JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Maximum RCS Venting Time Determination**

JPM Number: **JPM-A1R (JPM-146)** Revision: **1**

Initiated:

John W. Riley (Signature on File)	1/23/17
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	1/27/17
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	1/24/17
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
1/9/17	JPM 146 developed in 2001. Revised to latest JPM format. Changed number for 2017 NRC JPM exam. Changed initial condition to give a different vent time. Other editorial changes.	1

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **JPM-A1R (JPM-146)** Revision: **1**

Task Title: Maximum RCS Venting Time Determination

System: RCS

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): NUTIMS #000-05-222

Applicable To: SRO _____ STA _____ RO X PEO _____

K/A Number: 2.1.23 K/A Rating: 4.3/4.4

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 determined the maximum allowable venting time (7 minutes ± 2 minutes). under the stated plant conditions

Required Materials: (procedures, equipment, etc.) EOP 2541, Appendix 24

General References: EOP 2541

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

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

JPM WORKSHEET

JPM Number: **JPM-A1R (JPM-146)** Revision : **1**

Initial Conditions:

- The plant tripped from 100% due to a LOCA.
- EOP 2532 is being performed.
- Appendix 24, "Void Elimination" is being implemented.
- Appendix 24, "Void Elimination, step 4, has been attempted to eliminate the voiding, by raising and lowering the RCS pressure within the RCS P/T curve.
- Attempts to eliminate the void were not successful AND a non-condensable void is suspected.
- RCS pressure is 760 psia.
- RCS temperature is 342°F.
- Containment temperature is 185°F.
- Containment pressure is 2.2 psig.
- Containment hydrogen concentration is currently 2.0%.
- Containment fans are running.

Initiating Cues: The Unit Supervisor has directed you to determine the maximum allowable RCS venting time in accordance with EOP 2541, Appendix 24, "Void Elimination", Contingency Action Step 4.1.a.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-A1R (JPM-146)** Revision: **1**

Task Title: **Maximum RCS Venting Time Determination**

START TIME: _____

STEP #1	Performance: 4.1 IF attempts to eliminate the void were *not* successful AND a non-condensable void is suspected, PERFORM the following to vent the reactor vessel: a. DETERMINE maximum allowable venting time. Refer to Attachment 24-A, "RCS Vent Time Based on Hydrogen Buildup Inside Containment."	Standard: Examinee refers to Attachment 24-A	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Provide a copy of EOP 2541, Appendix 24. The title on Attachment 24-A does not match the procedure step. The step has "RCS Vent Time Based on Hydrogen Buildup Inside Containment" and Attachment 24-A has "RCS Vent Time Based on Hydrogen Buildup". If asked state as a the US state that Attachment 24-A "RCS Vent Time Based on Hydrogen Buildup" should be used and that you will make an entry in the Narrative Log on the discrepancy.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1R (JPM-146)** Revision: **1**

Task Title: **Maximum RCS Venting Time Determination**

STEP #2	Performance: This figure is valid *only* when the following conditions exist: 1. RCS temperature is greater than 212 °F. 2. RCS pressure is less than 2250 psia. 3. Containment Temperature is less than 225 °F. 4. Containment pressure is greater than 0.0 psig. 5. Containment Hydrogen concentration is less than 2.9%. 6. Containment fans are running.	Standard: Examinee compares initial conditions against the requirements on Attachment 24-A and identifies that the figure is valid for the current conditions.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #3	Performance: Determine maximum vent time.	Standard: Examine using the initial conditions of RCS pressure **(760 psia)** and current containment Hydrogen volume **(2.0%)** to determine maximum vent time. Examinee determines the maximum allowable vent time is **7 minutes (+/- 2 minutes).**	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Once the examinee has determined the maximum vent time state this JPM is complete.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-A1R (JPM-146)** Revision: **1**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**10**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-A1R (JPM-146)** Revision: **1**

Initial Conditions:

- The plant tripped from 100% due to a LOCA.
- EOP 2532 is being performed.
- Appendix 24, "Void Elimination" is being implemented.
- Appendix 24, "Void Elimination, step 4, has been attempted to eliminate the voiding, by raising and lowering the RCS pressure within the RCS P/T curve.
- Attempts to eliminate the void were not successful AND a non-condensable void is suspected.
- RCS pressure is 760 psia.
- RCS temperature is 342°F.
- Containment temperature is 185°F.
- Containment pressure is 2.2 psig.
- Containment hydrogen concentration is currently 2.0%.
- Containment fans are running.

Initiating Cues:

The Unit Supervisor has directed you to determine the maximum allowable RCS venting time in accordance with EOP 2541, Appendix 24, "Void Elimination", Contingency Action Step 4.1.a.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Evaluate RCP Seal Problem (Admin)

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

Initiated:

Robert L. Cimmino, Jr.	01/31/2017
Developer	Date

Reviewed:

Will Chesnutt	
Technical Reviewer	Date

Approved:

Michael John Cote	
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/27/2003	Updated to reflect changes to OP 2301C and new 1500 psid criteria.	8
05/03/2016 rlc	Updated to reflect new format and procedure changes.	9
01/26/2017 rlc	Concept copied from JPM-011 for 2017 NRC Re-Take Exam	0/0

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **JPM-A1.1** Revision: **0/0**

Task Title: Evaluate RCP Seal Problem (Admin)

System: RCP

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 20

Task Number(s): NUTIMS #003-01-033

Applicable To: SRO _____ STA _____ RO **X** PEO _____

K/A Number: 003/A2.01 K/A Rating: 3.5/3.9

K/A Number: 2.1.7 K/A Rating: 4.4/4.7

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM, examinee has evaluated "A" RCP indications and reported that one seal has failed and another seal is failed/degraded. The examinee also recommends, based on the above findings, that a controlled shutdown should be initiated.

Required Materials: **AOP 2586, RCP Malfunctions**
(procedures, equipment, etc.) Calculator

General References: AOP 2586, RCP 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 JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-A1.1** Revision : **0/0**

Initial Conditions:

- Several alarms have annunciated for the "A" RCP.
- C-02/3; BA-18, RCP A MID SEAL PRES HI, remains locked in.
- The PPC has failed and is unusable.
- The US has entered AOP 2586, RCP Malfunctions, and has proceeded to step *2a. Trend RCP Data, CHECK PPC available.
- Another operator has just recorded the initial set of data for the "A" RCP on AOP 2586, Attachment A, A RCP Seal Data.

Initiating Cues:

- You are the RO.
- The US has directed you to perform AOP 2586, RCP Malfunctions, starting with Step *2a. Trend RCP Data, to evaluate the operation of the "A" RCP, using the initial set of data that was recorded.
- Report any indications of failed seals and make recommendations concerning continued operation.
- RCP vibration data will be acquired and trended by another operator.
- Only the initial set of data needs to be evaluated at this time. Subsequent trending of RCP data will be performed by other operators.

Simulator Requirements: None

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.1** Revision: **0/0**

Task Title: **Evaluate RCP Seal Problem (Admin)**

START TIME: _____

STEP #1	Performance: **AOP 2586, "RCP Malfunctions"** **ACTION/EXPECTED RESPONSE** 2. Trend RCP Data a. **CHECK** PPC available **RESPONSE NOT OBTAINED** a. **PERFORM** the following: 1. Using appropriate ATTACHMENT A through ATTACHMENT D, RECORD the affected RCP data parameters at an interval determined by SM/US **AND** **REFER** to ATTACHMENT E.	Standard: Examinee refers to AOP 2586, Step 2 and notes the PPC is not available per the initiating conditions. Examinee then refers to RNO Step 2a.1. and uses the given copy of Attachment "A", with the provided initial data, to determine the status of the "A" RCP seals.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: The form is effectively a job aid in determining the status of RCP seals when the PPC is unavailable.			
STEP #2	Performance: **AOP 2586, "RCP Malfunctions"** **ATTACHMENT A, "A RCP Seal Data"** Based on the calculations performed on Attachment A: 1. One seal $\Delta p < 200$ psid. 2. Second seal $\Delta p > 1500$ psid.	Standard: Examinee fills out Attachment A in accordance with the attached key.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.1** Revision: **0/0**

Task Title: **Evaluate RCP Seal Problem (Admin)**

<table>
<tr><td rowspan="3">STEP #3</td><td>Performance:
<u>AOP 2586, "RCP Malfunctions"
ATTACHMENT E, "RCP Seal Failure Indication Significance"</u>

Indication
RCP Lower, Mid, Upper seal D/P high/low
• Any seal greater than 1500 psid RCP
• D/P is less than or equal to 200 psid

Possible Causes:
Single RCP Seal Failure</td><td>Standard:
Examinee refers to AOP 2586, Attachment E, "RCP Seal Failure Indication Significance", and notes the following:
• One seal failed (due to the Δp < 200 psid).
• Second seal degraded/failing (due to seal Δp >1500 psid).</td><td>Critical:
Y ☒ N ☐</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="3">Cue:</td></tr>
<tr><td colspan="3">Comments: Identifying which seal is failed or failing and why is not critical.</td></tr>
<tr><td rowspan="3">STEP #4</td><td>3. Check RCP For Plant Shutdown Required
a. CHECK affected RCP for the following:
• Any RCP seal stage D/P is GREATER THAN 1500 psid
<u>OR</u>
• RCP has one RCP seal stage failed and another seal stage LESS THAN 650 psid</td><td>Standard:
Examinee continues with step 3 and notes the following:
• One seal has > 1500 psid
AND
• One seal has < 650 psid.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="3">Cue:</td></tr>
<tr><td colspan="3">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.1** Revision: **0/0**

Task Title: **Evaluate RCP Seal Problem (Admin)**

STEP #5	Performance: b. **PERFORM** the following: 1. **GO TO** OP 2204, Load Changes **AND** **INITIATE** a plant shutdown **AND** **CONTINUE** with actions of this procedure beginning with step 3.c	Standard: Examinee continues with step 3b. and recommends a **plant shutdown** be performed.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: The only critical action is to recommend a plant shutdown.			
	Comments: Recommending a course of action for the plant completes the JPM.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-A1.1** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	**20**	Actual Time to Complete (minutes):	
Work Practice Performance:		☐ SAT	☐ UNSAT
Operator Fundamentals:		☐ SAT	☐ UNSAT
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT ☒ N/A
Attached Question #1		☐ SAT	☐ UNSAT
Attached Question #2		☐ SAT	☐ UNSAT
Overall Result of JPM:		☐ SAT	☐ UNSAT

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-A1.1** Revision: **0/0**

Initial Conditions:

- Several alarms have annunciated for the "A" RCP.
- C-02/3; BA-18, RCP A MID SEAL PRES HI, remains locked in.
- The PPC has failed and is unusable.
- The US has entered AOP 2586, RCP Malfunctions, and has proceeded to step *2a. Trend RCP Data, CHECK PPC available.
- Another operator has just recorded the initial set of data for the "A" RCP on AOP 2586, Attachment A, A RCP Seal Data.

Initiating Cues:

- You are the RO.
- The US has directed you to perform AOP 2586, RCP Malfunctions, starting with Step *2a. Trend RCP Data, to evaluate the operation of the "A" RCP, using the initial set of data that was recorded.
- Report any indications of failed seals and make recommendations concerning continued operation.
- RCP vibration data will be acquired and trended by another operator.
- Only the initial set of data needs to be evaluated at this time. Subsequent trending of RCP data will be performed by other operators.

1. **Status of "A" RCP Seals**:

2. **Recommended action**:

ATTACHMENT A
A RCP Seal Data
(Page 1 of 1)

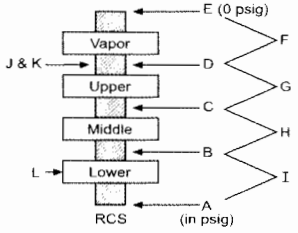


TABLE 1

(D _____ -E _____ =F _____)

(C _____ -D _____ =G _____)

(B _____ -C _____ =H _____)

(A _____ -B _____ =I _____)

NOTE: RCP seals are four stage sealing devices. When operating properly, the first three seal stages reduce pressure by approximately one third (1/3) of the total pressure across the pump seal.

NOTE: With RCS at rated pressure (2200 to 2300 psia), alarms actuate when seal stage pressures deviate from nominal values by 150 psig. This indicates a degraded or failing operation of a particular seal stage.

NOTE: RCP seal stages are considered failed when d/p across stage is less than 200 psid and RCS pressure is at rated pressure (2200 to 2300 psia).

NOTE: The increased d/p in the remaining intact seal stages is equal to the decrease in d/p of the degraded or failed seal stage. For short periods of time, each seal stage is designed to safely function with full RCS pressure d/p across the seal stage to allow for plant shutdown. Operation with d/p less than 1500 psid across a seal stage is acceptable indefinitely.

Parameter	PPC Point	Expected Value	PPC Alarm	Data Location	(Graphic Designator)	Data (Time Acquired) Today, Now					
(C-04R, HS-150-1) Temperature (°F)											
Lower Seal	T151	90 to 110°F	120°F	1	(L)	100					
Lube Oil Cooler Outlet	T152	100 to 120°F	120°F	2		105					
Lube Oil Cooler Inlet	T153	120 to 140°F	140°F	3		125					
Controlled Bleedoff	T154	110 to 150°F	150°F	4	(J)	115					
Motor Stator Winding	T155	160 to 180°F	200°F	5		175					
Upper Guide Bearing	T156	140 to 160°F	160°F	6		150					
Lower Guide Bearing	T157	140 to 160°F	160°F	7		105					
Upper Thrust Bearing	T158	110 to 140°F	160°F	8		133					
Lower Thrust Bearing	T159	110 to 140°F	160°F	9		128					
Anti-reverse Bearing	T190	150 to 170°F	175°F	10		165					
Lower Bearing Oil	T194	100 to 125°F	125°F	11		93					
(C-04R, HS-150-2) Pressure (psig)											
Middle Seal	P151	1400 to 1600 psig	1625# (High) 1290# (Low)	1	(B)	2200					
Upper Seal	P152	600 to 800 psig	945# (High) 545# (Low)	2	(C)	605					
Vapor Seal	P153	40 to 100 psig	125# (High) 20# (Low)	3	(D)	70					
(C-04R, HS-150-3) Level (%)											
Upper Oil Reservoir	L156	78 to 84%	85% (High) 70% (Low)	1		76					
Lower Oil Reservoir	L157	78 to 84%	85% (High) 77% (Low)	2		82					
Additional Data (gpm / psia / psig / psid)											
Bleedoff Flow	F150	0.9 to 1.3 pgm	1.5 gpm (High) 0.85 gpm (Low)	C-04R PR-150A (#9)	(K)	1.52					
RCS Pressure RCS (psia) - 15 = A (psig)	PZRPR	2240 to 2260 psia (2225 to 2245 psig)	2350# (High) 1900# (Low)	C-02/3 PR-100	(A)	2240					
Containment Pressure	CTMTPR	0 psig	1 psig	N/A	(E)	0	0	0	0	0	0
Vapor Seal d/p (F=D-E)	CVAVAPDP	40 to 100 psid	N/A	Table 1	(F)						
Upper Seal d/p (G=C-D)	CVAUPRDP	600 to 850 psid	N/A	Table 1	(G)						
Middle Seal d/p (H=B-C)	CVAMIDDP	600 to 850 psid	N/A	Table 1	(H)						
Lower Seal d/p (I=A-B)	CVALWRDP	600 to 850 psid	N/A	Table 1	(I)						

Graphics No. CS8324

ATTACHMENT A - 'A' RCP SEAL DATA

ATTACHMENT A
A RCP Seal Data
(Page 1 of 1)

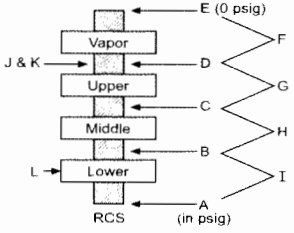


TABLE 1

(D 70 -E 0 =F 70)
(C 605 -D 70 =G 535)
(B 2200 -C 605 =H 1595)
(A 2240 -B 2200 =I 40)

Degraded Seal

d/p Too High For Continued Operation

Failed Seal

NOTE: RCP seals are four stage sealing devices. When operating properly, the first three seal stages reduce pressure by approximately one third (1/3) of the total pressure across the pump seal.

NOTE: With RCS at rated pressure (2200 to 2300 psia), alarms actuate when seal stage pressures deviate from nominal values by 150 psig. This indicates a degraded or failing operation of a particular seal stage.

NOTE: RCP seal stages are considered failed when d/p across stage is less than 200 psid and RCS pressure is at rated pressure (2200 to 2300 psia).

NOTE: The increased d/p in the remaining intact seal stages is equal to the decrease in d/p of the degraded or failed seal stage. For short periods of time, each seal stage is designed to safely function with full RCS pressure d/p across the seal stage to allow for plant shutdown. Operation with d/p less than 1500 psid across a seal stage is acceptable indefinitely.

Parameter	PPC Point	Expected Value	PPC Alarm	Data Location	(Graphic Designator)	Data (Time Acquired) Today, Now					
(C-04R, HS-150-1) Temperature (°F)											
Lower Seal	T151	90 to 110°F	120°F	1	(L)	100					
Lube Oil Cooler Outlet	T152	100 to 120°F	120°F	2		105					
Lube Oil Cooler Inlet	T153	120 to 140°F	140°F	3		125					
Controlled Bleedoff	T154	110 to 150°F	150°F	4	(J)	115					
Motor Stator Winding	T155	160 to 180°F	200°F	5		175					
Upper Guide Bearing	T156	140 to 160°F	160°F	6		150					
Lower Guide Bearing	T157	140 to 160°F	160°F	7		105					
Upper Thrust Bearing	T158	110 to 140°F	160°F	8		133					
Lower Thrust Bearing	T159	110 to 140°F	160°F	9		128					
Anti-reverse Bearing	T190	150 to 170°F	175°F	10		165					
Lower Bearing Oil	T194	100 to 125°F	125°F	11		93					
(C-04R, HS-150-2) Pressure (psig)											
Middle Seal	P151	1400 to 1600 psig	1625# (High) 1290# (Low)	1	(B)	2200					
Upper Seal	P152	600 to 800 psig	945# (High) 545# (Low)	2	(C)	605					
Vapor Seal	P153	40 to 100 psig	125# (High) 20# (Low)	3	(D)	70					
(C-04R, HS-150-3) Level (%)											
Upper Oil Reservoir	L156	78 to 84%	85% (High) 70% (Low)	1		76					
Lower Oil Reservoir	L157	78 to 84%	85% (High) 77% (Low)	2		82					
Additional Data (gpm / psia / psig / psid)											
Bleedoff Flow	F150	0.9 to 1.3 pgm	1.5 gpm (High) 0.85 gpm (Low)	C-04R PR-150A (#9)	(K)	1.52					
RCS Pressure RCS (psia) - 15 = A (psig)	PZRPR	2240 to 2260 psia (2225 to 2245 psig)	2350# (High) 1900# (Low)	C-02/3 PR-100	(A)	2240					
Containment Pressure	CTMTPR	0 psig	1 psig	N/A	(E)	0	0	0	0	0	0
Vapor Seal d/p (F=D-E)	CVAVAPDP	40 to 100 psid	N/A	Table 1	(F)	70					
Upper Seal d/p (G=C-D)	CVAUPRDP	600 to 850 psid	N/A	Table 1	(G)	535 ← Degraded Seal					
Middle Seal d/p (H=B-C)	CVAMIDDP	600 to 850 psid	N/A	Table 1	(H)	1595					
Lower Seal d/p (I=A-B)	CVALWRDP	600 to 850 psid	N/A	Table 1	(I)	40 ← Failed Seal					

Graphics No. CS8324

ATTACHMENT A - 'A' RCP SEAL DATA

ATTACHMENT E
RCP Seal Failure Indication Significance

(Page 1 of 1)

Indication	Possible Causes:
RCP Lower, Mid, Upper seal D/P high/low • Any seal greater than 1500 psid • D/P is less than or equal to 200 psid	Single RCP Seal Failure
RCP Lower, Mid, Upper seal D/P rate of change • 10 psid/hr	Single RCP Seal Failure
RCP Bleedoff Temperature High • Bleedoff temperature greater than 195.0 °F	Single RCP Seal Failure
RCP Bleedoff Flow High • Bleedoff Flow greater than 2.0 gpm	Single RCP Seal Failure
Vapor Seal Pressure low (any of the following) • Increasing Containment Sump level of equal to or greater than 1 gpm • less than 25 psid • Controlled Bleedoff pressure (P215) is low and NOT able to be increased using PIC-215. • Stator temperature on the affected RCP is increasing and DOES NOT stabilize. • Increased upward trend Containment radiation monitors.	Failed or Failing Vapor Seal Stage
Vapor Seal Pressure High • greater than 115 psid	Interruption of RCP Bleedoff Flow Path

Operation with D/P less than or equal to 1500 psid across a seal stage is acceptable indefinitely.

RCP seal stages are considered failed when D/P across that stage is less than or equal to 200 psid AND RCS pressure is between 2,200 and 2,300 psia

IF one seal stage fails (D/P is less than or equal to 200 psid), OR is degrading AND the following are NOT in alarm or trending toward alarm limits,
THEN allow affected RCP to remain in service:

- Controlled Bleedoff Flow
- Controlled Bleedoff Temperature

With RCS pressure at 2200 to 2300 psia, alarms are actuated when seal stage pressures deviate from nominal values by 150 psig, indicating degraded or failing operation of a particular seal stage.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
*3___	**Check RCP For Plant Shutdown Required**	
	a. **CHECK** affected RCP for the following:	☐ a. **PROCEED TO** step 4.
☐	• Any RCP seal stage D/P is GREATER THAN 1500 psid **OR**	
☐	• RCP has one RCP seal stage failed and another seal stage LESS THAN 650 psid **OR**	
☐	• RCP upper or lower oil reservoir level trending outside of PPC alarm values on Attachment A through Attachment D. **OR**	
☐	• Any RCP seal temperature or bearing oil temperature increasing trend and evaluation indicates alarm setpoint will be reached	
	b. **PERFORM** the following:	
☐	1. **GO TO** OP 2204, Load Changes **AND** **INITIATE** a plant shutdown **AND** **CONTINUE** with actions of this procedure beginning with step 3.c	
☐	c. **WHEN** Reactor is sub-critical, **THEN** **STOP** affected RCP	

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Determine Shutdown Margin**

JPM Number: **JPM-A1.2R** Revision: **3**

Initiated:

John W. Riley (Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/31/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	01/24/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
	Revised JPM for LOIT 2008 NRC Exam	1
	Revised to incorporate NRC comments (Note: Rev. 1 was never approved)	2
12/29/08	Incorporated NRC Post-Validation comments	2
01/23/17	Revised JPM for ILT 2017 JPM Retake Exam. Updated to latest JPM template. This is essentially a complete re-write of JPM due to the significant changes to the procedure OP 2208 (revision 017) for determining Shutdown Margin and a completely new OP 2208-013 form (revision 009).	3

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

System: Administrative

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 25

Task Number(s): NUTIMS #121-01-145

Applicable To: SRO X STA X RO X PEO _____

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

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: X Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has determined the required shutdown boron concentration is between 833.8 ppm to 850.4 ppm and that required SDM is not being met, taking into account xenon worth.

Required Materials: (procedures, equipment, etc.)
- OP 2208 and form 2208-13
- RE Curve and Data Book (Cycle 24)
- Calculator

General References: OP 2208, Section 4.3

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

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

JPM WORKSHEET

JPM Number: **JPM-A1.2R** Revision : **3**

Initial Conditions:

- The plant tripped from 100% steady-state equilibrium power at 1330, after 2 months of operation.
- On the trip, CEA #1 (Group 7 CEA) stuck fully withdrawn.
- All other plant components and systems responded as designed.
- The plant is presently stable at a Tavg of 532 °F and a pressure of 2250 psia.
- The Chemistry Department sampled the RCS, 15 minutes after the plant trip, and determined the Boron concentration is 650 ppm.
- Reactor Engineering has indicated core average burnup is 8000 MWD/MTU.

