JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Determine a Clearance Boundary**

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

II. Initiated:

R. J. Ashey 9/14//2011
Developer Date

III. Reviewed:

Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

Nuclear Training Supervisor Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	
9/14/2011	Updated JPM to include NRC comments.	1/0

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

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, Draining the Auxiliary Feedwater System
- OP-AA-200, Equipment Clearance
- Non-Electronic Tagging Process, Attachment 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.

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Initial Conditions:

- Unit 2 is in Mode 5 for a refueling outage.
- There is evidence that 2-FW-8B, "B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve, may be leaking by. The Maintenance Department will be performing a seating surface and general condition inspection of this valve.

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.
- The tagging computer is NOT available; therefore, a manual clearance must be initiated.
- The clearance must include:
  - Tag type (color)
  - Component ID
  - Component description
  - Tagged position
  - Tagging order
  - Restoration position
  - Restoration order

Simulator Requirements:

- 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.. 1

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.	Examinee reviews the material provided for determination of clearance boundary: • P&ID 25203-26005 SH.3 (Condensate Storage and Aux Feed). • P&ID25203-30005 (Single Line Meter & Relay Diagram 4.16KV Emerg. Buses 24C, 24D) • Aux Feed Valve line-up, OP 2322-001 • OP-AA-200, Equipment Clearance	**N**	
Cue:	**Provide examinee with:** • **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 2354G, Draining the Auxiliary Feedwater System** • **OP-AA-200, Equipment Clearance**			
Comments:				

Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	**(OP-AA-200 3.2.2g).** **ESTABLISH** the tagging sequence. **WHEN** procedural guidance exists, **THEN** the procedure takes precedence over the normal sequence of isolation. The normal sequence of isolation is as follows:	Examinee establishes a clearance boundary with the following components and sequencing. (See attached Answer Key)		
	1. **POSITION** control switch	• Examinee CAUTION tags "P9B-HS (HANDSWITCH FOR "B" AUXILAIRY FEEDWATER PUMP" control switch indicating that the breaker is racked down	**N**	
	2. **REMOVE** power from component(s)	• Examinee removes power from "B" MDAFP by "RACKING DOWN" 4160VAC breaker (A406) and placing a Red Tag on the breaker.	**Y**	
Cue:				
Comments:	• The Yellow CAUTION tag on P9B-HS is for information use and is NOT required to be sequenced first, but would typically be Order #1. (Order #2, if the breaker is first) • The Red Tag on the breaker is the first component required to be tagged; therefore, this would be Order #2. (Order #1, if the handswitch was NOT first.). (See Answer Key)			

Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	3. **ISOLATE** component/system from high pressure side to low pressure side	**ISOLATE** component/system from high pressure side to low pressure side by Danger Tagging "CLOSED": 2-FW-9B ("B" AUX FEED DISCHARGE STOP VALVE) 2-FW-52C ("B" AUX FEED RECIRCULATION STOP VALVE) 2-CN-29B ("B" AUX FEED PUMP SUCTION ISOLATION) 2-FIRE-94B ("B" AUX FEED PUMP EMERGENCY FIRE WATER SUPPLY VALVE)	 Y Y* Y* Y*	
Cue:				
Comments:	The discharge stop must be closed prior to closing the suction or minimum flow recirculation valves. (Order #3) * The exact sequence of suction side/recirculation alignment is NOTcritical. (Order #4, #5, and #6) (See Answer Key)			

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Determine a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	4. **OPEN** drain valve(s) 5. **OPEN** vent valve(s)	Examinee tags open one or both of the following drain valves and one or both of the following vent valves: 2-CN-332 ("B" AUX FEED PUMP SUCTION HEADER DRAIN) 2-CN 331 ("B" AUX FEED PUMP DISCHARGE HEADER DRAIN VALVE) 2-CN-330 ("B" AUX FEED PUMP CASING VENT VALVE) 2-CN-329 ("B" AUX FEED PUMP CASING VENT VALVE)	 **Y*** **Y*** **Y*** **Y***	
Cue:				
Comments:	• It is NOT critical to open <u>both</u> vent and drain valves. To provide proper depressurization and draining, <u>only one</u> vent and <u>one</u> drain are *required* to be open. • If only one vent and drain valve are opened, the Order Number is #7 and #8. Either the vent or the drain may be opened first. (See Answer Key) • The restoration order and position are NOT critical.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

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

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 **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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initial Conditions:

- Unit 2 is in Mode 5 for a refueling outage.
- There is evidence that 2-FW-8B, "B" Motor Driven Auxiliary Feedwater Pump Discharge Check Valve, may be leaking by. The Maintenance Department will be performing a seating surface and general condition inspection of this valve.

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.
- The tagging computer is NOT available; therefore, a manual clearance must be initiated on OP-AA-200, Equipment Clearance, Attachment 2.
- The clearance must include:
  - Tag type (color)
  - Component ID
  - Component description
  - Tagged position
  - Tagging order
  - Restoration position
  - Restoration order

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 & 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		

The Answer Key denotes the MINIMUM tagging required to safely isolate the component for the work to be performed. Addition components may be tagged, but are NOT required.

ANSWER KEY

JPM-A1.1R

ANSWER KEY

Section Coversheet
Tagout: 2C19
Section: 2322X00-002A

Millstone Station

09/20/11 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	**LOCKED OPEN**	LOCKED 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-331 * "B" AUX FEED PUMP DISCHARGE HEADER DRAIN VALVE * 2_TB _00106_	IV	5	**OPEN**			1	**CLOSED**	CLOSED		

ANSWER KEY

*	Red	2-CN-332 * "B" AUX FEED PUMP SUCTION HEADER DRAIN * 2_TB _00106_	IV	5	**OPEN**			1	**CLOSED**	CLOSED		
*	Red	2-CN-330 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB _ 00106_	IV	5	**OPEN**			1	**CLOSED**	CLOSED		
*	Red	2-CN-329 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB _00106_	IV	5	**OPEN**			1	**CLOSED**	CLOSED		

* **Only <u>one</u> vent and <u>one</u> drain are <u>required</u> to be open to provide proper venting and draining.**

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Calculate Spent Fuel Pool HeatupTime To 150°F

JPM Number: JPM-A2R Revision: 0

II. Initiated:

Robert L. Cimmino, Jr. — Developer
09/15/11 — Date

III. Reviewed:

Technical Reviewer — Date

IV. Approved:

Cognizant Plant Supervisor (optional) — Date

Nuclear Training Supervisor — Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
09/15/11	Minor changes to incorporate NRC validation comments.	0/1

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 HeatupTime To 150°F

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"
TRM 3.9.3.2 Spent Fuel Pool Temperature

*** * * * 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:

- 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 93°F.

Initiating Cues:

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

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-A2R Rev.. 0

Calculate Spent Fuel Pool HeatupTime To 150°F

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	**NOTE:** 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. **NOTE:** Systems planned to be removed from service in the next 24 hours may be assumed to be out of service, and, therefore, not credited. **NOTE:** Attachment 4 through Attachment 8 provide further guidance while performing SSA Checklist. **NOTE:** SSA Checklists are completed as follows: • Daily • Prior to removing any equipment required to support the KSFs unless daily review already assumed equipment is out of service • Equipment available to support the KSFs unexpectedly becomes unavailable • Prior to performing plant MODE changes when shutdown. • 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	Examinee reads and acknowledges notes	N	

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
Cue:	**Provide examinee with the following:** • **OU-M2-201" Shutdown Safety Assessment Checklist"** • **A calculator**			
Comments:				
2 .	3.2 Heatup Calculations 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. 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.	Examinee determines that this step is not applicable. Examinee refers to Attachment 3, Millstone Unit 2 SFP Time to 150°F Calculation.	**N** **N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	**NOTE:** 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.	Examinee reads and acknowledges note.	**N**	
Cue:				
Comments:	Examinee may choose to add up to 5°F to current SFP temperature based on the above note and expected SFP temperature rise. It is acceptable to use a starting temperature of 98°F for the calculation.			
4.	Instructions: 1. Record time after reactor shutdown (in days), and current SFP temperature (°F).	Examinee records **12 days** after shutdown on Attachment 3 Examinee records current Spent Fuel pool temperature of **93°F or 98°F** on Attachment 3	**N** **N**	
Cue:				
Comments:	Examinee may choose to add up to 5°F to current SFP temperature based on the above note and expected SFP temperature rise.			
5.	2. Record SFP Heatup Rate from Table 1 based on SFP Offload Condition (> 80 fresh fuel assemblies transferred to SFP).	Examinee refers to Table 1 to obtain SFP Heatup Rate	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6.	Table 1 SFP Heatup Rates 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).	Examinee reads and acknowledges note	**N**	
Cue:				
Comments:				
7.	Record SFP Heatup Rate	Examinee records a SFP Heatup Rate of **17.7°F/Hr** based on End-of-Cycle Core Offload using Time from Shutdown (days) of 10 days (most conservative value) 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)} {(150°F – **98**°F) / 17.7°F/hour} = **~2.9** Hrs. **OR** {(150°F – **93**°F) / 17.7°F/hour} = **~3.2** Hrs.	Examinee performs the following calculation to determine SFP temperature to 150°F: {(150°F – **98**°F) / 17.7°F/hour} = **~2.9** Hrs. **OR** {(150°F – **93**°F) / 17.7°F/hour} = **~3.2** Hrs. Examinee records a SFP time to 150°F as **~2.9 Hrs. OR 3.2 Hrs.** (based on initial temperature imputed in step 1 of Attach. 3)	**Y**	
Cue:				
Comments:				

JPM Number: JPM-A2R Rev.. 0

Calculate Spent Fuel Pool HeatupTime To 150°F

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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-A2R Rev. 0

VERIFICATION OF JPM COMPLETION

Title: Calculate Spent Fuel Pool HeatupTime To 150°F

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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

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 93°F.

Initial Conditions:

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

Calculation:

SFP Time to 150°F= {(150°F-SFP Temperature (°F)/ SFP Heatup Rate (°F/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 02/01/11
Developer Date

III. Reviewed:

Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

Nuclear Training Supervisor 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-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 requested 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)

Initial Conditions:

- 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 PEO being briefed has 450 mrem of annual dose exposure remaining.

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

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 (and NO other area) without exceeding any dose limit

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)
			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	**N**	
Cue:	**Provide RWP and Survey Map to the examinee.**			
Comments:				
2.	Highest loose contamination level in the work area	Examinee states that the highest loose contamination level in the work area is 22,000 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 30 minutes.	**Y**	
Cue:				
Comments:	The RWP Dose Alarm is set at 50 mrem in a 100 mrem/hr field. 50/100=0.5 hrs (30 minutes)			

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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initial Conditions:

- 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 PEO being briefed has 450 mrem of annual dose exposure remaining.

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

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 (and NO other area) without exceeding any dose limit

JPM-A3R

RADIATION WORK PERMIT SUMMARY 2110205

Millstone Station

PLANT CODE	YEAR	RWP NUMBER	REV.	RWP START	TYPE	CATEGORY	RWP EXPIRATION
2	11	2110205	0	01-AUG-2011 00:00	S	RO	30-OCT-2011 23:59

RWP DESCRIPTION

Operations RWP

TASK SUMMARY

	DOSE ALARM	DOSE RATE ALARM	TIME INTERVAL
1 ((HRA) Operations activities in RCAs, Radiation Areas, and High Radiation Areas	50	300	
2 (LHRA) Operations activities in Locked High Radiation Areas.	75	500	

ALARA INFORMATION

ALARA Review No.	Hours-Estimated	Person-mrem
21132	5400	5150

SPECIAL INSTRUCTIONS:

Access to RCAs to perform routine and special Operations activities during Refueling Outage.

RCA access includes Containment.

Health Physics supervision may change teledosimetry requirements based on equipment status, radiological conditions, or required coverage.

Activities may include, but are not limited to:
* Routine and special rounds
* Tagging
* Inspections
* Surveillances
* LLRT
* Venting or draining of systems
* System alignments and restorations

Entry on this RWP requires the worker to understand and comply with the following:
** Be knowledgeable of radiological conditions of the work area
** Adhere to the requirements of the RWP
** Notify HP before entering overhead areas
** Monitor electronic dosimeter frequently, especially in high noise areas
** Unless specifically briefed otherwise, if DOSE RATE alarm sounds, move to a lower dose area and notify HP
** If DOSE alarm sounds, leave the area and notify HP
** If electronic dosimeter malfunctions, notify HP BEFORE logging out
** Modesty garments will be worn whenever PCs are worn

Supervision [signature] **DATE:** 08-01-2011 **DATE:**
DATE: **DATE:**

JPM-A3R

Job Steps 1 OF 2

VALID FROM 01-AUG-2011 00:00 **TO** 30-OCT-2011 23:59 **RWP** 2110205-1	**REV. NO** 0
DOSE RATE ALARM: 300 **mrem/Hr**	**BUDGETED DOSE:** 1000 **mrem**
DOSE LIMIT ALARM: 50 **mrem**	**ALARA EVALUATION NO:** 21132

JOB LOCATIONS:

JOB DESCRIPTION: (HRA) Operations activities in RCAs, Radiation Areas, and High Radiation Areas

RADIOLOGICAL CONDITIONS: * Indicates estimated value for RWP Preparation. See survey forms for Details

GENERAL AREA RADIATION LEVELS (mrem/hr):
Review latest radiological surveys or historical data prior to entering RCA.

CONTACT/HOT SPOT RADIATION LEVELS (mrem/hr):

CONTAMINATION LEVELS (dpm/100cm2):

AIRBORNE RADIOACTIVITY (DAC):
All areas, < 0.3

DOSIMETRY REQUIREMENTS:
ED TLD

PROTECTIVE CLOTHING REQUIREMENTS:
* Cotton liners * Booties * Coveralls * Shoe covers * Rubber gloves * Modesty garments

A RWP PRE-JOB BRIEFING IS REQUIRED: ALARA REVIEW QUAL COMPLETE

WORKER INSTRUCTIONS:

NO entry to Locked High Radiation Areas permitted using this Job Step.

PCs required in contaminated areas.

HP supervision may adjust protective clothing requirements based on any of the following:
* ALARA reviews
* Heat stress evaluations
* FME controls

Requirements for High Radiation Area entries:
* Dose rate meter or alarming dosimeter **AND** knowledge of area dose rates, **OR** continuous HP coverage

* Health Physics briefing for High Radiation Areas

Lab coats may be worn for inspection-related tasks only; no physical work in contaminated areas may be performed.

A briefing from HP is required before venting or draining any contaminated systems, to ensure proper drainage is established and that adequate radiological controls are used.

Ends of hoses shall be capped or bagged when disconnecting from contaminated systems.
A minimum of lab coat and rubber gloves shall be worn when hoses are connected to or disconnected from contaminated systems.

JPM-A3R

Job Steps 2 OF 2

VALID FROM 01-AUG-2011 00:00	**TO** 30-OCT-2011 23:59	**RWP** 2110205-2	**REV. NO** 0

DOSE RATE ALARM: 500 mrem/Hr	**BUDGETED DOSE:** 75 mrem
DOSE LIMIT ALARM: 75 mrem	**ALARA EVALUATION NO:** 21132

JOB LOCATIONS:

JOB DESCRIPTION: (LHRA) Operations activities in Locked High Radiation Areas.

RADIOLOGICAL CONDITIONS: *Indicates estimated value for RWP Preparation. See survey forms for details

GENERAL AREA RADIATION LEVELS (mrem/hr):

Solid Rad Waste: 5 – 1500

CONTACT/HOT SPOT RADIATION LEVELS (mrem/hr):

CONTAMINATION LEVELS (dpm/100cm2):

Solid Rad Waste: < 1K

AIRBORNE RADIOACTIVITY (DAC):
<0.3

DOSIMETRY REQUIREMENTS:
ED TELEDOSIMETRY TLD

DOSIMETRY COMMENTS:
Teledosimetry required in Locked High Radiation Areas in Containment.

PROTECTIVE CLOTHING REQUIREMENTS:
* Cotton liners * Booties * Coveralls * Shoe covers * Rubber gloves * Modesty garments
* Lab coat (except CTMT) * Hard hat cover

A RWP PRE-JOB BRIEFING IS REQUIRED: ALARA REVIEW QUAL COMPLETE

WORKER INSTRUCTIONS:

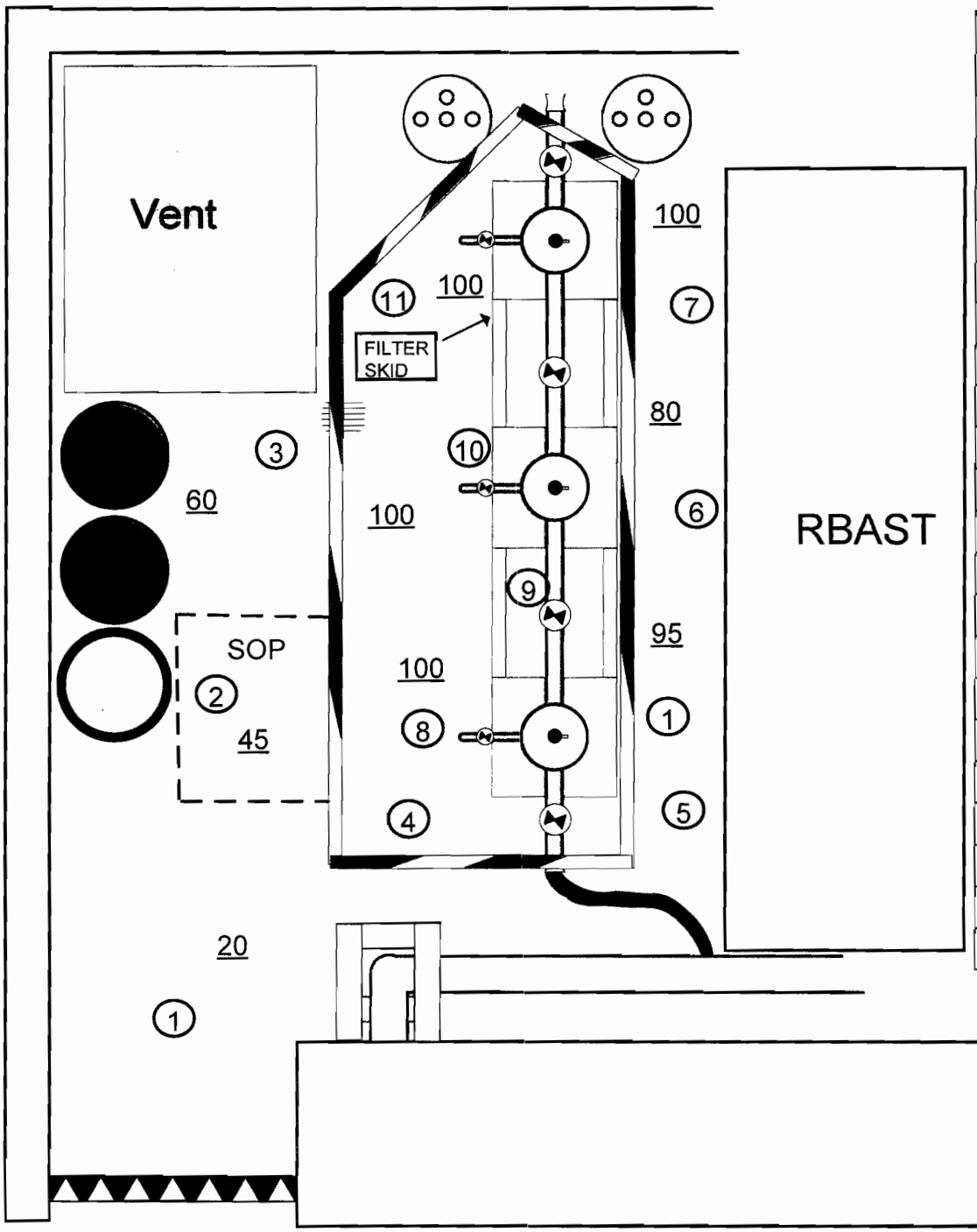
PCs required in contaminated areas.
HP supervision may adjust protective clothing requirements based on any of the following:
* ALARA reviews
* Heat stress evaluations
* FME controls
Requirements for Locked High Radiation Area entry:
* Dose rate meter or alarming dosimeter **AND** knowledge of area dose rates, **OR** continuous HP coverage
* Area **MUST** be locked or guarded at ALL times
* Health Physics briefing for Locked High Radiation Areas
* If dose rate fields in work area are > 1000 mrem/hr **OR** dose per entry is > 500 mrem, continuous HP coverage and Stay Time are required.
Lab coats may be worn for inspection-related tasks only; no physical work in contaminated areas may be performed.
A briefing from HP is required before venting or draining any contaminated systems, to ensure proper drainage is established and that adequate radiological controls are used.
Ends of hoses shall be capped or bagged when disconnecting from contaminated systems.
A minimum of lab coats and rubber gloves shall be worn when hoses are connected to or disconnected from contaminated systems.

MILLSTONE NUCLEAR POWER STATION- RADIATION SURVEY FIGURE NO.23 — UNIT 2

DATE	SURVEY BY SIGNATURE	REVIEWED BY	Type Of Survey
10/03/11			☐ Routine ☒ Special ☐ RWP # ____/____
TIME 0812	PRINT NAME John E. Tech	% REACTOR POWER 80	

Type	Instrument Type		Serial Number		1/Efficiency	Background	Calibration Due Date	
γ	RO-20		1273		N/A	N/A	2/12	
β+γ	L-177		207213		10	<80 CPM	3/12	
α	L - 2241	43-2	217619	22171	6.1	0	1/12	2/12

-5 Aux Bldg. Clean Waste Temp. FIlter Room



Smear Results	
NUMBER	DPM/100cm²
1-7	<1000
8	6000
9	22000
10	18000
11	9000
	alpha
1-11	<20

verified on: 09/30/2011

RAD CONTRL. AREA | RAD MAT. AREA | CONTAMINATED AREA | RAD AREA | HIGH RAD AREA | LHRA | GRAVE DANGER AREA | NEUTRON

100 - *gamma(γ) at waist level in mrem/hr*

100* - *gamma(γ) contact in mrem/hr*

25n - *neutron($_0n^1$) in mrem/hr*

(1) - *contamination survey point*

50 mrad - beta (β) reading in mrad/hr

JOB PERFORMANCE MEASURE APPROVAL SHEET

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

JPM Number: JPM-A4R Revision: 0

II. Initiated:

Robert L. Cimmino, Jr.	09/14/11
Developer	Date

III. Reviewed:

Technical Reviewer	Date

IV. Approved:

Cognizant Plant Supervisor (optional)	Date
Nuclear Training Supervisor	Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
09/14/11	Minor changes to incorporate NRC validation comments	0/1

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): _____

Task No.(s): _____

Applicable To: SRO ____ RO X PEO ____

K/A No. _____ K/A Rating _____

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 21)

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)

Initial Conditions:

- Unit 2 has experienced a plant trip with a concurrent Station Blackout 30 minutes ago.
- Unit 2 had been operating at 100% power for one month prior to the trip.
- The crew is performing EOP 2530, Station Blackout.
- The BOP is making preparations to restore power to Unit 2 from the SBO Diesel when it becomes available.
- Tavg is being maintained at 532°F.
- Chemistry has determined present RCS Boron concentration is 670 ppm.
- Present Core Burnup is 6500 MWD/MTU.
- All CEAs are fully inserted.

Initiating Cues:

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

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)
			START TIME:	
1.	**EOP 2530 Step 30** Check Shutdown Margin is satisfied. Refer to Appendix 17, Shutdown Margin.	Examinee obtains Appendix 17, Shutdown Margin.	**N**	
Cue:	**Provide examinee with EOP 2530, Station Blackout, and EOP 2541, Appendix 17, Shutdown Margin.**			
Comments:				
2.	**EOP 2541, Appendix 17** 1. IF desired to calculate required shutdown boron concentration, PERFORM Attachment 17-A, "Required Shutdown Boron Concentration." 2. If boration to the RCS to maintain shutdown margin is desired, PERFORM Attachment 17-B "Boration to the RCS from the BAST."	Examinee refers to EOP 2541, Appendix 17-A to calculate required shutdown boron concentration. Examinee determines that this step is Not Applicable.	**N** **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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	1. REQUEST Chemistry to sample the RCS for boron.	Examinee states from Initial Conditions that RCS Boron concentration is 670 ppm.	**N**	
Cue:				
Comments:				
5.	2. RECORD the current RCS TAVE.	Examinee records current RCS TAVE as 532°F 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 6500 MWD/MTU as given in Initial Conditions.	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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 is **719 ppm**, if data is taken from the table and interpolated. (710-730 ppm, if data is taken from the curve) Examinee determines that there is no indication that more than one CEA is NOT fully inserted and that this step is Not Applicable.	Y Y	
Cue:				
Comments:				

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.	**Y**	
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. **719 ppm** (710-730 ppm) 532°F	**N**	
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 (**6500 MWD/MTU**) is **112.7 ppm/%Δρ**, if data is taken from the table and interpolated. (112.5-112.9 ppm/%Δρ, if data is taken from the curve)	**Y**	
Cue:				
Comments:				

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	Using "Reactor Engineering Curve and Data Book (Xenon Worth vs. Time After Reactor Shutdown From Various Equilibrium Power Levels Cycle 21, MOC, RE-C-01)" the examinee determines that the smallest xenon reactivity worth expected for the first hour after shutdown is **2.682 %Δρ**, if data is taken from the table and interpolated. (2.670-2.750 %Δρ, if data is taken from the curve).	**Y**	
Cue:				
Comments:				
12.	8. RECORD xenon reactivity worth. _____XRW	Examinee records xenon reactivity worth of 2.682 %Δρ.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	9. CALCULATE Boron Equivalent of Xenon Reactivity Worth (BE of XRW) as follows: *Xenon Reactivity Worth* X *Inverse Boron Worth* = *Boron Equivalent of Xenon Reactivity Worth*	Examinee calculates Boron Equivalent of Xenon Reactivity Worth (BE of XRW) as follows: 2.682 %Δρ (*Xenon Reactivity Worth*) X 112.7 ppm/%Δρ (*Inverse Boron Worth*) = 302.3 ppm (*Boron Equivalent of Xenon Reactivity Worth*) Using minimum values: 2.670 x 112.5 = 300.4 ppm Using maximum values: 2.750 x 112.9 = 310.5 ppm	**Y**	
Cue:				
Comments:				
14.	10. CALCULATE Xenon Corrected Required Shutdown Boron *Required Shutdown Boron Concentration* – *Boron Equivalent of Xenon Reactivity Worth* = *Xenon Corrected Required Shutdown Boron Concentration*	Examinee calculates Xenon Corrected Required Shutdown Boron 719 ppm (*Required Shutdown Boron Concentration*) – 302.3 ppm (*Boron Equivalent of Xenon Reactivity Worth*) = *416.7* (*Xenon Corrected Required Shutdown Boron Concentration*) Minimum value: 710 – 310.5 = 399.5 ppm Maximum value: 730 – 300.4 = 429.6 ppm	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	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	• Examinee records RCS boron at the time of the Reactor trip as **670 ppm**. (Due to Station Blackout, RCS boron at the tinme of the trip must be the same as RCS boron results recently obtained from Chemistry.) • Examinee records RCS boron sample results obtained from Chemistry sample as **670 ppm**. (Obtained from Initial Conditions)	**Y** **Y**	
Cue:				
Comments:				
16.	12. CHECK RCS boron concentration greater than Xenon Corrected Required Shutdown Boron concentration.	Examinee compares the Xenon Corrected Required Shutdown Boron Concentration calculated in step 10 with the present RCS boron concentration and determines that the present RCS boron concentration is greater than Xenon Corrected Required Shutdown Boron concentration (i.e., Shutdown Margin is satisfied.); therefore, Emergency Boration is NOT required.	**Y**	
Cue:				
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-A4R Rev. 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): _____

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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initial Conditions:

- Unit 2 has experienced a plant trip with a concurrent Station Blackout 30 minutes ago.
- Unit 2 had been operating at 100% power for one month prior to the trip.
- The crew is performing EOP 2530, Station Blackout.
- The BOP is making preparations to restore power to Unit 2 from the SBO Diesel when it becomes available.
- Tavg is being maintained at 532°F.
- Chemistry has determined present RCS Boron concentration is 670 ppm.
- Present Core Burnup is 6500 MWD/MTU.
- All CEAs are fully inserted.

Initiating Cues:

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

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Shift Staffing Based on Administrative Requirements**

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

II. Initiated:

R. J. Ashey	9/15/2011
Developer	Date

III. Reviewed:

Technical Reviewer	Date

IV. Approved:

Cognizant Plant Supervisor (optional)	Date
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
9/15/2011	Revised JPM based on NRC comments.	1/0

Facility: MP-2 Examinee: _____

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

Task Title: **Shift Staffing Based on Administrative Requirements**

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. 2.1.5 K/A Rating 2.9/3.9

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 who is fit for duty and can be called in for shift coverage when the on shift RO becomes incapacitated (cannot perform licensed activities).

Required Materials (procedures, equipment, etc.):
Unit 2 Technical Specifications
LI-AA-700 (Rev. 4-00), Fatigue Management and Work Hour Limits for Covered Workers
SY-AA-FFD-101 (Rev. 6-00), Fitness For Duty
Operator Schedule (Handout)

General References:
Unit 2 Technical Specifications, Administrative Section
LI-AA-700700 (Rev. 4-00), Fatigue Management and Work Hour Limits for Covered Workers
SY-AA-FFD-101 (Rev. 6-00), Fitness For Duty

*** * * * 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.

Initial Conditions:

- The plant is in MODE 1 and stable at 100% power
- The crew began its 12 hour shift at 1800
- Current time and Date is 1830 on Wednesday, October 5, 2011.
- The Balance of Plant Operator has become ill early (1830) on his last night of Night Shift and has been sent home, which places the shift below minimum staffing levels. (Prior to the BOP becoming ill, the crew was at minimum staffing.)

Initiating Cues:

- You are the Night Crew Shift Manager.
- Based on Administrative requirements, determine the following from the attached list of available operators:
  - How soon must a relief be found?
  - From the list provided, who is immediately eligible to assume shift duties?
  - For those who are NOT eligible, what is the reason?
- NO other Shift Managers are available to assist with your decision.
- All other qualified operators are unavailable.

Available	Response
Operator 1	"I came in for Work Control coverage at 0600 this morning for 8 hours today and I'm scheduled for vacation tomorrow. My plans fell through, so I can easily reschedule my vacation. If you really need someone, I could probably be there in about 30 minutes."
Operator 2	"It's the last day of my seven days off. We just got back from Atlantic City, New Jersey, a half hour ago. I only got a few hours of sleep while my wife drove. I really don't want to come in, but I can be there in about an hour if you're in a bind."
Operator 3	"I've been on day shift for the last few days, including a makeup day of Training yesterday. I'm on vacation for a couple of days starting tomorrow. I don't have plans for vacation, so I can be there in about an hour or so."
Operator 4	"I'm on the last day of my seven days off. I had a couple of beers with dinner, but I'll come in if you want me to. It usually takes me 50 minutes to get to work, but I can be there in about 35 minutes, if I hurry and there's no traffic."
Operator 5	"I'm scheduled to come in tomorrow night for my first night of midnights. I'm just getting over a pretty nasty cold and I'd don't want to infect anyone, but, if you really need me, I'll come in. I just took a double dose of Nyquil about an hour ago, so I don't feel too bad right now. I can be there in about an hour. I just need to jump in the shower to wake up a little before I leave."

See Operator Schedules on next page.

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).

