE light indication</p> <p>2) "SI-621, FILL &amp; DRN" by rotating its switch to the "CLOSE" direction and observing the green CLOSE light lit</p>	<p>N</p> <p>N</p> <p>N</p> <p>N</p>	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
23.	<p>4.2.3 IF "SIS TO LOOP 2A PRESS HI," (C-14, C-01) is lit, PERFORM the following (C-01):</p> <p>a. OPEN "SI-631, FILL &amp; DRN"</p> <p>b. CRACK open "SI-638, HDR-2A CK VLV LKG DRN STOP."</p> <p>c. WHEN "P339 SIS TO LOOP 2A PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:</p> <p>1) "SI-638, HDR-2A CK VLV LKG DRN STOP"</p> <p>2) "SI-631, FILL &amp; DRN"</p>	<p>Examinee performs the following to clear "SIS TO LOOP 2A PRESS HI" alarm:</p> <p>a. OPEN "SI-631, FILL &amp; DRN" by rotating its switch to the "OPEN" direction and observing the red OPEN light lit</p> <p>b. CRACK open "SI-638, HDR-1B CK VLV LKG DRN STOP" by rotating its knob and observing the valve open by needle indication and red OPEN light indication</p> <p>c. WHEN "P339 SIS TO LOOP 1B PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:</p> <p>1) "SI-638, HDR-1B CK VLV LKG DRN STOP" by rotating its knob and observing the valve closed by needle indication and green CLOSE light indication</p> <p>2) "SI-631, FILL &amp; DRN" by rotating its switch to the "CLOSE" direction and observing the green CLOSE light lit</p>	<p>N</p> <p>N</p> <p>N</p> <p>N</p>	
Cue:				
Comments:				



## PERFORMANCE INFORMATION

JPM Number: JPM-S3.1

Rev.. 0

Filling #1 SIT tank with RCS pressure > 1750 psi

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
24.	<p>4.2.4 IF "SIS TO LOOP 2B PRESS HI," (D-14, C-01) is lit, PERFORM the following (C-01):</p> <p>a. OPEN "SI-641, FILL &amp; DRN"</p> <p>b. CRACK open "SI-648, HDR-2B CK VLV LKG DRN STOP."</p> <p>c. WHEN "P349 SIS TO LOOP 2B PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:</p> <p>1) "SI-648, HDR-2B CK VLV LKG DRN STOP"</p> <p>2) "SI-641, FILL &amp; DRN"</p>	<p>Examinee performs the following to clear "SIS TO LOOP 2B PRESS HI" alarm:</p> <p>a. OPEN "SI-641, FILL &amp; DRN" by rotating its switch to the "OPEN" direction and observing the red OPEN light lit</p> <p>b. CRACK open "SI-648, HDR-1B CK VLV LKG DRN STOP" by rotating its knob and observing the valve open by needle indication and red OPEN light indication</p> <p>c. WHEN "P349 SIS TO LOOP 1B PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:</p> <p>1) "SI-648, HDR-1B CK VLV LKG DRN STOP" by rotating its knob and observing the valve closed by needle indication and green CLOSE light indication</p> <p>2) "SI-641, FILL &amp; DRN" by rotating its switch to the "CLOSE" direction and observing the green CLOSE light lit</p>	<p>N</p> <p>N</p> <p>N</p> <p>N</p>	
Cue:				
Comments:				

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

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

**VERIFICATION OF JPM COMPLETION**Title: Filling #1 SIT tank with RCS pressure > 1750 psi

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

Student: \_\_\_\_\_

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

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.

Time Critical Task?    Yes \_\_\_\_\_    No   X  Validated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation:                      SAT                      UNSAT                      NA                      (circle one)

Overall Result of JPM:                      SAT                      UNSAT                      (circle one)

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

**Initial Conditions:**

- You have been directed to fill #1 SIT to a final level of ~58% using
- P41-A ("A" HPSI Pump) to makeup for some known leakage back to the Primary Drain Tank.

**Initiating Cues:**

- #1 SIT level is 56.7%
- Sampling of the #1 SIT is *not* required.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Response to VENT STACK RADMONITOR HI/FAIL Alarm

JPM Number: JPM-S9.1 Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

  
Technical Reviewer

02/03/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date



Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-S9.1 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-S9.1 Rev. 0

Task Title: Response to VENT STACK RADMONITOR HI/FAIL Alarm

System: Radiation Monitoring

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 071 A4.25 K/A Rating 3.2/3.2

### Method of Testing:

Simulated Performance: \_\_\_\_\_ Actual Performance: X

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will determine that the Vent Stack Radiation Monitor, RM8268, has failed and will take the appropriate actions for the failed Radiation Monitor.*

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

ARP 2590E-061 " VENT STACK RADMONITOR HI/FAIL"

### General References:

ARP 2590E-061 " VENT STACK RADMONITOR HI/FAIL"

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

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Initiating Cues:

- The Unit Supervisor has directed you to carry out actions in response to "VENT STACK RADMONITOR HI/FAIL (C-06/07, A-12) alarm.

Initial Conditions:

- Unit-2 is in Mode 1 at 100% power
- You are the BOP operator.
- "VENT STACK RADMONITOR HI/FAIL" (C-06/07, A-12) alarm has come in a few moments ago while you were out of the Control Room.
- The RO has obtained ARP 2590E-061, and has turned over this alarm response to you.

SimulatorRequirements:

- I/O RIC-8168 "EQUIP FAIL" light on.
- "VENT STACK RADMONITOR HI/FAIL" (C-06/07, A-12) alarm window lit.

**\*\*\* NOTES TO 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 the 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: JPM-S9.1

Rev.. 0

Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	VENT STACK RADMONITOR HI/FAIL (C-06/07, A-12)	Examinee refers to ARP 2590E-061 for alarm (C-06/07, A-12)	N	
Cue:				
Comments:				
2.	AUTOMATIC FUNCTIONS A L A R A To prevent contaminating low range stack activity monitor during high radiation condition, purging is desirable.	Examinee reads and acknowledges ALARA note.	N	
Cue:				
Comments:				
3.	1. If red "HIGH" light is lit AND "STACK GAS EFFLUENT PURGE VALVE, RV-8132," is in "ENABLE," purging of Unit 2 stack gaseous monitor, RM-8132B, is initiated (C-101).	Examinee states that red "HIGH" light is not lit.	N	
Cue:				
Comments:				
4.	1. IF high radiation condition exists, PERFORM the following: 1.1 Refer To MP-26-EPI-FAP06, "Classification and PARs" and DETERMINE reportability. 1.2 MONITOR Unit 2 stack discharge activity (C-101, PPC).	Examinee states that a high radiation condition does not exist and that this step is not applicable.	N	
Cue:				
Comments:				



## PERFORMANCE INFORMATION

JPM Number: JPM-S9.1

Rev.. 0

Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5.	<p style="text-align: center;">NOTE</p> <p>Tech Spec 3.3.3.1, Radiation Monitoring Table 3.3-6 Instrument 2.C requires channel 1 or channel 2 Noble Gas to be OPERABLE.</p>	Examinee reads and acknowledges note about required operable channels.	N	
Cue:				
Comments:				
6.	<p>2. DETERMINE if equipment failure exists as follows:</p> <p>2.1 PERFORM the following to verify display indication (C-101):</p> <p>2.1.1 PRESS "TEST LT CK" pushbutton.</p> <p>2.1.2 VERIFY LED display indicates all 8's and all lamps are lit.</p> <p>2.1.3 IF any lamp is not lit, REPLACE lamp.</p>	<p>Examinee presses "TEST LT CK" pushbutton.</p> <p>Examinee verifies LED display indicates all 8's and all lamps are lit.</p> <p>Examinee states that this step is not applicable.</p>	<p>Y</p> <p>N</p> <p>N</p>	
Cue:				
Comments:				
7.	<p>ARP 2590E-061</p> <p style="text-align: center;">NOTE</p> <p>Failure codes are displayed in scientific E notation, e.g. 1.00E00=1, 4.00E00=4, 1.20E01=12, etc.</p>	Examinee reads and acknowledges note about failure code display notation.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-S9.1

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8 .	2.2 At RIC-8168, CHECK for the following failure conditions: 2.2.1 "EQUIP FAIL" lamp lit 2.2.2 CHECK for channel 1 failure codes as follows: a. PRESS "DSP" "1" "30" "ENT." b. OBTAIN CODE FAILURE value.	Examinee observes and states that the "EQUIP FAIL" lamp is lit.  Examinee presses "DSP" "1" "30" "ENT."  Examinee obtains CODE FAILURE value of "1.00E00" for Channel 1.	Y  Y  Y	
Cue:	Provide examinee cue card with reading of "1.00E00" for Channel 1 digital display			
Comments:				
9 .	2.2.3 CHECK for channel 2 failure codes as follows: a. PRESS "DSP" "2" "30" "ENT." b. OBTAIN CODE FAILURE value.	Examinee presses "DSP" "2" "30" "ENT."  Examinee obtains CODE FAILURE value of "0.00E00" for Channel 2.	Y  Y	
Cue:				
Comments:				
10 .	2.2.4 CHECK for channel 3 failure codes as follows: a. PRESS "DSP" "3" "30" "ENT." b. OBTAIN CODE FAILURE value.	Examinee presses "DSP" "3" "30" "ENT."  Examinee obtains CODE FAILURE value of "0.00E00" for Channel 2.	Y  Y	
Cue:				
Comments:				
11 .	2.2.5 CHECK for channel 4 failure codes as follows: a. PRESS "DSP" "4" "30" "ENT." b. OBTAIN CODE FAILURE value.	Examinee presses "DSP" "4" "30" "ENT."  Examinee obtains CODE FAILURE value of "0.00E00" for Channel 4.	Y  Y	
Cue:				
Comments:				

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	2.2.6 CHECK for channel 5 failure codes as follows: a. PRESS "DSP" "5" "30" "ENT." b. OBTAIN CODE FAILURE value.	Examinee presses "DSP" "5" "30" "ENT."	Y	
		Examinee obtains CODE FAILURE value of "0.00E00" for Channel 5.	Y	
Cue:				
Comments:				
13.	2.2.7 IF any CODE FAILURE Table display "numbers" are indicated, REFER to Table 1 to identify it.	Examinee refers to CODE FAILURE Table to identify failure.	Y	
Cue:				
Comments:				

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
14.	<p>Table 1, Channel Failure Codes:</p> <ul style="list-style-type: none"> <li>0 No Failure</li> <li>1 Detector Failure</li> <li>2 Detector Saturation</li> <li>3 Motor Failure</li> <li>4 High Voltage Failure</li> <li>5 Check Source Failure</li> <li>6 Low Flow</li> <li>7 Particulate Filter Failure</li> <li>8 End of Particulate Filter Roll</li> <li>9 High Pressure Trip Value Exceeded</li> <li>10 Low Pressure Trip Value Exceeded</li> <li>11 High Temperature Trip Value Exceeded</li> <li>12 Low Temperature Trip Value Exceeded</li> <li>13 High Delta Pressure (Moving Filter Channel Only) Trip Value Exceeded</li> <li>14 Low Delta Pressure (Moving Filter Channel Only) Trip Value Exceeded</li> <li>15 Reserved (High Flow on Some Monitors)</li> <li>16 Temporary Power Failure</li> </ul>	Examinee identifies "Detector Failure" for Channel 1.	Y	
Cue:				
Comments:				

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
<b>15.</b>	<p style="text-align: center;"><b>NOTE</b></p> <p>1. IF failure code "1" exists on "Channel 1" and channel is updating plant conditions, the monitor can be restored to service if failure codes are reset.</p> <p>2. Channels 1 and 2 are gaseous channels. Channels 3, 4, and 5 are particulate channels. Therefore the output readings for channels 1, 2 compared to channels 3, 4, 5 could be significantly different.</p>	Examinee reads and acknowledges note on resetting failure codes, and potential differences in output readings of channels.	<b>N</b>	
Cue:				
Comments:				
<b>16.</b>	2.3 CHECK if monitor detector "Channel 1" is updating plant conditions, i.e. dynamic indication update once per second.	Examinee states that monitor detector "Channel 1" is updating plant conditions, i.e. dynamic indication update once per second.	<b>Y</b>	
Cue:				
Comments:				
<b>17.</b>	2.4 PRESS "DSP" "3" "23" "ENT" to check if monitor detector "Channel 3" is indicating plant conditions, i.e. is a static indication and will not update once per second and should not read 0.	Examinee states that "DSP" "3" "23" "ENT" monitor detector "Channel 3" is indicating plant conditions, i.e. is a static indication and will not update once per second and does not read 0.	<b>Y</b>	
Cue:				
Comments:				

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	2.5 IDENTIFY any Main Board Rad Monitor alarms.	Examinee identifies that VENT STACK RADMONITOR HI/FAIL (C-06/07, A-12) alarm is lit.	N	
Cue:				
Comments:				
19.	3. IF both channels 1 and 2 of RM-8168 are inoperable, Refer To TSAS 3.3.3.1, action b.	Examinee states that both channels 1 and 2 of RM-8168 are not inoperable and that this step is not applicable.	N	
Cue:				
Comments:				
20.	5. IF any of the following exist: _ Failure codes exist other than No. 1, "Detector Failure" _ "Channel 1" is not updating plant conditions _ "Channel 3" is not indicating plant conditions PERFORM the following: _ CONSULT I&C or System Engineer for corrective action. _ Generate CR.	Examinee states that this step is not applicable due to only No. 1, "Detector Failure" indicated, and both "Channel 1" and "Channel 3" indicating plant conditions.	Y	
Cue:				
Comments:				

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
21.	5. OBTAIN key #82 and CLEAR failure codes at RIC-8168 as follows: 5.1 TURN key switch to "ENABLE." 5.2 PRESS "FTN" "1" "07" "ENT." 5.3 CHECK "EQUIP FAIL" lamp not lit. IF lamp is lit, Go To step 5.6. 5.4 PRESS "ACS" "1" "ENT" to activate Channel 1 check source and CHECK indication increases. 5.5 CHECK Main Board Rad Monitor alarms have cleared. 5.6 TURN key switch to "DISABLE."	Examinee obtains key #82  Examinee verifies key switch in "ENABLE" Examinee presses "FTN" "1" "07" "ENT."  Examinee states that "EQUIP FAIL" lamp is still lit and goes to step 5.6.  Examinee turns key switch to "DISABLE."	Y  Y Y  Y	
Cue:				
Comments:	Examinee will not perform steps 5.4			
22.	6. RETURN key #82 to storage locker.	Examinee returns key #82 to storage locker.	N	
Cue:				
Comments:				
23.	NOTE If RM-8168 fails, Unit 2 stack gaseous monitor, RM-8132B, is the alternate radiation monitor to be used (preplanned alternate method).	Examinee reads and acknowledges note about RM-8132B being that alternate radiation monitor.	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-S9.1

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Response to VENT STACK RADMONITOR HI/FAIL Alarm

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
24.	<p>7. IF equipment failure did not clear, PERFORM the following:</p> <p>7.1 To ensure Unit 2 stack gaseous monitor, RM-8132B is not being purged, PLACE "STACK GAS EFFLUENT PURGE VALVE, RV-8132," in "DISABLE" (C-101).</p>	Examinee places "STACK GAS EFFLUENT PURGE VALVE, RV-8132," in "DISABLE" (C-101).	Y	
Cue:				
Comments:				

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

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



**VERIFICATION OF JPM COMPLETION**Title: Response to VENT STACK RADMONITOR HI/FAIL Alarm

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No XValidated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions:

- The Unit Supervisor has directed you to carry out actions in response to "VENT STACK RADMONITOR HI/FAIL"( C-06/07, A-12) alarm.

Initiating Cues:

- Unit-2 is in Mode 1 at 100% power
- You are the BOP operator.
- "VENT STACK RADMONITOR HI/FAIL" ( C-06/07, A-12) alarm has come in a few moments ago while you were out of the Control Room.
- The RO has obtained ARP 2590E-061, and has turned over this alarm response to you.

# JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Starting and Paralleling Second CEDM MG Set

JPM Number: JPM-013 Revision: 6/1

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

2006. Reviewed:

  
Technical Reviewer

02/03/11  
Date

2006. Approved:

N/A

Cognizant Plant Supervisor (optional)

Date

  
Nuclear Training Supervisor

2/3/11  
Date

## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	6/0
11/19/2010	Minor admin changes to JPM to reflect minor procedure change (OP 2302A) and standards	6/1

JPM Number: JPM-013 Rev. 6/1

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-013 Rev. 6/1

Task Title: Starting and Paralleling Second CEDM MG Set

System: Control Element Drive System (CEDS)

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): NUTIMS #001-01-019

Applicable To: SRO X RO X PEO X

K/A No. 001-A.408 K/A Rating 3.7/3.4

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee has successfully started the "A" CEDM MG set and paralleled it with the "B" MG set.*

### Required Materials

(procedures, equipment, etc.):

OP-2302A, Section 4.7 (pen and ink changes required)

### General References:

OP 2302A, "Control Element Drive System"

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

- Initial Conditions:
- The plant is preparing for startup.
  - The "B" CEDM MG set has been placed in service with its load contactor closed.
  - All TCBs are open except TCB-9, which is closed.
  - Both voltage droop circuits are on.
  - In-plant loads are powered from the RSST.
  - No maintenance has been performed on "A" or "B" CEDM MG sets.

- Initiating Cues:
- The Unit Supervisor has directed you to startup the "A" CEDM MG set and parallel it with the "B" CEDM MG set.

- Simulator Requirements:
- N/A

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

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

# PERFORMANCE INFORMATION

JPM Number: JPM-013

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## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	<b>CAUTION</b> If bus 24C and 24D are not receiving power from the same source, (not at the same frequency), the CEDM MG set outputs cannot be paralleled due to the potential difference in motor speeds.	Examinee reads and acknowledges the Caution.	N	
Cue:				
Comments:				
2.	4.7.1 VERIFY bus 24C and 24D are receiving power from the same source (i.e. in synchronization).	Examinee states this is completed per the given Initial Conditions.	N	
Cue:				
Comments:				
3.	4.7.2 PERFORM applicable action: <ul style="list-style-type: none"> <li>IF starting "A" CEDM MG second, Go To step 4.7.3.</li> <li>IF starting "B" CEDM MG second, Go To step 4.7.4.</li> </ul>	Examinee progresses to step 4.7.3.	Y	
Cue:				
Comments:				
4.	<b>NOTE</b> Actions listed in step 4.7.3, unless otherwise stated, are performed at C-29.	Examinee reads and acknowledges the Note	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-013

Rev.. 6/1

## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5 .	4.7.3 IF starting "A" CEDM MG second, PERFORM the following:  a. PLACE "MG-A" to "START" (C-04).	Examinee states that they would place "MG-A" handswitch to "START" or request that it be done by someone in the Control Room.	Y	
Cue:	<b>If the examinee requested the Control Room close the breaker, inform the examinee that it has been closed. If the examinee closes the breaker, give the appropriate indication that would be seen based on the examinee's actions.</b>			
Comments:				
6 .	b. PLACE "A" CEDM MG "MOTOR INPUT" breaker to "ON" (top left of C-30).	Examinee states that they close MG motor supply breaker by taking handle on top left of C-30 to "ON".	Y	
Cue:	<b>Give the appropriate indication that would be seen based on the examinee's actions.</b>			
Comments:				
7 .	c. PLACE "A" CEDM MG "INCOMING GENERATOR" synchronizing selector switch to "LOCAL."	Examinee states that they place synchronizing selector switch on C-29 in "LOCAL".	Y	
Cue:	<b>Give the appropriate indication that would be seen based on the examinee's actions.</b>			
Comments:				
8 .	d. PRESS "LOCAL" "MOTOR ON" and HOLD for 4 to 5 seconds (starts "A" CEDM MG).	Examinee states that they press "MOTOR ON" pushbutton for 4-5 sec.	Y	
Cue:	<b>Time "4 to 5 seconds" is <u>not</u> the critical part of this step.</b>			
Comments:				
9 .	e. WHEN 4 to 5 seconds has elapsed, RELEASE "LOCAL" "MOTOR ON."	Examinee states that they have released the "MOTOR ON" pushbutton.	N	
Cue:				
Comments:				



# PERFORMANCE INFORMATION

JPM Number: JPM-013

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## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
10.	f. ALLOW MG set to come up to rated speed (red "LOCAL" "MOTOR ON" light, lit).	Examinee states that the "red" indicating light above the "Motor On" pushbutton should light when the MG set is at rated speed.	N	
Cue:	<b>If the task was performed successfully, inform the examinee that the red "MOTOR ON" light is lit.</b>			
Comments:				
11.	g. OBSERVE increase in "LOCAL" "GENERATOR VOLTAGE" indication..	Examinee points to the "A" MG Set voltage meter and requests the indication.	N	
Cue:	<b>Voltage rises to 240 volts</b>			
Comments:				
12.	h. WHEN 142 to 158 seconds have lapsed after starting MG set AND within 2 second of the red 'MOTOR ON' light lighting, LISTEN for audible clunk (indicates starting winding de-energized).	Examinee states that they are waiting and listening for 142 to 158 seconds after starting MG set AND within 2 seconds of the red 'MOTOR ON' light lighting, for audible clunk (indicates starting winding de-energized).	N	
Cue:	<b>Inform the examinee that 150 seconds has elapsed, and within 2 seconds of the red "MOTOR ON" light lighting, an audible clunk is heard.</b>  <b>If not, give the appropriate indication that would be seen based on the examinee's actions (i.e.; If the Remote MG set was started in error, inform the examinee that the Remote MG set is indicating as above with no additional noise coming from the local MG set).</b>			
Comments:				
13.	i. IF audible clunk is not heard 170 seconds following start, PERFORM the following:	Examinee states that this step is not applicable or does not perform this section of the procedure.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