Initiating Cues:

- The Unit Supervisor has directed you to verify adequate SDM for the first full hour immediately following a plant trip. Utilize OP 2208 "Reactivity Calculations" section 4.3, crediting Xenon Worth hourly and existing plant conditions.
- Report status of Shutdown Margin to the Unit Supervisor after your calculations crediting xenon hourly worth.
- An STA review of your results is NOT required.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

START TIME: _____

STEP #1	Performance: OP-2208, Section 4.3 CAUTION: RCS boron concentration must meet SHUTDOWN MARGIN requirements of Technical Specifications LCO: 3.1.1.1, when in MODE 3, 4, and 5.	Standard: Examinee reads and acknowledges the CAUTION.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Provide examinee with the following items: • OP 2208, Reactivity Calculations • Blank copy of OPS Form 2208-13, SDM Determination in MODES 3, 4, and 5 • RE Curve and Data Book • Calculator • Ruler			
	Comments:			
STEP #2	Performance: 4.3.1 REQUEST Chemistry Department sample and determine present RCS boron concentration.	Standard: Examinee notes from the Initial Conditions that Chemistry Department has already sampled the RCS and provided an RCS boron concentration of **650 ppm**.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #3	Performance: **NOTE** 1. All data is recorded and calculated on OP 2208-013, "SDM Determination in MODEs 3, 4 and 5." Additional forms may be used as necessary. 2. SDM Determination may be performed to evaluate anticipated future plant conditions (e.g., due to plant cooldown, plant heatup or Shutdown CEA Groups withdrawn).	Standard: Examinee reads and acknowledges the NOTE.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #4	Performance: 4.3.2 RECORD Date and Time of calculation.	Standard: Examinee records a date and time on OP 2208-013.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: 4.3.3 OBTAIN present Core Burnup from <u>one</u> of the following and RECORD: • "CVBURNUP" (PPC) • Reactor Engineering	Standard: Examinee obtains present core burnup from Initial Conditions (8000 MWD/MTU), as provided by Reactor Engineering, and records it on OP 2208-013.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: • Obtained from initial conditions.			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #6	Performance: 4.3.4 RECORD RCS temperature (TAVG) for the present OR anticipated plant condition.	Standard: Examinee notes from the Initial Conditions that the RCS TAVG is 532°F and records 532°F on OP 2208-013.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #7	Performance: 4.3.5 CIRCLE the status of the Shutdown CEA Groups position (Shutdown CEA Groups may be withdrawn only in MODE 3) for the present OR anticipated plant condition.	Standard: Examinee notes from initial conditions that all CEAs are inserted except for CEA #1 which is not a Shutdown CEA. Examinee circles inserted on 2208-13.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #8	Performance: NOTE 1. Interpolation may be required to determine required xenon free shutdown boron concentration value. 2. RE Curve and Data Book Curve RE-B-03, "Minimum Boron Concentration, No Xenon, Keff = 0.99, Shutdown CEAs - Withdrawn, HZP," can only be used in MODE 3 with RCS average temperature (TAVG) greater than or equal to 500°F.	Standard: Examinee reads and acknowledges the NOTE.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #9	Performance:	Standard:	Critical:	Grade
	4.3.6 Refer To RE Curve and Data Book and DETERMINE the Required Xenon Free Shutdown Boron Concentration as follows: a. IF Shutdown CEA Groups are inserted, Refer To RE Curve RE-B-01, "3.6% Shutdown Boron Concentration vs. Moderator Temperature," and DETERMINE the required xenon free shutdown boron concentration as a function of RCS temperature (TAVG) and core burnup. b. IF Shutdown CEA Groups are withdrawn OR are anticipated to be withdrawn, Refer To RE Curve RE-B-03, "Minimum Boron Concentration, No Xenon, Keff = 0.99, Shutdown CEAs - Withdrawn, HZP," and DETERMINE the required xenon free shutdown boron concentration as a function of core burnup. c. RECORD required xenon free shutdown boron concentration value in "Required Xe Free CB."	Examinee uses 8000 MWD/MTU as burnup value and a T_{avg} of 532 °F and determines required shutdown boron concentration from the RE Curve and Data Book (RE-B-01) is **786 ppm (Tolerance: 780 ppm to 790 ppm]** Note tabular RE-B-01 provides 786 ppm for 8000 MWD/MTU. Examinee records required xenon free shutdown boron concentration value of **786 ppm (780 ppm to 790 ppm)** on OP 2208-013" in "Required Xe Free CB."	Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #10	Performance: NOTE: FSAR Chapter 14 main steam line break analysis uses the additional 350 ppm boration to disposition a main steam line break event initiated in MODE 3 with SIAS blocked. With SIAS blocked, the accident analysis does not credit boration from the HPSI pumps.	Standard: Examinee reads and acknowledges the NOTE.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #11	Performance: 4.3.7 DETERMINE the "Stuck Rod Boron Equivalent" as follows: [Ref. 6.5] a. RECORD the number of untrippable CEAs *not* inserted. b. MULTIPLY the value recorded in step 4.3.7.a. by 350 ppm. c. RECORD result in "Stuck Rod Boron Equivalent."	Standard: Examinee from initial conditions identifies that one regulating CEA did not insert into the core when the unit was tripped. Examinee records one CEA not inserted, multiplies one times 350 ppm and records **"Stuck Rod Boron Equivalent" as 350 ppm.**	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Recording data is not critical.			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #12	Performance: 4.3.8 DETERMINE the "Total Required Xe Free CB" as follows: a. ADD the values of "Required Xe Free CB" and "Stuck Rod Boron Equivalent." b. RECORD result in "Total Required Xe Free CB."	Standard: Examinee adds 786 ppm (Required Xe Free CB") and 350 ppm (Stuck Rod Boron Equivalent) to come up with **1136 ppm**. **[Tolerance: 1130 ppm to 1140 ppm]** Examinee records the Total Required Xe Free CB of 1136 ppm on the OP 2208-013 form.	Critical: Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments:			
STEP #13	Performance: 4.3.9 WHEN sample results are obtained, RECORD *present* RCS Boron Concentration.	Standard: Examinee records present RCS boron concentration of **650 ppm**, given in the Initial Conditions, on OPS Form 2208-13.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #14	Performance: 4.3.10 RECORD Date and Time that RCS boron sample was obtained.	Standard: Examinee records Date and Time that RCS boron sample was obtained on OP 2208-013. The initial conditions state that the sample was collected today, 15 minutes after the plant trip, at 1345.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #15	Performance: NOTE SHUTDOWN MARGIN is adequate if the value calculated in step 4.3.11 is positive, which indicates that the present RCS boron concentration is greater than the total required shutdown boron concentration.	Standard: Examinee reads and understands the note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #16	Performance: 4.3.11 SUBTRACT "Total Required Xe Free CB" from present RCS boron concentration and RECORD result AND sign (- or +) in "SHUTDOWN MARGIN Without Xenon Credit."	Standard: Examinee subtracts 1136 ppm (Total Required Xe Free CB) from 650 ppm (present RCS boron concentration). 650 ppm – 1136 ppm = **- 486 ppm**, with **[Tolerance: - 480 ppm to - 490 ppm]**. Examinee records result (486 ppm) AND sign (-) in "SHUTDOWN MARGIN Without Xenon Credit" on the OP 2208-013 form.	Critical: Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #17	Performance: 4.3.12 CHECK that present RCS boron concentration is greater than xenon free shutdown boron concentration.	Standard: Examinee compares present RCS born (650 ppm) against xenon free shutdown boron concentration (1136 ppm).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #18	Performance: 4.3.13 IF present RCS boron concentration is less than the total required xenon free shutdown boron concentration for current plant condition, PERFORM one of the following: • IF time after shutdown is less than 72 hours, Go To step 4.3.15 and PERFORM xenon correction. • Refer To AOP 2558, "Emergency Boration," and PERFORM emergency boration and ESTABLISH actual RCS boron concentration to greater than the total required xenon free shutdown boron concentration.	Standard: Examinee recognizes that present RCS boron concentration (650 ppm) is less than the total required xenon free shutdown boron concentration (1136 ppm) for current plant condition. Either path, PERFORM xenon correction or performing Emergency Boration are acceptable.	Critical: Y ☐ N ☒ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue: If examinee decides to Emergency Borate then direct, as the Unit Supervisor, to Go To step 4.3.15 and PERFORM xenon correction. Go to step 4.3.15 and PERFORM xenon correction.			
	Comments: The initiating cue states that the Unit Supervisor has directed you to verify adequate SDM for the first full hour immediately following a plant trip, taking advantage of the Xenon worth modification option and existing plant conditions. Step 4.3.14 is N/A since step 4.3.13 sends you directly to step 4.3.15 and step 4.3.14 is for anticipated plant conditions.			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP	Performance:	Standard:	Critical:	Grade
#19	**NOTE** Crediting xenon worth for the next 24 hour period is preferred over hourly calculations. If the 24 hour xenon corrected shutdown boron concentration is *not* met, use of the hourly method may be necessary.	Examinee reads and understands the note.	Y ☐ N ☒	S ☐ U ☐
	Cue:			
	Comments: The initiating cue states that the Unit Supervisor has directed you to verify adequate SDM for the first full hour immediately following a plant trip			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP	Performance:	Standard:	Critical:	Grade
#20	4.3.15 IF xenon worth credit is applicable (i.e., post trip or shutdown), PERFORM the following: a. DETERMINE the Xenon Reactivity worth as follows: 1) IF crediting Xenon Worth for the next 24 hour period, CHECK the "Next 24 hours" box. 2) IF crediting Xenon Worth for the next 24 hour period, Refer To one of the following and DETERMINE xenon reactivity worth expected at the end of the 24 hour period: • "Xenon - Samarium Post Trip Report" (printed automatically on Control Room printer following reactor trips) • RE Curve and Data Book • "XENON-SAMARIUM DEMAND" program (PPC) • Reactor Engineering	Examinee recognizes that the initiating cue directs you to verify adequate SDM for the first full hour immediately following a plant trip, taking advantage of the Xenon worth modification. Therefore step 4.3.15.a.1 and 4.3.15.a.2 are N/A.	Y ☐ N ☒	S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #21	Performance: NOTE When determining the smallest xenon reactivity worth expected to occur at any time during the next one hour period, the following should be considered: • If xenon is building in, the value at the beginning of the hour should be used. • If xenon is decaying, the value at the end of the hour should be used.	Standard: Examinee reads and understands the note and determines that xenon is building in.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #22	Performance: 3) IF crediting Xenon Worth hourly, CHECK the "Hourly" box. 4) IF crediting Xenon Worth hourly, Refer To one of the following and DETERMINE the *smallest* xenon reactivity worth expected within the hour being evaluated: • "Xenon-Samarium Post Trip Report" (printed automatically on Control Room printer following reactor trips) • RE Curve and Data Book • "XENON-SAMARIUM DEMAND" program on PPC • Reactor Engineering	Standard: Examinee checks the hourly box on OP 2208-013. Examinee obtains from the RE Curve and Data Book (RE-C-01) and determines the xenon reactivity worth value at the <u>beginning</u> of the hour = **2.676 %Δρ** (time zero) for MOC (8,000 MTD/MTU) life conditions. **[Tolerance: 2.650 %Δρ to 2.700 %Δρ]**	Critical: Y ☐ N ☒ Y ☒ N ☐	Grade S ☐ U ☐ S ☐ U ☐
	Cue: If asked which source to use, state that only the RE Curve and Data Book is available for use. (PPC is NOT available.)			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #23	Performance: 5) RECORD the source of the xenon reactivity data. 6) RECORD xenon reactivity value in "Xenon ρ."	Standard: Examinee records RE Curve and Data Book (RE-C-01) as the source of the xenon reactivity data on OP 2208-013. Examinee records xenon reactivity value of 2.676 %Δρ (2.650 – 2.700 %Δρ) in "Xenon ρ."	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #24	Performance: b. DETERMINE Inverse Boron Worth as follows: 1) Refer To RE Curve and Data Book, Curve RE-F-02, "Inverse Boron Worth versus Burnup, HFP, ARO," and DETERMINE Inverse Boron Worth at present burnup. 2) RECORD Inverse Boron Worth in "IBW."	Standard: Examinee uses 8,000 MWD/MTU burnup to determine **109.5 ppm/%Δρ** inverse boron worth from the RE Curve and Data Book (RE-F-02). **[Tolerance: 109.3 ppm/%Δρ to 109.7 ppm/%Δρ]** Examinee records 109.5 ppm/%Δρ for Inverse Boron Worth in "IBW" on OP 2208-013.	Critical: Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP	Performance:	Standard:	Critical:	Grade
#25	c. DETERMINE "Boron Equivalent Xe" as follows: 1) MULTIPLY "Xenon ρ" by "IBW." 2) RECORD result in "Boron Equivalent Xe."	Examinee multiplies 2.676 %Δρ (2.650 – 2.700 %Δρ) "Xenon ρ" by 109.5 ppm/%Δρ (109.3 - 109.7 ppm/%Δρ) "IBW." 2.676 %Δρ x 109.5 ppm/%Δρ = **293.0 ppm** 2.650 %Δρ x 109.3 ppm/%Δρ = 289.6 ppm 2.700 %Δρ x 109.7 ppm/%Δρ = 296.2 ppm **[Tolerance: 289.6 ppm to 296.2 ppm]**	Y ☒ N ☐	S ☐ U ☐
		Examinee records result **293.0 ppm (289.6 ppm to 296.2 ppm)** in "Boron Equivalent Xe" on 2208-013.	Y ☐ N ☒	S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #26	Performance: d. RECORD the "Required Xe Free CB" value from step 4.3.8. e. DETERMINE "Total Required Xe Corrected CB" as follows: 1) SUBTRACT "Boron Equivalent Xe" from "Total Required Xe Free CB." 2) RECORD result in "Total Required Xe Corrected CB."	Standard: Examinee records the Total Required Xe Free CB of 1136 ppm on the OP 2208-013 form. Examinee subtracts "Boron Equivalent Xe" from "Total Required Xe Free CB." 1136 ppm – 293 ppm = **843.0 ppm** 1130 ppm – 296.2 ppm = 833.8 ppm 1140 ppm – 289.6 ppm = 850.4 ppm **[Tolerance: 833.8 ppm to 850.4 ppm]** Examinee records result in "Total Required Xe Corrected CB."	Critical: Y ☐ N ☒ Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: Note, procedure step 4.3.15.e.1 stated "Total Required Xe Corrected C_B". This should be, as it is on the form "Total Required Xe Free C_B". A procedure change was processed for this JPM to make this correction.			
	Comments:			
STEP #27	Performance: f. RECORD present RCS boron concentration value from step 4.3.9 g. RECORD Date and Time that RCS boron sample was obtained in step 4.3.10.	Standard: Examinee records present RCS boron concentration of 650 ppm, given in the Initial Conditions, on OPS Form 2208-13. Examinee records date and time sample was obtained as stated in the initial conditions; The sample was collected today at 1345.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP #28	Performance: NOTE SHUTDOWN MARGIN is adequate if the value calculated in step 4.3.15.h. is positive, which indicates that the present RCS boron concentration is greater than the total required shutdown boron concentration.	Standard: Examinee reads and understands the note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #29	Performance: h. SUBTRACT "Total Required Xe Corrected CB" from present RCS boron concentration and RECORD result AND sign (- or +) in "SHUTDOWN MARGIN With Xenon Credit."	Standard: Examinee subtracts "Total Required Xe Corrected CB" from present RCS boron concentration. 650 ppm – 843.0 ppm = **- 193.0 ppm** 650 ppm – 833.8 ppm = - 183.8 ppm 650 ppm – 850.4 ppm = - 200.4 ppm **[Tolerance : – 183.8 ppm to – 200.4 ppm]** Examinee records result (193.0 ppm) AND sign (-) in "SHUTDOWN MARGIN With Xenon Credit."	Critical: Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A1.2R** Revision: **3**

Task Title: **Determine Shutdown Margin**

STEP	Performance:	Standard:	Critical:	Grade
#30	i. CHECK that present RCS boron concentration is greater than the total required xenon corrected shutdown boron concentration.	Examinee checks present RCS boron concentration is greater than the total required xenon corrected shutdown boron concentration. Examinee determines the total required xenon corrected shutdown boron concentration is greater than present RCS boron concentration and that required **SDM is not met**.	Y ☒ N ☐	S ☐ U ☐
	Cue: • Inform Examinee that an STA review of the results is NOT required (if asked). • Acknowledge report on Shutdown Margin. • State this JPM is complete.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-A1.2R** Revision: **3**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**25**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-A1.2R** Revision: **3**

Initial Conditions:

- The plant tripped from 100% steady-state equilibrium power at 1330, after 2 months of operation.
- On the trip, CEA #1 (Group 7 CEA) stuck fully withdrawn.
- All other plant components and systems responded as designed.
- The plant is presently stable at a Tavg of 532 °F and a pressure of 2250 psia.
- The Chemistry Department sampled the RCS, 15 minutes after the plant trip, and determined the Boron concentration is 650 ppm.
- Reactor Engineering has indicated core average burnup is 8000 MWD/MTU.

Initiating Cues:

- The Unit Supervisor has directed you to verify adequate SDM for the first full hour immediately following a plant trip. Utilize OP 2208 "Reactivity Calculations" section 4.3, crediting Xenon Worth hourly and existing plant conditions.
- Report status of Shutdown Margin to the Unit Supervisor after your calculations crediting xenon hourly worth.
- An STA review of your results is NOT required.

INSTRUCTOR COPY - KEY

Form Approval

Approval Date	Effective Date
5/30/2016	6/7/2016

Form Cover Sheet

Generic Information

Form Title	Rev. No.
Shutdown Margin Determination in MODEs 3, 4 and 5	009

Reference Procedure	Applicable Tech. Spec.	Frequency
OP 2208		

This form is being used for the following:

☐ System Alignment ☐ Preventative Maintenance ☐ **Other:** _____

☐ Maintenance Restoration (Retest)

Specific Information

Shutdown Margin Determination in MODEs 3, 4 and 5

Step No.	Calculation Date	Calculation Time
4.3.2	Today date ✓	Time Today ✓

Shutdown Boron Concentration Determination

Step No.	Parameter/Calculation	Value
4.3.3	Core Burnup	8,000 MWD/MTU ✓
4.3.4	RCS Average Temperature (T_{AVG})	532 °F ✓
4.3.5	Shutdown CEA Groups Position (Circle applicable value)	Withdrawn (Inserted) ✓
4.3.6	Shutdown Boron Concentration, No Xenon	786 ppm (Required Xe Free C_B) ✓
4.3.7	(1) X 350 ppm (# of untrippable CEAs Not Inserted) ✓	350 ppm (Stuck Rod Boron Equivalent) ✓
4.3.8	(786) + (350) (Required Xe Free C_B) (Stuck Rod Boron Equivalent)	1136 ppm (Total Required Xe Free C_B) ✓

Present RCS Boron Concentration

Step No.	Parameter	Value
4.3.9	RCS Boron Concentration	650 ppm (Present RCS C_B) ✓
4.3.10	RCS Boron Sample Date and Time	Date: Today's date Time: 1345 ✓

SHUTDOWN MARGIN Without Xenon Credit

Step No.	Parameter/Calculation	Value
4.3.11	(650) − (1136) (Present RCS C_B) (Total Required Xe Free C_B) ✓	(−) 486 ppm ✓

Acceptance Criteria

SHUTDOWN MARGIN is adequate if this value is positive indicating that present RCS Boron Concentration is greater than the Total Required Xenon Corrected Shutdown Boron Concentration.

Determined By:	Candidates Name
STA Review:	

Shutdown Margin Determination in MODEs 3, 4 and 5

Xenon Correction of Shutdown Boron Concentration

Step No.	Parameter/Calculation	Value
4.3.15.a.	Xenon Reactivity (Next 24 Hours ☐ Hourly ☑) (Indicate source used: RE Curve + Data)	2.676 %Δρ (Xenon ρ)
4.3.15.b.	Inverse Boron Worth	109.5 ppm/%Δρ (IBW)
4.3.15.c.	(2.676 %Δρ (Xenon ρ)) x (109.5 ppm / %Δρ (IBW))	293 ppm (Boron Equivalent Xenon)
4.3.15.d.	Total Required Xenon Free Shutdown Boron Concentration (from step)	1136 ppm (Total Required Xe Free C_B)
4.3.15.e.	(1136 Total Required Xe Free C_B) – (293 Boron Equivalent Xe)	843 ppm (Total Required Xe Corrected C_B)

Present RCS Boron Concentration

Step No.	Parameter	Value
4.3.15.f.	RCS Boron Concentration	650 ppm (Present RCS C_B)
4.3.15.g.	RCS Boron Sample Date and Time	Date: Today's date Time: 1345

SHUTDOWN MARGIN With Xenon Credit

Step No.	Parameter/Calculation	Value
4.3.15.h.	(650 Present RCS C_B) – (843 Total Required Xe Corrected C_B)	(–) 193 ppm

Acceptance Criteria

SHUTDOWN MARGIN is adequate if this value is positive indicating that present RCS Boron Concentration is greater than the Total Required Xenon Corrected Shutdown Boron Concentration.

Determined By:	Candidate's Name
STA Review:	

Shutdown Margin Determination in MODEs 3, 4 and 5

Hourly Xenon Correction Log									
	Date	**Time**	**Present RCS Boron Concentration**		**Total Required Xanon Corrected C_B**		**Shutdown Margin with Xenon Credit**	**Determined By**	**STA Review**
1			ppm	–	ppm	=	( ) ppm		
2			ppm	–	ppm	=	( ) ppm		
3			ppm	–	ppm	=	( ) ppm		
4			ppm	–	ppm	=	( ) ppm		
5			ppm	–	ppm	=	( ) ppm		
6			ppm	–	ppm	=	( ) ppm		
7			ppm	–	ppm	=	( ) ppm		
8			ppm	–	ppm	=	( ) ppm		
9			ppm	–	ppm	=	( ) ppm		
10			ppm	–	ppm	=	( ) ppm		
11			ppm	–	ppm	=	( ) ppm		
12			ppm	–	ppm	=	( ) ppm		

Acceptance Criteria

SHUTDOWN MARGIN is adequate if this value is positive indicating that present RCS Boron Concentration is greater than the Total Required Xenon Corrected Shutdown Boron Concentration.

Shutdown Margin Determination in MODEs 3, 4 and 5

Hourly Xenon Correction Log									
	Date	Time	Present RCS Boron Concentration		Total Required Xanon Corrected C_B		Shutdown Margin with Xenon Credit	Determined By	STA Review
13			ppm	–	ppm	=	( ) ppm		
14			ppm	–	ppm	=	( ) ppm		
15			ppm	–	ppm	=	( ) ppm		
16			ppm	–	ppm	=	( ) ppm		
17			ppm	–	ppm	=	( ) ppm		
18			ppm	–	ppm	=	( ) ppm		
19			ppm	–	ppm	=	( ) ppm		
20			ppm	–	ppm	=	( ) ppm		
21			ppm	–	ppm	=	( ) ppm		
22			ppm	–	ppm	=	( ) ppm		
23			ppm	–	ppm	=	( ) ppm		
24			ppm	–	ppm	=	( ) ppm		

Acceptance Criteria

SHUTDOWN MARGIN is adequate if this value is positive indicating that present RCS Boron Concentration is greater than the Total Required Xenon Corrected Shutdown Boron Concentration.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Complete "A" SW Pump Operability Surveillance, SP 2612A-003**

JPM Number: **JPM-A2R** Revision: **0/0**

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Mike Cote (Signature on File)	01/24/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/04/2017	Initial JPM creation for 2017 NRC Exam Re-Take	0/0

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **A2R** Revision: **0/0**

Task Title: **Complete "A" SW Pump Operability Surveillance, SP 2612A-003**

System: **Service Water**

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 076-01-096

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: 2.2.12 K/A Rating: 3.7/4.1

Method of Testing: Simulated Performance: _____ Actual Performance: **X**

Location: Classroom: **X** Simulator: _____ In-Plant: _____

Task Standards: At the completion of this JPM the examinee will have completed surveillance form SP 2612A-003 IAW SP 2612A; calculates the "A" SW pump ΔP, determines ΔP is UNSAT, and notifies the US of the UNSAT results.

