JAMES A. FITZPATRICK

Job Performance Measure

Core Thermal Power Calculated Manually

JPM Number: RO A-1-1

Revision Number: 2

Date: 04/08/2010

Developed By:	**T. Hedigan**	**04/08/10**
	Author	**Date**
Validated By:		
	Facility Technical Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 0.

JPM Setup Instructions:

ITEM:

1. 502	**6. 0.85**	**12. 3.95**
2. 420	**7. 47**	**13. 4.00**
3. 159	**8. 1026**	**14. 392/392**
4. 155	**9. 59**	**15. 391.9/391.9**
5. 0.85	**11. 625**	

Provide applicant with the following:

- **JPM handout sheet**
- **RAP-7.3.03, CORE THERMAL POWER EVALUATION , Rev 13**
- **Calculator**
- **ASME Steam Tables**
- **Attachment 1 partially filled out.**

TASK CONDITIONS:

Plant data has been recorded for steps 1 through 15 of attachment 1.

INITIATING CUE:

Calculate Core Thermal Power manually per section 9.2 of RAP-7.3.03, CORE THERMAL POWER EVALUATION. EPIC computer points are not available. Items 14 and 15 were obtained from 02TT-168A/C and B/D on attachment 3.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ______________________________
Job Title: RO

JPM Title: Core Thermal Power Calculated Manually

JPM Number: RO A-1-1 **Revision Number:** 0

K/A Number and Importance: K/A 2.1.18 IR: 3.6

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 75 minutes **Actual Time Used:** _____minutes

References:

RAP-7.3.03, CORE THERMAL POWER EVALUATION , Rev 13

RAP-7.3.16, PLANT POWER CHANGES, Rev. 46

ST-5D, APRM CALIBRATION, REV. 3

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ____________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Applicant calculates average feedwater temperature and compensated feed flow. Records data on Attachment 1 items 16 through 23.	Correctly calculates feedwater compensated flow. 16. 392 17. 391.9 18. -28 19. -28.1 20. 1.01031 21. 1.01034 22. A=3.99 (3.96-4.02) 23. B=4.04 (4.01-4.07)			
2. Applicant uses the ASME steam tables to calculate Items 24 through 30 on attachment 1. Note: Steam tables will not be able to be used to determine the enthalpy of compressed water. Items number 26, 27, 28, 29, 30.	Correctly determines enthalpy from steam tables. 24. 1191.9 (1191.2-1192.6) 25. 645.5 (639.9-651.1) 26. 367.4 (363.9-370.9) 27. 367.3 (363.8-370.8) 28. 490.1 (486.1-494.2) 29. 397.6 (393.6-401.6) 30. 65.8 (61.8-69.8)			
3. Applicant calculates items 31 through 34 on attachment 1.	Correctly calculates Q to feedwater. 31. 8.03 (7.97-8.09) 32. 367.4 (363.9-370.9) 33. 1191.9 (1191.2-1192.6) 34. 1940.4 (1935.4-1945.4)			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. Applicant calculates items 35 through 36 on attachment 1.	Correctly calculates Q to CRD flow. 35. .037 (.036-.038) 36. 12.2 (11.9-12.5)			
5. Applicant calculates items 37 through 39 on attachment 1.	Correctly calculates Q to Cleanup system. 37. .156 (.154-.158) 38. 92.5 (90.5-94.5) 39. 4.24 (4.04-4.44)			
6. Applicant calculates items 41 on attachment 1.	Correctly calculates QPUMP 41. 1.58 (1.38-1.78)			
7. **(*)** Applicant calculates items 42 through 43 on attachment 1.	Correctly determines core thermal power. 42. 1956.3 (1841.1-2069.4) 43. 77.1 (72.6-81.6)			
Task is complete.				

JPM Stop Time ___________

EXAM KEY

HEAT BALANCE CALCULATION SHEET

PERFORMED BY: ______________________ DATE/TIME: ______________

PURPOSE: ______________________

ITEM	PARAMETER	PANEL	INSTRUMENT	VALUE	UNITS
1.	Cleanup Inlet Temp	9-4	12TSS-142 POS 1	502	°F
2.	Cleanup Outlet Temp.	9-4	12TSS-142 POS 4	420	°F
3.	Cleanup Flow A	9-4	12FI-126A	159	GPM
4.	Cleanup Flow B	9-4	12FI-126B	155	GPM
5.	Power to Recirc. Pump A	9-4	RWR MG A GEN PWR	0.85	MW
6.	Power to Recirc. Pump B	9-4	RWR MG B GEN PWR	0.85	MW
7.	Total Core Flow	9-5	02-3DPR/FR-95	47	Mlb/hr
8.	Reactor Pressure (psig+14.7)	9-5	06PR/FR-98	1026	PSIA
9.	CRD Flow to Reactor	9-5	03FI-310	59	GPM
9a	RWR & RWCU Pump Seal Flows		Constant	15	GPM
10.	CRD System Temp		Constant	95	°F
11.	Gross MW Electric	9-7	MAIN GEN MW	625	GMWE
*12.	Feedwater Flow Loop A	9-5	06FI-89A	3.95	MLB/HR
*13.	Feedwater Flow Loop B	9-5	06FI-89B	4.00	MLB/HR
14.	TFWA, use PTID 407/410 or	9-21	02TT-168A/C	392 / 392	°F
15.	TFWB, use PTID 408/411 or	9-21	02TT-168B/D	391.9 / 391.9	°F
	FEEDWATER FLOW CALCULATIONS				
*16.	Average TFWA (407+410)/2 or (168A+168C)/2			392	°F
*17.	Average TFWB (408+411)/2 or (168B+168D)/2			391.9	°F
*18.	Delta T Loop A (DTA) = TFWA - 420			-28	°F
*19.	Delta T Loop B (DTB) = TFWB - 420			-28.1	°F
*20.	C.F. = 1.0 + {DTA*[-3.8064E-4 + (DTA*-4.4310E-7)]}			1.01031	
*21.	C.F. = 1.0 + {DTB*[-3.8064E-4 + (DTB*-4.4310E-7)]}			1.01034	
*22.	Compensated Flow A		(#12 * #20)	3.99 (3.96-4.02)	MLB/HR
*23.	Compensated Flow B		(#13 * #21)	4.04 (4.01-4.07)	MLB/HR
	PARAMETER	**ITEM**	**DATA USED**	**VALUE**	**UNITS**
24.	HS	#8,	ASME Table	1191.9 (1191.2-1192.6)	BTU/LB
25.	HFG	#8,	ASME Table	645.5 (639.9-651.1)	BTU/LB
*26.	HFWA	#8, #16,	ASME Table	367.4 (363.9-370.9)	BTU/LB
*27.	HFWB	#8, #17,	ASME Table	367.3 (363.8-370.8)	BTU/LB
28.	HCUI	#8, #1,	ASME Table	490.1 (486.1-494.2)	BTU/LB
29.	HCUO	#8, #2,	ASME Table	397.6 (393.6-401.6)	BTU/LB
30.	HCR	#8, #10,	ASME Table	65.8 (61.8-69.8)	BTU/LB
	PARAMETER		**EQUATION (ITEM #'S)**	**VALUE**	**UNITS**
31.	Total Feedflow		(#22 + #23)	8.03 (7.97-8.09)	MLB/HR
32.	Feedwater Enthalpy		[(#26*#22) + (#27*#23)]/#31	367.4 (363.9-370.9)	BTU/LB
33.	Steam Enthalpy		[#24 - (0.000*#25)]	1191.9 (1191.2-1192.6)	BTU/LB
34.	Q to feedwater (QFW)		[#31*(#33 - #32)]/3.413	1940.4 (1935.4-1945.4)	MWt
35.	CRD flow (WCR)		[(#9 * 0.498E-3) + (#9a * 0.498E-3)]	.037 (.036-.038)	MLB/HR
36.	Q to CRD flow (QCR)		[#35 * (#33 - #30)]/3.413	12.2 (11.9-12.5)	MWt
37.	Total CU flow (WCU)		(#3 + #4) *(0.498E-3)	.156 (.154-.158)	MLB/HR
38.	HCUI - HCUO		(#28 - #29)	92.5 (90.5-94.5)	BTU/LB
39.	Q to Cleanup Sys		(#38 * #37)/3.413	4.24 (4.04-4.44)	MWt
40.	Vessel ambient loss			1.1	MWt
41.	QPUMP		(#5 + #6) * 0.93	1.58 (1.38-1.78)	MWt
42.	Core Thermal Power		(#34 + #36 + #39 + #40 - #41)	1956.3 (1841.1-2069.4)	MWt
43	CTP/2536		(#42/2536) * 100	77.1 (72.6-81.6)	%

* Not Applicable when Attachment 5 is used.