Operator	Wed 9/28	Thurs 9/29	Fri 9/30	Sat 10/1	Sun 10/2	Mon 10/3	Tues 10/4	Wed 10/5	Thurs 10/6	Fri 10/7	Sat 10/8	Sun 10/9	Mon 10/10	Tues 10/11	Wed 10/12
#1	Day (12)	OFF	OFF	OFF	Day (12)	Day (12)	Day (12)	WC (0600-1400)	Vac.	Vac.	Night (6)	Night (12)	Night (6)	OFF	OFF
#2	Day (12)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Night (6)	Night (12)	Night (12)	Night (12)	Night (6)	OFF	OFF
#3	OFF	Day (12)	Day (12)	Day (12)	Day (12)	Day (12)	T (8)	OFF	Vac.	Vac.	OFF	OFF	Night (6)	Night (12)	Night (12)
#4	Day (12)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Night (6)	Night (12)	Night (12)	Night (12)	Night (6)	OFF	OFF
#5	Day (12)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Night (6)	Night (12)	Night (12)	Night (12)	Night (6)	OFF	OFF

Day (12) = 12 hour Day Shift
WC = Work Control
Night (12) = 12 Hour Night Shift
Night (6) = 6 hours on the first evening or last morning of Night Shift
T (8) = 8 hours of Training
OFF = Scheduled day off
Vac. = Vacation

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

Shift Staffing Based on Administrative Requirements

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)

START TIME: _____

1.	**How soon must a relief be found?** Determines from Technical Specifications Section 6.2 Table 6.2-1, that the crew composition may be less than minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence.	Examinee determines that another RO must report within 2 hours (Technical Specifications, Table 6.2-1).	**Y**	
Cue:	**Provide the examinee with the following documents:** • **Unit 2 Technical Specifications** • **Overtime Controls for All Personnel at Millstone Station, Fitness for Duty Questionnaire, MP-26-EPI-FAP-011** • **Dominion Nuclear Fitness for Duty Program, DNAP 0105** • **Operator Schedule (attached handout)**			
Comments:				
2.	**From the list provided, who is eligible to assume shift duties?**	• Examinee refers to the list of available operators, reviews their responses, and determines that, although **Operator 2** may NOT want to work a 12 hour shift, he/she is the only individual eligible to assume shift duties without condition.	**Y**	
Cue:	**If the examinee attempts to contact other 'additional' individuals, inform him/her that none of them will answer the phone or reply to the page.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	**For those who are NOT eligible, what is the reason?**	• Examinee determines that Operator #1 is NOT eligible because he/she would NOT have a break of at least 10 hours between work periods. He/she would also exceed more than 16 work hours in a rolling 24 hour period. (LI-AA-700, step 3.3.1) • Examinee determines that Operator #3 is NOT eligible because he/she would work more than 72 hours in a 7 day period. (LI-AA-700, step 3.3.1) • Examinee determines that Operator #4 is NOT eligible due to the consumption of alcoholic beverages within the past 5 hours. (SY-AA-FFD-101, step 3.19) • Examinee determines that Operator #5 is NOT eligible due to the use of over-the-counter medication that may affect his/her ability to perform required duties. SY-AA-FFD-101, step 3.19)	Y Y Y Y	
Cue:				
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

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

VERIFICATION OF JPM COMPLETION

Title: **Shift Staffing Based on Administrative Requirements**

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:

STUDENT HANDOUT

Initial Conditions:

- The plant is in MODE 1 and stable at 100% power
- The crew began its 12 hour shift at 1800
- Current time and Date is 1830 on Wednesday, October 5, 2011.
- The Balance of Plant Operator has become ill early (1830) on his last night of Night Shift and has been sent home, which places the shift below minimum staffing levels. (Prior to the BOP becoming ill, the crew was at minimum staffing.)

Initiating Cues:

- You are the Night Crew Shift Manager.
- Based on Administrative requirements, determine the following from the attached list of available operators:
  - How soon must a relief be found?
  - From the list provided, who is immediately eligible to assume shift duties?
  - For those who are NOT eligible, what is the reason?
- NO other Shift Managers are available to assist with your decision.
- All other qualified operators are unavailable.

Available	Response
Operator 1	"I came in for Work Control coverage at 0600 this morning for 8 hours today and I'm scheduled for vacation tomorrow. My plans fell through, so I can easily reschedule my vacation. If you really need someone, I could probably be there in about 30 minutes."
Operator 2	"It's the last day of my seven days off. We just got back from Atlantic City, New Jersey, a half hour ago. I only got a few hours of sleep while my wife drove. I really don't want to come in, but I can be there in about an hour if you're in a bind."
Operator 3	"I've been on day shift for the last few days, including a makeup day of Training yesterday. I'm on vacation for a couple of days starting tomorrow. I don't have plans for vacation, so I can be there in about an hour or so."
Operator 4	"I'm on the last day of my seven days off. I had a couple of beers with dinner, but I'll come in if you want me to. It usually takes me 50 minutes to get to work, but I can be there in about 35 minutes, if I hurry and there's no traffic."
Operator 5	"I'm scheduled to come in tomorrow night for my first night of midnights. I'm just getting over a pretty nasty cold and I'd don't want to infect anyone, but, if you really need me, I'll come in. I just took a double dose of Nyquil about an hour ago, so I don't feel too bad right now. I can be there in about an hour. I just need to jump in the shower to wake up a little before I leave."

(See Operator Schedule on next page)

Operator Schedule

Operator	Wed 9/28	Thurs 9/29	Fri 9/30	Sat 10/1	Sun 10/2	Mon 10/3	Tues 10/4	Wed 10/5	Thurs 10/6	Fri 10/7	Sat 10/8	Sun 10/9	Mon 10/10	Tues 10/11	Wed 10/12
#1	Day (12)	OFF	OFF	OFF	Day (12)	Day (12)	Day (12)	WC (0600-1400)	Vac.	Vac.	Night (6)	Night (12)	Night (6)	OFF	OFF
#2	Day (12)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Night (6)	Night (12)	Night (12)	Night (12)	Night (6)	OFF	OFF
#3	OFF	Day (12)	Day (12)	Day (12)	Day (12)	Day (12)	T (8)	OFF	Vac.	Vac.	OFF	OFF	Night (6)	Night (12)	Night (12)
#4	Day (12)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Night (6)	Night (12)	Night (12)	Night (12)	Night (6)	OFF	OFF
#5	Day (12)	OFF	OFF	OFF	OFF	OFF	OFF	OFF	Night (6)	Night (12)	Night (12)	Night (12)	Night (6)	OFF	OFF

Day (12) = 12 hour Day Shift
WC = Work Control
Night (12) = 12 Hour Night Shift
Night (6) = 6 hours on the first evening or last morning of Night Shift
T (8) = 8 hours of Training
OFF = Scheduled day off
Vac. = Vacation

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Approve and Authorize a Clearance Boundary**

JPM Number: JPM-A1.2S Revision: 1

II. Initiated:

R. J. Ashey 9/14/2011
Developer Date

III. Reviewed:

Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

Nuclear Training Supervisor Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	
9/14/2011	Revised to include NRC comments.	1/0

JPM Number: JPM-A1.2S Rev. 1

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: _____

JPM Number: JPM-A1.2S Rev. 1

Task Title: **Approve and Authorize a Clearance Boundary**

System: Auxiliary Feedwater

Time Critical Task: Yes ____ No **X**

Validated Time (minutes): _____

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
  - 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 2354G, Draining the Auxiliary Feedwater System
- OP-AA-200 (Equipment Clearance)

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)

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.
- A tag clearance to accomplish the inspection has been prepared on the tagging computer, which is NOT available now.

Initiating Cues:

- Your task is to review the printed Tag Clearance and determine if it can be approved and authorized as written.
  - If the Tag Clearance cannot be approved and authorized as written, determine the changes required to approve and authorize Tag Clearance Sheet.

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-A1.2S Rev.. 1

Approve and Authorize a Clearance Boundary

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	**OP-AA-200 "Equipment Clearance"** 3.2.3c. **REVIEW** the completed Tagging Record for accuracy and completeness, referencing controlled documents as necessary. The reviewing SRO or designee shall: • **ENSURE** that the tag-out is adequate for the tasks and hazards involved. • **ENSURE** that the proper sequence of component alignment and tag placement is specified. • **ENSURE** that the appropriate entries have been made in the comment section of the Tagging Record. • **DETERMINE** if support is required from Maintenance Personnel to execute the tag-out.	• Examinee reviews the completed Tagging Clearance for accuracy and completeness, using the following controlled drawings: o 25203-26005 SH.3, Condensate Storage and Aux Feed o 25203-30005 Single Line Meter & Relay Diagram 4.16KV Emerg. Buses 24C,24D (A3,A4 • Examinee identifies that the incorrect 4160 VAC breaker (A307) is Red Tagged and that the correct breaker (A406) is required to be Red Tagged in the "Racked Down" position. • Examinee identifies that 2-FIRE-94B, "B" AUX FEED PUMP EMERGENCY FIRE WATER SUPPLY VALVE" has been incorrectly omitted from the tagging sheet and that this valve is required to be Red Tagged in the "Closed" position. • Examinee determines that this tag clearance CANNOT be approved or authorized as written for the task to be performed.	N Y Y Y	
Cue:				
Comments:	• Examinee may determine that only <u>one</u> casing vent valve one header drain valve (2-CN-331 or 2-CN-332). At least one casing vent valve and one header drain valve *must* be tagged open. • Examinee may desire to tag open the motor heater breaker for "B" MDAFW pump. This is NOT necessary, but may be considered for the clearance. (See Answer Key)			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-A1.2S Rev. 1

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 **X**

Validated Time (minutes): 10 min.

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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

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.
- A tag clearance to accomplish the inspection has been prepared on the tagging computer, which is NOT available now.

Initiating Cues:

- Your task is to review the printed Tag Clearance and determine if it can be approved and authorized as written.
  - If the Tag Clearance cannot be approved and authorized as written, determine the changes required to approve and authorize Tag Clearance Sheet.

Section Coversheet ***Millstone Station***
Tagout: 2C21
Section: 2322X00-002A ***10/03/11 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 & 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

JPM-A1.2S

ANSWER KEY

Millstone Station

Section Coversheet
Tagout: 2C21
Section: 2322X00-002A

10/03/11 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 AUXILARY 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/CAPPED**	CLOSED		

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

This is an alternate suction valve that must be Red

ANSWER KEY

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

Component to be Worked:

FOR TRAINING ONLY

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 & 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		

FOR TRAINING ONLY

Section Coversheet ***Millstone Station***
Tagout: 2C21
Section: 2322X00-002A ***10/03/11 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 307 * 4.16KV BREAKER P9A AUXILARY FEEDWATER PUMP 24C-32 * 2_TB _03106_LWR_ SWGR_BUS 24C	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-CN-330 * "B" AUX FEED PUMP CASING VENT VALVE * 2_TB _ 00106_	IV	4	**OPEN/UNCAPPED**			1	**CLOSED**	CLOSED		

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: 1

II. Initiated:

R. J. Ashey	09/14/2011
Developer	Date

III. Reviewed:

Technical Reviewer	Date

IV. Approved:

Cognizant Plant Supervisor (optional)	Date
Nuclear Training Supervisor	Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
02/03/11	Created JPM for LOIT 2011 NRC Exam	0/0
9/14/2011	Revised JPM to incorporate NRC comments.	1/0

JPM Number: JPM-A2S Rev. 1/0

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP-2 Examinee: _____

JPM Number: JPM-A2S Rev. 1

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.

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Initial Conditions:

- The plant has just returned to100% power after completing Control Valve Testing at 90% power.
- Group 7 CEAs were inserted 10 steps for the power reduction, but have all just been fully withdrawn, as indicated by the Core Mimic.
  - 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 to CEAPDS from CEA #1 is not capable of tracking motion of this CEA at this time.
- I&C testing indicates the reed switch input card to CEAPDS for CEA #1, located on the rear of C-05, needs to be replaced with a spare from the warehouse.
- Testing and replacement will take approximately five (5) hours.

Initiating Cues:

- You are the on-shift US.
- Determine what Tech Spec LCO(s) is (are) applicable and what ACTION(s) is (are) required.

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-A2S Rev. 1

Tech. Spec. Applicability with Embedded Surveillance

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	Given a copy of the plant Technical Specifications Manual and, if requested, AOP 2556, CEA Malfunctions: • Review the Initial Conditions and Initiating Cue. • Review Tech. Specs. and, as needed, AOP 2556 for any required entries and additional surveillance requirements.	Examinee reviews the following: • A copy of the Unit 2 Technical Specifications Manual • If desired, a copy of AOP 2556, CEA Malfunctions, and/or SP 2619A-001, Control Room Daily Surveillance.	**N** **N**	
Cue:	• **Provide a copy of Unit 2 Technical Specifications.** • **If desired, provide AOP 2556; CEA Malfunctions and/or SP 2619A-001, Control Room Daily Surveillance.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	Explain the necessary Tech. Spec. entry requirements and the Tech. Spec. surveillance that must be performed.	• During the review of Unit 2 Technical Specifications, the examinee states the need to enter into Tech. Spec.LCO 3.1.3.1B (B.1 or B.2) and 3.1.3.1C. • The examinee may state the need to enter into Tech. Spec.LCO 3.1.3.6D. • The examinee states the need to record CEA Position Indication within the first hour and at least once every four (4) hours per the Tech Spec. ACTIONs of 3.1.3.1B (B.1 or B.2) and 3.1.3.1C. (The CEA positions are to be recorded on SP 2619A-001, Control Room Daily Surveillance, Section 49, which includes the time of inoperability and the time of return to OPERABILITY.) • The examinee must NOT enter Tech Spec LCO 3.1.3.3 or 3.0.3 as they are NOT applicable with the Backup Scanner operating as designed.	Y N Y Y	
Cue:	**None**			
Comments:	• Although Tech. Spec. 3.1.3.6.D applies and must be logged, it is NOT a Critical item because the requirement of this Tech Spec ACTION requires logging CEA positions every 12 hours, which is **less** restrictive than the Tech Spec ACTIONs of 3.1.3.1B (B.1 or B.2) or 3.1.3.1C. • LCO 3.1.3.1B.1 would NOT apply if the malfunction cannot be repaired and tested within 6 hours.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-A2S Rev. 1

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)*

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initial Conditions:

- The plant has just returned to100% power after completing Control Valve Testing at 90% power.
- Group 7 CEAs were inserted 10 steps for the power reduction, but have all just been fully withdrawn, as indicated by the Core Mimic.
  - As the RO fully withdrew all 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 to CEAPDS from CEA #1 is not capable of tracking motion of this CEA at this time.
- I&C testing indicates the reed switch input card to CEAPDS for CEA #1, located on the rear of C-05, needs to be replaced with a spare from the warehouse.
- Testing and replacement will take approximately five (5) hours.

Initiating Cues:

- You are the on-shift US.
- Determine what Tech Spec LCO(s) is (are) applicable and what ACTION(s) is (are) required.

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. — 09/14/11
Developer — Date

III. Reviewed:

Technical Reviewer — Date

IV. Approved:

Cognizant Plant Supervisor (optional) — Date

Nuclear Training Supervisor — Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
12/07/10	Created JPM for LOIT 2011 NRC Exam	0/0
09/06/2011	Corrected Minimum value for LHRA from 1000 mrem/hr to 1001 mrem/hr	0/1
09/14/11	Minor changes to incorporate NRC validation comments	0/2

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): _____

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)

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.

Initiating Cues: Determine the following:

1. Which PEO (#1 or #2) will be directed to clear the tag-out and perform the initial valve lineup?
2. Which PEO (#1 or #2) will be directed to perform the required valve lineup Independent Verification?
3. What specific dose will each PEO get in performing their task?

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-A3S Rev. 0

Radiological Assessment and Task Supervision

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	• Review the Initial Conditions and Initiating Cue. • Using known exposure rate in the area, calculate the maximum available stay time for each PEO. • Based on available stay time, decide which PEO must perform each task.	• PEO #1 only has 400 mR of exposure left and PEO #2 has 850 mR of exposure left. • The minimum radiation level for a Locked High Radiation area is 1001 mrem/hr. • 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 </= 24 minutes. (400 mR / 1001 mR/hr. * 60 min/hr. = 23.976 minutes) And </= 51 minutes for PEO #2 (850 mR / 1001 mR/hr * 60 min/hr. = 50.949 minutes)	**N** **N** **N**	
Cue:	**If requested, provide examinee with a copy of RPM 5.2.2; Basic Radiation Worker Responsibilities.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	• PEO #1 does not have enough exposure left to clear the tags and perform the initial valve lineup. • 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. The examinee may also state the following, but it is not required: • 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).	Based on the calculated stay times for each PEO and the individual task time requirements: 1. PEO #2 is assigned to clear the tags and perform the initial valve lineup. 2. PEO #1 is assigned to perform the valve lineup Independent Verification. 3. PEO #1 dose received ~ 250 mrem. PEO #2 dose received ~ 750 mrem.	 Y Y 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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

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.

Initiating Cues:

Determine the following:

1. Which PEO (#1 or #2) will be directed to clear the tag-out and perform the initial valve lineup?
2. Which PEO (#1 or #2) will be directed to perform the required valve lineup Independent Verification?
3. What specific dose will each PEO get in performing their task?

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **EAL Classification and PARs**

JPM Number: JPM-A4S Revision: 0

II. Initiated:

R. J. Ashey	12/15/10
Developer	Date

III. Reviewed:

Technical Reviewer	Date

IV. Approved:

Cognizant Plant Supervisor (optional)	Date

Nuclear Training Supervisor	Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
12/13/10	Create for use on LOIT-2011 NRC Exam	0

Facility: MP-2 Examinee: _____

JPM Number: JPM-A4S Revision: 0

Task Title: **EAL Classification and PARs**

System: Emergency Plan

Time Critical Task: Yes X No _____

Validated Time (minutes): 20

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

Applicable To: SRO X RO _____ PEO _____

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

Method of Testing:

Simulated Performance: _____ Actual Performance: X

Location:

Classroom: X Simulator: X In-Plant: X

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
- MP-26-EPI-FAP07-001, Incident Report Forms
- Student Handout, Critical Plant Parameters

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 JPM 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.

Initial Conditions: See attached form for Critical Plant Parameters.

Initiating Cues:

- You are the on-duty SM.
- Your task is to determine the NRC and state posture code classification and PAR, if applicable, for the event described on the attached form. (Time Critical)
  - Fill in the data for steps 1 and steps 4 through 8.
  - If applicable, provide the required Protective Action Recommendation that would be given to the state.
  - Determine Potassium Iodide (KI) strategy, if applicable.

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-A4S Rev. 0

EAL Classification and PARs

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	**MP-26-EPI-FAP06, Step 2.1** Obtain the following: • 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 the following:** • **Plant Critical Parameters handout** • **MP-26-EPI-FAP07-001, Incident Report Form** • **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**			
Comments:	The 15 minute time for classification starts when the examinee completes his/ her review of the Critical Plant Parameters.			
2.	Perform the initial classification for this event, per the existing conditions.	Based on a "top to bottom, left to right' technique, the examinee determines that all three barriers are lost and this event is classified as a GENERAL EMERGENCY, State Posture Code, ALPHA. (See Answer Key)	**Y**	
Cue:				
Comments:	The 15 minute time for classification ends when the examinee writes or verbalizes the NRC classification and State Posture Code.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	**MP-26-EPI-FAP06, Step 2.4** For Control Room PARs, Refer To EPI-FAP06-005, "Control Room Protective Action recommendations" and determine the proper PAR.	• Examinee references: o MP-26-EPI-FAP06, Classification and PARs o MP-26-EPI-FAP06-005, Control Room Protective Action Recommendations.	**N**	
Cue:				
Comments:	References are provided in step 1. The 15 minute clock for the PAR starts when the examinee classifies the event.			
4.	**MP-26-FAP06-005 (Flowchart)** Are All Three Fission Product Barriers Lost?	Examinee determines that all 3 Fission Product Barriers are lost.	**Y**	
Cue:				
Comments:				
5.	Is there a release in progress?	Examinee determines that there IS a release in progress.	**Y**	
Cue:				
Comments:	Examinee may determine that there is a release in progress, but will determine the release is NOT controlled, which will lead to the same conclusion.			
6.	Is the release controlled?	Examinee determines that the release is NOT controlled. Examinee determines that a State Posture Code Alpha exists that requires a 10-mile PAR.	**Y**	
Cue:				
Comments:	Examinee may determine that there is a release in progress, but will determine the release is NOT controlled, which will lead to the same conclusion.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	Check the appropriate wind direction from 142 ft. level for zone(s) to evacuate:	• Examinee observes wind direction table and checks 340°-029°. • Examinee determines from the wind direction table that zones **A** and **B** and **Plum Island** must be evacuated.	**Y** **Y**	
Cue:				
Comments:				
8.	Shelter all other zones.	Examinee determines that all other zones must be sheltered.	**Y**	
Cue:				
Comments:	The classification is a GENERAL EMERGENCY, ALPHA. The PAR should state, "Evacuate zones **A** and **B** and **Plum Island**. Shelter all other zones."			
9.	Determine Potassium Iodide (KI) strategy.	Examinee determines that Dose Projections or actual dose is NOT available at this time; therefore, KI strategy cannot be determined.	**Y**	
Cue:				
Comments:	The 15 minute clock stops when the examinee writes or verbalizes the recommendation to the state to initiate a 10 mile evacuation of specific zones and shelter all other zones.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-A4S Revision: 0

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): 20

Actual Time to Complete (minutes): _____

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:

_____

_____

_____

_____

_____

JPM Number: JPM-A4S Revision: 0

STUDENT HANDOUT

Initial Conditions: See attached form for Critical Plant Parameters.

Initiating Cues:

- You are the on-duty SM.
- Your task is to determine the NRC and state posture code classification and PAR, if applicable, for the event described on the attached form. (Time Critical)
  - Fill in the data for steps 1 and steps 4 through 8.
  - If applicable, provide the required Protective Action Recommendation that would be given to the state.
  - Determine Potassium Iodide (KI) strategy, if applicable.

JPM Number: JPM-A4S Revision: 0

Initial Conditions: The plant is operating at 100% power. Bus 24E is aligned to Bus 24C. 'B' LPSI Pump is OOS. Wind at the site is from 15 deg at 3 mph.

CRITICAL PLANT PARAMETERS	
INFORMATION	**SOURCE**
The following information is provided at the completion of EOP 2525, Standard Post Trip actions:	US
The BOP reports the following: • Buses 25A/B, 24A/B, and 24C de-energized • Bus 24D energized by the 'B' D/G • S/G press: #1 is 745 psia, #2 is 740 psia, both slowly lowering • Th is 289°F, Tc is 262°F, both slowly lowering • S/G levels: #1 is 18%, #2 is 16%, both rising slowly • 'B' AFP supplying both S/Gs	BOP
The RO reports the following: • Pressurizer level is 0% • Reactor vessel level (RVLMS) is 0%. (Both #8 string HJTCs are OPERABLE) • Pressurizer pressure is 53 psia and slowly lowering • CETS are 847°F and slowly rising • Subcooling (CET) indicates -478°F and becoming more negative • Facility 2 SIAS, CIAS, EBFS actuated • CTMT pressure is 3 psig, lowering • CTMT temperature is not available • MSL: RM-4299A/B are 1.6 R/hr, RM-4299C is 1.8 R/hr, all are rising • CTMT Hi Range, RM-8240 / 8241: 20,000R/hr / 21,000 R/hr, both are rising • CTMT Personnel Access Area, RM-7890, is off scale high • Facility 2 CTMT atmosphere, RM-8262A/B show pre CIAS spikes and alarm • RMs outside CTMT are reading as follows: o RM-8132B, MP2 Vent (Normal) is reading 4.0E+01 cpm and lowering o RM-8168, MP2 Vent (Mid/High) is reading 1.3E-02 μCi/cc and rising o RM-8169, Millstone Stack is reading 4.7E+01 μCi/cc and rising	PPO
Trends shows the following: • MSL: RM-4299A/B were reading 0.7 R/hr, RM-4299C is 0.9 R/hr, 15 minutes ago • CTMT Hi Range, RM-8240 / 8241 were reading 350R/hr / 370 R/hr, 15 minutes ago • Rad Monitors outside of CTMT started rising about 15 minutes ago. • Containment pressure was 42 psig15 minutes ago.	STA
Transition to EOP 2532	US

Classification Level NRC: _____

State Posture Code: _____

Protective Action Recommendation, if applicable: KI Strategy, If applicable:

_____ _____

_____ _____

JPM Number: JPM-A4S Revision: 0

3/5/08
Approval Date

3/14/08
Effective Date

Incident Report Form (IRF)

NOTE: ***FOR AN INITIAL CLASSIFICATION OR A CLASSIFICATION CHANGE, COMPLETE ITEMS 1-8, AND 13-15. FOR UPDATE MESSAGE, COMPLETE ALL ITEMS 1-15.*** (2)

1	IRF Number: **DSEO Event Classification** **Date: _____ at _____ hours (*Military time*)**	
2	☐ NOT a Drill ☐ Drill ☐ Communications Drill *(call in drill only)*	
3	☐ Initial Classification ☐ Classification Change ☐ Update ☐ Terminated Event	
4	Incident Location: ☐ Millstone Unit 1 ☐ Millstone Unit 2 ☐ Millstone Unit 3	
5	Incident Classification: ☐ An Unusual Event	Posture Code ☐ Delta – One ☐ Delta - Two
	☐ An Alert	☐ Charlie - One
	☐ A Site Area Emergency	☐ Charlie - Two
	☐ A General Emergency	☐ Bravo ☐ Alpha
6	Radiological Release Status: Routine releases are ongoing due to plant operations. Additional radiological releases associated with the event: ☐ No radiological release due to event ☐ Terminated radiological release due to event ☐ Radiological release in progress due to event	(2)
7	Meteorological Data: ☐ Current Site Wind: At _____ hours (military time) from the ___ (in degrees) into the ___ (in degrees) at ___ mph. ☐ Not Available	
8	Major EAL Heading: Minor EAL Heading:	

NOTE: ***COMPLETE ITEMS 9-12 FOR UPDATE MESSAGES ONLY.***

9	Forecast Site Wind: ☐ The wind is expected to shift at ___ hours (military time) from the ___ (in degrees) into the ___ (in degrees) at ___ mph. ☐ Not Available	
10	Plant Status: ☐ Stable ☐ Degrading ☐ Improving ☐ Unchanged since last report	
11	Offsite Services Requested: ☐ Fire ☐ Ambulance ☐ Law Enforcement/Security ☐ None	
12	Access to the site: ☐ Has been restricted ☐ Has not been restricted	
13	*(For site use only)* Name: (Person filling out report)	
14	Message Authorized for release by: Shift Manager or DSEO	Date: Time:
15	Message Sent	Date: Time: (2)

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: Align Charging Discharge Path

JPM Number: JPM-S1.1 Revision: 1

II. Initiated:

R. J. Ashey 9/13/2011
Developer Date

III. Reviewed:

Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

Nuclear Training Supervisor Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
9/13/2011	Update to include NRC comments	1/0
9/28/2011	Update to include NRC comments	1/0

JPM Number: JPM-S1.1 Rev. 1

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)

Initial Conditions:

- Unit 2 is at 100% power.
- The crew has just observed a loss off Charging flow and has secured Charging and Letdown.

Initiating Cues:

- The US has directed you to perform the actions of AOP 2512, Loss of All Charging, to restore Charging flow.

Simulator Requirements:

- IC-10
- I/O " 02A1A2S11" CH-429, Charging Header Isolation, to close.
- Place ALL Charging Pump handswitches in Pull-To-Lock
- Close LTDN ISOL Valves, CH-515 and CH-516
- Place the simulator in Freeze until the examinee is ready.
- **Booth Operator: When requested, insert remote "CVR01" to "OPEN" in order to simulate opening CH-340 and CH-440, and reports these valves are open.**

*** * * 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 Rev.. 1

Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	**AOP 2512, Loss of All Charging, Section 3.0 Assessment of Loss of All Charging** NOTE 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. 2. If the SM/US believe attempts to restore charging will be unsuccessful then the decision to trip the RX should not be delayed. 3. Following a reactor trip, this procedure will be performed in parallel with EOP 2526, "Reactor Trip Recovery" and OP 2207, "Plant Cooldown" 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	Examinee reads and acknowledges note.	N	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
2.	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 determines that the condition is presently NOT met, but may be applicable at some later time.	**N**	
Cue:				
Comments:				
3.	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

JPM Number: JPM-S1.1 Rev.. 1

Align Charging Discharge Path

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	3.3 INITIATE forcing sprays, and MONITOR PZR pressure.	Examinee initiates forcing sprays by placing ALL backup heaters to ON and lowering the automatic setpoint on the controlling channel pressure controller to maintain RCS pressure at ~ 2250 psia.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)

5.	3.4 CHECK charging flowpath as follows:
	• Suction aligned from one of the following:
	  • "VCT OUT ISOL CH-501" open
	  • "BA ISOL CH-514"
	  OR
	  • "GRAV FD ISOL BAST A, CH-509",
	  OR
	  • "GRAV FD ISOL BAST B, CH-508"
	  • "RWST ISOL, CH-192" and "RWST TO CHGSUCT, CH-504", open
	• Charging header isolation valves open:
	  • "CHG HDR ISOL, CH-429"
	  • "CHG ISOL, CH-518"
	  OR
	  • "CHG ISOL, CH-519"
	• NO indication of blockage in either the suction or discharge flowpath
		Examinee observes the following:
		• Suction aligned from any ***one*** of the following by a red (OPEN) indication:
		  • "VCT OUT ISOL CH-501"
		  • "BA ISOL CH-514"
		  OR
		  • "GRAV FD ISOL BAST A, CH-509",
		  OR
		  "GRAV FD ISOL BAST B, CH-508"
		  • "RWST ISOL, CH-192" and "RWST TO CHGSUCT, CH-504", open
		• Charging header isolation valves open:
		  • "CHG HDR ISOL, CH-429"
		  • "CHG ISOL, CH-518"
		  OR
		  • "CHG ISOL, CH-519"
		• NO indication of blockage in either the suction or discharge flowpath
		
		Examinee notes that "CHG HDR ISOL, CH-429" is closed by green CLOSE indication and will NOT open (if attempted).
		Contingency Action 3.4.1 is applicable.
			N
			N
			
			N
			
			N
			N
			
			Y
			N
			
			N
			N
			
			Y	

Cue:	**If a PEO is dispatched to open CH-429 locally, report that the valve will NOT open.**			
Comments:	Any attempt to open CH-429, CHG HDR ISOL, from C-05 or locally will NOT be successful.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6.	3.4.1 PERFORM the following: a. PLACE all charging pump handswitches in "PULL-TO-LOCK." b. CLOSE "LTDN ISOL, CH-515" and "LTDN ISOL, CH-516" (C-02) c. WHEN VCT level rises to 86% or as desired, PLACE letdown divert switch, "LTDN DIVERT CH-500 to "RWS" position.	• Examinee verifies that all charging pump handswitches are in the "PULL-TO-LOCK" position. • Examinee verifies "LTDN ISOL, CH-515" and "LTDN ISOL, CH-516" are closed. • WHEN VCT level rises to 86% (or as desired) examinee places the letdown divert switch, "LTDN DIVERT CH-500, to the "RWS" position.	**N** **N** **N**	
Cue:				
Comments:	Examinee may place the letdown divert switch, "LTDN DIVERT CH-500, to the "RWS" position prior to reaching 86% VCT level.			
7.	d. Refer To the following TS/TRM LCOs and DETERMINE applicability: • TRM 3.1.2.2 • TRM 3.1.2.4 • TRM 7.1.1 • TS 3.5.2.a (if PZR press > 1750 psia) • TS 3.5.3.a (if PZR press < 1750 psia) • TS 3.0.3	Examinee requests that the US/SM refer to the listed TS/TRM LCOs and DETERMINE applicability:	**N**	
Cue:	**Inform examinee that the SM will determine Tech Spec and TRM applicability.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	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 determines that Section 5.0, Discharge Flowpath Restoration" is applicable due to the closure of "CHG HDR ISOL, CH-429"	**N**	
Cue:				
Comments:				
9.	**Section 5.0** 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 that a plant shutdown will be required due to the loss of the normal Charging flowpath.	**N**	
Cue:				
Comments:				
10.	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 verifies that the flowing valves are closed: • "LTDN ISOL, CH-515" • "LTDN ISOL, CH-516"	 **N** **N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	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:				
12.	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:				
13.	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:	**Report that Tech Specs and TRM are being reviewed.**			
Comments:				
14.	e. OBTAIN key #39 from Operations key locker and CLOSE "HPSI HDR A STOP, SI-656" (C-01).	Examinee obtains key #39 from the Operations key locker and utilizes it to close "HPSI HDR A STOP, SI-656"	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	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 directs a PEO to open the following valves: • CH-340, "CHARGING PUMP DISCHARGE TO HPSI HEADER" • CH-440, "CHARGING PUMP DISCHARGE TO HPSI HEADER"	**Y**	
Cue:	**Booth Operator: When requested, insert remote "CVR01" to "OPEN" in order to simulate opening CH-340 and CH-440, and reports these valves are open.**			
Comments:				
16.	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" position and observing that the green (CLOSE) light is lit and the red (OPEN) light is NOT lit: • "LOOP 1A, SI-617" • "LOOP 1B, SI-627" • "LOOP 2B, SI-647"	 **Y** **Y** **Y**	
Cue:				
Comments:				
17.	h. ENSURE "LOOP 2A, SI-637," is open (C-01).	Examinee ensures "LOOP 2A, SI-637," is open by observing its red (OPEN) light is lit.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	i. OBTAIN Key #50 from Operation Key Locker and UNLOCK and CLOSE "CHG HDR ISOL, CH-429" (C-02).	Examinee obtains Key #50 from the Operation Key Locker and unlocks and closes "CHG HDR ISOL, CH-429" by rotating the key counter-clockwise and observing a green (CLOSE) light is lit and the red (OPEN) light is NOT lit.	**N**	
Cue:				
Comments:	Examinee may state that this valve was already closed.			
19.	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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
20.	j. IF desired, ALIGN charging pump suction to RWST as follows (C-02): 1) CLOSE "VCT MAKEUP BYPASS, CH-196." 2) OPEN "RWST TO CHG 3) SUCT, CH-504." 4) OPEN "RWST ISOL, CH-192." 5) CLOSE "VCT OUT ISOL, CH-501." 6) Refer To AOP 2575, "Rapid Downpower," and SELECT borate from the RWST	Examinee aligns the charging pump suction to RWST as follows: 1) Verifies "VCT MAKEUP BYPASS, CH-196." Is closed by observing only the green (CLOSED) light is lit. 2) Verifies "RWST TO CHG SUCT, CH-504" is open by observing only the red (OPEN) light is lit 3) Opens "RWST ISOL, CH-192" by rotating its handswitch clockwise and observing the red (OPEN) light is lit and the green (OPEN) light is NOT lit. 4) Closes "VCT OUT ISOL, CH-501" by rotating its handswitch counter-clockwise and observing the green (CLOSE) light and the red (CLOSED) light is NOT lit. 5) Examinee states that he/she will refer to AOP 2575, "Rapid Downpower," and SELECT borate from the RWST	**N** **N** **Y** **Y** **N**	
Cue:				
Comments:	Examinee states that a plant shutdown has been initiated due to boration from the RWST.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-S1.1 Rev. 1

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:

STUDENT HANDOUT

Initial Conditions:

- Unit 2 is at 100% power.
- The crew has just observed a loss of Charging flow and has secured Charging and Letdown.