Required Materials: (procedures, equipment, etc.) SP 2612A, "A" Service Water Pump Tests procedure.
SP 2612A-003, "A" SW Pump and Facility 1 Discharge Check Valve IST form.

General References: SP 2612A, "A" Service Water Pump Tests procedure.

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

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

JPM WORKSHEET

JPM Number: **JPM-A2R** Revision : **0/0**

Initial Conditions:

- Plant is in Mode 1, all conditions normal.
- "A" & "C" Service Water Pumps are in service.
- "A" Service Water Pump surveillance SP 2612A is being performed following an overhaul of the pump strainer.
- Only the pump IST is being performed. The flush valve and check valve tests are *not* required.
- All vibration data has been recorded on SP 2612A-003.

Initiating Cues:

The US has directed you to complete surveillance form SP 2612A-003, from step 4.1.11c.1 through step 4.1.19, using the below listed data, which was obtained simultaneously. Section 4.1 has been completed up to and including step 4.1.11b.

- Discharge Pressure indication on PI-6474 (local) = 38.5 psig
- "A" SW Header Flow indication on FIT-6471 = 10,500 gpm
- Temp Flow Meter at Strainer Backwash Piping flow = 0 gpm
- Distance from floor to Circ Water Bay Level = 12.43 ft

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-A2R** Revision: **0/0**

Task Title: **Complete "A" SW Pump Operability Surveillance, SP 2612A-003**

START TIME: _____

STEP #1	Performance: **SP 2612A, "A" SW Pump Tests** 4.1.11 WHEN "A" Service Water Pump has operated for at least two minutes with stable system flowrate of 10,500 gpm (10,300 to 10,700 gpm), PERFORM the following: a. N/A [completed per IC] b. N/A [completed per IC] c. OBTAIN the following simultaneously, and RECORD on SP 2612A-003: 1) "A" Service Water Pump discharge pressure (PI-6474, strainer inlet pressure). 2) Service Water Header "A" flow (FIT-6471). 3) Strainer backwash discharge flow from temporary flow meter.	Standard: Examinee enters applicable data from Initial Conditions onto form SP 2612A-003 under "Data": • **38.5** at step 4.1.11c.1) • **10,500** at step 4.1.11c.2) • **0** at step 4.1.11c.3)	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Examinee will calculate total SW flow and determine IST acceptance criteria is SAT.			

PERFORMANCE INFORMATION

JPM Number: **JPM-A2R** Revision: **0/0**

Task Title: **Complete "A" SW Pump Operability Surveillance, SP 2612A-003**

STEP #2	Performance: **SP 2612A (cont)** 4.1.12 OBTAIN "A" Service Water Pump sea level, by performing the following: a. REQUEST local operator to Refer To Attachment 3 and measure the distance from floor to circulating water bay level. b. RECORD distance from floor to circulating water bay level on SP 2612A-003. c. RECORD water level indicator NQ Number on SP 2612A-003 cover page. d. CALCULATE sea level as follows: *Sea level = 14 - Distance from floor to water level* e. RECORD sea level on SP 2612A-003.	Standard: Examinee records distance from floor to CW bay level (**12.43** ft) on form SP 2612A-003 at step 4.1.12b under "Level Indicator Data". Examinee calculates Sea Level as: Examinee calculated sea level; (14 – 12.43 = **1.57** ft) **[Tolerance: 1.5 to 1.6]** Examinee records **1.57** on SP 2612A-003, step 4.1.12e under "Calculated Data".	Critical: Y ☐ N ☒ Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments: Recording of data is **NOT** critical.			
STEP #3	Performance: **SP 2612A (cont)** 4.1.13 CALCULATE pump suction pressure as follows: *Suction pressure = Sea level x 0.45*	Standard: Examinee calculates pump suction pressure as: [1.57 X 0.45 = **0.71**] **[Tolerance: 0.675 to 0.72]**	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A2R** Revision: **0/0**

Task Title: **Complete "A" SW Pump Operability Surveillance, SP 2612A-003**

STEP #4	Performance: **SP 2612A (cont)** 4.1.14 RECORD pump suction pressure on SP 2612A-003.	Standard: Examinee records suction pressure **[0.71]** on SP 2612A-003, step 4.1.14 under "Data".	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: **SP 2612A (cont)** 4.1.15 Using step 4.1.11c.1) and 4.1.14 pressures, PERFORM the following: a. CALCULATE "A" SW Pump ΔP as follows: *ΔP = Discharge - Suction pressure* b. RECORD "A" SW Pump ΔP on SP 2612A-003.	Standard: Examinee calculates "A" SW Pump ΔP ΔP = Discharge (38.5) - Suction (0.71)= **37.8 psig** **[Tolerance: 37.78 to 37.82]** Examinee records ΔP **(37.8 psig)** on SP 2612A-003, step 4.1.15b. under "Data".	Critical: Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐
	Cue:			
	Comments: Recording of data is **NOT** critical.			
STEP #6	Performance: **SP 2612A (cont)** 4.1.16 DOCUMENT "A" SW Pump ΔP Results SP 2612A-003.	Standard: Examinee documents "A" SW Pump ΔP Results on SP2612A-003, step 4.1.16 as "**UNSAT**" for **both** "**Acceptable**" and "**Normal**" limits.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A2R** Revision: **0/0**

Task Title: **Complete "A" SW Pump Operability Surveillance, SP 2612A-003**

S T E P #7	Performance: **SP 2612A (cont)** 4.1.17 DOCUMENT "A" Service Water Pump vibration Results on SP 2612A-003.	Standard: Examinee documents "A" SW Pump vibration Results on SP2612A-003, step 4.1.17 as "**SAT**" for **both** "**Acceptable**" and "**Normal**" limits.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P #8	Performance: **SP 2612A (cont)** 4.1.18 DOCUMENT "A" Service Water Pump Operational Readiness Results on SP 2612A-003.	Standard: Examinee documents "A" SW Pump Operational Readiness Results on SP2612A-003, step 4.1.18 as "**UNSAT**".	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Recording of data is **NOT** critical.			
S T E P #9	Performance: **SP 2612A (cont)** 4.1.19 IF "A" Service Water Pump Operational Readiness Results "UNSAT," Refer To Attachment 1.	Standard: Examinee refers to Att. 1, Actions for IST Data Outside "Acceptable" Limits, and notifies the US that of the "**UNSAT**" results.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Once the Examinee has notified the US of the UNSAT results per Step 1 of Attachment 1, the JPM is complete.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-A2R** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-A2R** Revision: **0/0**

Initial Conditions:

- Plant is in Mode 1, all conditions normal.
- "A" & "C" Service Water Pumps are in service.
- "A" Service Water Pump surveillance SP 2612A is being performed following an overhaul of the pump strainer.
- Only the pump IST is being performed. The flush valve and check valve tests are *not* required.
- All vibration data has been recorded on SP 2612A-003.

Initiating Cues:

The US has directed you to complete surveillance form SP 2612A-003, from step 4.1.11c.1 through step 4.1.19, using the below listed data, which was obtained simultaneously. Section 4.1 has been completed up to and including step 4.1.11b.

- Discharge Pressure indication on PI-6474 (local) = 38.5 psig
- "A" SW Header Flow indication on FIT-6471 = 10,500 gpm
- Temp Flow Meter at Strainer Backwash Piping flow = 0 gpm
- Distance from floor to Circ Water Bay Level = 12.43 ft

Answer Key

Form Approval

Approval Date	Effective Date
11/23/15	11/23/15

Surveillance Form

Generic Information

Form Title	Rev. No.
"A" SW Pump and Facility 1 Discharge Check Valve IST	008

Reference Procedure	Applicable TS/TRM	Applicability (TS/TRM)	Frequency
SP 2612A	4.0.5; TRM Table 7.1.21–2, Item A	All MODEs	Every 92 days (Q)

Specific Information

Schedule Start Date: NA JM		WO Number	Mntc Restoration: [X] Yes [ ] No
Performance Modes: All	Prerequisites Completed (Initials): JM	Precautions Noted (Initials): 2	
Test Authorized By: Unit Supervisor Chief Supervisor		Date: Today	Partial Surveillance: [X] Yes [ ] No
Performed By (Print/Sign)		Date	
Accepted By (Print/Sign)		Date	Acceptance Criteria Satisfied: [ ] Yes [ ] No
Approved By (Department Head or Designee)		Date	

Surveillance Information

Test Equipment Type	QA Number	Cal Due Date
Vibration Analyzer	MTE-03441	4/30/17
Accelerometer	MTE-03441	4/30/17
Water Level Indicator	NO# 0005	7/15/17
Stopwatch	MTE-03266	8/31/17
Stopwatch		
Temporary Flow Meter	MTE-06381	7/29/17

Comments

CR# _____

NOTE: Following acceptance, copy FORWARDED to IST Coordinator. [ ] Initial

"A" SW Pump and Facility 1 Discharge Check Valve IST

Installation of Temp Flow Meter (Step 4.1.1a.)			
SM approval to INSTALL temporary flow meter: NA			
SM signature NA		Date NA	
Step	**Action**	**Performer**	**I.V.**
4.1.1b.	PDM to install temporary flow meter on service water strainer backwash piping		
4.1.1c.	Perform IV for installation of temporary flow meter on service water backwash piping		

2-SW-90A, "'A' SERVICE WATER PUMP STRAINER FLUSH," Stroke and Timing					
Step	**Parameter**	**Limits**	**Minimum**	**Data (sec)**	**Maximum**
4.1.5f./h.	2-SW-90A open stroke time Baseline = 7.36 sec	"Acceptable"	N/A	7.55	14.72
		"Normal"	3.68		11.04
	2-SW-90A close stroke time (Augmented)	"Acceptable"	N/A	4.93	N/A
		"Normal"	N/A		N/A
Step	**Parameter**	**IST Acceptance Criteria**		**Results**	**Initials**
4.1.5j./k.	2-SW-90A stroke times	Within IST "Normal" limits		"SAT" ☒ "UNSAT" ☐	
	2-SW-90A Operational Readiness	The following are met: • Stroke times within IST "Acceptable" limits • Valve completed one full cycle		"SAT" ☒ "UNSAT" ☐	

2-SW-1A, "'A' SERVICE WATER PUMP DISCHARGE CHECK," Open Check					
Step No.	**Parameter**	**Indicator**	**IST Acceptance Criteria**		
			Minimum	**Data (gpm)**	**Maximum**
4.1.9a.	Service Water Header "A" flow	FIT-6471	10,300	10,500	10,700
4.1.9b.	**Parameter**	**IST Acceptance Criteria**		**Results**	**Initials**
	2-SW-1A Open Check	SW Header "A" flow within IST "Acceptance Criteria"		"SAT" ☒ "UNSAT" ☐	

"A" SW Pump and Facility 1 Discharge Check Valve IST

"A" SW Pump Vibration Level Data				
Step	**Parameter**	**IST Acceptance Criteria**		
	Vibration Measurement Point	**Acceptable Limits**	**Data (in/sec)**	**Normal Limits**
4.1.11a.	MOH Baseline = .102	< 0.612	0.123	< 0.255
	MOV Baseline = .134	< 0.700	0.186	< 0.325
	MOA Baseline = .055	< 0.330	0.096	< 0.137
	MIH Augmented	< 0.420	0.102	N/A
	MIV Augmented	< 0.330	0.079	N/A
	MIA Augmented	< 0.234	0.074	N/A

"A" SW Pump Discharge Pressure			
Step	**Parameter**	**Indicator**	**Data (psig)**
4.1.11c.1)	Discharge pressure	PI–6474 (local)	38.5

"A" SW Header Flow					
Step	**Parameter**	**Indicator**	**IST Acceptance Criteria**		
			Minimum	**Data (gpm)**	**Maximum**
4.1.11c.2)/ 3)	Service Water Header "A" flow	FIT–6471		10,500	
	Temp Flow Meter at strainer backwash piping			0	
	Total Flow		10,300	10,500	10,700
4.1.11c.	**Item**	**IST Acceptance Criteria**		**Results**	**Initials**
	SW Header "A" flow	Meets IST Acceptance Criteria		"SAT" ☒ "UNSAT" ☐	JL

Intake Structure Level and "A" SW Pump Suction Pressure Calculation			
Step	**Parameter**	**Indicator**	**Data (ft)**
4.1.12b./e.	Distance from floor to Circ Water Bay level	Level Indicator	12.43
	Sea level (*Sea level = 14 – Distance from floor to water level)*	Calculated	1.57
4.1.14	Suction pressure	**Indicator**	**Data (psig)**
		Calculated (Note 1.)	0.71
Note 1. *Suction pressure (psig) = Sea level x 0.45*			

"A" SW Pump and Facility 1 Discharge Check Valve IST

"A" SW Pump ΔP					
Step	Parameter	Limits	IST Acceptance Criteria		
			Min	Data (psid)	Max
4.1.15b.	"A" SW Pump ΔP Baseline = 44.05 psid (Note 2.)	"Acceptable"	40.97	37.8	48.45
		"Normal"	41.85		N/A

Note 2. *ΔP (psid) = Discharge – Suction Pressure*

Step	Item	Results	Initials
4.1.16	"A" SW Pump ΔP is within IST "Acceptable" limits	"SAT" ☐ "UNSAT" ☒	
	"A" SW Pump ΔP is within IST "Normal" limits	"SAT" ☐ "UNSAT" ☒	

"A" SW Pump Vibration Level Data			
Step	Item	Data	Initials
4.1.17	All "A" SW Pump vibration data is within IST "Acceptable" limits	"SAT" ☒ "UNSAT" ☐	
	All "A" SW Pump vibration data is within IST "Normal" limits	"SAT" ☒ "UNSAT" ☐	

"A" SW Pump Operational Readiness				
Step	Parameter	IST Acceptance Criteria	Data	Initials
4.1.18	"A" SW Pump Operational Readiness	All within IST "Acceptable" limits: • "A" SW Pump ΔP • SW Header "A" total flow • "A" SW Pump vibration	"SAT" ☐ "UNSAT" ☒	

"A" SW Pump and Facility 1 Discharge Check Valve IST

2–SW–1B, "'B' SERVICE WATER PUMP DISCHARGE CHECK," Closure Check				
Step	**Parameter**	**IST Acceptable Limit**	**Results**	**Initials**
4.1.23 d./e.	"B" SW Pump	*No* reverse rotation observed	"SAT" ☐ "UNSAT" ☐	NA
	2–SW–1B closed	All within IST "Acceptable" limits: • "A" SW Pump ΔP • "B" SW Pump reverse rotation	"SAT" ☐ "UNSAT" ☐	NA

"A" SW Pump Reverse Rotation Check				
Step	**Parameter**	**IST Acceptable Limit**	**Results**	**Initials**
4.1.26	"A" SW Pump	*No* sustained reverse rotation observed	"SAT" ☐ "UNSAT" ☐	NA

"B" SW Pump Discharge Pressure			
Step	**Parameter**	**Indicator**	**Data (psig)**
4.1.28c.1)	Discharge pressure	PI–6480 (local)	NA

2–SW–1B, "'B' SERVICE WATER PUMP DISCHARGE CHECK," Open Check					
Step	**Parameter**	**Indicator**	**IST Acceptance Criteria**		
			Min	**Data (gpm)**	**Max**
4.1.28c.2)	Service Water Header "A" flow	FIT–6471	10,300	NA	10,700
4.1.28d.	**Item**	**IST Acceptance Criteria**		**Results**	**Initials**
	2–SW–1B Open Check	SW Header "A" flow within IST "Acceptance Criteria"		"SAT" NA ☐ "UNSAT" ☐	NA

Intake Structure Level and "B" SW Pump Suction Pressure Calculation			
Step	**Parameter**	**Indicator**	**Data (ft)**
4.1.29b./d.	Distance from floor to Circ Water Bay level	Level Indicator	NA
	Sea level (*Sea level = 14 – Distance from floor to water level)*	Calculated	NA
4.1.31	Suction pressure	**Indicator**	**Data (psig)**
		Calculated (Note 3.)	NA
Note 3. *Suction pressure (psig) = Sea level x 0.45*			

"B" SW Pump ΔP				
Step	Parameter	Limits	IST Acceptance Criteria	
			Minimum	Data (psid)
4.1.32b.	"B" SW Pump ΔP (Note 4.)	"Acceptable"	38.6	NA

Note 4. *ΔP (psid) = Discharge – Suction Pressure*

Step	Item	IST Acceptance Criteria	Results	Initials
4.1.33	"B" SW Pump ΔP	Within IST "Acceptable" limits	"SAT" ☑ "UNSAT" ☐	NA

2–SW–1A, "'A' SERVICE WATER PUMP DISCHARGE CHECK," Closure Check				
Step	Parameter	IST Acceptance Criteria	Results	Initials
4.1.34	2–SW–1A Closure Check	All within IST "Acceptable" limits: • "A" SW Pump reverse rotation • "B" SW Pump ΔP	"SAT" NA ☐ "UNSAT" ☐	NA

2–SW–1B, "'B' SERVICE WATER PUMP DISCHARGE CHECK," Closure Check				
Step	Parameter	IST Acceptable Limit	Results	Initials
4.1.36 i./j.	"B" SW Pump	*No* reverse rotation observed	"SAT" ☐ "UNSAT" ☐	NA
	2–SW–1B closed	All within IST "Acceptable" limits: • "A" SW Pump ΔP • "B" SW Pump reverse rotation	"SAT" NA ☐ "UNSAT" ☐	NA

SW Pump Strainer Control Restoration			
Step	Parameter	Performer	I.V.
4.1.39	"A" SW Pump Strainer switch returned to "AUTO"		
	"B" SW Pump Strainer switch returned to "AUTO"	NA	NA

Removal of Temp Flow Meter (Step 4.1.40a.)			
SM approval to REMOVE temporary flow meter: _____ SM signature Date			
Step	Action	Performer	I.V.
4.1.40b.	PDM to remove temporary flow meter on service water strainer backwash piping	NA	
4.1.40c.	Perform IV for removal of temporary flow meter on service water backwash piping		

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Review RWP and Survey Map**

JPM Number: **JPM-A3R** Revision: **0**

Initiated:

John W. Riley (Signature on File)	1/23/17
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	1/27/17
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	1/26/17
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
1/11/2017	New JPM for 2017 NRC JPM exam re-take. Similar JPMs are in the bank but task (vent a pump) and area have been changed.	0

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **JPM-A3R** Revision: **0**

Task Title: **Review RWP and Survey Map**

System: Radiation Control

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): _____

Applicable To: SRO X STA _____ RO X PEO _____

K/A Number: 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 reviewed the applicable RWP and survey map to determine the specified radiological requirements to perform the assigned task.

Required Materials: (procedures, equipment, etc.) RWP 2170002
Millstone Nuclear Power Station – Radiation Survey Figure No. 27 Unit 2, -45 Safeguards, Aerated Waste Tank and Pump Rooms.

General References: MP-PROC-HP-RPM 5.2.2[r016] Basic Radiation Worker Responsibilities

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

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

JPM WORKSHEET

JPM Number: **JPM-A3R** Revision : **0**

Initial Conditions:

- The plant is in MODE 1 operating at 100% power.
- Maintenance on the "A" CS pump has been completed.
- All pump tagging has been removed with the exception of the pump breaker. The pump breaker remains racked down and RED TAGGED.
- The suction, discharge, recirculation, vent and drain valves are all closed in preparation for filling and venting of the pump.

Initiating Cues:

- You have been directed to fill and vent the "A" CS pump (P43A). The pump casing vent only needs to be vented and this vent is reached without climbing.
- Hoses need to be installed for venting.
- The duration of filling and venting the "A" CS pump (P43A) is expected to take half an hour.
- All radiological protective action for this work is contained in the RWP. There are no additional radiological protective action requirements in the Operating procedure for filling and venting the pump.
- State the radiological requirements for entering this area. Include in your answer:

  1. Which RWP task (job step) is appropriate for this assignment.
  2. Highest radiation level in the work area around the pump (including units of measure).
  3. Highest contamination level in the area of the pump (including units of measure).
  4. Protective clothing required to perform venting operations.
  5. Expected dose for this assignment area for you only (including units of measure)
  6. Dose rate alarm (including units of measure)

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

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-A3R** Revision: **0**

Task Title: **Review RWP and Survey Map**

START TIME: _____

STEP #1	Performance: Review RWP 2170002, Nuclear Station Operations and Maintenance Radiation Work Permit (RWP). Review Millstone Nuclear Power Station – Radiation Survey Figure No. 27 Unit 2, -45 Safeguards, Aerated Waste Tank and Pump Rooms.	Standard: Examinee reviews RWP 2170002, Nuclear Station Operations and Maintenance Radiation Work Permit (RWP). Examinee reviews Millstone Nuclear Power Station – Radiation Survey Figure No. 27 Unit 2, -45 Safeguards, Aerated Waste Tank and Pump Rooms.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: • Provide examinee with RWP 2170002, Nuclear Station Operations and Maintenance Radiation Work Permit. • Provide examinee Millstone Nuclear Power Station – Radiation Survey Figure No. 27 Unit 2, -45 Safeguards, Aerated Waste Tank and Pump Rooms • Provide a calculator.			
	Comments:			
STEP #2	Performance: 1. Determine which RWP task (job step) is appropriate for this assignment.	Standard: Examinee states that task (job step) No. 1 is appropriate for this task. Task #1 is Operations: Perform routine work activities in RCAs and Radiation Areas: routine surveillance, rounds, system operation and restoration, tagging, walk downs and inspections.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-A3R** Revision: **0**

Task Title: **Review RWP and Survey Map**

STEP #3	Performance: 2. Determine the highest radiation level in the area around the "A" CS pump (P43A) (including units of measure).	Standard: Examinee states that highest radiation level in the area around the "A" CS pump (P43A) is 5 mrem/hr (2.4 mrem/hr to 5 mrem/hr is acceptable)	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Note mr/hr is the same as mrem/hr			
STEP #4	Performance: 3. Determine the highest contamination level in the area around the "A" CS pump (P43A) (including units of measure).	Standard: Examinee states that the contamination level in the area around the "A" CS pump (P43A) area is < 1k DPM/100 cm^2	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: 4. Determine the minimum protective clothing required for hooking up hoses to be used for the venting.	Standard: Examinee states that as a minimum lab coats and rubber gloves shall be worn when hoses are connected to contaminated systems.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Reference page 4 of Job Step 1, specifies 7.3 of RWP 2170002. It is acceptable if the examinee includes shoe covers since HP might specify this requirement in the brief.			
STEP #6	Performance: 5. Determine the expected dose for this assignment, (including units of measure).	Standard: Examinee states that the expected dose is between 1.2 to 2.5 mrem.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: The examinee could estimate high (conservative) using 5 mrem/hr Dose Rate X 1/2 hr = 2.5 mrem , or could use what appears to be the closes radiation reading to the pump 2.4 mrem/hr which would be 2.4 mrem/hr X 1/2 hr = 1.2 mrem Note mr is the same as mrem			

PERFORMANCE INFORMATION

JPM Number: **JPM-A3R** Revision: **0**

Task Title: **Review RWP and Survey Map**

STEP #7	Performance: 6. Determine the expected dose rate alarm for this assignment, (including units of measure).	Standard: Examinee states that the dose rate alarm is 20 mrem/hr.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Note mr/hr is the same as mrem/hr			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

PERFORMANCE INFORMATION

JPM Number: **JPM-A3R** Revision: **0**

Task Title: **Review RWP and Survey Map**

1. RWP Task	Task #1 is Operations: Perform routine work activities in RCAs and Radiation Areas: routine surveillance, rounds, system operation and restoration, tagging, walk downs and inspections.
2. Highest Radation level in pump area (units of measure)	5 mrem/hr (2.4 to 5 mrem/hr is acceptable)
3. Highest contamination level in the pump area (units of measure)	Contamination level in the area around the "A" CS pump (P43A) area is $< 1k$ DPM/100 cm^2
4. Minimum required PCs to vent	Minimum lab coats and rubber gloves shall be worn when hoses are connected to contaminated systems. Including shoe covers would be acceptable.
5. Expected Dose (units of measure)	Expected dose is between 1.2 to 2.5 mrem.
6. Dose Rate Alarm Setting (units of measure)s	Dose Rate Alarm is 20 mrem/hr.