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## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
14.	j. Using "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch, ADJUST "GENERATOR VOLTS" as close as possible to 240 volts.	Examinee states that voltage is already at 240 VAC and no adjustment is necessary.	N	
Cue:				
Comments:	The voltage indication was given in the previous step. However, If the examinee feels it must be adjusted, have them demonstrate how by pointing to the applicable volt meter and where the needle should be for proper indication.			
15.	NOTE Closing "GENERATOR OUTPUT" breaker does not energize the bus.	Examinee reads and acknowledges the Note.	N	
Cue:				
Comments:				
16.	k. PLACE "A" CEDM MG "GENERATOR OUTPUT" breaker to "ON."	Examinee states that they close MG Set Output breaker by taking handle on bottom right of C-29 to "ON".	Y	
Cue:	<b>Give the appropriate indication that would be seen based on the examinee's actions.</b>			
Comments:				

# PERFORMANCE INFORMATION

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## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
17.	<p>NOTE</p> <ol style="list-style-type: none"> <li>If other MG set is not loaded, the speed of each machine is very close to each other and the synchroscope may not be rotating.</li> <li>The object of the following steps is to have the synchroscope at or very near the 12 o'clock position and nearly stationary and the voltages of both machines set at or near 240 VAC.</li> </ol>	Examinee reads and acknowledges the Note.	N	
Cue:				
Comments:				
18.	<p>I. IF synchroscope is not at 12 o'clock and not rotating, PERFORM the following to get the synchroscope to move:</p> <ol style="list-style-type: none"> <li>Using "REMOTE" "GEN VOLTAGE ADJUSTMENT" switch, RAISE "REMOTE" ("B" CEDM MG) "GENERATOR VOLTS" to 250 VAC.</li> <li>Using "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch, LOWER "LOCAL" ("A" CEDM MG) "GENERATOR VOLTS" to 235 VAC.</li> </ol>	<ol style="list-style-type: none"> <li>Examinee states that they are turning the "REMOTE" "GEN VOLTAGE ADJUSTMENT" switch to raise the "REMOTE" ("B" CEDM MG) "GENERATOR VOLTS" to 250 VAC.</li> <li>Examinee states that they are turning the "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch to lower the "LOCAL" ("A" CEDM MG) "GENERATOR VOLTS" to 235 VAC.</li> </ol>	Y	
Cue:	<p><b>When questioned about the status of the synchroscope, inform the examinee the needle is at the 3 o'clock position and not moving. When the examinee attempts to raise the "B" MG set generator voltage (remote), inform the examinee voltage is now 250 VAC. When the examinee attempts to lower the "A" MG set voltage (local), inform the examinee voltage is now 235 VAC and the synchroscope is slowly rotating in the slow direction.</b></p>			
Comments:				

# PERFORMANCE INFORMATION

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## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
19.	m. WHEN synchroscope is at the 12 o'clock position, ADJUST both MG set output voltages to 240 VAC. (The synchroscope should be nearly stationary.)	1) Examinee states that they are turning the "REMOTE" "GEN VOLTAGE ADJUSTMENT" switch to lower the "REMOTE" ("B" CEDM MG) "GENERATOR VOLTS" to 240 VAC. 2) Examinee states that they are turning the "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch to raise the "LOCAL" ("A" CEDM MG) "GENERATOR VOLTS" to 240 VAC.	Y	
Cue:	If the task is performed successfully, inform the examinee the synchroscope is stable at 12 o'clock and both MG set generator voltages are reading 240 VAC.			
Comments:				
20.	n. PRESS and HOLD "LOCAL" "LOAD ON".	Examinee states that they press the "A" CEDM MG set "LOAD ON" button until the "LOAD ON" light is lit.	Y	
Cue:	If the task was performed successfully, inform the examinee the yellow/amber "LOAD ON" light is lit. If not, give the appropriate indication that would be seen based on the examinee's actions (i.e.; the Remote MG set yellow/amber "LOAD ON" light is lit).			
Comments:				
21.	o. WHEN "LOCAL" "LOAD ON" light is lit, RELEASE "LOCAL" "LOAD ON."	Examinee states that they released the "A" CEDM MG set "LOAD ON" button.	N	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

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## Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
22.	p. PLACE "A" CEDM MG "INCOMING GENERATOR" synchronizing selector switch to "OFF."	Examinee states that they turn the synchronizing selector switch to "OFF."	N	
Cue:				
Comments:	<b>If performing this JPM with <u>either</u> MG set operating, TERMINATE the JPM after the completion of this step. If performing this JPM with both MG sets secured <u>and</u> permission has been granted to open the cabinet, continue the JPM to normal completion.</b>			
23.	q. PRESS and RELEASE "RESET," (back of C-29).	Examinee opens the back door of C-29 and states that they would press the reset button.	N	
Cue:				
Comments:				
24.	r. CHECK all 5 relay lights, "4TD," "LO AMP," "HI AMP," "OVR," and "SK" lights, not lit (above reset button, back of C-29).	Relay lights are verified out.	N	
Cue:	<b>If the RESET button and relay lights are correctly located, then inform the examinee that all lights are out.</b>			
Comments:	<b>After this step is completed, the JPM is considered complete.</b>			

TERMINATION CUE: The evaluation for this JPM is concluded.

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

**VERIFICATION OF JPM COMPLETION**Title: **Starting and Paralleling Second CEDM MG Set**

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

Student: \_\_\_\_\_

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

For the examinee 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.

Time Critical Task? Yes \_\_\_\_\_ No **X**

Validated Time (minutes): \_\_\_\_\_ 20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

### **Initial Conditions:**

- The plant is preparing for startup.
- The "B" CEDM MG set has been placed in service with its load contactor closed.
- All TCBs are open except TCB-9, which is closed.
- Both voltage droop circuits are on.
- In-plant loads are powered from the RSST.
- No maintenance has been performed on "A" or "B" CEDM MG sets.

### **Initiating Cues:**

- The Unit Supervisor has directed you to startup the "A" CEDM MG set and parallel it with the "B" CEDM MG set.

# JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Manual operation of 2-SW-3.2A

JPM Number: JPM-124 Revision: 4/0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

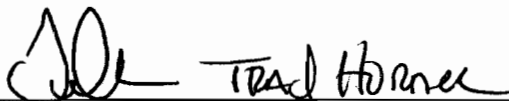
  
Technical Reviewer

02/03/11  
Date

IV. Approved:

\_\_\_\_\_  
Cognizant Plant Supervisor (optional)

\_\_\_\_\_  
Date

  
Nuclear Training Supervisor

2/3/11  
Date



## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-124 Rev. 4/0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-124 Rev. 4/0

Task Title: Manual operation of 2-SW-3.2A

System: Service Water

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 15

Task No.(s): \_\_\_\_\_

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

K/A No. 076 A4.02 K/A Rating 2.6/2.6

### Method of Testing:

Simulated Performance: X Actual Performance: \_\_\_\_\_

### Location:

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

### Task Standards:

*At the completion of this JPM, the examinee will have placed 2-SW-3.2A in manual operation and closed the valve.*

### Required Materials

(procedures, equipment, etc.):

OP 2326A Attachment 3 " Manual Operation of 2-SW-3.2A and 2-SW-3.2B"

### General References:

OP 2326A Service Water

### **\*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**Initiating Cues:

- You have been directed to take manual control and close 2-SW-3.2A per OP 2326A, Attachment 3
- The examiner will act as the US as needed.

Initial Conditions:

- The plant has tripped due to a LOCA.
- A SIAS was automatically actuated.
- "B" Service Water Supply to TBCCW Heat Exchangers, 2-SW-3.2A, failed to close on the SIAS signal, and will *NOT* close from the Control Room.

Simulator

- N/A

Requirements:**\*\*\* NOTES TO 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 the 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: JPM-124

Rev.. 4/0

Manual operation of 2-SW-3.2A

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
START TIME: _____				
1.	OP 2326A Attachment 3 1. To place valve in manual, PERFORM the following: 1.1 DOCUMENT valve number and function on top of this Attachment	Examinee identifies 2-SW-3.2A and documents valve number and function on top of Attachment 3 (OP 2326A).	N	
Cue:				
Comments:				
2.	1.2 CLOSE instrument air isolation to valve.	Examinee closes instrument air isolation to 2-SW-3.2A by taking the valve in the clockwise direction to a hard stop.	Y	
Cue:				
Comments:				
3.	1.3 OPEN operating cylinder equalizing valve.	Examinee opens operating cylinder equalizing valve for 2-SW-3.2A by taking the valve to the counter-clockwise direction.	Y	
Cue:				
Comments:				
4.	1.4 To align slot in shaft with T-handle mechanism, OPERATE manual handwheel.	Examinee aligns slot in shaft with T-handle mechanism with the use of the manual handwheel.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-124

Rev.. 4/0

Manual operation of 2-SW-3.2A

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5.	1.5 ENGAGE T-handle mechanism in valve shaft.	Examinee ENGAGE's T-handle mechanism in valve shaft for 2-SW-3.2A.	Y	
Cue:				
Comments:				
6.	<p>NOTE</p> <p>The following are reverse acting valves:            _ 2-SW-3.2B, 'A' SERVICE WATER HEADER TO TBCCW HEAT EXCHANGERS"            _ 2-SW-3.2A, 'B' SERVICE WATER HEADER TO TBCCW HEAT EXCHANGERS"</p>	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				
7.	<p>1.6 POSITION valve as directed by SM or US:</p> <p>_ To close valve, OPERATE handwheel in counterclockwise direction.            _ To open valve, OPERATE handwheel in clockwise direction.</p>	Examinee closes 2-SW-3.2A by operating handwheel in <i>counterclockwise</i> direction to its limit of travel.	Y	
Cue:	At limit of travel in the counterclockwise direction, 2-SW-3.2A indicates closed.			

TERMINATION CUE: The evaluation for this JPM is concluded.

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

**VERIFICATION OF JPM COMPLETION**Title: Manual operation of 2-SW-3.2A

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No XValidated Time (minutes): 15

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

**Initial Conditions:**

- You have been directed to take manual control and close 2-SW-3.2A per OP 2326A, Attachment 3
- The examiner will act as the US as needed.

**Initiating Cues:**

- The plant has tripped due to a LOCA.
- A SIAS was automatically actuated.
- "B" Service Water Supply to TBCCW Heat Exchangers, 2-SW-3.2A, failed to close on the SIAS signal, and will *NOT* close from the Control Room.

## JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Aligning Backup Air (Alternate Path)

JPM Number: JPM-P2.2

Revision: 0

II. Initiated:



Marc R. Pucel  
Developer

02/01/11  
Date

III. Reviewed:

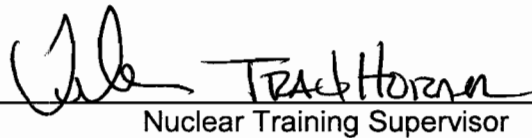
  
Technical Reviewer

02/03/11  
Date

IV. Approved:

Cognizant Plant Supervisor (optional)

Date

  
Nuclear Training Supervisor

2/3/11  
Date



## JOB PERFORMANCE MEASURE

### **SUMMARY OF CHANGES:**

<b>A/I &amp; DATE</b>	<b>DESCRIPTION</b>	<b>REV/CHANGE</b>
2006-317	Update JPM to include HUP evaluations and new format	

JPM Number: JPM-P2.2 Rev. 0

## JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: \_\_\_\_\_

JPM Number: JPM-P2.2 Rev. 0

Task Title: Aligning Backup Air

System: Instrument Air

Time Critical Task: Yes \_\_\_\_\_ No X

Validated Time (minutes): 20

Task No.(s): \_\_\_\_\_

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

K/A No. 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:

*At the completion of this JPM, the examinee will have aligned a backup air supply to 2-CH-517, 2-CH-518, and 2-CH-519 per EOP 2541 Appendix 40.*

### Required Materials

(procedures, equipment, etc.):

EOP 2541 Appendix 40, "Aligning Backup Instrument Air"

### General References:

EOP 2541 "Standard Appendixes"

### \*\*\*\* 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 job performance measure will be satisfied. You may use any approved reference materials normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.*

**JOB PERFORMANCE MEASURE WORKSHEET (continued)**

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Initiating Cues:

- You have been directed to align Backup Instrument Air to 2-CH-517, 2-CH-518, and 2-CH-519 per EOP 2541 Appendix 40

Initial Conditions:

- Unit-2 was manually tripped due to low Instrument Air header pressure

Simulator  
Requirements:

- N/A

**\*\*\* NOTES TO 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 the 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: JPM-P2.2  
Aligning Backup Air

Rev.. 0

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
<b>START TIME:</b> _____				
<b>1 .</b>	EOP 2541 Attachment 40-A "Aligning Backup Instrument Air"	Examinee refers to EOP 2541 Attachment 40-A to place backup air supply in service.	<b>N</b>	
Cue: _____				
Comments: _____				
<b>2 .</b>	<p style="text-align: center;"><b>NOTE</b></p> <p>The next step places Backup Air Supply System in service for the following: (-5' Aux Bldg near letdown HX room)</p> <ul style="list-style-type: none"> <li>_ CH-517, Auxiliary spray valve</li> <li>_ CH-518, Charging header to loop 2A</li> <li>_ CH-519, Charging header to loop 1A</li> <li>_ EB-88, RM-8123 inboard supply</li> <li>_ EB-89, RM-8262 inboard supply</li> </ul>	Examinee reads and acknowledges note	<b>N</b>	
Cue: _____				
Comments: _____				
<b>3 .</b>	<p>5. IF placing backup air in service for Charging and Sampling System isolation valves, PERFORM the following: (-5' Aux Bldg near letdown HX room)</p> <p>a. ADJUST IA-591, backup air PCV to minimum. (full counterclockwise)</p>	Examinee adjusts IA-591 backup air PCV to minimum by turning the valve full counterclockwise.	<b>Y</b>	
Cue: _____				
Comments: _____				

## PERFORMANCE INFORMATION

JPM Number:

JPM-P2.2

Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	b. Slowly OPEN IA-603, "MASTER STOP".	Examinee slowly opens IA-603, "MASTER STOP" by taking the valve handle in the counterclockwise direction to a hard stop.	Y	
Cue:	<b>When 2-IA-603 is opened, indicate regulator high side pressure of 1000 psi</b>			
Comments:				
5.	c. OPEN IA-590, master stop.	Examinee opens IA-590, master stop by taking the valve handle in the counterclockwise direction to a hard stop.	Y	
Cue:				
Comments:				
6.	d. ADJUST IA-591, backup air PCV clockwise and ESTABLISH 100 psig outlet pressure.	Examinee adjusts IA-591, backup air PCV clockwise to establish 100 psig outlet pressure as read on the downstream regulator gauge.	Y	
Cue:	<b>When examinee shows ¼ turn clockwise movement of the regulator handle, indicate 100 psi on downstream gauge.</b>			
Comments:				
7.	e. UNLOCK and OPEN IA-566, master stop.	Examinee unlocks and opens IA-566, master stop by taking the valve handle in the counterclockwise direction to a hard stop.	Y	
Cue:				
Comments:				
8.	f. IF at any time during this evolution, Containment isolation is required, CLOSE IA-566, master stop.	Examinee reads and acknowledges this step and states that this step will be left open and used if required.	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-P2.2

Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9 .	g. Slowly OPEN IA-595, master stop.	Examinee slowly opens IA-595, master stop by taking the valve handle in the counterclockwise direction to a hard stop.	Y	
Cue:				
Comments:				
10 .	h. MONITOR backup air bottle pressure every 4 hours.	Examinee states that backup air bottle pressure will be monitored every 4 hours and is presently ~ 990 psi	N	
Cue:	<b>Indicate regulator high side pressure of ~ 990 psi</b>			
Comments:				
11 .	<p style="text-align: center;"><b>NOTE</b></p> <p>Approximately 50 psi of air is required to cycle a valve. If the supply of air bottles is limited, the Shift Manager or TSC may elect to change air bottles at a lower pressure.</p>	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				

## PERFORMANCE INFORMATION

JPM Number: JPM-P2.2

Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	<p>i. WHEN pressure lowers to less than 1000 psig OR is expected to fall below 1000 psig before the next pressure check, PERFORM ONE of the following:</p> <p>_ IF swing backup air supply is available AND not supplying AC-15, 20, 12, 47, Refer To step 6, and ALIGN swing backup air supply to Charging and Sampling System valves inside Containment.</p> <p>_ REPLACE QA air bottle</p>	<p>Examinee determines that swing backup air supply is available and is not supplying AC-15, 20, 12, and 47.</p> <p>Examinee refers to step 6 for aligning swing backup air supply to Charging and Sampling System valves inside Containment.</p>	<p>N</p> <p>N</p>	
Cue:	<ul style="list-style-type: none"> <li>• If examinee requests SM guidance, state that as the SM, you want the swing bottle placed in service (as it is not being used to supply AC-15, 20, 12, and 47).</li> <li>• Additionally, no replacement air bottles are available in the short term.</li> </ul>			
Comments:	Examinee may question as to the status of backup air to AC-15, 20, 12, and 47. Use cue above.			

# PERFORMANCE INFORMATION

JPM Number:

JPM-P2.2

Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	<p><b>NOTE</b></p> <p>The next step places swing backup air supply in service for the following sets of valves:</p> <ul style="list-style-type: none"> <li>_ Charging and Sampling System Valves Inside Containment:</li> <li>_ CH-517, Auxiliary spray valve</li> <li>_ CH-518, Charging header to loop 2A</li> <li>_ CH-519, Charging header to loop 1A,</li> <li>_ EB-88, RM-8123 inboard supply,</li> <li>_ EB-89, RM-8262 inboard supply</li> </ul>	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				
14.	<p>6. IF placing swing backup air station in service for Charging and Sampling System, PERFORM the following:</p> <p>a. ADJUST IA-886, "B/U AIR PCV" to minimum. (full counterclockwise) (14'6" Aux Bldg near MCC B61)</p>	Examinee adjusts IA-886, "B/U AIR PCV" to minimum by taking regulator handle full counterclockwise.	Y	
Cue:				
Comments:				
15.	<p>b. Slowly OPEN IA-885, air bottle "MASTER STOP". (14'6" Aux Bldg near MCC B61)</p>	Examinee slowly opens IA-885, air bottle "MASTER STOP" by taking the valve handle counterclockwise to a hard stop.	Y	
Cue:	Indicate regulator high side pressure of ~ 2500 psi.			
Comments:				



## PERFORMANCE INFORMATION

JPM Number: JPM-P2.2

Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
16.	c. OPEN IA-887, "REGULATOR ISOL FOR B/U IA". (14'6" Aux Bldg near MCC B61)	Examinee opens IA-887, "REGULATOR ISOL FOR B/U IA" by taking the valve handle counterclockwise to a hard stop.	Y	
Cue:				
Comments:				
17.	d. ADJUST IA-886, "B/U AIR PCV" clockwise and ESTABLISH 100 psig outlet pressure. (14'6" Aux Bldg near MCC B61)	Examinee adjusts IA-886, "B/U AIR PCV" clockwise and establishes 100 psig outlet Pressure as indicated on the downstream gauge.	Y	
Cue:	<b>When examinee shows clockwise movement of the regulator handle, indicate 100 psi on downstream gauge.</b>			
Comments:				
18.	e. Slowly OPEN IA-889, "MANIFOLD ISOLATION FOR B/U AIR CYLINDER C-3C". (14'6" Aux Bldg near MCC B61)	Examinee slowly opens IA-889, "MANIFOLD ISOLATION FOR B/U AIR CYLINDER C-3C" by taking the valve handle counterclockwise to a hard stop.	Y	
Cue:				
Comments:				
19.	f. Slowly OPEN IA-910, "B/U AIR SWING BOTTLE MANIFOLD STOP VALVE". (14'6" Aux Bldg near MCC B61)	Examinee slowly opens IA-910, "B/U AIR SWING BOTTLE MANIFOLD STOP VALVE" by taking the valve handle counterclockwise to a hard stop.	Y	
Cue:				
Comments:				
20.	g. CLOSE IA-595, master stop. (-5' Aux Bldg near letdown HX room)	Examinee closes IA-595, master stop by taking the valve handle clockwise to a hard stop.	Y	
Cue:				
Comments:				

# PERFORMANCE INFORMATION

JPM Number: JPM-P2.2

Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
21.	h. CLOSE IA-603, "MASTER STOP". (-5' Aux Bldg near letdown HX room)	Examinee closes IA-603, "MASTER STOP" by taking the valve handle clockwise to a hard stop.	Y	
Cue:				
Comments:				
22.	i. IF at any time during this evolution, Containment isolation is required, CLOSE IA-566, master stop.	Examinee reads and acknowledges this step and states that this step will be left open and used if required.	N	
Cue:				
Comments:				
23.	j. MONITOR backup air bottle pressure every 4 hours.	Examinee states that backup air bottle pressure will be monitored every 4 hours.	N	
Cue:				
Comments:				

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

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

**VERIFICATION OF JPM COMPLETION**Title: Aligning Backup Air

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

Student: \_\_\_\_\_

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

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.

Time Critical Task? Yes \_\_\_\_\_ No XValidated Time (minutes): 20

Actual Time to Complete (minutes): \_\_\_\_\_

JPM Work Practice Evaluation: SAT UNSAT NA (circle one)

Overall Result of JPM: SAT UNSAT (circle one)

During the TPE, the trainee	Evaluation
performed the task correctly and in accordance with procedure usage and adherence requirements.	Pass / Fail
never put anyone's safety at risk.	Pass / Fail
never put equipment reliability at risk.	Pass / Fail
never violated radiological work practices.	Pass / Fail
demonstrated effective use of event-free human performance tools.	Pass / Fail

Areas for Improvement/Comments:

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## **STUDENT HANDOUT**

Initial Conditions:

- You have been directed to align Backup Instrument Air to 2-CH-517, 2-CH-518, and 2-CH-519 per EOP 2541 Appendix 40.

Initiating Cues:

- Unit-2 was manually tripped due to low Instrument Air header pressure.