Contact Operations to determine if this is performed to satisfy Tech. Specs: ☐ YES ☐ NO

* If Yes, Second Verifier: ______________________ Date/Time: ______________

Reviewed By: ______________________ Date/Time: ______________
Reactor Engineering Superintendent

- This *IS* a Quality Record -

HANDOUT PAGE

TASK CONDITIONS:

Plant data has been recorded for steps 1 through 15 of attachment 1.

INITIATING CUE:

Calculate Core Thermal Power manually per section 9.2 of RAP-7.3.03, CORE THERMAL POWER EVALUATION. EPIC computer points are not available. Items 14 and 15 were obtained from 02TT-168A/C and B/D on attachment 3.

HEAT BALANCE CALCULATION SHEET

PERFORMED BY: ______________________ DATE/TIME: ______________

PURPOSE: ______________________

ITEM	PARAMETER	PANEL	INSTRUMENT	VALUE	UNITS
1.	Cleanup Inlet Temp	9-4	12TSS-142 POS 1	502	°F
2.	Cleanup Outlet Temp.	9-4	12TSS-142 POS 4	420	°F
3.	Cleanup Flow A	9-4	12FI-126A	159	GPM
4.	Cleanup Flow B	9-4	12FI-126B	155	GPM
5.	Power to Recirc. Pump A	9-4	RWR MG A GEN PWR	0.85	MW
6.	Power to Recirc. Pump B	9-4	RWR MG B GEN PWR	0.85	MW
7.	Total Core Flow	9-5	02-3DPR/FR-95	47	Mlb/hr
8.	Reactor Pressure (psig + 14.7)	9-5	06PR/FR-98	1026	PSIA
9.	CRD Flow to Reactor	9-5	03FI-310	59	GPM
9a	RWR & RWCU Pump Seal Flows		Constant	15	GPM
10.	CRD System Temp		Constant	95	°F
11.	Gross MW Electric	9-7	MAIN GEN MW	625	GMWE
*12.	Feedwater Flow Loop A	9-5	06FI-89A	3.95	MLB/HR
*13.	Feedwater Flow Loop B	9-5	06FI-89B	4.00	MLB/HR
14.	TFWA, use PTID 407/410 or	9-21	02TT-168A/C	392 / 392	°F
15.	TFWB, use PTID 408/411 or	9-21	02TT-168B/D	391.9 / 391.9	°F
	FEEDWATER FLOW CALCULATIONS				
*16.	Average TFWA (407+410)/2 or (168A+168C)/2				°F
*17.	Average TFWB (408+411)/2 or (168B+168D)/2				°F
*18.	Delta T Loop A (DTA) = TFWA - 420				°F
*19.	Delta T Loop B (DTB) = TFWB - 420				°F
*20.	C.F. = 1.0 + {DTA*[-3.8064E-4 + (DTA*-4.4310E-7)]}				
*21.	C.F. = 1.0 + {DTB*[-3.8064E-4 + (DTB*-4.4310E-7)]}				
*22.	Compensated Flow A		(#12 * #20)		MLB/HR
*23.	Compensated Flow B		(#13 * #21)		MLB/HR
	PARAMETER	**ITEM**	**DATA USED**	**VALUE**	**UNITS**
24.	HS	#8,	ASME Table		BTU/LB
25.	HFG	#8,	ASME Table		BTU/LB
*26.	HFWA	#8, #16,	ASME Table		BTU/LB
*27.	HFWB	#8, #17,	ASME Table		BTU/LB
28.	HCUI	#8, #1,	ASME Table		BTU/LB
29.	HCUO	#8, #2,	ASME Table		BTU/LB
30.	HCR	#8, #10,	ASME Table		BTU/LB
	PARAMETER		**EQUATION (ITEM #"S)**	**VALUE**	**UNITS**
31.	Total Feedflow		(#22 + #23)		MLB/HR
32.	Feedwater Enthalpy		[(#26*#22) + (#27*#23)]/#31		BTU/LB
33.	Steam Enthalpy		[#24 - (0.000*#25)]		BTU/LB
34.	Q to feedwater (QFW)		[#31*(#33 - #32)]/3.413		MWt
35.	CRD flow (WCR)		[(#9 * 0.498E-3) + (#9a * 0.498E-3)]		MLB/HR
36.	Q to CRD flow (QCR)		[#35 * (#33 - #30)]/3.413		MWt
37.	Total CU flow (WCU)		(#3 + #4) *(0.498E-3)		MLB/HR
38.	HCUI - HCUO		(#28 - #29)		BTU/LB
39.	Q to Cleanup Sys		(#38 * #37)/3.413		MWt
40.	Vessel ambient loss			1.1	MWt
41.	QPUMP		(#5 + #6) * 0.93		MWt
42.	Core Thermal Power		(#34 + #36 + #39 + #40 - #41)		MWt
43	CTP/2536		(#42/2536) * 100		%

* Not Applicable when Attachment 5 is used.

Contact Operations to determine if this is performed to satisfy Tech. Specs: ☐ YES ☐ NO

* If Yes, Second Verifier: ______________________ Date/Time: ______________

Reviewed By: ______________________ Date/Time: ______________
Reactor Engineering Superintendent

- This *IS* a Quality Record -

Heat Balance Calculation Sheet (RO Candidate Worksheet)

ITEM	PARAMETER	PANEL	INSTRUMENT	VALUE	UNITS
1.	Cleanup Inlet Temp.	09-4	12TSS-142, POS 1	502	°F
2.	Cleanup Outlet Temp.	09-4	12TSS-142, POS 4	420	°F
3.	Cleanup Flow A	09-4	12FI-126A	159	GPM
4.	Cleanup Flow B	09-4	12FI-126B	155	GPM
5.	Power to Recirc. Pump A	09-4	RWR MG A GEN PWR	0.85	MW
6.	Power to Recirc. Pump B	09-4	RWR MG B GEN PWR	0.85	MW
7.	Total Core Flow	09-5	02-3DPR/FR-95	47	Mlb/hr
8.	Reactor Pressure (psig + 14.7)	09-5	06PR/FR-98	1026	PSIA
9.	CRD Flow to Reactor	09-5	03FI-310	59	GPM
9a.	RWR & RWCU Pump Seal Flows		Constant	15	GPM
10.	CRD System Temp		Constant	95	°F
11.	Gross MW Electric	09-7	MAIN GEN MW	625	GMWE
*12.	Feedwater Flow Loop A	09-5	06FI-89A	3.95	Mlb/hr
*13.	Feedwater Flow Loop B	09-5	06FI-89B	4.00	Mlb/hr
14.	TFWA, use PTID 407/410 or	09-21	02TT-168A/C	392 / 392	°F
15.	TFWB, use PTID 408/411 or	09-21	02TT-168B/D	391.9 / 391.9	°F
	FEEDWATER FLOW CALCULATIONS				
*16.	Average TFWA (407+410) / 2 or (168A+168C) / 2				°F
*17.	Average TFWB (408+411) / 2 or (168B+168D) / 2				°F
*18.	Delta T Loop A (DTA) = TFWA – 420				°F
*19.	Delta T Loop B (DTB) = TFWB – 420				°F
*20.	C.F. = 1.0 + {DTA x [-3.8064E-4 + (DTA x -4.4310E-7)]}				
*21.	C.F. = 1.0 + {DTB x [-3.8064E-4 + (DTB x -4.4310E-7)]}				
*22.	Compensated Flow A		(#12 x #20)		Mlb/hr
*23.	Compensated Flow B		(#13 x #21)		Mlb/hr
	PARAMETER	**ITEM**	**DATA USED**	**VALUE**	**UNITS**
24.	HS	#8	ASME Table		BTU/lb
25.	HFG	#8	ASME Table		BTU/lb
*26.	HFWA	#8, #16	ASME Table		BTU/lb
*27.	HFWB	#8, #17	ASME Table		BTU/lb
28.	HCUI	#8, #1	ASME Table		BTU/lb
29.	HCUO	#8, #2	ASME Table		BTU/lb
30.	HCR	#8, #10	ASME Table		BTU/lb
UNITS	**PARAMETER**	**EQUATION (ITEM #'S)**		**VALUE**	
31.	Total Feedflow	(#22 + #23)			Mlb/hr
32.	Feedwater Enthalpy	{(#26 x #22) + (#27 x #23)} / #31			BTU/lb
33.	Steam Enthalpy	{#24 – (0.000 x #25)}			BTU/lb
34.	Q to Feedwater (QFW)	{#31 x (#33 - #32)} / 3.413			MWt
35.	CRD flow (WCR)	{(#9 x 0.498E-3) + (#9a x 0.498E-3)}			Mlb/hr
36.	Q to CRD Flow (QCR)	{#35 x (#33 - #30)} / 3.413			MWt
37.	Total CU flow (WCU)	(#3 + #4) x (0.498E-3)			Mlb/hr
38.	HCUI – HCUO	(#28 - #29)			BTU/lb
39.	Q to Cleanup Sys	(#38 x #37) / 3.413			MWt
40.	Vessel Ambient Loss			1.1	MWt
41.	QPUMP	(#5 + #6) x 0.93			MWt
42.	Core Thermal Power	(#34 + #36 + #39 + #40 - #41)			MWt
43.	CTP / 2536	(#42 / 2536) x 100			%