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-A3R** Revision: **0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT (Page 1 of 2)

JPM Number: JPM-A3R Revision: 0

Initial Conditions:

- The plant is in MODE 1operating at 100% power.
- Maintenance on the "A" CS pump has been completed.
- All pump tagging has been removed with the exception of the pump breaker. The pump breaker remains racked down and RED TAGGED.
- The suction, discharge, recirculation, vent and drain valves are all closed in preparation for filling and venting of the pump.

Initiating Cues:

- You have been directed to fill and vent the "A" CS pump (P43A). The pump casing vent only needs to be vented and this vent is reached without climbing.
- Hoses need to be installed for venting.
- The duration of filling and venting the "A" CS pump (P43A) is expected to take half an hour.
- All radiological protective action for this work is contained in the RWP. There are no additional radiological protective action requirements in the Operating procedure for filling and venting the pump.
- State the radiological requirements for entering this area. Include in your answer:

  1. Which RWP task (job step) is appropriate for this assignment.
  2. Highest radiation level in the work area around the pump (including units of measure).
  3. Highest contamination level in the area of the pump (including units of measure).
  4. Protective clothing required to perform venting operations.
  5. Expected dose for this assignment area for you only (including units of measure)
  6. Dose rate alarm for this area (including units of measure)

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

STUDENT HANDOUT (Page 2 of 2)

JPM Number: **JPM-A3R** Revision: **0**

1. RWP Task	
2. Highest Radation level in the pump area (units of measure)	
3. Highest contamination level in the pump area (units of measure)	
4. Minimum required PCs to vent	
5. Expected Dose (units of measure)	
6. Dose Rate Alarm (units of measure)	

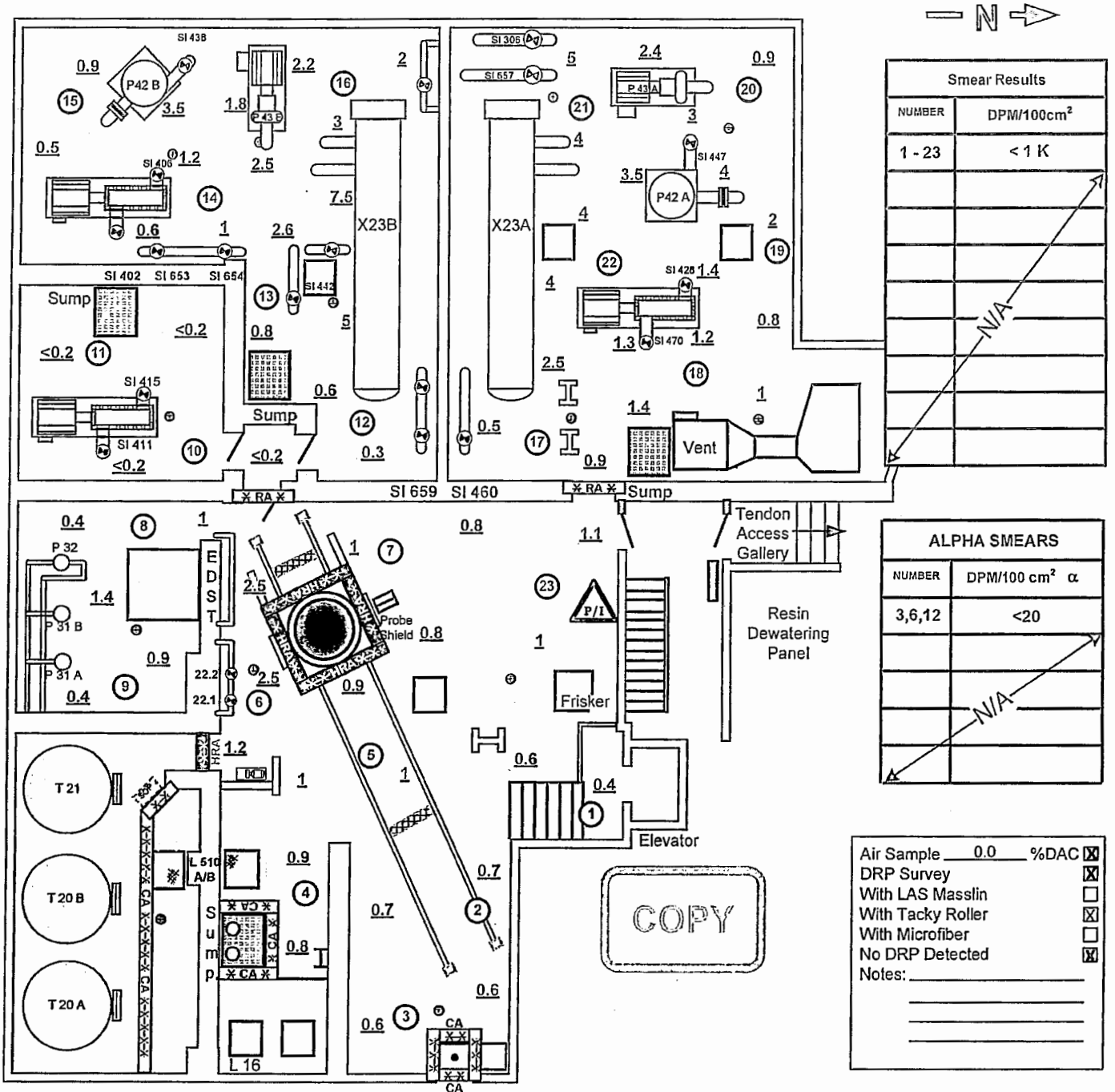
MILLSTONE NUCLEAR POWER STATION RADIATION SURVEY FIGURE NO. 27 UNIT 2

DATE 12/04/16	SURVEY BY SIGNATURE		Survey Type: Radiation ☒ Gamma ☐ Beta ☐ Neutron; Contamination ☒ GA ☐ LAS ☒ DRP	Purpose: ☒ Routine ☐ Special ☐ RWP # /	Rad Material Labeling & Packaging SAT INITIALS GWA
TIME 1230	PRINT NAME G. Arends				
REVIEWED BY (PRINT/SIGN/DATE) BJBowen / BJBowen 12-7-16		% REACTOR POWER 100			

Type	Instrument Type		Serial Number		1/Efficiency	Background	Calibration Due Date	
γ	Tele		6611-140		N/A	N/A	11/17	
β + γ	L-177		84679		10	80 cpm	06/17	
α	L-2241	43-2	234926	7496	6.5	0 cpm	03/17	03/17

REASON FOR SURVEY: MONTHLY

-45 Safeguards, Aerated Waste Tank & Pump Room



Smear Results	
NUMBER	DPM/100cm²
1 - 23	< 1 K

N/A

ALPHA SMEARS	
NUMBER	DPM/100 cm² α
3,6,12	<20

N/A

Air Sample 0.0 %DAC ☒
DRP Survey ☒
With LAS Masslin ☐
With Tacky Roller ☒
With Microfiber ☐
No DRP Detected ☒
Notes: _____

RCA RMA CA RA HRA LHRA VHRA NEA

RAD CONTROLLED AREA · RAD MATERIAL AREA · CONTAMINATED AREA · RADIATION AREA · HIGH RAD AREA · LOCKED HIGH RAD AREA · VERY HIGH RAD AREA · NEUTRON EXPOSURE AREA

100 - gamma(γ) at waist level in mrem/hr · 100* - gamma(γ) contact in mrem/hr · 25 N - neutron($_0n^1$) in mrem/hr · (1) - DRP survey point
(1) - contamination survey point · 50 β - beta (β) reading in mrad/hr · 250*/10 HS - hot spot reading · (1) LAS - large area smear

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Emergency Boration**

JPM Number: **JPM-S1 (JPM-091)** Revision: **8/0**

Initiated:

Robert L. Cimmino, Jr.(Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	01/26/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

A/I & DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	7/1
01/09/2017 RLC	Copied from JPM-091 and updated to latest procedure and format.	8/0

JPM WORKSHEET

Facility: MP-2 Examinee: _____

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

System: Reactivity Control

Time Critical Task: ( ) YES (X) NO

Validated Time (minutes): 15

Task Number(s): NUTIMS # 000-04-099

Applicable To: SRO X RO X PEO _____

K/A Number: 004 A2.14 K/A Rating: 3.8/3.9

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 recognized the failure of two (2) Control Element Assemblies (CEAs) to insert and has taken action to perform Emergency Boration.

Required Materials: (procedures, equipment, etc.)
EOP 2525, Standard Post Trip Actions
EOP 2541, Appendix 3, Emergency boration

General References:
EOP 2525, Standard Post Trip Actions
EOP 2541, Appendix 3, Emergency boration

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

JPM WORKSHEET

JPM Number: **JPM-S1** Revision : **8/0**

Initial Conditions:

- The plant is at 100% power with all systems and equipment operating normally.

Initiating Cues:

- You are the RO.
- Respond to alarms and changing plant conditions on the Primary side.
- The examiner will act as the US.

Simulator Requirements:

- Reset the simulator to any 100% power. IC-20 was used in validation.
- Enter RD0201 and RD0238; CEA #1 and #38 stuck out on trip.
- Set up RP02, spurious Reactor trip on trigger 1.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

START TIME: _____

STEP #1	Performance: Report that the Reactor has tripped	Standard: Examinee observes indications and alarms of a Reactor trip. Examinee reports the Reactor trip to the Unit Supervisor.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: • **BOOTH: When the examinee has the watch or directed by the floor, initiate trigger 1, inserting malfunction RP02, spurious Reactor trip.** • **Examiner:** When the Examinee reports the Reactor trip, acknowledge and direct the RO to commence EOP 2525, Standard Post Trip Actions and state **"going to alarm silence"**. Pause for a moment while the RO checks C-04 indications, and then (if necessary) ask the RO, "Status of the reactor?" and acknowledge the response. • **BOOTH: Once the US (Examiner) states "going to alarm silence", place all annunciators in "silence".** • **FLOOR: Once the RO has commenced actions on C-02/3, change the PPC screens to "post-trip".**			
	Comments:			
STEP #2	Performance: EOP 2525 Reactivity Control - Reactor Trip 1. ENSURE Reactor trip by ALL of the following: • ALL CEAs fully INSERTED. • Reactor power is dropping. • SUR is negative.	Standard: When asked about the status of Reactivity Control, the examinee reports that the Reactor is tripped, **two CEAs are stuck out**, power is dropping, and Startup Rate is negative. Examinee states that he/she must perform the contingency action and commence Emergency Boration per Appendix 3.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Examinee reports to the US are *not* critical, only that Emergency Boration is commenced.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

STEP #3	Performance: 2525 RESPONSE NOT OBTAINED 1.1 PERFORM the following: b. IF more than ONE CEA is not fully inserted, THEN USE Appendix 3, "Emergency Boration," and COMMENCE emergency boration.	Standard: Examinee goes to RESPONSE NOT OBTAINED step 1.1.b commences emergency boration using Appendix 3, "Emergency Boration." Examinee may use the laminated copy of Attachment 3-A, which starts with **JPM Step #5**, or reference EOP 2541, Appendix 3 (JPM Step #4).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: RESPONSE NOT OBTAINED step 1.1.a, IF Reactor trip breakers are CLOSED, THEN INSERT CEAs by ANY of the following methods. This step is not applicable since the Reactor trip breakers are OPEN.			
STEP #4	Performance: EOP 2541, Appendix 3 1. IF emergency boration is desired, PERFORM Attachment 3-A, "Commencing Emergency Boration."	Standard: Examinee goes to Attachment 3-A, "Commencing Emergency Boration." And commences emergency boration.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

STEP #5	Performance: EOP 2541, Appendix 3, Attachment 3A 1. IF boric acid storage tanks are available, INITIATE emergency boration as follows:	Standard: Examinee observes level in both Boric Acid Storage Tanks are >75% and determines that both tanks are available.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #6	Performance: a. ENSURE CH-512, VCT makeup valve stop is closed.	Standard: Examinee ensures CH-512, VCT Makeup Valve, (on C-04) is closed by observing the green (closed) light is lit and the red (open) light is NOT lit.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #7	Performance: b. ENSURE CH-196, VCT makeup bypass is closed.	Standard: Examinee ensures CH-196, VCT Makeup Bypass Valve, (on C-02) is closed by observing the green (closed) light is lit and the red (open) light is NOT lit.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

STEP #8	Performance: c. OPEN CH-514, boric acid isolation.	Standard: Examinee opens 2-CH-514, boric acid isolation, by momentarily holding the handswitch in the "OPEN" position and observing the associated red light is lit and the green light is NOT lit (on C-02).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #9	Performance: d. START **BOTH** boric acid pumps.	Standard: • Examinee starts both "A" and "B" Boric Acid Pumps by momentarily placing the respective handswitches to "START". • Examinee observes the associated red light is lit and the green light is NOT lit.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: The **only** Critical part of this step is to start both boric acid pumps.			
STEP #10	Performance: e. CLOSE BOTH boric acid pump recirc valves: • CH-510 • CH-511	Standard: Examinee takes 2-CH-510 and 2-CH-511 switches to the "CLOSE" position. Examinee observes both valves are closed by observing the green (closed) lights are lit and the red (open) lights are NOT lit.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: The step is **not** critical because boric acid injection will still occur with these valves full open.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

STEP #11	Performance: f. OPEN BOTH boric acid gravity feed isolations: • CH-508 • CH-509	Standard: Examinee takes CH-508 and CH-509 handswitches to the "OPEN" position. Examinee observes both valves are go open and the associated red lights are lit and the green lights are NOT lit (on C-02).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #12	Performance: g. CLOSE CH-501, VCT outlet isolation.	Standard: Examinee closes CH-501, VCT outlet isolation, by holding the handswitch in the "CLOSE" position until the associated red light is NOT lit and the green light is lit (on C-02).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #13	Performance: h. ENSURE BOTH of the following are closed: • CH-192, RWST isolation • CH-504, RWST to charging suction.	Standard: Examinee observes both valves are closed by observing the green (closed) lights are lit and the red (open) lights are NOT lit (on C-02).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S1** Revision: **8/0**

Task Title: **Emergency Boration**

STEP #14	Performance: i. IF CH-500, letdown divert handswitch is in the "VCT" position, PLACE the valve to the "RWS" position.	Standard: Examinee observes CH-500, Letdown Divert handswitch position and places it in "RWS" as necessary.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: This step has no relevance to the success of the task.			
STEP #15	Performance: j. ENSURE at least one charging pump is operating.	Standard: Examinee determines the "A" and "C" Charging Pumps are operating by observing the associated red light is lit and the green light is NOT lit.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Examinee may start the "B" charging pump, though this is not required for this JPM.			
STEP #16	Performance: k. CHECK charging flow is greater than 40 gpm.	Standard: Examinee observes Charging flow is greater than 40 gpm and reports indication to the US.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Acknowledge the report or, if necessary, ask the RO for a status.			
	Comments: **Establishing >/= 40 gpm charging flow with a suction source of the BAST completes the JPM.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S1** Revision: **8/0**

Date Performed: _____

Student: _____

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.
As necessary, refer to TIG-04 for additional Pass/Fail criteria.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	15 min	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S1** Revision: **8/0**

Initial Conditions:

- The plant is at 100% power with all systems and equipment operating normally.

Initiating Cues:

- You are the RO.
- Respond to alarms and changing plant conditions on the Primary side.
- The examiner will act as the US.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Verify SI Flow IAW EOP 2532, LOCA**

JPM Number: **JPM-S2** Revision: 0/0

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/30/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/31/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/17/17 rlc	Create JPM for NRC 2017 Re-Take	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S2** Revision: **0/0**

Task Title: **Verify SI Flow IAW EOP 2532, LOCA**

System: LPSI

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 12

Task Number(s): 000-05-222

Applicable To: SRO _____ STA _____ RO **X** PEO _____

K/A Number: 006/A3.03 K/A Rating: 4.1/4.1

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has recognized SI flow is not adequate and has taken action to open Facility 2 LPSI injection valves that had failed to open on the already triggered SIAS signal.

Required Materials: (procedures, equipment, etc.) EOP 2532, LOCA, Step 4 through Step 6.
EOP 2541, Appendix 2, Figure 3 – "Pre-SRAS Minimum Required SI Flow"

General References: EOP 2532, Loss Of Coolant 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 JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-S2** Revision : **0/0**

Initial Conditions:

1. Plant tripped on EHC malfunction, the crew completed EOP 2525, Standard Post Trip Actions.
2. Immediately after transitioning to EOP 2526, Reactor Trip Recovery, 24C de-energized due to a bus fault and a Large Break LOCA occurred.
3. The crew then transitioned to EOP 2532, Loss of Coolant Accident.
4. All steps in EOP 2532, LOCA have been completed through step 3.
5. Based on a loss of RCP NPSH, all the RCPs are secured and TIC-4165 is in Manual-Closed.

Initiating Cues:

1. You are the Reactor Operator (RO).
2. The Unit Supervisor has directed you to perform steps 4, 5 and 6 of EOP 2532, Loss Of Coolant Accident.

Simulator Requirements:

1. Reset Simulator to any power IC, **[IC-140 presently set up]** ensure CRACS is operating on **Z-1**.
2. Trip the plant and perform EOP 2525, immediate actions only.
3. Initiate a loss of 24C **(ED05C)** an trip the "A" EDG.
4. Then initiate a LOCA using **RC02A @ 4000#/s, no ramp**.
5. Acknowledge all alarms, ensure alarms are **not** silenced, and wait for RCS pressure to lower enough to allow LPSI flow.
6. When LPSI has been injecting for about **10 minutes**, then override closed both of the Facility 2 LPSI injection valves.
7. Ensure SI flow curve is displayed on booth PPC monitor and be ready to print the screen if requested by the NRC examiner.
8. FREEZE the simulator until the examinee takes the watch.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S2** Revision: **0/0**

Task Title: **Verify SI Flow IAW EOP 2532, LOCA**

START TIME: _____

S T E P #1	Performance: **EOP 2532, LOCA** **Check SIAS Actuation** 4. IF pressurizer pressure is less than 1714 psia, PERFORM **ALL** of the following: a. ENSURE SIAS, CIAS and EBFAS have actuated. (C01)	Standard: Examinee refers to Step 4 of EOP 2532 and notes that SIAS, CIAS and EBFAS have actuated.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **BOOTH: When the examinee is ready to take the watch, place the simulator in RUN.**			
	Comments: Examinee may note LPSI injection valves, SI-635 and SI-645, have not opened and either open them or recommend they be opened. Concur and direct.			
S T E P #2	Performance: **Check SIAS Actuation** b. ENSURE **ONE** complete facility of CRACS is operating in the recirc mode: (C25) **Facility 1**	Standard: Examinee notes Facility 1 CRACS in not operating due to loss of power (and Fac. 1 section is N/A).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S2** Revision: **0/0**

Task Title: **Verify SI Flow IAW EOP 2532, LOCA**

STEP #3	Performance:	Standard:	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	4. Check SIAS Actuation (cont) b. ENSURE **ONE** complete facility of CRACS is operating in the recirc mode: (C25) **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, fresh air damper is closed. • HV-496, exhaust air damper is closed. • HV-497, cable vault exhaust damper is closed.	Examinee verifies Facility 2 CRACS is operating in recirc mode by performing the following: • Starts F-21B supply fan • Notes HV-203B damper opens. • Starts F-31B, exhaust fan. • Notes HV-206B damper opens. • Notes HV-212B is open. • Notes F-32B is running. • Notes HV-495, fresh air damper is closed. • Notes HV-496, exhaust air damper is closed. • Notes HV-497, cable vault exhaust damper is closed.		
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S2** Revision: **0/0**

Task Title: **Verify SI Flow IAW EOP 2532, LOCA**

STEP #4	Performance: **Optimize Safety Injection** 5. IF SIAS has initiated, PERFORM the following: a. CHECK at least one train of SIAS, CIAS and EBFAS has properly actuated. (C01X) b. CHECK that safety injection flow is adequate. Refer To Appendix 2, "Figures."	Standard: a. Examinee checks C01X Facility 2 indication of SIAS, CIAS and EBFAS. If not previously opened, notes SI-635 and SI-645 are closed. b. Examinee checks for adequate SI flow on the PPC or compares total indicated flow on C01 to required flow per EOP 2541, Appendix 2 Figure 3, "Pre-SRAS Minimum Required SI Flow".	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: **Optimize Safety Injection** CONTINGENCY ACTIONS a.1 IF **ANY** component is *not* in its required position, manually ALIGN the applicable component. b.1 PERFORM **ANY** of the following to restore safety injection flow within the SI Flow Curve: 1) ENSURE electrical power to safety injection pumps and valves. 2) ENSURE correct safety injection valve lineup.	Standard: a.1 Examinee notes two LPSI injection valves (SI-635 and SI-645) are indicating not in their accident position (**blue** light off - C-01X or Green light lit, red light off – C-01). Examinee then uses C-01 control switches to open SI-635 and SI-645 (red lights are lit and the green lights are off for both valves). b.1 If LPSI SI valves were **not** opened in the previous step, examinee performs step b.1 1) Examinee notes SI pumps and valves have adequate electrical power. 2) Examinee notes two LPSI injection valves are closed and opens injection valves until adequate SI flow is achieved (App. 2).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: **Once LPSI injection valves are opened enough to satisfy EOP 2541 Appendix 2 Figure 3, the JPM is complete.**			
	Comments: Opening the LPSI injection valves enough to meet SI flow IAW App. 2 figure in either step "a.1" or "b.1" is acceptable. **Satisfactory completion of this step requires LPSI injection flow indication on C-01 or the PPC meet Figure 3 of Appendix 2.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S2** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	**12**	Actual Time to Complete (minutes):	
Work Practice Performance:		☐ SAT	☐ UNSAT
Operator Fundamentals:		☐ SAT	☐ UNSAT
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT ☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT
Attached Question #2		☐ SAT	☐ UNSAT
Overall Result of JPM:		☐ SAT	☐ UNSAT

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S2** Revision: **0/0**

Initial Conditions:

1. Plant tripped on EHC malfunction, the crew completed EOP 2525, Standard Post Trip Actions.
2. After transitioning to EOP 2526, Reactor Trip Recovery, 24C de-energized due to a bus fault and a Large Break LOCA occurred.
3. The crew then transitioned to EOP 2532, Loss of Coolant Accident.
4. All steps in EOP 2532, LOCA have been completed through step 3.
5. Based on a loss of RCP NPSH, all the RCPs are secured and TIC-4165 is in Manual-Closed.