Facility: <u>MP2</u>	Scenario No.: <u>ES11LI1</u>	Op-Test No.: <u>1</u>
Examiners: _____ Operators: _____ _____ _____		
Initial Conditions: <u>100% power, MOL, Eq. Xe., 9.2 ppm Boron SGBD @ 40 gpm per SG, 24E aligned to 24C, "B" TBCCW Pimp is OOS for motor repairs.</u>		
Turnover: <u>100% power, MOL, Eq. Xe., 9.2 ppm Boron, blend ratio: 70:1, SGBD @ 25 gpm per SG, 24E aligned to 24C, "B" RBCCW Pump OOS for motor repairs, no other equipment OOS and no surveillance in progress or due.</u>		

Event No.	Malfunction No.	Event Type*	Event Description
1	N/A	N (BOP/S)	Swap from "A" to "B" RBCCW Pump (TS)
2	RX11D	I (BOP/S)	#2 SG Alternate steam flow transmitter failure
3	RD0368	C (RO/S)	CEA #28 to slip 35 steps into the core. (TS)
4	N/A	R (All)	Downpower to < 70% power for CEA recovery (Reactivity)
5	RP24D	I (RO/S)	"D" CTMT pressure transmitter failure (TS)
6	FW33 TC10A	M (All)	Loss of vacuum with failure of Turbine Low Vacuum Trip - Manual reactor trip with loss of both Main Feed Pumps
7	FW30A FW20A FW20C	C (BOP/S)	Degradation/loss of the "A" AFW Pump Overspeed trip of the Turbine Driven Aux Feed Pump
8	ED05D	M (All)	Bus 24D Fault
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			



SEG# ES11LI1 Rev ; 0

## REQUIREMENTS

### Goal of Training:

- a) Evaluate the licensees' ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations, abnormal operating conditions and emergency operating conditions.
- b) Evaluate the crew's ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations and abnormal operating conditions. To include:
  - 1) Ability of the crew to perform crew-dependent (and time-critical) tasks.
  - 2) Ability of the crew to:
    - Understand/interpret annunciators/alarms, plant/systems response
    - Diagnose events/conditions based on signals/readings
    - Comply with/use procedures, Technical Specifications, and TRM
    - Perform control board operations
    - Properly communicate information/proper crew interactions
    - Practice Reactivity Management
    - Make conservative decisions.
  - 3) Ability of each individual to:
    - Respond and correctly interpret annunciators
    - Correctly diagnose events
    - Properly interpret integrated system response
    - Comply with and use Technical Specifications/TRM
    - Comply with and use procedures
    - Properly perform control board operations
    - Demonstrate responsible attitude
    - Properly communicate information and interact with rest of crew
    - Leadership skills required to effectively manage the evolutions
    - Provide adequate overview where required

### Learning Objectives:

NA

### Tasks:

NA

### Prerequisites:

N/A

### Training Resources:

2 booth instructors, 3 NRC Examiners

SEG# ES11LI1 Rev : 0

**References:**

OP 2330A, RBCCW System  
 ARP 2590D-064, SG Level Setpoint Deviation Hi/Lo  
 ARP 2590A-084, CTMT Pres Hi D  
 RE Curve and Data Book  
 AOP 2556, CEA Malfunctions  
 AOP 2575, Rapid Downpower  
 EOP 2525, Standard Post Trip Actions  
 EOP 2537, Loss of All Feedwater

**Commitments:**

N/A

**Evaluation Method:**

**Operating Experience:**

**Plant/Simulator  
differences that may  
affect the scenario:**

None

**Related PRA  
Information:**

Core Damage Frequency: 0.98  
LERF: 1.00  
Important Components: 24E aligned to 24C  
 TDAFP out for bearing replacement  
 "A" and "B" RBCCW Pumps must be swapped for maintenance.



SEG# ES11LI1 Rev ; 0

## OVERVIEW

### **INITIAL CONDITIONS:**

- 100% power EOL. (IC-171)
- 24E aligned to 24C
- The "B" RBCCW Pump has just been restored from coupling alignment.
- "A" and "B" RBCCW Pumps must be swapped to allow maintenance to complete vibration testing.

The simulator will be prepared for the evaluation and the licensees will be briefed on the conduct of the evaluation and the areas in which they will be evaluated.

### **Scenario Summary:**

The crew will take the shift with the unit at 100% power, 24E aligned to 24C.

The Crew will initially be directed to swap from "A" RBCCW Pump to "B" RBCCW Pump supplying Facility 1 for preventative maintenance on the "A" RBCCW Pump. The US will brief the crew and the BOP will perform the evolution. The US will log into TSAS 3.7.4.1 during the pump swap.

After the "B" RBCCW Pump is started and the US logs out of TSAS 3.7.4.1, the alternate steam flow transmitter for #2 SG will start to fail low. Feed flow to #2 SG will trend down. The SPO must diagnose the problem and deselect the failed transmitter. (Prior to deselecting the failed transmitter, the examinee may place the #2 FRV and both main feed pump speed controllers in 'manual' to control S/G level.)

Shortly after restoring #2 S/G level control to automatic, a CEA will slip to ~145 steps. The BOP should lower Turbine load to match Reactor power. The crew will enter AOP 2556, CEA Malfunctions.

As a result of the slipped CEA, the crew will enter AOP 2575, Rapid Downpower, and reduce power to ≤70%.

During the downpower, the "D" Containment pressure transmitter will gradually fail high. The US will enter TSAS 3.3.1.1, Table 3.3-1, Action 2, and TSAS 3.3.2.1, Table 3.3-3, Action 2, and direct the RO to bypass the appropriate channels of RPS (CTMT High Pressure) and ESAS (CTMT High Pressure and High/High Pressure).

After the crew has taken the appropriate actions for the failed Containment pressure transmitter, Condenser Vacuum will rapidly degrade. Because the low vacuum Turbine trip will NOT actuate, the crew should immediately trip the Reactor prior to reaching 7.5" HG Backpressure and perform EOP 2525.

Shortly after the trip, "A" Aux Feed Pump will degrade. The pump will trip within a few minutes (if not manually secured) requiring the BOP to start the Turbine Driven Aux Feed Pump. Shortly after the TDAFP is started, it will trip on overspeed and cannot be restored.

After EOP 2525 is complete, Bus 24D will fault resulting in a loss of the only remaining Aux Feed Pump. The crew will rediagnose and enter EOP 2537, Loss of All Feedwater. This will require lowering S/G pressure enough to initiate Condensate flow for heat removal.

The scenario will end when adequate Condensate flow is established to both S/Gs.

#### **CT-1 (SPTA-5): Manually shut down the Reactor.**

**When Condenser Vacuum exceeds 7.5" Hg backpressure, the Turbine will fail to automatically trip. The Plant must be manually tripped to prevent an automatic trip on low Steam Generator Level.**

#### **CT-2 (LOAF-4): Establish a Primary to Secondary Heat Sink.**

**Main Feed flow (from Condensate) is restored prior to reaching 70 inches wide range level in either S/G OR Once-Thru-Cooling initiated with less than or equal to 70 inches in either S/G and level NOT being restored.**

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### SIMULATOR SETUP CHECKLIST

- ☐ ENSURE TRex Workstation is operating.
- ☐ VERIFY the most current approved training load is loaded.
- ☐ RESET to **IC-30**
- ☐ If necessary, ADJUST the various potentiometer settings to the values specified by the chart in the simulator Notebook for the selected IC.
- ☐ As needed, RESET Computer Terminals (At Power displays if 100% power IC).
- ☐ ENSURE SG blowdown values in PPC Plant Calorimetric are reset.
- ☐ ENSURE RCS Leak Rate is reset in PPC.
- ☐ ENSURE keys on Control Panels are only those required for the session (including RPS, ESAS, and RC-14).
- ☐ If necessary (i.e., exams), ADVANCE chart recorders
- ☐ ENSURE the appropriate Protected Train placard is hung ("**B**" **TRAIN PROTECTED**).
- ☐ ENSURE appropriate signs are in place on simulator doors.
- ☐ ENSURE procedures designated for use during the scenario are clear of previous place keeping marks.
- ☐ If necessary, ENSURE Simulator fidelity items cleared.
- ☐ ENSURE each desk has adequate supplies (e.g., pencils, grease pencils, markers, paper).
- ☐ If required, OVERRIDE annunciators that will be lit long-term in the Control Room.
- ☐ ENTER Initial Malfunctions / I/Os / Remote Functions.
- ☐ PLACE Simulator to RUN.
- ☐ If placing Equipment OOS, then PERFORM necessary switch manipulations and HANG appropriate tags, as required for the following:
- ☐ PERFORM final walk down of Control Panels to verify proper indications (e.g., lights, switches, magnetic labels).

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>1. INITIAL CONDITIONS:</b> <ul style="list-style-type: none"> <li>• IC-171</li> <li>• Mode: 1</li> <li>• Burnup:EOL</li> <li>• Power: 99.8%</li> <li>• Boron: (CB): 9.2 ppm</li> <li>• Temperature: Tave 569°F</li> <li>• Pressure: 2250 psia</li> <li>• Xenon: Stable, at equilibrium</li> <li>• Rods: ARO</li> <li>• Generator: 888 Mwe</li> </ul>	ENTER or VERIFY the Initial Malfunctions / I/Os / Remote Functions are loaded on the appropriate Schedule.	N/A
<b>2. SIMULATOR SETUP:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.</li> </ul>	COMPLETE Simulator Setup Checklist	N/A
<b>3. TURNOVER:</b> PERFORM the crew turnover (Turnover Sheet) with the SM. <ul style="list-style-type: none"> <li>• Crew must swap "A" and "B" RBCCW Pumps for maintenance.</li> </ul>		SM brief crew on plant conditions and any major equipment OOS. (All) Walk down control boards and let US know when they are ready.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>1. Swap From "A" to "B" RBCCW Pump</b>		<b>Normal Evolution/Tech Spec</b>
		US Directs/BOP Performs: Swap "A" and "B" RBCCW Pumps per OP 2330A, RBCCW System, Section 4.2.
	<p>Perform actions as directed.</p> <p>If dispatched, report that SIAS/LNP ACTUATION SIGNAL HS 9119D is in BLOCK.</p> <p><b>Event 7: CCR06 – 0</b>, Close 2-RB-3A</p> <p><b>Event 8: CCR40 – NORM</b>, Place "B" RBCCW Pump SIAS/LNP Actuation Hand Switch in 'Normal'.</p> <p><b>Event 9: CCR06 – 100</b>, Open 2-RB-3A</p> <p>Acknowledge the direction and report that RBCCW Rad Monitors flows are normal.</p>	<p><b>BOP:</b></p> <ul style="list-style-type: none"> <li>• Verify "B" RBCCW Pump is properly aligned with the SIAS/LNP ACTUATION SIGNAL HS 9119D in BLOCK.</li> <li>• Verify RB-251A, A/B RBCCW Pump X-Tie Valve, is open on C-06.</li> <li>• Ensure US logs into TSAS 3.7.3.1.</li> <li>• Start "B" RBCCW Pump. <ul style="list-style-type: none"> <li>◦ Check "B" RBCCW Pump SIAS/LNP Start Manually Blocked annunciator is lit on C-06/7.</li> <li>◦ Check "B" RBCCW Pump for normal running amps and discharge pressure.</li> </ul> </li> <li>• Direct a PEO to close 2-RB-3A, "A" RBCCW Pump Discharge Stop. <ul style="list-style-type: none"> <li>◦ Stop "A" RBCCW Pump.</li> <li>◦ Verify "A" RBCCW Header High Flow annunciator is clear.</li> </ul> </li> <li>• Direct a PEO to place "B" RBCCW Pump SIAS/LNP Actuation Hand Switch in 'Normal'. <ul style="list-style-type: none"> <li>◦ Verify "B" RBCCW Pump SIAS/LNP Start Manually Blocked annunciator clears.</li> </ul> </li> <li>• Verify US exits TSAS 3.7.3.1.</li> <li>• Direct a PEO to open 2-RB-3A, "A" RBCCW Pump Discharge Stop.</li> <li>• Verify "A" RBCCW Header flow is between 6,000 and 7,300 gpm on C-05.</li> <li>• Direct a PEO to verify the appropriate Rad Monitor flow locally.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>2. Failure of #2 S/G Alternate Steam flow Transmitter</b>		
	<p><b>Event 1: RX11D – 100% with a Ramp Time of 300 seconds, #2 Steam Generator Alternate Steam Flow Transmitter Failure.</b></p> <p><b>TM1, AE1</b></p>	<p><u>BOP:</u></p> <ul style="list-style-type: none"> <li>Recognizes a difference the #2 Main and Alternate Steam Flow Transmitters</li> <li>Observe #2 S/G level rising.</li> <li><i>May observe S/G Level Deviation Hi/Lo annunciator on C-05.</i></li> <li>Reports to the US that the #2 Alternate Steam flow Transmitter appears to be failing high.</li> </ul>
		<p><u>US:</u></p> <ul style="list-style-type: none"> <li>Directs BOP to deselect the #2 Alternate Steam Flow Transmitter (Select Main Steam Flow Transmitter) or,                             <ul style="list-style-type: none"> <li><i>If necessary, directs the BOP to place #2 Main Feed Reg valve in Manual and both Main Feed Pump speeds in manual to restore and maintain #2 S/G level to the normal band.</i></li> </ul> </li> <li>References ARP 2690D-064, SG Level Setpoint Deviation Hi/Lo.</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>BOP:</u></p> <ul style="list-style-type: none"><li>• Deselects the #2 S/G Alternate Steam Flow Transmitter on C-05.</li><li>• <i>If necessary, takes manual control of #2 Main Feed Reg Valve and place both Main Feed Pump Speed Controls in manual.</i><ul style="list-style-type: none"><li>○ Restores and maintains #2 S/G level in normal band.</li><li>○ When normal level has been restored, returns #2 Main Feed Reg valve and Main Feed pump Speed control to automatic.</li></ul></li></ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>3. CEA #68 slips 35 Steps</b>		<b>Tech Spec</b>
	<b>Event 2: RD0368 – 35 Steps, CEA #68 (Group 7) slips to 145 steps</b> <b>TM2, AE2</b>	<u>RO:</u> <ul style="list-style-type: none"> <li>Observes the following on C-04: <ul style="list-style-type: none"> <li>CEA DROPPED NIS Annunciator</li> <li>White light for CEA #68 is lit (red light out)</li> <li>CEAPDS Monitor indicates that CEA #68 is misaligned.</li> <li>CEA GR DEV BK/UP annunciator.</li> </ul> </li> <li>Reports that CEA #68 has slipped to 145 steps.</li> </ul>
		<u>BOP:</u> Lowers Turbine load to match Reactor power and stabilize RCS temperature.
		<u>RO:</u> Monitors RCS temperature, Pressurizer pressure, and Pressurizer level.
	When I&C assistance is requested, state that you will begin troubleshooting immediately.	<u>US:</u> <ul style="list-style-type: none"> <li>Enters TSAS 3.1.3.1, action a.1.</li> <li>Requests I&amp;C assistance.</li> <li>Enters AOP 2556, CEA Malfunctions and directs required actions.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>BOP:</u></p> <ul style="list-style-type: none"> <li>• Prints NSSS Data Sheet and Incore Operability Report form PPC.</li> <li>• Notifies Reactor Engineering.</li> <li>• Monitors <math>\Delta T</math> Power on RPS.</li> <li>• As required, toggles Dropped Rod Reset switches on RPS to clear Dropped Rod LEDs.</li> </ul>



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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>4. Downpower to 70%.</b>		<b>Reactivity Manipulation</b>
	AE3	<u>US:</u> <ul style="list-style-type: none"> <li>• Directs entry into AOP 2575 Rapid Downpower for power reduction to &lt;70% in &lt;1 hour.</li> <li>• Performs Focus Brief for Trip Criteria and RCS Temperature Control.</li> <li>• Directs or makes required notifications.</li> </ul>
		<u>RO:</u> <ul style="list-style-type: none"> <li>• Commences Forcing Pressurizer Sprays: <ul style="list-style-type: none"> <li>○ Closes all Backup Heater Breakers</li> <li>○ Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia).</li> </ul> </li> </ul>
		<u>US:</u> <p>Refers to Reactor Engineering Curve and Data Book and determine that Reactivity Plan, RE-G-11 is appropriate for the downpower.</p>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>RO:</u></p> <p>Commences Boration form the RWST (<i>the crew may opt to Borate from the BAST</i>):</p> <ul style="list-style-type: none"> <li>• Ensures at least one Charging Pump is running.</li> <li>• Ensures VCT Makeup Bypass, CH-196, is closed.</li> <li>• Ensures RWST to Charging Suction, CH-192, is open.</li> <li>• Closes VCT Outlet Isolation, CH-501</li> <li>• Checks Charging flow is appropriate.</li> <li>• Starts an additional Charging Pump and balances Charging and Letdown.</li> </ul>
		<p><u>BOP:</u></p> <p>Reduces Turbine load using the LOAD LIMIT POT.</p> <ul style="list-style-type: none"> <li>• Maintains Tc within 1°F of program.</li> <li>• Maintains 50-150 MVARs</li> </ul>
		<p><u>Crew:</u></p> <p>Maintains parameters within the prescribed limits of Attachment 1, Rapid Downpower Parameters.</p>
		<p><u>BOP:</u></p> <p>When power is between 80 and 85%, stops one of the three Condensate Pumps.</p>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>5. "D" Containment pressure transmitter fails high.</b>		<b>Tech Spec</b>
	<b>Event 3: RP24D – 100%, with a Ramp Time of 160 seconds.</b> "D" Containment pressure transmitter fails high.  <b>TM3, AE4</b>	<u>RO:</u> Observes and reports CTMT PRES HI D annunciator on C-01.  <ul style="list-style-type: none"> <li>Reports value and trend of all Containment pressure indications and determines that Channel "D" appears to have failed high.</li> </ul>
<i>The crew <u>may</u> temporarily stop the downpower to address the failed instrument.</i>		<u>RO:</u> <i>Closes RWST to Charging Suction, CH-19, if the US directs the downpower to be temporarily stopped to address the failed instrument.</i>
		<u>BOP:</u> <i>Maintains RCS temperature on program, if the US directs the downpower to be temporarily stopped to address the failed instrument.</i>
		<u>US:</u> <ul style="list-style-type: none"> <li>Refers to ARP 2590A-084, CTMT PRES HI D and/or ARP 2590C-048 (C-01), CTMT HI PRES TRIP CH D (C-04)</li> <li>Directs RO (or BOP) to obtain appropriate keys and bypass Channel "D" Containment Pressure on RPS and ESAS.</li> <li>Logs into TSAS 3.3.1.1, Table 3.3-1, and 3.3.2.1, Table 3.3-3.</li> <li>Contacts I&amp;C for troubleshooting and repairs.</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<u>RO (or BOP):</u> <ul style="list-style-type: none"> <li>Obtains bypass keys for Channel "D" RPS and ESAS Containment Pressure.</li> <li>Bypasses Channel "D" RPS and ESAS Containment Pressure.</li> </ul>
		<u>US:</u> <i>If the downpower were temporarily halted, directs the RO and BOP to commence the downpower as previously performed.</i>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>6. Loss of Condenser Vacuum/Turbine fails</b>		
<p><b>CT-1 (SPTA-5): Manually shut down the Reactor.</b>  <b>The plant must be manually tripped prior to an automatic Reactor trip on low S/G level due to loss of Main Feed Pumps</b></p>	<p><b>Event 4: FW33 – 100%.</b> Condenser Vacuum rapidly degrades.</p> <p><b>TC10A – Fail.</b> The Main Turbine fails to trip on low Condenser Vacuum. (Inserted during initial setup)</p> <p><b>TM4, MA1, CT1</b></p>	<p><u>RO/BOP:</u></p> <ul style="list-style-type: none"> <li>• Observes and reports annunciators and indications associated with a rapidly degrading Condenser Vacuum</li> <li>• When directed, manually trips the Reactor and commences actions of EOP 2525, Standard Post Trip Actions.</li> </ul>
		<p><u>US:</u></p> <p>Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525:</p> <ul style="list-style-type: none"> <li>• Reactivity Control (RO) <ul style="list-style-type: none"> <li>○ Status of the Reactor</li> </ul> </li> <li>• Maintenance of Vital Auxiliaries (BOP) <ul style="list-style-type: none"> <li>○ Status of the Turbine</li> <li>○ Status of Electrical Buses</li> <li>○ Status of SW &amp; RBCCW</li> <li>○ Check one facility of CRAC operating (RO)</li> </ul> </li> <li>• RCS Inventory Control (RO) <ul style="list-style-type: none"> <li>○ Pzr level &amp; Subcooled margin (SCM), value &amp; trend</li> </ul> </li> <li>• RCS Pressure Control (RO) <ul style="list-style-type: none"> <li>○ Pzr pressure, value &amp; trend</li> </ul> </li> <li>• Core Heat Removal (RO) <ul style="list-style-type: none"> <li>○ RCP status</li> <li>○ Loop delta-T</li> <li>○ T<sub>H</sub> Subcooling Margin</li> </ul> </li> <li>• RCS Heat Removal (BOP) <ul style="list-style-type: none"> <li>○ S/G pressures, value and trend</li> <li>○ RCS T<sub>C</sub> value and trend</li> </ul> </li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<ul style="list-style-type: none"> <li>○ S/G levels, value and trend</li> <li>○ RCS Subcooling Margin</li> <li>• Containment (CTMT) Isolation (RO)               <ul style="list-style-type: none"> <li>○ Radmonitors inside CTMT, outside CTMT, steam plant</li> <li>○ CTMT pressure &lt;1 psig</li> </ul> </li> <li>• CTMT Temperature &amp; Pressure Control (RO)</li> <li>• CTMT temperature and pressure value and trend</li> </ul>
		<p><u>RO:</u></p> <p>Performs associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>• RX tripped</li> <li>• All CEAs inserted</li> <li>• SUR negative and power lowering</li> </ul>
		<p><u>BOP:</u></p> <p>Performs associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>• Value and trend of S/G pressures</li> <li>• Closes MSIVs.</li> <li>• Value and trend of T<sub>C</sub></li> <li>• Adjusts ADVs to maintain on the lower end of 880-920 psig.</li> <li>• Value and trend of S/G levels</li> <li>• Commence feeding S/Gs with 'A' and 'B' AFW pump, S/G level band 40-70%. (Main Feed Pumps tripped)</li> <li>• Subcooling value / CET temperature</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>RO:</u></p> <p>Continues with associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>• Rad monitors inside CTMT not going up or in alarm</li> <li>• Rad monitors outside CTMT not going up or in alarm</li> <li>• Steam Plant Rad monitors not in alarm or going up</li> <li>• Value and trend of CTMT temperature and pressure</li> </ul>
		<p><u>BOP:</u></p> <p>Continue with Subsequent Actions:</p> <ul style="list-style-type: none"> <li>• Closes MSIVs due to condenser NOT being available</li> <li>• Opens HD-106, Subcooling Valve</li> <li>• Stops both Heater Drains Pumps</li> <li>• Closes MFW pump mini flow Recirc(s), FW-36A/B</li> <li>• If AFAS has actuated (alarms on C-04), then places both Override hand switches in Pull-To-Lock and controls Aux Feed flow rate</li> <li>• Secures all but one Condensate Pump</li> <li>• Checks IA Header pressure is &gt;90 psig and stable.</li> </ul>
		<p><u>US:</u></p> <p>Query RO &amp; BOP regarding the status of EOP 2525 subsequent actions.</p>