* Not applicable when Attachment 5 is used.

JAMES A. FITZPATRICK

Job Performance Measure

Work Hour Restrictions

JPM Number: RO A-1-2

Revision Number: 1

Date: 03/11/2010

Developed By:	**B. Litkett**	**4/08/2010**
	Author	**Date**
Validated By:	______________________	__________
	Facility Technical Representative	**Date**
Review By:	______________________	__________
	Examiner	**Date**
Approved By:	______________________	__________
	Chief Examiner	**Date**

ADMIN RO JPM #A-1-2

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. ______ Date ______________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 1.

JPM Setup Instructions:

Provide applicant with the following:

- JPM handout sheet

TASK STANDARD:

Determine any work hour restrictions

TASK CONDITIONS:

A Reactor Operator has called in sick for Thursday, May 6th Day Shift.

The following is the recent work hour history of 3 Reactor Operators. Their hours worked were and are in the Main Control Room during Mode 1, except for the training week.

Dayshift 7:00 am – 7:00 pm
Nightshift 7:00 pm – 7:00 am
Training 7:00 am – 3:30 pm

The schedules show the day that each work shift begins.

RO – John Smith	M	T	W	T	F	S	S
Week of April 12	T	T	T	T	T		
Week of April 19						D	D
Week of April 26	D	D				N	N
Week of May 3	N	N			D	D	D
Week of May 10			N	N	N		

RO – Bill Waters	M	T	W	T	F	S	S
Week of April 5	T	T	T	T	T		
Week of April 12	D				D	D	D
Week of April 19	D			N	N	N	
Week of April 26		D	D	D	D		N
Week of May 3	N	N	N				

RO – Mike Hill	M	T	W	T	F	S	S
Week of April 19	T	T	T	T	T		
Week of April 26			D		D	D	D
Week of May 3	D	D			N	N	N
Week of May 10			D	D	D		
Week of May 17	N	N	N	N			

INITIATING CUE:

Evaluate the work hour history for each of the 3 Reactor Operators. Determine which operators can take the scheduled watch for a full dayshift of 12 hours today, May 6th.

If applicable, describe the conditions that would make any operator(s) ineligible to work.

Consider all days after May 6th as scheduled shifts. Consider all days before May 6th as actual worked shifts.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ______________________________
Job Title: RO

JPM Title: Work Hour restrictions

JPM Number: RO A-1-2 **Revision Number:** 1

K/A Number and Importance: K/A 2.1. 5 IR: 2.9

Suggested Testing Environment: Classroom

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____minutes

References:

1. EN-OM-123, Rev.2; Fatigue Management program

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ___________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure EN-OM-123 Rev.2; Fatigue Management program	The applicant obtains a controlled copy of EN-OM-123 Rev.2; Fatigue Management program **EXAMINER NOTE:** AP-11.03 used to contain overtime rules for key station personnel. However, this information is now contained in EN-OM-123; Fatigue Management Program. AP-11.03 no longer applies to operators on shift and is no longer active.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
2. Step 5.2. Working hour limits for covered individuals. A. Work hour limits for individuals performing Covered work consist of three concurrent components; maximum ceilings, minimum breaks and Minimum Days Off (MDO) (1) The maximum ceilings which apply at all times are a maximum of: • 16 work hours in any 24 hour period, • 26 work hours in any 48 hour period, and • 72 hours in any 7 day period. (2) The minimum break times which apply at all times are a minimum of: (a) 10-hour break between successive work periods, except that an 8-hour break is allowed when necessary to accommodate a crew's scheduled transition between work schedules or shifts, and (b) 34-hour break in any 9 – day period. (3) EN-OM-123; step 5.2.4 describes MDO: (a) For Operators working a 12 hour shift, the requirement is to average a minimum of 2.5 days off per week. The average days off per week is averaged over a shift cycle of up to 6 weeks in duration.	Applicant evaluates each listed operator against limitations of EN-OM-123.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*3. Evaluate John Smith for overtime.	Applicant determines John Smith can **NOT** take the watch because he would not have a 34 hour uninterrupted break in the nine days from May 1 to May 9.			
*4. Evaluate Bill Waters for overtime.	Applicant determines Bill Waters can **NOT** take the shift because he would exceed the 16 hours in a 24 hour period requirement. The night shift of May 5 will end at 7 am and Day shift May 6 starts at 7 am. So with no time off between shifts, will end up working 24 hours straight.			
*5. Evaluate Mike Hill for overtime.	Mike Hill **can** work the shift. He would have a 36 hour break from May 4 to May 6 and for the week he will have 72 hours which is allowed, and for the cycle he will have 13 days off. The MDO, when working a five week cycle requires 12.5 days off, which rounded up is 13 days off. Therefore he meets the MDO requirement.			
Examiner: Terminate the task at this point				

JPM Stop Time __________

Handout Page

TASK CONDITIONS:

A Reactor Operator has called in sick for Thursday, May 6th Day Shift.

The following is the recent work hour history of 3 Reactor Operators. Their hours worked were and are in the Main Control Room during Mode 1, except for the training week.

Dayshift 7:00 am – 7:00 pm
Nightshift 7:00 pm – 7:00 am
Training 7:00 am – 3:30 pm

The schedules show the day that each work shift begins.

RO – John Smith	M	T	W	T	F	S	S
Week of April 12	T	T	T	T	T		
Week of April 19						D	D
Week of April 26	D	D				N	N
Week of May 3	N	N			D	D	D
Week of May 10			N	N	N		

RO – Bill Waters	M	T	W	T	F	S	S
Week of April 5	T	T	T	T	T		
Week of April 12	D				D	D	D
Week of April 19	D			N	N	N	
Week of April 26		D	D	D	D		N
Week of May 3	N	N	N				

RO – Mike Hill	M	T	W	T	F	S	S
Week of April 19	T	T	T	T	T		
Week of April 26			D		D	D	D
Week of May 3	D	D			N	N	N
Week of May 10			D	D	D		
Week of May 17	N	N	N	N			

Handout Page

INITIATING CUE:

Evaluate the work hour history for each of the 3 Reactor Operators. Determine which operators can take the scheduled watch for a full dayshift of 12 hours today, May 6th.

If applicable, describe the conditions that would make any operator(s) ineligible to work.