Initiating Cues:

- The US has directed you to perform the actions of AOP 2512, Loss of All Charging, to restore Charging flow.

JOB PERFORMANCE MEASURE APPROVAL SHEET

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

JPM Number: JPM-S4s.1 Revision: 0

II. Initiated:

Robert L. Cimmino, Jr.	09/14/11
Developer	Date

III. Reviewed:

Technical Reviewer	Date

IV. Approved:

Cognizant Plant Supervisor (optional)	Date
Nuclear Training Supervisor	Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
09/14/11	Minor changes to incorporate NRC validation comments	0/1
09/28/2011	Minor editorial changes	0/1

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: OP 2386 "Reactor Regulating 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:

- Unit 2 was manually tripped due to a loss of condenser vacuum
- Buses 25A and 25B failed to transfer to the RSST on the trip.
- Due to a small steam leak in the 38'-6" West Enclosure Building, the Shift Manager has restricted access to this area.

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.

Simulator Requirements:

- IC-152
- RX20D @ 0% (PIC-4224 output fails to 0, closing the #2 SG ADV)
- Instructor to act as RO to address alarms
- PPC monitors are set to the standard Post-Trip displays.

*** * * 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)
			START TIME:	
1.	EOP 2528, Step 29 Loss Of Offsite Power/Loss of Forced Circulation, Perform Controlled Cooldown.	Examinee refers to EOP 2528 Loss Of Offsite Power/Loss of Forced Circulation, step 29 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. <u>Contingency Actions</u> 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, Contingency Actions, due to the condenser steam dumps not being available.	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	OP 2386, Reactor Regulating System 4.1 Operation of Foxboro 762 Controllers	Examinee refers to OP 2386 for guidance on operation of Foxboro controllers.	**N**	
Cue:				
Comments:	Direct reference to the applicable procedure is <u>not</u> required as the applicable steps to operate valve controllers are considered to be a "Skill -Of-The-Craft".			
5.	4.1.2 Manual Operation a. PUSH the "A/M" button until "M" is lit. b. PRESS "SEL" button until cursor appears above output (right hand bar graph). c. USING "▲" and "▼" buttons, ADJUST output as desired.	Examinee pushes the "M" on "ATMOS DUMP CTRL PIC 4224" in order to take manual control of 2-MS-190B. Examinee presses "SEL" button on "ATMOS DUMP CTRL PIC 4224" until cursor appears above output. Examinee raises output on "ATMOS DUMP CTRL PIC 4224" in order to open 2-MS-190B.	**N** **N** **N**	
Cue:				
Comments:	When both ADVs have been opened, trigger malfunction **RX20D to 0%** to fail PIC-4224 and close the #2 SG ADV.			
6.	#2 SG ADV fails closed	Examinee observes the following: • #2 SG ADV red OPEN light is not lit • The cooldown rate lowers • Loop 2 Tc stabilizes or rises slightly	**N***	
Cue:	**If needed, US directs examinee to continue cooldown using <u>both</u> ADVs.**			
Comments:	*Any *<u>one</u>* of these is sufficient to indicate that the #2 SG ADV has gone closed			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	OP 2386, Reactor Regulating System 4.5 Operation of Controller from Foxboro Screen	Examinee refers to OP 2386, Section 4.5 in order to take control of 2-MS-190B from the Foxboro screen.	**N**	
Cue:	• **Deny any request to send a PEO to manually operate 2-MS-190B due to hazardous local conditions from steam leak.** • **Deny any request for PEO/spare operator assistance for operation of #2 ADV from C-21 panel**			
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**. Either the Foxboro IA system or the manual controller on C-21 (Hot Shutdown Panel) is an acceptable location to re-open the #2 SG ADV. The controlled re-opening of the #2 SG ADV is the **only** aspect of the steps that makes them "Critical".			
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:				
9.	4.5.1 SELECT "Change Env" (Foxboro controls PPC).	Examinee selects "Change Env" on the PPC Foxboro screen.	**N**	
Cue:	This step may only need to be performed if the Foxboro IA program was never manipulated since it was started.			
Comments:				
10.	4.5.2 SELECT "Reactor Reg" (environment selection screen PPC).	Examinee selects "Reactor Reg" on the PPC Foxboro screen.	**N**	
Cue:	This step may only need to be performed if the Foxboro IA program was never manipulated since it was started.			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	4.5.3 CLICK on "OK."	Examinee selects "OK." on the PPC Foxboro screen.	**N**	
Cue:	This step may only need to be performed if the Foxboro IA program was never manipulated since it was started.			
Comments:				
12.	4.5.4 SELECT "Dump Vlv Cntrls" screen (Foxboro control PPC).	Examinee selects "Dump Vlv Cntrls" 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:				
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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
17.	Select the "OUTPUT" box.	Examinee selects the "OUTPUT" box on the PPC FOXBORO screen.	**Y**	
Cue:	This step is **NOT** in the procedure, but is assumed to be a "Skill -Of-The-Craft" required action.			
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:	**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.**			
Comments:				
19.	Proceed to C-21 Hot Shutdown Panel	Examinee locates and opens Hot Shutdown Panel (C-21)	**Y**	
Cue:	**Examinee may open the #2 SG ADV using either the Foxboro IA system or the manual controller on C-21 (Hot Shutdown Panel). Either procedure is acceptable. The successful controlled re-opening of the #2 SG ADV is the *only* aspect of the steps that makes them "Critical".**			
Comments:	Direct reference to the applicable procedure is not required as the applicable steps to operate valve controllers are considered to be a "Skill -Of-The-Craft".			
20.	Place #2 ADV controller HIC 4224 in manual control	Examinee locates and places "HIC 4224" in the "MAN" position.	**Y**	
Cue:				
Comments:	If examinee states the need to establish communication with the Control Room, inform the examinee to assume that communication with the control room has been established.			

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 SG ADV controller in manual to open #2 SG 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:	**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.**			
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM- S4s.1 Rev. 0

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)*

Areas for Improvement/Comments:

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initiating Cues:

- Unit-2 was manually tripped due to a loss of condenser vacuum.
- Buses 25A and 25B failed to transfer to the RSST on the trip.
- Due to a small steam leak in the 38'-6" West Enclosure Building, the Shift Manager has restricted access to this area.

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.

JOB PERFORMANCE MEASURE APPROVAL SHEET

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

JPM Number: JPM-S5.1 Revision: 1

II. Initiated:

R. J. Ashey 9/14/2011
Developer Date

III. Reviewed:

Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

Nuclear Training Supervisor Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
9/14/2011	Revised JPM to incorporate NRC comments.	1/0
9/28/2011	Minor editorial changes.	1/0

JPM Number: JPM-S5.1 Rev. 1

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: _____

JPM Number: JPM-S5.1 Rev. 1

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", Section 4.2 "Shifting Train 'A' CRACS to Recirculation Mode" and Section 4.6 "Shifting Train 'B' CRACS to Recirculation Mode".
AOP 2577 " Fuel Handling Accident", Section 3.0 "Fuel Handling Accident in Containment"

General References: OP 2315A "Control Room Air Conditioning System"
AOP 2577 " 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)**

Initial Conditions:

- Unit 2 is in a Refueling outage with fuel movement occurring in Containment.
- The Refuel SRO on the bridge just called the Control Room to report that a fuel bundle has dropped from the refueling machine in CTMT and that a fuel handling accident has occurred. The bundle does NOT appear to be damaged at this time.

Initiating Cues:

- The US has directed you to perform AOP 2577, Fuel Handling Accident, Section 3.0, Fuel Handling Accident in Containment.

Simulator Requirements:

- IC-153, or any IC in Mode 6 during fuel movement
- Mon 1 (SDC), Mon 2 (STR), Mon 3 (PAV)
- Train "A" CRACS is operating in "NORMAL" mode.
- Insert Remote CHR04 – RI and open all 4 Containment Purge Valves to maintain containment habitability.
  - Ensure the following:
    - Purge Fan, F-23 is OFF
    - Purge Damper, AC-1 is CLOSED
    - Purge Damper AC-3 is OPEN
    - AC-4 is OPEN. (I/O indication to show closed) [Panel tags removed]
    - AC-5 is OPEN. (I/O indication to show closed) [Panel tags removed]
    - AC-11 CLOSED

*** * * 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.. 1

Containment Isolation due to Fuel Handling Accident

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
		START TIME: _____		
1.	**Fuel Handling Accident AOP 2577**	When examinee is informed of the dropped fuel bundle in Containment, then he/she obtains AOP 2577, Fuel Handling Accident.	**N**	
Cue:	**If desired, provide examinee with a copy of AOP 2577**			
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 contacts Health Physics Department to perform the following: • Evacuate personnel from SG primary sides and loop areas • Coordinate an evacuation of personnel in containment	**Y**	
Cue:	**Booth operator acknowledges the request and reports 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.	**N**	
Cue:				
Comments:				

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:	**If asked, report that all personnel have exited containment.**			
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:	**US acknowledges need to establish CTMT closure**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	3.6 VERIFY at least one train of CRACS operating in recirculation mode. (C25) Facility 1 • HV-203A, Fan F-21A exhaust damper is open. • Fan F-21A, supply fan is running. • HV-206A, Fan F-31A exhaust damper is open. • Fan F-31A, exhaust fan is running. • HV-212A, Fan F-32A exhaust damper is open. • Fan F-32A, filter fan is running. • HV-202, minimum fresh air damper is closed. • HV-207, cable vault exhaust damper is closed. • HV-208, exhaust air damper is closed. • (Facility 2, Continued on next page.)	Examinee positions or verifies <u>either</u> Facility 1 or Facility 2 of CRACS in the recirculation by the following: • Verifies HV-203A, Fan F-21A exhaust damper is open by red "OPEN" light lit only. • Starts Fan F-21A, supply fan and observes red "ON" light lit only. • Verifies HV-206A, Fan F-31A exhaust damper is open by red "OPEN" light lit only. • Starts Fan F-31A, exhaust fan and observes red "ON" light lit only.. • Starts Fan F-32A, filter fan and observes red "ON" light lit only. • Verifies HV-212A, Fan F-32A exhaust damper is open by red "OPEN" light lit only • Verifies HV-202, minimum fresh air damper is closed by green "CLOSE" light lit only. • Verifies HV-207, cable vault exhaust damper is closed by green "CLOSE" light lit only. • Verifies HV-208, exhaust air damper is closed by green "CLOSE" light lit only. • Places NORM/RECIRC MODE, HS-8346, in RECIRC <u>OR</u> (next page)	**N** **Y#** **N** **Y#** **N** **Y** **N** **N** **N** **Y***	
Cue:	• **If desired, provide examinee with AOP 2577 " Fuel Handling Accident"** • **If the examinee desires to use the Control Room Air Conditioning procedure for placing both CRAS in the recirculation mode, then, if desired, provide him/her with OP 2315A, "Control Room Air Conditioning System," and proceed to step 9 (Train "A") or step 11 (Train "B").**			
Comments:	# If NOT already operating. * AOP 2577 assumes high radiation in the Control Room will cause CRACS to automatically shift to the recirculation mode. It does NOT specifically establish a method to accomplish this task manually; therefore, this step implies that the examinee must place the CRAC System handswitch in the RECIRC position.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8. cont.	Facility 2 • HV-203B, Fan F-21B exhaust damper is open. • Fan F-21B, supply fan is running. • HV-206B, Fan F-31B exhaust damper is open. • Fan F-31B, exhaust fan is running. • HV-212B, Fan F-32B exhaust damper is open. • Fan F-32B, filter fan is running. • HV-495, minimum fresh air damper is closed. • HV-496, exhaust damper is closed. • HV-497, cable vault exhaust damper is closed.	• Verifies HV-203B, Fan F-21B exhaust damper is open by red "OPEN" light lit only. • Starts Fan F-21B, supply fan and observes red "ON" light lit only. • Verifies HV-206B, Fan F-31B exhaust damper is open by red "OPEN" light lit only. • Starts Fan F-31B, exhaust fan and observes red "ON" light lit only. • Starts Fan F-32B, filter fan and observes red "ON" light lit only. • Verifies HV-212B, Fan F-32B exhaust damper is open by red "OPEN" light lit only. • Verifies HV-495, minimum fresh air damper is closed by green "CLOSE" light lit only. • Verifies HV-496, exhaust damper is closed by green "CLOSE" light lit only. • Verifies HV-497, cable vault exhaust air damper is closed by green "CLOSE" light lit only. • Places NORM/RECIRC MODE, HS-8346, in RECIRC	**N** **Y#** **N** **Y#** **N** **Y** **N** **N** **N** **Y***	
Cue:	**This JPM is complete when all three CRACS Fans are running and the NORM/RECIRC MODE, HS-8346 or HS-8359, switch is in the RECIRC position.**			
Comments:	# If NOT already operating. * AOP 2577 assumes high radiation in the Control Room will cause CRACS to automatically shift to the recirculation mode. It does NOT specifically establish a method to accomplish this task manually; therefore, this step implies that the examinee must place the CRAC System handswitch in the RECIRC position.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9.	**OP 2315A, Section 4.2, Shifting Train "A" CRACS to Recirculation Mode** 4.2.8 Place "NORM/RECIRC MODE, HS-8346" and "NORM/RECIRC MODE, HS-8359" in RECIRC. 4.2.9 Verify the following: • MIN FRESH AIR DMPR, HV-202 closed • CABLE VAULT EXH DMPR, HV-207 closed • EXH AIR DMPR, HV-208 closed • FRESH AIR DMPR, HV-495 closed • EXH AIR DMPR, HV-496 closed • CABLE VAULT EXH DMPR, HV-497 closed • CRACS SPLY FAN, F-21A running • CRACS EXH FAN, F-31A running • FLTR FANS INLET DMPR, HV-210 open	Examinee places "NORM/RECIRC MODE, HS-8346" and "NORM/RECIRC MODE, HS-8346" in the RECIRC position. Examinee verifies the following: • MIN FRESH AIR DMPR, HV-202, is closed by observing the green light is lit. • CABLE VAULT EXH DMPR, HV-207, is closed by observing the green light is lit. • EXH AIR DMPR, HV-208, is closed by observing the green light is lit. • FRESH AIR DMPR, HV-495, is closed by observing the green light is lit. • EXH AIR DMPR, HV-496, is closed by observing the green light is lit. • CABLE VAULT EXH DMPR, HV-497, is closed by observing the green light is lit. • CRACS SPLY FAN, F-21A, is running by verifying the red light is lit. • CRACS EXH FAN, F-31A, is running by verifying the red light is lit. • FLTR FANS INLET DMPR, HV-210, is open by verifying the red light is lit.	Y N N N N N N N N N	
Cue:	**If the examinee desires to use the Control Room Air Conditioning procedure for placing both CRAS in the recirculation mode, then provide him/her with OP 2315A, "Control Room Air Conditioning System."**			
Comments:	Shifting Train "B" CRACS to Recirculation Mode is addressed by JPM steps 11 and 12.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
10.	4.2.10 Start CRACS FLTR FAN, F-32A, HS-8006 a. Verify the following: • CRACS FLTR FAN, F-32A, HS-8006 red run light lit and switch in AUTO. • F-32A, EXH DMPR, HV-212A red open light lit.	• Examinee starts CRACS FLTR FAN, F-32A by momentarily placing the hand switches to the "START" position. • Examinee verifies the hand switch returns to the AUTO position and the red light is lit. • Examinee verifies that the F-32A, EXH DMPR, HV-212A, red open light lit.	**Y** **N** **N**	
Cue:	**This JPM is complete when CRACS Filter Fan, F-32A is started.**			
Comments:	If used, Facility 2 is continued on the next page.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	**OP 2315A, Section 4.6, Shifting Train "B" CRACS to Recirculation Mode** 4.6.8 Place "NORM/RECIRC MODE, HS-8346" and "NORM/RECIRC MODE, HS-8359" in RECIRC. 4.6.9 Verify the following: • MIN FRESH AIR DMPR, HV-202 closed • CABLE VAULT EXH DMPR, HV-207 closed • EXH AIR DMPR, HV-208 closed • FRESH AIR DMPR, HV-495 closed • EXH AIR DMPR, HV-496 closed • CABLE VAULT EXH DMPR, HV-497 closed • CRACS SPLY FAN, F-21B running • CRACS EXH FAN, F-31B running • FLTR FANS INLET DMPR, HV-210 open	Examinee places "NORM/RECIRC MODE, HS-8346" and "NORM/RECIRC MODE, HS-8346" in the RECIRC position. Examinee verifies the following: • MIN FRESH AIR DMPR, HV-202, is closed by observing the green light is lit. • CABLE VAULT EXH DMPR, HV-207, is closed by observing the green light is lit. • EXH AIR DMPR, HV-208, is closed by observing the green light is lit. • FRESH AIR DMPR, HV-495, is closed by observing the green light is lit. • EXH AIR DMPR, HV-496, is closed by observing the green light is lit. • CABLE VAULT EXH DMPR, HV-497, is closed by observing the green light is lit. • CRACS SPLY FAN, F-21B, is running by verifying the red light is lit. • CRACS EXH FAN, F-31B, is running by verifying the red light is lit. • FLTR FANS INLET DMPR, HV-210, is open by verifying the red light is lit.	Y N N N N N N N N N	
Cue:				
Comments:				

PERFORMANCE INFORMATION

JPM Number: JPM-S5.1 Rev.. 1

Containment Isolation due to Fuel Handling Accident

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	4.6.10 Start CRACS FLTR FAN, F-32B, HS-8007 4.6.11 Ensure the following: a. CRACS FLTR FAN, F-32B, HS-8007 red run light lit and switch in AUTO. b. F-32B, EXH DMPR, HV-212B red open light lit.	• Examinee starts CRACS FLTR FAN, F-32B by momentarily placing the hand switches to the "START" position. • Examinee verifies the hand switch returns to the AUTO position and the red light is lit. • Examinee verifies that the F-32B, EXH DMPR, HV-212B, red open light lit.	Y N N	
Cue:	**This JPM is complete when CRACS Filter Fan, F-32B is started.**			
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-S5.1 Rev. 1

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)*

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:

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initial Conditions:

- Unit 2 is in a Refueling outage with fuel movement occurring in Containment.
- The Refuel SRO on the bridge just called the Control Room to report that a fuel bundle has dropped from the refueling machine in CTMT and that a fuel handling accident has occurred. The bundle does NOT appear to be damaged at this time.

Initiating Cues:

- The US has directed you to perform AOP 2577, Fuel Handling Accident, Section 3.0, Fuel Handling Accident in Containment.

JOB PERFORMANCE MEASURE APPROVAL SHEET

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

JPM Number: JPM-S7.1 Revision: 0

II. Initiated:

Robert L. Cimmino, Jr. — Developer
09/14/11 — Date

III. Reviewed:

Technical Reviewer — Date

IV. Approved:

Cognizant Plant Supervisor (optional) — Date

Nuclear Training Supervisor — Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
09/14/11	Minor changes to incorporate NRC validation comments	0/1

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 Retest)

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: Authorized copy of SP 2604T-001.
FC-210X (PMW) and FC-210Y (BA) Controllers are in **A/M**
FC-210X (PMW) and FC-210Y (BA) Integrators are reset to **zero**.

*** * * * 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)

performed.

Initial Conditions:

- Unit 2 is at 100% power, ARO
- In Tech Spec ACTION Statement for Actuation Module, AM-515.
- You are the BOP operator
- A second licensed operator is available to assist you.

Initiating Cues:

- You have been assigned to perform SP 2604T, (Section 4.1) Testing Actuation Module, AM515 for OPERABILITY retest after replacement.

Simulator Requirements:

- IC-10, IC-20 or IC-30
- 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 Retest)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	SP **2604T, INSTRUCTIONS, Section 4.1, Testing Actuation Module, AM515** NOTE The following alarms may be received during the performance of this section: • "ESAS COMPONENT UNDER TEST FAILURE" (C-01 B41) • "SIAS OR UV ACTUATION SIG CH 1 TRIP" (C-01 A34) • "CONT PRESS HI A" (C-01 A21) • "CTMT AIR RECIRC FAN A VIBRATION HI" (C-01 A4) • "CTMT AIR RECIRC FAN C VIBRATION HI" (C-01 C4) • "SIAS CH 1 TROUBLE" (C-01X AA5)	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:				

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 observing: • "A" Service Water Pump is operating with amp indication (`45 amps) and red light lit. (C-06) • "F-14A, CAR FAN A," and "F-14C, CAR FAN C," are operating in fast speed with red light lit (C-01). • No boration or dilution to VCT or charging pumps in progress.	**N**	
Cue:				
Comments:				
3.	C A U T I O N 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 ENSURE "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 observes that FC-210X PRI MAKEUP WTR FLOW CONTROLLER and FC-210Y BA MAKEUP FLOW CONTROLLER meet one of the following conditions: • In manual mode and set fully closed • Integrator set for "0"	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
5.	4.1.3 OPEN CH-196, "VCT MAKEUP BYPASS," (C-02).	Examinee places the hand switch for CH-196, VCT MAKEUP BYPASS, in the Open position and observes the red light is lit.	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6.	4.1.4 Depending on current condition, PERFORM applicable action: • IF SIAS is not "Blocked" (*pzr 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. • 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. • 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.	Examinee determines that SIAS is NOT "Blocked" (*pzr pressure greater than or equal to 1,850 psia), and observes that all "1/5" lights or bistable "TRIP" lights are NOT lit for SIAS, CIAS, EBFAS, CSAS, or SG on Facility 1 and Facility 2 ESAS actuation and sensor cabinets.	N	
Cue:				
Comments:				

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 rotates the "S-501, TEST PERMISSIVE SWITCH," to the "TEST SIAS" position	**Y**	
Cue:				
Comments:				
8.	4.1.6 PLACE "S-502, TEST GROUP SWITCH," in "GROUP 1" (ESAS actuation cabinet 5).	Examinee rotates the "S-502, TEST GROUP SWITCH," to the "GROUP 1" position.	**N**	
Cue:				
Comments:				
9.	4.1.7 PLACE "S-102, TRIP TEST" switch in "CONT PRESS SIAS/CIAS/EBFAS/MSI." (ESAS Sensor Cabinet `A')	Examinee rotates the "S-102, TRIP TEST" switch to the "CONT PRESS SIAS/CIAS/EBFAS/MSI" position.	**Y**	
Cue:				
Comments:				
10.	NOTE 1. When the next step is performed, many "1/5" lights illuminate on the actuation modules. 2. Due to the distance between bistable, BA101, and actuation module, AM 515, two people are required to initiate the test.	Examinee reads and acknowledges note about 1/5 lights and requirement for additional person requirement for test initiation.	**N**	
Cue:	**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).**			
Comments:				

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 provides specific direction for pressing and holding "TRIP TEST" button on bistable, BA101 at ESAS Sensor Cabinet `A'.	Y	
Cue:	**This action should be performed by a "second person" as directed by the examinee**			
Comments:				
12.	4.1.9 CHECK lower "1/5" light lit on actuation module, AM515 (ESAS actuation cabinet 5).	Examinee observes lower "1/5" light is lit on actuation module, AM515, on ESAS actuation cabinet 5.	**N**	
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 provides specific direction for momentarily pressing the lower "1/5" "TEST" button on actuation module, AM515, on ESAS actuation cabinet 5.	**Y**	
Cue:	**This action may be performed by a "second person" as directed by the examinee**			
Comments:				
14.	4.1.11 RELEASE "TRIP TEST" button on bistable BA101.	Examinee either performs or provides specific direction for releasing the "TRIP TEST" button on bistable BA101.	**Y**	
Cue:	**This action should be performed by a "second person" as directed by the examinee**			
Comments:				

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: • Actuation module, AM515, red "TRIP" light is lit on ESAS actuation cabinet 5. • F-14A, CAR FAN A, slow speed red light lit on C-01. • F-14C, CAR FAN C, slow speed red light lit on C-01 • CH-196 green (closed) light is lit on C-02.	**N**	
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 the following hand switches in the "START LOW/PULL TO LOCK position. • F-14A, CAR FAN A • F-14C, CAR FAN C	 **N** **N**	
Cue:				
Comments:				
17.	4.1.14 PRESS "ACTUATION RESET SIAS" button (ESAS Actuation Cabinet 5).	Examinee momentarily presses the "ACTUATION RESET SIAS" button at ESAS Actuation Cabinet 5.	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	4.1.15 PRESS red "TRIP" light on bistable, BA101. (ESAS Sensor Cabinet `A')	• Examinee momentarily presses the red "TRIP" light on bistable, BA101, on ESAS Sensor Cabinet `A'. • Examinee observes that the red "TRIP" light goes out.	**Y** **N**	
Cue:				
Comments:				
19.	4.1.16 PLACE "S-102, TRIP TEST" switch in "OPERATE." (ESAS Sensor Cabinet `A')	Examinee rotates the "S-102, TRIP TEST" switch to the "OPERATE" position 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 rotates the "S-501, TEST PERMISSIVE SWITCH" to the "OPERATE" position 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 momentarily presses the 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)*

Areas for Improvement/Comments:

_____

_____

_____

_____

_____

STUDENT HANDOUT

Initial Conditions:

- Unit 2 is at 100% power, ARO
- In Tech Spec ACTION Statement for Actuation Module, AM-515.
- You are the BOP operator
- A second licensed operator is available to assist you.

Initiating Cues:

- You have been assigned to perform SP 2604T, (Section 4.1) Testing Actuation Module, AM515 for OPERABILITY retest after replacement.

JOB PERFORMANCE MEASURE APPROVAL SHEET

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

JPM Number: JPM-S2.1 Revision: 1

II. Initiated:

R. J. Ashey 9/14/2011
Developer Date

III. Reviewed:

Technical Reviewer Date

IV. Approved:

Cognizant Plant Supervisor (optional) Date

Nuclear Training Supervisor Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	
9/14/2011	Revised JPM to incorporate NRC comments.	1/0
9/28/2011	Incorporated NRC comments	1/0

JPM Number: JPM-S2.1 Rev. 1

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP2 Examinee: _____

JPM Number: JPM-S2.1 Rev. 1

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.):

- OP 2304C, Make Up (Boration and Dilution) portion of CVCS, Section 4.9, Manual Blended Make Up to VCT
- OP 2304C, Make Up (Boration and Dilution) portion of CVCS, Section 4.22, Maintaining VCT Level and Pressure During Normal Operation
- OP 2304C, Make Up (Boration and Dilution) portion of CVCS, Attachment 4, Resetting PMW and BS Controllers
- 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 reports, alarm acknowledgments, and log entries as if the evolution was actually being performed.

JOB PERFORMANCE MEASURE WORKSHEET **(continued)**

Initial Conditions:

- The plant is at 100% power, EOL
- The current blend ratio is 9:1 (corrected for Boron-10 depletion) calculated using "A" BAST
- The piping to the VCT is currently at the calculated blend concentration (no requirement for adjusting for water in the piping).
- A manual leak rate calculation is NOT in progress.