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SCENARIO TIME LINE		
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		<u>RO/BOP:</u> When asked, report that Subsequent Actions are complete and verified.
		<u>US:</u> <ul style="list-style-type: none"><li>• At the completion of EOP 2525, Diagnostic Flow Chart, determines that the trip is uncomplicated and goes to EOP 2526, Reactor Trip Recovery.</li><li>• Places Master Silence Switch in NORM.</li></ul>



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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>7. Degradation/Loss of "A" Aux Feed Pump and Trip of the Turbine Driven Aux Feed Pump.</b>	<p><b>Event 5: FW30A – 100%, with a Ramp Time of 270 seconds.</b> "A" Aux Feed Pump degrades over the next 4.5 minutes.</p> <p><b>FW20A – Trip, with a 6 minute delay.</b> "A" Aux Feed Pump trips 1.5 minutes after it is fully degraded.</p> <p><b>Event 29: FW20C – TRIP</b>, When the TDAFP speed reaches 500 rpm, the pump will trip. (Inserted during Initial setup.)</p> <p><b>TM5, EM1</b></p> <p>If a PEO is dispatched to determine the problem with the "A" Aux Feed Pump and/or the TDAFP:</p> <ul style="list-style-type: none"> <li>• If the "A" Aux Feed Pump still running, report that there is a very loud screeching noise that appears to be coming from the outboard motor bearing.</li> <li>• If the "A" Aux Feed Pump NOT running, report that the breaker is in the trip-free position and the outboard motor bearing is extremely hot.</li> <li>• The trip mechanism latch on the Steam Admission Valve for the TDAFP is broken and cannot be fixed for several hours.</li> </ul>	<p><b>BOP:</b></p> <p>Observes lowering Aux Feed flow or S/G levels continuing to lower with 2 Motor Driven Aux Feed Pumps running.</p> <ul style="list-style-type: none"> <li>• Trips "A" Aux Feed Pump or observes "A" Aux Feed Pump is tripped.</li> <li>• Reports loss of "A" Aux Feed Pump to the US.</li> <li>• If directed, dispatches a PEO to determine the cause of the pump trip.</li> <li>• Starts the Turbine Driven Auxiliary Feed Pump.</li> <li>• Observes annunciator and indications of a trip of the TDAFP.</li> <li>• Reports the loss of the TDAFP to the US.</li> <li>• Closes the steam inlet valve to the TDAFP.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>8. Bus 24D Fault</b>		
	<b>Event 6: ED05D – Trip.</b> Bus 24D trips on fault resulting in a complete loss of all feedwater. <b>TM6, EM2, MA2, EU1</b>	<b>BOP:</b> <ul style="list-style-type: none"> <li>Observes annunciators associated with the loss of Bus 24D on C-08 and reports the loss of Bus 24D to the US.</li> <li>When directed or when recommended, trips “B” D/G.</li> </ul>
	<b>Event 10: CVR11 – 22E,</b> When directed, Place “B” Charging Pump on Facility 1.	<b>US:</b> <ul style="list-style-type: none"> <li>Using the Diagnostic Flow Chart, determine that Loss of All Feedwater has occurred.</li> <li>Enters EOP 2537, Loss of All Feedwater.</li> <li>When (If) deemed necessary, dispatches a PEO to swap the “B” Charging Pump to Facility 1.</li> </ul>
Safety Function Status Checks are normally performed by the Shift Technical Advisor.  Classifications are generally performed by the Shift Manager.		<b>US:</b> <ul style="list-style-type: none"> <li><i>Directs that Safety Function Status Checks be performed.</i></li> <li><i>Classifies event as a General Interest, Echo due to the plant trip.</i></li> </ul>
		<b>RO:</b> When directed by the US: <ul style="list-style-type: none"> <li>Stops all RCPs</li> <li>Places TIC-4165, Steam Dump Tavg Controller, in manual and closed.</li> <li>Places Pressurizer Spray Controllers in manual and closed.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
	<p>If dispatched to determine if any Aux Feed Pump can be started, as necessary, report that:</p> <ul style="list-style-type: none"> <li>The "A" Aux Feedwater Pump outboard motor bearing is still very hot and discolored, The pump will NOT rotate by hand.</li> <li>The TDAFP overspeed trip mechanism is broken and cannot be repaired until new parts are ordered or manufactured (at least 4-6 hours)</li> <li>Bus 24D has significant damage caused by an internal phase to phase short.</li> </ul> <ul style="list-style-type: none"> <li>When (If) dispatched to locally open CNM-2, inform the Control Room that you'll do your best, but it will likely take at least an hour to complete.</li> </ul>	<p><u>BOP:</u></p> <ul style="list-style-type: none"> <li>Determines that both S/G levels are greater than 70" (Wide Range) and reports value and trend to US.</li> <li>Using various indications, determines that the loss of all feedwater was NOT caused by a Main or Aux Feed Line break.</li> <li>When directed by the US, performs actions to conserve S/G inventory:               <ul style="list-style-type: none"> <li>Closes MS-220A and B, Blowdown Isolation Valves.</li> <li>Closes MS-191A and B, S/G Sample Isolation valves.</li> <li>Attempts to restore feedwater to at least one S/G.</li> </ul> </li> <li>Determines that at least on Condensate Pump is running.</li> <li>Determines both Main Feed Pump Discharge Valves, FW-38A and B, are open.</li> <li>Closes both Main Feed Pump Min-Flow Valves, FW-36A and B.</li> <li>Observes CPF Bypass Valve, CNM-2, is deenergized (closed) and dispatches a PEO to manually open CNM-2.</li> <li>Opens both Main Feed Reg Bypass Valves, FW-41A and B.               <ul style="list-style-type: none"> <li>If MSI actuates, pushes the MSI OVRD push buttons, then opens the Feed Reg Valve Bypass Valves.</li> </ul> </li> <li>Determines both Main Feed Air Assist Check Valves, FW-5A and B, are in the open position.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>RO:</u></p> <p>During the subsequent cooldown and when permitted:</p> <ul style="list-style-type: none"> <li>• blocks SIAS</li> <li>• blocks MSI</li> <li>• commences Emergency Boration</li> </ul>
<p><b>CT-2 (LOAF-4): Establish a Primary to Secondary Heat Sink.</b></p> <p><b>Main Feed flow (from Condensate) is restored prior to reaching 70 inches wide range level in either S/G OR Once-Thru-Cooling initiated with less than or equal to 70 inches in either S/G and level NOT being restored.</b></p>	CT2	<p><u>BOP:</u></p> <p>Using the Steam Dumps to the Condenser, initiates a cooldown at the maximum controllable rate to establish feed flow from Condensate to the Steam Generators (approximately 550 psig in the S/Gs)</p> <ul style="list-style-type: none"> <li>• Controls feed flow to establish and maintain 40-70% in both S/Gs.</li> </ul>
<p>The US will likely direct the RO to <u>prepare</u> for Once-Thru-Cooling prior to reaching 70 inches in either S/G.</p>		<p><u>US:</u></p> <ul style="list-style-type: none"> <li>• <i>If either S/G level lowers to 70 inches and level is NOT being restored, directs the crew to initiate Once-Thru-Cooling.</i></li> <li>• <i>When Once-Thru-Cooling has been initiated, enters EOP 2540, Functional Recovery.</i></li> </ul>
		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>• <i>Trips all Proportional Heaters.</i></li> <li>• <i>Places all Backup Heaters in Pull-To-Lock.</i></li> <li>• <i>Initiates both facilities of SIAS.</i></li> <li>• <i>Verifies "A" HPSI Pump is running.</i></li> <li>• <i>Verifies all HPSI Injection valves are open.</i></li> <li>• <i>Ensures at least "A" Charging Pump is running.</i></li> <li>• <i>Obtains keys and opens both PORVs.</i></li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<u>BOP:</u> <i>Opens both ADVs.</i>
SCENARIO END: At the discretion of the lead evaluator, the simulator will be placed in FREEZE.	<ul style="list-style-type: none"><li>• When directed, FREEZE simulator.</li><li>• Inform the crew that the evaluation is complete.</li></ul>	

INPUT SUMMARY						
Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
<b>MALFUNCTIONS</b>						
TC10A, Failure of the Main Turbine to trip on low vacuum.	NA	NA	NA	NA	NA	1
FW20C, The TDAFP trips shortly after being started.	NA	NA	29	NA	NA	1
RX11D, #2 S/G Alternate Steam Flow Transmitter failure.	NA	300 sec.	1	100	100	5
RD0368, CEA #68 slips to 145 steps.	NA	NA	2	35	145	6
RP24D, "D" Containment Pressure Transmitter fails high.	NA	160 sec.	3	100	100	7
FW33, Condenser Vacuum rapidly degrades.	NA	NA	4	7.5	7.5	8
FW30A, "A" Aux Feed Pump degrades.	NA	270 sec.	5	100	100	9
FW20A, "A" Aux Feed Pump trips	360 sec.	NA	5	NA	NA	10
ED05D, Bus 24D trips on fault resulting in a loss of all feedwater.	NA	NA	6	NA	NA	11
<b>REMOTE FUNCTIONS</b>						
CCR06, Close 2-RB-3A	NA	NA	7	0	0	2
CCR40, Place "B" RBCCW Pump SIAS/LNP Actuation Hand Switch in 'Normal'.	NA	NA	8	NORM	NORM	3
CCR06, Open 2-RB-3A	NA	NA	9	100	100	4
CVR11, Place "B" Charging Pump on Facility 1.	NA	NA	10	22E	22E	12
<b>OVERRIDES</b>						

SEG# ES10LI1Rev; 0**SIMULATOR EXERCISE VALIDATION CHECKLIST**

Mark with an "X" Yes or No for any of the following. If the answer is No, include an explanation after the item.

- |   | Yes                                 | No                       |
|---|-------------------------------------|--------------------------|
| 1. The desired initial condition(s) could be achieved.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All malfunctions and other instructor interface items were functional and responded to support the simulator Scenario.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. All malfunctions and other instructor interface items were initiated in the same sequence described within the simulator scenario.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. All applicable acceptance criteria were met for procedures that were used to support the simulator scenario.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. During the simulator scenario, observed changes corresponded to expected plant response.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Did the scenario satisfy the learning or examination objectives without any significant simulator performance issues, or deviations from the approved scenario sequence?   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. The simulator is capable of being used to satisfy learning or examination objectives without exceptions, significant performance discrepancies, or deviation from the approved scenario sequence.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Any identified Critical Tasks possesses the following elements (NUREG-1021):   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"><li>• Essential to safety with adverse consequences or significant degradation,</li><li>• Cue(s) prompt the Operator to respond.</li><li>• Defined and measurable performance indicators.</li><li>• Performance feedback.</li></ul> |                                     |                          |

The use of "N/A" is allowed for item 8 only if this is NOT an evaluated scenario.

Discrepancies noted (Check "none" or list items in comments field)

None ☒

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Validator: Sign the cover page only after noted discrepancies are corrected or compensatory actions are taken to ensure quality training.**

## SIMULATOR TRAINING 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>		
<div style="display: flex; justify-content: space-between;"> <div> Mode: 1  Megawatts: Thermal: 2698 MWTH  Electric: 888 MWe  RCS Leakage: Identified: 0.015 gpm  Unidentified: 0.036 gpm  Date/Time: Today 0015 </div> <div> Rx Power: 100%  PZR Pressure: 2250 psia  RCS T-AVE: 569 degF  Protected Train/Facility: <u>TRAIN B</u> </div> </div>		

Active Tracking Records and Action Statements					
Equipment/Reason					
LCO	Action	Date	Time in LCO	Action Requirement	Time Left
None					
2-U-AIL, See AIL for details					
None					

OD Compensatory Actions / Temp Logs			
Open Date	Class Reason	Reason	Watch Position
7/05/08	ODM	2-CH-507, RCP bleedoff relief isolation, is closed on C02. This is due to relief CH-199 leaking by into the PDT. ARP C-10 for Bleedoff flow high directs closing CH-507. ARP B-10 directs opening CH-507, (>280#). OP-2301C-001 has been modified for this valve to be CLOSED.	RO

PLANT SYSTEMS APC	
System	Notes

CROSS UNIT SYSTEM STATUS	
U3 Power to 24E	34A aligned to 24E

SURVEILLANCES / EVOLUTIONS IN PROGRESS	
OP 2204	Steady State Operation

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)	
Current Rod Height	ARO @ 180
Xenon Trend	Stable
Current Boron	9.2 ppm
Boron Pot Setting / Blend Ratio	70 to 1 (corrected)



Facility: <u>MP2</u>	Scenario No.: <u>ES11LI3</u>	Op-Test No.: <u>3</u>
Examiners: _____ Operators: _____ _____ _____		
Initial Conditions: <u>100% power, MOL, Eq. Xe., 9.2 ppm Boron SGBD @ 40 gpm. Bus 24E is aligned to Bus 24C. TDAFP is OOS for bearing replacement.</u>		
Turnover: <u>100% power, MOL, Eq. Xe., 9.2 ppm Boron, blend ratio: 70:1 SGBD @ 40 gpm per S/G, Bus 24E aligned to Bus 24C, TDAFP is OOS for bearing replacement. In TSAS 3.7.1.2a and TRM Table 7.1.15-1, ACTIONS b.1 and b.2 for fire areas R-3, R-11, R-16 and R-17.</u>		

Event No.	Malf. No.	Event Type*	Event Description
1	SW9A	C (BOP/S)	"A" Service Water Pump degrading performance. (TS). (Swap Service Water Pumps.)
2	RX03B	I (RO/S)	Failure of in-service Pressurizer Pressure transmitter
3	CH07 ED06B	C (BOP/S)	Non-Vital Bus 22B is lost develops due to a seismic event
4	RC04	C (RO/S)	Small RCS Leak develops. (TS)
5	N/A	R (All)	Plant shutdown due to RCS leak
6	RC04 ED06B RP04A, B, C, D RP27B	M (All)	Small Break LOCA requiring a Reactor trip. Failure of automatic Reactor trip and manual trip push buttons Loss of Actuation Cabinet 6 on the trip.
7	MS01B	M (BOP/S)	Excess Steam Demand in Containment on #2 S/G after the trip
8	RH06A	C (RO/S)	Failure of "A" Containment Spray Pump to start on CSAS
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			



## Simulator Exercise Guide

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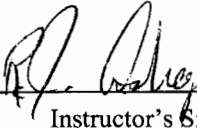
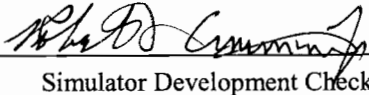
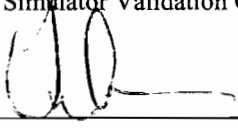
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<b>SITE:</b>	<b>Millstone Power Station</b>	
<b>PROGRAM:</b>	<b>Unit 2 LOIT NRC Exam</b>	
<b>Title</b>	<b>Simulator Exam #3</b>	
<b>COURSE:</b>	<b>ES11LI3</b>	<b>Course #: NA</b>
<b>Total Time</b>	<b>1.5 hours</b>	

COPY

Prepared by:	<u>R. J. Ashey</u>	<u></u>	<u>1/10/2011</u>
	Printed Name	Instructor's Signature	Date
Reviewed by:	<u>Robert L. Cinning Jr.</u>	<u></u>	<u>02/04/11</u>
(Optional)	Printed Name	Simulator Development Checklist Instructor Signature	Date
Reviewed by:	<u></u>	<u></u>	<u></u>
(Optional)	Printed Name	Simulator Validation Checklist Signature	Date
Approved by:	<u>Tad Horner</u>	<u></u>	<u>2/4/11</u>
	Printed Name	Training Supervisor	Date

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## REQUIREMENTS

### Goal of Training:

- a) Evaluate the licensees' ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations, abnormal operating conditions and emergency operating conditions.
- b) Evaluate the crew's ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations and abnormal operating conditions. To include:
  - 1) Ability of the crew to perform crew-dependent (and time-critical) tasks.
  - 2) Ability of the crew to:
    - Understand/interpret annunciators/alarms, plant/systems response
    - Diagnose events/conditions based on signals/readings
    - Comply with/use procedures, Technical Specifications, and TRM
    - Perform control board operations
    - Properly communicate information/proper crew interactions
    - Practice Reactivity Management
    - Make conservative decisions.
  - 3) Ability of each individual to:
    - Respond and correctly interpret annunciators
    - Correctly diagnose events
    - Properly interpret integrated system response
    - Comply with and use Technical Specifications/TRM
    - Comply with and use procedures
    - Properly perform control board operations
    - Demonstrate responsible attitude
    - Properly communicate information and interact with rest of crew
    - Leadership skills required to effectively manage the evolutions
    - Provide adequate overview where required

### Learning Objectives:

NA

### Tasks:

NA

### Prerequisites:

N/A

### Training Resources:

1 lead simulator (floor) instructor, 1 booth instructor

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## References:

ARP 2590E-029, SW PUMP A STNR TROUBLE  
AOP 2565, Loss of Service Water  
OP 2326A, Service Water System  
ARP 2590B-212, PZR PRESSURE SELECTED CHANNEL DEVIATION HI/LO  
Millstone 2 Technical Specifications  
AOP 2562, Earthquake  
AOP 2568 Reactor Coolant System Leak  
AOP 2575, Rapid Downpower  
EOP 2525, Standard Post Trip Actions  
EOP Loss of Coolant Accident  
EOP 2540, Functional Recovery  
EOP 2540, Functional Recovery of Containment Temperature and Pressure Control  
EOP 2540C1, Functional Recovery of RCS Inventory Control  
EOP 2540D, Functional Recovery of RCS Heat Removal

## Commitments:

N/A

## Evaluation Method:

## Operating Experience:

## Plant/Simulator differences that may affect the scenario:

None

## Related PRA Information:

Core Damage Frequency: 0.98  
LERF: 1.00  
Important Components: 24E aligned to 24C  
TDAFP out for bearing replacement

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## OVERVIEW

### **INITIAL CONDITIONS:**

- 100% power EOL.
- 24E aligned to 24C
- The TDAFP is OOS for a bearing replacement and is not expected back until mid day tomorrow.
- In TSAS 3.7.1.2.a and TRM Table 7.1.15-1, Actions b.1 and b.2 for Fire Areas R-3, R-11, R-16, and R-17.

The simulator will be prepared for the evaluation and the licensees will be briefed on the conduct of the evaluation and the areas in which they will be evaluated.

### **Scenario Summary:**

The crew will take the shift with the unit at 100% power and 24E aligned to 24C. The Turbine Driven Aux. Feed Pump is out of service for bearing replacement.

Shortly after the crew takes the shift, the "A" Service Water Pump will begin to degrade requiring the crew to swap to the "B" Service Water Pump. While swapping Service Water Pumps the US will enter TSAS 3.7.4.1.

After the Service Water Pumps are swapped, the Channel "Y" Pressurizer Pressure transmitter will fail low causing RCS pressure to rise. The crew will swap to Channel "X". (Prior to swapping to Channel "X", the crew may take manual control of pressurizer pressure components.)

When RCS pressure is back to 2250 psia and stable, a seismic event will result in a loss of Non-Vital 480 Volt Bus 22B. The crew should enter AOP 2503B and take action to cross-tie Bus 22B with Bus 22A.

When the Non-Vital Buses are cross-tied, a small RCS leak will develop. The Crew will attempt to determine the location of the leak while the US enters TSAS 3.4.6.2, and AOP 2575, Rapid Downpower. The downpower rate will be determined and the appropriate Reactivity Plan will be selected.

During the downpower, the RCS leak will degrade to where it exceeds charging pump capacity (Small Break LOCA) and eventually trigger an automatic reactor trip (if not manual performed).

The automatic (or manual) reactor trip will not occur, even when the trip push buttons are pressed, requiring the crew to trip the CEDM MG sets to initiate a reactor trip. The crew will enter EOP 2525, Standard Post Trip Actions. On the trip, ESAS Actuation Cabinet 6 deenergizes resulting in a failure of all Facility 2 ESAS components from automatically actuating to their accident conditions.

During the performance of EOP 2525, a small steam line break in Containment will occur. The crew will diagnose the 2 events and transition to EOP 2540, Functional Recovery.

When Containment Spray is actuated, the "B" Containment Spray Pump will NOT automatically start. The crew will start the "A" and/or the "B" Containment Spray Pump(s) to maintain Containment Integrity.

The scenario will end when at least one Containment Spray Pump is running and the crew has prioritized the Safety Functions for performance.