Consider all days after May 6th as scheduled shifts. Consider all days before May 6th as actual worked shifts.

JAMES A. FITZPATRICK

Job Performance Measure

Initiate a manual tagout for 'B' RHR pump discharge check valve replacement

JPM Number: RO A-2

Revision Number: 1

Date: 03/09/2010

Developed By:	**B. Litkett**	**04/08/10**
	Author	**Date**
Validated By:	____________________	________
	Facility Technical Representative	**Date**
Review By:	____________________	________
	Examiner	**Date**
Approved By:	____________________	________
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE:	All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 0.

2. **REFERENCES**

    a. EN-OP-102

    b. OP-13

    c. FM- 20B

3. **TOOLS AND EQUIPMENT**

    a. Current copies of OP index and references.

4. **SET UP REQUIREMENTS**

    a. Applicant has been assigned to prepare a tagout.

5. **EVALUATOR NOTES**

    a. Examiner's copy of component positions (Answer Key) is provided.

    b. The Applicant should demonstrate proper use of all HU tools during the performance of the procedure.

    c. Manual tag sheet is used. If Applicants ask, then, state "SOMs is out of service and SM has directed use of manual tagout for this work".

    d. If Applicant asks for a copy of the work order state this was reviewed and no additional information was obtained.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the Applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the Applicant acknowledges the initiating cue.

Operator's Name: ____

Job Title: RO

JPM Title: Initiate a manual tagout for 'B' RHR pump discharge check valve replacement

JPM Number: RO A-2 **Revision Number:** 0

K/A Number and Importance: K/A 2.2.13 IR: 4.1

Suggested Testing Environment: Classroom

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 60 minutes **Actual Time Used:** _____minutes

References:

EVALUATION SUMMARY:

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____
____
____
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: _______________________________(Print)

Evaluator's Signature: _______________________________ **Date:** ___________

TASK CONDITIONS:

Currently all systems are operable

INITIATING CUE:

A tagout is required on the "B" RHR system to conduct repairs on 10RHR-42B; discharge check valve. Work scope is to replace valve internals. Shift Operations Management System is out of service and SM has directed use of manual tagout for this work.

You have been directed to prepare a manual tagout. You are responsible for required hang positions and sequence of the components. Inform the Operations Supervisor when you have completed the tagout.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Applicant determines EN-OP-102-01; attachment 9.2 and 9.3; OP-13; FM-20A and drawings	Applicant uses EN-OP-102-01; attachment 9.2 and 9.3; OP-13;FM-20A and drawings			
Evaluator CUE: Can provide blank copy of EN-OP-102-01; attachment 9.2 and 9.3 after applicant determines tagging sheets.	**Evaluator CUE: Can provide blank copy of EN-OP-102-01; attachment 9.2 and 9.3 after applicant determines tagging sheets.**			
2. Applicant reviews the isolation boundaries.	The Applicant determines tagout boundary			
3.(*) 1-10 - 10P-3B; RHR B PUMP CONTROL SWITCH in auto after stop; sequence 1.	Applicant selects 1-10 - 10P-3B; RHR B PUMP CONTROL SWITCH in auto after stop; sequence 1.			
4. (*) 1-10 -10P-2B; RHR B KEEPFULL PUMP CONTROL SWITCH; STOP; sequence 1.	Applicant selects 1-10 -10P-2B; RHR B KEEPFULL PUMP CONTROL SWITCH; STOP; sequence 1.			
5. (*)1-71-71MCC-163-OE1; 10P-2B; RHR B KEEPFULL PUMP BREAKER; OFF/REMOVED, sequence 2.	Applicant selects 1-71-71MCC-163-OE1; 10P-2B; RHR B KEEPFULL PUMP BREAKER; OFF/REMOVED, sequence 2.			
6. (*) 1-71 - -71-10540 BKR CLOSE FUSE; Fuses removed; sequence 2.	Applicant selects 1-71 - -71-10540 BKR CLOSE FUSE; Fuses removed; sequence 2.			
7. (*) 1-71 – CKTBKR-71-10540 racked out/removed; sequence 3.	Applicant selects 1-71 – CKTBKR-71-10540 racked out/removed; sequence 3.			
8. (*) 1-71 - -71-10540 BKR TRIP FUSES; fuses removed; sequence 4.	Applicant selects 1-71 - -71-10540 BKR TRIP FUSES; fuses removed; sequence 4.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9.(*) 1-10 –VALVE 10RHR-45B; 'B' RHR discharge isolation valve, CLOSED, sequence 5.	Applicant selects 1-10 – VALVE 10RHR-45B; 'B' RHR discharge isolation valve, CLOSED, sequence 5.			
10.(*) 1-10 - -10MOV-13B [KEYLOCK SW] TORUS SUCT VALVE; CLOSED; sequence 6.	Applicant selects 1-10 - - 10MOV-13B [KEYLOCK SW] TORUS SUCT VALVE; CLOSED; sequence 6.			
11. (*) 1-10 – 10MOV-15B (SW); SHUTDOWN CLG VLV; CLOSED; sequence 6.	Applicant selects 1-10 – 10MOV-15B (SW); SHUTDOWN CLG VLV; CLOSED; sequence 6.			
12. (*)1-71 - 71 MCC-163-OJ4; 10MOV-13B RHR PUMP B SUCT FROM SUPPRESSION POOL ISOL VALVE;OFF/REMOVED; sequence 7.	Applicant selects 1-71 - 71 MCC-163-OJ4; 10MOV-13B RHR PUMP B SUCT FROM SUPPRESSION POOL ISOL VALVE; OFF/REMOVED; sequence 7.			
13. (*) 1-71 - 71MMC-163-OD1; 10MOV-15B RHR PUMP SUCT SHUTDOWN COOLING ISOL VALVE; OFF/REMOVED; sequence 7.	Applicant selects 1-71 - 71MMC-163-OD1; 10MOV-15B RHR PUMP SUCT SHUTDOWN COOLING ISOL VALVE; OFF/REMOVED; sequence 7.			
14. (*) 1-10 – VALVE- 10MOV-15B; RHR PUMP B SUCT Shutdown Cooling ISOL, CLOSED, sequence 8.	Applicant selects 1-10 – VALVE- 10MOV-15B; RHR PUMP B SUCT Shutdown Cooling ISOL, CLOSED, sequence 8.			
15. (*) 1-10-VALVE- 10MOV-13B; RHR PUMP B SUCT TORUS ISOL VALVE; CLOSED, sequence 8.	Applicant selects 1-10-VALVE- 10MOV-13B; RHR PUMP B SUCT TORUS ISOL VALVE; CLOSED, sequence 8.			
16. (*) 1-10-VALVE-10RHR-251B; RHR PUMP B SUCT DRAIN VALVE; CLOSED; sequence 9.	Applicant selects 1-10-VALVE-10RHR-251B; RHR PUMP B SUCT DRAIN VALVE; CLOSED; sequence 9.			
17. (*) 1-10 –VALVE-10RHR-28B; RHR PUMP B MIN FLOW ISOL VALVE; CLOSED; sequence 9.	Applicant selects 1-10 – VALVE-10RHR-28B; RHR PUMP B MIN FLOW ISOL VALVE; CLOSED; sequence 9.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
18.(*) 1-10-VALVE-10RHR-91B; RHR KEEP-FULL PUMP B SUCT ISOL VALVE;CLOSED; sequence 9.	Applicant selects 1-10-VALVE-10RHR-91B; RHR KEEP-FULL PUMP B SUCT ISOL VALVE; CLOSED; sequence 9.			
19.(*) 1-10-VALVE-10RHR-250D; RHR Pump D DISCH DRAIN VALVE, CLOSED, sequence 9.	Applicant selects 1-10-VALVE-10RHR-250D; RHR Pump D DISCH DRAIN VALVE, CLOSED, sequence 9.			
20.(1) 1-10-VALVE-10RHR-250B; RHR PUMP B DISCH DRAIN VALVE; OPEN; sequence 10.	Applicant selects 1-10-VALVE-10RHR-250B; RHR PUMP B DISCH DRAIN VALVE; OPEN; sequence 10.			
21.(1) 1-10-VALVE-10RHR-253; RHR Pumps B & D DISCH DRAINS TO EQUIP SUMP ISOL VALVE; OPEN; sequence 10.	Applicant selects 1-10-VALVE-10RHR-253; RHR Pumps B & D DISCH DRAINS TO EQUIP SUMP ISOL VALVE; OPEN; sequence 10.			
22.(1) 1-10-VALVE-10RHR-682; RHR PUMP B DISCH DRAIN VALVE; UNCAPPED & OPEN; sequence 10.	Applicant selects 1-10-VALVE-10RHR-682; RHR PUMP B DISCH DRAIN VALVE; UNCAPPED & OPEN; sequence 10.			
23.(1)1-10-VALVE-10RHR-698: RHR PUMP B DISCH SPARE INSTRUMENTATION ISOLATION VALVE; UNCAPPED & OPEN; sequence 10.	Applicant selects 1-10-VALVE-10RHR-698: RHR PUMP B DISCH SPARE INSTRUMENTATION ISOLATION VALVE; UNCAPPED & OPEN; sequence 10.			
EXAMINER NOTE 1: Other methods of draining the system are available. Only 1 vent and drain valve needs to be open.	**EXAMINER NOTE 1: Other methods of draining the system are available. Only 1 vent and drain valve needs to be open.**			
Task is complete.				