Initiating Cues:

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

Simulator Requirements:

- IC-10 or any 100% power equivalent IC.
- VCT level @ 78%
- **When examinee is monitoring VCT level and pressure, the Booth Instructor will I/O "CVFIC-210X, "Foxboro Controller (PMW) AO 0-50 GPM" to "5 GPM" to fail FC-210X open.**

*** * * 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.. 1

Manual Blended Makeup to Volume Control Tank (Faulted)

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	**Section 4.9, Manual Blended Make Up to VCT** 4.9.1 Refer To Section 4.22, "Maintaining VCT Level and Pressure During Normal Operation," and PERFORM applicable actions.	Examinee refers to 4.22, "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:	The examinee must obtain OP 204C, "Make Up (Boration and Dilution) Portion of CVCS"			
2.	C A U T I O N 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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	4.9.2 ENSURE the following (C-02): • PMW is available (indicating lights for PMW transfer pumps). • WHEN blend will be injected into the RCS, at least *one* charging pump running.	• Examinee observes that red "ON" indicating light is lit for running PMW pump. • Examinee notes red "ON" lit for running Charging pump and ~44 gpm is indicated for charging header flow on "F-212".	**N**	
Cue:				
Comments:				
4.	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.	Examinee states that Initial Conditions provided a blend ratio, corrected for Boron-10 depletion.	**N**	
Cue:				
Comments:				
5.	4.9.4 VERIFY the following are closed: • CH-512, "MAKEUP VLV STOP," (C-04) • CH-196, "VCT MAKEUP BYPASS," (C02) • CH-192, "RWST ISOL," (C-02)	Examinee verifies the following valves are closed by their green "CLOSE" lights only are lit: • CH-512, "MAKEUP VLV STOP," (C-04) • CH-196, "VCT MAKEUP BYPASS," (C02) • CH-192, "RWST ISOL," (C-02)	**N** **N** **N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6.	4.9.5 DETERMINE desired VCT level change in % level.	Examinee states that Initial Conditions requires a 2% level addition.	**N**	
Cue:				
Comments:				
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 calculates that an addition of **68 gallons** is required to raise VCT level 2%. 2% x 38 gals/% = **68 gals**	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	4.9.7 Refer to Attachment 4 as required and RESET the following to 0 total gallons (C-04): a. "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" b. "BORIC ACID FLOW CONTROLLER FC-210Y" c. PRESS "SEL" button and HOLD until display indicates "TOTAL RST." d. PRESS "R/L" button to transfer to "R" mode to reset totalizer. e. PRESS "R/L" button to transfer to "L" mode. f. PRESS "SEL" button and HOLD until controller number (FC-210X or FC-210Y) total gallons is displayed.	Examinee resets "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" to 0 total gallons by performing the following: a. CHECK "R/L" light indicates "L" (FC-210X) b. determines that a manual leak rate determination is *not* in progress AND flow controller totalizers are *not* being used to track RCS makeup, and that this step is not applicable. c. PRESS "SEL" button and HOLD until display indicates "TOTAL RST." (FC-210X) d. PRESS "R/L" button to transfer to "R" mode to reset totalizer (FC-210X). e. PRESS "R/L" button to transfer to "L" mode (FC-210X). f. PRESS "SEL" button and HOLD until controller number (FC-210X) total gallons is displayed.	N N Y Y Y Y	

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9.	**OP 2304C, Attachment 4** 1. If desired to reset "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" to 0 total gallons, PERFORM the following (C-04): 1.1. CHECK "R/L" light indicates "L." 1.2. IF a manual leak rate determination is in progress AND flow controller totalizers are being used to track RCS makeup, Refer To SP 2602A-001, "Manual RCS Leak Rate Determination," and RECORD total gallons added to the RCS. 1.3. PRESS "SEL" button and HOLD until display indicates "TOTAL RST." 1.4. PRESS "R/L" button to transfer to "R" mode to reset totalizer. 1.5. PRESS "R/L" button to transfer to "L" mode. 1.6. PRESS "SEL" button and HOLD until "PMW TOTAL" is displayed. 1.7. Ensure "AM" is lit.	Examinee resets "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" to 0 total gallons by performing the following: • Checks "R/L" light indicates "L" on FC-210X • States that a manual leak rate determination is *not* in progress as indicated in the Initial Conditions AND flow controller totalizers are *not* being used to track RCS makeup; therefore, this step is Not Applicable. • Presses "SEL" button and holds until display indicates "TOTAL RST" on FC-210X • Presses "R/L" button on FC-210X to transfer to "R" mode to reset totalizer. • Presses "R/L" button on FC-210X to transfer to "L" mode. • Presses "SEL" button and holds until "PMW TOTAL" is displayed on FC-210X. • Observes that "AM" light is lit on FC-210X.	N N Y Y Y Y N	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
10.	2. If desired to reset "BORIC ACID FLOW CONTROLLER FC-210Y" to 0 total gallons, PERFORM the following (C-04): 1.8. CHECK "R/L" light indicates "L." 1.9. IF a manual leak rate determination is in progress AND flow controller totalizers are being used to track RCS makeup, Refer To SP 2602A-001, "Manual RCS Leak Rate Determination," and RECORD total gallons added to the RCS. 1.10. PRESS "SEL" button and HOLD until display indicates "TOTAL RST." 1.11. PRESS "R/L" button to transfer to "R" mode to reset totalizer. 1.12. PRESS "R/L" button to transfer to "L" mode. 1.13. PRESS "SEL" button and HOLD until "BA TOTAL" is displayed. 1.14. Ensure "AM" is lit.	Examinee resets "BORIC ACID FLOW CONTROLLER FC-210Y" to 0 total gallons by performing the following: • Checks "R/L" light indicates "L" on FC-210Y • States that a manual leak rate determination is *not* in progress as indicated in the Initial Conditions AND flow controller totalizers are *not* being used to track RCS makeup; therefore, this step is Not Applicable. • Presses "SEL" button and holds until display indicates "TOTAL RST" on FC-210Y • Presses "R/L" button on FC-210Y to transfer to "R" mode to reset totalizer. • Presses "R/L" button on FC-210Y to transfer to "L" mode. • Presses "SEL" button and holds until "BA TOTAL" is displayed on FC-210Y. • Observes that "AM" light is lit on FC-210Y.	N N Y Y Y Y N	
Cue:				
Comments:				
11.	4.9.8 START PPC trend of VCT level (L226).	Examinee selects L226 on a PPC trend and observes.	N	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	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:				
13.	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 "▲" and "▼" buttons, ADJUST setpoint to desired flow rate.	Examinee adjusts automatic setpoint of "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" as follows (C04): • Observes FC-210X and FC-210Y and determines the "AM" is lit on each controller. • Presses "SEL" button on FC-210X and FC-210 until cursor appears above thesetpoint (left hand bar graph). • Using "▲" and "▼" buttons, adjusts the setpoints to a flow rates that will maintain a 9:1 (PMW to Boric Acid) blend ratio.	N Y Y	
Cue:				
Comments:	The examinee may set the "BORIC ACID FLOW CONTROLLER FC-210Y" to any value. The examinee must set the "PRI MAKEUP WTR FLOW CONTROLLER FC-210X" to a value 9 times the value of the "BORIC ACID FLOW CONTROLLER FC-210Y".			
14.	4.9.10 PLACE "MAKEUP MODE SEL" in "MANUAL" (C-04).	Examinee places "MAKEUP MODE SEL" switch in "MANUAL" on C-04.	Y	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	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 momentarily placing its handswitch to "START"	**Y**	
Cue:				
Comments:				
16.	4.9.12 ENSURE 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 is lit. • Examinee verifies "A" boric acid pump develops a discharge pressure of greater than 98 psig, as indicated on "PP A DIS PRES, PI-206".	**N** **N**	
Cue:				
Comments:				
17.	NOTE 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 the note.	**N**	
Cue:				
Comments:				
18.	4.9.13 OPEN CH-512 (C-04).	Examinee opens CH-512 by placing its handswitch to the "OPEN" position and observing the red "OPEN" light only is lit.	**Y**	
Cue:				
Comments:	Examinee may announce an expected "PMW FLOW HI/LO" (C-04, BB-8) and "BA MAKEUP FLOW HI/LO" 9C-04,BA-8) flow alarm prior to, (or after receiving alarm) upon initiating blend flow. It is expected that the ARP's for these alarms will be referenced.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
19.	4.9.14 ENSURE flows have stabilized at setpoint of flow controllers (C-04).	Examinee observes that flows have stabilized at the prescribed setpoints of flow controllers, FC-210X and FC-210Y, by observing the outputs of the flow controllers on C-04.	**N**	
Cue:				
Comments:				
20.	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 the PPC trend, computer trend recorder UR—243(C-04), and/or "VCT PRES, PI-225" and "VCT LVL, LI-226" on C-02/03	**N**	
Cue:	**When examinee is monitoring VCT level and pressure, the Booth Instructor will I/O "CVFIC-210X, "Foxboro Controller (PMW) AO 0-50 GPM" to "5 GPM" to fail FC-210X open.**			
Comments:	Examinee may choose to terminate blended makeup to the VCT by closing CH-512 prior to referencing ARP 2590-060			
21.	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:				
Comments:				
22.	2. CHECK flow rate on "PRI MAKEUP WTR FLOW, FC-210X," within 10 gpm of setpoint (C-04).	Examinee observes that indicated flow on "PRI MAKEUP WTR FLOW, FC-210X," is greater than 10 gpm from setpoint.	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
23.	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: • Places "PRI MAKEUP WTR FLOW, FC-210X," to "MANUAL." • Adjusts "PRI MAKEUP WTR FLOW, FC-210X," to zero output. • Closes 2-CH-196, "VCT MAKEUP BYPASS," placing the switch in the CLOSE position and ensuring green "close" light only is lit. • Closes 2-CH-512, "MAKEUP VLV STOP," is closed by placing the 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 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: _____

JPM Number: JPM-S2.1 Rev. 1

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:

STUDENT HANDOUT

Initial Conditions:

- The plant is at 100% power, EOL
- The current blend ratio is 9:1 (corrected for Boron-10 depletion) calculated using "A" BAST
- The piping to the VCT is currently at the calculated blend concentration (no requirement for adjusting for water in the piping).
- A manual leak rate calculation is NOT in progress.

Initiating Cues:

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

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Restoring Bus 24C to Unit 2 RSST with the "A" D/G Supplying (Alternate Path - Faulted)**

JPM Number: JPM-6.1 Revision: 11

II. Initiated:

Robert L. Cimmino, Jr. — Developer — 09/14/11 — Date

IV. Reviewed:

Technical Reviewer — Date

IV. Approved:

Cognizant Plant Supervisor (optional) — Date

Nuclear Training Supervisor — Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
10/14/08	Revised JPM for LOIT 2008 NRC Exam	10/0
12/30/08	Incorporated NRC Post-Validation comments	11/0
09/14/11	Incorporated NRC Post-Validation comments	11/1
9/28/2011	Minor editorial changes	11/1

JPM Number: JPM-6.1 Rev. 11

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP-2 Examinee: _____

JPM Number: JPM-6.1 Rev. 11

Task Title: **Restoring Bus 24C to Unit 2 RSST with the "A" D/G Supplying (Alternate Path - Faulted)**

System: Electrical

Time Critical Task: Yes ____ No **X**

Validated Time (minutes): 30

Task No.(s): NUTIMS #062-01-362

Applicable To: SRO **X** RO **X** PEO ____

K/A No. 064 A4.07 K/A Rating 3.4/3.4

Method of Testing:

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

Location:

Classroom: ____ Simulator: **X** In-Plant: ____

Task Standards: At the completion of this JPM, the examinee has paralleled the RSST with the "A" DG and then manually tripped "A" DG based on degraded conditions.

Required Materials (procedures, equipment, etc.):

- EOP 2541, Appendix 23H, Transfer of 4.16 kV Bus 24C from DG A to the RSST
- ARP AOP 2590F-119 (C-08, C-30), 12U AUTO VOLTAGE REGULATOR SETPOINT NOT 4160 VAC
- ARP 2590F-136 (C08, D-34), DIESEL GEN 12U DIFFERENTIAL LOCKOUT
- ARP 2590F-141 (C08, A-36), DIESEL GEN 12U TROUBLE
- ARP 2590F-143 (C08, C-36), DIESEL GEN 12U BKR CLOSING CKT BLOCKED
- ARP 2590F-117 (C08, A-30), DIESEL GEN 12U BKR TRIP

General References: EOP 2541, Appendix 23H, Transfer of 4.16 kV Bus 24C from DG A to the RSST

*** * * * 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 tripped approximately 20 minutes ago.
- Bus 24C did NOT automatically transfer to the RSST.
- "A" DG performed as expected and is supplying Bus 24C.
- NO faults are indicated on Bus 24C.
- NO faults are indicated on the RSST.
- Bus 24A will NOT be energized at this time.

Initiating Cues:

- You are the Balance of Plant Operator (BOP).
- The Unit Supervisor has directed you to transfer Bus 24C to the Unit 2 RSST and remove "A" DG from service in accordance with EOP 2541, Appendix 23H.

Simulator Requirements:

- Initialize at any post-trip IC where Bus 24C failed to automatically transfer to the RSST (IC-152).
- If necessary, reset to any stable 100% power IC, insert malfunction ED17A, Failure of Bus 24C to Auto Transfer, place the simulator in RUN, and manually trip the plant. (Other malfunctions may be added provided they do NOT interfere with the performance of this JPM.) Perform action of EOP 2525 and place the simulator in FREEZE until the examinee is prepared to begin the JPM.
- Adjust DG voltage and speed slightly such that the examinee is required to correctly adjust voltage and speed when paralleling with the RSST.
- **Insert the following I/O Overrides to prevent the "A" DG MAN START/STOP switch from tripping the "A" DG:**
  - **EGDGH7ARL_1 - A D/G "Ready to Load" light ON; W**
  - **EGDGH7ASB_1 - A D/G "Standby" light OFF; NW**
  - **06A1A5S33 - A D/G Manual Start/Stop Switch OFF**
- **When the examinee closes the RSST Supply Breaker to Bus 24C, A302, simultaneously I/O the following C-08 annunciators ON (assign each I/O to the same Event in a Schedule):**
  - **D-34; DIESEL GEN 12U DIFFERENTIAL LOCKOUT**
  - **A-36; DIESEL GEN 12U TROUBLE**
  - **C-36; DIESEL GEN 12U BKR CLOSING CKT BLOCKED**
  - **A-30; DIESEL GEN 12U BKR TRIP**
  - **EGA2/MTR15G-12U – A DG current at 600 amps (pegged high).**

* * * 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?").

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)

START TIME: _____

1.	**EOP 2541, Appendix 23** From the Table of Contents, determine that Appendix H is the appropriate procedure for this task.	Provide EOP 2541, Attachment 23H procedure to use to transfer Bus 24C to the Unit 2 RSST and remove "A" DG from service.	**N**	
Cue:	**If desired, provide the examinee with EOP 2541, Appendix 23H.**			
Comments:				
2.	**EOP 2541, Appendix 23** 1. CHECK the Unit 2 RSST energized.	Examinee locates and observes RSST VOLTS meter on C-08 and determines that the RSST 4.16 kV voltage reads approximately 4160 Volts; therefore the Unit 2 RSST is energized.	**N**	
Cue:				
Comments:				
3.	2. ENSURE BOTH of the following breakers are open (C-08): • A302, "RSS SPLY BKR, 22S3-24C-2" • A304, "24A/24C TIE BKR, 24C-1T-2"	Examinee locates A302, "RSS SPLY BKR, 22S3-24C-2" and A304, "24A/24C TIE BKR, 24C-1T-2", and determines the breakers are open by observing that the associated green light is lit and the red light is NOT lit.	**N**	
Cue:				
Comments:	If the amber light associated with A304, "24A/24C TIE BKR, 24C-1T-2", is lit, the examinee may clear the amber light by momentarily placing the associated control switch in the OPEN position.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
4.	3. ENSURE A702, "RSS FDR BKR, 22S3-2-2", is closed (C-08).	Examinee locates A702, "RSS FDR BKR, 22S3-2-2" (on C-07), and determines the breaker is closed by observing that the associated red light is lit and the green light is NOT lit.	**N**	
Cue:				
Comments:	A702 is actually located on the edge of C-07, right next to C-08.			
5.	CAUTION: A SIAS in the interval between resetting the undervoltage relays and paralleling the RSST to the bus may result in overloading the DG due to all the loads being energized without being sequenced on.	Examinee reads and acknowledges CAUTION.	**N**	
Cue:				
Comments:				
6.	4. PRESS Facility 1 "UV RESET" button (ESF Actuation Cabinet 5).	Examinee locates Facility 1 "UV RESET" button on ESF Actuation Cabinet 5 and momentarily presses button.	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	5. PLACE DG A "UNIT PARALLEL SEL SW" in "UNIT PARALLEL" position.	• Examinee locates the DG A "UNIT PARALLEL SEL SW and momentarily places the switch in the UNIT PARALLEL position. • Examinee observes the associated white light illuminate.	**Y**	
Cue:				
Comments:				
8.	6. PLACE "SYN SW, 22S3-24C-2 (A302)" to "ON" and CHECK "INCOMING" and "RUNNING" voltages indicated.	• Examinee obtains the Sync Switch control knob, places it in the SYN SW, 22S3-24C-2 (A302)" location, and rotates the switch to the ON position. • Examinee locates the RUNNING and INCOMING Voltmeters and observes a slight mismatch.	**Y** **N**	
Cue:				
Comments:	• The INCOMING and RUNNING Voltages will vary proportionally with the difference in RSST voltage and "A" DG output voltage. • After a time delay of approximately one minute, the SYNC SELECTOR SWITCH ON annunciator will alarm. The examinee should state that this is an expected alarm.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9.	7. ADJUST DG A "VOLTAGE CNTL REG AUTO CNTL" switch to match generator voltage with RSST voltage.	Examinee locates the DG A "VOLTAGE CNTL REG AUTO CNTL" switch and momentarily places it in the RAISE or LOWER position to match "A" DG output voltage (on C-08) with RSST Voltage (on C-08).	**Y**	
Cue:	**If desired, provide ARP for C-30 on C-08, if requested (AOP 2590F-119).**			
Comments:	"A" DG output voltage is directly tied to INCOMING voltage. Based on the JPM initial setup, C-08 annunciator C-30 may alarm (12U AUTO VOLTAGE REGULATOR SETPOINT NOT 4160 VAC).			
10.	NOTE: Due to the DG energizing the bus, operation of the governor control is opposite to the normal expectation. To slow the synchroscope rotation, a RAISE adjustment is required. To speed up the synchroscope rotation, a LOWER adjustment is required.	Examinee reads the note and determines that he/she may need to place the "A" DG Governor CNTL adjustment switch in the LOWER position to make the sychroscope rotate more quickly in the FAST direction. Additionally, he/she may need to place the "A" DG Governor CNTL adjustment switch in the RAISE position to slow the rotation of the sychroscope in the FAST direction.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
11.	8. ADJUST DG A "LOAD CNTL GOVERNOR CNTL" switch, as necessary, to achieve a slow (1 to 2 rpm) rotation of the synchroscope in the fast (clockwise) direction.	Examinee locates the DG A "LOAD CNTL GOVERNOR CNTL" switch, and momentarily places it in the RAISE or LOWER position, as required, to obtain a slow rotation (~1 to 2 rpm) of the synchroscope on the FAST (clockwise) direction (on C-08).	**Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	9. WHEN the synchroscope pointer passes the "11 o'clock" position, CLOSE A302, "RSS SPLY BKR, 22S3-24C-2".	• With one hand on A302, "RSS SPLY BKR, 22S3-24C-2", the examinee observes the synchroscope rotating slowly toward the "12 o'clock" position. • When the pointer reaches the "11 o'clock" position (At the end of the arrow on the meter), the examinee places the control switch for A302, "RSS SPLY BKR, 22S3-24C-2" in the CLOSE position. • Examinee observes the following: o Synchroscope stops moving. o "A" DG reactive and real load change slightly. o The red light associated with on A302, "RSS SPLY BKR, 22S3-24C-2", is lit and the green light is NOT lit.	**N** **Y** **N**	
Cue:	**When the examinee closes the RSST Supply Breaker to Bus 24C, A302, I/O the following C08 annunciators ON simultaneously:** **1. D-34; DIESEL GEN 12U DIFFERENTIAL LOCKOUT** **2. A-36; DIESEL GEN 12U TROUBLE** **3. C-36; DIESEL GEN 12U BKR CLOSING CKT BLOCKED** **4. A-30; DIESEL GEN 12U BKR TRIP** **5. EGA2/MTR15G-12U, "A" DG amps pegged high at 600 amps.**			
Comments:	The annunciator I/Os may be inserted simultaneously by programming them into the remote controller.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	The following annunciators alarm on C08: • D-34; DIESEL GEN 12U DIFFERENTIAL LOCKOUT • A-36; DIESEL GEN 12U TROUBLE • C-36; DIESEL GEN 12U BKR CLOSING CKT BLOCKED • A-30; DIESEL GEN 12U BKR TRIP	Examinee observes the new "A" EDG alarms and references applicable ARPs:	**N**	
Cue:	**• If desired, provide the examinee with the requested Annunciator Response Procedure(s).** **• If at any time the Examinee recommends tripping the "A" EDG, concur with the recommendation.** **• If the Examinee recommends any "local" action be taken by PEOs for the "A" EDG, as the US, inform the Examinee that the PEO available for EDG observation is NOT qualified to perform local actions.**			
Comments:	Tripping the EDG accomplishes the last remaining critical step and the JPM is complete (See JPM step 18).			
14.	ARP-2590F-141, A-36; DIESEL GEN 12U TROUBLE. Caused by a new alarm on the local EDG panel, C-38, that has not yet been acknowledged on that panel.	Examinee references ARP-2590F-141 and notes this is caused by a new alarm on the local EDG panel, C-38. • Examinee may request the PEO at the EDG verify what alarms just came in.	**N** **N**	
Cue:	**If Examinee requests status of local EDG alarms, state that the following alarms just came in on the local panel:** **• D-5; GENERATOR NEUTRAL GROUND FAULT** **• E-5; GENERATOR LOCKOUT TRIP**			
Comments:	Tripping the EDG accomplishes the last remaining critical task and the JPM is complete (See JPM step 18).			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	ARP-2590F-143, C-36; DIESEL GEN 12U BKR CLOSING CKT BLOCKED automatic functions <u>should</u> cause the Generator output breaker, A312 to trip.	Examinee references ARP-2590F-143 and notes the EDG output breaker should have tripped but did not. • Examinee may open the EDG output breaker. However, the EDG must still be emergency (manually) tripped.	**N**	
Cue:	**If Examinee requests status of local EDG alarms, state that the following alarms are in on the local panel:** • **D-5; GENERATOR NEUTRAL GROUND FAULT** • **E-5; GENERATOR LOCKOUT TRIP**			
Comments:	Tripping the EDG accomplishes the last remaining critical task and the JPM is complete (See JPM step 18).			
16.	ARP-2590F-136, D-34; DIESEL GEN 12U DIFFERENTIAL LOCKOUT automatic functions <u>should</u> cause the following: 1. Generator output breaker, A312 and diesel trip. 2. Generator output breaker, closing circuitry is blocked.	Examinee references ARP-2590F-136: • Examinee notes EDG output breaker should have tripped but did not. • Examinee may open the EDG output breaker. However, the EDG must still be emergency (manually) tripped. • Examinee notes EDG should have tripped but did not.	**N** **N** **N**	
Cue:	**If Examinee requests status of local EDG alarms, state that the following alarms are in on the local panel:** • **D-5; GENERATOR NEUTRAL GROUND FAULT** • **E-5; GENERATOR LOCKOUT TRIP**			
Comments:	Tripping the EDG accomplishes the last remaining critical task and the JPM is complete (See JPM step 18).			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
17.	ARP-2590F-117, A-30; DIESEL GEN 12U BKR TRIP automatic functions <u>should</u> have cause all loads to be carried by the RSST. 1. <u>IF</u> "DIESEL GEN 12U DIFFERENTIAL LOCKOUT" (D-34) is lit, <u>AND</u> "A" DG has *not* tripped, PRESS *both* "EMERG STOP" buttons for "A" DG (C-08).	Examinee references ARP-2590F-136: • Examinee notes EDG output breaker should have tripped but did not. • Examinee may open the EDG output breaker. However, the EDG must still be emergency (manually) tripped. • Examinee notes EDG should have tripped but did not.	**N** **N** **N**	
Cue:	**If Examinee requests status of local EDG alarms, state that the following alarms are in on the local panel:** • **D-5; GENERATOR NEUTRAL GROUND FAULT** • **E-5; GENERATOR LOCKOUT TRIP**			
Comments:	Tripping the EDG accomplishes the last remaining critical task and the JPM is complete (See JPM step 18).			
18.	Emergency STOP DG A.	• Examinee locates and simultaneously presses BOTH emergency trip buttons for "A" DG on C-08. • Examinee observes that "A" DG voltage drops to 0 Kilovolts and frequency drops to 58 Hertz. • Examinee releases BOTH emergency trip buttons.	**Y** **N** **N**	
Cue:				
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-6.1 Rev. 11

VERIFICATION OF JPM COMPLETION

Title: **Restoring Bus 24C to Unit 2 RSST with the "A" D/G Supplying (Alternate Path - 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): 30 min.

Actual Time to Complete (minutes): _____

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

Areas for Improvement/Comments:

STUDENT HANDOUT

Initial Conditions:

- The plant tripped approximately 20 minutes ago.
- Bus 24C did NOT automatically transfer to the RSST.
- "A" DG performed as expected and is supplying Bus 24C.
- NO faults are indicated on Bus 24C.
- NO faults are indicated on the RSST.
- Bus 24A will NOT be energized at this time.

Initiating Cues:

- You are the Balance of Plant Operator (BOP).
- The Unit Supervisor has directed you to transfer Bus 24C to the Unit 2 RSST and remove "A" DG from service in accordance with EOP 2541, Appendix 23H.

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:

Robert L. Cimmino, Jr.	09/15/11
Developer	Date

III. Reviewed:

Technical Reviewer	Date

IV. Approved:

Cognizant Plant Supervisor (optional)	Date
Nuclear Training Supervisor	Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	0/0
09/15/11	Minor changes to incorporate NRC validation comments.	0/1
9/28/2011	Editorial change to comment for step 13.	0/1

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)**

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

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.

Simulator Requirements:
- IC-151
- #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:	**If desired, 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"**			
Comments:				

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

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	NOTE 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. 2. The following alarms are expected after reopening 2-SI-656: • SIS TO LOOP 1A PRESS HI, (C-01, window A-14) • SIS TO LOOP 1B PRESS HI, (C-01, window B-14) • SIS TO LOOP 2A PRESS HI, (C-01, window C-14) • SIS TO LOOP 2B PRESS HI, (C-01, window D-14)	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:	**US informs examinee that he has entered into TSAS 3.5.2.a**			
Comments:				

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:	**If local pump status is requested, state that a PEO has verified that all prestart checks are satisfactory.**			
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:	**If asked, direct examinee to use "P-41A, HPSI PP A"** **If requested, all post-start checks are satisfactory.**			
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:				

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:	**US informs examinee that he has exited TSAS 3.5.2.a**			
Comments:				
10.	CAUTION Recirculation header must not be subjected to pressure above 300 psig as indicated on "RECIRC HDR PRESS, PI-305."	Examinee reads and acknowledges caution.	**N**	
	NOTE When raising pressure during reactor startup before containment reaches operating temperature, SIT pressure should be limited to 220 psig to allow for thermal expansion.	Examinee reads and acknowledges note.	**N**	
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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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:				
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:	• **Acknowledge closing of SI-618 if required.** • **At the discretion of the examiner (after the low SIT pressure alarm clears), inform the examinee that #1 SIT level is at the required value.**			
Comments:	The JPM will continue to completion when the examiner determines that #1 SIT level is being raised satisfactorily.			
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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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:				
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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	4.1.16 Refer To one of the following and RECORD new SIT level and if applicable, boron concentration. • SP 2619A-001, "Control Room Daily Surveillance, Modes 1 and 2" • SP 2619A-002, "Control Room Daily Surveillance, Modes 3 and 4"	Examinee states or attempts to perform the following administrative actions prior to proceeding. Refers to SP 2619A-001, "Control Room Daily Surveillance, Modes 1 and 2" and records new SIT level and if applicable, boron concentration.	**N**	
	4.1.17 UPDATE applicable control board marker reference level(s).	Update applicable control board marker reference level(s).		
	4.1.18 CHANGE applicable PPC temporary high alarm limit(s) for new reference level(s).	Change SIT#1 PPC temporary high alarm limit(s) for new reference level(s).		
Cue:	**Inform the examinee that these administrative actions are being performed by the spare operator and that he/she can continue with the procedure.**			
Comments:				
19.	CAUTION 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.	Examinee reads and acknowledges caution.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
20.	4.1.19 Go To Section 4.2 to lower SIS loop pressure to clear annunciator.	Examinee goes to Section 4.2 to lower SIS loop pressure	**N**	
Cue:				
Comments:				
21.	4.2.1 IF "SIS TO LOOP 1A PRESS HI," (A-14, C-01) is lit, PERFORM the following (C-01):	Examinee performs the following to clear "SIS TO LOOP 1A PRESS HI" alarm:		
	a. OPEN "SI-611, FILL & DRN."	a. Opens "SI-611" by rotating its switch and observing the red open light lit.	**N**	
	b. CRACK open "SI-618, HDR-1A CK VLV LKG DRN STOP."	b. Cracks open "SI-618" by rotating its knob and observing the valve open by needle indication and red open light lit.	**N**	
	c. WHEN "P319 SIS TO LOOP 1A PRES," (PPC) indicates 225 to 275 psig, CLOSE the following:	c. When "P319" (PPC) indicates 225 to 275 psig, examinee closes the following:		
	1) "SI-618, HDR-1A CK VLV LKG DRN STOP"	1) "SI-618" by rotating its knob and observing the valve closed by needle indication and green CLOSE light lit.	**N**	
	2) "SI-611, FILL & DRN"	2) "SI-611" by rotating its switch and observing the green CLOSE light lit.	**N**	
Cue:	**Terminate the JPM at this time.**			
Comments:				

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-S3.1 Rev. 0

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): _____

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

Areas for Improvement/Comments:

STUDENT HANDOUT

Initial Conditions:

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

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.

JOB PERFORMANCE MEASURE APPROVAL SHEET

I. JPM Title: **Shifting LPSI Pumps During SDC Operation (Alternate Path)**

JPM Number: JPM-S4p1 Revision: 0

II. Initiated:

R. J. Ashey — Developer — 09/13/2011 — Date

III. Reviewed:

_____ — Technical Reviewer — _____ — Date

IV. Approved:

_____ — Cognizant Plant Supervisor (optional) — _____ — Date

_____ — Nuclear Training Supervisor — _____ — Date

JOB PERFORMANCE MEASURE

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
12/11/08	Created JPM for LOIT 2008 NRC Exam	0/0
12/30/08	Incorporated NRC Post-Validation comments	0/0
09/13/2011	Reuse of JPM for 2011 LOIT class	0/0
09/28/2011	Minor editorial changes.	0/0

JPM Number: JPM-2 S4p1 Rev. 0

JOB PERFORMANCE MEASURE WORKSHEET (continued)

Facility: MP-2 Examinee: _____

JPM Number: JPM- S4p1 Rev. 0

Task Title: **Shifting LPSI Pumps During SDC Operation (Alternate Path)**

System: Heat Removal (Primary), Residual Heat Removal

Time Critical Task: Yes ____ No **X**

Validated Time (minutes): 40

Task No.(s): NUTIMs # 005-01-071

Applicable To: SRO **X** RO **X** PEO ____

K/A No. 005 A4.01 K/A Rating 3.6/3.4

Method of Testing:

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

Location:

Classroom: ____ Simulator: **X** In-Plant: ____

Task Standards: At the completion of this JPM, SDC is in operation with one Containment Spray Pump running in place of a LPSI Pump.

Required Materials (procedures, equipment, etc.):
- OP 2310, Section 4.1
- AOP 2572, Section 5.0
- ARP 2590A-006, LPSI Pump B Overload/Trip
- ARP 2590A-032, LPSI Pump B Motor Current Hi/Lo

General References:
- OP 2310, Section 4.1
- AOP 2572, Section 5.0
- ARP 2590A-006, LPSI Pump B Overload/Trip
- ARP 2590A-032, LPSI Pump B Motor Current Hi/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)

Initial Conditions:

- The plant is stable in MODE 6 after completing the core reload during a refueling outage.
- The Refuel Pool level is just below the Upper Guide Structure work platform.
- SDC is in service with "A" LPSI pump operating.
- SDC is NOT supplementing SFP Cooling.
- Both facilities of RBCCW and Service water are in operation supplying all associated components.
- Both RWST Headers are filled and vented.
- Both trains of Spent Fuel Pool Cooling are in service.

Initiating Cues:

- The "A" LPSI Pump vibration is above the Alert limit. Condition Based Maintenance has recommended securing the pump for further investigation.
- The US has directed you to place "B" LPSI Pump in service and remove "A" LPSI Pump from service.