**CT1 (LOCA-11): Perform a plant cooldown. A plant cooldown must be initiated within one hour following an unisolable LOCA at a rate of greater than 40°F/hr.**

**CT2 (CTPC-1): Maintain Containment Temperature and Pressure Control. Establish greater than or equal to 1300 gpm Containment Spray flow from at least one Containment Spray Pump prior to reaching 51 psig Containment Pressure.**

**CT3 (ESDE-6): Isolate the Affected S/G. AFW to the faulted (#2) SG is isolated within ≤30 minutes of MSI actuation on an ESDE.**

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### SIMULATOR SETUP CHECKLIST

- ☐ ENSURE TRex Workstation is operating.
- ☐ VERIFY the most current approved training load is loaded.
- ☐ RESET to **IC-173**
- ☐ If necessary, ADJUST the various potentiometer settings to the values specified by the chart in the simulator Notebook for the selected IC.
- ☐ As needed, RESET Computer Terminals (At Power displays if 100% power IC).
- ☐ ENSURE SG blowdown values in PPC Plant Calorimetric are reset.
- ☐ ENSURE RCS Leak Rate is reset in PPC.
- ☐ ENSURE keys on Control Panels are only those required for the session (including RPS, ESAS, and RC-14).
- ☐ If necessary (i.e., exams), ADVANCE chart recorders
- ☐ ENSURE the appropriate Protected Train placard is hung (**A TRAIN PROTECTED**).
- ☐ ENSURE appropriate signs are in place on simulator doors.
- ☐ ENSURE procedures designated for use during the scenario are clear of previous place keeping marks.
- ☐ If necessary, ENSURE Simulator fidelity items cleared.
- ☐ ENSURE each desk has adequate supplies (e.g., pencils, grease pencils, markers, paper).
- ☐ If required, OVERRIDE annunciators that will be lit long-term in the Control Room.
- ☐ ENTER Initial Malfunctions / I/Os / Remote Functions.
- ☐ PLACE Simulator to RUN.
- ☐ If placing Equipment OOS, then PERFORM necessary switch manipulations and HANG appropriate tags, as required for the following:
- ☐ PERFORM final walk down of Control Panels to verify proper indications (e.g., lights, switches, magnetic labels).

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>1. INITIAL CONDITIONS:</b> <ul style="list-style-type: none"> <li>IC-173</li> <li>Mode: 1</li> <li>Burnup:EOL</li> <li>Power: 99.8%</li> <li>Boron: (CB): ppm</li> <li>Temperature: Tave 569 F</li> <li>Pressure: 2250 psia</li> <li>Xenon: Stable, at equilibrium</li> <li>Rods: ARO</li> <li>Generator: 888 Mwe</li> </ul>	ENTER or VERIFY the following Initial Malfunctions / I/Os / Remote Functions	N/A
<b>2. SIMULATOR SETUP:</b> As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.	COMPLETE Simulator Setup Checklist	N/A
<b>3. PRE-SCENARIO:</b> BRIEF the crew on purpose of this session		
<b>4. TURNOVER:</b> PERFORM the crew turnover (Turnover Sheet) with the US.		SM brief crew on plant conditions and any major equipment OOS. (All) Walk down control boards and let US know when they are ready. No shift briefing is required or recommended.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. <i>Observe degraded performance of "A" Service Water Pump and swap to "B" Service Water Pump.</i>		<b>Technical Specification</b>
	<b>Event 1: SW09A – Ramp to 100% over 240 seconds, "A" Service Water Strainer clogs.</b> <b>TM1, AE1</b>	<u>BOP:</u> Observes and reports indications associated with degrading flow on "A" Service Water header. <ul style="list-style-type: none"> <li>Observes and reports SW PUMP A STNR TROUBLE annunciator on C-06/7</li> </ul>
	<p>When dispatched to determine the cause of the low "A" Service Water Header flow, report that the "A" Service Water Strainer D/P is 28 psid and getting worse. The strainer motor is rotating, but the strainer is NOT rotating.</p> <p>Report that Sodium Hypochlorite is secured to the "A" Service Water Pump.</p>	<u>US:</u> <ul style="list-style-type: none"> <li>Refers to ARP 2590E-029 (CA-4 on C-06/7)               <ul style="list-style-type: none"> <li>If High RBCCW or TBCCW header temperature annunciator are received, refers to ARP 2590E-048 (D-8 on C-06/7) or 2590E-015 (DA-2 on C-06/7)</li> </ul> </li> <li>Determines that "A" Service Water Header flow is lowering.</li> <li>Dispatches a PEO to the Intake Structure to determine the cause.               <ul style="list-style-type: none"> <li>Directs the PEO to stop Sodium Hypochlorite to the "A" Service Water Pump.</li> </ul> </li> <li>Refers to OP 2326A and directs the BOP to Start "B" Service Water Pump on Facility 1 and secure "A" Service Water Pump.</li> <li>Enters and exits TSAS 3.7.4.1 as directed by procedure.</li> <li>Makes notifications for assistance.</li> </ul>



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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
	<p>Report that "B" SW Pump is operating properly.</p> <p><b>Event 7:</b> When directed to vent the "B" SW Pump Strainer, insert an <b>I/O for SW PUMP B STNR TROUBLE, CA-4 on C-06/7</b>. Allow the I/O to remain in for 2 minutes, then delete the I/O.</p> <p><b>Event 8:</b> When directed, insert <b>Remote Function SWR31 in NORM</b>, to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position.</p> <p>Report when <u>each</u> directed action is complete.</p>	<p><u>BOP:</u></p> <ul style="list-style-type: none"> <li>Verifies that the "B" Service Water Pump is properly aligned to Facility 1: <ul style="list-style-type: none"> <li>Bus 24E is being supplied by Bus 24C</li> <li>"B" SW Pump is in Pull-To-Lock</li> <li>A502, "B" SW Pump breaker is racked up.</li> <li>SW-97B, Dis X-Tie, is closed.</li> <li>SW-97A, Dis X-Tie, is open.</li> <li>HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, is in BLOCK.</li> </ul> </li> <li>Dispatches a PEO to secure Sodium Hypochlorite to the "A" Service Water Pump and to observe proper start of "B" SW Pump</li> <li>Informs the US to log into TSAS 3.7.4.1. (already in Action Statement)</li> <li>Starts "B" Service Water Pump.</li> <li>Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator alarms.</li> <li>Stops "A" SW Pump.</li> <li>Observes proper operation of "B" SW Pump.</li> <li>Directs PEO to vent the "B" SW Pump Strainer.</li> <li>Places "A" SW Pump in Pull-To-Lock.</li> <li>Directs a PEO to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position.</li> <li>Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator is clear.</li> <li>Informs US to exit TSAS 3.7.4.1.</li> <li>Directs a PEO to restore Sodium Hypochlorite to the "B" SW Pump.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>2. Failure of Channel Y Pressurizer pressure transmitter.</b>		
	<b>Event 2: RX03B – Ramp to 1500 over 400 seconds</b> , Channel Y Pressurizer Pressure transmitter gradually fails low.  <b>TM2, AE2</b>	<u>RO:</u> <ul style="list-style-type: none"> <li>• Observes RCS pressure rising.</li> <li>• Observes Pressurizer Pressure Deviation Hi/Lo annunciator.</li> <li>• Reports rising Pressurizer pressure to the US.</li> </ul>
		<u>US:</u> <ul style="list-style-type: none"> <li>• Obtains ARP 2590B-212, Pzr Pressure Selected Channel Deviation Hi/Lo (D-37 on C-2/3) and /or Pressurizer Ch Y Pres Hi/Lo (D-39 on C-02/3)</li> <li>• Makes notifications for assistance and troubleshooting.</li> <li>• Refers to (does <u>NOT</u> enter) TSAS 3.2.6, 3.3.3.5, and 3.3.3.8. (Only one channel is required to be OPERABLE.)</li> </ul>
		<u>RO:</u> <ul style="list-style-type: none"> <li>• Observes all Pressurizer pressure channels and determines that Channel Y is failing.</li> <li>• When directed, shifts Pressure control to Channel X.</li> <li>• Verifies proper operation of Pressurizer pressure control system.</li> </ul>

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<b>3. Seismic Event Resulting in a Loss of Non-Vital 480 Volt Bus 22B.</b>		
	<p><b>Event 3: CH07 – Insert</b>, Seismic event.</p> <p><b>Event 3: ED06B – TRIP</b>, Loss of Non-Vital Bus 22B.</p> <p>Immediately after entering the seismic event malfunction, call the Control Room and report significant vibration in the Turbine Building lasting several seconds.</p> <p><b>TM3, AE3</b></p>	<p><u>Crew:</u></p> <p>Observes numerous component high vibration annunciators and receives a report of a seismic event.</p> <p>Seismic Event annunciator and white flag on event recorder.</p> <p><u>BOP:</u></p> <p>Observes and reports numerous annunciators and indications associated with the loss of Non-Vital Bus 22B.</p>
	<p>If requested, report accelerometer reading is 0.03g ZPA.</p> <p>Report NO damage indicated anywhere.</p> <p>When dispatched, report that tie breaker A204 is open with NO target drops. All other conditions are normal.</p>	<p><u>US:</u></p> <ul style="list-style-type: none"> <li>Enters AOP 2562, Earthquake.</li> <li>Queries the RO and BOP on Plant conditions.</li> <li>Dispatches PEOs to determine any plant damage.</li> <li>References ARP 2590F-065, 480B BUS 22A/B/C/D VOLTS LO, and enters AOP 2503B, Loss of Non-Vital 480 VAC Bus 22B.</li> <li>Directs BOP to place equipment in service requires to support plant operation.</li> <li>Directs BOP to ensure a fault is NOT indicated on Bus 22B.</li> <li>Directs a PEO to determine the cause of the breaker trip.</li> <li>Directs BOP to perform applicable steps to cross-tie Bus 22B with 22A.</li> <li>Requests assistance form Maintenance Department.</li> </ul>

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	<p>If dispatched, report that 22A-1T-2 Ammeter Phase B (Ammeter above B0111 cubicle) is reading 850 amps.</p>	<p><u>BOP:</u></p> <ul style="list-style-type: none"> <li>• From available indications, determines that Bus 22B does NOT have a fault.</li> <li>• Checks Bus 22A voltage between 435 and 525 Volts.</li> <li>• Ensures the following breakers are open: <ul style="list-style-type: none"> <li>○ A204, 24B/22B Feeder Breaker (24B4-2)</li> <li>○ B0209, 22B Supply breaker (24B4-1X3-2)</li> <li>○ B0111, 22A/22B Tie Breaker (22A-1T-2)</li> </ul> </li> <li>• Places (or requests RO to place) Group 1 and Group 2 Pressurizer Backup Heaters in Pull-To-Lock.</li> <li>• Places Sync Selector Switch, 22A/22B in CL TIE/TRIP B.</li> <li>• Closes B0111, 22A/22B Tie Breaker (22A-1T-2)</li> <li>• Places Sync Selector Switch, 22A/22B in OFF.</li> <li>• Checks Bus 22B voltage between 435 and 525 volts.</li> <li>• Checks current on Bus 22A is less than 1,800 amps.</li> <li>• If current on Bus 22A is greater than 1,600 amps, dispatches a PEO to verify local current reading is less than 1,600 amps.</li> <li>• When (If) directed, Caution Tag Group 1 and Group 2 Pressurizer Backup Heaters.</li> </ul>

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<b>4. Unisolable RCS Leak Develops.</b>		<b>Technical Specification</b>
	<b>Event 4: RC04 – 2% with a Ramp Time of 90 seconds and a 120 second delay; 14 gpm RCS leak.</b>  <b>TM4, AE4</b>	<u>RO/BOP:</u>  Observes and reports: <ul style="list-style-type: none"> <li>• Charging and Letdown flow mismatch</li> <li>• PPC Sump leak rate alarm</li> <li>• RCS Leak Rate Rising annunciator on C-06/7</li> <li>• Containment Sump level rising</li> </ul>
		<u>US:</u> <ul style="list-style-type: none"> <li>• Enter AOP 2568, Reactor Coolant System Leak.</li> <li>• Queries the RO and BOP on Plant conditions.</li> <li>• Determines that RCS leakage exceeds 10 gpm and enters TSAS 3.4.6.2.</li> <li>• Determines that leak does NOT exceed the capacity of the Charging system. ( Reactor trip is NOT required)</li> <li>• When Containment Sump level reaches 100%, logs into TSAS 3.3.3.8 and 3.4.6.1.</li> </ul>
		<u>RO:</u>  When requested, reports the status of: <ul style="list-style-type: none"> <li>• Pressurizer level</li> <li>• Pressurizer pressure</li> <li>• RCS leak rate</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>5. Rapid Downpower due to RCS leak.</b>		<b>Reactivity Manipulation</b>  <u>US:</u> <ul style="list-style-type: none"> <li>• Directs to RO and BOP to attempt to determine the location of the RCS leak.</li> <li>• Enters AOP 2575, Rapid Downpower                             <ul style="list-style-type: none"> <li>○ Performs Focus Brief on Trip Criteria and RCS Temperature Control.</li> <li>○ Requests SM/STA to make required notifications. (Unusual Event, Delta-One)</li> <li>○ Directs RO to initiate forcing sprays and to insert Group 7 CEAs 10 steps (while maintaining Reactivity oversight).</li> <li>○ Determines that Reactivity Plan RE-G-13, <u>14</u>, or 15 should be used.</li> <li>○ Directs RO and BOP to coordinate a rapid downpower.</li> </ul> </li> </ul>
		<u>RO:</u> <ul style="list-style-type: none"> <li>• Initiates Forcing Sprays:                             <ul style="list-style-type: none"> <li>○ Closes all Backup Heater Breakers</li> <li>○ Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia).</li> </ul> </li> <li>• Inserts Group 7 CEAs to 170 steps and observes applicable parameters.</li> <li>• Initiates Boration from the RWST:                             <ul style="list-style-type: none"> <li>○ Ensures at least one Charging Pump is operating.</li> <li>○ Ensures CH-196, VCT Makeup Bypass, is closed.</li> <li>○ Ensures CH-504, RWST to Charging Suction, is open.</li> </ul> </li> </ul>

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	<p><i>The US may direct Boration to be accomplished from the BAST to allow for easier makeup to the VCT. Boration from the BAST (alternate method) is in italics.</i></p>	<ul style="list-style-type: none"> <li>○ Opens CH-192, RWST Isolation.</li> <li>○ Closes CH-501, VCT Outlet.</li> <li>○ Starts a second Charging Pump.</li> <li>● <i>If Boration is from the BAST:</i> <ul style="list-style-type: none"> <li>○ <i>Ensures the Makeup Flow Selector switch is in the DILUTE position.</i></li> <li>○ <i>Ensues FC-210X, Primary Makeup Water Flow controller, is set to "0".</i></li> <li>○ <i>Ensures CH-512, Makeup Valves Stop, is closed.</i></li> <li>○ <i>Ensures CH-196, VCT Makeup Bypass, is closed.</i></li> <li>○ <i>Ensures CH-192, RWST Isolation, is closed.</i></li> <li>○ <i>Ensures FC-210Y, Boric Acid Flow controller, is set to the predetermined flow rate.</i></li> <li>○ <i>Opens CH-504, RWST to Charging Suction.</i></li> <li>○ <i>Place Makeup Mode Sel switch in MAN.</i></li> <li>○ <i>Starts the selected Boric Acid and verifies discharge pressure is greater than 98 psig.</i></li> <li>○ <i>Opens CH 196, VCT Makeup Bypass.</i></li> <li>○ <i>As required, refers to attachment and performs actions to maintain VCT level in the desired band.</i></li> </ul> </li> </ul>
		<p><u>BOP:</u></p> <p>Reduces Turbine load to follow Reactor power to maintain Tc on program using the Load Limit Pot.</p>

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6. <i>RCS leak rapidly degrades to a small Break LOCA and a failure of the Reactor to automatically or manually trip.</i>		
	<p><b>Event 5: RC04 – 25% with a ramp time of 270 seconds</b>, Small break LOCA (175 gpm) requiring a Reactor trip.</p> <p><b>RP04A, B, C and D – FAIL</b>; Failure of all Reactor Trip push buttons.</p> <p><b>RP27B – FAIL</b>. Failure of all RPS Channels to process a Reactor trip</p> <p><b>ES04F – Deenergize</b>, Actuation Cabinet 6 deenergizes.</p> <p><b>TM5, MA1</b></p>	<p><u>RO</u>:</p> <ul style="list-style-type: none"> <li>• Observes lowering Pressurizer level and pressure which exceeds Charging capacity and informs the US.</li> <li>• Starts 3<sup>rd</sup> Charging Pump.</li> </ul>
		<p><u>US</u>:</p> <p>Directs the crew to manually trip the Reactor and perform EOP 2525, Standard Post Trip Actions.</p> <p>Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525:</p> <ul style="list-style-type: none"> <li>• Reactivity Control (RO) <ul style="list-style-type: none"> <li>○ Status of the Reactor</li> </ul> </li> <li>• Maintenance of Vital Auxiliaries (BOP) <ul style="list-style-type: none"> <li>○ Status of the Turbine</li> <li>○ Status of Electrical Buses</li> <li>○ Status of SW &amp; RBCCW</li> <li>○ Check one facility of CRAC operating (RO)</li> </ul> </li> <li>• RCS Inventory Control (RO) <ul style="list-style-type: none"> <li>○ Pzr level &amp; Subcooled margin (SCM), value &amp; trend</li> </ul> </li> </ul>



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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<ul style="list-style-type: none"> <li>• RCS Pressure Control (RO) <ul style="list-style-type: none"> <li>○ Pzr pressure, value &amp; trend</li> </ul> </li> <li>• Core Heat Removal (RO) <ul style="list-style-type: none"> <li>○ RCP status</li> <li>○ Loop delta-T</li> <li>○ T<sub>H</sub> Subcooling Margin</li> </ul> </li> <li>• RCS Heat Removal (BOP) <ul style="list-style-type: none"> <li>○ S/G pressures, value and trend</li> <li>○ RCS T<sub>C</sub> value and trend</li> <li>○ S/G levels, value and trend</li> <li>○ RCS Subcooling Margin</li> </ul> </li> <li>• Containment (CTMT) Isolation (RO) <ul style="list-style-type: none"> <li>○ Rad monitors inside CTMT, outside CTMT, steam plant</li> <li>○ CTMT pressure &lt;1 psig</li> </ul> </li> <li>• CTMT Temperature &amp; Pressure Control (RO)</li> <li>• CTMT temperature and pressure value and trend.</li> </ul>
		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>• Presses all four Reactor Trip push buttons on C-04 and immediately realizes the Reactor did NOT trip.</li> <li>• Opens both CEDM MG feeder breakers.</li> <li>• Reactor has tripped, power is lowering, SUR is negative, all CEAs are inserted.</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>BOP:</u></p> <p>Perform associated actions of EOP 2525 and report results when queried:</p> <ul style="list-style-type: none"> <li>• Turbine tripped, stop valves are closed, 8T &amp; 9T are open, Megawatts are zero</li> <li>• All electrical buses energized</li> <li>• Two Facilities of SW and RBCCW operating</li> </ul>
		<p><u>RO:</u></p> <p>Performs associated actions of EOP 2525 and report results when queried:</p> <ul style="list-style-type: none"> <li>• Control Room Air Conditioning Status</li> <li>• Pressurizer level value and trend</li> <li>• Pressurizer pressure value and trend                             <ul style="list-style-type: none"> <li>○ PORVs and Spray Valves are closed</li> <li>○ When RCS pressure is less than 1750 psia, then SIAS, CIAS, and EBFAS have actuated on Facility 1 only.</li> <li>○ After SIAS actuates, one RCP in each loop is secured.</li> <li>○ If Pressurizer pressure lowers to minimum NPSH, then all RCPs are secured.</li> </ul> </li> <li>• Observes and reports numerous annunciators associated with ESAS on C-01.</li> <li>• Number of RCPs operating                             <ul style="list-style-type: none"> <li>○ Value and trend of loop Delta-T</li> <li>○ Value and trend of subcooling</li> </ul> </li> <li>• If no RCPs operating, T<sub>AVG</sub> controller, TIC-4165 in manual/closed</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>BOP:</u></p> <p>Performs associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>• Value and trend of S/G pressures</li> <li>• Value and trend of T<sub>C</sub></li> <li>• Value and trend of S/G levels</li> <li>• Subcooling value / CET temperature</li> </ul>
		<p><u>RO:</u></p> <p>Continues with associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>• Reports Rad Monitors inside CTMT not going up or in alarm</li> <li>• Reports Rad Monitors outside CTMT not going up or in alarm</li> <li>• Reports Steam Plant Rad Monitors not in alarm or going up</li> <li>• Reports Value and trend of CTMT temperature and pressure.</li> <li>• Starts Containment Aux Recirc Fans and PIR Fans.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>BOP:</u></p> <p>Continue with Subsequent Actions:</p> <ul style="list-style-type: none"> <li>• Opens HD-106, Subcooling Valve</li> <li>• Stops both Heater Drains Pumps</li> <li>• Secures all but one Condensate Pump</li> <li>• Secures one Main Feed Pump                             <ul style="list-style-type: none"> <li>○ Closes FW-42A and B, Main Feed Block Valves</li> <li>○ Ensure both Main Feed Reg Bypass Valves are throttled to 40%</li> <li>○ Closes FW-38A or B, associated Main Feed Pump Discharge Valve</li> </ul> </li> <li>• Checks IA Header pressure is &gt;90 psig and stable.</li> </ul>
		<p><u>US:</u></p> <p>Query RO &amp; BOP regarding the status of EOP 2525 subsequent actions.</p>
		<p><u>RO/BOP:</u></p> <p>When asked, report that Subsequent Actions are complete and verified.</p>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>US:</u></p> <ul style="list-style-type: none"> <li>• At the completion of EOP 2525, Diagnostic Flow Chart, determines that a LOCA inside Containment has occurred and goes to EOP 2532, Loss of Coolant Accident.</li> <li>• Places Master Silence Switch in NORM.</li> <li>• Notes the need for the SM to complete EPI-FAP06-002, classify the event as an Alert, Charlie-1, and make appropriate notifications.</li> <li>• Directs the RO and BOP: <ul style="list-style-type: none"> <li>○ Ensure SIAS Actuation</li> <li>○ Optimize Safety Injection</li> <li>○ Monitor for RCP trip criteria.</li> <li>○ Perform actions to isolate the LOCA, if possible.</li> <li>○ Determine LOCA location.</li> <li>○ Place H2 Analyzers in operation.</li> <li>○ Ensure CIAS.</li> <li>○ When appropriate, ensure CSAS.</li> <li>○ Check IA pressure &gt; 90 psig and stable.</li> <li>○ Align Condenser Air Removal.</li> <li>○ Initiate a controlled cooldown.</li> </ul> </li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
CSAS will actuate shortly after the steam line break is inserted.		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>When Pressurizer pressure lowers to 1714 psia, ensures SIAS has actuated.                             <ul style="list-style-type: none"> <li>Ensures one complete train of CRAC is in Recirc.</li> </ul> </li> <li>Ensures Safety Injection flow is within the SI Flow Curve.</li> <li>Ensures two RCPs are tripped within 5 minutes after SIAS or all RCPs are secured if below minimum NPSH.</li> <li>Attempts to isolate the LOCA (Unisolable)</li> <li>Checks for LOCA outside Containment (LOCA is inside Containment)</li> <li>When time permits, places H2 Analyzers in service.</li> <li>Determines that Containment pressure has NOT exceeded 4.42 psig; therefore, MSI and CSAS have NOT actuated.</li> <li>When Containment pressure is greater than 9.48 psig, determines that Facility 2 CSAS did not actuate (Loss of Actuation Cabinet 6) and that "A" Containment Spray Pump did not automatically start.</li> </ul>
		<p><u>BOP:</u></p> <ul style="list-style-type: none"> <li>Verifies IA pressure is greater than 90 psig.</li> <li>Aligns Condenser Air Removal to Unit 2 Stack.</li> </ul>
<p><b>CT1 (LOCA-11) Perform a plant cooldown.</b></p> <p>A plant cooldown must be initiated within one hour following an unisolable LOCA at a rate of greater than 40°F/hr.</p>		<p><u>Crew:</u></p> <p>Initiates a controlled cooldown.</p>

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7. <i>Excess Steam Demand in Containment on #2 Steam Generator</i>		
	<p><b>Event 6: MS01B – 2.5% ramped in over 240 seconds</b>, Excess Steam Demand on #2 S/G (0.475 #m/hr).</p> <p><b>TM6, MA2, EM1</b></p>	<p><u>BOP:</u></p> <p>Observes and reports Lowering S/G pressures, S/G levels, RCS temperature, and other parameters associated with an Excess Steam Demand event.</p>
	<p><b>EU1, EC1</b></p>	<p><u>US:</u></p> <ul style="list-style-type: none"> <li>• Acknowledges reports(s) and enters Diagnostic Flow Chart, then enters EOP 2540 Functional Recovery due to more than one major event.</li> <li>• Notes the need for the SM to complete EPI-FAP06-002, determine that the event remains an <b>Alert, Charlie-1</b>, and make appropriate notifications.</li> <li>• Open the Safety Function Tracking Page and enter EOP entry time.</li> <li>• Return alarm silence to normal</li> </ul>
		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>• If PZR press. &lt; 1714 psia, ensures: <ul style="list-style-type: none"> <li>○ Only 1 RCP/loop running</li> <li>○ Secured RCP Spray vlv. closed</li> </ul> </li> <li>• If RCP NPSH lost, ensure: <ul style="list-style-type: none"> <li>○ All RCPs are secured</li> <li>○ TIC-4165 in manual and closed</li> <li>○ Both spray valves are in manual and closed.</li> </ul> </li> </ul>

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		<u>BOP:</u> Directs Chemistry to obtain samples of both SGs, frisk the samples, report frisk results, and analyze the samples for activity and Boron.