ANSWER KEY

Protective and Caution Tagging Forms & Checklist

ATTACHMENT 9.2 **TAGOUT COVER SHEET**

Clearance: **Manual** **Tagout:** **10-RHR-42B-MAN**

Component to be worked: 'B' RHR pump

Description: Repair 10RHR- 42B – replace valve internals

Placement Inst:

1.) Ensure MOVs are CLOSED prior to tagging open breakers.

2.) Ensure condensate transfer is for keepfull for 'D' RHR Pump. 10P-2B and 10P-3B are out of service

3.) Rack out breaker 71-10540 per OP-46A

Hazards:

1.) Residual water in piping is possible. Possible contaminated water

Restoration Inst:

1.)Ensure RHR B is filled and vented prior to restoration

2.) Rack in breaker 71-10540 per OP-46A

Attribute Description	Attribute Value
LCO	N

Work Order Number	Description
12345678910	Replace 10RHR-42B internals

Status	Description	User	Verification Date
Prepared	Prepared		
Technical Reviewed	Reviewed		
Approved	Approved		
Tags Verified Hung	Tags Verified Hung		
Removal Approved	Removal Approved		
Tags Verified Removed	Tags Verified Removed		

Clearance: **MANUAL** Tagout: ______________.

Tag Serial No.	Tag Type	Equipment Equipment Description Equipment Location	Place. Seq.	Placement Configuration	Place. 1st Verif Date/Time	Place. 2nd Verif Date/Time	Rest .Seq .	Restoration Configuration	Rest. 1st Verif Date/Time	Rest. 2nd Verif Date/Time	Placement/ Removal Tag Notes
	D	10P-3B; 'B' RHR pump control switch	1	Auto after Stop							
	D	10P-2B; 'B' RHR Keep full pump control switch	1	Stop							
	D	1-71-71MCC-163-OE1	2	OFF/ REMOVED							
	D	1-71 - -71-10540 BKR CLOSE FUSE	2	Fuses removed							
	D	1-71 – CKTBKR-71-10540	3	Racked out/Removed							
	D	1-71 - -71-10540 BKR TRIP FUSES	4	Fuses removed							
	D	1-10 –VALVE 10RHR-45B; 'B' RHR DISCHARGE ISOLATION VALVE,	5	CLOSED							
	D	1-10 --10MOV-13B [KEYLOCK SW] TORUS SUCT VALVE.	6	CLOSED							
	D	1-10 – 10MOV-15B (SW); SHUTDOWN CLG VLV	6	CLOSED							
	D	1-71-71MCC-163-OJ4; 10MOV-13B breaker	7	OFF/ REMOVED							
	D	1-71-71MCC-163-OD1;10MOV-15B breaker	7	OFF/ REMOVED							
	D	1-10 – VALVE- 10MOV-15B; RHR PUMP B SUCT Shutdown Cooling ISOL	8	CLOSED							
	D	1-10-VALVE- 10MOV-13B; RHR PUMP B SUCT TORUS ISOL VALVE	8	CLOSED							
	D	1-10-VALVE-10RHR-251B; RHR PUMP B SUCT DRAIN VALVE	9	CLOSED							
	D	1-10 –VALVE-10RHR-28B; RHR PUMP B MIN FLOW ISOL VALVE	9	CLOSED							

ATTACHMENT 9.3 **ANSWER KEY** **TAGOUT TAGS SHEET**

	D	1-10-VALVE-10RHR-91B; RHR KEEP-FULL PUMP B SUCT ISOL VALVE	9	CLOSED							
	D	1-10-VALVE-10RHR-250D; RHR Pump D DISCH DRAIN VALVE	9	CLOSED							
Note 1	D	1-10-VALVE-10RHR-250B; RHR PUMP B DISCH DRAIN VALVE	10	OPEN							
Note 1	D	10RHR-253; 'B' and 'D' RHR B & D DISCH DRAINS TO EQUIP SUMP ISOL VALVE	10	OPEN							
Note 1	D	1-10-VALVE-10RHR-682; RHR PUMP B DISCH DRAIN VALVE	10	UNCAPPED and OPEN							
Note 1	D	1-10-VALVE-10RHR-698: RHR PUMP B DISCH SPARE INSTRUMENTATION ISOLATION VALVE	10	UNCAPPED and OPEN							

NOTE 1: Only 1 vent and drain valve needs to be open.

JPM Stop Time __________

HANDOUT PAGE

TASK CONDITIONS:

Currently all systems are operable

INITIATING CUE:

A tagout is required on the "B" RHR system to conduct repairs on 10RHR-42B; discharge check valve. Work scope is to replace valve internals. Shift Operations Management System is out of service and SM has directed use of manual tagout for this work.

You have been directed to prepare a manual tagout. You are responsible for required hang positions and sequence of the components. Inform the Operations Supervisor when you have completed the tagout.

JAMES A. FITZPATRICK

Job Performance Measure

Liquid Radwaste Potentiometer Settings

JPM Number: RO A-3

Revision Number: 0

Date: 03/04/2010

Developed By:	**T. Hedigan**	**03/04/10**
	Author	**Date**
Validated By:	______________________	________
	Facility Technical Representative	**Date**
Review By:	______________________	________
	Examiner	**Date**
Approved By:	______________________	________
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 0.

JPM Setup Instructions:

Provide applicant with the following:

- **JPM handout sheet**
- **Attachment 10 of SP-01.05, Wastewater Sampling and Analysis**
- **Sample Activity vs. Alarm Pot Setting graph**

TASK CONDITIONS:

Current plant conditions are as follows:

• **The plant is at 70% power**	
• **2 Circulating water pumps (36P-1A/B) running**	
• **2 Service water pumps (46P-1A/C) running**	
• **Liquid rad monitor (17RM-350) reading from EPIC-A-1209**	**29.8cps**
• **Liquid rad monitor (17RM-350) background from the 09-14 Panel**	**22.0cps**
• **Liquid rad monitor (17RM-350) K-factor from the 09-14 Panel**	**2.10E-7uci/ml/cps**

INITIATING CUE: The Shift Manager has directed you to independently verify the following data, complete SP-01.05, Wastewater Sampling and Analysis, Attachment 10, and determine HI/HI and HI potentiometer settings.

Tank Discharge Flow Rate (maximum) DFR	**200gpm**
Tank Activity (ACT) uCi/ml (from discharge permit)	**2.29E-6uci/ml**
Required Dilution Factor (DF) (from discharge permit)	**1.0**
Tempering gate/flow	**0%**

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the Applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the Applicant acknowledges the initiating cue.