Initiating Cues:

1. You are the Reactor Operator (RO).
2. The Unit Supervisor has directed you to perform steps 4, 5 and 6 of EOP 2532, Loss Of Coolant Accident.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Forcing Pressurizer Sprays**

JPM Number: **JPM-S3** Revision: **0/0**

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/26/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	02/1/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/06/17 RLC	Copied from JPM 223 and revised as JPM-S3 for 2017 NRC Re-Take Exam, modified malfunction from controller output failure to controller input failure (PT-100Y).	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

System: **Pressurizer Pressure Control System**

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 010-02-002

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: 010/K6.03 K/A Rating: 3.2/3.6

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has attempted to Force Pressurizer Sprays and has taken action to prevent a Reactor trip due to a controller malfunction.

Simulator Requirements:

- Initialize to a 100% power IC that will allow Forcing Pressurizer Sprays.
- Ensure Channel "Y" is selected for pressure control.
- CAUTION tag Ch. "X" PIC-100X OOS. Place tag on Channel Selector Switch and over controller PIC-100X.
- Insert malfunction RX03B, PT-100Y Pressure Transmitter failure, at **2348** psia, **ramp = 1 min**. when examinee lowers selected pressure controller setpoint.

General References:

- OP 2204, Load Changes, Attachment 10, Forcing Pressurizer Sprays
- ARP 2590B-212, D-37 on C-02/3, PZR Pressure Selected Channel Deviation Hi/Lo
- ARP 2590B-216, D-38 on C-02/3, Pressurizer Ch X Pres Hi/Lo
- ARP 2590B-220, D-39 on C-02/3, Pressurizer Ch Y Pres Hi/Lo
- AOP 2585, Immediate Operator Actions

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

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

JPM WORKSHEET

JPM Number: **JPM-S3** Revision : **0/0**

Initial Conditions:

- A down-power to 90% is being initiated using OP 2204, Load Changes.
- All equipment is operating normally.
- Channel "X" Pressure controller, PIC-100X, is Out-Of-Service while I&C investigates an erratic control issue.

Initiating Cues:

You are the Reactor Operator (RO) and have been directed to initiate forcing Pressurizer Sprays in accordance with OP 2204, Load Changes, Attachment 10, Forcing Pressurizer Sprays.

Required Materials:
(procedures, equipment, etc.)

- OP 2204, Load Changes, Attachment 10, Forcing Pressurizer Sprays
- ARP 2590B-212, D-37 on C-02/3, PZR Pressure Selected Channel Deviation Hi/Lo
- ARP 2590B-216, D-38 on C-02/3, Pressurizer Ch X Pres Hi/Lo
- ARP 2590B-220, D-39 on C-02/3, Pressurizer Ch Y Pres Hi/Lo
- AOP 2585, Immediate Operator Actions

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

START TIME: _____

STEP #1	Performance: **OP 2204, Attachment 10** NOTE: 1. Annunciator C-02 window D-37, "PRESSURIZER SELECTED CHANNEL DEVIATION HI/LO," is expected during performance of this evolution. 2. The potential effects of forcing pressurizer spray, due to the pressure coefficient of reactivity, need to be identified to ensure margin exists for thermal power limits.	Standard: Examinee reads and acknowledges the Note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Provide OP 2204, Load Changes, Attachment 10, Forcing Pressurizer Sprays, to the examinee.			
	Comments:			
STEP #2	Performance: **OP 2204, Attachment 10** 1. IF using PIC-100X, "PRESS CNTL-X," to force sprays, PERFORM the following:	Standard: Examinee recognizes that the Pressurizer Pressure Channel Selector Switch is NOT in the "X" position, marks step 1 as NA, and proceeds to step 2.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

STEP #3	Performance: 2. IF using PIC-100Y, "PRESS CNTL-Y," to force sprays, PERFORM the following:	Standard: PIC-100Y has been verified in service in previous step. Examinee continues with step 2	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: If requested, provide examinee with a copy of ARP 2590B-212, PZR. PRESSURE SELECTED CHANNEL DEVIATION, D-37 on C-02/3.			
STEP #4	Performance: 2.1 To initiate forcing sprays, PERFORM the following:	Standard: Examinee continues with step 2.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: 2.1.1 RECORD one of the following from PIC-100Y, "PRESS CNTL-Y" (C-03): • Controller setpoint (black and white arrow) • Controller output signal	Standard: Examinee observes either the PIC-100Y Controller setpoint (Black and white arrow) on C-03 or the PIC-100Y Controller output signal on C-03 and records >/= 1 of these values on Attachment 10.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Examinee may record both values on Attachment 10.			
	Comments:			
STEP #6	Performance: 2.1.2 RECORD pressurizer pressure. (PPC or C-03)	Standard: Examinee observes Pressurizer pressure from the PPC or on C-03 and records the value on Attachment 10.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

STEP #7	Performance: 2.1.3 PLACE all available pressurizer "BACKUP HTRS" group handswitches to "CLOSE" (C-03).	Standard: • Examinee locates all 4 Backup Heater handswitches on C-03 and momentarily places each of them in the "CLOSE" position, observing red lights lit for each group.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #8	Performance: 2.1.4 Slowly LOWER PIC-100Y, "PRESS CNTL-Y," to obtain both of the following: • Pressurizer controller output signal 40% to 50% • The following controllers output signal start to rise: o HIC-100E, "PZR SPRAY-1A" o HIC-100F, "PZR SPRAY-1B"	Standard: • Examinee locates the thumbwheel for Pressure Controller, PIC-100Y, and rotates it in the downward direction to obtain a 40-50% output on the controller horizontal scale. • Examinee observes that the red pointer and the black and white pointer on the vertical scales of both Spray Valve Controllers, HIC-100E and 100F, are rising. • Examinee observes and acknowledges annunciator D-37, PZR. PRESSURE SELECTED CHANNEL DEVIATION HI/LO alarm and reports that this is an expected alarm for Forcing Sprays.	Critical: Y ☒ N ☐ Y ☐ N ☒ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: **BOOTH: When annunciator D-37 alarms on C-02/3 (PZR PRESSURE SELECTED CHANNEL DEVIATION), insert malfunction RX03B at 2348 psia with a 1 minute ramp.**			
	Comments: If requested, provide examinee with a copy of ARP 2590B-212, PZR PRESSURE SELECTED CHANNEL DEVIATION HI/LO, D-37 on C-02/3.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

STEP #9	Performance: 2.2 ADJUST PIC-100Y, "PRESS CNTL-Y" (C-03), as necessary to maintain pressurizer pressure recorded in step 2.1.2.	Standard: While adjusting PIC-100Y setpoint, Examinee observes PZR pressure and PZR Spray valves continuing to OPEN.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: • If requested, provide examinee with ARP-2590B-220, PRESSURIZER CH Y PRES HI/LO, D-39 on C-02/3.			
	Comments: Examinee may not ask for the ARP if Immediate Operator Actions are taken to mitigate the lowering pressure. **If ARPs are used to mitigate the event, skip to JPM Step 14 (for alarm D-37) or Step 20 (for alarm D-38/39), depending on the ARP utilized.**			
STEP #10	Performance: **AOP 2585 Immediate Operator Actions** Examinee performs Section 10, **Pressurizer Spray Valve Open**: [10.1] OBSERVE Pressurizer pressure safety channel indications to evaluate RCS pressure.	Standard: Note: AOP 2585 actions contained in steps 10.1 – 10.4 are required to be performed from memory. Examinee observes the four Safety Channels of pressurizer pressure and notes they are lowering.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #11	Performance: [10.2] IF Pressurizer pressure less than 2260 psig, manually CLOSE affected spray valve(s): o HIC 100E, PZR SPRAY- 1A o HIC 100F, PZR SPRAY- 1B	Standard: Examinee verifies PZR pressure < 2260 psia, then places BOTH Spray Valve controllers, HIC-100E/F in "M" and manually closes the affected spray valves on C-03.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: This step is not critical if the examinee elects to utilize the ARPs to mitigate the event. Examinee may also note RCS pressure has dropped below the Tech. Spec. DNB Limit of 2225 psia. This note is ***not*** Critical as it is a momentary issue and the Examinee is required to focus on mitigating the problem.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

S T E P #12	Performance: [10.3] CHECK affected Pressurizer Spray Valve(s) are closed: o HIC 100E, PZR SPRAY- 1A o HIC 100F, PZR SPRAY- 1B	Standard: Examinee Verifies BOTH spray valves are closed (red lights off, green lights lit on C-03); o HIC 100E, PZR SPRAY- 1A o HIC 100F, PZR SPRAY- 1B	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P #13	Performance: [10.4] START backup heaters as needed.	Standard: Examinee notes all backup heaters are already on.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: **Once both spray valves are closed, the JPM is complete.**			
S T E P #14	Performance: **ARP 2590B-212 (C02/3; D-37), "PZR PRESSURE SELECTED CHANNEL DEVIATION HI/LO"** **AUTOMATIC FUNCTIONS** 1. For High alarm, proportional heaters are at minimum output 2. For Low alarm, proportional heaters are at maximum output	Standard: Examinee notes this is an expected alarm, but may reference the applicable ARP for guidance. Examinee reads and acknowledges the Automatic Functions.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Steps 14 - 24 are included in case the examinee utilizes the ARPs to mitigate the event. Any critical steps listed in this set are only applicable if the spray valves have not yet been manually closed.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

S T E P #15	Performance: **CORRECTIVE ACTIONS** NOTE; This is an expected alarm when forcing pressurizer sprays, or testing heater capacity.	Standard: Examinee acknowledges the Note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P #16	Performance: 1. OBSERVE the following to evaluate RCS pressure: • PRES CNTL-X, PIC-100X • PRES CNTL-Y, PIC-100Y • Pressurizer pressure safety channel indication	Standard: Examinee observes RCS pressure indication and notes pressure is lowering on Channel "X" and the Safety Channels.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
S T E P #17	Performance: 2. IF channel check indicates the controlling channel of pressurizer pressure has malfunctioned, AND the opposite channel is operating properly, PERFORM the following (C-03):	Standard: Examinee may note the controlling channel is malfunctioning, but also notes Ch. "X" is unavailable does NOT transfer control to Ch. "X".	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: If examinee suggests transferring to Channel "X" (it appears operational), as the US, state the status of Channel "X" is unknown and direct the examinee to remain in Channel "Y" and continue with required actions.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

STEP #18	Performance: 3. IF channel check indicates the controlling channel of pressurizer pressure is operating properly, ENSURE *selected* channel setpoint is adjusted to desired pressurizer pressure (C-03).	Standard: Examinee may attempt to raise the selected channel setpoint to mitigate the failure, but should soon recognize this action is not succeeding.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #19	Performance: 4. IF heaters and spray are *not* operating properly, PERFORM the following: 4.1 Manually OPERATE pressurizer heaters and spray to establish desired RCS pressure.	Standard: Examinee should take manual control of both spray valves and close them, or take manual control of PIC-100Y and lower its output to close both spray valves (green lights lit, red lights off on C-03).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: This step is required only if spray valves have not yet been manually closed. **Once both spray valves are closed, the JPM is complete.**			
STEP #20	Performance: **ARP 2590B-216[220] (C02/3; D-38[39]), "PRESSURIZER CH X[Y] PRES HI/LO"** **AUTOMATIC FUNCTIONS** 1. IF high pressure alarm, backup heater breakers trip.	Standard: Examinee notes this alarm and references the applicable ARP for guidance.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Either Ch. "X" (2590-216) or Ch. "Y" (2590B-220) Hi/Lo alarms may be referenced due to duplicate actions.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

STEP #21	Performance: **CORRECTIVE ACTIONS** 1. OBSERVE (CHECK) "PRESSURIZER PRESS, PR-100," pressurizer pressure controllers, and pressurizer pressure safety channels (C-03), and PPC indications of applicable RCS pressure.	Standard: Examinee observes various pressure indications and notes RCS pressure is lowering.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #22	Performance: 2. IF channel check indicates that channel "X" ("Y") is the controlling channel and has malfunctioned, AND channel "Y" ("X") is operating properly, PERFORM the following (C-03):	Standard: Examinee notes Ch. "X" is unavailable and not the controlling channel (step is N/A)	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: Not attempting to transfer control to Ch. "X" is the only critical part to this step.			
STEP #23	Performance: 3. IF pressure is high, VERIFY the following: 3.1 *All* heaters are de-energized. 3.2 "SPRAY VLVS, RC-100E and RC-100F" are fully open (C-03).	Standard: Examinee notes pressure is low, that the step is N/A and takes no action.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: This step is only critical if this action is taken and not corrected before the plant trips on low pressure.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S3** Revision: **0/0**

Task Title: **Forcing Pressurizer Sprays**

STEP				
#24	Performance: 4. IF pressure is low, VERIFY the following: 4.1 *All* heaters are energized. 4.2 "SPRAY VLVS, RC-100E and RC-100F" are fully closed (C-03).	Standard: Examinee verifies all backup heaters are energized and takes manual control of both spray valves and closes both valves (green lights lit, red lights off on C-03). Examinee may also place PIC-100Y in "M" and manually drive the output low, which would also close both spray valves if their controllers are still in automatic mode ("A").	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: This step is required only if spray valves have not yet been manually closed. **Once both spray valves are closed, the JPM is complete.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S3** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):	
Work Practice Performance:		☐ SAT ☐ UNSAT	
Operator Fundamentals:		☐ SAT ☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT ☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT ☐ UNSAT	
Attached Question #2		☐ SAT ☐ UNSAT	
Overall Result of JPM:		☐ SAT ☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S3** Revision: **0/0**

Initial Conditions:

- A down-power to 90% is being initiated using OP 2204, Load Changes.
- All equipment is operating normally.
- Channel "X" Pressure controller, PIC-100X, is Out-Of-Service while I&C investigates an erratic control issue.

Initiating Cues:

You are the Reactor Operator (RO) and have been directed to initiate forcing Pressurizer Sprays in accordance with OP 2204, Load Changes, Attachment 10, Forcing Pressurizer Sprays.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Operate the TDAFP using EOP 2541, Appendix 6 (Alt. Path)

JPM Number: **JPM-S4** Revision: **0/0**

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	01/26/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/18/17 rlc	Created JPM for 2017 NRC Re-Take Exam	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S4** Revision: **0/0**

Task Title: **Operate the TDAFP using EOP 2541, Appendix 6 (Alt. Path)**

System: Auxiliary Feed Water

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 061-01-076

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: 061/A2.04 K/A Rating: 3.4/3.8

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: The examinee will utilize EOP 2541, Appendix 6 to start up the TDAFP, place it in service feeding both SGs, then respond to a trip of the pump and return it to service feeding both SGs.

Required Materials: (procedures, equipment, etc.)
1. EOP 2541, Appendix 6, "TDAFW Pump Normal Startup"
2. EOP 2541, Appendix 7, "TDAFW Pump Abnormal Startup."

General References: EOP 2541, Appendix 6, "TDAFW Pump Normal Startup"

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

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

JPM WORKSHEET

JPM Number: **JPM-S4** Revision : **0/0**

Initial Conditions:

1. The plant tripped from 100% power due to a loss of condenser vacuum.
2. All plant systems and components responded as designed on the trip.
3. EOP 2525, "Standard Post Trip Actions", were in progress when the "B" AFW pump tripped on overload.

Initiating Cues:

1. You are the Balance Of Plant (BOP) operator.
2. As the BOP, complete step 7a. RNO actions to place the TDAFW pump in service.

Simulator Requirements:

Initialize the simulator to the following conditions:

1. Mode 3 with a plant trip due to loss of condenser vacuum (**FW01/FW33**).
2. Place alarms in "silence" and perform all EOP 2525 Immediate Actions, including setting up AFW to feed both SGs using the two electric pumps.
3. Trip the "B" AFW pump (**FW20B**) but do ***not*** start the TDAFP.
4. FREEZE the simulator until examinee is ready to take the watch.
5. Set up the following IO/Malfunctions to simulate TDAFP overspeed trip:
   a. BT-29; IO **FWSI-4194A** to 4500 rpm, no Ramp, auto Delete in 1 sec.
   b. BT-29; **FW20C**, no Ramp, no auto Delete.
6. **Be prepared to delete FW20C when the examinee directs a PEO to locally reset the overspeed trip.**

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S4** Revision: **0/0**

Task Title: **Operate the TDAFP using EOP 2541, Appendix 6 (Alt. Path)**

START TIME: _____

<table>
<tr><td rowspan="3">STEP #1</td><td>Performance:
<u>EOP 2525, Standard Post Trip Actions</u>
<u>RESPONSE NOT OBTAINED</u>
a.1 RESTORE level to between 40% to 70% in at least ONE steam generator using ANY of the following:
• Main feedwater
• Motor- driven auxiliary feedwater pump
• TDAFW Pump. Refer To Appendix 6, “TDAFW Pump Normal Startup.”
• TDAFW Pump. Refer To Appendix 7, “TDAFW Pump Abnormal Startup.”</td><td>Standard:

Examinee notes the RNO action and refers to Appendix 6, “TDAFW Pump Normal Startup”.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments: Appendix 7 may also be used as it contains all the necessary steps of Appendix 6. However, Appendix 7 contains several steps that are beyond the scope of the given event that would be considered “N/A”.</td></tr>
<tr><td rowspan="3">STEP #2</td><td>Performance:
<u>EOP 2541, Appendix 6, TDAFW Pump Normal Startup</u>
1. IF a SBO event has occurred OR DC Bus 201B is not energized, Go To Appendix 7, “TDAFW Pump Abnormal Operation”</td><td>Standard:

Examinee recognizes a Station Blackout event has not occurred and the step is N/A.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-S4** Revision: **0/0**

Task Title: **Operate the TDAFP using EOP 2541, Appendix 6 (Alt. Path)**

STEP #3	Performance: **CAUTION** 1. Operation of the TDAFW pump below 1400 rpm or above 4200 rpm will exceed the governor speed control range. 2. Opening SV-4188 too quickly could overspeed the TDAFP.	Standard: Examinee reads and acknowledges the caution.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #4	Performance: 2. Slowly OPEN SV-4188, TDAFP steam valve.	Standard: Examinee opens the TDAFP steam supply valve, by manipulating C-05 control switch SV-4188 and observes TDAFP speed rising.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: **BOOTH: Verify FW20C actuates when TDAFP speed exceeds 500 rpm and be prepared to delete FW20C when the examinee directs a PEO to locally reset the overspeed trip.**			
	Comments: Opening SV-4188 is the only critical part to this step. **When the TDAFP speed rises above 500 rpm, the IO and malfunctions will trigger to simulate an overspeed trip.**			

PERFORMANCE INFORMATION

JPM Number: **JPM-S4** Revision: **0/0**

Task Title: **Operate the TDAFP using EOP 2541, Appendix 6 (Alt. Path)**

<table>
<tr>
<td rowspan="2">STEP #5</td>
<td>Performance:
<u>CONTINGENCY ACTIONS</u>
2.1 IF the TDAFW pump trips on overspeed, PERFORM the following:
a. ADJUST the turbine governor to minimum speed.
b. ENSURE MS-464,"TERRY TURBINE AUX FEED PUMP STEAM SUPPLY" is closed.
c. OPEN MS-436, "LS-4590 INSTRUMENT DRAIN."
d. Slowly OPEN MS-447, "LS-4590 INSTRUMENT BACKUP DRAIN."
e. ENSURE alarm window "AUX FW TURB STEAM LINE WATER LEVEL HI" is clear. (A-14, C05)
f. WHEN the condensate has drained from the steam line drip pocket, CLOSE BOTH MS-436 and MS-447.
g. ENSURE that the TDAFW pump overspeed trip mechanical latch is reset.
h. Go To Step 2.</td>
<td>Standard:
Examinee recognizes the TDAFP has tripped (on overspeed) and begins Contingency Actions:
a. Adjusts governor speed to ensure at minimum. (Examinee may state governor speed is already at minimum or have a PEO check it locally).
b. Closes steam supply valve operator to MS-464 using SV-4188 until both green lights are lit (top one is already lit).
c. Instructs PEO to perform step "2.1c.".
d. Instructs PEO to perform step "2.1d.".
e. Notes alarm window "AUX FW TURB STEAM LINE WATER LEVEL HI" is clear. (A-14, C05).
f. Instructs PEO to perform step "2.1f.".
g. Instructs PEO to perform step "2.1g.". Examinee resets annunciator C-05/C-15 when it clears.
h. When the PEO reports all required steps are completed, the examinee proceeds to step "2." to restart the TDAFP.</td>
<td>Critical:
Y ☒ N ☐</td>
<td>Grade
S ☐ U ☐</td>
</tr>
<tr>
<td colspan="3">Cue:
<u>BOOTH</u>: Monitor for and reset alarms on all panels except C-05.
<u>BOOTH</u>: When a PEO is directed to perform <u>step 2.1g</u> local action, wait a couple minutes and delete the malfunction "FW20C".
<u>Examiner</u>: Closing SV-4188 to allow the overspeed trip mechanism to be reset locally is the only critical step.
When the overspeed trip is reset locally, the overspeed trip alarm on C-05 (C-15) will reset.
<u>If</u> the US is performing communications with the PEO, then at this time inform the examinee that the PEO reports completing steps "c, d, f and g" and that all local conditions appear normal for the TDAFP.
Comments: Annunciator C-15 on C-05 will clear when the TDAFP overspeed trip mechanism is reset locally.</td>
</tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-S4** Revision: **0/0**

Task Title: **Operate the TDAFP using EOP 2541, Appendix 6 (Alt. Path)**

STEP #6	Performance: 2. Slowly OPEN SV-4188, TDAFP steam valve.	Standard: Examinee operates SV-4188 on C-05 and raises TDAFP speed.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #7	Performance: CAUTION Failure to perform TDAFW pump warmup can cause an overspeed trip due to condensate in the steam line or a sluggish governor speed control.	Standard: Examinee reads and acknowledges the caution.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #8	Performance: 3. ADJUST the TDAFW pump "SPD CNTL" switch to maintain minimum governor speed.	Standard: Examinee adjusts governor speed on C-05 to maintain minimum speed of approximately 1400 rpm.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: The governor is already at minimum speed so the step is effectively N/A.			
STEP #9	Performance: 4. WHEN TDAFW pump parameters have stabilized, RAISE the "SPD CNTL" switch to establish feed flow.	Standard: Examinee notes parameters are stable and raises TDAFP speed until a rise in Auxiliary Feedwater flow is noted to both S/Gs on C-05.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: **When the TDAFP discharge pressure exceeds S/G pressure and AFW flow to both S/Gs begins to rise, the JPM is complete.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S4** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):	
Work Practice Performance:		☐ SAT	☐ UNSAT
Operator Fundamentals:		☐ SAT	☐ UNSAT
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT ☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT
Attached Question #2		☐ SAT	☐ UNSAT
Overall Result of JPM:		☐ SAT	☐ UNSAT

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S4** Revision: **0/0**

Initial Conditions:

1. The plant tripped from 100% power due to a loss of condenser vacuum.
2. All plant systems and components responded as designed on the trip.
3. EOP 2525, "Standard Post Trip Actions", were in progress when the "B" AFW pump tripped on overload.