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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<p><b>8. Failure of "A" Containment to start on CSAS.</b></p>		
<p>This malfunction will occur when Containment pressure exceeds 9.48 psig. The crew will continue to take the actions of EOP 2540 prior to and after the malfunction.</p>	<p><b>RH06A, TRIP</b>, Failure of "A" CS Pump to start on CSAS. (Initial Conditions)</p> <p><b>TM7, EM2,</b></p>	<p><u>RO:</u></p> <p>Observes and reports actuation of Facility 1 CSAS and the failure of the "A" Containment Spray Pump to start.</p>
		<p><u>US:</u></p> <ul style="list-style-type: none"> <li>• Directs RO to start either "A" or "B" Containment Spray Pump.</li> <li>• Determines that the Safety Function Status Checks for CTPC-3 are NOT met and enters EOP 2540F, Functional Recovery of Containment Temperature.</li> </ul>
<p><b>CT2 (CTPC-1): Maintain Containment Temperature and Pressure Control.</b></p> <p><b>Establish greater than or equal to 1300 gpm Containment Spray flow from at least one Containment Spray Pump prior to reaching 51 psig Containment Pressure.</b></p>		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>• Starts "B" Containment Spray Pump and the associated Containment Spray header flow is greater than or equal to 1300 gpm.</li> <li>• Verifies Containment Temperature and Pressure Control acceptance criteria is met: <ul style="list-style-type: none"> <li>○ At least 2 CAR Fans operating in Slow Speed.</li> <li>○ At least one Containment Spray Header delivering at least 1300 gpm.</li> <li>○ Containment pressure less than 51 psig.</li> </ul> </li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS		
		<u>US:</u> <ul style="list-style-type: none"> <li>Directs placing H<sub>2</sub> analyzers in service.</li> <li>Identifies Success paths to be used.</li> </ul>		
		<u>US:</u> Identifies Success Paths to be used.		
<u>Note:</u> These success paths and order of priority are based on the conditions seen during the scenario validation. A different path and priorities may be applicable due to the timing of operator mitigating actions.		Safety Function	Path	Met? Priority
		RC-1	CEA Insertion	Yes 5
		DC-1	DC Power	Yes 6
		AC-1	RSST	Yes 7
		IC-2	SI	Yes 2
		PC-1	Subcooled	Yes 4
		HR-2	SI Operating	Yes 3 (2)
		CI-1	Isolated	Yes 8
		CTPC-3	CARs [Emerg.]	Yes 4 (3)
	EC2	<u>US:</u> Identifies CTPC-3, CARs (Emerg.), as the first priority and enters EOP 2540F, Containment Temperature and Pressure Control.		

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Performed earlier as a Critical Task.		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>• Ensures all four CAR Coolers are operating in slow speed with adequate RBCCW flow.</li> <li>• Ensure CSAS has actuated with at least one Containment Spray Header flow greater than 1300 gpm.</li> <li>• Ensures both Containment Aux Recirc Fans are operating.</li> <li>• Ensures both PIR Fans are operating.</li> <li>• Reviews Containment Spray termination criteria.</li> <li>• Verifies CTPC-3 Acceptance Criteria are satisfied: <ul style="list-style-type: none"> <li>○ At least two CAR Fans running in slow speed.</li> <li>○ At least one Containment Spray header is delivering at least 1300 gpm.</li> <li>○ Containment pressure is less than 51 psig.</li> </ul> </li> </ul>
		<p><u>US:</u></p> <p>Identifies IC-2, SI, as the next Safety Function priority and enters EOP 2540C1, Functional Recovery of RCS Inventory Control.</p>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
	<p>When dispatched, report that the SI Room Sump Pump breakers are open and there is no leakage.</p>	<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>• Ensures SIAS, CIAS, and EBFAS have properly actuated.</li> <li>• Checks Safety Injection flow meets the SI Flow Curve. <ul style="list-style-type: none"> <li>○ Determines that RCS pressure is NOT preventing adequate SI flow.</li> </ul> </li> <li>• Ensures both facilities of RBCCW and Service Water are in service.</li> <li>• Performs actions to conserve RCS Inventory. (Isolates various non-essential components.)</li> <li>• Reviews HPSI throttle/stop criteria and determines that HPSI cannot be throttled or stopped.</li> <li>• Reviews LPSI stop criteria and determines that LPSI may be stopped.</li> <li>• Requests assistance for filling the RWST.</li> <li>• Observes Containment Sump level is rising.</li> <li>• Determines that SI/CS Pump Minflow valves, SI-651 and 652, must be placed in OPER when RWST level lowers to 20%.</li> <li>• Determines that SRAS must be initiated when RWST level lowers to less than 9%.</li> <li>• Reviews SRAS supplemental actions.</li> <li>• Reviews HPSI Pump post SRAS performance criteria.</li> <li>• Dispatches a PEO to open SI Room Sump Pump Breakers and monitor for leakage.</li> <li>• Verifies that IC-2 Acceptance Criteria are met: <ul style="list-style-type: none"> <li>○ HPSI flow is within the SI Flow Curve.</li> <li>○ Vessel level is &gt;7%.</li> </ul> </li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
	EU2	<p><u>US:</u></p> <ul style="list-style-type: none"> <li>Continues to assess Safety Functions up to and including EOP 2540D, Functional Recovery of RCS Heat Removal.</li> <li>Directs RO and BOP to: <ul style="list-style-type: none"> <li>Ensure at least one complete facility of SIAS, CIAS, EBFAS, MSI, and CSAS have actuated.</li> <li>Ensure one complete facility of CRAC is operating in RECIRC.</li> <li>Verify single phase Safety Injection flow is adequate.</li> <li>Verify subcooling.</li> <li>Align Condenser Air Removal.</li> </ul> </li> <li>Determines SGTR did NOT occur.</li> <li>Determines ESD did occur and that #2 S/G is the most affected.</li> <li>Directs BOP to perform actions of Appendix 11, ESDE Response.</li> </ul>
		<p><u>RO:</u></p> <p>Ensures MSI has actuated and at least one train of MSI has properly actuated (all MSI components are in their accident condition on C-01X).</p>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<p><b>CT3 (ESDE-6): AFW to the faulted (#2) SG is isolated within ≤30 minutes of MSI actuation on an ESDE.</b></p>	<p><b>Event 9:</b> When dispatched, insert <b>Remote Function MSR13, RI</b>. Close the disconnect for MS-202, #2 Main Steam Supply to the TDAFP.</p>	<p><u>BOP:</u></p> <p>Isolates #2 S/G:</p> <ul style="list-style-type: none"> <li>• Ensues MS-64B, #2 MSIV, is closed.</li> <li>• Ensures MS-65B, #2 MSIV Bypass, is closed.</li> <li>• Ensures #2 ADV controller is in Manual and closed.</li> <li>• Places ADV Quick Open Permissive switch in OFF.</li> <li>• Closes FW-41B, #2 Main Feed Reg Valve Bypass Valve.</li> <li>• Ensures FW-42B, #2 Main Feed Block Valve, is closed.</li> <li>• Places FW-5B, Main Feed Air Assist Check Valve switch in CLOSE.</li> <li>• Dispatches a PEO to unlock and close Disconnect for MS-202, #2 Main Steam Supply to the TDAFP. (May be performed earlier)</li> <li>• Ensures MS-220B, #2 S/G Blowdown Isolation, is closed.</li> <li>• Ensures both Aux Feed OVERRIDE/MAN/START/RESET hand switches are in Pull-To-Lock.</li> <li>• Closes FW-43B, #2 Aux Feed Reg Valve.</li> <li>• Places hand switch for FW-12B, #2 Aux Feed Air Assist Check Valve, in CLOSE.</li> <li>• Ensures MS-65B, #2 Main Steam Leg Low Point Drain, is closed.</li> <li>• Ensures Main Steam Safety Valves are closed.</li> </ul>
<p>SCENARIO END: When #2 S/G is isolated or at the discretion of the lead evaluator, direct the simulator to be placed in FREEZE.</p>	<p>When directed, inform the crew that the scenario is complete and place the simulator in FREEZE.</p>	

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INPUT SUMMARY						
Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
<b>MALFUNCTIONS</b>						
RP04A, Failure of #1 Reactor Trip Push Button	NA	NA	NA	NA	NA	6
RP04B, Failure of #2 Reactor Trip Push Button	NA	NA	NA	NA	NA	6
RP04C, Failure of #3 Reactor Trip Push Button	NA	NA	NA	NA	NA	6
RP04D, Failure of #4 Reactor Trip Push Button	NA	NA	NA	NA	NA	6
RP27B, Automatic RPS Trip Failure (ATWS)	NA	NA	NA	NA	NA	6
RH06A, Failure of "A" CS Pump to start.	NA	NA	NA	NA	NA	10
SW10, "A" SW Pump Degrades.	NA	240 sec.	1	100%	100%	1
RX03B, Channel Y Pressurizer Pressure transmitter fails low	NA	400 sec.	2	0%	0%	4
CH07, Seismic Event	NA	NA	3	NA	NA	5
RC04, 14 gpm RCS Leak.	NA	90 sec.	3	2%	2%	6
ED16B, Loss of VA-20	NA	NA	4	NA	NA	7
RC04, Small Break LOCA (175 gpm)	NA	270 sec.	6	25%	25%	8
ES04F, Actuation Cabinet 6 Deenergizes.	NA	NA	6	NA	NA	8
MS01B, ESD on #2 S/G inside Containment	NA	240 sec.	7	2.5	2.5	9
<b>REMOTE FUNCTIONS</b>						
SWR31, Place HS-6484A in Normal.	NA	NA	NA	NORM	NORM	2
MSR13, Close the disconnect for MS-202	NA	NA	NA	RI	RI	11
<b>OVERRIDES</b>						
Annunciator CA-4 on C-06/7, SW PUMP STNR TROUBLE	NA	NA	5	ON	OFF	3

### SIMULATOR EXERCISE VALIDATION CHECKLIST

Mark with an "X" Yes or No for any of the following. If the answer is No, include an explanation after the item.

- |  | Yes                                 | No                       |
|--|-------------------------------------|--------------------------|
| 1. The desired initial condition(s) could be achieved.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All malfunctions and other instructor interface items were functional and responded to support the simulator Scenario.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. All malfunctions and other instructor interface items were initiated in the same sequence described within the simulator scenario.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. All applicable acceptance criteria were met for procedures that were used to support the simulator scenario.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. During the simulator scenario, observed changes corresponded to expected plant response.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Did the scenario satisfy the learning or examination objectives without any significant simulator performance issues, or deviations from the approved scenario sequence?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. The simulator is capable of being used to satisfy learning or examination objectives without exceptions, significant performance discrepancies, or deviation from the approved scenario sequence.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Any identified Critical Tasks possesses the following elements (NUREG-1021):  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> <li>Essential to safety with adverse consequences or significant degradation,</li> <li>Cue(s) prompt the Operator to respond.</li> <li>Defined and measurable performance indicators.</li> <li>Performance feedback.</li> </ul> |                                     |                          |

The use of "N/A" is allowed for item 8 only if this is NOT an evaluated scenario.

Discrepancies noted (Check "none" or list items in comments field)

None ☒

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Validator: Sign the cover page only after noted discrepancies are corrected or compensatory actions are taken to ensure quality training.**



## SIMULATOR TRAINING 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: <u>1</u>	Rx Power: <u>100%</u>	
Megawatts: Thermal: 2698 MWTH	PZR Pressure: <u>2250</u> psia	
Electric: 888 MWe	RCS T-AVE: <u>569</u> degF	
RCS Leakage: Identified: 0.015 gpm	Protected Train/Facility: <u>TRAIN A</u>	
Unidentified: <u>0.036</u> gpm		
Date/Time: <u>Today 0015</u>		

**Active Tracking Records and Action Statements**
**Equipment/Reason**

LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.7.1.2	a	Today	4 hours	Restore to OPERABLE within 7 days.	6d, 20 hrs
TRM Table 7.1-15.1	b.1 and b.2	Today	4 hours	Establish a roving watch. Ensure FUNCTIONALITY of Fire Detection and Suppression systems for Fire Areas R-3, R-11, R-17 and R-17.	59 d, 20 hrs

**2-U-AIL, See AIL for details**

None					
------	--	--	--	--	--

**OD Compensatory Actions / Temp Logs**

Open Date	Class Reason	Reason	Watch Position
7/05/08	ODM	2-CH-507, RCP bleedoff relief isolation, is closed on C02. This is due to relief CH-199 leaking by into the PDT. ARP C-10 for Bleedoff flow high directs closing CH-507. ARP B-10 directs opening CH-507, (>280#). OP-2301C-001 has been modified for this valve to be CLOSED.	RO

**PLANT SYSTEMS APC**

System	Notes

**CROSS UNIT SYSTEM STATUS**

U3 Power to 24E	34A aligned to 24E
-----------------	--------------------

**SURVEILLANCES / EVOLUTIONS IN PROGRESS**

OP 2204	Steady State Operation
---------	------------------------

**REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)**

Current Rod Height	ARO @ 180
Xenon Trend	Stable
Current Boron	9.2 ppm
Boron Pot Setting / Blend Ratio	70 to 1 (corrected)

Facility: <u>MP2</u>	Scenario No.: <u>ES11LI4</u>	Op-Test No.: <u>1</u>
Examiners: _____ Operators: _____ _____ _____		
Initial Conditions: <u>45% power, BOL, Eq. Xe., \$ ppm Boron SGBD @ \$ gpm per SG, 24E aligned to 24D, "A" Main Feed Water Pump in service.</u>		
Turnover: <u>45% power, BOL, Eq. Xe., \$ ppm Boron, blend ratio: \$:1, SGBD @ \$ gpm per SG, 24E aligned to 24D, "A" Main Feed Water Pump in service, waiting for 'B' Main Feed Water Pump to come back from Maintenance, no other equipment OOS and no surveillance in progress or due.</u>		

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (RO/S)	
2	CH08C	C (BOP/S)	CRAC Filter Fan "A", F-32A, trips. (TS)
3	CW04C	C (BOP/S)	Main Condenser tube leak in the "C" water box.
4			
5			
6			
7			
8			
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

## ES11LI4

### **Scenario Summary:**

The crew will take the shift with the unit at approximately 50% power with the direction to hold power here until the "B" Main Feedwater Pump is returned from Maintenance.

Once the crew has the watch, the Control Room Air Conditioning (CRAC) Radiation Monitor will spike, causing the ventilation system to shift into recirculation mode. Per ARP 2590A-159, the crew should verify proper operation of the CRAC system and discuss returning the system to normal operation. Before this action is taken, a PEO will report that the belt for CRACS Filter Fan, F32A, is broken. This will require the crew to secure Facility 1 CRAC and ensure Facility 2 CRAC is operating as required per OP 2315A, Control Room Air Conditioning System. The US will enter TSAS 3.7.6.1a for an inoperable train of CRAC and call Maintenance/Work Planning to repair the fan belt.

While the work order for fan F32A is being generated, a seawater leak will develop in the "C" Waterbox. The crew will enter AOP 2516, Condenser Tube Leak, and isolate "C" Waterbox.

While "C" Waterbox is being isolated, Channel "Y" Pressurizer level transmitter will fail high causing Pressurizer pressure and level to lower. The crew will either take manual control of Pressurizer level (Letdown flow) or will swap to Channel "X".

When Pressurizer level is restored to setpoint and control is back in automatic, the "A" Condenser Steam Dump Valve will open slightly due to a failure of its C-05 controller output. The Crew must transfer control of the steam dump to the Foxboro IA Control System in order to re-close the valve.

Once the "A" Steam Dump is re-closed, the Turbine System Engineer will call to inform the crew that the "A" Main Feedwater Pump should be shut down as soon as possible due to abnormal noise coming from the pump turbine. This will force the crew into AOP 2575, Emergency Downpower, and commence a plant shut down.

Once plant power has been lowered about 10%, Bus 24C will deenergize (bus fault), requiring a manual plant trip. The crew will enter EOP 2525, Standard Post Trip Actions. On the trip, a LOCA will develop due to a rupture of the "A" RCP Seal Cooler.

During the performance of EOP 2525, a manual or automatic SIAS will be initiated and the "A" DG will be emergency tripped due to the fault on 24C (Loss of Service Water to the EDG).

After entry into EOP 2532, Loss of Coolant Accident, the "C" HPSI Pump will trip and not restart. The crew will recognize that safety injection flow is inadequate and start the "B" HPSI Pump.

The scenario will end after the crew isolates the intersystem LOCA and initiates a controlled cooldown.

**CT-1 (LOCA-9): Manually establish the required minimum safety injection flow.  
Restore a running HPSI pump within 30 minutes of entry into EOP 2532.**

**CT-2 (LOCA-3) Establish CTMT Isolation.  
Isolate CTMT by closing at least one isolation valve at each penetration.**

**and/or**

**CT-2 (LOCA-6) Isolate RCS Leakage.  
Isolate or attempt to isolate locations that may be the source of the loss of coolant.**

**CT-3 (LOCA-3): Initiate a plant cooldown.  
A plant cooldown at a rate of greater than 40°F/hr should be initiated within one hour, following an unisolable LOCA, until the condenser steam dump valves or ADVs are full open.**



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Job Aid

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SEG# ES10LI4 (Spare)

Rev ; 0

<b>SITE:</b>	<b>Millstone Power Station</b>		
<b>PROGRAM:</b>	<b>Unit 2 LOIT NRC Exam</b>		
<b>Title</b>	<b>Simulator #4 (Original Spare)</b>		
<b>COURSE:</b>	<b>ES10LI4</b>	<b>Course #: NA</b>	
<b>Total Time</b>	<b>1.5 hours</b>		

Prepared by:	<u>Robert L. Cimmino, Jr.</u>	<u></u>	<u>09/13/11</u>
	Printed Name	Instructor's Signature	Date
Reviewed by:	<u></u>	<u></u>	<u></u>
(Optional)	Printed Name	Simulator Development Checklist Instructor Signature	Date
Reviewed by:	<u></u>	<u></u>	<u></u>
(Optional)	Printed Name	Simulator Validation Checklist Signature	Date
Approved by:	<u></u>	<u></u>	<u></u>
	Printed Name	Training Supervisor	Date

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## REQUIREMENTS

**Goal of Training:**

- a) Evaluate the licensees' ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations, abnormal operating conditions and emergency operating conditions.
- b) Evaluate the crew's ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations and abnormal operating conditions. To include:
  - 1) Ability of the crew to perform crew-dependent (and time-critical) tasks.
  - 2) Ability of the crew to:
    - Understand/interpret annunciators/alarms, plant/systems response
    - Diagnose events/conditions based on signals/readings
    - Comply with/use procedures, Technical Specifications, and TRM
    - Perform control board operations
    - Properly communicate information/proper crew interactions
    - Practice Reactivity Management
    - Make conservative decisions.
  - 3) Ability of each individual to:
    - Respond and correctly interpret annunciators
    - Correctly diagnose events
    - Properly interpret integrated system response
    - Comply with and use Technical Specifications/TRM
    - Comply with and use procedures
    - Properly perform control board operations
    - Demonstrate responsible attitude
    - Properly communicate information and interact with rest of crew
    - Leadership skills required to effectively manage the evolutions
    - Provide adequate overview where required

**Learning Objectives:**

NA

**Tasks:**

NA

**Prerequisites:**

N/A

**Training Resources:**

1 lead simulator (floor) instructor, 1 booth instructor

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**References:**

ARP 2590A-159, CRACS in Auto Recirc Mode  
 ARP 2590D-067, C Hotwell Cond Hi  
 AOP 2516, Condenser Tube Leak  
 ARP 2590B-217, Pressurizer CH Y Level HI/LO  
 ARP 2590D-041, Condensate Pump Trouble  
 EOP 2525, Standard Post Trip Actions  
 EOP 2532, Loss of Coolant Accident  
 Plant Technical Specifications

**Commitments:**

N/A

**Evaluation Method:**

NRC License Examiner Observation

**Operating Experience:**

N/A

**Plant/Simulator  
differences that may  
affect the scenario:**

None

**Related PRA  
Information:**

Core Damage Frequency: 0.98  
LERF: 1.00  
Important Components: 24E aligned to 24C

SEG# ES10LI4 (Spare) Rev ; 0**OVERVIEW****INITIAL CONDITIONS:**

- 46% power BOL.
- 24E aligned to 24C with "A" & "B" Condensate Pumps operating.
- Plant startup with "A" Main Feed Pump in service.
- "A" Emergency Diesel Generator out of service for PMs.