Operator's Name: ______________________________

Job Title: RO

JPM Title: Liquid Radwaste Potentiometer Settings

JPM Number: RO A-3 **Revision Number:** 0

K/A Number and Importance: K/A 2.3.11 **Ability to control radiation releases.** IR: 3.8

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____minutes

References:

1. SP-01.05, Wastewater Sampling and Analysis, Rev. 10
2. SP-03.07, Liquid Process Radiation Monitors, Rev. 6

EVALUATION SUMMARY:

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ___________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. APPLICANT TRANSCRIBES DATA TO ATTACHMENT 1 #1 THROUGH 9.	APPLICANT TRANSCRIBES DATA TO ATTACHMENT 1 #1 THROUGH 9.			
2. APPLICANT CALCULATES Canal Flow Rate (CFR) ATTACHMENT 1 #10.	APPLICANT CALCULATES Canal Flow Rate (CFR) ATTACHMENT 1 #10. 10. 276,000			
3. APPLICANT CALCULATES Canal Dilution Factor (CDF) ATTACHMENT 1 #11.	APPLICANT CALCULATES Canal Dilution Factor (CDF) 11. 7.25 E-4			
4. APPLICANT CALCULATES Fraction of Allowed Dilution (FL) ATTACHMENT 1 #12.	APPLICANT CALCULATES Fraction of Allowed Dilution (FL) 12. 7.25 E-4			
5. APPLICANT CALCULATES Background Correction Activity (BCA) ATTACHMENT 1 #13.	APPLICANT CALCULATES Background Correction Activity 13. 1.638 E-6			
6. APPLICANT CALCULATES Hi/Hi setpoint value ATTACHMENT 1 #14.	APPLICANT CALCULATES Hi/Hi setpoint value 14. 1.58 E-3			
7. APPLICANT CALCULATES Hi setpoint value ATTACHMENT 1 #15.	APPLICANT CALCULATES Hi setpoint value 15. 7.91 E-4			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
8. (*)Obtain 17RM-350 potentiometer setting for Hi-Hi setpoint from Sample Activity vs. Alarm Pot Setting graph	Applicant determines and records 17RM-350 potentiometer setting for Hi-Hi setpoint from Sample Activity vs. Alarm Pot Setting graph 16. 7.3 turns (7.2-7.4)			
9. (*) Obtain 17RM-350 potentiometer setting for Hi setpoint from Sample Activity vs. Alarm Pot Setting graph	Applicant determines and records 17RM-350 potentiometer setting for Hi setpoint from Sample Activity vs. Alarm Pot Setting graph 17. 7.4 turns (7.3-7.5)			
Task is complete.				

JPM Stop Time ___________

EXAM KEY

LIQUID RADWASTE EFFLUENT MONITOR ALARM POT SETTING DETERMINATION WORKSHEET

DATA COLLECTION

1. Number of running circulating water pumps (36P-1A/B/C): 2
2. Number of running service water pumps 46P-1A/B/C): 2
3. Tank Discharge Flow Rate (Maximum) (DFR): 200 gpm
4. Tank Activity (ACT): 2.29 E-6 μCi/ml
5. Required Dilution Factor (DF) 1.0
6. Current Liquid Radwaste Monitor (17RM-350) reading (EPIC-A-1209): 29.8 cps

NOTE: Background should be maintained LESS THAN 1000 cps.

7. Liquid Radwaste Monitor (17RM-350) posted background: 22.0 cps
8. Liquid Radwaste Monitor (17RM-350) K-Factor: 2.16 E-7 μCi/ml/cps
9. Tempering gate flow (EPIC-A-3547) 0 %

CALCULATIONS

10. Canal Flow Rate (CFR) (gpm)

CFR = [(# Circ pumps X 120,000) + (# service water pumps X 18,000)] X [1 - (% tempering / 100)]

CFR = [(#1 X 120,000) + (#2 X 18,000)] X [1 - (#9 / 100)]

CFR = [(2 X 120,000) + (2 X 18,000)] X [1 - (0 / 100)]

CFR = 276,000 gpm

11. Canal Dilution Factor (CDF)

CDF = (Tank Discharge Flow Rate) / (Canal Flow Rate)

CDF = (#3) / (#10)

CDF = (200) / (276,000)

CDF = 7.25×10^{-4}

12. Fraction of Allowed Dilution (F_L)

NOTE: F_L must be LESS THAN 1.0 for discharge.

F_L = (Canal Dilution Factor) X (Required Dilution Factor)

F_L = (#11) X (#5)

F_L = 7.25×10^{-4} X 1

F_L = 7.25×10^{-4}

0%

EXAM KEY

RO ADMIN JPM A-3.doc

EXAM KEY

LIQUID RADWASTE EFFLUENT MONITOR ALARM POT SETTING DETERMINATION WORKSHEET

CALCULATIONS (Cont)

13. Background Correction Activity (BCA) in µCi/ml

BCA = (Current 17RM-350 reading - 17RM-350 background) X 17RM-350 K-Factor

BCA = (#6 - #7) X (#8)

BCA = (29.8 - 22.0) x 2.10×10^{-7}

BCA = 1.638×10^{-6} µCi/ml

14. Calculate Hi/Hi setpoint value in µCi/ml:

Hi/Hi setpoint value = [Tank Activity / (2 X F_L)] + (BCA)

Hi/Hi setpoint value = [#4 / (2 X #12)] + (#13)

Hi/Hi setpoint value = [2.29×10^{-6} / (2 x 7.25×10^{-4})] + 1.638×10^{-6}

Hi/Hi setpoint value = 1.58×10^{-3} µCi/ml

15. Calculate Hi setpoint value in µCi/ml:

Hi setpoint value = [Tank Activity / (4 X F_L)] + BCA

Hi setpoint value = [#4 / (4 X #12)] + (#13)

Hi setpoint value = [2.29×10^{-6} / (4 x 7.25×10^{-4})] + 1.638×10^{-6}

Hi setpoint value = 7.91×10^{-4} µCi/ml

16. Obtain 17RM-350 Hi/Hi alarm potentiometer setting, using Hi/Hi setpoint value activity, from current Liquid Radwaste Monitor "Sample Activity vrs. Alarm Pot Setting" graph.

Hi/Hi Alarm potentiometer setting 7.3 (7.2 - 7.4)

17. Obtain 17RM-350 Hi alarm potentiometer setting, using Hi setpoint value activity, from current Liquid Radwaste Monitor "Sample Activity vrs. Alarm Pot Setting" graph.

Hi Alarm potentiometer setting 7.4 (7.3 - 7.5)

Performed by: Applicant fills in.
Print / Sign / Date

18. Independently verify calculations AND alarm potentiometer settings.

Independent verification : ____________________
Print / Sign / Date

18. Enter Hi and Hi/Hi alarm potentiometer settings on Discharge permit (Attachment 2).

COMPLETED ATTACHMENT 10 IS ATTACHED TO DISCHARGE PERMIT

EXAM KEY

RO ADMIN JPM A-3.doc

HANDOUT PAGE

TASK CONDITIONS:

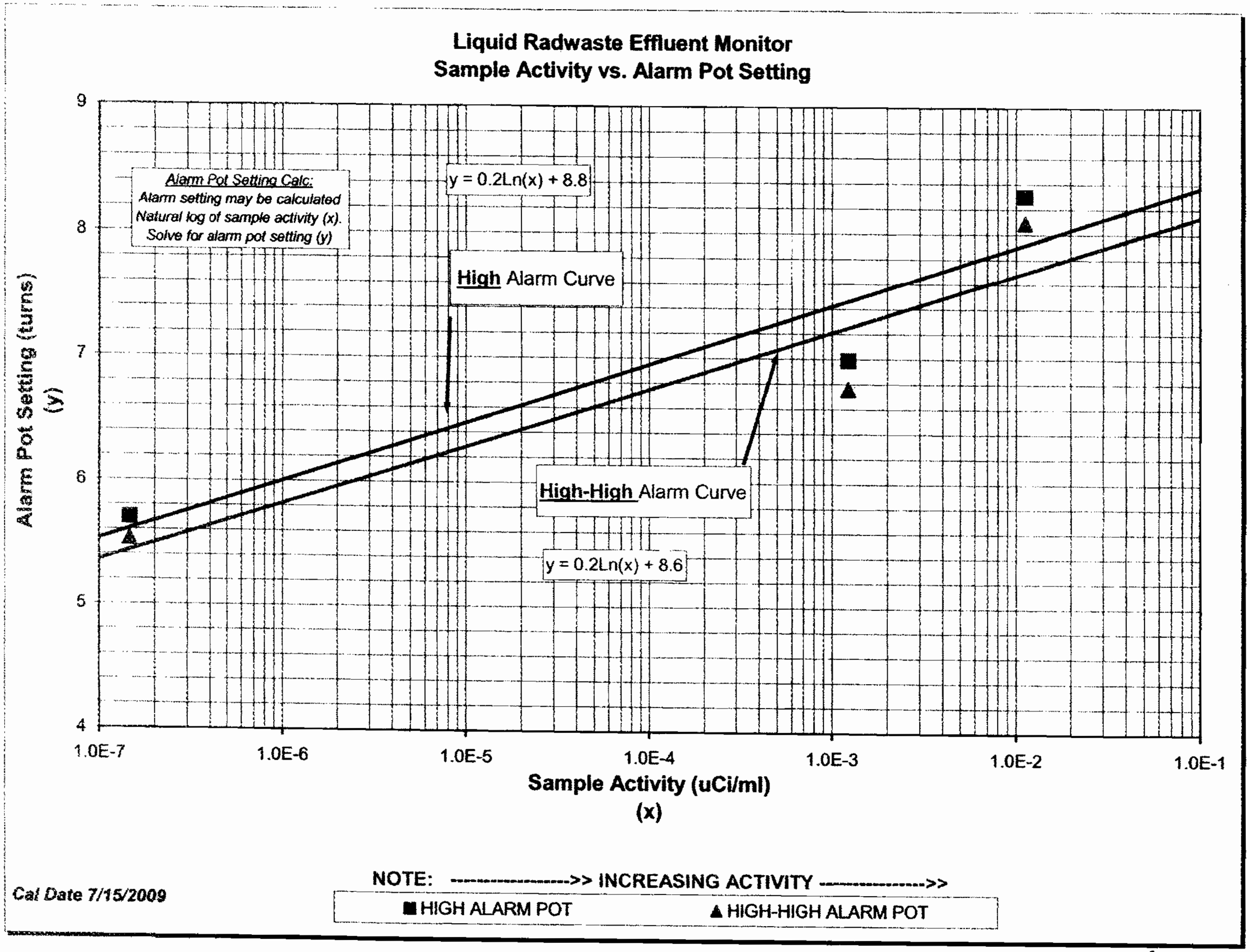
Current plant conditions are as follows:

- **The plant is at 100% power**
- **2 Circulating water pumps (36-1A/B) running**
- **2 Service water pumps (46-1A/C) running**
- **Liquid Rad Monitor (17RM-350) reading from EPIC-A-1209 29.8cps**
- **Liquid Rad Monitor (17RM-350) background from the 09-14 Panel 22.0cps**
- **Liquid rad monitor (17RM-350) K-factor from the 09-14 Panel 2.10E-7uci/ml/cps**

INITIATING CUE: The Shift Manager has directed you to independently verify the following data, complete SP-01.05, Wastewater Sampling and Analysis, Attachment 10, and determine HI/HI and HI potentiometer settings.

Tank Discharge Flow Rate (maximum) DFR	**200gpm**
Tank Activity (ACT) uCi/ml (from discharge permit)	**2.29E-6uci/ml**
Required Dilution Factor (DF) (from discharge permit)	**1.0**
Tempering gate/flow	**0%**

RO ADMIN JPM A-3.doc



Do Not Use After 11 / 16 / 09

7/15/2009

Prepared By: [signature]

LIQUID RADWASTE EFFLUENT MONITOR ALARM POT SETTING DETERMINATION WORKSHEET

DATA COLLECTION

1. Number of running circulating water pumps (36P-1A/B/C): ____________
2. Number of running service water pumps 46P-1A/B/C): ____________
3. Tank Discharge Flow Rate (Maximum) (DFR): ____________ gpm
4. Tank Activity (ACT): ____________ μCi/ml
5. Required Dilution Factor (DF) ____________
6. Current Liquid Radwaste Monitor (17RM-350) reading (EPIC-A-1209): ____________ cps

NOTE: Background should be maintained **LESS THAN** 1000 cps.

7. Liquid Radwaste Monitor (17RM-350) posted background: ____________ cps
8. Liquid Radwaste Monitor (17RM-350) K-Factor: ________________ μCi/ml/cps
9. Tempering gate flow (EPIC-A-3547) ____________ %

CALCULATIONS

10. Canal Flow Rate (CFR) (gpm)

CFR = [(# Circ pumps X 120,000) + (# service water pumps X 18,000)] X [1 - (% tempering / 100)]

CFR = [(#1 X 120,000) + (#2 X 18,000)] X [1 - (#9 / 100)]

CFR = [(__________ X 120,000) + (__________________ X 18,000)] X [1 - (__________/ 100)]

CFR = ____________________ gpm

11. Canal Dilution Factor (CDF)

CDF = (Tank Discharge Flow Rate) / (Canal Flow Rate)

CDF = (#3) / (#10)

CDF = (______________________ / ____________)

CDF = __________________

12. Fraction of Allowed Dilution (F_L)

NOTE: F_L must be **LESS THAN** 1.0 for discharge.

F_L = (Canal Dilution Factor) X (Required Dilution Factor)

F_L = (#11) X (#5)

F_L = ____________________ X ______________________

F_L = ____________________

CALCULATIONS (Cont)

13. Background Correction Activity (BCA) in μCi/ml

BCA = (Current 17RM-350 reading - 17RM-350 background) X 17RM-350 K-Factor

BCA = (#6 - #7) X (#8)

BCA = (________________ - ______________) X ____________

BCA = ________________ μCi/ml

14. Calculate Hi/Hi setpoint value in μCi/ml:

Hi/Hi setpoint value = [Tank Activity / (2 X F_L)] + (BCA)

Hi/Hi setpoint value = [#4 / (2 X #12)] + (#13)

Hi/Hi setpoint value = [__________ / (2 X _______)] + _________

Hi/Hi setpoint value = ____________ μCi/ml

15. Calculate Hi setpoint value in μCi/ml:

Hi setpoint value = [Tank Activity / (4 X F_L)] + BCA

Hi setpoint value = [#4 / (4 X #12)] + (#13)

Hi setpoint value = [__________ / (4 X _______)] + _________

Hi setpoint value = ____________ μCi/ml

16. Obtain 17RM-350 Hi/Hi alarm potentiometer setting, using Hi/Hi setpoint value activity, from current Liquid Radwaste Monitor "Sample Activity vrs. Alarm Pot Setting" graph.

Hi/Hi Alarm potentiometer setting ______________

17. Obtain 17RM-350 Hi alarm potentiometer setting, using Hi setpoint value activity, from current Liquid Radwaste Monitor "Sample Activity vrs. Alarm Pot Setting" graph.

Hi Alarm potentiometer setting ______________

Performed by: ______________________________
Print / Sign / Date

18. Independently verify calculations **AND** alarm potentiometer settings.

Independent verification : ______________________________
Print / Sign / Date

18. Enter Hi and Hi/Hi alarm potentiometer settings on Discharge permit (Attachment 2).

COMPLETED ATTACHMENT 10 IS ATTACHED TO DISCHARGE PERMIT

LIQUID RADWASTE EFFLUENT MONITOR ALARM POT SETTING DETERMINATION WORKSHEET (CANDIDATE HANDOUT)

DATA COLLECTION

1. Number of running circulating water pumps (36P-1A/B/C): __________
2. Number of running service water pumps (46P-1A/B/C): __________
3. Tank Discharge Flow Rate (Maximum) (DFR): __________ gpm
4. Tank Activity (ACT): __________ uCi/ml
5. Required Dilution Factor (DF): __________
6. Current Liquid Radwaste Monitor (17RM-350) reading (EPIC-A-1209): __________ cps

Note: Background should be maintained **LESS THAN** 1000 cps.