Simulator Requirements:

- Reset the simulator to IC-110 or equivalent with the plant in MODE 5, NOT in reduced inventory, low decay heat.
- Ensure "A" LPSI Pump is in service, "B" LPSI Pump is available
- Ensure both Containment Spray Pump breakers are Racked In (RHR17 and RHR18).
- Ensure both trains of Service Water and RBCCW are operating.
- Ensure ESF Room Coolers are in service.
- Ensure SDC display and heatup/cooldown trends are up on the RO monitors.
- **Put Malfunctions RH01A ('A' LPSI Pump trip) and RH01B ('B' LPSI Pump trip) on an event, ready to activate when 'A' LPSI is secured.**
- **Examiner and Booth Operator should be on headsets to coordinate remote operations of JPM step 22.**

*** * * 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).

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
		START TIME: _____		
1.	**OP 2310, Section 4.1** 4.1.1. IF starting "A" LPSI pump, PERFORM the following:	Examinee determines that this step is NA.	**N**	
Cue:	**Provide the examinee with OP 2310, Shutdown Cooling System, if desired.**			
Comments:				
2.	4.1.2. IF starting "B" LPSI pump, PERFORM the following: a. VERIFY "B" ESF room cooler in service as follows: 1) VERIFY "ESG RM CLR A, RB-68.1B" (C-06) is open. 2) OBSERVE indicated flow on "ESG ROOM HX A OUT FLOW, FI-6736" (C-06). 3) VERIFY "ESF ROOM B, F-15B" is running (C-01)	• Examinee observes red (open) light is lit and the green (closed) light is NOT lit for "ESG RM CLR A, RB-68.1B" on C-06. • Examinee observes flow is indicated on "ESG ROOM HX A OUT FLOW, FI-6736" on C-06. • Examinee observes red (running) light is lit and the green (stop) light is NOT lit for the "B" ESF Room Cooler on C-01.	**N** **N** **N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
3.	b. VERIFY 2-SI-450, "`B' LPSI PUMP MINIMUM FLOW STOP," closed.	• Examinee dispatches a PEO to the "B" Safeguards Room to determine the position of 2-SI-450, `B' LPSI PUMP MINIMUM FLOW STOP. • Examinee acknowledges that 2-SI-450, `B' LPSI PUMP MINIMUM FLOW STOP, is closed.	**N** **N**	
Cue:	**Inform examinee that 2-SI-450, `B' LPSI PUMP MINIMUM FLOW STOP, is closed.**			
Comments:				
4.	c. VERIFY 2-SI-432, "`B' LPSI PUMP SUCTION FROM RWST," closed.	• Examinee dispatches a PEO to the "B" Safeguards Room to determine the position of 2-SI-432, `B' LPSI PUMP SUCTION FROM RWST. • Examinee acknowledges that 2-SI-432, `B' LPSI PUMP SUCTION FROM RWST, is closed.	**N** **N**	
Cue:	**Inform examinee that 2-SI-432, `B' LPSI PUMP SUCTION FROM RWST is closed.**			
Comments:				
5.	d. VERIFY 2-SI-440, "`B' LPSI PUMP SUCTION FROM SDC," open.	• Examinee dispatches a PEO to the "B" Safeguards Room to determine the position of 2-SI-440, `B' LPSI PUMP SUCTION FROM SDC. • Examinee determines that 2-SI-440, `B' LPSI PUMP SUCTION FROM SDC, is open by observing the red (open) light is lit and the green (closed) indication light is NOT lit on C-01	**N** **N**	
Cue:	**If a PEO is dispatched, inform examinee that 2-SI-440, `B' LPSI PUMP SUCTION FROM SDC is closed.**			
Comments:				
6.	e. VERIFY 2-SI-435, "`B' LPSI PUMP DISCHARGE STOP," open.	• Examinee dispatches a PEO to the "B" Safeguards Room to determine the position of 2-SI-435, `B' LPSI PUMP DISCHARGE STOP. • Examinee acknowledges that 2-SI-435, `B' LPSI PUMP DISCHARGE STOP, is open.	**N** **N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
7.	f. START P-42B, "LPSI PP B" (C-01).	• Examinee locates the switch for the "B" LPSI Pump and momentarily rotates the switch to the START position. • Examinee observes the red (start) light associated with "B" LPSI Pump is lit and the green (stop) light is NOT lit. • Examinee observes "B" LPSI Pump amps rise and stabilize.	**Y** **N** **N**	
Cue:				
Comments:				
8.	g. STOP P-42A, "LPSI PP A" (C-01).	• Examinee locates the switch for the "A" LPSI Pump and momentarily rotates the switch to the STOP position. • Examinee observes the green (stop) light associated with "A" LPSI Pump is lit and the red (running) light is NOT lit. • Examinee observes "A" LPSI Pump amps read "0".	**Y** **N** **N**	
Cue:	**Booth Operator: When "A" LPSI Pump is secure, insert malfunctions, RH01A and RH01B (TRIP) to trip both LPSI Pumps.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
9.	Observe the loss of the "B" LPSI Pump and go to AOP 2572, Loss and Shutdown Cooling.	• Examinee observes the following: o "LPSI PUMP B OVERLOAD/TRIP" annunciator lit (C-01, B-2) o "LPSI PUMP B MOTOR CURRENT HI/LO" annunciator lit (C-01, D-8) o "B" LPSI Pump current reading "0" amps o Amber 'trip' light lit above the "B" LPSI Pump handswitch. • Examinee reports the loss of "B" LPSI Pump. • Examinee may reference ARP 2590A-006, LPSI PUMP OVERLOAD/TRIP and/or ARP 2590A-032, LPSI PUMP B MOTOR CURRENT HI/LO. • Examinee obtains AOP 2572, Loss of Shutdown Cooling.	**Y** **N** **N** **N**	
Cue:	**• Acknowledge the report of the loss of SDC.** **• If examinee recommends restarting "A" LPSI Pump, concur with recommendation.**			
Comments:	If the examinee attempts a restart of the "A" LPSI Pump, the pump will immediately trip.			
10.	**AOP 2572, Section 3.0** Perform Initial Actions for Loss of SDC, steps 3.1 through 3.9.	Examinee begins at step 3.1 of AOP 2572, Loss of Shutdown Cooling.	**N**	
Cue:	**• Inform examinee that another operator is performing steps 3.1 through 3.9.**			
Comments:				
11.	3.10. IF AC power is *not* available, CONSIDER using Section 9.0 for the following: • RWST gravity feed makeup to the RCS • Heat removal by an available Steam generator	Examinee determines that AC power is available and marks this step NA.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	3.11. DETERMINE cause of loss of SDC and PERFORM applicable action: • IF lost due to loss of suction pressure, Go To Section 4.0, "SDC Lost Due to Loss of Suction Pressure or RCS Inventory" • IF lost due to automatic tripping of running LPSI pump, Go To Section 5.0, "SDC Lost Due to Automatic Tripping of Running LPSI Pump"	• Examinee determines that the loss of SDC was NOT due to a loss of suction pressure. • Examinee determines that the loss of SDC was due to tripping of the running LPSI Pump and proceeds to Section 5.0 • Examinee determines that the remaining bullets under step 3.11 are NA.	**N** **Y** **N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	**AOP 2572, Section 5.0** **NOTE:** 1. This section assumes a running LPSI pump breaker trip without a concurrent loss of power to the associated bus. 2. Obtaining reference positions of SDC flow control valves may be helpful during SDC restoration. 3. If diverting additional flow through SDC heat exchangers is required, SI-306 may be closed greater than its open limit stop (mid-position).	Examinee reads and acknowledges the notes.	**N**	
Cue:				
Comments:				
14.	5.1 Using applicable controller, PERFORM the following: a. RECORD output of the following SDC flow controllers: • HIC-3657 _____ • FIC-306 _____ b. CLOSE SI-657, SDC HX Flow Control Valve (HIC-3657). c. VERIFY SI-306, SDC Total Flow Control Valve, is full open (FIC-306).	• Examinee records the output indicated on HIC-3657 and FIC-306. • Examinee rotates the knob on the controller for SI-657, HIC-3657, in the close direction until the output reads "0". • Examinee rotates the knob on the controller for SI-306, FIC-306, in the open direction until the output reads "0".	**N** **Y** **Y**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
15.	5.2 CLOSE all LPSI Injection Valves: • SI-615, Loop 1A • SI-625, Loop 1B • SI-635, Loop 2A • SI-645, Loop 2B	• Examinee locates each LPSI Injection Valve handswitch. • Examinee individually places and holds each handswitch in the close position until the associated red (open) light goes out and the green (closed) light is lit.	**N** **Y**	
Cue:				
Comments:				
16.	5.3 IF SDC was supplying only the RCS/Refuel Pool, CRACK open *one* LPSI Injection Valve: • SI-615, "LPSI INJ VLVS" LOOP 1A • SI-625, "LPSI INJ VLVS" LOOP 1B • SI-635, "LPSI INJ VLVS" LOOP 2A • SI-645, "LPSI INJ VLVS" LOOP 2B	• Examinee determines that SDC was supplying ONLY the RCS/RFP and picks one of the four LPSI Injection valves. • Examinee momentarily places the associated handswitch in the open position until the red (open) indicating light is lit, then releases the handswitch. (Both red and green indicating lights should be lit.)	**N** **Y**	
Cue:				
Comments:	The examinee may require more than one attempt to throttle the valve.			
17.	5.4 IF SDC was supplying both the Spent Fuel Pool and the RCS/Refuel Pool, PERFORM the following:	Examinee determines that this step is NA per the Initial Conditions.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	5.5 IF available, START standby LPSI pump.	• If NOT attempted earlier, examinee may request one restart of the "A" and/or "B" LPSI Pumps. • Examinee determines that neither LPSI pump is available. • Examinee references contingency action to determine the cause of the pump failures.	**N** **N** **N**	
Cue:	**If requested, inform examinee that a restart attempt is NOT allowed.**			
Comments:	If an attempt was made to start "A" LPSI Pump earlier, then this step is NA.			
19.	**Contingency Action** 5.5.1 IF the standby LPSI Pump is *not* available, PERFORM the following: a. If time permits, EVALUATE cause of LPSI Pump trip as follows: 1) Dispatch operator to applicable 4160 VAC pump breaker to obtain protective relay status: • "A" LPSI Pump: A309 • "B" LPSI Pump: A404 b. If SM permission is obtained, START LPSI Pump that tripped.	• Examinee determines that neither LPSI Pump is available or capable of being started.	**N**	
Cue:	• **If requested, inform examinee that a restart attempt is NOT allowed.** • **Inform examinee that Maintenance has been dispatched to determine the cause of the pump failures.**			
Comments:	If an attempt was made to start "A" LPSI Pump earlier, then this step is NA.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
20.	**CAUTION:** Prior to utilizing a CS pump for SDC, the RCS heat removal rate and associated SDC flow must be considered. Maximum SDC flow through any CS pump is limited to 1700 gpm. Additionally, the RWST suction header must be filled and vented in order to align the associated CS pump to the RCS. The applicable facility ECCS suction flowpath from the RWST is isolated.	Examinee reads and acknowledges the CAUTION.	**N**	
Cue:				
Comments:				
21.	5.6 IF desired, USE the "A" CS Pump for SDC as follows:	Examinee determines that "A" and "B" Containment Spray Pumps are available per the Initial conditions.	**N**	
Cue:	**As the US, concur with the recommendation to use the "A" Containment Spray Pump (If examinee suggests using the "B" Containment Spray Pump, state as the US that you would prefer "A" Containment Spray Pump be used).**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
22.	a. COMPLETE "A" CS pump alignment verification (Attachment 6).	Examinee references Attachment 6, performs actions in the Control Room, and directs a PEO to perform all required actions outside the Control Room: 1. All HPSI pump handswitches in Pull-to-Lock. 2. RBCCW System is operating and *supplying CS pump seal coolers* 3. Facility 1 RWST Header is filled and vented. *4. 2-CS-1A, "A" CS Pump Suction, OPEN* *5. 2-CS-7A, "A" CS Pump Minimum Flow Recirc, CLOSED* 6. 2-CS-16.1A, "A" Containment Sump Outlet Header Isolation, CLOSED 7. 2-CS-13.1A, "A" RWST Outlet Header Isolation, CLOSED *8. 2-CS-3A, "A" Containment Spray Pump Discharge, OPEN* 9. 2-SI-441, "A" LPSI Pump Suction from SDC, OPEN *10. 2-SI-453, LPSI Pump Discharge to "B" SDC Heat Exchanger, CLOSED* *11. 2-SI-452, LPSI Pump Discharge to "A" SDC Heat Exchanger, OPEN* *12. 2-SI-432, "B" LPSI Pump Suction from RWST, CLOSED* *13. 2-SI-444 "A" LPSI pump suction from RWST, OPEN*	 N N N N N N Y N N Y N N Y	
Cue:	• **Instructor: When directed, insert remote functions: CS-7A (RHR08 [CLOSE]); CS-3A (RHR10 [OPEN]); SI-453 (RHR13 [0%]); SI-444 (RHR04 [100%]). (Valves to be operated from the booth are underlined.)** • **As the PEO, acknowledge the direction to verify components and manipulate valves. Report that all components and systems are operating normally and that the valves (*in italics*) have been verified or positioned appropriately.**			
Comments:	*Italicized* components are operated or verified *outside* the Control Room. Underlined steps are aligned by the Booth Instructor.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
23.	b. VERIFY one train of SFPC in service in accordance with OP 2305, "Spent Fuel Pool Cooling and Purification System."	Examinee verifies both trains of Spent Fuel Pool Cooling are in service per the Initial Conditions.	**N**	
Cue:				
Comments:				
24.	c. ENSURE suction pressure is greater than or equal to 18 psig.	• Examinee directs a PEO to observe and report "A" Containment Spray Pump suction pressure. • Acknowledge a report of 35 psig suction pressure on the "A" Containment Spray Pump.	**N** **N**	
Cue:	**Acknowledge direction and report "A" Containment Spray Pump suction pressure is 35 psig.**			
Comments:				
25.	d. START the "A" CS pump.	• Examinee locates the handswitch for the "A' Containment Spray pump and momentarily places it in the START position. • Examinee observes the associated red (running) light comes on and the green (stop) light go out. • Examinee observes running amperage.	**Y** **N** **N**	
Cue:				
Comments:	Steps 5.7 and 5.8 are NA with the "A" Containment Spray Pump running.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
26.	**Caution** 1. When establishing SDC flow while in reduced inventory, due to concerns regarding boron dilution and vortexing at the SDC suction, SDC flow must be limited to between 1,400 to 1,600 gpm. 2. SDC flow through any one LPSI pump must be limited to a maximum of 4,000 gpm. 3. SDC flow through any one SDC heat exchanger must be limited to a maximum of 4,800 gpm. 4. SDC flow through only one CS pump must be limited to a maximum of 1700 gpm.	Examinee reads and acknowledges the Caution.	**N**	
Cue:				
Comments:				
27.	5.9 IF SDC was supplying flow to only the Refuel Pool, PERFORM the following:	Examinee determines that SDC was supplying only the Refuel Pool (RCS) per the Initial Conditions.	**N**	
Cue:				
Comments:				
28.	a. IF the RCS is in reduced inventory, PERFORM the following:	Examinee determines from the Initial Conditions that the RCS is NOT in reduced inventory and this step is NA.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
29.	b. IF the RCS is *not* in reduced inventory, PERFORM the following: 1) IF a LPSI pump is in service, THROTTLE flow 3500 to 4000 gpm. 2) IF a CS pump is in service, PERFORM the following: a) THROTTLE flow 1650 to 1700 gpm. b) Monitor for indications of cavitation.	• Examinee determines that the RCS is NOT in reduced inventory from the Initial Conditions. • Examinee determines that a LPSI Pump is NOT in service and that this step is NA. • Examinee determines that the "A" CS Pump is in service. • Examinee adjusts the LPSI Injection Valves to obtain an indicated CS Pump flow (PPC or C-01) of 1650 to 1700 gpm.	**N** **N** **N** **Y**	
Cue:				
Comments:	The examinee may adjust one or all of the LPSI Injection valves to obtain the required flow.			
30.	5.10 IF SDC was supplying both the SFP and Refuel Pool, PERFORM the following:	Examinee determines from Initial Conditions that SDC was NOT supplying the SFP and that step 5.10 is NA.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
31.	**Caution** Caution should be used when reestablishing SDC heat exchanger flow, due to the potential for water in the SDC heat exchangers to be much cooler than RCS temperature. Initiating flow slowly allows temperatures to equalize.	Examinee reads and acknowledges the Caution.	**N**	
Cue:				
Comments:				
32.	5.11 WHEN establishing cooldown, Refer To SP 2602B, "Transient Temperature, Pressure Verification," and PERFORM the following: • MONITOR RCS cooldown rate using T351Y. • ENSURE system response is within cooldown limits.	Examinee obtains SP 2602B, "Transient Temperature, Pressure Verification," to maintain a log of the cooldown rate while monitoring T351Y.	**N**	
Cue:	**Inform examinee that SP 2602B, "Transient Temperature, Pressure Verification," will be performed by another operator.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
33.	5.12 Slowly ADJUST HIC-3657, SI-657 Controller, to establish and maintain desired cooldown rate.	Examinee rotates knob on HIC-3657, SI-657 Controller, to establish a cooldown rate, not to exceed a 50°F cooldown in a one hour period.	**Y**	
Cue:				
Comments:	• Due to the configuration of the SDC System, the initial cooldown rate may be excessive; however, the examinee should adjust SI-657 as necessary to limit the cooldown rate to less than 50°F in a one hour period. • The JPM should be terminated when the examinee demonstrates he/she is able to manipulate SI-657 and control the RCS cooldown rate. It is not the intent, nor does time allow, for the examinee to establish any specific cooldown rate. • **Reaching a value of 212°F on RCS to SDC Temperature, T351X, constitutes a failure of the JPM.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM- S4p1 Rev. 0

VERIFICATION OF JPM COMPLETION

Title: **Shifting LPSI Pumps During SDC Operation**

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): 40

Actual Time to Complete (minutes): _____

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

Areas for Improvement/Comments:

STUDENT HANDOUT

Initial Conditions:

- The plant is stable in MODE 6 after completing the core reload during a refueling outage.
- The Refuel Pool level is just below the Upper Guide Structure work platform.
- SDC is in service with "A" LPSI pump operating.
- SDC is NOT supplementing SFP Cooling.
- Both facilities of RBCCW and Service water are in operation supplying all associated components.
- Both RWST Headers are filled and vented.
- Both trains of Spent Fuel Pool Cooling are in service.

Initiating Cues:

- The "A" LPSI Pump vibration is above the Alert limit. Condition Based Maintenance has recommended securing the pump for further investigation.
- The US has directed you to place "B" LPSI Pump in service and remove "A" LPSI Pump from service.

JOB PERFORMANCE MEASURE APPROVAL SHEET

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

JPM Number: JPM-013 Revision: 6/1

II. Initiated:

R. J. Ashey
Developer — Date

Reviewed:

Technical Reviewer — Date

Approved:

N/A
Cognizant Plant Supervisor (optional) — Date

Nuclear Training Supervisor — Date

SUMMARY OF CHANGES:

A/I & DATE	DESCRIPTION	REV/CHANGE
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

General References: OP 2302A

*** * * * 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).

Starting and Paralleling Second CEDM MG Set

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	CAUTION 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. ENSURE 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: • IF starting "A" CEDM MG second, Go To step 4.7.3. • IF starting "B" CEDM MG second, Go To step 4.7.4.	Examinee progresses to step 4.7.3.	Y	
Cue:				
Comments:				
4.	NOTE Actions listed in step 4.7.3, unless otherwise stated, are performed at C-29.	Examinee reads and acknowledges the Note	N	
Cue:				
Comments:				

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 proceed to the Control Room and place the "MG-A" handswitch to the "START" position or request that it be done by someone in the Control Room.	**Y**	
Cue:	• **If the examinee requested the Control Room close the breaker, inform the examinee that it has been closed.** • **If the examinee closes the breaker, inform the examinee that the breaker indicates closed (red light lit).**			
Comments:				
6.	b. PLACE "A" CEDM MG "MOTOR INPUT" breaker to "ON" (top left of C-30).	Examinee states that they would close MG motor supply breaker by taking handle on top left of C-30 to "ON".	**Y**	
Cue:	**The Input Breaker is in the "ON" position.**			
Comments:				
7.	c. PLACE "A" CEDM MG "INCOMING GENERATOR" synchronizing selector switch to "LOCAL."	Examinee states that they would place synchronizing selector switch on C-29 in "LOCAL" position.	**Y**	
Cue:	**The Synchroscope is on, but is NOT rotating.**			
Comments:				
8.	d. PRESS "LOCAL" "MOTOR ON" and HOLD for 4 to 5 seconds (starts "A" CEDM MG).	Examinee states that they would press "MOTOR ON" pushbutton.	**Y**	
Cue:	**The motor can be heard coming up to speed.**			
Comments:	The time of "4 to 5 seconds" is not critical for this step.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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:				
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:	**The red "MOTOR ON" light is lit.**			
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:	**Indicate that Voltage rises to 240 volts**			
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:	**Inform the examinee that 150 seconds has elapsed and, within 2 seconds of the red "MOTOR ON" light lighting, an audible clunk is heard.**			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
13.	i. IF audible clunk is not heard 170 seconds following start, PERFORM the following: 1) PRES and HOLD "LOCAL" "MOTOR OFF" 2) WHEN red "LOCAL" "MOTOR ON" light is not lit RELEASE "LOCAL" "MOTOR OFF." 3) NOTIFY SM.	Examinee states that this step is NOT Applicable.	**N**	
Cue:				
Comments:				
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:	**The voltage indication was given in the previous step; however, if the examinee feels it must be adjusted, have them demonstrate how to accomplish this. State that the voltage raises and lowers as adjustments are made.**			
Comments:				
15.	NOTE Closing "GENERATOR OUTPUT" breaker does not energize the bus.	Examinee reads and acknowledges the Note.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
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:	**The breaker is in the "ON" position.**			
Comments:				
17.	NOTE 1. 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. 2. 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.	Examinee reads and acknowledges the Note.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
18.	I. IF synchroscope is not at 12 o'clock and not rotating, PERFORM the following to get the synchroscope to move: 1) Using "REMOTE" "GEN VOLTAGE ADJUSTMENT" switch, RAISE "REMOTE" ("B" CEDM MG) "GENERATOR VOLTS" to 250 VAC. 2) Using "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch, LOWER "LOCAL" ("A" CEDM MG) "GENERATOR VOLTS" to 235 VAC.	1) Examinee states that they are turning the "REMOTE" "GEN VOLTAGE ADJUSTMENT" switch to raise the "REMOTE" ("B" CEDM MG) "GENERATOR VOLTS" to 250 VAC. 2) Examinee states that they are turning the "LOCAL" "GEN VOLTAGE ADJUSTMENT" switch to lower the "LOCAL" ("A" CEDM MG) "GENERATOR VOLTS" to 235 VAC.	**Y** **Y**	
Cue:	**Inform the examinee that 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.**			
Comments:				

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** **Y**	
Cue:	**When the voltage adjustments are made, 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 would press the "A" CEDM MG set "LOAD ON" button until the "LOAD ON" light is lit.	**Y**	
Cue:	**Inform the examinee the 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:				

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 would turn the synchronizing selector switch to "OFF."	N	
Cue:				
Comments:	The remaining steps require entry into the back of Panel C-29, which contains high voltage.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

JPM Number: JPM-013 Rev. 6/1

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:

_____

_____

_____

_____

_____

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:

R. J. Ashey _____
Developer Date

III. Reviewed:

_____ _____
Technical Reviewer Date

IV. Approved:

_____ _____
Cognizant Plant Supervisor (optional) Date

_____ _____
Nuclear Training Supervisor 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-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): _____

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 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-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.	**Y**	
Cue:	Acknowledge air isolation is closed.			
Comments:				
3.	1.3. OPEN operating cylinder equalizing valve.	Examinee opens operating cylinder equalizing valve for 2-SW-3.2A.	**Y**	
Cue:	Acknowledge valve opened.			
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.	**Y**	
Cue:	Acknowledge slot in shaft is now aligned with T-handle.			
Comments:				
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:	Acknowledge T-handle is now engaged in shaft slot.			
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
6.	NOTE 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"	Examinee reads and acknowledges note.	**N**	
Cue:				
Comments:				
7.	1.6. POSITION valve as directed by SM or US: • To close valve, OPERATE handwheel in *counterclockwise* direction. • To open valve, OPERATE handwheel in *clockwise* direction.	Examinee closes 2-SW-3.2A by operating handwheel in *counterclockwise* 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: _____

JPM Number: JPM-124 Rev. 4/0

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 **X**

Validated Time (minutes): _____

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:

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:

R. J. Ashey
Developer — Date

III. Reviewed:

Technical Reviewer — Date

IV. Approved:

Cognizant Plant Supervisor (optional) — Date

Nuclear Training Supervisor — 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-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): _____

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)

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 Rev.. 0

Aligning Backup Air

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
			START TIME:	
1.	EOP 2541 Attachment 40-A "Aligning Backup Instrument Air"	Examinee refers to EOP 2541 Attachment 40-A to place backup air supply in service.	**N**	
Cue:	**Provide examinee with a copy of EOP 2441, Appendix 40.**			
Comments:				
2.	NOTE The next step places Backup Air Supply System in service for the following: (-5' Aux Bldg near letdown HX room) • CH-517, Auxiliary spray valve • CH-518, Charging header to loop 2A • CH-519, Charging header to loop 1A • EB-88, RM-8123 inboard supply • EB-89, RM-8262 inboard supply	Examinee reads and acknowledges note	**N**	
Cue:				
Comments:				
3.	5. IF placing backup air in service for Charging and Sampling System isolation valves, PERFORM the following: (-5' Aux Bldg near letdown HX room) a. ADJUST IA-591, backup air PCV to minimum. (full counterclockwise)	Examinee adjusts IA-591 backup air PCV to minimum by turning the valve full counterclockwise.	**Y**	
Cue:				
Comments:				

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:	**When 2-IA-603 is opened, indicate regulator high side pressure of 1000 psi**			
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:	**When examinee shows ¼ turn clockwise movement of the regulator handle, indicate 100 psi on downstream gauge.**			
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:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
8.	f. IF at any time during this evolution, Containment isolation is required, CLOSE IA-566, master stop.	Examinee reads and acknowledges this step. Examinee states that this step will be left open and used if Containment is required.	**N** **N**	
Cue:				
Comments:				
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:	**Indicate regulator high side pressure of ~ 990 psi**			
Comments:				
11.	NOTE 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.	Examinee reads and acknowledges note.	**N**	
Cue:				
Comments:				

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)
12.	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: • 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. • REPLACE QA air bottle.	Examinee determines that swing backup air supply is available and is NOT supplying AC-15, 20, 12, and 47. Examinee refers to step 6 for aligning swing backup air supply to Charging and Sampling System valves inside Containment.	**N** **N**	
Cue:	• **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).** • **Additionally, no replacement air bottles are available in the short term.**			
Comments:	Examinee may question the status of backup air to AC-15, 20, 12, and 47. Use cue above.			

STEP	PERFORMANCE	STANDARD	CRITICAL (Y/N)	GRADE (S/U)

13.	NOTE
	The next step places swing backup air supply in service for the following sets of valves:
	• Charging and Sampling System Valves Inside Containment:
	  • CH-517, Auxiliary spray valve
	  • CH-518, Charging header to loop 2A
	  • CH-519, Charging header to loop 1A,
	  • EB-88, RM-8123 inboard supply,
	  • EB-89, RM-8262 inboard supply
		Examinee reads and acknowledges note.	**N**	

Cue:				
Comments:				
14.	6. IF placing swing backup air station in service for Charging and Sampling System, PERFORM the following: a. ADJUST IA-886, "B/U AIR PCV" to minimum. (full counterclockwise) (14'6" Aux Bldg near MCC B61)	Examinee adjusts IA-886, "B/U AIR PCV", to minimum by taking regulator handle full counterclockwise.	**Y**	
Cue:				
Comments:				
15.	b. Slowly OPEN IA-885, air bottle "MASTER STOP". (14'6" Aux Bldg near MCC B61)	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:				

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:	**When examinee shows clockwise movement of the regulator handle, indicate 100 psig on downstream gauge.**			
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:				

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. Examinee states that this step will be left open and used if Containment isolation is required.	**N** **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: _____

JPM Number: JPM-P2.2 Rev. 0

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 **X**

Validated Time (minutes): _____

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:

_____

_____

_____

_____

_____

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: MP2 Scenario No.: ES11LI1 Op-Test No.: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 100% power, BOL, Eq. Xe., 1204 ppm Boron SGBD @ 40 gpm per SG, 24E aligned to 24C, "B" RBCCW Pump has just been returned to service following repairs.

Turnover: 100% power, BOL, Eq. Xe., 1204 ppm Boron, blend ratio: 3.89:1, SGBD @ 40 gpm per SG, 24E aligned to 24C, "B" RBCCW Pump has just been returned to service following repairs, no other equipment OOS and no surveillance in progress or due.

Event No.	Malf. No.	Event Type*	Event Description
1.	N/A	N (BOP/S)	Swap from "A" to "B" RBCCW Pump
2.	CH01A	C (RO/S)	Loss of "A" Containment Air Recirculation Fan (TS)
3.	RX11D	I (BOP/S)	#2 SG Alternate steam flow transmitter failure
4.	RD0368	C (BOP/S)	CEA #68 to slip 35 steps into the core. (TS)
5.	N/A	R (All)	Downpower to < 70% power for CEA recovery (Reactivity)
6.	RP24D	I (RO/S)	"D" CTMT pressure transmitter failure (TS)
7.	FW33 TC10A RP28D RP28E	M (All)	Loss of vacuum with failure of Turbine Low Vacuum Trip Manual reactor trip with loss of both Main Feed Pumps due to low vacuum Failure of the Reactor to trip on low S/G level
8.	FW30A FW20A FW20C	C (BOP/S)	Degradation/loss of the "A" AFW Pump Overspeed trip of the Turbine Driven Aux Feed Pump
9.	ED05D	M (All)	Bus 24D Fault

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

ES11LI1

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. The US will brief the crew and the BOP will perform the evolution. The US will log into TSAS 3.7.3.1 during the pump swap.

After the "B" RBCCW Pump is started and the US logs out of TSAS 3.7.3.1, the "A" Containment Air Recirculation Fan will trip. The RO will start the "D" CAR Fan and the US will enter TSAS 3.6.2.1b.

Shortly after the "D" CAR Fan is started, the alternate steam flow transmitter for #2 SG will start to fail high. 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 $\leq$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 and the Reactor will NOT trip in low S/G level after the Main Feed Pumps trip, 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.
The plant must be manually tripped prior to reaching the Automatic Auxiliary Feedwater initiation setpoint of 27% in either S/G.

CT-2 (LOAF-3): Secure all RCPs.
RCPs must be secured prior to attempting to regain feed flow from the running Condensate Pump or initiating Once-Through-Cooling.

(CT-3 (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 the steps to establish Once-Through-Cooling have been initiated prior to reaching 70 inches in either S/G and level is NOT being restored.

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SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 2 LOIT NRC Exam**	
Title	**Simulator Exam #1**	
COURSE:	**ES11LI1**	**Course #: NA**
Total Time	**1.5 hours**	

Prepared by:	R. J. Ashey		9/12/2011
	Printed Name	Instructor's Signature	Date
Reviewed by:			
(Optional)	Printed Name	Simulator Development Checklist Instructor Signature	Date
Reviewed by:			
(Optional)	Printed Name	Simulator Validation Checklist Signature	Date
Approved by:			
	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: 2 booth instructors, 3 NRC Examiners

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References:
OP 2330A, RBCCW System
ARP 2590A-009, CTMT AIR RECIRC FAN A TRIP (A-3 on C-01)
OP 2313A Containment Air Recirculation and Cooling 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
"A" and "B" RBCCW Pumps must be swapped for maintenance.

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OVERVIEW

INITIAL CONDITIONS:

- 100% power BOL. (IC-10)
- 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 to allow maintenance to complete vibration testing. The US will brief the crew and the BOP will perform the evolution. The US will log into TSAS 3.7.3.1 during the pump swap.

After the "B" RBCCW Pump is started and the US logs out of TSAS 3.7.3.1, the "A" Containment Air Recirculation Fan will trip. The RO will start the "D" CAR Fan and the US will enter TSAS 3.6.2.1b.

Shortly after the "D" CAR Fan is started, the alternate steam flow transmitter for #2 SG will start to fail high. 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 $\leq$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 and the Reactor will NOT trip in low S/G level after the Main Feed Pumps trip, 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.

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CT-1 (SPTA-5): Manually shut down the Reactor.
The plant must be manually tripped prior to reaching the Automatic Auxiliary Feedwater initiation setpoint of 27% in either S/G.

CT-2 (LOAF-3): Secure all RCPs.
RCPs must be secured prior to attempting to regain feed flow from the running Condensate Pump or initiating Once-Through-Cooling.

(CT-3 (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 the steps to establish Once-Through-Cooling have been initiated prior to reaching 70 inches in either S/G and level is 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-10**
- ❑ 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).

SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. INITIAL CONDITIONS: • IC-10 • Mode: 1 • Burnup:BOL • Power: 99.8% • Boron: (CB): 1204 ppm • Temperature: Tave 569°F • Pressure: 2250 psia • Xenon: Stable, at equilibrium • Rods: ARO • Generator: 892 Mwe	ENTER or VERIFY the Initial Malfunctions / I/Os / Remote Functions are loaded on the appropriate Schedule.	N/A
2. **SIMULATOR SETUP:** ❑ As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.	COMPLETE Simulator Setup Checklist	N/A
3. **TURNOVER:** PERFORM the crew turnover (Turnover Sheet) with the SM. • Crew must swap "A" and "B" RBCCW Pumps for maintenance.		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**
1. Swap From "A" to "B" RBCCW Pump		***Normal Evolution/Tech Spec***
		US Directs/BOP Performs: Swap "A" and "B" RBCCW Pumps per OP 2330A, RBCCW System, Section 4.2.
	Perform actions as directed. If dispatched, report that SIAS/LNP ACTUATION SIGNAL HS 6119D is in BLOCK. **Event 7:** **CCR06 – 0,** Close 2-RB-3A **Event 8:** **CCR40 – NORM,** Place A504, "B" RBCCW Pump SIAS/LNP Actuation Hand Switch in 'Normal'. **Event 9:** **CCR06 – 100,** Open 2-RB-3A Acknowledge the direction and report that RBCCW Rad Monitors flows are normal.	BOP: • Ensure "B" RBCCW Pump is properly aligned with the SIAS/LNP ACTUATION SIGNAL HS 6119D in BLOCK. • Ensure RB-251A, A/B RBCCW Pump X-Tie Valve, is open on C-06. • Ensure US logs into TSAS 3.7.3.1. • Start "B" RBCCW Pump. o Check "B" RBCCW Pump SIAS/LNP Start Manually Blocked annunciator is lit on C-06/7. o Check "B" RBCCW Pump for normal running amps and discharge pressure. • Direct a PEO to close 2-RB-3A, "A" RBCCW Pump Discharge Stop. o Stop "A" RBCCW Pump. o Verify "A" RBCCW Header High Flow annunciator is clear. • Direct a PEO to place "B" RBCCW Pump SIAS/LNP Actuation Hand Switch in 'Normal'. o Verify "B" RBCCW Pump SIAS/LNP Start Manually Blocked annunciator clears. • Verify US exits TSAS 3.7.3.1. • Direct a PEO to open 2-RB-3A, "A" RBCCW Pump Discharge Stop. • Verify "A" RBCCW Header flow is between 6,000 and 7,300 gpm on C-05. • Direct a PEO to verify the appropriate Rad Monitor flow locally.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
2. Trip of "A" CAR	***Insert Event 1, Trip of "A" CAR Fan, after RB-3A, "A" RBCCW Pump Outlet, is open.***	***Tech Spec***
	Event 1: CH01A – "A" CAR Fan Trips **TM1, AE1**	RO: • Observes CTMT AIR RECIRC FAN A TRIP annunciator (A-3) on C-01 and red running light is NOT lit for "A" CAR Fan. • Reports observation to US.
		US: • Enters ARP 2590A-009, CTMT AIR RECIRC FAN A TRIP • Directs RO to: o refer to OP 2313A and start "D" CAR Fan. o observe Containment pressure and temperature. • Makes required notifications for troubleshooting and repairs. • Enter TSAS 3.6.2.1b.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: Obtains OP 2313A, Containment Air Recirculating and Cooling System, and performs the following: • Verifies RB 28.2D, RBCCW Normal Outlet Valve, and RB28.3D, RBCCW Emergency Outlet Valve, are open. • Verifies RB-28.1D, CAR RBCCW Inlet Valve, is locked open • Checks "B" RBCCW Header flow is less than 8,000 gpm. (C-05) • Momentarily places "D" CAR Fan to START HIGH and observes red FAST SPEED indicating light is lit. • Presses CAR FAN VIB RESET B&D button on C-01 to clear the High Vibration annunciator.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
3. Failure of #2 S/G Alternate Steam Flow Transmitter	***Insert Event 2, Failure of #2 S/G Alternate Steam Flow Transmitter, after "D" CAR Fan is reported running and request for troubleshooting/repairs are complete.***	
	Event 2: RX11D – 100% with a Ramp Time of 300 seconds, #2 Steam Generator Alternate Steam Flow Transmitter Failure. **TM2, AE2**	BOP: • Recognizes a difference the #2 Main and Alternate Steam Flow Transmitters • Observe #2 S/G level rising. • *May observe S/G Level Deviation Hi/Lo annunciator on C-05.* • Reports to the US that the #2 Alternate Steam flow Transmitter appears to be failing high.
		US: • Directs BOP to deselect the #2 Alternate Steam Flow Transmitter (Select Main Steam Flow Transmitter only) or, o *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.* • References ARP 2690D-064, SG Level Setpoint Deviation Hi/Lo.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: • Deselects the #2 S/G Alternate Steam Flow Transmitter on C-05. • *If necessary, takes manual control of #2 Main Feed Reg Valve and place both Main Feed Pump Speed Controls in manual.* o *Restores and maintains #2 S/G level in normal band.* o *When normal level has been restored, returns #2 Main Feed Reg valve and Main Feed pump Speed control to automatic.*

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
4. CEA #68 slips 35 Steps	***Insert Event 3, CEA #68 slips 35 Steps, after S/G levels are stable in Automatic***	***Tech Spec***
	Event 3: RD0368 – 35 Steps, CEA #68 (Group 7) slips to 145 steps **TM3, AE3**	RO: • Observes the following on C-04: o CEA DROPPED NIS Annunciator o White light for CEA #68 is lit (red light out) o CEAPDS Monitor indicates that CEA #68 is misaligned. o CEA GR DEV BK/UP annunciator. • Reports that CEA #68 has slipped to 145 steps.
		BOP: Lowers Turbine load to match Reactor power and stabilize RCS temperature.
		RO: Monitors RCS temperature, Pressurizer pressure, and Pressurizer level.
	When I&C assistance is requested, state that you will begin troubleshooting immediately.	US: • Enters TSAS 3.1.3.1, action a.1. • Requests I&C assistance. • Enters AOP 2556, CEA Malfunctions and directs required actions.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: • Prints NSSS Data Sheet and Incore Operability Report form PPC. • Notifies Reactor Engineering. • Monitors ΔT Power on RPS. • As required, toggles Dropped Rod Reset switches on RPS to clear Dropped Rod LEDs.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
5. Downpower to 70%.		***Reactivity Manipulation***
	AE4	US: • Directs entry into AOP 2575 Rapid Downpower for power reduction to <70% in <1 hour. • Performs Focus Brief for Trip Criteria and RCS Temperature Control. • Directs or makes required notifications.
		RO: • Commences Forcing Pressurizer Sprays: o Closes all Backup Heater Breakers o Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia).
		US: Refers to Reactor Engineering Curve and Data Book and determines that Reactivity Plan, RE-G-08 is appropriate for the downpower.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: Commences Boration from the RWST *(the crew may opt to Borate from the BAST)*: • Ensures at least one Charging Pump is running. • Ensures VCT Makeup Bypass, CH-196, is closed. • Ensures RWST to Charging Suction, CH-192, is open. • Closes VCT Outlet Isolation, CH-501 • Checks Charging flow is appropriate. • Starts an additional Charging Pump and balances Charging and Letdown.
		BOP: Reduces Turbine load using the LOAD LIMIT POT. • Maintains Tc within 1°F of program. • Maintains 50-150 MVARs
		Crew: Maintains parameters within the prescribed limits of Attachment 1, Rapid Downpower Parameters.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
6. "D" Containment Pressure Transmitter Fails High.	***Insert Event 4, "D" Containment Pressure Transmitter Fails High, when Reactor power reaches 90%.***	***Tech Spec***
	Event 4: RP24D – 100%, with a Ramp Time of 160 seconds. "D" Containment pressure transmitter fails high. **TM4, AE5**	RO: Observes and reports CTMT PRES HI D annunciator on C-01. • Reports value and trend of all Containment pressure indications and determines that Channel "D" appears to have failed high.
The crew may temporarily stop the downpower to address the failed instrument.		*RO:* *Closes RWST to Charging Suction, CH-19, if the US directs the downpower to be temporarily stopped to address the failed instrument.*
		BOP: *Maintains RCS temperature on program, if the US directs the downpower to be temporarily stopped to address the failed instrument.*
		US: • Refers to ARP 2590A-084, CTMT PRES HI D, ARP 2590A-088, CTMT PRES HI HI D (on C-01), or ARP 2590C-048, CTMT HI PRES TRIP CH D (on C-04) • Directs RO (or BOP) to obtain appropriate keys and bypass Channel "D" Containment Pressure on RPS and ESAS. • Logs into TSAS 3.3.1.1, Table 3.3-1, and 3.3.2.1, Table 3.3-3. • Contacts I&C for troubleshooting and repairs.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO (or BOP): • Obtains bypass keys for Channel "D" RPS and ESAS Containment Pressure. • Bypasses or inhibits o Channel "D" RPS Cont Press (Bypass) o ESAS Cont Press SIAS/CIAS (Inhibit) o ESAS Cont Pres CSAS (Inhibit)
		US: *If the downpower was temporarily halted, directs the RO and BOP to commence the downpower as previously performed.*

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
7. Loss of Condenser Vacuum - Turbine Trip and Low S/G Level Trip Fails	***Insert Event 5, Loss of Condenser Vacuum - Turbine Trip and Low S/G Level Trip Fails, when all applicable channels or RPS and ESAS are bypassed/inhibited and the applicable Tech Specs have been entered.***	
CT-1 (SPTA-5): Manually shut down the Reactor. **The plant must be manually tripped prior to reaching the Automatic Auxiliary Feedwater initiation setpoint of 27% in either S/G.**	**Event 5: FW33 – 100%.** Condenser Vacuum rapidly degrades. **TC10A – Fail.** The Main Turbine fails to trip on low Condenser Vacuum. (Inserted during initial setup) **RP28D**, Failure of automatic Reactor trip in #1 S/G low level. (Inserted during initial setup) **RP28E**, Failure of automatic Reactor trip in #2 S/G low level. (Inserted during initial setup) **TM5, MA1, CT1**	RO/BOP: • Observes and reports annunciators and indications associated with a rapidly degrading Condenser Vacuum • When directed, manually trips the Reactor and commences actions of EOP 2525, Standard Post Trip Actions.
		US: Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525: • Reactivity Control (RO) o Status of the Reactor • Maintenance of Vital Auxiliaries (BOP) o Status of the Turbine o Status of Electrical Buses o Status of SW & RBCCW o Check one facility of CRAC operating (RO) • RCS Inventory Control (RO) o Pzr level & Subcooled margin (SCM), value & trend • RCS Pressure Control (RO) o Pzr pressure, value & trend

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		• Core Heat Removal (RO) o RCP status o Loop delta-T o T_H Subcooling Margin • RCS Heat Removal (BOP) o S/G pressures, value and trend o RCS T_C value and trend o S/G levels, value and trend o RCS Subcooling Margin • Containment (CTMT) Isolation (RO) o Radmonitors inside CTMT, outside CTMT, steam plant o CTMT pressure <1 psig • CTMT Temperature & Pressure Control (RO) • CTMT temperature and pressure value and trend
		<u>RO:</u> Performs associated actions of EOP 2525 and reports results when queried: • RX tripped • All CEAs inserted • SUR negative and power lowering

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: Performs associated actions of EOP 2525 and reports results when queried: • Value and trend of S/G pressures • Closes MSIVs. • Value and trend of T_C • Adjusts ADVs to maintain on the lower end of 880-920 psig. • Value and trend of S/G levels • Commence feeding S/Gs with 'A' and 'B' AFW pump, S/G level band 40-70%. (Main Feed Pumps tripped) • Subcooling value / CET temperature
		RO: Continues with associated actions of EOP 2525 and reports results when queried: • Rad monitors inside CTMT not going up or in alarm • Rad monitors outside CTMT not going up or in alarm • Steam Plant Rad monitors not in alarm or going up • Value and trend of CTMT temperature and pressure

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: Continue with Subsequent Actions: • Closes MSIVs due to condenser NOT being available • Opens HD-106, Subcooling Valve • Stops both Heater Drains Pumps • Closes MFW pump mini flow Recirc(s), FW-36A/B (FIC-5237 and FIC-5240) • If AFAS has actuated (alarms on C-04), then places both Override hand switches in Pull-To-Lock and controls Aux Feed flow rate • Secures all but one Condensate Pump • Checks IA Header pressure is >90 psig and stable.
		US: Query RO & BOP regarding the status of EOP 2525 subsequent actions.
		RO/BOP: When asked, report that Subsequent Actions are complete and verified.
		US: • At the completion of EOP 2525, Diagnostic Flow Chart, determines that the trip is uncomplicated and goes to EOP 2526, Reactor Trip Recovery. • Places Master Silence Switch in NORM.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
8. Degradation/Loss of "A" Aux Feed Pump and Trip of the Turbine Driven Aux Feed Pump.	***Insert Event 6, Degradation/Loss of "A" Aux Feed Pump and Trip of the Turbine Driven Aux Feed Pump, when the US places the Master Silence Switch back to NORM.***	
	Event 6: FW30A – 100%, with a Ramp Time of 270 seconds. "A" Aux Feed Pump degrades over the next 4.5 minutes. **FW20A – Trip, with a 6 minute delay.** "A" Aux Feed Pump trips 1.5 minutes after it is fully degraded. **Event 29: FW20C – TRIP**, When the TDAFP speed reaches 500 rpm, the pump will trip. (Inserted during Initial setup.) **TM6, EM1** If a PEO is dispatched to determine the problem with the "A" Aux Feed Pump and/or the TDAFP: • 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. • 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. • The trip mechanism latch on the Steam Admission Valve for the TDAFP is broken and cannot be fixed for several hours.	BOP: Observes lowing Aux Feed flow or S/G levels continuing to lower with 2 Motor Driven Aux Feed Pumps running. • Trips "A" Aux Feed Pump or observes "A" Aux Feed Pump is tripped. • Reports loss of "A" Aux Feed Pump to the US. • If directed, dispatches a PEO to determine the cause of the pump trip. • Starts the Turbine Driven Auxiliary Feed Pump. • Observes annunciator and indications of a trip of the TDAFP. • Reports the loss of the TDAFP to the US. • Closes the steam inlet valve to the TDAFP.

SEG# ES11LI1 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
9. Bus 24D Fault	***Insert Event 10, Degradation/Loss of "A" Aux Feed Pump and Trip of the Turbine Driven Aux Feed Pump, when the US places the Master Silence Switch back to NORM.***	
	Event 10: ED05D – Trip. Bus 24D trips on fault resulting in a complete loss of all feedwater. **TM7, EM2, MA2, EU1**	BOP: • Observes annunciators associated with the loss of Bus 24D on C-08 and reports the loss of Bus 24D to the US. • When directed or when recommended, trips "B" D/G.
	Event 11: CVR11 – 22E, When directed, place "B" Charging Pump on Facility 1.	US: • Using the Diagnostic Flow Chart, determine that Loss of All Feedwater has occurred. • Enters EOP 2537, Loss of All Feedwater. • When *(If)* deemed necessary, dispatches a PEO to swap the "B" Charging Pump to Facility 1.
Safety Function Status Checks are normally performed by the Shift Technical Advisor. Classifications are generally performed by the Shift Manager.		*US:* • *Directs that Safety Function Status Checks be performed.* • *Classifies event as a General Interest, Echo due to the plant trip.*
CT-2 (LOAF-3): Secure all RCPs. **RCPs must be secured prior to attempting to regain feed flow from the running Condensate Pump or initiating Once-Through-Cooling.**	**CT2**	RO: When directed by the US: • Stops all RCPs • Places TIC-4165, Steam Dump Tavg Controller, in manual and closed. • Places Pressurizer Spray Controllers in manual and closed.

SEG# ES11LI1 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	If dispatched to determine if any Aux Feed Pump can be started, as necessary, report that: • The "A" Aux Feedwater Pump outboard motor bearing is still very hot and discolored, The pump will NOT rotate by hand. • The TDAFP overspeed trip mechanism is broken and cannot be repaired until new parts are ordered or manufactured (at least 4-6 hours) • Bus 24D has significant damage caused by an internal phase to phase short. • 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.	BOP: • Determines that both S/G levels are greater than 70" (Wide Range) and reports value and trend to US. • Using various indications, determines that the loss of all feedwater was NOT caused by a Main or Aux Feed Line break. • When directed by the US, performs actions to conserve S/G inventory: o Closes MS-220A and B, Blowdown Isolation Valves. o Closes MS-191A and B, S/G Sample Isolation valves. o Attempts to restore feedwater to at least one S/G. • Determines that at least one Condensate Pump is running. • Determines both Main Feed Pump Discharge Valves, FW-38A and B, are open. • Closes both Main Feed Pump Min-Flow Valves, FW-36A and B. • Observes CPF Bypass Valve, CNM-2, is deenergized (closed) and dispatches a PEO to manually open CNM-2. • Opens both Main Feed Reg Bypass Valves, FW-41A and B. o If MSI actuates, pushes the MSI OVRD push buttons, then opens the Feed Reg Valve Bypass Valves. • Determines both Main Feed Air Assist Check Valves, FW-5A and B, are in the open position.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: During the subsequent cooldown and when permitted: • blocks SIAS • blocks MSI • commences Emergency Boration
CT-3 (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** **The steps to establish Once-Through-Cooling have been initiated prior to reaching 70 inches in either S/G and level is NOT being restored.**	**CT3**	BOP: Using the Atmospheric Dumps, initiates a cooldown at the maximum controllable rate to establish feed flow from Condensate to the Steam Generators (controllers set to obtain approximately 550 psig in the S/Gs) • Controls feed flow to establish and maintain 40-70% in both S/Gs.
The US will likely direct the RO to prepare for Once-Thru-Cooling prior to reaching 70 inches in either S/G.		*US:* • *If either S/G level lowers to 70 inches and level is NOT being restored, directs the crew to initiate Once-Thru-Cooling.* • *When Once-Thru-Cooling has been initiated, enters EOP 2540, Functional Recovery.*

SEG# ES11LI1 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: • *Trips all Proportional Heaters.* • *Places all Backup Heaters in Pull-To-Lock.* • *Initiates both facilities of SIAS.* • *Verifies "A" HPSI Pump is running.* • *Verifies all HPSI Injection valves are open.* • *Ensures at least "A" Charging Pump is running.* • *Obtains keys and opens both PORVs.*
		BOP: *Opens both ADVs.*
SRO to determine NRC Classification.		SRO: Determines that this event does NOT have an NRC classification; however, it is Reportable to the state and a General Interest, Echo.
SCENARIO END: When RCS Heat Removal has been established or at the discretion of the lead evaluator, the simulator will be placed in FREEZE.	• When directed, FREEZE simulator. • Inform the crew that the evaluation is complete.	

INPUT SUMMARY

Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
MALFUNCTIONS						
TC10A, Failure of the Main Turbine to trip on low vacuum.	NA	NA	NA	NA	NA	9
RP28D, Failure of automatic Reactor trip in #1 S/G low level	NA	NA	NA	NA	NA	9
RP28D, Failure of automatic Reactor trip in #2 S/G low level	NA	NA	NA	NA	NA	9
FW20C, The TDAFP trips shortly after being started.	NA	NA	29	NA	NA	12
CH01A, "A" CAR Fan trips	NA	NA	1	TRIP	TRIP	4
RX11D, #2 S/G Alternate Steam Flow Transmitter failure.	NA	300 sec.	2	100	100	5
RD0368, CEA #68 slips to 145 steps.	NA	NA	3	35	145	6
RP24D, "D" Containment Pressure Transmitter fails high.	NA	160 sec.	4	100	100	7
FW33, Condenser Vacuum rapidly degrades.	NA	NA	5	7.5	7.5	8
FW30A, "A" Aux Feed Pump degrades.	NA	270 sec.	6	100	100	10
FW20A, "A" Aux Feed Pump trips	360 sec.	NA	6	NA	NA	11
ED05D, Bus 24D trips on fault resulting in a loss of all feedwater.	NA	NA	10	NA	NA	13
REMOTE FUNCTIONS						
CCR06, Close 2-RB-3A	NA	NA	7	0	0	1
CCR40, Place "B" RBCCW Pump SIAS/LNP Actuation Hand Switch in 'Normal'.	NA	NA	8	NORM	NORM	2
CCR06, Open 2-RB-3A	NA	NA	9	100	100	3
CVR11, Place "B" Charging Pump on Facility 1.	NA	NA	11	22E	22E	14
OVERRIDES						

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.	☒	☐
2.	All malfunctions and other instructor interface items were functional and responded to support the simulator Scenario.	☒	☐
3.	All malfunctions and other instructor interface items were initiated in the same sequence described within the simulator scenario.	☒	☐
4.	All applicable acceptance criteria were met for procedures that were used to support the simulator scenario.	☒	☐
5.	During the simulator scenario, observed changes corresponded to expected plant response.	☒	☐
6.	Did the scenario satisfy the learning or examination objectives without any significant simulator performance issues, or deviations from the approved scenario sequence?	☒	☐
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.	☒	☐
8.	Any identified Critical Tasks possesses the following elements (NUREG-1021): • Essential to safety with adverse consequences or significant degradation, • Cue(s) prompt the Operator to respond. • Defined and measurable performance indicators. • Performance feedback. 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

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1		Rx Power:	100%
Megawatts:	Thermal:	2698 MWTH	PZR Pressure:	2250 psia
	Electric:	892 MWe	RCS T-AVE:	569 °F
RCS Leakage:	Identified:	0.015 gpm	Protected Train/Facility:	**TRAIN B**
	Unidentified:	0.036 gpm		
Date/Time:	Today 0015			

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
			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
OP 2330A	"A" and "B" RBCCW Pumps must be swapped to allow maintenance to complete vibration testing.

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	ARO @ 180
Xenon Trend	Stable
Current Boron	1204 ppm
Boron Pot Setting / Blend Ratio	3.89 to 1 (corrected)

Facility: MP2 Scenario No.: ES11LI2 Op-Test No.: 2

Examiners: _____ Operators: _____

Initial Conditions: 100% power, BOL, Eq. Xe., 1204 ppm Boron SGBD @ 40 gpm. Bus 24E is aligned to Bus 24C. TDAFP is OOS for bearing replacement.

Turnover: 100% power, BOL, Eq. Xe., 1204 ppm Boron, blend ratio: 3.89:1 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.

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 I/O 06A1A3S15	C (BOP/S)	Non-Vital Bus 22B is lost 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	C (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		

ES11LI2

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. The crew will enter EOP 2532 to address the LOCA.

During the performance of EOP 2532, 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 (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.

CT2 (ESDE-6): AFW to the faulted (#2) SG is isolated within ≤ 30 minutes of MSI actuation on an ESDE. (Per OP 2260; Step 15 of EOP 2540D requires the affected S/G to be isolated)

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SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 2 LOIT NRC Exam**	
Title	**Simulator Exam #2**	
COURSE:	**ES11LI2**	**Course #: NA**
Total Time	**1.5 hours**	

Prepared by:	R. J. Ashey		1/10/2011
	Printed Name	Instructor's Signature	Date
Reviewed by:			
(Optional)	Printed Name	Simulator Development Checklist Instructor Signature	Date
Reviewed by:			
(Optional)	Printed Name	Simulator Validation Checklist Signature	Date
Approved by:			
	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-028, SW PUMP A STNR TROUBLE (Rev. 0-04)
AOP 2565, Loss of Service Water (Rev. 4-03)
OP 2326, Service Water System (Rev. 18-00)
ARP 2590B-212, PZR PRESSURE SELECTED CHANNEL DEVIATION HI/LO (Rev. 0-00)
Millstone 2 Technical Specifications
AOP 2562, Earthquake (Rev. 6-04)
AOP 2568 Reactor Coolant System Leak (Rev. 7-06)
AOP 2575, Rapid Downpower (Rev. 4-01)
EOP 2525, Standard Post Trip Actions (Rev. 24-00)
EOP 2532, Loss of Coolant Accident (Rev. 29-01)
EOP 2540, Functional Recovery (Rev. 22-02)
EOP 2540F, Functional Recovery of Containment Temperature and Pressure Control (Rev. 0-00)
EOP 2540C1, Functional Recovery of RCS Inventory Control (Rev. 4-01)
EOP 2540D, Functional Recovery of RCS Heat Removal (Rev. 21-01)

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 BOL (IC-10).
- 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. The crew will enter EOP 2532 to address the LOCA.

During the performance of EOP 2532, 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.

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CT-1 (SPTA-5) Manually Shutdown the reactor.
The reactor must be manually tripped using the CEDM output breakers immediately (within 1 minute) when any automatic trip fails and/or the manual trip push buttons do NOT work.CT-2 (LOAF-3): Secure all RCPs.
RCPs must be secured prior to attempting to regain feed flow from the running Condensate Pump or initiating Once-Through-Cooling.

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 or Most Affected Steam Generator.
AFW to the faulted (#2) SG is isolated within ≤ 30 minutes of MSI actuation on an ESDE. (Per OP 2260. Step 15 of EOP 2540D requires the affected S/G to be isolated)

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SIMULATOR SETUP CHECKLIST

- ❑ ENSURE TRex Workstation is operating.
- ❑ VERIFY the most current approved training load is loaded.
- ❑ RESET to **IC-10**
- ❑ 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).

SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. INITIAL CONDITIONS: • IC-10 • Mode: 1 • Burnup:EOL • Power: 99.8% • Boron: (CB):1204 ppm • Temperature: Tave 569 F • Pressure: 2250 psia • Xenon: Stable, at equilibrium • Rods: ARO • Generator: 892 Mwe	ENTER or VERIFY the Initial Malfunctions / I/Os / Remote Functions. Ensure TDAFP is tagged out.	N/A
2. **SIMULATOR SETUP:** As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.	COMPLETE Simulator Setup Checklist	N/A
3. **PRE-SCENARIO:** BRIEF the crew on purpose of this session		
4. **TURNOVER:** 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. Observe degraded performance of "A" Service Water Pump and swap to "B" Service Water Pump.		***Technical Specification***
	Event 1: SW09A – Ramp to 100% over 240 seconds, "A" Service Water Strainer clogs. **TM1, AE1**	BOP: Observes and reports indications associated with degrading flow on "A" Service Water header. • Observes and reports SW PUMP A STNR TROUBLE annunciator on C-06/7

	When dispatched to determine the cause of the low "A" Service Water Header flow, report that the "A" Service Water Strainer D/P is pegged high. The strainer motor is rotating, but the strainer is NOT rotating.
	When directed, report that Sodium Hypochlorite is secured to the "A" Service Water Pump.
		US:
		• Refers to ARP 2590E-028 (BB-4 on C-06/7)
		  o 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)
		• Determines that "A" Service Water Header flow is lowering.
		• Dispatches a PEO to the Intake Structure to determine the cause:
		  o Directs PEO to observe and report strainer status (i.e., rotating, Blowdown Valve open, D/P, etc.)
		  o Directs PEO to stop Sodium Hypochlorite to the "A" Service Water Pump.
		• Enters TSAS 3.7.4.1 *(and TRM 7.1.2.1.a)* and exits when appropriate
		• Refers to OP 2326A (or from memory to stabilize the plant) and directs the BOP to Start "B" Service Water Pump on Facility 1 and secure "A" Service Water Pump.
		• *May enter AOP 2565, Loss of Service Water*
		• Makes notifications for assistance.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	When requested, report that Sodium Hypochlorite is secured to the "A" Service Water Pump. Report that "B" SW Pump is operating properly. **Event 7:** When directed to vent the "B" SW Pump Strainer, insert an **I/O for SW PUMP B STNR TROUBLE, CA-4 on C-06/7.** Allow the I/O to remain in for 2 minutes, then delete the I/O. **Event 11:** When directed, **insert Remote Function SWR31 in NORM**, to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position. Report when each directed action is complete.	BOP: • Per OP 2326A, Service Water System, Section 4.6, verifies that the "B" Service Water Pump is properly aligned to Facility 1: o Bus 24E is being supplied by Bus 24C o "B" SW Pump is in Pull-To-Lock o A502, "B" SW Pump breaker is racked up. o SW-97B, Dis X-Tie, is closed. o SW-97A, Dis X-Tie, is open. o HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, is in BLOCK. • Directs a PEO to secure Sodium Hypochlorite to the "B" SW Pump. • Verifies US has entered TSAS 3.7.4.1. • Places "S" Service Water Pump in Pull-To-Lock. • Starts "B" Service Water Pump. • Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator alarms. • Stops "A" SW Pump. • Observes proper operation of "B" SW Pump (also directs PEO) • Directs PEO to vent the "B" SW Pump Strainer. • Places "A" SW Pump in Pull-To-Lock. • Directs a PEO to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position. • Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator is clear. • Informs US to exit TSAS 3.7.4.1. • *If AOP 2565 is used, actions are similar.*

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
2. Failure of Channel Y Pressurizer Pressure Transmitter.	***Insert Event 2, Failure of Channel Y Pressurizer Pressure Transmitter, when the SIAS/LNP annunciator clears.***	
	Event 2: RX03B –1500 Channel Y Pressurizer Pressure transmitter fails low. **TM2, AE2**	RO: • Observes RCS pressure rising. • Observes Pressurizer Pressure Deviation Hi/Lo annunciator. • Reports rising Pressurizer pressure to the US.
		US: • 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) • Makes notifications for assistance and troubleshooting. • Refers to (does NOT enter) TSAS 3.2.6, 3.3.3.5, and 3.3.3.8. (Only one channel is required to be OPERABLE.)
		RO: • Observes all Pressurizer pressure channels and determines that Channel Y is failed. • When directed, shifts Pressure control to Channel X. • Verifies proper operation of Pressurizer pressure control system.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
3. Seismic Event Resulting in a Loss of Non-Vital 480 Volt Bus 22B.	*Insert **Event 3, Seismic Event Resulting in a Loss of Non-Vital 480 Volt Bus 22B**, when Pressurizer pressure control has been swapped to Channel X and RCS pressure is stable.*	
	Event 3: CH07 – Insert, Seismic event. **Event 3: I/O 06A1A3S15 – OPEN**, 24B to 22B Tie Breaker, A204, opens causing a loss of Non-Vital Bus 22B. **Immediately after entering the seismic event malfunction, call the Control Room and report significant vibration in the Turbine Building lasting several seconds.** **TM3, AE3**	Crew: Observes numerous component high vibration annunciators and receives a report of a seismic event. Seismic Event annunciator and white flag on event recorder. BOP: Observes and reports numerous annunciators and indications associated with the loss of Non-Vital Bus 22B.
	If requested, report that loose parts monitor is normal, i.e., no abnormal readings or alarms. If requested, report accelerometer reading is 0.03g ZPA. When asked, report NO damage indicated anywhere after initial inpsection. When dispatched, report that tie breaker A204 is open with NO target drops. All other conditions are normal.	US: • Enters AOP 2562, Earthquake. • Queries the RO and BOP on Plant conditions. • Dispatches PEOs to determine any plant damage. • References ARP 2590F-065, 480B BUS 22A/B/C/D VOLTS LO, and enters AOP 2503B, Loss of Non-Vital 480 VAC Bus 22B. • Directs BOP to place equipment in service requires to support plant operation. • Directs BOP to ensure a fault is NOT indicated on Bus 22B. • Directs a PEO to determine the cause of the breaker trip. • Directs BOP to perform applicable steps to cross-tie Bus 22B with 22A. • Requests assistance form Maintenance Department.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	If dispatched, report that 22A-1T-2 Ammeter Phase B (Ammeter above B0111 cubicle) is reading 850 amps.	BOP: • From available indications, determines that Bus 22B does NOT have a fault. • Checks Bus 22A voltage between 435 and 525 Volts. • Ensures the following breakers are open: o A204, 24B/22B Feeder Breaker (24B4-2) o B0209, 22B Supply breaker (24B4-1X3-2) o B0111, 22A/22B Tie Breaker (22A-1T-2) • Places (or requests RO to place) Group 1 and Group 2 Pressurizer Backup Heaters in Pull-To-Lock. • Places Sync Selector Switch, 22A/22B in CL TIE/TRIP B. • Closes B0111, 22A/22B Tie Breaker (22A-1T-2) • Places Sync Selector Switch, 22A/22B in OFF. • Checks Bus 22B voltage between 435 and 525 volts. • Checks current on Bus 22A is less than 1,800 amps. • 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. • When (If) directed, Caution Tag Group 1 and Group 2 Pressurizer Backup Heaters.

SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. INITIAL CONDITIONS: • IC-10 • Mode: 1 • Burnup:EOL • Power: 99.8% • Boron: (CB):1204 ppm • Temperature: Tave 569 F • Pressure: 2250 psia • Xenon: Stable, at equilibrium • Rods: ARO • Generator: 892 Mwe	ENTER or VERIFY the Initial Malfunctions / I/Os / Remote Functions. Ensure TDAFP is tagged out.	N/A
2. **SIMULATOR SETUP:** As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.	COMPLETE Simulator Setup Checklist	N/A
3. **PRE-SCENARIO:** BRIEF the crew on purpose of this session		
4. **TURNOVER:** 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. Observe degraded performance of "A" Service Water Pump and swap to "B" Service Water Pump.		***Technical Specification***
	Event 1: SW09A – Ramp to 100% over 240 seconds, "A" Service Water Strainer clogs. **TM1, AE1**	BOP: Observes and reports indications associated with degrading flow on "A" Service Water header. • Observes and reports SW PUMP A STNR TROUBLE annunciator on C-06/7

	When dispatched to determine the cause of the low "A" Service Water Header flow, report that the "A" Service Water Strainer D/P is pegged high. The strainer motor is rotating, but the strainer is NOT rotating.
	When directed, report that Sodium Hypochlorite is secured to the "A" Service Water Pump.
		US:
		• Refers to ARP 2590E-028 (BB-4 on C-06/7)
		  o 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)
		• Determines that "A" Service Water Header flow is lowering.
		• Dispatches a PEO to the Intake Structure to determine the cause:
		  o Directs PEO to observe and report strainer status (i.e., rotating, Blowdown Valve open, D/P, etc.)
		  o Directs PEO to stop Sodium Hypochlorite to the "A" Service Water Pump.
		• Enters TSAS 3.7.4.1 *(and TRM 7.1.2.1.a)* and exits when appropriate
		• Refers to OP 2326A (or from memory to stabilize the plant) and directs the BOP to Start "B" Service Water Pump on Facility 1 and secure "A" Service Water Pump.
		• *May enter AOP 2565, Loss of Service Water*
		• Makes notifications for assistance.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	When requested, report that Sodium Hypochlorite is secured to the "A" Service Water Pump. Report that "B" SW Pump is operating properly. **Event 7:** When directed to vent the "B" SW Pump Strainer, insert an **I/O for SW PUMP B STNR TROUBLE, CA-4 on C-06/7.** Allow the I/O to remain in for 2 minutes, then delete the I/O. **Event 11:** When directed, **insert Remote Function SWR31 in NORM**, to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position. Report when each directed action is complete.	BOP: • Per OP 2326A, Service Water System, Section 4.6, verifies that the "B" Service Water Pump is properly aligned to Facility 1: o Bus 24E is being supplied by Bus 24C o "B" SW Pump is in Pull-To-Lock o A502, "B" SW Pump breaker is racked up. o SW-97B, Dis X-Tie, is closed. o SW-97A, Dis X-Tie, is open. o HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, is in BLOCK. • Directs a PEO to secure Sodium Hypochlorite to the "B" SW Pump. • Verifies US has entered TSAS 3.7.4.1. • Places "S" Service Water Pump in Pull-To-Lock. • Starts "B" Service Water Pump. • Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator alarms. • Stops "A" SW Pump. • Observes proper operation of "B" SW Pump (also directs PEO) • Directs PEO to vent the "B" SW Pump Strainer. • Places "A" SW Pump in Pull-To-Lock. • Directs a PEO to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position. • Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator is clear. • Informs US to exit TSAS 3.7.4.1. • *If AOP 2565 is used, actions are similar.*

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	If dispatched, report that 22A-1T-2 Ammeter Phase B (Ammeter above B0111 cubicle) is reading 850 amps.	BOP: • From available indications, determines that Bus 22B does NOT have a fault. • Checks Bus 22A voltage between 435 and 525 Volts. • Ensures the following breakers are open: o A204, 24B/22B Feeder Breaker (24B4-2) o B0209, 22B Supply breaker (24B4-1X3-2) o B0111, 22A/22B Tie Breaker (22A-1T-2) • Places (or requests RO to place) Group 1 and Group 2 Pressurizer Backup Heaters in Pull-To-Lock. • Places Sync Selector Switch, 22A/22B in CL TIE/TRIP B. • Closes B0111, 22A/22B Tie Breaker (22A-1T-2) • Places Sync Selector Switch, 22A/22B in OFF. • Checks Bus 22B voltage between 435 and 525 volts. • Checks current on Bus 22A is less than 1,800 amps. • 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. • When (If) directed, Caution Tag Group 1 and Group 2 Pressurizer Backup Heaters.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
4. Unisolable RCS Leak Develops.	***Insert Event 4, Unisolable RCS Leak, when buses are cross-tied and PZR Heaters are placed in Pull-To-Lock.***	***Technical Specification***
	Event 4: RC04 – 14 gpm with a Ramp Time of 90 seconds and a 120 second delay; 14 gpm RCS leak. **TM4, AE4**	RO/BOP: Observes and reports: • Charging and Letdown flow mismatch • PPC Sump leak rate alarm • RCS Leak Rate Rising annunciator on C-06/7 • Containment Sump level rising
		US: • Enter AOP 2568, Reactor Coolant System Leak. • Queries the RO and BOP on Plant conditions. • Determines that RCS leakage exceeds 10 gpm and enters TSAS 3.4.6.2. • Determines that leak does NOT exceed the capacity of the Charging system. (Reactor trip is NOT required) • When Containment Sump level reaches 100%, logs into TSAS 3.3.3.8 and 3.4.6.1.
		RO: When requested, reports the status of: • Pressurizer level • Pressurizer pressure • RCS leak rate

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
5. Rapid Downpower due to RCS leak.		***Reactivity Manipulation***
Initial Classification: **Unusual Event, Delta-One**		US: • Directs to RO and BOP to attempt to determine the location of the RCS leak. • Enters AOP 2575, Rapid Downpower o Performs Focus Brief on Trip Criteria and RCS Temperature Control. o *Requests SM/STA to make required notifications. (**Unusual Event, Delta-One**)* o Directs RO to initiate forcing sprays and to insert Group 7 CEAs 10 steps (while maintaining Reactivity oversight). o Determines that Reactivity Plan RE-G-13, 14, or 15 should be used. o Directs RO and BOP to coordinate a rapid downpower.
		RO: • Initiates Forcing Sprays: o Closes all Backup Heater Breakers o Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia). • Inserts Group 7 CEAs to 170 steps and observes applicable parameters. • Initiates Boration from the RWST: o Ensures at least one Charging Pump is operating. o Ensures CH-196, VCT Makeup Bypass, is closed. o Ensures CH-504, RWST to Charging Suction, is open. o Opens CH-192, RWST Isolation.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	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.	o Closes CH-501, VCT Outlet. o Starts a second Charging Pump. • *If Boration is from the BAST:* o *Ensures the Makeup Flow Selector switch is in the DILUTE position.* o *Ensues FC-210X, Primary Makeup Water Flow controller, is set to "0".* o *Ensures CH-512, Makeup Valves Stop, is closed.* o *Ensures CH-196, VCT Makeup Bypass, is closed.* o *EnsuresCH-192, RWST Isolation, is closed.* o *Ensures FC-210Y,Boric Acid Flow controller, is set to the predetermined flow rate.* o *Opens CH-504, RWST to Charging Suction.* o *Place Makeup Mode Sel switch in MAN.* o *Starts the selected Boric Acid and verifies discharge pressure is greater than 98 psig.* o *Opens CH 196, VCT Makeup Bypass.* o *As required, refers to attachment and performs actions to maintain VCT level in the desired band.*
		BOP: Reduces Turbine load to follow Reactor power to maintain Tc on program using the Load Limit Pot.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
6. RCS leak rapidly degrades to a small Break LOCA and a failure of the Reactor to automatically or manually trip.	***Insert Event 5, RCS Leak degrades to a SBLOCA, when power has been reduced to 95%.***	
	Event 5: RC04 – 175 gpm with a ramp time of 270 seconds, Small break LOCA (175 gpm) requiring a Reactor trip. **RP04A, B, C and D – FAIL**; Failure of all Reactor Trip push buttons. (Assigned to Event 3) **RP27B – FAIL**. Failure of all RPS Channels to process a Reactor trip. (Assigned to Event 3) **The loss of Actuation Cabinet 6 must be entered immediately after the Reactor trip and before SIAS is manually or automatically actuated.** **Event 6: ES04F – Deenergize**, Actuation Cabinet 6 deenergizes. **TM5, MA1**	RO: • Observes lowering Pressurizer level and pressure which exceeds Charging capacity and informs the US. • Starts 3rd Charging Pump.

CT-1 (SPTA-5) Manually Shutdown the reactor.
The reactor must be manually tripped using the CEDM output breakers immediately (within 1 minute) when any automatic trip fails and/or the manual trip push buttons do NOT work.
		US:
		Directs the crew to manually trip the Reactor and perform EOP 2525, Standard Post Trip Actions.
		Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525:
		• Reactivity Control (RO)
		  o Status of the Reactor
		• Maintenance of Vital Auxiliaries (BOP)
		  o Status of the Turbine
		  o Status of Electrical Buses
		  o Status of SW & RBCCW
		  o Check one facility of CRAC operating (RO)

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		• RCS Inventory Control (RO) o Pzr level & Subcooled margin (SCM), value & trend • RCS Pressure Control (RO) o Pzr pressure, value & trend • Core Heat Removal (RO) o RCP status o Loop delta-T o T_H Subcooling Margin • RCS Heat Removal (BOP) o S/G pressures, value and trend o RCS T_C value and trend o S/G levels, value and trend o RCS Subcooling Margin • Containment (CTMT) Isolation (RO) o Rad monitors inside CTMT, outside CTMT, steam plant o CTMT pressure <1 psig • CTMT Temperature & Pressure Control (RO) • CTMT temperature and pressure value and trend.
		<u>RO:</u> • Presses all four Reactor Trip push buttons on C-04 and immediately realizes the Reactor did NOT trip. • Opens both CEDM MG feeder breakers. • Reactor has tripped, power is lowering, SUR is negative, all CEAs are inserted.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: Perform associated actions of EOP 2525 and report results when queried: • Turbine tripped, stop valves are closed, 8T & 9T are open, Megawatts are zero • All electrical buses energized • Two Facilities of SW and RBCCW operating
		RO: Performs associated actions of EOP 2525 and report results when queried: • Control Room Air Conditioning Status • Pressurizer level value and trend • Pressurizer pressure value and trend o PORVs and Spray Valves are closed o When RCS pressure is less than 1750 psia, then SIAS, CIAS, and EBFAS have actuated on Facility 1 only. o After SIAS actuates, one RCP in each loop is secured. o If Pressurizer pressure lowers to minimum NPSH, then all RCPs are secured. • Observes and reports numerous annunciators associated with ESAS on C-01. • Number of RCPs operating o Value and trend of loop Delta-T o Value and trend of subcooling • If no RCPs operating, T_{AVG} controller,TIC-4165 in manual/closed

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: Performs associated actions of EOP 2525 and reports results when queried: • Value and trend of S/G pressures • Value and trend of T_C • Value and trend of S/G levels • Subcooling value / CET temperature
		RO: Continues with associated actions of EOP 2525 and reports results when queried: • Reports Rad Monitors inside CTMT not going up or in alarm • Reports Rad Monitors outside CTMT not going up or in alarm • Reports Steam Plant Rad Monitors not in alarm or going up • Reports Value and trend of CTMT temperature and pressure. • Starts Containment Aux Recirc Fans and PIR Fans.

SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. INITIAL CONDITIONS: • IC-10 • Mode: 1 • Burnup:EOL • Power: 99.8% • Boron: (CB):1204 ppm • Temperature: Tave 569 F • Pressure: 2250 psia • Xenon: Stable, at equilibrium • Rods: ARO • Generator: 892 Mwe	ENTER or VERIFY the Initial Malfunctions / I/Os / Remote Functions. Ensure TDAFP is tagged out.	N/A
2. **SIMULATOR SETUP:** As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.	COMPLETE Simulator Setup Checklist	N/A
3. **PRE-SCENARIO:** BRIEF the crew on purpose of this session		
4. **TURNOVER:** 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.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. Observe degraded performance of "A" Service Water Pump and swap to "B" Service Water Pump.		***Technical Specification***
	Event 1: SW09A – Ramp to 100% over 240 seconds, "A" Service Water Strainer clogs. **TM1, AE1**	BOP: Observes and reports indications associated with degrading flow on "A" Service Water header. • Observes and reports SW PUMP A STNR TROUBLE annunciator on C-06/7

	When dispatched to determine the cause of the low "A" Service Water Header flow, report that the "A" Service Water Strainer D/P is pegged high. The strainer motor is rotating, but the strainer is NOT rotating.
	When directed, report that Sodium Hypochlorite is secured to the "A" Service Water Pump.
		US:
		• Refers to ARP 2590E-028 (BB-4 on C-06/7)
		  o 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)
		• Determines that "A" Service Water Header flow is lowering.
		• Dispatches a PEO to the Intake Structure to determine the cause:
		  o Directs PEO to observe and report strainer status (i.e., rotating, Blowdown Valve open, D/P, etc.)
		  o Directs PEO to stop Sodium Hypochlorite to the "A" Service Water Pump.
		• Enters TSAS 3.7.4.1 *(and TRM 7.1.2.1.a)* and exits when appropriate
		• Refers to OP 2326A (or from memory to stabilize the plant) and directs the BOP to Start "B" Service Water Pump on Facility 1 and secure "A" Service Water Pump.
		• *May enter AOP 2565, Loss of Service Water*
		• Makes notifications for assistance.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	When requested, report that Sodium Hypochlorite is secured to the "A" Service Water Pump. Report that "B" SW Pump is operating properly. **Event 7:** When directed to vent the "B" SW Pump Strainer, insert an **I/O for SW PUMP B STNR TROUBLE, CA-4 on C-06/7.** Allow the I/O to remain in for 2 minutes, then delete the I/O. **Event 11:** When directed, **insert Remote Function SWR31 in NORM**, to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position. Report when each directed action is complete.	BOP: • Per OP 2326A, Service Water System, Section 4.6, verifies that the "B" Service Water Pump is properly aligned to Facility 1: o Bus 24E is being supplied by Bus 24C o "B" SW Pump is in Pull-To-Lock o A502, "B" SW Pump breaker is racked up. o SW-97B, Dis X-Tie, is closed. o SW-97A, Dis X-Tie, is open. o HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, is in BLOCK. • Directs a PEO to secure Sodium Hypochlorite to the "B" SW Pump. • Verifies US has entered TSAS 3.7.4.1. • Places "S" Service Water Pump in Pull-To-Lock. • Starts "B" Service Water Pump. • Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator alarms. • Stops "A" SW Pump. • Observes proper operation of "B" SW Pump (also directs PEO) • Directs PEO to vent the "B" SW Pump Strainer. • Places "A" SW Pump in Pull-To-Lock. • Directs a PEO to place HS-6484A (on A502), SIAS/LNP Actuation Signal Hand Switch, in the NORMAL position. • Checks SW Pump B SIAS/LNP Start Manually Blocked annunciator is clear. • Informs US to exit TSAS 3.7.4.1. • *If AOP 2565 is used, actions are similar.*

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
2. Failure of Channel Y Pressurizer Pressure Transmitter.	***Insert Event 2, Failure of Channel Y Pressurizer Pressure Transmitter, when the SIAS/LNP annunciator clears.***	
	Event 2: RX03B –1500 Channel Y Pressurizer Pressure transmitter fails low. **TM2, AE2**	RO: • Observes RCS pressure rising. • Observes Pressurizer Pressure Deviation Hi/Lo annunciator. • Reports rising Pressurizer pressure to the US.
		US: • 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) • Makes notifications for assistance and troubleshooting. • Refers to (does NOT enter) TSAS 3.2.6, 3.3.3.5, and 3.3.3.8. (Only one channel is required to be OPERABLE.)
		RO: • Observes all Pressurizer pressure channels and determines that Channel Y is failed. • When directed, shifts Pressure control to Channel X. • Verifies proper operation of Pressurizer pressure control system.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
3. Seismic Event Resulting in a Loss of Non-Vital 480 Volt Bus 22B.	*Insert **Event 3, Seismic Event Resulting in a Loss of Non-Vital 480 Volt Bus 22B**, when Pressurizer pressure control has been swapped to Channel X and RCS pressure is stable.*	
	Event 3: CH07 – Insert, Seismic event. **Event 3: I/O 06A1A3S15 – OPEN**, 24B to 22B Tie Breaker, A204, opens causing a loss of Non-Vital Bus 22B. **Immediately after entering the seismic event malfunction, call the Control Room and report significant vibration in the Turbine Building lasting several seconds.** **TM3, AE3**	Crew: Observes numerous component high vibration annunciators and receives a report of a seismic event. Seismic Event annunciator and white flag on event recorder. BOP: Observes and reports numerous annunciators and indications associated with the loss of Non-Vital Bus 22B.
	If requested, report that loose parts monitor is normal, i.e., no abnormal readings or alarms. If requested, report accelerometer reading is 0.03g ZPA. When asked, report NO damage indicated anywhere after initial inpsection. When dispatched, report that tie breaker A204 is open with NO target drops. All other conditions are normal.	US: • Enters AOP 2562, Earthquake. • Queries the RO and BOP on Plant conditions. • Dispatches PEOs to determine any plant damage. • References ARP 2590F-065, 480B BUS 22A/B/C/D VOLTS LO, and enters AOP 2503B, Loss of Non-Vital 480 VAC Bus 22B. • Directs BOP to place equipment in service requires to support plant operation. • Directs BOP to ensure a fault is NOT indicated on Bus 22B. • Directs a PEO to determine the cause of the breaker trip. • Directs BOP to perform applicable steps to cross-tie Bus 22B with 22A. • Requests assistance form Maintenance Department.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	If dispatched, report that 22A-1T-2 Ammeter Phase B (Ammeter above B0111 cubicle) is reading 850 amps.	BOP: • From available indications, determines that Bus 22B does NOT have a fault. • Checks Bus 22A voltage between 435 and 525 Volts. • Ensures the following breakers are open: o A204, 24B/22B Feeder Breaker (24B4-2) o B0209, 22B Supply breaker (24B4-1X3-2) o B0111, 22A/22B Tie Breaker (22A-1T-2) • Places (or requests RO to place) Group 1 and Group 2 Pressurizer Backup Heaters in Pull-To-Lock. • Places Sync Selector Switch, 22A/22B in CL TIE/TRIP B. • Closes B0111, 22A/22B Tie Breaker (22A-1T-2) • Places Sync Selector Switch, 22A/22B in OFF. • Checks Bus 22B voltage between 435 and 525 volts. • Checks current on Bus 22A is less than 1,800 amps. • 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. • When (If) directed, Caution Tag Group 1 and Group 2 Pressurizer Backup Heaters.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
4. Unisolable RCS Leak Develops.	***Insert Event 4, Unisolable RCS Leak, when buses are cross-tied and PZR Heaters are placed in Pull-To-Lock.***	***Technical Specification***
	Event 4: RC04 – 14 gpm with a Ramp Time of 90 seconds and a 120 second delay; 14 gpm RCS leak. **TM4, AE4**	RO/BOP: Observes and reports: • Charging and Letdown flow mismatch • PPC Sump leak rate alarm • RCS Leak Rate Rising annunciator on C-06/7 • Containment Sump level rising
		US: • Enter AOP 2568, Reactor Coolant System Leak. • Queries the RO and BOP on Plant conditions. • Determines that RCS leakage exceeds 10 gpm and enters TSAS 3.4.6.2. • Determines that leak does NOT exceed the capacity of the Charging system. (Reactor trip is NOT required) • When Containment Sump level reaches 100%, logs into TSAS 3.3.3.8 and 3.4.6.1.
		RO: When requested, reports the status of: • Pressurizer level • Pressurizer pressure • RCS leak rate

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
5. Rapid Downpower due to RCS leak.		***Reactivity Manipulation***
Initial Classification: **Unusual Event, Delta-One**		US: • Directs to RO and BOP to attempt to determine the location of the RCS leak. • Enters AOP 2575, Rapid Downpower o Performs Focus Brief on Trip Criteria and RCS Temperature Control. o *Requests SM/STA to make required notifications. (**Unusual Event, Delta-One**)* o Directs RO to initiate forcing sprays and to insert Group 7 CEAs 10 steps (while maintaining Reactivity oversight). o Determines that Reactivity Plan RE-G-13, 14, or 15 should be used. o Directs RO and BOP to coordinate a rapid downpower.
		RO: • Initiates Forcing Sprays: o Closes all Backup Heater Breakers o Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia). • Inserts Group 7 CEAs to 170 steps and observes applicable parameters. • Initiates Boration from the RWST: o Ensures at least one Charging Pump is operating. o Ensures CH-196, VCT Makeup Bypass, is closed. o Ensures CH-504, RWST to Charging Suction, is open. o Opens CH-192, RWST Isolation.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	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.	o Closes CH-501, VCT Outlet. o Starts a second Charging Pump. • *If Boration is from the BAST:* o *Ensures the Makeup Flow Selector switch is in the DILUTE position.* o *Ensues FC-210X, Primary Makeup Water Flow controller, is set to "0".* o *Ensures CH-512, Makeup Valves Stop, is closed.* o *Ensures CH-196, VCT Makeup Bypass, is closed.* o *EnsuresCH-192, RWST Isolation, is closed.* o *Ensures FC-210Y,Boric Acid Flow controller, is set to the predetermined flow rate.* o *Opens CH-504, RWST to Charging Suction.* o *Place Makeup Mode Sel switch in MAN.* o *Starts the selected Boric Acid and verifies discharge pressure is greater than 98 psig.* o *Opens CH 196, VCT Makeup Bypass.* o *As required, refers to attachment and performs actions to maintain VCT level in the desired band.*
		BOP: Reduces Turbine load to follow Reactor power to maintain Tc on program using the Load Limit Pot.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
6. RCS leak rapidly degrades to a small Break LOCA and a failure of the Reactor to automatically or manually trip.	***Insert Event 5, RCS Leak degrades to a SBLOCA, when power has been reduced to 95%.***	
	Event 5: RC04 – 175 gpm with a ramp time of 270 seconds, Small break LOCA (175 gpm) requiring a Reactor trip. **RP04A, B, C and D – FAIL**; Failure of all Reactor Trip push buttons. (Assigned to Event 3) **RP27B – FAIL**. Failure of all RPS Channels to process a Reactor trip. (Assigned to Event 3) **The loss of Actuation Cabinet 6 must be entered immediately after the Reactor trip and before SIAS is manually or automatically actuated.** **Event 6: ES04F – Deenergize**, Actuation Cabinet 6 deenergizes. **TM5, MA1**	RO: • Observes lowering Pressurizer level and pressure which exceeds Charging capacity and informs the US. • Starts 3rd Charging Pump.

CT-1 (SPTA-5) Manually Shutdown the reactor.
The reactor must be manually tripped using the CEDM output breakers immediately (within 1 minute) when any automatic trip fails and/or the manual trip push buttons do NOT work.
		US:
		Directs the crew to manually trip the Reactor and perform EOP 2525, Standard Post Trip Actions.
		Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525:
		• Reactivity Control (RO)
		  o Status of the Reactor
		• Maintenance of Vital Auxiliaries (BOP)
		  o Status of the Turbine
		  o Status of Electrical Buses
		  o Status of SW & RBCCW
		  o Check one facility of CRAC operating (RO)

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		• RCS Inventory Control (RO) o Pzr level & Subcooled margin (SCM), value & trend • RCS Pressure Control (RO) o Pzr pressure, value & trend • Core Heat Removal (RO) o RCP status o Loop delta-T o T_H Subcooling Margin • RCS Heat Removal (BOP) o S/G pressures, value and trend o RCS T_C value and trend o S/G levels, value and trend o RCS Subcooling Margin • Containment (CTMT) Isolation (RO) o Rad monitors inside CTMT, outside CTMT, steam plant o CTMT pressure <1 psig • CTMT Temperature & Pressure Control (RO) • CTMT temperature and pressure value and trend.
		<u>RO:</u> • Presses all four Reactor Trip push buttons on C-04 and immediately realizes the Reactor did NOT trip. • Opens both CEDM MG feeder breakers. • Reactor has tripped, power is lowering, SUR is negative, all CEAs are inserted.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: Perform associated actions of EOP 2525 and report results when queried: • Turbine tripped, stop valves are closed, 8T & 9T are open, Megawatts are zero • All electrical buses energized • Two Facilities of SW and RBCCW operating
		RO: Performs associated actions of EOP 2525 and report results when queried: • Control Room Air Conditioning Status • Pressurizer level value and trend • Pressurizer pressure value and trend o PORVs and Spray Valves are closed o When RCS pressure is less than 1750 psia, then SIAS, CIAS, and EBFAS have actuated on Facility 1 only. o After SIAS actuates, one RCP in each loop is secured. o If Pressurizer pressure lowers to minimum NPSH, then all RCPs are secured. • Observes and reports numerous annunciators associated with ESAS on C-01. • Number of RCPs operating o Value and trend of loop Delta-T o Value and trend of subcooling • If no RCPs operating, T_{AVG} controller,TIC-4165 in manual/closed

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		BOP: Performs associated actions of EOP 2525 and reports results when queried: • Value and trend of S/G pressures • Value and trend of T_C • Value and trend of S/G levels • Subcooling value / CET temperature
		RO: Continues with associated actions of EOP 2525 and reports results when queried: • Reports Rad Monitors inside CTMT not going up or in alarm • Reports Rad Monitors outside CTMT not going up or in alarm • Reports Steam Plant Rad Monitors not in alarm or going up • Reports Value and trend of CTMT temperature and pressure. • Starts Containment Aux Recirc Fans and PIR Fans.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**

		BOP:
		Continue with Subsequent Actions:
		• Opens HD-106, Subcooling Valve
		• Stops both Heater Drains Pumps
		• Secures all but one Condensate Pump
		• Secures one Main Feed Pump
		  o Closes FW-42A and B, Main Feed Block Valves
		  o Ensure both Main Feed Reg Bypass Valves are throttled to 40%
		  o Closes FW-38A or B, associated Main Feed Pump Discharge Valve
		• Checks IA Header pressure is >90 psig and stable.

		US: Query RO & BOP regarding the status of EOP 2525 subsequent actions.
		RO/BOP: When asked, report that Subsequent Actions are complete and verified.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
7. Excess Steam Demand in Containment on #2 Steam Generator	***Insert Event 7, Excess Steam Demand in Containment on #2 Steam Generator, when the Master Silence Switch is returned to NORM (in EOP 2532 or at Examiner discretion).***	
Classification: **Alert, Charlie-1 based on Barrier Failure, BA1**	**Event 7: MS01B – 0.475 million lbm/hr ramped in over 240 seconds**, Excess Steam Demand on #2 S/G (0.475 #m/hr). **TM6, MA2, EM1**	US: • 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. • Places Master Silence Switch in NORM. • Notes the need for the SM to complete EPI-FAP06-002, classify the event as an **Alert, Charlie-1,** and make appropriate notifications.
CSAS will actuate shortly after the steam line break is inserted. **The 30 minute clock for Critical Task #3 starts when MSI is actuated and stops when Auxiliary Feed flow to #2 S/G is isolated.**		BOP: Observes and reports Lowering S/G pressures, S/G levels, RCS temperature, and other parameters associated with an Excess Steam Demand event.
	EU1, EC1	US: • Acknowledges reports(s) and enters Diagnostic Flow Chart, then enters EOP 2540 Functional Recovery due to more than one major event. • Opens the Safety Function Tracking Page and enter EOP entry time. • Returns alarms silence to normal

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SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
		US: • Directs placing H_2 analyzers in service. • Identifies Success Paths to be used.
		US: Identifies Success Paths to be used.
Note: **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	4
DC-1	DC Power	Yes	5
AC-1	RSST	Yes	6
IC-2	SI	Yes	2
PC-1	Subcooled	Yes	7
HR-2	SI Operating	Yes	3
CI-1	Isolated	Yes	8
CTPC-3	CARs [Emerg.]	Yes	1

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	EC2	US: Identifies CTPC-3, CARs (Emerg.), as the first priority and enters EOP 2540F, Containment Temperature and Pressure Control.
		RO: • If PZR press. < 1714 psia, ensures: o Only 1 RCP/loop running o Secured RCP Spray vlv. closed • If RCP NPSH lost, ensure: o All RCPs are secured o TIC-4165 in manual and closed o Both PZR spray valves are in manual and closed.
		BOP: Directs Chemistry to obtain samples of both SGs, frisk the samples, report frisk results, and analyze the samples for activity and Boron.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
8. Failure of "A" Containment Spray Pump to Start on CSAS.		
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.	**RH06A, TRIP**, Failure of "A" CS Pump to start on CSAS. (Initial Conditions) **TM7, EM2**	RO: Observes and reports actuation of Facility 1 CSAS. "A" Containment Spray Pump failed to start. "B" Containment Spray Pump failed to automatically start due to Actuation Cabinet 6 failure. No Containment Spray is operating.
		US: • Directs RO to start either "A" or "B" Containment Spray Pump. • Determines that the Safety Function Status Checks for CTPC-3 are NOT met until either Containment Spray Pump is in operation with adequate flow.
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.**	**CT1**	RO: Starts "A" or "B" Containment Spray Pump and verifies the associated Containment Spray header flow is greater than or equal to 1300 gpm.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
Performed earlier as a Critical Task.		RO: • Ensures all four CAR Coolers are operating in slow speed with adequate RBCCW flow. • Ensure CSAS has actuated with at least one Containment Spray Header flow greater than 1300 gpm. • Ensures both Containment Aux Recirc Fans are operating. • Ensures both PIR Fans are operating. • Reviews Containment Spray termination criteria. • Verifies CTPC-3 Acceptance Criteria are satisfied: o At least two CAR Fans running in slow speed. o At least one Containment Spray header is delivering at least 1300 gpm. o Containment pressure is less than 51 psig.
		US: Identifies IC-2, SI, as the next Safety Function priority and enters EOP 2540C1, Functional Recovery of RCS Inventory Control.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**

	When dispatched, report that the SI Room Sump Pump breakers are open and there is no leakage.	RO:
		• Ensures SIAS, CIAS, and EBFAS have properly actuated.
		• Checks Safety Injection flow meets the SI Flow Curve.
		  o Determines that RCS pressure is NOT preventing adequate SI flow.
		• Ensures both facilities of RBCCW and Service Water are in service.
		• Performs actions to conserve RCS Inventory. (Isolates various non-essential components.)
		• Reviews HPSI throttle/stop criteria and determines that HPSI cannot be throttled or stopped.
		• Reviews LPSI stop criteria and determines that LPSI may be stopped.
		• Requests assistance for filling the RWST.
		• Observes Containment Sump level is rising.
		• Determines that SI/CS Pump Minflow valves, SI-651 and 652, must be placed in OPER when RWST level lowers to 20%.
		• Determines that SRAS must be initiated when RWST level lowers to less than 9%.
		• Reviews SRAS supplemental actions.
		• Reviews HPSI Pump post SRAS performance criteria.
		• Dispatches a PEO to open SI Room Sump Pump Breakers and monitor for leakage.
		• Verifies that IC-2 Acceptance Criteria are met:
		  o HPSI flow is within the SI Flow Curve.
		  o Vessel level is >7%.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	EU2	US: • Continues to assess Safety Functions up to and including EOP 2540D, Functional Recovery of RCS Heat Removal. • Directs RO and BOP to: o Ensure at least one complete facility of SIAS, CIAS, EBFAS, MSI, and CSAS have actuated. o Ensure one complete facility of CRAC is operating in RECIRC. o Verify single phase Safety Injection flow is adequate. o Verify subcooling. o Align Condenser Air Removal. • Determines SGTR did NOT occur. • Determines ESD did occur and that #2 S/G is the most affected. • Directs BOP to perform actions of Appendix 11, ESDE Response.
		RO: Ensures MSI has actuated and at least one train of MSI components are in their accident condition (on C-01X).

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
CT3 (ESDE-6): AFW to the faulted (#2) SG is isolated within ≤ 30 minutes of MSI actuation on an ESDE. (Per OP 2260. Step 15 of EOP 2540D requires the affected S/G to be isolated)	**CT2**	BOP: Isolates #2 S/G using Appendix 11, ESDE Response: • Ensues MS-64B, #2 MSIV, is closed. • Ensures MS-65B, #2 MSIV Bypass, is closed. • Ensures #2 ADV controller is in Manual and closed. • Places ADV Quick Open Permissive switch in OFF. • Closes FW-41B, #2 Main Feed Reg Valve Bypass Valve. • Ensures FW-42B, #2 Main Feed Block Valve, is closed. • Places FW-5B, Main Feed Air Assist Check Valve switch in CLOSE. • Dispatches a PEO to unlock and close Disconnect for MS-202, #2 Main Steam Supply to the TDAFP. (Valve is already closed and tagged)) • Ensures MS-220B, #2 S/G Blowdown Isolation, is closed. • Ensures both Aux Feed OVERRIDE/MAN/START/RESET hand switches are in Pull-To-Lock. • Closes FW-43B, #2 Aux Feed Reg Valve. • Places hand switch for FW-12B, #2 Aux Feed Air Assist Check Valve, in CLOSE. • Ensures MS-65B, #2 Main Steam Leg Low Point Drain, is closed. • Ensures Main Steam Safety Valves are closed.