Initiating Cues:

1. You are the Balance Of Plant (BOP) operator.
2. As the BOP, complete step 7a. RNO actions to place the TDAFW pump in service.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Restoring from Containment Spray Inadvertent Actuation

JPM Number: **JPM-S5** Revision: **0/0**

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	01/26/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/13/17 RLC	Created JPM-S5 for NRC 2017 Exam Re-Take	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S5** Revision: **0/0**

Task Title: **Restore From Inadvertent Containment Spray Actuation**

System: Containment Spray and ESAS

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): (NUTIMS) 026-01-035

Applicable To: SRO _____ STA _____ RO **X** PEO _____

K/A Number: 026/A4.05 K/A Rating: 3.5/3.5

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: The examinee will reset ESAS and restore Facility 1 Containment Spray to its normal, at power configuration, following an inadvertent CSAS actuation, using AOP 2571, Inadvertent ESFAS Actuation.

Required Materials: (procedures, equipment, etc.) Provide the examinee with a copy of AOP 2571, Inadvertent ESFAS Actuation, with all applicable steps up to, and including, step 3.2 **marked as "N/A"**.

General References: AOP 2571, Inadvertent ESFAS Actuation.

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

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

JPM WORKSHEET

JPM Number: **JPM-S5** Revision : **0/0**

Initial Conditions:

1. Plant power is 100%, steady state, when an inadvertent Containment Spray actuation occurred on Facility 1 only.
2. The actuation has been deemed inadvertent because all plant conditions are normal and none of the Sensor Cabinet bistables have been triggered.
3. I&C and all applicable personnel have been notified.
4. The crew has entered AOP 2571, Inadvertent ESFAS Actuation, and has completed steps 3.1 and 3.2.

Initiating Cues:

1. You are the Reactor Operator (RO).
2. The US has instructed you to restore from the inadvertent CSAS using AOP 2571, Inadvertent ESFAS Actuation, starting at step 3.3.

Simulator Requirements:

1. Reset the simulator to any full power, stable IC and go to RUN.
2. Trigger malfunction **ES02E**, SPURIOUS FAC 1 CSAS SIGNAL
3. Wait for the CTMT Sump alarm (C-06/7, BA-21) to come in.
4. Then, acknowledge all alarms and place the simulator in FREEZE until the examinee is ready to take the watch.

NOTE: The simulator triggers an inadvertent CSAS by directly stimulating the ESAS Actuation Modules, and does not send a signal through the Sensor Modules. Therefore, the sensor bistables will not be triggered and will not have any red lights energized that need to be reset. This more precisely simulates an ESAS circuit failure based on OE.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S5** Revision: **0/0**

Task Title: **Restoring from Containment Spray Inadvertent Actuation**

START TIME: _____

STEP #1	Performance: **AOP 2571, Inadvertent ESFAS Actuation** **3.0 Inadvertent CSAS Actuation** 3.1 IF an inadvertent bus 24C UV 3.1. actuation has occurred, Go To AOP 2502C, "Loss of Vital 4.16 KV Bus 24C."	Standard: Examinee recognizes step 3.1 is "N/A" or already completed.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **BOOTH: When the examinee is ready to take the watch place the simulator in RUN.**			
	Comments: It is acceptable for the examinee to briefly review the control boards and AOP 2571 prior to taking the watch.			
STEP #2	Performance: 3.2 IF an inadvertent bus 24D UV 3.2. actuation has occurred, Go To AOP 2502D, "Loss of Vital 4.16 KV Bus 24D."	Standard: Examinee recognizes step 3.2 is "N/A" or already completed.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #3	Performance: CAUTION When an ESAS signal has been overridden by use of the equipment handswitch, then future ESAS signals will not be processed for that equipment until the ESAS modules have been reset.	Standard: Examinee reads and acknowledges the Caution	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: If the examinee chooses to make the US aware of the Caution, acknowledge any reports.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S5** Revision: **0/0**

Task Title: **Restoring from Containment Spray Inadvertent Actuation**

<table>
<tr><td rowspan="3">STEP #4</td><td>Performance:
3.3 IF an inadvertent containment spray actuation has occurred, PERFORM the following as required:
a. CHECK Containment pressure less than 9.48 psig.
b. OVERRIDE CSAS start signals and STOP containment spray pumps.(C- 01)
c. OVERRIDE CSAS open signals and CLOSE the following valves:(C- 01)
• CS-4.1A, containment spray header “A” isolation
• CS-4.1B, containment spray header “B” isolation
d. Go To Section 7.0, “Inadvertent CSAS Actuation.”</td><td>Standard:
Examinee notes the step applies and performs the following:
a. Verifies CTMT pressure on C-01 < 9.48 psig.
b. Overrides and stops the “A” CS Pump by taking the handswitch on C-01 to the “START” and then the “STOP” position (more than one attempt is acceptable).
c. Overrides and closes CS-4.1A, containment spray header “A” isolation valve by taking the handswitch to “OPEN” and then “CLOSED” on C-01 (more than one attempt is acceptable).
d. Proceeds to Section 7.0, “Inadvertent CSAS Actuation.”</td><td>Critical:
Y ☐ N ☒
Y ☒ N ☐
Y ☐ N ☒
Y ☐ N ☒</td><td>Grade
S ☐ U ☐
S ☐ U ☐
S ☐ U ☐
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments: Stopping of the “A” CTMT Spray Pump is the <u>only</u> step that is critical.
Examinee may state (per the Initiating Cue) that because only Facility 1 CSAS triggered, no action is required for the Facility 2 CTMT Spray components.</td></tr>
<tr><td rowspan="3">STEP #5</td><td>Performance:
<u>AOP 2571, Inadvertent ESFAS Actuation</u>
7.0 Inadvertent CSAS Actuation
7.1 Refer To Attachment 2, “Resetting ESAS,” Section 2.0, “Resetting CSAS,” and ATTEMPT to reset CSAS.</td><td>Standard:
Examinee goes to Section 7.0 reads step 7.1 and then proceeds to Attachment 2, Section 2.0 “Resetting CSAS,” for resetting the CSAS.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-S5** Revision: **0/0**

Task Title: **Restoring from Containment Spray Inadvertent Actuation**

<table>
<tr><td rowspan="3">STEP #6</td><td>Performance:
<u>Attachment 2, Section 2.0 Resetting CSAS</u>
2.1 PRESS to reset the following bistable module "TRIP" lights:
• "CTM PRESSURE CSAS BISTABLE BA102" (Sensor Cabinet A)
• "CTM PRESSURE CSAS BISTABLE BA302" (Sensor Cabinet C)
• "CTM PRESSURE CSAS BISTABLE BA402" (Sensor Cabinet D)
• "CTM PRESSURE CSAS BISTABLE BA202" (Sensor Cabinet B)</td><td>Standard:
Examinee refers to Attachment 2, Section 2.0, Resetting CSAS. Examinee proceeds to ESAS and ensures the trip lights on the following bistables are reset:
• Sensor Cabinet A, bistable BA102
• Sensor Cabinet C, bistable BA302
• Sensor Cabinet D, bistable BA402
• Sensor Cabinet B, bistable BA202
Examinee may recognizes the Sensor bistables are not triggered (all "TRIP" lights are de-energized), as explained by the Initiating Cue, and consider the step "N/A".</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="3">Cue:</td></tr>
<tr><td colspan="3">Comments: Although the Initiating Cue stated the Sensor bistables were not triggered by the circuit failure (simulator malfunction), the examinee may still elect to perform the step by pushing each de-energized trip light, just to be reassured it is complete.</td></tr>
<tr><td rowspan="3">STEP #7</td><td>Performance:
2.2 PRESS "CSAS ACTUATION RESET" (Actuation Cabinet 5).</td><td>Standard:
Examinee presses the "CSAS ACTUATION RESET" button on Actuation Cabinet 5.</td><td>Critical:
Y ☒ N ☐</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="3">Cue:</td></tr>
<tr><td colspan="3">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-S5** Revision: **0/0**

Task Title: **Restoring from Containment Spray Inadvertent Actuation**

STEP				
# 8	Performance: 2.3 OBSERVE BOTH of the following CSAS actuation module "TRIP" lights extinguished (Actuation Cabinet 5): • "CSAS GROUP 1 AM509" • "CSAS GROUP 2 AM510"	Standard: Examinee notes the "TRIP" lights on both CSAS Actuation modules on Actuation Cabinet 5, AM509 and AM510, are de-energized.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **After the completion of step 2.3, inform the examinee that the JPM is complete.**			
	Comments: If the examinee notes the ATI should be reset, acknowledge and state that another operator will take care of that task.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S5** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S5** Revision: **0/0**

Initial Conditions:

1. Plant power is 100%, steady state, when an inadvertent Containment Spray actuation occurred on Facility 1 only.
2. The actuation has been deemed inadvertent because all plant conditions are normal and none of the Sensor Cabinet bistables have been triggered.
3. I&C and all applicable personnel have been notified.
4. The crew has entered AOP 2571, Inadvertent ESFAS Actuation, and has completed steps 3.1 and 3.2.

Initiating Cues:

1. You are the Reactor Operator (RO).
2. The US has instructed you to restore from the inadvertent CSAS using AOP 2571, Inadvertent ESFAS Actuation, starting at step 3.3.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Unload and Shutdown the "B" EDG (Alt Path)**

JPM Number: **JPM-S6** (JPM 059) Revision: **10**

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Mike J. Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
06/30/2014 djj	Updated Material to new format and procedures	9
01/13/17 rlc	Updated Material to new format and procedures and added JPM number designation for 2017 NRC Re-Take Exam	10

JPM WORKSHEET

Facility: **Millstone Unit 2** Examinee: _____

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Task Title: **Unload and Shutdown the "B" EDG (Alt Path)**

System: Emergency Diesel Generators

Time Critical Task: ( ) YES (**X**) NO

Validated Time (minutes): 10

Task Number(s): NUTIMS 064 01 121

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: 064 A4.06 K/A Rating: 3.9 / 3.9

Method of Testing: Simulated Performance: _____ Actual Performance: **X**

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of the JPM the examinee, while attempting to unload and secure the "B" EDG, will recognize an electrical fault has occurred that should have tripped the EDG but didn't, then respond by manually tripping the EDG.

Required Materials: (procedures, equipment, etc.)
- Simulator with the "B" EDG running paralleled at full load
- MP-PROC-OPS-OP 2346C "B" Emergency Diesel Generator
- MP-PROC-OPS-ARP 2590F-140 C08 D-35 DIESEL GEN 13U DIFFERENTIAL LOCKOUT

General References:
- MP-PROC-OPS-OP 2346C "B" Emergency Diesel Generator
- MP-PROC-OPS-ARP 2590F-140 C08 D-35 DIESEL GEN 13U DIFFERENTIAL LOCKOUT

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

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

JPM WORKSHEET

JPM Number: **JPM-S6 (JPM 059)** Revision : **10**

Initial Conditions:

1. The Plant is stable at 100% power with all conditions normal.
2. The "B" EDG has been continually running at full load, in parallel with Bus 24D for a surveillance run.
3. All data was collected on OP 2346C-002, the Unit Supervisor has completed his review and all data is SAT.

Initiating Cues:

The Unit Supervisor has directed you to Unload and Secure the "B" EDG in accordance with OP 2346C, "B" Emergency Diesel Generator procedure.

Simulator Requirements:

- Initialize to any 100% IC with the "B" EDG fully loaded X-Tied to 24D **[Note: IC-139 is saved with all required JPM conditions]**
- **Under EG, insert the following I/O Overrides to prevent the "B" DG MAN START/STOP switch from tripping the "B" DG:**
  - EGDGH7B15G13U_1 - B D/G "Ready to Load" light on; **W**
  - EGDGH7B15G13U_2 - B D/G "Standby" light off; **NW**
  - 06A1A5S34 – B D/G Manual Start/Stop Switch; **AUTO**
- **To simulate a fault, create Event 1 with the following:**
  - Trigger C08-D35; [ON], DIESEL GEN 13U DIFFERENTIAL LOCKOUT.
  - Trigger C08-B36; [ON], DIESEL GEN 13U TROUBLE.
  - Trigger C08-C31; [ON], 13U AUTO VOLTAGE REGULATOR SETPOINT NOT 4160 VAC.
  - I/O EGV2/MTR15G-13U; DG "B" Volts [300 AC_KV, no ramp]
  - I/O EGA2/MTR15G-13U; DG "B" Amps [600 AC_AMP, no ramp]
  - I/O EGVAR/MTR15G-13U, D/G "B" VARs [2000 K, no ramp]
  - I/O EGW-2/MTR15G-13U, D/G "B" Power [300 AC_KW, no ramp]

All of the above items must be duplicated to auto delete (return to normal) one second after a second BT is triggered. This second BT should be triggered at the time the EDG is manually tripped by the examinee, so the simulator correctly reflects the EDG is no longer operating.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Task Title: **Unload and Shutdown the "B" EDG (Alt Path)**

START TIME: _____

STEP #1	Performance: **OP 2346C, "B" Emergency Diesel Generator Section 4.6, Unloading and Shutdown of "B" DG from Control Room** 4.6.1 IF "B" DG has been operated at low load (<50% of full load) for greater than or equal to eight hours, Refer To Section 4.5 and LOAD the diesel to between 2,550 and 2,650 kW for at least one hour.	Standard: Examinee reads the initial conditions and proceeds to Section 4.6. Examinee notes per the Initial Conditions, Step 4.6.1 is N/As	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #2	Performance: **NOTE** *During isochronous mode of operation (i.e., not in unit parallel), generator load is decreased by stopping components powered from applicable buses.* 4.6.2 WHEN required DG run time has lapsed OR otherwise directed, ENSURE all required data has been recorded on OP 2346C-002.	Standard: Examinee reads and N/As the NOTE the EDG is in Unit parallel Examinee notes per the Initial Conditions, Step 4.6.2 is complete.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: OP 2346A-002 was completed and signed off per the Initial Conditions.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Task Title: **Unload and Shutdown the "B" EDG (Alt Path)**

STEP #3	Performance: 4.6.3 WHEN lowering DG load, MAINTAIN Kvar loading at 50% of kW value, using "B" DG "VOLTAGE CNTL REG AUTO CNTL" (C-08).	Standard: Examinee maintains KVARs at approximately 50% of EDG Load using the Voltage Regulator.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #4	Performance: 4.6.4 ADJUST "B" DG "LOAD CNTL GOVERNOR CNTL" to reduce load to 1,400 kW (C-08).	Standard: Examinee adjusts the Governor Control to obtain 1400 KW and voltage Regulator to ~ 700 Kvars in equal adjustments maintaining Kvars half of KW.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: NOTE DG operation at 1,400 kW for at least five minutes allows for proper cooldown of components and equalization of temperatures.	Standard: Examinee reads and acknowledges the note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #6	Performance: 4.6.5 ALLOW DG to operate at 1,400 kW for at least five minutes.	Standard: When EDG is at ~1400 KW the Examinee states they are waiting the 5 minutes for cooldown.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **BOOTH: Once the examinee reports they are waiting the 5 minutes, or at the discretion of the examiner, trigger Event 1.**			
	Comments: **Actions taken for the EDG malfunction are in the subsequent JPM steps.**			

PERFORMANCE INFORMATION

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Task Title: **Unload and Shutdown the "B" EDG (Alt Path)**

STEP # 7	Performance:	Standard:	Critical:	Grade
	OP 2346C, "B" Emergency Diesel Generator Precaution 3.8, 3.8 The following steps for use in emergencies (since it causes abrupt changes in engine loading and power output to the line) have been discussed in pre-job briefing: 3.8.1 If, at any time, it becomes necessary to immediately stop either DG, perform the following: a. Using "EMERGENCY STOP. PUSH TO STOP ENGINE," button, TRIP DG fuel racks (local) OR simultaneously press *both* "EMERG STOP" buttons for DG (C-08) (C-38 if in local control). b. Ensure the following (C-38): • DG "A.C. BREAKER" opens • Field excitation indicates 0 volts • Diesel engine shuts down	• Examinee determines an abnormal condition exists and the "B" D/G and output breaker should have tripped. • **Examinee simultaneously (momentarily) presses both EMERG STOP buttons for the "B" D/G.** • Examinee observes the following: o "B" D/G and the output breaker trip o "B" D/G Frequency is at minimum (58 Hz). o "B" D/G output breaker, A401, is open (green light is lit and red light is out).	Y ☐ N ☒ Y ☒ N ☐ Y ☐ N ☒	S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: If the Examinee recommends tripping the "B" EDG, acknowledge and concur with the recommendation.			
	Comments: • The normal Start/Stop switch will not function to stop the "B" D/G (as part of the JPM to require use of the trip buttons). • The examinee may use the guidance of OP 2346C, Precaution 3.8, or ARP-2590F-140 (C-08/D-35) to manually trip the EDG. • It is NOT critical which procedural guidance is used, only that the EDG be manually tripped from C-08. • **Once the "B" D/G is emergency tripped from C-08, the JPM is complete.**			

PERFORMANCE INFORMATION

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Task Title: **Unload and Shutdown the "B" EDG (Alt Path)**

STEP # 8	Performance:	Standard:	Critical:	Grade
	ARP 2590F-140, "DIESEL GEN 13U DIFFERENTILA LOCKOUT" (C-08/D-35) AUTOMATIC FUNCTIONS 1. Generator output breaker, A401 and diesel trip. 2. Generator output breaker, closing circuitry is blocked. CORRECTIVE ACTIONS 1. IF "B" DG has *not* tripped, PRESS *both* "EMERG STOP" buttons for "B" DG (C-08). 2. VERIFY "DG B FDR BKR, 15G-13U-2 (A401)" open (C-08).	• Examinee observes some or all of the following: o Several parameters change. o D-35; DIESEL GEN 13U DIFFERENTIAL LOCKOUT o B-36; DIESEL GEN 13U TROUBLE • Examinee determines that the "B" D/G and output breaker should have tripped. • **Examinee simultaneously (momentarily) presses both EMERG STOP buttons for the "B" D/G.** • Examinee observes that the "B" D/G and the output breaker trip: o "B" D/G Frequency is at minimum (58 Hz). o "B" D/G output breaker, A401, is open (green light is lit and red light is out).	Y ☐ N ☒ Y ☐ N ☒ Y ☒ N ☐ Y ☐ N ☒	S ☐ U ☐ S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: If the Examinee recommends tripping the "B" EDG, acknowledge and concur with the recommendation.			
	Comments: • The normal Start/Stop switch will not function to stop the "B" D/G (as part of the JPM to require use of the trip buttons). • The examinee may use the guidance of OP 2346C, Precaution 3.8, or ARP-2590F-140 (C-08/D-35) to manually trip the EDG. • It is NOT critical which procedural guidance is used, only that the EDG be manually tripped from C-08. • **Once the "B" D/G is emergency tripped from C-08, the JPM is complete.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Date Performed: _____

Student: _____

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.
As necessary, refer to TIG-04 for additional Pass/Fail criteria.

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**10**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____

Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S6 (JPM 059)** Revision: **10**

Initial Conditions:

1. The Plant is stable at 100% power with all conditions normal.
2. The "B" EDG has been continually running at full load, in parallel with Bus 24D for a surveillance run.
3. All data was collected on OP 2346C-002, the Unit Supervisor has completed his review and all data is SAT.

Initiating Cues:

The Unit Supervisor has directed you to Unload and Secure the "B" EDG in accordance with OP 2346C, "B" Emergency Diesel Generator procedure.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to SG Level Safety Channel Failure Low

JPM Number: JPM-S7 Revision: 0/0

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/30/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/31/2017
Technical Reviewer	Date

Approved:

Michael J. Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/12/17 RLC	Created new JPM for 2017 NRC Re-Take	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S7** Revision: **0/0**

Task Title: **Respond to SG Level Safety Channel Failure Low**

System: RPS and AFAS

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): NUTIMS # 012-01-006

Applicable To: SRO _____ STA _____ RO **X** PEO _____

K/A Number: 012/A4.03 K/A Rating: 3.6/3.6

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: At the completion of this JPM, the examinee has responded to the failure of Safety Channel "B" Steam Generator Level, to include bypassing the appropriate RPS and AFAS channels.

Required Materials: (procedures, equipment, etc.)
- ARP 2590C-006, CB-1, Rev. 000-00, "SG LO LEVEL TRIP CH B"
- Unit 2 Technical Specifications
- RPS bypass key for SG Level
- C-517 and C-518 bypass keys

General References: ARP 2590C-006, CB-1, Rev. 000-00, "SG LO LEVEL TRIP CH B"

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

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

JPM WORKSHEET

JPM Number: **JPM-S7** Revision : **0/0**

Initial Conditions: The plant is stable at 100% power with all operating conditions normal.

Initiating Cues:

- You are the BOP.
- Respond to changing parameters and alarms by reporting your observations and conclusions.
- The examiner will act as the Unit Supervisor, participate in the communication process.
- Make recommendations and perform actions as required.

Simulator Requirements:

- Initialize to any at power IC with all operating conditions normal.
- Ensure all bypass keys are removed from Channel "B" of RPS and C-517 and C-518.
- When examinee is in position (or directed by the floor evaluator), enter malfunction **RP13B at 0% severity, no ramp**, to fail LT-1113B (#1 SG Safety Ch "B" level) input to all systems at 0%.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S7** Revision: **0/0**

Task Title: **Respond to SG Level Safety Channel Failure Low**

START TIME: _____

STEP #1	Performance: **C-04, CB-1; ARP 2590C-006, "SG LO LEVEL TRIP CH B" Actions:** **AUTOMATIC FUNCTIONS** 1. If 2 RPS channels actuate, reactor trips.	Standard: Examinee acknowledges the C-04 alarm, checks primary plant parameters, notes reactor did not trip and reports observations to the US. Examinee should recommend and/or reference ARP 2590C-006 and note that two channels of RPS did not actuate and the reactor did not trip.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **Booth: when directed, activate malfunction RP13B at 0%, no ramp.** When the alarm actuates, solicit status of the reactor if not automatically given. Acknowledge any communication as the US and solicit recommendations for actions to take for the alarm if the examinee does not suggest referencing the applicable ARP.			
	Comments:			
STEP #2	Performance: **CORRECTIVE ACTIONS** 1. IF reactor trips, Go To EOP 2525, "Standard Post Trip Actions" and PERFORM necessary corrective actions.	Standard: Examinee notes reactor did not trip and the step is N/A (i.e.; does <u>not</u> transition to EOP 2525).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #3	Performance: 2. OBSERVE channel "B" SG level indication and COMPARE to other safety channel indications (C-05, PPC).	Standard: Examinee notes #1 SG Safety Channel "B" level indication has failed low, when compared to the other three safety channels.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: Examinee may also note the #1 SG level control channel has not changed from pre-event conditions.			

PERFORMANCE INFORMATION

JPM Number: **JPM-S7** Revision: **0/0**

Task Title: **Respond to SG Level Safety Channel Failure Low**

STEP #4	Performance: 3. IF SG level is less than 49.5% AND no automatic reactor trip has occurred, manually TRIP reactor and Go To EOP 2525, "Standard Post Trip Actions."	Standard: Examinee notes SG actual level has not lowered below pre-event values (i.e.; does not transition to EOP 2525).	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: 4. IF SG level is greater than 49.5% AND alarm is due to instrument malfunction, PERFORM the following: **4.1. OBTAIN necessary keys and PERFORM applicable actions to bypass channel "B" SG level bistables on RPS, C-517, and C-518.** 4.2. Refer To the following Technical Specifications LCOs and DETERMINE applicability: • 3.3.1.1, Table 3.3-1 • 3.3.2.1, Table 3.3-3 • 3.3.3.5, Table 3.3-9 (LI-1123B only)	Standard: Examinee notes SG level is greater than 49.5% and notes alarm appears to be due to instrument malfunction. **Examinee obtains RPS SG Level bistable bypass key (#4) from applicable RPS channel, inserts it into RPS Channel "B" SG Level bistable and turns it clockwise to bypass the tripped bistable. Examinee gets 2 AFAS bypass keys from simulator key locker, inserts a key into HS-1113B-1 (C-517) and HS-1113B-2 (C-518) and turns both keys clockwise to bypass the failed Channel "B" SG Level inputs to both facilities of AFAS.** Examinee then suggests the US refer to the listed Tech. Spec. LCOs to determine applicability.	Critical: Y ☐ N ☒ Y ☒ N ☐ Y ☐ N ☒	Grade S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: **As necessary**: Solicit examinee for suggested actions and concur. Note that the RO will continue as Operator At The Controls (while BOP goes behind the control boards).			
	Comments: **Step "4.1" is the only critical part of JPM Step #5.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S7** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**10**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S7** Revision: **0/0**

Initial Conditions: The plant is stable at 100% power with all operating conditions normal.