The simulator will be prepared for the evaluation and the licensees will be briefed on the conduct of the evaluation and the areas in which they will be evaluated.

**Scenario Summary:**

The crew will take the shift with the unit at approximately 45% power with the direction to hold power here until the "B" Main Feedwater Pump is returned from Maintenance.

Once the crew has the watch, the Control Room Air Conditioning (CRAC) Radiation Monitor will fail high, causing the ventilation system to shift into recirculation mode. Five seconds after starting, the "A" Filter Fan, F32A, will trip due to a broken belt. Per ARP 2590A-159, the crew should verify proper operation of the CRAC system and note the loss of the filter fan. This will require the crew to secure Facility 1 CRAC and ensure Facility 2 CRAC is operating as required per ARP 2590A-159. The US will enter TSAS 3.7.6.1a for an inoperable train of CRAC, TSAS 3.3.3.1 for the failed rad monitor, and call Maintenance/Work Planning for the needed equipment repairs.

While the work order for fan F32A is being generated, a seawater leak will develop in the "C" Waterbox. Chemistry will report the leak and the crew will enter AOP 2516, Condenser Tube Leak, and isolate "C" Waterbox.

After "C" Waterbox is isolated, Channel "Y" Pressurizer level transmitter will fail high causing Pressurizer level and pressure to lower. The crew will either take manual control of Pressurizer level (Letdown flow) and swap to swap to Channel "X" level control, or immediately swap level control channels.

Once Pressurizer level is restored to automatic control, the "A" Condensate Pump motor winding temperatures will rise abnormally high, causing a control board trouble alarm and applicable PPC alarms. The Crew must start the "B" Condensate Pump and secure the "A" Condensate Pump before the "A" trips on high current/overload.

When the "A" Condensate Pump problem has been mitigated, the Turbine System Engineer will call to inform the crew that the "A" Main Feedwater Pump should be shut down as soon as possible due to abnormal noise coming from the pump turbine. This will force the crew into AOP 2575, Emergency Downpower, and commence a plant shut down.

Once plant power has been lowered by approximately 10%, a major fault will occur on bus 24A causing bus 24C to de-energize and force a manual plant trip. During the performance of EOP 2525, Standard Post Trip Actions, the "A" RCP seal cooler will rupture, resulting in an Intersystem, Small-Break LOCA.

After entry into EOP 2532, Loss of Coolant Accident, the "C" HPSI Pump will trip and not restart. The crew will recognize that safety injection flow is inadequate and the need to start a Facility 1 HPSI Pump. This will require either bus 24C be re-energized from the RSST, or 24E be re-energized from Unit 3.

The scenario will end after the crew isolates the intersystem LOCA and initiates a controlled cooldown.

SEG# ES10LI4 (Spare) Rev ; 0**Critical Tasks**

**CT-1 (LOCA-9): Manually establish the required minimum safety injection flow.  
Restore a running HPSI pump within 30 minutes of entry into EOP 2532.**

**CT-2 (LOCA-3) Establish CTMT Isolation.**

**Isolate CTMT by closing at least one isolation valve at each penetration.**

**and/or**

**CT-2 (LOCA-6) Isolate RCS Leakage.**

**Isolate or attempt to isolate locations that may be the source of the loss of coolant.**

**CT-3 (LOCA-3): Initiate a plant cooldown.**

**A plant cooldown at a rate of greater than 40°F/hr should be initiated within one hour, following an unisolable LOCA, until the condenser steam dump valves or ADVs are full open.**



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### SIMULATOR SETUP CHECKLIST

- ☐ ENSURE TRex Workstation is operating.
- ☐ VERIFY the most current approved training load is loaded.
- ☐ RESET to **IC-83 (~45% power, BOL)**
- ☐ If necessary, ADJUST the various potentiometer settings to the values specified by the chart in the simulator Notebook for the selected IC.
- ☐ As needed, RESET Computer Terminals (At Power displays if 100% power IC).
- ☐ ENSURE SG blowdown values in PPC Plant Calorimetric are reset.
- ☐ ENSURE RCS Leak Rate is reset in PPC.
- ☐ ENSURE keys on Control Panels are only those required for the session (including RPS, ESAS, and RC-14).
- ☐ ADVANCE chart recorders.
- ☐ ENSURE the appropriate Protected Train placard is hung (**A TRAIN PROTECTED**).
- ☐ ENSURE appropriate signs are in place on simulator doors.
- ☐ ENSURE procedures designated for use during the scenario are clear of previous place keeping marks.
- ☐ If necessary, ENSURE Simulator fidelity items cleared.
- ☐ ENSURE each desk has adequate supplies (e.g., pencils, grease pencils, markers, paper).
- ☐ If required, OVERRIDE annunciators that will be lit long-term in the Control Room.
- ☐ ENTER Initial Malfunctions / I/Os / Remote Functions.
- ☐ PLACE Simulator to RUN.
- ☐ If placing Equipment OOS, then PERFORM necessary switch manipulations and HANG appropriate tags, as required for the following:
  - **“A” and “C” Condensate Pumps running and “B” Condensate Pump in standby.**
  - **24E aligned to 24C.**
  - **“A” EDG OOS.**
  - **“B” Main Feedwater Pump OOS.**
- ☐ PERFORM final walk down of Control Panels to verify proper indications (e.g., lights, switches, magnetic labels).

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>1. INITIAL CONDITIONS:</b> <ul style="list-style-type: none"> <li>• IC-18</li> <li>• Mode: 1</li> <li>• Burnup: MOL</li> <li>• Power: 45%</li> <li>• Boron: (CB): <b>XXX</b> ppm</li> <li>• Temperature: Tave <b>563°F</b></li> <li>• Pressure: 2250 psia</li> <li>• Xenon: Increasing</li> <li>• Rods: Gp 7 at <b>165</b></li> <li>• Generator: <b>405</b> MWe</li> </ul>	ENTER or VERIFY the following Initial Malfunctions / I/Os / Remote Functions: <ul style="list-style-type: none"> <li><input type="checkbox"/> Ensure 24E aligned to 24C.</li> <li><input type="checkbox"/> Ensure "A" &amp; "C" Condensate Pumps are running and "B" is in standby.</li> <li><input type="checkbox"/> "A" Main Feedwater Pump tagged out.</li> <li><input type="checkbox"/> "A" EDG tagged out. EGR17 (RO) "A" EDG Bkr. tagged out. EGR12 (CLOSED) "A" EDG Air Start isol.</li> </ul>	N/A
<b>2. SIMULATOR SETUP:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.</li> </ul>	COMPLETE Simulator Setup Checklist	N/A
<b>3. PRE-SCENARIO:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> BRIEF the crew on purpose of this session and REVIEW objectives (if necessary).</li> <li><input type="checkbox"/> IF this is the first simulator scenario of the week, <u>THEN</u> REVIEW the Plant/Simulator Differences List with the crew.</li> </ul>		Review Log keeping responsibilities per the Gold Standard Book, page 23 & 24.
<b>4. TURNOVER:</b> PERFORM the crew turnover (Turnover Sheet) with the SM. <ul style="list-style-type: none"> <li><input type="checkbox"/> Provide crew with partially completed OP 2204 and brief on existing conditions.</li> </ul>		US brief crew on plant conditions and any major equipment OOS. (All) Walk down control boards and let US know when they are ready. No shift briefing is required or recommended.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>1. Facility 1 CRAC Shifts to Recirculation Mode With Loss of Fan F-32A</b>	Once the crew has the watch, and at the discretion of the Lead Examiner, initiate #1.	<b><u>Tech Spec</u></b>
CRAC Facility 1 Radiation Monitor fails low, causing the system to shift to Recirculation Mode. Shortly after this occurs, the Filter Fan, F-32A, will trip due to broken fan belts overloading the motor.	<b><u>Event 1:</u></b> RM010 – 100%  RM-9799A fails high, causing “A” Train of CRAC to shift to “Recirc.” mode.	<b><u>RO:</u></b>  <ul style="list-style-type: none"> <li>Observe “C.R.A.C.S. IN AUTO RECIRC MODE” annunciator (C-40) on C01 and Facility 1 CRAC has shifted to recirc. mode.</li> <li>Reports observation to US.</li> </ul>
		<b><u>US:</u></b>  <ul style="list-style-type: none"> <li>Enters ARP-2590A-159, <u>Automatic Function:</u> CRACS transfers to recirculation mode.</li> <li>Directs the RO to verify Facility 1 operating as designed in recirculation mode.</li> </ul>
	<b><u>Event 1:</u></b> CH08C – ON (5 second delay)  <b>CHHS8006_1 (NG) (5 second delay)</b> F-32A green light out  <b>CHHS8006_1 (NR) (5 second delay)</b> F-32A red light out  If requested, call as a PEO to report fan F-32A belts have failed and appear to have caused the fan to trip.	<b><u>RO:</u></b> Per ARP 2590A-159  <ol style="list-style-type: none"> <li>Verifies Facility 1 CRAC has shifted to recirculation mode.</li> <li>PLACE “NORM/RECIRC MODE, HS-8346” AND “NORM/RECIRC MODE, HS-8359” switches in “RECIR” (C-25A and C-25B).</li> <li>Check damper positions.</li> <li>Verify both Filter Fans running. Notes F-32A not running or tripped.</li> </ol> <ul style="list-style-type: none"> <li>Reports observation to US.</li> </ul>
	<b>TM1, AE1</b>	<b><u>US:</u></b> Per ARP 2590A-159  <ul style="list-style-type: none"> <li>Receive report of F-32A failure.</li> <li>Direct RO to secure Fac. 1 CRAC and start Fac. 2 CRAC per OP-2315A, Control Room Air Conditioning System.</li> <li>Enters <b>TSAS 3.7.6.1a.</b>; One train of CRAC inoperable.</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>RO</u>: Per ARP 2590A-159</p> <ol style="list-style-type: none"> <li>5. Per OP-2315A, shifts from Fac. 1 to Fac. 2 CRAC operating.</li> <li>5.1. VERIFY "CRACS SPLY FAN F21B, HS-8010" and "CRACS EXH FAN F31B, HS-8000" running (C-25B).</li> <li>5.2. CHECK "F-21B, EXH DMPR, HV-203B" and "F-31B, EXH DMPR, HV-206B" open (C-25B).</li> <li>5.3. VERIFY "CRACS SPLY FAN F21A, HS-8009" and "CRACS EXH FAN F31A, HS-8001" not running (C-25A).</li> <li>5.4. CHECK "F-21A, EXH DMPR, HV-203A" and "F-31A, EXH DMPR, HV-206A" closed (C-25A).</li> <li>5.5. CHECK "F-32B EXH DMPR, HV-212B," indicates open (red light lit) (C-25B).</li> <li>9. Verifies one complete train (Fac. 2) of CRAC operating.</li> </ol>
<p>The crew may attempt to return CRAC to "NORMAL" but will be unable to with the failed rad monitor.</p>		<p><u>US/RO</u>: Per ARP 2590A-159</p> <ul style="list-style-type: none"> <li>• Receives report; Fac. 2 CRAC in service.</li> <li>12. Notes probable failure of RM-9799A and enters <b>TSAS 3.3.3.1. Action 16</b>; Control Room Isolation Rad Monitor inoperable.</li> <li>• Makes required notifications for troubleshooting and repairs.</li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>2. Condenser Tube Leak (seawater) in the "C" Water Box.</b>	When actions for #1 are completed, or at the discretion of the Lead Examiner, initiate #2.	
	<b>Event 2: CW04C – 10 gpm (100%)</b> Main Condenser tube leak in the "C" water box. When the Demin System Trouble alarm comes in, call as Chemistry and report indication of a tube leak in "C" Water Box. TM2, AE2	<b>BOP:</b> <ul style="list-style-type: none"> <li>Observe "CONDENSATE DEMIN SYSTEM TROUBLE" annunciator (A-16) on C05.</li> <li>Reports observation to US.</li> <li>Utilize the ARP for "C" HOTWELL COND LEVEL HI annunciator (BA-17) on C05. (Hotwell conductivity recorders will already be pegged high with all alarms active due to the low power level).</li> </ul>
	If necessary, call as the SM and remind the US that the PPC conductivity screen will <u>not</u> update with rising conductivity.	<b>US:</b> AOP 2516, Condenser Tube Leak <ul style="list-style-type: none"> <li>Notes actions under ARP 2590D-061 under Chemistry jurisdiction.</li> <li>Enters ARP-2590D-067, HOTWELL COND LEVEL HI (C05, BA-17), go to AOP 2516.</li> <li>Enters AOP-2516, Condenser Tube Leak.</li> <li>3.1 N/A</li> <li>3.2 Notes CPF demins. are operating in Amine form, references OP-2316A, Main Steam System, and directs BOP to secure SG blowdown.</li> </ul>
		<b>BOP:</b> <ul style="list-style-type: none"> <li>Per OP-2316A, closes MS-220A &amp; -220B and MS-145A &amp; -145B</li> <li>Verifies PPC indicates zero blowdown flow.</li> <li>Reports completion to US.</li> </ul>
	If Chemistry samples are requested, inform US samples have already confirmed "C" water box has a tube leak.	<b>US:</b> <ul style="list-style-type: none"> <li>3.5 Determines "C" water box should be isolated and references AOP-2516, section 6.0, Isolate "C" Water Box</li> </ul>

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		<b>AOP 2516 Condenser Tube Leak</b> <b>6.1 – 6.3 N/A</b> <b>6.4</b> Directs the BOP to stop the “C” Circ. Pump
		<u>BOP:</u> <b>6.4</b> Per AOP-2516, secures “C” Circ. Pump by tripping or lowering VFD.
		<u>US:</u> Directs the BOP to perform the following: <b>6.5</b> Close CW-11F, “C” water box inlet. <b>6.6</b> Monitor RBCCW & TBCCW temperatures. <b>6.8</b> Ensure CW-11C, “C” water box outlet open.
	<b>Event 8:</b> <b>FWR53 (CLOSE)</b> “C” condenser air isolation. <b>CWR04A (CLOSE)</b> “C” water box outlet and inlet stops. VP-9C us not modeled. <b>When valves linked to Event 8 have reached their demand position, inform the crew that all PEO actions are completed.</b> <b>It is <u>not</u> necessary to actually start a 2<sup>nd</sup> SJAE or the Mechanical Vacuum Pumps.</b>	<u>US (or BOP):</u> Directs a PEO to: <b>6.9</b> Close AR-1C, condenser “C” isolation stop. <b>6.10</b> Close VP-1C & -1G, “C” water box outlet & inlet stops. <b>6.11</b> Open VP-9C, “C” water box inlet vent. <b>6.12</b> (Crew/BOP) Monitor condenser vacuum. <b>6.13</b> Deenergize cathodic protection. <b>6.14</b> (BOP) When directed, close CW-11C.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>3. Failure of Channel "Y" Pressurizer Level Transmitter.</b>	<b>When actions for #2 are completed, or at the discretion of the Lead Examiner, initiate #3.</b>	<b><u>Tech Spec (TRM)</u></b>
	<b><u>Event 3:</u> RX04B – 85% (300 second ramp)</b> Channel "Y" Pressurizer Level transmitter fails high over a period of five minutes. <b>TM3, AE3</b>	<b><u>RO:</u></b> <ul style="list-style-type: none"> <li>Observes and reports any of the following:                             <ul style="list-style-type: none"> <li>Letdown flow rising.</li> <li>Pressurizer backup heaters energized.</li> <li>Level controller output rising.</li> <li>Actual level dropping (may not be diagnosed at this time).</li> <li>PRESSURIZER CH Y LEVEL HI/LO annunciator (A-39) on C02-3 (delayed).</li> </ul> </li> </ul>
		<b><u>US:</u></b> Enters ARP-2590B-217, annunciator A-39. <b>3.</b> Notes indicated level is high. <ul style="list-style-type: none"> <li>a. Backup charging pump has stopped.</li> <li>b. Letdown flow is at maximum (128 gpm)</li> </ul> <b>5.</b> Verifies $T_{AVG}/T_{REF}$ recorder and Foxboro I/A indicate normal (RRS is not the problem).
The ARP assumes only one charging pump is running. Therefore, when level control is transferred to Channel 'X', the 2 <sup>nd</sup> charging pump will restart automatically, unless the charging pump control switches have been changed from the initial setup of two running pumps.		<b><u>US:</u></b> Directs and the <b><u>RO</u></b> performs the following: <ul style="list-style-type: none"> <li><b>8.1</b> SHIFT "LTDN FLOW CNTL, HIC-110" to "MAN" (C-02).</li> <li><b>8.2</b> Adjust "LTDN CNTL, HIC-110" to stabilize Pressurizer level and Letdown flow.</li> <li><b>8.3</b> Commence forcing PZR sprays (in setup)</li> <li><b>8.4</b> SHIFT PZR level control to channel "X".</li> <li><b>8.5</b> RESTORE Letdown to automatic.</li> </ul>
		<b><u>RO:</u></b> (Restoring Letdown flow to automatic) <ul style="list-style-type: none"> <li><b>8.5.1</b> Adjust bias to "0".</li> <li><b>8.5.2</b> Shift HIC-110" back to "AUTO."</li> <li><b>8.5.3</b> Adjust bias to restore PZR level to setpoint.</li> <li><b>8.5.4</b> Shift Pressurizer heater control "SEL SW" to channel "X".</li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
4. <b><i>"A" Condensate Pump High Motor Winding Temperature.</i></b>	When HIC-110 is back in automatic, or at the discretion of the Lead Examiner, initiate #4.	
	<b><u>Event 4:</u> FW23 – 100%</b> The "A" Condensate Pump motor winding temperature will begin to rise abnormally high, causing control board and PPC alarms. <b>TM4, AE4</b>	<b><u>BOP/Crew:</u></b> <ul style="list-style-type: none"> <li>Observe "A" Condensate Pump high motor winding alarms on PPC MON 2.</li> <li>Observe "CONDENSATE PUMP TROUBLE" alarm A-11 on C05</li> </ul>
		<b><u>US/BOP:</u></b> <ul style="list-style-type: none"> <li>Enters ARP-2590D-041, annunciator A-11, CONDENSATE PUMP TROUBLE.</li> <li>1. Notes "A" Condensate Pump <u>not</u> tripped.</li> <li>2. Notes "A" Condensate Pump amps <u>not</u> high</li> <li>3. Notes "A" Condensate Pump motor winding temperature high and rising on the PPC.</li> <li>• <b><u>US</u></b> - Directs "B" Condensate Pump be started.</li> <li>• <b><u>US</u></b> - Directs "A" Condensate Pump be secured.</li> </ul>
	<b><u>Event 9:</u> FW23 – 0% (ramp 5 minutes)</b> <b><u>When</u> "A" Condensate pump is secured, trigger Event 9 to ramp down high temp.</b>	<b><u>BOP</u></b> <ul style="list-style-type: none"> <li>Starts the "B" Condensate Pump.</li> <li>Secures the "A" Condensate Pump and places it in Pull-To-Lock.</li> <li>Observes Condensate Header pressure.</li> </ul>



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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<p><b>5. Rapid Downpower due to failing SGFP.</b></p>	<p>When 'B' Cond. pump is running, or at the discretion of the Lead Examiner, initiate #5.</p>	<p><b>Reactivity Manipulation</b></p>
<p>The US may <u>not</u> use a predetermined reactivity plan due to the existing power level not directly matching any existing plant generated by RE. In this case, reactivity thumbrules should be used.</p>	<p>Call as Turbine Engineer and inform the crew that the "A" SG Feed Pump (SGFP) is making unusual noises and should be shut down as soon as possible. It is <u>not</u> necessary to trip the pump at this time.</p> <p>TM5, AE5</p>	<p><u>US:</u></p> <ul style="list-style-type: none"> <li>Enters AOP 2575, Rapid Downpower <ul style="list-style-type: none"> <li>Performs Focus Brief on Trip Criteria and RCS Temperature Control.</li> <li>Requests SM/STA to make required notifications.</li> <li>Directs RO to initiate forcing sprays and to insert Group 7 CEAs 10 steps (while maintaining Reactivity oversight)</li> <li>Determines which Reactivity Plan, RE-G-13, -14, or -15 may be used.</li> <li>Directs RO and BOP to coordinate a rapid downpower per the chosen plan.</li> </ul> </li> </ul>
<p>The US may direct Boration to be accomplished from the BAST to allow for easier makeup to the VCT. Boration from the BAST (alternate method) is in italics.</p>		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>Initiates Forcing Sprays: (if not already) <ul style="list-style-type: none"> <li>Closes all Backup Heater Breakers</li> <li>Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia).</li> </ul> </li> <li><b>Inserts Group 7 CEAs 10 steps</b> and observes applicable parameters.</li> <li><b>Initiates Boration</b> from the RWST: <ul style="list-style-type: none"> <li>Ensures at least one Charging Pump is operating.</li> <li>Ensures CH-196, VCT Makeup Bypass, is closed.</li> <li>Ensures CH-504, RWST to Charging Suction, is open.</li> <li>Opens CH-192, RWST Isolation.</li> <li>Closes CH-501, VCT Outlet.</li> <li>Starts a second Charging Pump.</li> </ul> </li> </ul>