SEG# ES11LI2 Rev ; 0

SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
SCENARIO END: When #2 S/G is isolated or at the discretion of the lead evaluator, direct the simulator to be placed in FREEZE. Classification: **Alert, Charlie-One based on Barrier Failure, BA1**	When directed, inform the crew that the scenario is complete and place the simulator in FREEZE.	US Classify the event as an **Alert, Charlie-One based on Barrier Failure, BA1 or BA2.**

INPUT SUMMARY

Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
MALFUNCTIONS						
RP04A, Failure of #1 Reactor Trip Push Button	NA	NA	3	NA	NA	9
RP04B, Failure of #2 Reactor Trip Push Button	NA	NA	3	NA	NA	9
RP04C, Failure of #3 Reactor Trip Push Button	NA	NA	3	NA	NA	9
RP04D, Failure of #4 Reactor Trip Push Button	NA	NA	3	NA	NA	9
RP27B, Automatic RPS Trip Failure (ATWS)	NA	NA	3	NA	NA	9
RH06A, Failure of "A" CS Pump to start.	NA	NA	NA	NA	NA	12
SW09A, "A" SW Pump Strainer plugs.	NA	240 sec.	1	100%	100%	1
RX03B, Channel Y Pressurizer Pressure transmitter fails low	NA	NA.	2	1500%	1500%	4
CH07, Seismic Event	NA	NA	3	NA	NA	5
RC04, 14 gpm RCS Leak.	120 sec.	90 sec.	4	14 gpm	14 gpm	7
RC04, Small Break LOCA (175 gpm)	NA	270 sec.	5	175	175	8
ES04F, Actuation Cabinet 6 Deenergizes.	NA	NA	6	NA	NA	10
MS01B, ESD on #2 S/G inside Containment	NA	240 sec.	7	0.475	0.475	11
REMOTE FUNCTIONS						
SWR31, Place HS-6484A in Normal.	NA	NA	11	NORM	NORM	2
OVERRIDES						
Annunciator CA-4 on C-06/7, SW PUMP STNR TROUBLE	NA	NA	10	ON	OFF	3
06A1A3S15, 24B to 22B Tie Breaker opens causing a loss of Non-Vital Bus 22B	NA	NA	3	NA	NA	6

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.	☒	☐
2.	All malfunctions and other instructor interface items were functional and responded to support the simulator Scenario.	☒	☐
3.	All malfunctions and other instructor interface items were initiated in the same sequence described within the simulator scenario.	☒	☐
4.	All applicable acceptance criteria were met for procedures that were used to support the simulator scenario.	☒	☐
5.	During the simulator scenario, observed changes corresponded to expected plant response.	☒	☐
6.	Did the scenario satisfy the learning or examination objectives without any significant simulator performance issues, or deviations from the approved scenario sequence?	☒	☐
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.	☒	☐
8.	Any identified Critical Tasks possesses the following elements (NUREG-1021): • Essential to safety with adverse consequences or significant degradation, • Cue(s) prompt the Operator to respond. • Defined and measurable performance indicators. • Performance feedback. 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

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1		Rx Power:	100%
Megawatts:	Thermal:	2698 MWTH	PZR Pressure:	2250 psia
	Electric:	892 MWe	RCS T-AVE:	569 degF
RCS Leakage:	Identified:	0.015 gpm	Protected Train/Facility:	**TRAIN A**
	Unidentified:	0.036 gpm		
Date/Time:	Today 0015			

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

PLANT SYSTEMS APC

System	Notes
2322	TDAFP out of service for bearing replacement

CROSS UNIT SYSTEM STATUS

U3 Power to 24E	**34A aligned to 24E**

SURVEILLANCES / EVOLUTIONS IN PROGRESS

OP 2204	Steady State Operation
NA	TDAFP out of service for bearing replacement

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	ARO @ 180
Xenon Trend	Stable
Current Boron	1204 ppm
Boron Pot Setting / Blend Ratio	3.89 to 1 (corrected)

Facility: MP2 Scenario No.: ES11LI3 Op-Test No.: 3

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 46% power, BOL, Eq. Xe., 1338 ppm Boron SGBD @ 40 gpm per SG, 24E aligned to 24C, "A" Main Feed Water Pump in service.

Turnover: 45% power, BOL, Eq. Xe., 1338 ppm Boron, blend ratio: 3.4:1, SGBD @ 40 gpm per SG, 24E aligned to 24C, "A" Main Feed Water Pump in service, waiting for 'B' Main Feed Water Pump to come back from Maintenance, "A" EDG out for PMs, no other equipment OOS and no surveillance in progress or due.

Event No.	Malf. No.	Event Type*	Event Description
1	RM01O/ CH08C	I/C (RO/S)	CRAC Rad. Monitor failure, Filter Fan "A", F-32A, trips. (TS)
2	CW04C	C (BOP/S)	Main Condenser tube leak in the "C" water box.
3	RX04B	I (RO/S)	Ch. 'Y' PZR Level transmitter, LT-110Y (selected), failure.
4	FW23	C (BOP/S)	'A' Condensate Pump Motor Winding Temperature high.
5	N/A	R (All)	Main Feed Water Pump problem requiring plant shutdown.
6	ED05A	M (All)	Loss of bus 24C requiring a plant trip.
7	RC02B	M (All)	"B" RCP Seal Cooler rupture (Intersystem SB-LOCA)
8	SI04C	C (RO/S)	'C' HPSI Pump trip (loss of SI flow).
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

ES11LI3

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 "B" 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.

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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SITE:	**Millstone Power Station**	
PROGRAM:	**Unit 2 LOIT NRC Exam**	
Title	**Simulator Exam #3**	
COURSE:	**ES10LI3**	**Course #: NA**
Total Time	**1.5 hours**	

Prepared by:	Robert L. Cimmino, Jr.		09/13/11
	Printed Name	Instructor's Signature	Date
Reviewed by:			
(Optional)	Printed Name	Simulator Development Checklist Instructor Signature	Date
Reviewed by:			
(Optional)	Printed Name	Simulator Validation Checklist Signature	Date
Approved by:			
	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 AOP 2575, Rapid Downpower EOP 2525, Standard Post Trip Actions EOP 2532, Loss of Coolant Accident EOP 2541, Appendix 23-B, Energizing Bus 24C from the RSST EOP 2541, Appendix 23-N, Energizing Bus 24E from Unit 3 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

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OVERVIEW

INITIAL CONDITIONS:

- 46% power BOL.
- 24E aligned to 24C with "A" & "B" Condensate Pumps operating.
- Plant startup with "B" 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 "A" 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 "B" 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.

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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 (~46% 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 **(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:
  - **"A" and "C" Condensate Pumps running and "B" Condensate Pump in standby.**
  - **24E aligned to 24C.**
  - **"A" EDG OOS.**
  - **"A" Main Feedwater Pump OOS.**
- ❑ PERFORM final walk down of Control Panels to verify proper indications (e.g., lights, switches, magnetic labels).

SCENARIO TIME LINE

FLOOR INSTRUCTOR	BOOTH INSTRUCTOR	STUDENTS
1. INITIAL CONDITIONS: • IC-83 • Mode: 1 • Burnup: BOL • Power: 46% • Boron: (CB): ***1338*** ppm • Temperature: Tave ***563***°F • Pressure: 2250 psia • Xenon: Increasing • Rods: Gp 7 at ***165*** • Generator: ***405*** MWe	ENTER or VERIFY the following Initial Malfunctions / I/Os / Remote Functions: ❑ **Ensure 24E aligned to 24C.** ❑ **Ensure "A" & "C" Condensate Pumps are running and "B" is in standby.** ❑ **"A" Main Feedwater Pump tagged out.** ❑ **"A" EDG tagged out.** **EGR17 (RO) "A" EDG Bkr. tagged out.** **EGR12 (CLOSED) "A" EDG Air Start isol.**	N/A
2. **SIMULATOR SETUP:** ❑ As necessary, PERFORM I.V. of Initial Malfunctions / I/Os / Remote Functions entered.	COMPLETE Simulator Setup Checklist	N/A
3. **PRE-SCENARIO:** ❑ BRIEF the crew on purpose of this session and REVIEW objectives (if necessary). ❑ IF this is the first simulator scenario of the week, THEN REVIEW the Plant/Simulator Differences List with the crew.		Review Log keeping responsibilities per the Gold Standard Book, page 23 & 24.
4. **TURNOVER:** PERFORM the crew turnover (Turnover Sheet) with the SM. ❑ Provide crew with partially completed OP 2204 and brief on existing conditions.		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**
1. Facility 1 CRAC Shifts to Recirculation Mode With Loss of Fan F-32A	**Once the crew has the watch, and at the discretion of the Lead Examiner, initiate #1.**	***Tech Spec***
CRAC Facility 1 Radiation Monitor fails high, 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.	**Event 1: RM01O – 100%** RM-9799A fails high, causing "A" Train of CRAC to shift to "Recirc." mode.	RO: • Observe "C.R.A.C.S. IN AUTO RECIRC MODE" annunciator (C-40) on C01 and Facility 1 CRAC has shifted to recirc. mode. • Reports observation to US.
		US: • Enters ARP-2590A-159, Automatic Function: CRACS transfers to recirculation mode. • Directs the RO to verify Facility 1 operating as designed in recirculation mode.
	Event 1: CH08C – ON (5 second delay) **CHHS8006_1 (NG) (5 second delay)** F-32A green light out **CHHS8006_1 (NR) (5 second delay)** 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.	RO: Per ARP 2590A-159 1. Verifies Facility 1 CRAC has shifted to recirculation mode. 1. PLACE "NORM/RECIRC MODE, HS-8346" AND "NORM/RECIRC MODE, HS-8359" switches in "RECIR" (C-25A and C-25B). 2. Check damper positions. 3. Verify both Filter Fans running. Notes F-32A not running or tripped. • Reports observation to US.
	TM1, AE1	US: Per ARP 2590A-159 • Receive report of F-32A failure. • Direct RO to secure Fac. 1 CRAC and start Fac. 2 CRAC per OP-2315A, Control Room Air Conditioning System. • Enters **TSAS 3.7.6.1a**.; One train of CRAC inoperable.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: Per ARP 2590A-159 **5.** Per OP-2315A, shifts from Fac. 1 to Fac. 2 CRAC operating. **5.1.** VERIFY "CRACS SPLY FAN F21B, HS-8010" and "CRACS EXH FAN F31B, HS-8000" running (C-25B). **5.2.** CHECK "F-21B, EXH DMPR, HV-203B" and "F-31B, EXH DMPR, HV-206B" open (C-25B). **5.3.** VERIFY "CRACS SPLY FAN F21A, HS-8009" and "CRACS EXH FAN F31A, HS-8001" not running (C-25A). **5.4.** CHECK "F-21A, EXH DMPR, HV-203A" and "F-31A, EXH DMPR, HV-206A" closed (C-25A). **5.5.** CHECK "F-32B EXH DMPR, HV-212B," indicates open (red light lit) (C-25B). **9.** Verifies one complete train (Fac. 2) of CRAC operating.
The crew may attempt to return CRAC to "NORMAL" but will be unable to with the failed rad monitor.		US/RO: Per ARP 2590A-159 • Receives report; Fac. 2 CRAC in service. **12.** Notes probable failure of RM-9799A and enters **TSAS 3.3.3.1. Action 16**; Control Room Isolation Rad Monitor inoperable. • Makes required notifications for troubleshooting and repairs.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
2. Condenser Tube Leak (seawater) in the "C" Water Box.	**When actions for #1 are completed, or at the discretion of the Lead Examiner, initiate #2.**	
	Event 2: CW04C – 10 gpm (100%) 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**	BOP: • Observe "CONDENSATE DEMIN SYSTEM TROUBLE" annunciator (A-16) on C05. • Reports observation to US. • 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).
	If necessary, call as the SM and remind the US that the PPC conductivity screen will not update with rising conductivity.	US: AOP 2516, Condenser Tube Leak • Notes actions under ARP 2590D-061 under Chemistry jurisdiction. • Enters ARP-2590D-067, HOTWELL COND LEVEL HI (C05, BA-17), go to AOP 2516. • Enters AOP-2516, Condenser Tube Leak. 3.1 N/A 3.2 Notes CPF demins. are operating in Amine form, references OP-2316A, Main Steam System, and directs BOP to secure SG blowdown.
	Event 14: **FWR55 (0)** When/if requested, secure makeup to the CST.	BOP: • Per OP-2316A, closes MS-220A & -220B and MS-145A & -145B • Verifies PPC indicates zero blowdown flow. • Reports completion to US.
	If Chemistry samples are requested, inform US samples have already confirmed "C" water box has a tube leak.	US: **3.5** Determines "C" water box should be isolated and references AOP-2516, section 6.0, Isolate "C" Water Box

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
	Event 12: **TPR20 – All Remote Panel Alarm Reset (RESET)** When/if requested, reset CPF alarm.	**3.6 AOP 2516 Condenser Tube Leak** **6.1 – 6.3** N/A **6.4** Directs the BOP to stop the "C" Circ. Pump
		BOP: **6.4** Per AOP-2516, secures "C" Circ. Pump by tripping or lowering VFD.
		US: Directs the BOP to perform the following: **6.5** Close CW-11F, "C" water box inlet. **6.6** Monitor RBCCW & TBCCW temperatures. **6.8** Ensure CW-11C, "C" water box outlet open.
	Event 10: **FWR53 (CLOSE)** "C" condenser air isolation. **CWR04A (CLOSE)** "C" water box outlet and inlet stops. VP-9C is not modeled. **When valves linked to Event 10 have reached their demand position, inform the crew that all PEO actions are completed.** **It is not necessary to actually start a 2nd SJAE or the Mechanical Vacuum Pumps.**	US (or BOP): Directs a PEO to: **6.9** Close AR-1C, condenser "C" isolation stop. **6.10** Close VP-1C & -1G, "C" water box outlet & inlet stops. **6.11** Open VP-9C, "C" water box inlet vent. **6.12** (Crew/BOP) Monitor condenser vacuum. **6.13** Deenergize cathodic protection. **6.14** (BOP) When directed, close CW-11C.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
3. Failure of Channel "Y" Pressurizer Level Transmitter.	**When actions for #2 are completed, or at the discretion of the Lead Examiner, initiate #3.**	***Tech Spec (TRM)***

	Event 3: RX04B – 85% (5 minute ramp)
	Channel "Y" Pressurizer Level transmitter fails to 85% over a period of five minutes.
	TM3, AE3
		RO:
		• Observes and reports any of the following:
		  • Letdown flow rising.
		  • Pressurizer backup heaters energized.
		  • Level controller output rising.
		  • Actual level dropping (may not be diagnosed at this time).
		  • PRESSURIZER CH Y LEVEL HI/LO annunciator (A-39) on C02-3 (delayed).

		US: Enters ARP-2590B-217, annunciator A-39.
		3. Notes indicated level is high.
		  a. Backup charging pump has stopped.
		  b. Letdown flow is at maximum (128 gpm)
		5. 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 2nd charging pump will restart automatically, unless the charging pump control switches have been changed from the initial setup of two running pumps.		US: Directs and the RO performs the following: **8.1** SHIFT "LTDN FLOW CNTL, HIC-110" to "MAN" (C-02). **8.2** Adjust "LTDN CNTL, HIC-110" to stabilize Pressurizer level and Letdown flow. **8.3** Commence forcing PZR sprays (in setup) **8.4** SHIFT PZR level control to channel "X". **8.5** RESTORE Letdown to automatic.
		RO: (Restoring Letdown flow to automatic) **8.5.1** Adjust bias to "0". **8.5.2** Shift HIC-110" back to "AUTO." **8.5.3** Adjust bias to restore PZR level to setpoint. **8.5.4** Shift Pressurizer heater control "SEL SW" to channel "X".

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
4. "A" Condensate Pump High Motor Winding Temperature.	**When HIC-110 is back in automatic, or at the discretion of the Lead Examiner, initiate #4.**	
	Event 4: FW23 – 100% The "A" Condensate Pump motor winding temperature will begin to rise abnormally high, causing control board and PPC alarms. **TM4, AE4**	BOP/Crew: • Observe "A" Condensate Pump high motor winding alarms on PPC MON 2. • Observe "CONDENSATE PUMP TROUBLE" alarm A-11 on C05
Examinees may reference OP 2319A, Condensate System, to swap Condensate Pumps.	If dispatched as a PEO, report that no abnormalities are observed.	US/BOP: • Enters ARP-2590D-041, annunciator A-11, CONDENSATE PUMP TROUBLE. 1. Notes "A" Condensate Pump not tripped. 2. Notes "A" Condensate Pump amps not high 3. Notes "A" Condensate Pump motor winding temperature high and rising on the PPC. • **US** - Directs "B" Condensate Pump be started. • **US** - Directs "A" Condensate Pump be secured.
	Event 11: FW23 – 0% (ramp 5 minutes) **When "A" Condensate pump is secured, trigger Event 11 to ramp down high temp.**	BOP • Starts the "B" Condensate Pump. • Secures the "A" Condensate Pump and places it in Pull-To-Lock. • Observes Condensate Header pressure.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
5. Rapid Downpower due to failing SGFP.	**When 'B' Cond. pump is running, or at the discretion of the Lead Examiner, initiate #5.**	***Reactivity Manipulation***
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.	**Call as Turbine Engineer and inform the crew that the "B" 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.** **TM5, AE5**	<u>US:</u> • Enters AOP 2575, Rapid Downpower o Performs Focus Brief on Trip Criteria and RCS Temperature Control. o *Requests SM/STA to make required notifications.* o Directs RO to initiate forcing sprays and to insert Group 7 CEAs 10 steps (while maintaining Reactivity oversight) o Determines which Reactivity Plan, RE-G-13, -14, or -15 may be used. o Directs RO and BOP to coordinate a rapid downpower per the chosen plan.
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.		<u>RO:</u> • Initiates Forcing Sprays: (if not already) o Closes all Backup Heater Breakers o Adjusts Pressurizer pressure controller to achieve an output of approximately 50% (to maintain RCS pressure at approximately 2250 psia). • **Inserts Group 7 CEAs 10 steps** and observes applicable parameters. • **Initiates Boration** from the RWST: o Ensures at least one Charging Pump is operating. o Ensures CH-196, VCT Makeup Bypass, is closed. o Ensures CH-504, RWST to Charging Suction, is open. o Opens CH-192, RWST Isolation. o Closes CH-501, VCT Outlet. o Starts a second Charging Pump.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO (*alternate boration method*): • *If Boration is from the BAST:* o *Ensures the Makeup Flow Selector switch is in the DILUTE position.* o *Ensues FC-210X, Primary Makeup Water Flow controller, is set to "0".* o *Ensures CH-512, Makeup Valves Stop, is closed.* o *Ensures CH-196, VCT Makeup Bypass, is closed.* o *EnsuresCH-192, RWST Isolation, is closed.* o *Ensures FC-210Y,Boric Acid Flow controller, is set to the predetermined flow rate.* o *Opens CH-504, RWST to Charging Suction.* o *Place Makeup Mode Sel switch in MAN.* o *Starts the selected Boric Acid and verifies discharge pressure is greater than 98 psig.* o *Opens CH 196, VCT Makeup Bypass.* o *As required, refers to attachment and performs actions to maintain VCT level in the desired band.*
		BOP: Reduces Turbine load to follow Reactor power to maintain Tc on program using the Load Limit Pot.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
6. Loss of Vital Bus 24C; Manual Plant Trip.	**When power is lowered by ~ 10%, or at the discretion of the Lead Examiner, initiate #6.**	
	Event 6: ED05A – ON Causes a fault on vital bus 24A which results in the following: • NSST to 24A trips on the bus fault, deenergizing 24A and all non-Vital 4160/480 VAC power (unrecoverable). • 24C deenergizes causing Fac. 1 ESAS UV • The UV locks out the RSST to 24C. • Because "A" EDG is OOS, 24C and all Vital 4160/480 VAC power remain deenergized. • 24C can be recovered, but not in time to prevent a required plant trip. **TM6, MA1**	US: Directs the crew to manually trip the Reactor and perform EOP 2525, Standard Post Trip Actions. Queries RO and BOP on the status of Safety Functions as delineated in EOP 2525: • Reactivity Control (RO) o Status of the Reactor • Maintenance of Vital Auxiliaries (BOP) o Status of the Turbine o Status of Electrical Buses o Status of SW & RBCCW o Check one facility of CRAC operating (RO) • RCS Inventory Control (RO) o PZR level & Subcooled margin (SCM), value & trend • RCS Pressure Control (RO) o PZR pressure, value & trend • Core Heat Removal (RO) o RCP status o Loop delta-T o T_H Subcooling Margin • RCS Heat Removal (BOP) o S/G pressures, value and trend o RCS T_C value and trend o S/G levels, value and trend o RCS Subcooling Margin

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		• Containment (CTMT) Isolation (RO) o Rad monitors inside CTMT, outside CTMT, steam plant o CTMT pressure <1 psig • CTMT Temperature & Pressure Control (RO) o CTMT temperature and pressure value and trend
		RO: • Presses all four Reactor Trip push buttons on C-04 and verifies the Reactor trips. • Reactor has tripped, power is lowering, SUR is negative, all CEAs are inserted.
		BOP: Perform associated actions of EOP 2525 and report results when queried: • Turbine tripped, stop valves are closed, 8T & 9T are open, Megawatts are zero • All electrical buses energized except for 24A and 24C ("A" EDG OOS). • Facilities 2 SW and RBCCW operating.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
7. Rupture of the "B" RCP Seal Cooler. (Intersystem Small-Break LOCA)	**Two minutes after the plant trips, or at the discretion of the Lead Examiner, initiate #7.**	
	Event 6 + 2 Min.: RC20B 308 gpm (56%) **Approximately 2 minutes after Event #6, activate the "B" RCP seal cooler rupture, resulting in a Small Break LOCA.** **TM7, MA2**	RO: Performs associated actions of EOP 2525 and report results when queried: • Control Room Air Conditioning Status • Pressurizer level value and trend o PZR level lowering, all available charging pumps running, letdown flow at minimum.
The remaining RCPs may be secured when the crew recognizes the leak in the "B" RCP Seal Cooler.		RO: • Pressurizer pressure value and trend o PORVs and Spray Valves are closed o When RCS pressure is less than 1714 psia, then SIAS, CIAS, and EBFAS have actuated (only Facility 2 powered). o "A" & "C" RCPs secured due to no RBCCW flow on loss of 24C. o If Pressurizer pressure lowers to minimum NPSH, then all RCPs are secured. • Number of RCPs operating o Value and trend of loop Delta-T o Value and trend of subcooling • If no RCPs operating, T_{AVG} controller,TIC-4165 in manual/closed
		BOP: Performs associated actions of EOP 2525 and reports results when queried: • Value and trend of S/G pressures • Operates steam dumps, as necessary, to control RCS T_{AVG}.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		• Value and trend of T_C • Value and trend of S/G levels • Subcooling value / CET temperatures
		RO: Continues with associated actions of EOP 2525 and reports results when queried: • Rad monitors: o Inside CTMT; not going up or in alarm o Outside CTMT; RM-6038, RBCCW going up and/or in alarm. US/BOP/RO: RBCCW Surge Tank level rising o Steam Plant; not going up or in alarm. • CTMT temperature/pressure rising slowly. o 2 CAR Fans and "B" Aux Circ. Fan running in slow. o Starts "B" PIR Fan.
		BOP: Continue with Subsequent Actions: • Opens HD-106, Subcooling Valve • Stops both Heater Drains Pumps • Secures all but one Condensate Pump • Verifies Main Feed Pump operating. o Closes FW-42B, Main Feed Block Valve. o Ensure both Main Feed Reg Bypass Valves are throttled to 40% • Checks IA Header pressure is >90 psig and stable.
		US: Query RO & BOP regarding the status of EOP

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		2525 subsequent actions.
		RO/BOP: When asked, report that Subsequent Actions are complete and verified.
		US: • 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. • Places Master Silence Switch in NORM. • Notes the need for the SM to complete EPI-FAP06-002, classify the event as an Alert, Charlie-1, and make appropriate notifications.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
8. Loss of High Pressure Safety Injection.	**Once EOP 2532 actions are started, or at the discretion of the Lead Examiner, initiate #8.**	***EOP-2532, Loss Of Coolant Accident***
	Event 8: RC20B 550 gpm (100%) **Raise the severity of the "B" RCP Seal Cooler tube rupture to maximum.** **EU1** **Event 27 (RCS Pres < 1600 psia): 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. **TM8, EM1**	US: ❑ Enters EOP 2532, Loss Of Coolant Accident ❑ Directs performance of SFSC ❑ Directs Chemistry sample S/Gs ❑ Directs SM to classify the event ❑ Opens Place keeper and ENTER the EOP entry time ❑ Ensures the master silence switch is in "NORMAL"
		US/BOP: ❑ Opens both SG sample valves. ❑ Directs Chemistry to do the following: o Sample both SGs. o Frisk the samples. o Report frisk results. o Analyze samples for boron and activity.
		RO: ❑ Check SIAS, CIAS and EBFAS actuation. ❑ Check adequate Safety Injection flow. o Notes "C" HPSI pump has tripped. o May attempt restart of "C" HPSI Pump. o Reports "A" & "B" HPSI pumps have no power. 24C or 24E must be restored.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RO: o Takes "B" Charging Pump out of "Pull-To-Lock". o Verifies "B" Charging Pump running.
	There will not be any safety injection flow from the HPSI pump until RCS pressure drops below 1250 psia.	US: ❑ Acknowledges "C" HPSI pump lost (no SI) and "A" & "B" HPSI pump without power. ❑ Directs 24C be reenergized by the RSST or Unit 3.
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.**	RO/BOP: Appendix 23-B, Energizing 24C from the RSST 1. Verifies RSST energized on C-08. 2. Checks for faults on 24C. 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). 3. Ensures breakers A304, A305 and A312 are open. (A305 would be closed on setup). 4. Ensures A702 is closed. 5. Put synch switch for A302 to "ON". 6. Gets key #26 from cabinet and places all four ESAS "UV BUS A3" in "INHIBIT". 7. Presses "UV RESET" button on Cabinet 5. 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.
		RO/BOP: Appendix 23-B, Energizing 24C from the RSST 12.

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
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.		RO: Start the "A" HPSI pump and verify adequate SI. US: Verifies SI flow adequate.
If energizing 24E from Unit 3, this section will be used.		RO/BOP: 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.		RO: Start the "B" HPSI pump and verify adequate SI. US: Verifies SI flow adequate.
		BOP: ❑ Verifies switchgear room cooling.
		RO: ❑ Stop RCPs as necessary (may have been secured earlier if NPSH was lost). ❑ Place PZR spray controller(s) in manual and close. ❑ Place HIC-4165 in manual and close.
		RO/BOP: ❑ Verifies PORVs closed, letdown isolated,

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		RCS sample valves closed. ❑ Notes indication of leakage into RBCCW o RM-6038, RBCCW Rad. Monitor, rising. o RBCCW Surge Tank level rising (C06)
		US: ❑ Directs any operating RCPs be secured. ❑ Directs RBCCW CTMT Header Isolation Valves be closed.
		BOP: ❑ Stops the operating RCPs. ❑ Places associated pressurizer spray valve controller RC-100E or RC-100F in manual and closed. ❑ Places TIC-4165, steam dump TAVG controller, in manual and closed.
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.** **Note: As a minimum, RB-30.1B and RB-37.2B must be closed.**	**Event 13: 05A1A2S9 CLOSE** **05A1A2S12 CLOSE** **If directed to close RB-30.1A and RB-37.2A locally, then trigger Event 13.** **Then do the following to close the valves:** **1. Open the "Insight" window.** **2. In "Insight", open the file "johnccrbvalves.tis".** **3. Set the values for both valves to "*0.0*".**	BOP: ❑ Closes Fac. 1 RBCCW CTMT header isolation valves: RB-30.1A, RB-37.2A. o If 24C has not been restored, directs a PEO to close the valves locally. ❑ Closes Fac. 2 RBCCW CTMT header isolation valves: RB-30.1B and RB-37.2B.
	Note: The Crew may need to continue to monitor indications to ensure the LOCA has been redirected into CTMT.	US/CREW: ❑ Verifies LOCA is no longer outside CTMT.
		US/CREW:

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SCENARIO TIME LINE		
FLOOR INSTRUCTOR	**BOOTH INSTRUCTOR**	**STUDENTS**
		❑ Directs/places hydrogen analyzer in service.
		Crew: ❑ Verifies SIAS, CIAS, EBFAS, MSI, CRACS, CAR fan operation, as necessary.
		US/BOP: ❑ Verifies adequate instrument air pressure.
		US: ❑ Directs Crew initiate a controlled cool down and depressurization of RCS.
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.		BOP: ❑ Initiates a plant cool down. o Opens steam dump valves. o Establishes 40 –100 °F/hr cool down.
		RO: ❑ 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.	Crew: Standby for questions from Examiners.

INPUT SUMMARY

Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
MALFUNCTIONS						
RM01O – Rad. Monitor RM-9799A on CRAC, fails high.	NA	0	1	0.1 mr/Hr (0%)		1
CH08C – CRAC Filter Fan "A", F-32A, trips	5 sec.	0	1	NA		2
CW04C – Main Condenser tube leak in the "C" water box.		0	2	10 gpm (100%)		3
RX04B – Ch. 'Y' Pressurizer Level transmitter, LT-110Y, fails to 85% level.	NA	5 min.	3	(85%)		4
FW23 – "A" Condensate Pump Motor Winding Temperature High.	NA	0	4	ON		5
FW23 - "A" Condensate Pump Motor Winding Temperature Return to Normal.	NA	5 min.	11	0		6
ED05A – Major fault on bus 24A (loss of Facility One 4160/480 VAC).	NA	0	6	ON		7
RC20B - Seal Cooler Rupture in RCP "B" (2 minute delay)	2 min.	0	6	308 gpm (56%)		8
RC20B - Seal Cooler Rupture in RCP "B" (Increase in severity)	NA	0	8	550 gpm (100%)		9
SI04C – 'C' HPSI Pump trip on RCS Pressure <1600 psia.	NA	0	27	ON		10
REMOTE FUNCTIONS						
EGR12 – "A" EDG Air Start Valves	NA	0	NA	NA	CLOSE	0
EGR17 – "A" EDG Breaker (A312)	NA	0	NA	NA	RO	0
FWR53 – "C" Condenser SJAE Isolation (AR-1C)	NA	0	10	NA	CLOSE	3
CWR04A - "C" Condenser Vents (VP-1C & VP-1G)	NA	0	10	NA	CLOSE	3
TPR20 – All Remote Panel Alarm Reset	NA	0	12	NA	RESET	3
FWR55 – Makeup to Condensate Storage Tank (CST) secured (0 gpm)	NA	0	14	NA	0	3

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INPUT SUMMARY

Description	Delay Time	Ramp Time	Event Trigger	Severity Or Value	Final Value	Relative Order
OVERRIDES						
05A1A2S9 – RBCCW CTMT Isolation Header "A" Supply (RB-30.1A)	NA	0	13	NA	CLOSE	9
05A1A2S12 – RBCCW CTMT Isolation Header "A" Return (RB-37.2A)	NA	0	13	NA	CLOSE	9
CHHS8006_1 (NG) (5 second delay) F-32A green light out.	5 sec.	0	1	NA	NG	2
CHHS8006_1 (NR) (5 second delay) F-32A red light out.	5 sec.	0	1	NA	NR	2

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.	☒	☐
2.	All malfunctions and other instructor interface items were functional and responded to support the simulator Scenario.	☒	☐
3.	All malfunctions and other instructor interface items were initiated in the same sequence described within the simulator scenario.	☒	☐
4.	All applicable acceptance criteria were met for procedures that were used to support the simulator scenario.	☒	☐
5.	During the simulator scenario, observed changes corresponded to expected plant response.	☒	☐
6.	Did the scenario satisfy the learning or examination objectives without any significant simulator performance issues, or deviations from the approved scenario sequence?	☒	☐
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.	☒	☐
8.	Any identified Critical Tasks possesses the following elements (NUREG-1021): • Essential to safety with adverse consequences or significant degradation, • Cue(s) prompt the Operator to respond. • Defined and measurable performance indicators. • Performance feedback. 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

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

Mode:	1		Rx Power:	46%
Megawatts:	Thermal:	1215 MWTH	PZR Pressure:	2250 psia
	Electric:	405 MWe	RCS T-AVE:	563 deg F
RCS Leakage:	Identified:	0.015 gpm	Protected Train/Facility:	**TRAIN B**
	Unidentified:	0.036 gpm		
Date/Time:	Today 0015			

Active Tracking Records and Action Statements

Equipment/Reason

LCO	Action	Date	Time in LCO	Action Requirement	Time Left
3.8.1.1	b.	Today	1 hour	Perform Surveillance Requirement 4.8.1.1.1 every 8 hours. Restore diesel to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours.	8 hrs 71 hrs.

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 46% power. Awaiting return of the "A" Main Feedwater Pump.
SP 2619-002	AC Electrical Source Operability

REACTIVITY BRIEFING (SEE REACTIVITY THUMBRULES / SPREAD SHEET FOR ADDITIONAL INFO)

Current Rod Height	ARO @ 165
Xenon Trend	Rising
Current Boron	1338 ppm
Boron Pot Setting / Blend Ratio	3.4 to 1 (corrected)