Initiating Cues:

- You are the BOP.
- Respond to changing parameters and alarms by reporting your observations and conclusions.
- The examiner will act as the Unit Supervisor, participate in the communication process.
- Make recommendations and perform actions as required.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Respond to the Loss of a 2nd Circulating Water Pump

JPM Number: JPM-S8 Revision: 0/0

Initiated:

Robert L. Cimmino, Jr. (Signature on File)	01/30/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/31/2017
Technical Reviewer	Date

Approved:

Michael J. Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/18/17 rlc	Created new JPM for 2017 NRC Re-Take Exam	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S8** Revision: **0/0**

Task Title: **Respond to the Loss of a 2nd Circulating Water Pump**

System: Circulating Water

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): 000-04-250

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: 075/A2.02 K/A Rating: 2.5/2.7

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 cross-tied the "A" and "B" Circ. Water pumps in response to an existing trip of the "A" Circ. Water pump, noted the subsequent loss of the "B" Circ. Water pump and either recommends or initiates a manual plant trip prior to an automatic plant trip on high condenser backpressure.

Required Materials: (procedures, equipment, etc.)
AOP 2517, Circulating Water Malfunctions
ARP 2590E-050 (C06/7, B-9); CIRC WATER PUMP B OVERLOAD/TRIP

General References:
AOP 2517, Circulating Water Malfunctions
ARP 2590E-050 (C06/7, B-9); CIRC WATER PUMP B OVERLOAD/TRIP

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

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

JPM WORKSHEET

JPM Number: **JPM-S8** Revision : **0/0**

Initial Conditions: The "A" Circulating Water pump has just tripped on overload and the crew has entered AOP 2517, Circulating Water Malfunctions.

The plant is at 100% power, steady state, with all other systems and components are operating normally for the given conditions.

No liquid waste discharges are on progress.

No sodium hypochlorite shocking of bays is in progress.

Initiating Cues: You are the Balance Of Plant (BOP) operator and have been instructed by the US to commence the actions of AOP 2517, Circulating Water Malfunctions, starting with step 3.0, Initial Actions.

Simulator Requirements:

1. Initialize to 100% power, steady state, all equipment operating normally.
2. Ensure all VFDs are set to 100%
3. Trip the "A" CW pump (**CW01A**), acknowledge all alarms and place simulator in FREEZE until the examinee takes the watch.
4. Call up the malfunction to trip the "B" CW pump (**CW01B**) and have it ready to trigger.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S8** Revision: **0/0**

Task Title: **Respond to the Loss of a 2nd Circulating Water Pump**

START TIME: _____

STEP #1	Performance: **AOP 2517, Circ. Water Malfunctions** **3.0 Initial Actions** **INSTRUCTIONS** 3.1 CHECK the following condition exists: • **BOTH** circulating water pumps are tripped in **ONE** condenser CONTINGENCY ACTIONS 3.1.1 Proceed To step 3.3.	Standard: Examinee notes that only one Circ. Water pump has tripped and per the Contingency Action 3.1.1, proceeds to step 3.3	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **BOOTH: When the examinee is ready to take the watch, place the simulator in RUN.**			
	Comments:			
STEP #2	Performance: *3.3 MONITOR condenser backpressure maintained less than or equal to 4.5 in Hg.	Standard: The examinee should continuously monitor (*) condenser backpressure to ensure </= 4.5" Hg. If backpressure is >/= 6.5" Hg, the Examinee notes the Contingency Action guidance and recommends and/or trips the plant.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: If examinee suggests the plant be (conservatively) tripped due to rising condenser back pressure, decline the request and state that backpressure appears to be rising at a slower rate and to continue with the AOP actions at this time.			
	Comments: **Once a 2nd CW pump is lost, the examinee may recommend tripping the plant at any time due to rising backpressure. If this recommendation is made, the JPM may be considered complete.**			

PERFORMANCE INFORMATION

JPM Number: **JPM-S8** Revision: **0/0**

Task Title: **Respond to the Loss of a 2nd Circulating Water Pump**

STEP #3	Performance: 3.4 RAISE speed of all VFD mode operating circulating water pumps to 100%.	Standard: Examinee notes all VFDs at 100% value.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #4	Performance: 3.5 CLOSE water box inlets for pumps which tripped: a. CW-11H, "A" water box inlet b. CW-11G, "B" water box inlet c. CW-11F, "C" water box inlet d. CW-11E, "D" water box inlet	Standard: Examinee notes the "A" CW pump has tripped and closes CW-11H, "A" water box inlet on C-06 (red light out, green light lit).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: NOTE A 15 to 20 second pause is required after receiving the full closed position indication to allow for full closure prior to opening the crosstie valve.	Standard: Examinee reads and acknowledges the note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S8** Revision: **0/0**

Task Title: **Respond to the Loss of a 2nd Circulating Water Pump**

<table>
<tr><td rowspan="3">STEP #6</td><td>Performance:
3.6 CHECK water box inlets for tripped pumps closed.
a. OPEN the following waterbox cross-tie valves for tripped pump(s):
• CW-12D, condenser 1A inlet cross-tie
• CW-12C, condenser 1B inlet cross-tie</td><td>Standard:
Examinee notes CW-11H is closed, waits 15 – 20 seconds, then opens CW-12D, condenser 1A inlet cross-tie (red light lit, green light out on C-06).</td><td>Critical:
Y ☒ N ☐</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:
BOOTH: When examinee completes step 3.6 (<u>before</u> beginning step 3.7) immediately trip the “B” CW Pump (trigger CW01B).</td></tr>
<tr><td colspan="4">Comments: The critical <u>only</u> action is to open CW-12D. When the 2nd CW pump is lost, the examinee may immediately recommend tripping the plant.</td></tr>
<tr><td rowspan="3">STEP #7</td><td>Performance:
<u>ARP 2590E-050</u> (C06/7, B-9); CIRC WATER PUMP B OVERLOAD/TRIP
<u>AUTOMATIC FUNCTIONS</u>
1. “B” circulating water pump trips and alarms.
<u>CORRECTIVE ACTIONS</u>
1. NOTIFY Security Shift Operations Supervisor that the “B” circulating water pump has tripped.
2. Go To AOP 2517, “Circulating Water Malfunctions.”</td><td>Standard:
Examinee notes and acknowledges the “B” CW pump trip.
Examinee informs US of the “B” CW pump trip.
Examinee may elect to recommend and/or trip the plant at this time, or proceed with the ARP guidance to demonstrate the procedure flow path.
1. Informs US to notify Security Shift Operations Supervisor that the “B” circulating water pump has tripped.
2. Goes back to AOP 2517, CW Malfunctions.</td><td>Critical:
Y ☐ N ☒

Y ☒ N ☐</td><td>Grade
S ☐ U ☐

S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue: If at any time a plant trip is recommended, concur and direct.</td></tr>
<tr><td colspan="4">Comments: If required, inform examinee that the Security Shift Operations Supervisor has been notified of the “B” CW pump trip.
This step is critical <u>only</u> if a plant trip is recognized to be needed at this time. Examinee may first elect to refer to this ARP, and then go back to AOP 2517 to demonstrate a procedure path. If the plant <u>is</u> tripped at this time, the remaining steps are <u>not</u> critical. However, an automatic plant trip due to high condenser backpressure occurring <u>before</u> the examinee <u>recommends</u> a manual trip constitutes a failure of the JPM.
<u>Manually</u> tripping the plant, or <u>recommending</u> the plant be manually tripped, due to the loss of a 2nd CW pump or rising condenser backpressure, successfully completes the JPM.</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-S8** Revision: **0/0**

Task Title: **Respond to the Loss of a 2nd Circulating Water Pump**

STEP #8	Performance: **AOP 2517, Circ. Water Malfunctions** **3.0 Initial Actions** **INSTRUCTIONS** 3.1 CHECK the following condition exists: • **BOTH** circulating water pumps are tripped in **ONE** condenser	Standard: Examinee notes both circulating water pumps are tripped in one condenser and proceeds to step 3.2	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: **If at any time a plant trip is recommended, concur and direct.**			
	Comments: An automatic plant trip due to high condenser backpressure occurring before the examinee recommends a manual trip constitutes a failure of the JPM. **Manually tripping the plant (or recommending the plant be tripped) due to the loss of a 2nd CW pump, or rising condenser backpressure, successfully completes the JPM.**			
STEP #9	Performance: **NOTE** When power is less than 15% AND linear power bistable light clears (*not* lit), on at least 3 RPS channels, the turbine trip is inhibited and turbine trip will *not* result in an automatic reactor trip.	Standard: Examinee reads and acknowledges the note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-S8** Revision: **0/0**

Task Title: **Respond to the Loss of a 2nd Circulating Water Pump**

STEP #10	Performance: 3.2 CHECK **BOTH** of the following conditions exist: • Power less than 15% • Turbine trip inhibited	Standard: Examinee notes power is > 15% and references the Contingency Action 3.2.1.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #11	Performance: CONTINGENCY ACTIONS 3.2.1 IF greater than or equal to 15% power, THEN PERFORM the following actions: a. TRIP the reactor and turbine. b. Go To EOP 2525, "Standard Post Trip Actions.	Standard: Examinee recommends and/or trips the plant.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: **If at any time a plant trip is recommended, concur and direct.**			
	Comments: An automatic plant trip due to high condenser backpressure occurring before the examinee recommends a manual trip constitutes a failure of the JPM. **Manually tripping the plant (or recommending the plant be tripped) due to the loss of a 2nd CW pump, or rising condenser backpressure, successfully completes the JPM.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S8** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No	
Validated Time (minutes):	**10**	Actual Time to Complete (minutes):	
Work Practice Performance:		☐ SAT	☐ UNSAT
Operator Fundamentals:		☐ SAT	☐ UNSAT
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT ☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT
Attached Question #2		☐ SAT	☐ UNSAT
Overall Result of JPM:		☐ SAT	☐ UNSAT

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S8** Revision: **0/0**

Initial Conditions: The "A" Circulating Water pump has just tripped on overload and the crew has entered AOP 2517, Circulating Water Malfunctions.

The plant is at 100% power, steady state, with all other systems and components are operating normally for the given conditions.

No liquid waste discharges are on progress.

No sodium hypochlorite shocking of bays is in progress.

Initiating Cues: You are the Balance Of Plant (BOP) operator and have been instructed by the US to commence the actions of AOP 2517, Circulating Water Malfunctions, starting with step 3.0, Initial Actions.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: Mitigate a Reactor Regulating System Failed T_{COLD} Input

JPM Number: JPM-S9 Revision: 0/0

Initiated:

Robert L. Cimmino, Jr.	02/03/2017
Developer	Date

Reviewed:

Will Chesnutt	
Technical Reviewer	Date

Approved:

Michael John Cote	
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/31/2017 rlc	Created new JPM for 2017 NRC Re-Take Exam	0/0

JPM WORKSHEET

Facility: **MP Unit 2** Examinee: _____

JPM Number: **JPM-S9** Revision: **0/0**

Task Title: **Mitigate a Reactor Regulating System Failed T_{COLD} Input**

System: Reactor Regulating System

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): NUTIMS 041-01-003

Applicable To: SRO _____ STA _____ RO **X** PEO _____

K/A Number: 016/A4.01 K/A Rating: 2.9/2.8

Method of Testing: Simulated Performance: _____ Actual Performance: X

Location: Classroom: _____ Simulator: X In-Plant: _____

Task Standards: The Examinee will use OP 2386, Reactor Regulating System, Section 4.2, "Removing (bypassing) Faulty Indication", to deselect a failed T_{COLD} input and restore system calculated outputs to normal.

Required Materials: (procedures, equipment, etc.) OP 2386, "Reactor Regulating System"
ARP 2590C-148, "TAVG-TREF HI/LO" (C-04/DA-19)

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 JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-S9** Revision : **0/0**

Initial Conditions:

1. The Plant is at 100% power, steady state.
2. Loop 1 T_{COLD} temperature transmitter, TE-111Y, has failed to 614°F.
3. I&C has been notified.

Initiating Cues:

1. You are the Balance Of Plant (BOP) operator.
2. The Unit Supervisor has directed you to bypass the failed T_{COLD} input to the Reactor Regulating System IAW OP 2386, "Reactor Regulating System", Section 4.2, "Removing (bypassing) Faulty Indication".

Simulator Requirements:

1. Initialize the simulator to any steady state, 100% power IC.
2. Enter malfunction **RX08A at 614°F** to fail TE-111Y input to the RRS.
3. Acknowledge all alarms.
4. On the BOP "Foxboro control PPC" application, select the "FEEDWATER HEATERS OVERVIEW" screen.

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-S9** Revision: **0/0**

Task Title: **Mitigate a Reactor Regulating System T_{COLD} Input Failure**

START TIME: _____

STEP #1	Performance: **OP 2386, Reactor Regulating System** **4.2 Removing (bypassing) Faulty Indication**	Standard: 1. Examinee references OP 2386, "Reactor Regulating System" (RRS), Section 4.2, "Removing (bypassing) Faulty Indication" 2. Examinee uses any BOP computer work station to access the "Foxboro control PPC" application.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: All required actions in Steps 4.2.1 – 4.2.6 are performed on the Foxboro control PPC interface to the Foxboro IA system.			
STEP #2	Performance: 4.2.1 SELECT "Change Env" (Foxboro control PPC).	Standard: Examinee selects "Change Env" on the application.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #3	Performance: 4.2.2 SELECT "Reactor-Reg" (environment selection screen PPC). 4.2.3 CLICK on "OK." 4.2.4 SELECT "RRS Instruments" screen (Foxboro control PPC).	Standard: The RRS Instruments screen has been selected on the Foxboro control PPC.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue:			
	Comments: The RRS Instrument screen is labeled "REACTOR REGULATING & STEAM DUMP PROGRAM TEMPERATURE and PRESSURE INSTRUMENT SELECTION".			

PERFORMANCE INFORMATION

JPM Number: **JPM-S9** Revision: **0/0**

Task Title: **Mitigate a Reactor Regulating System T_{COLD} Input Failure**

STEP #4	Performance: NOTE Removing a temperature input from the Selected Loop could cause Pressurizer level setpoint to change.	Standard: Examinee reads and acknowledges the Note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: If required, inform the examinee that the RO is monitoring pressurizer level control for any changes.			
	Comments:			
STEP #5	Performance: 4.2.5 SELECT the input to be bypassed and PRESS the "NORMAL" button.	Standard: Examinee *CLICKS* the "NORMAL" button under the **TE-111Y** indication.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: **The button label for TE-111Y must be changed from "NORMAL" to "BYPASSED" for the failed input to be successfully bypassed from the RRS output calculations.**			
	Comments:			
STEP #6	Performance: 4.2.6 OBSERVE that the "NORMAL" button changed to "BYPASSED."	Standard: Examinee observes the TE-111Y input is now bypassed.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments: **This completes the JPM.**			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-S9** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☐ No		
Validated Time (minutes):	**10**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-S9** Revision: **0/0**

Initial Conditions:

1. The Plant is at 100% power, steady state.
2. Loop 1 T_{COLD} temperature transmitter, TE-111Y, has failed to 614°F.
3. I&C has been notified.

Initiating Cues:

1. You are the Balance Of Plant (BOP) operator.
2. The Unit Supervisor has directed you to bypass the failed T_{COLD} input to the Reactor Regulating System IAW OP 2386, "Reactor Regulating System", Section 4.2, "Removing (bypassing) Faulty Indication".

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Transferring Computer UPS 480 VAC Main Power Supply**

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Initiated:

John W. Riley (Signature on File)	01/23/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
2006-317	Update JPM to include HUP evaluations and new format	3/0
06-11-07 (DAP)	Verified JPM to comply with 2349A Rev 010-001. Made minor changes to font and format but nothing of substance.	3/0
JWR 08-07-2012	Updated to new Format. Minor editorial changes.	3/1
07/22/2015 - RJA	Updated to newest format and latest procedure revision.	4
1/16/17 jwr	Reviewed and validated for 2017 NRC JPM exam. Changed Task Number, minor changes some cues and initiating cue.	5

JPM WORKSHEET

Facility: **MP 2** Examinee: _____

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Task Title: **Transferring Computer UPS 480 VAC Main Power Supply**

System: Plant Process Computer

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 30

Task Number(s): 083-01-030

Applicable To: SRO **X** STA _____ RO **X** PEO **X**

K/A Number: 062 A4.01 K/A Rating: 3.3/3.1

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 transferred the computer UPS main power supply from Facility 1 to Facility 2.

Required Materials: (procedures, equipment, etc.) OP 2349A, Plant Process Computer UPS System

General References: OP 2349A, Plant Process Computer UPS 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 JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-P1 (JPM-116)** Revision : **5**

Initial Conditions:

- The plant is at 100% power.
- All systems are in a normal lineup.
- The computer uninterruptible power supply is being supplied from Facility 1.
- The Task Preview and Pre-job Brief have been completed.

Initiating Cues:

- The Unit Supervisor has directed you to transfer the computer UPS main power supply from Facility 1 to Facility 2 in accordance with OP 2349A, Section 4.8.
- The computer UPS main power supply is being swapped from Facility 1 to Facility 2 to support preventative maintenance on breaker B5238.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Task Title: **Transferring Computer UPS 480 VAC Main Power Supply**

START TIME: _____

STEP #1	Performance: <u>OP 2349A, Section 4.8</u> C A U T I ON With safety switches, NB-5238 and NB-6245 open, computer power is supplied from computer battery. When computer battery is supplying power, positive operator action must be taken within 90 minutes to place computer UPS back on UPS inverter or alternate source.	Standard: Examinee reads and acknowledges the Note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Provide examinee with a copy of OP 2349A, Plant Process Computer UPS System.			
	Comments:			
STEP #2	Performance: 4.8.1 IF transferring main power supply from Facility 1 to Facility 2, PERFORM the following: a. CHECK Facility 2 supply breaker, B6245, "computer uninterruptible power supply," closed (CRAC room).	Standard: Examinee proceeds to the Control Room Air Conditioning Room and observes breaker B6245, "computer uninterruptible power supply," is in the ON position.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Breaker B6245 is in the ON (closed) position..			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Task Title: **Transferring Computer UPS 480 VAC Main Power Supply**

STEP #3	Performance: b. CHECK computer battery, DB4A, aligned to inverter with CB-1 closed (D50A).	Standard: Examinee locates CB-1 on D50A (West DC switchgear room) and observes that the breaker is in the ON position.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Breaker CB-1 is in the ON (closed) position.			
	Comments: This area may be Protected. The preferred method to complete this step is to get the Shift Managers permission to enter the Protected Area. A photo maybe used to complete this step as an alternate method.			
STEP #4	Performance: c. CHECK UPS *not* aligned to alternate source.	Standard: Examinee observes that the red "ALTERNATE SOURCE SUPPLYING LOAD" light on D50A is NOT lit and / or the amber "INVERTER SUPPLYING LOAD" light is lit.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: The red "ALTERNATE SOURCE SUPPLYING LOAD" light on D50A is NOT lit and / or the amber "INVERTER SUPPLYING LOAD" light is lit.			
	Comments: This area may be Protected. The preferred method to complete this step is to get the Shift Managers permission to enter the Protected Area. A photo maybe used to complete this step as an alternate method.			

PERFORMANCE INFORMATION

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Task Title: **Transferring Computer UPS 480 VAC Main Power Supply**

STEP #5	Performance: d. PLACE safety switch, "computer power safety switch NB-5238," to "OFF" (East DC Switchgear Room).	Standard: Examinee proceeds to the East DC Switchgear Room and simulates placing switch NB-5238 to the "OFF" position.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Switch NB-5238 has been placed in the "OFF" position.			
	Comments:			
STEP #6	Performance: e. TURN and REMOVE Kirk-Key for safety switch, "computer power safety switch, NB-5238", (East DC Switchgear Room).	Standard: Examinee simulates turning and removing Kirk-Key for safety switch "computer power safety switch, NB-5238", (East DC Switchgear Room). .	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Kirk-Key for safety switch NB-5238 has been turned and the key has been removed.			
	Comments:			
STEP #7	Performance: f. INSERT and TURN Kirk-key for safety switch, "computer power safety switch, NB-6245" (West DC Switchgear Room).	Standard: Examinee proceeds to the West DC Switchgear Room and simulates inserting the Kirk-key into safety switch NB-6245. Examinee simulates turning Kirk-Key for safety switch NB-6245..	Critical: Y ☒ N ☐ Y ☒ N ☐	Grade S ☐ U ☐ S ☐ U ☐
	Cue: The kirk-key has been inserted and turned.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Task Title: **Transferring Computer UPS 480 VAC Main Power Supply**

STEP #8	Performance: g. PLACE safety switch, "computer power safety switch, NB-6245," to "ON" (West DC Switchgear Room).	Standard: Examinee simulates placing safety switch, "computer power safety switch, NB-6245," to the "ON" position.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: "Computer power safety switch, NB-6245," is in the "ON" position.			
	Comments:			
STEP #9	Performance: h. IF UPS inverter operating, OBSERVE the following (D50A): • Amber "IN SYNC" light, lit • Amber "INVERTER SUPPLYING LOAD" light lit • Red "BATTERY CURRENT" light not lit.	Standard: Examinee observes the following: • Amber "IN SYNC" light is lit • Amber "INVERTER SUPPLYING LOAD" light is lit • Red "BATTERY CURRENT" light is NOT lit.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: • Amber "IN SYNC" light is lit • Amber "INVERTER SUPPLYING LOAD" light is lit • Red "BATTERY CURRENT" light is NOT lit.			
	Comments: This area may be Protected. The preferred method to complete this step is to get the Shift Managers permission to enter the Protected Area. A photo maybe used to complete this step as an alternate method.			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**30**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-P1 (JPM-116)** Revision: **5**

Initial Conditions:

- The plant is at 100% power.
- All systems are in a normal lineup.
- The computer uninterruptible power supply is being supplied from Facility 1.
- The Task Preview and Pre-job Brief have been completed.

Initiating Cues:

- The Unit Supervisor has directed you to transfer the computer UPS main power supply from Facility 1 to Facility 2 in accordance with OP 2349A, Section 4.8.
- The computer UPS main power supply is being swapped from Facility 1 to Facility 2 to support preventative maintenance on breaker B5238.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Swapping "B" Service Water Strainer from Facility 1 to Facility 2**

JPM Number: **JPM-P2** Revision: **0**

Initiated:

John W. Riley (Signature on File)	01/24/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/24/2017 jwr	Initial issue JPM. Similar to JPM-123. Written for the 2017 ILT NRC JPM exam. JPM-123 used the operating procedure. This JPM uses the Loss of Vital 480 VAC Bus 22E AOP; 2503E.	0

JPM WORKSHEET

Facility: **MP 2** Examinee: _____

JPM Number: **JPM-P2** Revision: **0**

Task Title: **Swapping "B" Service Water Strainer from Facility 1 to Facility 2**

System: Service Water

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 10

Task Number(s): 000-04-018

Applicable To: SRO **X** STA _____ RO **X** PEO **X**

K/A Number: 076/A2.01 K/A Rating: 3.5/3.7

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 simulated swapping the "B" service water strainer power supply from Facility 1 to Facility 2.