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		<p><u>RO (alternate boration method):</u></p> <ul style="list-style-type: none"> <li>• If Boration is from the BAST: <ul style="list-style-type: none"> <li>○ Ensures the Makeup Flow Selector switch is in the DILUTE position.</li> <li>○ Ensures FC-210X, Primary Makeup Water Flow controller, is set to "0".</li> <li>○ Ensures CH-512, Makeup Valves Stop, is closed.</li> <li>○ Ensures CH-196, VCT Makeup Bypass, is closed.</li> <li>○ Ensures CH-192, RWST Isolation, is closed.</li> <li>○ Ensures FC-210Y, Boric Acid Flow controller, is set to the predetermined flow rate.</li> <li>○ Opens CH-504, RWST to Charging Suction.</li> <li>○ Place Makeup Mode Sel switch in MAN.</li> <li>○ Starts the selected Boric Acid and verifies discharge pressure is greater than 98 psig.</li> <li>○ Opens CH 196, VCT Makeup Bypass.</li> <li>○ As required, refers to attachment and performs actions to maintain VCT level in the desired band.</li> </ul> </li> </ul>
		<p><u>BOP:</u></p> <p>Reduces Turbine load to follow Reactor power to maintain Tc on program using the Load Limit Pot.</p>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<b>6. Loss of Vital Bus 24C; Manual Plant Trip. LOCA Initiates on the Plant Trip.</b>	<p><b>When power is lowered by ~ 10%, or at the discretion of the Lead Examiner, initiate #6.</b></p> <p><b>Event 6: ED05A – ON</b></p> <p>Causes a fault on vital bus 24A which results in the following:</p> <ul style="list-style-type: none"> <li>• NSST to 24A trips on the bus fault, deenergizing 24A and all non-Vital 4160/480 VAC power (unrecoverable).</li> <li>• 24C deenergizes causing Fac. 1 ESAS UV</li> <li>• The UV locks out the RSST to 24C.</li> <li>• Because “A” EDG is OOS, 24C and all Vital 4160/480 VAC power remain deenergized.</li> <li>• 24C can be recovered, but not in time to prevent a required plant trip.</li> </ul> <p><b>TM6, MA1</b></p> <p><b>Event 6: (+2 minutes) RC20B 308 gpm (56%)</b></p> <p>On the trip, a rupture will occur in the “A” RCP seal cooler, resulting in a Small Break LOCA.</p> <p><b>TM7, MA2</b></p>	<p><b>US:</b></p> <p>Directs the crew to manually trip the Reactor and perform EOP 2525, Standard Post Trip Actions.</p> <p>Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525:</p> <ul style="list-style-type: none"> <li>• Reactivity Control (RO) <ul style="list-style-type: none"> <li>◦ Status of the Reactor</li> </ul> </li> <li>• Maintenance of Vital Auxiliaries (BOP) <ul style="list-style-type: none"> <li>◦ Status of the Turbine</li> <li>◦ Status of Electrical Buses</li> <li>◦ Status of SW &amp; RBCCW</li> <li>◦ Check one facility of CRAC operating (RO)</li> </ul> </li> <li>• RCS Inventory Control (RO) <ul style="list-style-type: none"> <li>◦ Pzr level &amp; Subcooled margin (SCM), value &amp; trend</li> </ul> </li> <li>• RCS Pressure Control (RO) <ul style="list-style-type: none"> <li>◦ Pzr pressure, value &amp; trend</li> </ul> </li> <li>• Core Heat Removal (RO) <ul style="list-style-type: none"> <li>◦ RCP status</li> <li>◦ Loop delta-T</li> <li>◦ T<sub>H</sub> Subcooling Margin</li> </ul> </li> <li>• RCS Heat Removal (BOP) <ul style="list-style-type: none"> <li>◦ S/G pressures, value and trend</li> <li>◦ RCS T<sub>C</sub> value and trend</li> <li>◦ S/G levels, value and trend</li> <li>◦ RCS Subcooling Margin</li> </ul> </li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<ul style="list-style-type: none"> <li>Containment (CTMT) Isolation (RO) <ul style="list-style-type: none"> <li>Radmonitors inside CTMT, outside CTMT, steam plant</li> <li>CTMT pressure &lt;1 psig</li> </ul> </li> <li>CTMT Temperature &amp; Pressure Control (RO) <ul style="list-style-type: none"> <li>CTMT temperature and pressure value and trend</li> </ul> </li> </ul>
		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>Presses all four Reactor Trip push buttons on C-04 and verifies the Reactor trips.</li> <li>Reactor has tripped, power is lowering, SUR is negative, all CEAs are inserted.</li> </ul>
		<p><u>BOP:</u></p> <p>Perform associated actions of EOP 2525 and report results when queried:</p> <ul style="list-style-type: none"> <li>Turbine tripped, stop valves are closed, 8T &amp; 9T are open, Megawatts are zero</li> <li>All electrical buses energized except for 24A and 24C ("A" EDG OOS).</li> <li>Facilities 2 SW and RBCCW operating.</li> </ul>
		<p><u>RO:</u></p> <p>Performs associated actions of EOP 2525 and report results when queried:</p> <ul style="list-style-type: none"> <li>Control Room Air Conditioning Status</li> <li>Pressurizer level value and trend <ul style="list-style-type: none"> <li>PZR level lowering, all available charging pumps running, letdown flow at minimum.</li> </ul> </li> </ul>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<p>The remaining RCPs may be secured when the crew recognizes the leak in the "B" RCP Seal Cooler.</p>		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li>Pressurizer pressure value and trend                             <ul style="list-style-type: none"> <li>PORVs and Spray Valves are closed</li> <li>When RCS pressure is less than 1714 psia, then SIAS, CIAS, and EBFAS have actuated (only Facility 2 powered).</li> <li>"A" &amp; "C" RCPs secured due to no RBCCW flow on loss of 24C.</li> <li>If Pressurizer pressure lowers to minimum NPSH, then all RCPs are secured.</li> </ul> </li> <li>Number of RCPs operating                             <ul style="list-style-type: none"> <li>Value and trend of loop Delta-T</li> <li>Value and trend of subcooling</li> </ul> </li> <li>If no RCPs operating, T<sub>AVG</sub> controller, TIC-4165 in manual/closed</li> </ul>
		<p><u>BOP:</u></p> <p>Performs associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>Value and trend of S/G pressures</li> <li>Operates steam dumps, as necessary, to control RCS T<sub>AVG</sub>.</li> <li>Value and trend of T<sub>C</sub></li> <li>Value and trend of S/G levels</li> <li>Subcooling value / CET temperatures</li> </ul>

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		<p><u>RO:</u></p> <p>Continues with associated actions of EOP 2525 and reports results when queried:</p> <ul style="list-style-type: none"> <li>Rad monitors: <ul style="list-style-type: none"> <li>Inside CTMT; not going up or in alarm</li> <li>Outside CTMT; RM-6038, RBCCW going up and/or in alarm.</li> </ul> </li> </ul> <p><u>US/BOP/RO:</u> RBCCW Surge Tank level rising</p> <ul style="list-style-type: none"> <li>Steam Plant; not going up or in alarm.</li> </ul> <ul style="list-style-type: none"> <li>CTMT temperature/pressure rising slowly. <ul style="list-style-type: none"> <li>2 CAR Fans and "B" Aux Circ. Fan running in slow.</li> <li>Starts "B" PIR Fan.</li> </ul> </li> </ul>
		<p><u>BOP:</u></p> <p>Continue with Subsequent Actions:</p> <ul style="list-style-type: none"> <li>Opens HD-106, Subcooling Valve</li> <li>Stops both Heater Drains Pumps</li> <li>Secures all but one Condensate Pump</li> <li>Verifies Main Feed Pump operating. <ul style="list-style-type: none"> <li>Closes FW-42B, Main Feed Block Valve.</li> <li>Ensure both Main Feed Reg Bypass Valves are throttled to 40%</li> </ul> </li> <li>Checks IA Header pressure is &gt;90 psig and stable.</li> </ul>
		<p><u>US:</u></p> <p>Query RO &amp; BOP regarding the status of EOP 2525 subsequent actions.</p>

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FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<p><u>RO/BOP:</u></p> <p>When asked, report that Subsequent Actions are complete and verified.</p>
		<p><u>US:</u></p> <ul style="list-style-type: none"> <li>• At the completion of EOP 2525, Diagnostic Flow Chart, determines that a LOCA inside Containment has occurred and goes to EOP 2532, Loss of Coolant Accident.</li> <li>• Places Master Silence Switch in NORM.</li> <li>• Notes the need for the SM to complete EPI-FAP06-002, classify the event as an Alert, Charlie-1, and make appropriate notifications.</li> </ul>

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<b>7. Loss of High Pressure Safety Injection.</b>	Once EOP 2532 actions are started, or at the discretion of the Lead Examiner, initiate #7.	<b><u>EOP-2532, Loss Of Coolant Accident</u></b>
	<p><b><u>Event 7:</u></b> RC20B 550 gpm (100%) Raise the severity of the "B" RCP Seal Cooler tube rupture to maximum.</p> <p><b><u>Event 27 (RCS Pres &lt; 1600 psia):</u></b> SI04C – ON Initiate a trip of the "C" HPSI Pump when RCS pressure drops below 1600 psia, causing the loss of the only running High Pressure Safety Injection Pump. <b>TM8, EM1</b></p>	<p><u>US:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Enters EOP 2532, Loss Of Coolant Accident</li> <li><input type="checkbox"/> Directs performance of SFSC</li> <li><input type="checkbox"/> Directs Chemistry sample S/Gs</li> <li><input type="checkbox"/> Directs SM to classify the event</li> <li><input type="checkbox"/> Opens Place keeper and ENTER the EOP entry time</li> <li><input type="checkbox"/> Ensures the master silence switch is in "NORMAL"</li> </ul>
		<p><u>US/BOP:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Opens both SG sample valves.</li> <li><input type="checkbox"/> Directs Chemistry to do the following: <ul style="list-style-type: none"> <li>o Sample both SGs.</li> <li>o Frisk the samples.</li> <li>o Report frisk results.</li> <li>o Analyze samples for boron and activity.</li> </ul> </li> </ul>
		<p><u>RO:</u></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Check SIAS, CIAS and EBFAS actuation.</li> <li><input type="checkbox"/> Check adequate Safety Injection flow. <ul style="list-style-type: none"> <li>o Notes "C" HPSI pump has tripped.</li> <li>o May attempt restart of "C" HPSI Pump.</li> <li>o Reports "A" &amp; "B" HPSI pumps have no power. 24C or 24E must be restored.</li> </ul> </li> </ul>



## Simulator Exercise Guide

Job Aid

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
When "B" charging pump is swapped to 22F it will automatically start due to the already existing SIAS start signal.	<b>Event 10: CVR11 22F</b> When directed, swap "B: charging pump to 22F.	<b>RO:</b> <ul style="list-style-type: none"> <li>○ Directs PEO to swap "B" Charging pump power to Facility 2 (22F).</li> <li>○ Takes "B" Charging Pump out of "Pull-To-Lock".</li> <li>○ Verifies "B" Charging Pump running.</li> </ul>
	There will not be any safety injection flow from the HPSI pump until RCS pressure drops below 1250 psia.	<b>US:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Acknowledges "C" HPSI pump lost (no SI) and "A" &amp; "B" HPSI pump without power.</li> <li><input type="checkbox"/> Directs 24C be reenergized by the RSST or Unit 3.</li> </ul>
If energizing 24C from the RSST, this section will be used.	If the crew desires to energizing 24E from Unit 3 and requests power, give permission to take power up to the applicable limit. Unit 3 is not experiencing any power challenges and is operating normally.	<b>RO/BOP:</b> Appendix 23-B, Energizing 24C from the RSST <ol style="list-style-type: none"> <li>1. Verifies RSST energized on C-08.</li> <li>2. Checks for faults on 24C.</li> </ol> <p>Note: the fault on 24A may be seen as a fault on 24C and cause the crew to abandon efforts to restore 24C. If so, they should proceed to restore power to 24E from Unit 3 (following).</p> <ol style="list-style-type: none"> <li>3. Ensures breakers A304, A305 and A312 are open. (A305 would be closed on setup).</li> <li>4. Ensures A702 is closed.</li> <li>5. Put synch switch for A302 to "ON".</li> <li>6. Gets key #26 from cabinet and places all four ESAS "UV BUS A3" in "INHIBIT".</li> <li>7. Presses "UV RESET" button on Cabinet 5.</li> </ol>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<u>RO/BOP:</u> Appendix 23-B, Energizing 24C from the RSST 8. "A" RBCCW and SW pumps in P-T-L. 9. Both AFW Override switches in P-T-L. 10. Override off "A" HPSI, LPSI and CS pumps. 11. Close A302 to energize 24C.
CT-1 (LOCA-9): Manually establish the required minimum safety injection flow. Restore a running HPSI pump within 30 minutes of entry into EOP 2532.		<u>RO:</u> Start the "A" HPSI pump and verify adequate SI. <u>US:</u> Verifies SI flow adequate.
If energizing 24E from Unit 3, this section will be used.		<u>RO/BOP:</u> Appendix 23-N, Energizing 24E from Unit 3 1. Checks no faults on 24E. 2. Verifies 24E supply from Unit 3 has voltage. 3. "B" HPSI, SW and RBCCW pumps off. 4. Ensure A305 and A408 are open. 5. Verifies permission granted from Unit 3. 6. Put synch switch for A305 to "ON" and check "INCOMING" voltage. 7. Close A305 to energize 24E. 8. Check voltage indicated on "RUNNING". 9. Put synch switch for A305 to "OFF".
CT-1 (LOCA-9): Manually establish the required minimum safety injection flow. Restore a running HPSI pump within 30 minutes of entry into EOP 2532.		<u>RO:</u> Start the "B" HPSI pump and verify adequate SI. <u>US:</u> Verifies SI flow adequate.
		<u>BOP:</u> <input type="checkbox"/> Verifies switchgear room cooling.
		<u>RO:</u> <input type="checkbox"/> Stop RCPs as necessary (may have been secured earlier if NPSH was lost).

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<input type="checkbox"/> Place PZR spray controller(s) in manual and close. <input type="checkbox"/> Place HIC-4165 in manual and close.
		<u>RO/BOP:</u> <input type="checkbox"/> Verifies PORVs closed, letdown isolated, RCS sample valves closed. <input type="checkbox"/> Notes indication of leakage into RBCCW <ul style="list-style-type: none"> <li>o RM-6038, RBCCW Rad. Monitor, rising.</li> <li>o RBCCW Surge Tank level rising (C06)</li> </ul>
		<u>US:</u> <input type="checkbox"/> Directs any operating RCPs be secured. <input type="checkbox"/> Directs RBCCW CTMT Header Isolation Valves be closed.
		<u>BOP:</u> <input type="checkbox"/> Stops the operating RCPs. <input type="checkbox"/> Places associated pressurizer spray valve controller RC-100E or RC-100F in manual and closed. <input type="checkbox"/> Places TIC-4165, steam dump TAVG controller, in manual and closed.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
<p><b>CT-2 (LOCA-3) Establish CTMT Isolation.</b> Isolate CTMT by closing at least one isolation valve at each penetration.</p> <p align="center"><u>and/or</u></p> <p><b>CT-2 (LOCA-6) Isolate RCS Leakage.</b> Isolate or attempt to isolate locations that may be the source of the loss of coolant.</p> <p><b>Note:</b> As a minimum, RB-30.1B and RB-37.2B must be closed.</p>	<p><b>Event 11: 05A1A2S9 CLOSE</b> <b>05A1AS12 CLOSE</b></p> <p><b>If directed to close RB-30.1A and RB-37.1A locally, trigger Event 11.</b> <b>Then do the following to close the valves:</b></p> <ol style="list-style-type: none"> <li>1. Open the "Insight" window.</li> <li>2. In "Insight", open the file "johnccrbvalves.tis".</li> <li>3. Set the values for both valves to "0.0".</li> </ol>	<p><b>BOP:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Closes Fac. 1 RBCCW CTMT header isolation valves: RB-30.1A, RB-37.2A. <ul style="list-style-type: none"> <li>o If 24C has <u>not</u> been restored, directs a PEO to close the valves locally.</li> </ul> </li> <li><input type="checkbox"/> Closes Fac. 2 RBCCW CTMT header isolation valves: RB-30.1B and RB-37.2B.</li> </ul>
	<p><b>Note: The Crew may need to continue to monitor indications to ensure the LOCA has been redirected into CTMT.</b></p>	<p><b>US/CREW:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies LOCA is no longer outside CTMT.</li> </ul>
		<p><b>US/CREW:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Directs/places hydrogen analyzer in service.</li> </ul>
		<p><b>Crew:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies SIAS, CIAS, EBFAS, MSI, CRACS, CAR fan operation, as necessary.</li> </ul>
		<p><b>US/BOP:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Verifies adequate instrument air pressure.</li> </ul>
		<p><b>US:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Directs Crew initiate a controlled cool down and depressurization of RCS.</li> </ul>
<p><b>CT-3 (LOCA-3): Initiate a plant cooldown.</b> A plant cooldown at a rate of greater than 40°F/hr should be initiated within one hour, following an unisolable LOCA, until the condenser steam dump valves or ADVs are full open.</p>		<p><b>BOP:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Initiates a plant cool down. <ul style="list-style-type: none"> <li>o Opens steam dump valves.</li> <li>o Establishes 40 –100 °F/hr cool down.</li> </ul> </li> </ul>

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		<u>RO:</u> <input type="checkbox"/> Depressurizes RCS (as necessary) using Auxiliary Spray Flow.
The scenario may be terminated once a plant cooldown has been initiated, or at the discretion of the Lead Examiner.	Restore simulator references/procedures.	<u>Crew:</u> Standby for questions from Examiners.

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### INPUT SUMMARY

Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
<b>MALFUNCTIONS</b>						
RM01O – Rad. Monitor RM-9799A on CRAC, fails low.	NA	0	1	0.1 mr/Hr (0%)		1
CH08C – CRAC Filter Fan “A”, F-32A, trips	NA	0	2	NA		2
CW04C – Main Condenser tube leak in the “C” water box.		0	3	10 gpm (100%)		3
RX04B – Ch. ‘Y’ Pressurizer Level transmitter, LT-110Y, fails to 2350 psia.	NA	300	4	2350 psia (85%)		4
FW23 – “A” Condensate Pump Motor Winding Temperature High.	NA	0	5	ON		5
ED05C – Major fault on bus 24A (loss of Facility One 4160/480 VAC).	NA	0	6	ON		6
RC20A; Seal Cooler Rupture in RCP “A” (2 minute delay)	2 min.	0	6	308 gpm (56%)		7
RC20A; Seal Cooler Rupture in RCP “A” (Increase in severity)	NA	0	7	550 gpm (100%)		8
SI04C – ‘C’ HPSI Pump trip.	NA	0	27	ON		9
<b>REMOTE FUNCTIONS</b>						
EGR12 – “A” EDG Air Start Valves ()					CLOSED	0
EGR17 – “A” EDG Breaker ()					RO	0
<b>OVERRIDES</b>						

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### SIMULATOR EXERCISE VALIDATION CHECKLIST

Mark with an "X" Yes or No for any of the following. If the answer is No, include an explanation after the item.

- |  | Yes                                 | No                       |
|--|-------------------------------------|--------------------------|
| 1. The desired initial condition(s) could be achieved.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All malfunctions and other instructor interface items were functional and responded to support the simulator Scenario.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. All malfunctions and other instructor interface items were initiated in the same sequence described within the simulator scenario.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. All applicable acceptance criteria were met for procedures that were used to support the simulator scenario.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5. During the simulator scenario, observed changes corresponded to expected plant response.  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 6. Did the scenario satisfy the learning or examination objectives without any significant simulator performance issues, or deviations from the approved scenario sequence?  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 7. The simulator is capable of being used to satisfy learning or examination objectives without exceptions, significant performance discrepancies, or deviation from the approved scenario sequence.   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 8. Any identified Critical Tasks possesses the following elements (NUREG-1021):  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> <li>• Essential to safety with adverse consequences or significant degradation,</li> <li>• Cue(s) prompt the Operator to respond.</li> <li>• Defined and measurable performance indicators.</li> <li>• Performance feedback.</li> </ul> |                                     |                          |

The use of "N/A" is allowed for item 8 only if this is NOT an evaluated scenario.

Discrepancies noted (Check "none" or list items in comments field)

None ☒

Comments:

**Validator: Sign the cover page only after noted discrepancies are corrected or compensatory actions are taken to ensure quality training.**

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## SIMULATOR TRAINING SHIFT TURNOVER REPORT

<b>DATE-TIME</b> Today <u>0515</u>	<b>PREPARED BY</b> <u>Unit Supervisor / "NIGHT" Shift</u>	<b>SHIFT</b> 18:00 - 06:00
<b>PLANT STATUS:</b>		
<div style="display: flex; justify-content: space-between;"> <div> Mode: <u>1</u>  Megawatts: Thermal: 1215 MWTH  Electric: 405 MWe  RCS Leakage: Identified: 0.015 gpm  Unidentified: <u>0.036</u> gpm  Date/Time: <u>Today 0015</u> </div> <div> Rx Power: <u>45%</u>  PZR Pressure: <u>2250</u> psia  RCS T-AVE: <u>563</u> degF  Protected Train/Facility: <u>TRAIN</u> </div> </div>		

Active Tracking Records and Action Statements					
Equipment/Reason					
LCO	Action	Date	Time in LCO	Action Requirement	Time Left
2-U-AIL, See AIL for details					

OD Compensatory Actions / Temp Logs			
Open Date	Class Reason	Reason	Watch Position

PLANT SYSTEMS APC	
System	Notes

CROSS UNIT SYSTEM STATUS	
U3 Power to 24E	34A aligned to 24E

SURVEILLANCES / EVOLUTIONS IN PROGRESS	
OP 2204	Steady State Operation at 45% power.

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)	
Current Rod Height	ARO @ 165
Xenon Trend	Rising
Current Boron	700 ppm
Boron Pot Setting / Blend Ratio	to 1 (corrected)