Required Materials: (procedures, equipment, etc.) AOP 2503E, Loss of Vital 480 VAC Bus 22E

General References: AOP 2503E, Loss of Vital 480 VAC Bus 22E

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

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

JPM WORKSHEET

JPM Number: **JPM-P2** Revision : **0**

Initial Conditions:

- The plant is at 100% power.
- A loss of 480 volt electrical bus 22E has occurred.
- The crew has entered AOP 2503E, "Loss of Vital 480 VAC Bus 22E".
- The crew is performing step 3.18 to place the "B" SW pump in service on facility 1.
- The crew has completed all steps through 3.18.e. The "B" SW pump is operating and the "A" SW pump has been stopped.

Initiating Cues:

- The Unit Supervisor has directed you to swap the "B" service water strainer power supply from Facility 1 to Facility 2 in accordance with AOP 2503E, step 3.18.f.
- The examiner will act as the US as needed.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-P2** Revision: **0**

Task Title: **Swapping "B" Service Water Strainer from Facility 1 to Facility 2**

START TIME: _____

STEP #1	Performance: 3.18.f DISPATCH Operator to intake structure to ENSURE "B" service water strainer powered from facility 2, as follows: 1) PLACE "B" SW strainer control switch to "OFF."	Standard: The examinee locates the "B" Service water Strainer control switch on the middle, left of the "B" Service Water Pump Discharge Strainer Control panel L1B (C58B), and simulates placing it to the "OFF" position.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: "B" SW strainer control switch is in "OFF" position.			
	Comments: The best way to administer this JPM is to have both the examiner and examinee stand on the floor using a flashlight and laser pointer. The examinee can climb the ladder and look at the panel but there is not enough room for the examinee and examiner on the platform. And it could be unsafe for the examinee to turn on the platform to communicate with the examiner.			
STEP #2	Performance: 2) OPEN "Z1" knife switch.	Standard: The examinee locates the "B" Service Water Strainer "Z1" knife switch on the right side of the "B" Service Water Pump Discharge Strainer Control panel L1B (C58B), and simulates placing it in the "OFF" position.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: "Z1" knife switch is in the "OFF" position.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P2** Revision: **0**

Task Title: **Swapping "B" Service Water Strainer from Facility 1 to Facility 2**

STEP #3	Performance: 3) ROTATE and REMOVE Kirk-key.	Standard: • The examinee locates the Kirk-key in the lock for the Z1 knife switch, and simulates rotating it 90° to lock the Z1 knife switch. • Examinee simulates removing the Kirk-key.	Critical: Y ☒ N ☐ Y ☒ N ☐	Grade S ☐ U ☐ S ☐ U ☐
	Cue: The Z1 Kirk-key has been rotated and removed.			
	Comments:			
STEP #4	Performance: 4) INSERT Kirk-key in Z2 lock.	Standard: The examinee locates the Kirk-key lock for the Z2 knife switch and simulates inserting the Kirk-key into the Z2 lock.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: The Kirk key has been inserted into the Facility 2 key lock switch.			
	Comments:			
STEP #5	Performance: 5) UNLOCK and CLOSE Z2 knife switch.	Standard: The examinee simulates unlocking the Kirk key lock for the Z2 knife switch, and simulates closing the Z2 knife switch ("ON" position).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: The Z2 Kirk key switch is unlocked and the knife switch is closed ("ON" position).			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P2** Revision: **0**

Task Title: **Swapping "B" Service Water Strainer from Facility 1 to Facility 2**

STEP #6	Performance: 6) PRESS "CLOSE" on strainer control panel (west side above Z2 knife switch).	Standard: The examinee simulates pressing "CLOSE" on strainer control panel (west side above Z2 knife switch).	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: "CLOSE" on strainer control panel has been pressed.			
	Comments:			
STEP #7	Performance: 7) PLACE "B" SW strainer control switch in "AUTO."	Standard: Examinee simulates placing "B" SW strainer control switch in "AUTO.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: The "B" SW strainer control switch is in "AUTO.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-P2** Revision: **0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**10**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-P2** Revision: **0**

Initial Conditions:

- The plant is at 100% power.
- A loss of 480 volt electrical bus 22E has occurred.
- The crew has entered AOP 2503E, "Loss of Vital 480 VAC Bus 22E".
- The crew is performing step 3.18 to place the "B" SW pump in service on Facility 1.
- The crew has completed all steps through 3.18.e. The "B" SW pump is operating and the "A" SW pump has been stopped.

Initiating Cues:

- The Unit Supervisor has directed you to swap the "B" service water strainer power supply from Facility 1 to Facility 2 in accordance with AOP 2503, step 3.18.f.
- The examiner will act as the US as needed.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Shift from "A" to "B" Waste Gas Decay Tank**

JPM Number: **JPM-P3 (JPM-225)** Revision: **2**

Initiated:

John W. Riley (Signature on File)	1/18/17
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	01/27/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	02/01/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
10/20/08	Revised JPM for LOIT 2008 NRC Exam	1/0
01/02/09	Incorporated NRC Post-Validation comments	1/0
01/17/2017 jwr	Updated to the latest format in preparation for the 2017 NRC JPM exam. Made changes due to procedure changes.	2/0

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: Shift from "A" to "B" Waste Gas Decay Tank

System: Gaseous Radwaste

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 25

Task Number(s): 071-01-035

Applicable To: SRO X STA _____ RO X PEO X

K/A Number: 071 A4.05 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 has shifted from the "A" Waste Gas Decay Tank in service to the "B" Waste Gas Decay Tank in service.

Required Materials: (procedures, equipment, etc.) Waste Gas System, OP 2337, Section 4.2

General References: Waste Gas System, OP 2337, Section 4.2

***** 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 JPM will be satisfied. With the exception of the questions at the end, you may use any approved reference material normally available in the Control Room, including logs. Make all written reports, oral reports, alarm acknowledgements, and log entries as if the evolution was actually being performed.

JPM WORKSHEET

JPM Number: **JPM-P3 (JPM-225)** Revision : **2/0**

Initial Conditions:

- The "A" Waste Gas Decay Tank is in service.
- The "A" Waste Gas Decay Tank pressure indicates 137 psig.
- The "B" Waste Gas Decay Tank pressure indicates 5 psig.
- All prerequisites are met.
- The Task Preview and Pre-job Brief have been completed.

Initiating Cues: The US has directed you to remove the "A" Waste Gas Decay Tank from service and place the "B" Waste Gas Decay Tank in service.

Simulator Requirements: N/A

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

START TIME: _____

STEP #1	Performance: OP 2337, Section 4.2, NOTE: 1. The following Section shifts any of the following waste gas decay tanks ("A" through "F"): 2. When using this Section, the last designator is written in the box next to the component's identification number on a copy of this Section.	Standard: Examinee reads and acknowledges NOTE prior to section 4.2, "Shifting Waste Gas Decay Tanks."	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Provide the examinee with OP 2337, Gaseous Radwaste System, prerequisites and precautions (pages 1-4) and section 4.2 Shifting Waste Gas Decay Tanks (pages 8-10).			
	Comments:			
STEP #2	Performance: OP 2337, Section 4.2, NOTE: Waste Gas Decay Tanks are normally shifted when the gas pressure in the in service Waste Gas Decay Tank reaches 135 to 140 psig.	Standard: Examinee reads and acknowledges NOTE at the start of section 4.2, "Shifting Waste Gas Decay Tanks."	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

STEP #3	Performance: 4.2.1 MARK the boxes in step 4.2.6 with the letter designator of the valve identification number of the Waste Gas Decay Tank being *removed* from service.	Standard: Examinee records the letter "A" in the boxes associated with step 4.2.6.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #4	Performance: 4.2.2 MARK the boxes in step 4.2.8 with the letter designator of the valve identification number of the Waste Gas Decay Tank which is to be placed *in service*.	Standard: Examinee records the letter "B" in the boxes associated with step 4.2.8.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

<table>
<tr><td rowspan="3">STEP #5</td><td>Performance:
4.2.3 CIRCLE position of Waste Gas Compressor hand switches (C-61):
• HS-9188, "WASTE GAS COMPRESSOR F-1A"
OFF AUTO STANDBY
• HS-9189, "WASTE GAS COMPRESSOR F-1B"
OFF AUTO STANDBY</td><td>Standard:
Examinee locates the handswitches for the "A" and "B" Waste Gas Compressors on Panel C-61 and records the position of the handswitches in the appropriate space.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
<tr><td rowspan="3">STEP #6</td><td>Performance:
4.2.4 WRITE in-service Waste Gas Decay Tank pressure _____ psig</td><td>Standard:
Examinee writes in the in-service Waste Gas Decay Tank pressure as 137 psig. This was provided in the initial conditions.</td><td>Critical:
Y ☐ N ☒</td><td>Grade
S ☐ U ☐</td></tr>
<tr><td colspan="4">Cue:</td></tr>
<tr><td colspan="4">Comments:</td></tr>
</table>

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

STEP #7	Performance: 4.2.5 ENSURE the following in "OFF" (C-61): • HS-9188, "WASTE GAS COMPRESSOR F-1A" • HS-9189, "WASTE GAS COMPRESSOR F-1B"	Standard: Examinee states he/she would place both "A" and "B" Waste Gas Compressor handswitches in the OFF position.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Both Waste Gas Compressor handswitches are in the OFF position.			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

STEP #8	Performance:	Standard:	Critical:	Grade
	4.2.6 For Waste Gas Decay Tank being *removed* from service, CLOSE the following valves: • 2-GR-6.1A, "DECAY TK (T-19A) INLET VALVE"(C-61) • 2-GR-6A, "A DECAY TANK INLET STOP" (-25'6" Auxiliary Building) • 2-GR-7A, "A DECAY TANK INLET"	• Examinee locates the "WASTE GAS DECAY TANK INLET VALVE, 2-GR-6.1A handswitch and states he/she would rotate it to the CLOSE position. • Examinee locates the "A" Decay Tank Inlet Stop, 2-GR-6A and states he/she would rotate it in the clockwise direction until the handwheel stops. • Examinee locates the "A" Decay Tank Inlet, 2-GR-7A, and states he/she would rotate it in the clockwise direction until the handwheel stops.	Y ☒ N ☐ Y ☐ N ☒ Y ☒ N ☐	S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: • When the examinee states that he/she is rotating the handswitch for 2-GR-6.1A to the closed position, inform examinee that the red light is NOT lit and the green light is lit. • When the examinee states that he/she is rotating the handle for 2-GR-6A and 2-GR-7A, then inform him/her that the valve position indicator is pointing to the CLOSE position.			
	Comments: • All of the manual valve handles rotate 90° and have a pointer for valve position. • The handles for each of the manual valves may be oriented differently depending on local interference. • 2-GR-7A mark number matches, but noun name does not match on permanent label. A temporary label (pink tag) is in place for a 100% match while the new permanent label is being made.			

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

STEP #9	Performance: 4.2.7 WRITE time decay tank isolated.	Standard: Examinee writes in the time decay tank isolated.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

STEP #10	Performance: 4.2.8 PLACE applicable Waste Gas Decay Tank in service as follows: a. ENSURE the following valves closed: • 2-GR-8B, "B DECAY TANK OUTLET ISOLATION" (-25'6" Auxiliary Building) • 2-GR-9B, "B DECAY TANK OUTLET STOP" (-25'6" Auxiliary Building) • 2-GR-8.1B, "DECAY TK (T-19B) OUTLET VALVE" (C-61) b. OPEN the following valves: • 2-GR-6.1B, "DECAY TK (T-19B) INLET VALVE" (C-61) • 2-GR-6B, "B DECAY TANK INLET STOP" -25'6" Auxiliary Building) • 2-GR-7B, "B DECAY TANK INLET"	Standard: • Examinee locates and states he/she would attempt to rotate the "B" Decay tank outlet isolation, 2-GR-8B, in the clockwise (close) direction and determines that the handle will NOT move. • Examinee locates and states he/she would attempt to rotate the "B" Decay tank outlet stop, 2-GR-9B, in the clockwise (close) direction and determines that the handle will NOT move. • Examinee locates and observes that the associated red light for the "B" DECAY TANK OUTLET CONTROL VALVE, 2-GR-8.1B is out and the green light is lit. • Examinee locates and states he/she would place the "B" Decay tank inlet valve, 2-GR-6.1B, handswitch to the OPEN position. • Examinee locates and states he/she would rotate the "B" Decay Tank Inlet Stop, 2-GR-6B, in the counter clockwise (open) direction until the handle stops. • Examinee locates and states he/she would rotate the "B" Decay Tank Inlet valve, 2-GR-7B, in the counter clockwise (open) direction until the handle stops.	Critical: Y ☐ N ☒ Y ☐ N ☒ Y ☐ N ☒ Y ☒ N ☐ Y ☒ N ☐ Y ☒ N ☐	Grade S ☐ U ☐ S ☐ U ☐ S ☐ U ☐ S ☐ U ☐ S ☐ U ☐ S ☐ U ☐
	Cue: For each of the above listed valves, when the examinee states that he/she is rotating a handswitch or a valve handle, then inform him/her that the valves are in the appropriate position or that the appropriate lights are lit as stated in the Standard.			
	Comments: 2-GR-7B mark number matches, but noun name does not match on permanent label. A temporary label (pink tag) is in place for a 100% match while the new permanent label is being made.			

PERFORMANCE INFORMATION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Task Title: **Shift from "A" to "B" Waste Gas Decay Tank**

STEP #11	Performance: 4.2.9 PLACE Waste Gas Compressor switches to position marked in step 4.2.3.	Standard: Examinee places the handswitches for the "A" and "B" Waste Gas Compressors on Panel C-61 back to the position recorded in step 4.2.3.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Inform examinee that the appropriate lights are lit.			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-P3 (JPM-225)** Revision: **2/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**25**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **P3 (JPM-225)** Revision: **2/0**

Initial Conditions:

- The "A" Waste Gas Decay Tank is in service.
- The "A" Waste Gas Decay Tank pressure indicates 137 psig.
- The "B" Waste Gas Decay Tank pressure indicates 5 psig.
- All prerequisites are met.
- The Task Preview and Pre-job Brief have been completed.

Initiating Cues: The US has directed you to remove the "A" Waste Gas Decay Tank from service and place the "B" Waste Gas Decay Tank in service.

JOB PERFORMANCE MEASURE APPROVAL SHEET

JPM Title: **Local Manual Operation of a FRV**

JPM Number: **JPM-P4** Revision: **0/0**

Initiated:

John W. Riley (Signature on File)	1/30/2017
Developer	Date

Reviewed:

Will Chesnutt (Signature on File)	1/31/2017
Technical Reviewer	Date

Approved:

Michael John Cote (Signature on File)	2/2/2017
Supervisor, Nuclear Training	Date

SUMMARY OF CHANGES

DATE	DESCRIPTION	REV/CHANGE
01/25/2017 rlc	Created from JPM-063 for 2017 NRC Re-Take Exam	0/0

JPM WORKSHEET

Facility: **MP2** Examinee: _____

JPM Number: **JPM-P4** Revision: **0/0**

Task Title: **Local Manual Operation of a FRV**

System: Main Feedwater (Steam Generator)

Time Critical Task: ☐ YES ☒ NO

Validated Time (minutes): 15

Task Number(s): 059-01-038

Applicable To: SRO **X** STA _____ RO **X** PEO _____

K/A Number: 035/A4.01 K/A Rating: 3.7/3.6

Method of Testing: Simulated Performance: X Actual Performance: _____

Location: Classroom: _____ Simulator: _____ In-Plant: X

Task Standards: Examinee has simulated taking local manual control of the #1 Feedwater Regulating Valve per OP 2385.

Required Materials: (procedures, equipment, etc.) AOP 2504C Loss of 120 VAC Vital Instrument Panel VA-10
OP 2385 "Feedwater Control system Operation"

General References: AOP 2504C Loss of 120 VAC Vital Instrument Panel VA-10
OP 2385 "Feedwater Control system Operation"

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

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

JPM WORKSHEET

JPM Number: **JPM-P4** Revision : **0/0**

Initial Conditions:

- The plant is at 100 % power, steady state.
- VA-10 has de-energized due to a failure of the panel's main breaker.
- Electrical Maintenance is investigating the breaker failure.

Initiating Cues:

- The US has directed you to establish communications with the control room and take local manual control of the #1 FRV in accordance with OP 2385 "Feedwater Control System Operation".
- Simulate that you have an ASCOM phone and Headset with you.
- TSAS 3.7.1.6 "Main Feedwater Isolation Components" has been entered.
- All of OP 2385 prerequisites are met except for Vital Instrument power from VA10.
- Step 4.7.2 has been completed by the control room. The controllers are properly configured. "REG VLV, LIC-5268" and "MSTR, LIC-5272" controllers are in manual and "BYPASS, LIC-5215" is in "AUTO".

Simulator Requirements:

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

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

PERFORMANCE INFORMATION

JPM Number: **JPM-P4** Revision: **0/0**

Task Title: **Local Manual Operation of a FRV**

START TIME: _____

STEP #1	Performance: **OP 2385, "Feedwater Control System Operation"** **4.7 Local Operation of No. 1 FRV** CAUTION 1. To remain within the Main Steam Line Break inside Containment analysis, operation with FRV bypass valve(s) open when greater than 25% power is *not* allowed. 2. During this mode of operation, the FRV override from "TURBINE TRIP" or "HI-HI SG LEVEL" signal does *not* function.	Standard: Examinee reads and acknowledges the CAUTION.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Provide a copy of OP 2385, "Feedwater Control System Operation"; index, prerequisites, and precaution (through page 7) and section 4.7, "Local Operation of No. 1 FRV".			
	Comments:			
STEP #2	Performance: NOTE This Section is required when malfunctions occur which prevent movement of No. 1 FRV from the Control Room and operation of the Feedwater System is required.	Standard: Examinee reads and acknowledges the Note.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			

PERFORMANCE INFORMATION

JPM Number: **JPM-P4** Revision: **0/0**

Task Title: **Local Manual Operation of a FRV**

STEP #3	Performance: 4.7.1 IF in MODEs 1, 2, or 3, ENTER TSAS 3.7.1.6.	Standard: Examinee notes that the initiating cue stated that TSAS 3.7.1.6 has been entered.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #4	Performance: 4.7.2 ENSURE the following (C-05): • "REG VLV, LIC-5268," controller in manual (red light, lit) • "MSTR, LIC-5272," controller in manual (red light, lit) • "BYPASS, LIC-5215," controller in "AUTO" (green light, lit)	Standard: Examinee notes that the initiating cue stated that Step 4.7.2 has been completed by the control room.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #5	Performance: 4.7.3 STATION Operator at 2-FW-51A, "#1 S/G FEED REG VALVE," and ESTABLISH communications (54' 6" TB).	Standard: Examinee proceeds to the FRV area and states that they would contact the control room on their ASCOM phone.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: Communications with Control room established. BOP is on the line.			
	Comments:			

PERFORMANCE INFORMATION

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STEP #6	Performance: 4.7.4 At 2-FW-51A, "#1 S/G FEED REG VALVE," PERFORM the following (54' 6" TB): a. REMOVE handwheel anti- rotational restraint.	Standard: Examinee simulates removing the handwheel anti- rotational restraint or states they would remove the handwheel anti- rotational restraint.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Restraining device is removed.			
	Comments:			
STEP #7	Performance: CAUTION Feed Regulating valve may move in the closed direction when engaging the large manual handwheel.	Standard: Examinee reads and acknowledges the Caution	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue:			
	Comments:			
STEP #8	Performance: 4.7.4 At 2-FW-51A, "#1 S/G FEED REG VALVE," PERFORM the following (54 6" TB): b. TURN *large* handwheel *clockwise* to its limit of travel.	Standard: Examinee simulates turning the large handwheel for 2-FW-51A in the clockwise direction until it will not turn any further or states that they would turn the large handwheel for 2-FW-51A in the clockwise direction until it will not turn any further.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Large handwheel for 2-FW-51A rotated clockwise to hard stop.			
	Comments:			

PERFORMANCE INFORMATION

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STEP #9	Performance: 4.7.4 At 2-FW-51A, "#1 S/G FEED REG VALVE," PERFORM the following (54 6" TB): c. TURN *small* handwheel *counterclockwise* until tight, locking *large* handwheel in "engaged" position.	Standard: Examinee simulates turning the small handwheel in the counter-clockwise direction until it will not turn any further or states that they would turn the small handwheel in the counter-clockwise direction until it will not turn any further.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: Small handwheel turned counterclockwise and is tight (large handwheel is locked in engaged position).			
	Comments:			
STEP #10	Performance: 4.7.4 At 2-FW-51A, "#1 S/G FEED REG VALVE," PERFORM the following (54 6" TB): d. OPEN 2-FW-39A, "'A' FEED REGULATING EQUALIZING STOP."	Standard: Examinee locates 2-FW-39A and simulates turning its knob counterclockwise until it will not turn any further or states that they would open it by turning its knob counterclockwise until it will not turn any further.	Critical: Y ☒ N ☐	Grade S ☐ U ☐
	Cue: FW-39A, FEED REGULATING EQUALIZING STOP, is open.			
	Comments:			
STEP #11	Performance: 4.7.5 As directed by Control Room, OPERATE No. 1 FRV *large* handwheel and MAINTAIN No. 1 SG level within desired operating band.	Standard: Examinee informs the control room 2-FW-51A is in Local-Manual control, standing by for direction.	Critical: Y ☐ N ☒	Grade S ☐ U ☐
	Cue: As BOP, acknowledge that #1 FRV is in local manual and instruct examinee to standby for instructions. **This completes the JPM.**			
	Comments:			

TERMINATION CUE: The evaluation for this JPM is concluded.

STOP TIME: _____

VERIFICATION OF JPM COMPLETION

JPM Number: **JPM-P4** Revision: **0/0**

Date Performed: _____

Student: _____

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

EVALUATION SECTION:

Time Critical Task?		☐ Yes ☒ No		
Validated Time (minutes):	**15**	Actual Time to Complete (minutes):		
Work Practice Performance:		☐ SAT	☐ UNSAT	
Operator Fundamentals:		☐ SAT	☐ UNSAT	
JPM Question Portion Overall [*NLO only*]:		☐ SAT	☐ UNSAT	☐ N/A
Attached Question #1		☐ SAT	☐ UNSAT	
Attached Question #2		☐ SAT	☐ UNSAT	
Overall Result of JPM:		☐ SAT	☐ UNSAT	

Evaluator: _____
Print / Sign

Areas for Improvement / Comments:

STUDENT HANDOUT

JPM Number: **JPM-P4** Revision: **0/0**

Initial Conditions:

- The plant is at 100 % power, steady state.
- VA-10 has de-energized due to a failure of the panel's main breaker.
- Electrical Maintenance is investigating the breaker failure.

Initiating Cues:

- The US has directed you to establish communications with the control room and take local manual control of the #1 FRV in accordance with OP 2385 "Feedwater Control System Operation".
- Simulate that you have an ASCOM phone and Headset with you.
- TSAS 3.7.1.6 "Main Feedwater Isolation Components" has been entered.
- All of OP 2385 prerequisites are met except for Vital Instrument power from VA10.
- Step 4.7.2 has been completed by the control room. The controllers are properly configured. "REG VLV, LIC-5268" and "MSTR, LIC-5272" controllers are in manual and "BYPASS, LIC-5215" is in "AUTO".