7. Liquid Radwaste Monitor (17RM-350) posted background: __________ cps
8. Liquid Radwaste Monitor (17RM-350) K-Factor: __________ uCi/ml/cps
9. Tempering Gate Flow (EPIC-A-3547): __________ %

CALCULATIONS

10. Canal Flow Rate (CFR) (gpm)

CFR = [(# Circ pumps x 120,000) + (# Service water pumps x 18,000)] x [1 – (% tempering / 100)]
CFR = [(#1 x 120,000 + (#2 x 18,000)] x [1 – (#9 / 100)]
CFR = [(__________ x 120,000) + (__________ x 18,000)] x [1 – (__________ / 100)]
CFR = ________________ gpm

11. Canal Dilution Factor (CDF)

CDF = (Tank Discharge Flow Rate) / (Canal Flow Rate)
CDF = (#3) / (#10)
CDF = (______________) / (______________)
CDF = ________________

12. Fraction of Allowed Dilution (F_L)

Note: F_L must be **LESS THAN** 1.0 for discharge.

F_L = (Canal Dilution Factor) x (Required Dilution Factor)
F_L = (#11) x (#5)
F_L = (________________) x (________________)
F_L = ______________________

LIQUID RADWASTE EFFLUENT MONITOR ALARM POT SETTING DETERMINATION WORKSHEET (CANDIDATE HANDOUT)

CALCULATIONS (Cont.)

13. Background Correction Activity (BCA) in uCi/ml

BCA = [(Current 17RM-350 reading) – (17RM-350 background)] x (17RM-350 K-Factor)
BCA = (#6 - #7) x (#8)
BCA = (____________________ - ______________________) x ________________________
BCA = _________________________________ uCi/ml

14. Calculate Hi/Hi setpoint value in uCi/ml:

Hi/Hi setpoint value = [Tank Activity / (2 x F_L)] + (BCA)
Hi/Hi setpoint value = [#4 / (2 x #12)] + (#13)
Hi/Hi setpoint value = [_________________ / (2 x ______________)] + ____________________
Hi/Hi setpoint value = ______________________ uCi/ml

15. Calculate Hi setpoint value in uCi/ml:

Hi setpoint value = [Tank Activity / (4 x F_L)] + (BCA)
Hi setpoint value = [#4 / (4 x #12)] + (#13)
Hi setpoint value = [______________ / (4 x _______________)] + ____________________
Hi setpoint value = ________________________ uCi/ml

16. Obtain 17RM-350 Hi/Hi alarm potentiometer setting, using Hi/Hi setpoint value activity, from current Liquid Radwaste Monitor "Sample Activity vs. Alarm Pot Setting" graph.

Hi/Hi Alarm Potentiometer setting __________________________________

17. Obtain 17RM-350 Hi alarm potentiometer setting, using Hi setpoint value activity, from current Liquid Radwaste Monitor "Sample Activity vs. Alarm Pot Setting" graph.

Hi Alarm Potentiometer setting ____________________________________

Performed by: ____
Print / Sign / Date

18. Independently verify calculations **AND** alarm potentiometer settings.

Independent Verification: ____
Print / Sign / Date

19. Enter Hi and Hi/Hi alarm potentiometer settings on Discharge permit (Attachment 2).

JAMES A. FITZPATRICK

Job Performance Measure

Core Thermal Power Calculated Manually

JPM Number: SRO A-1-1

Revision Number: 2

Date: 04/08/2010

Developed By: T. Hedigan — 04/08/10
Author — **Date**

Validated By: ______________ — ________
Facility Technical Representative — **Date**

Review By: ______________ — ________
Examiner — **Date**

Approved By: ______________ — ________
Chief Examiner — **Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:

1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 0.

JPM Setup Instructions:

ITEM:

1. 512	**6. 3.55**	**12. 5.44**
2. 425	**7. 79**	**13. 5.55**
3. 160	**8. 1057**	**14. 423.6/423.6**
4. 155	**9. 59**	**15. 423.6/423.6**
5. 3.85	**11. 870**	

Turbine first stage pressure is 667.4 psig

Provide applicant with the following:

- **JPM handout sheet**
- **RAP-7.3.03, CORE THERMAL POWER EVALUATION , Rev 13**
- **Calculator**
- **ASME Steam Tables**
- **Attachment 1 partially filled out.**
- **Attachment 2 partially filled out.**

TASK CONDITIONS:

Current indicated reactor power is 100% on APRM's.

Plant data has been recorded for steps 1 through 15 of attachment 1.

Turbine first stage pressure is 667.4 psig and has been recorded on attachment 2.

INITIATING CUE:

Perform section 9.3, Core Thermal Heat Balance Verification, of RAP-7.3.03, CORE THERMAL POWER EVALUATION. EPIC computer points are not available. Items 14 and 15 were obtained from 02TT-168A/C and B/D on attachment 3.

Determine what plant action, if any, is required.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ______________________________
Job Title: SRO

JPM Title: Core Thermal Power Calculated Manually

JPM Number: SRO A-1-1 **Revision Number:** 1

K/A Number and Importance: K/A 2.1.18 IR: 3.8

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 75 minutes **Actual Time Used:** _____minutes

References:

RAP-7.3.03, CORE THERMAL POWER EVALUATION , Rev 13

RAP-7.3.16, PLANT POWER CHANGES, Rev. 46

ST-5D, APRM CALIBRATION, REV. 3

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. **(*)** Applicant calculates reactor power using first stage turbine pressure.	Applicant calculates reactor power using first stage turbine pressure. 100.2			
2. Applicant calculates average feedwater temperature and compensated feed flow. Records data on Attachment 1 items 16 through 23.	Correctly calculates feedwater compensated flow. 16. 423.6 17. 423.6 18. 3.6 19. 3.6 20. 0.99862 21. 0.99862 22. A=5.43 (5.40-5.46) 23. B=5.54 (5.51-5.57)			
3. Applicant uses the ASME steam tables to calculate Items 24 through 30 on attachment 1. Note: Steam tables will not be able to be used to determine the enthalpy of compressed water. Items number 26, 27, 28, 29, 30.	Correctly determines enthalpy from steam tables. 24. 1190.7 (1190-1191.4) 25. 639.6 (638-641.2) 26. 401.5 (398-405) 27. 401.5 (398-405) 28. 502.0 (498-506) 29. 403.0 (399-407) 30. 65.9 (61.9-69.9)			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. Applicant calculates items 31 through 34 on attachment 1.	Correctly calculates Q to feedwater. 31. 10.97 (10.91-11.03) 32. 401.5 (398-405) 33. 1190.7 (1190-1191.4) 34. 2537.9 (2532.9-2542.9)			
5. Applicant calculates items 35 through 36 on attachment 1.	Correctly calculates Q to CRD flow. 35. .037 (.036-.038) 36. 12.2 (11.9-12.5)			
5. Applicant calculates items 37 through 39 on attachment 1.	Correctly calculates Q to Cleanup system. 37. .157 (.155-.159) 38. 98.98 (96.98-100.98) 39. 4.55 (4.35-4.75)			
6. Applicant calculates items 41 on attachment 1.	Correctly calculates QPUMP 41. 6.88 (6.68-7.08)			
7. (*)Applicant calculates items 42 through 43 on attachment 1.	Correctly determines core thermal power. 42. 2548.8 (2447-2650) 43. 100.5 (96.5-104.5)			
8. (*) Applicant compares the two methods and determines that they are within 5%. No further action required per attachment 2.	Applicant compares the two methods and determines that they are within 5%. No further action required per attachment 2.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. **(*)** Applicant states that current reactor power is above license limit and would lower power to ensure below 100% License Limit, 2536 Mwth. Note: Even if heat balance is below 100% the turbine power is above 100% and should be addressed.	RAP-7.3.16 step 7.1.1 requires power to be lowered if the 12 minute average exceeds the Licensed Power Level. Applicant may also state that would adjust APRM's per ST-5d APRM Calibration.			
Task is complete.				

JPM Stop Time ___________

EXAM KEY

HEAT BALANCE CALCULATION SHEET

PERFORMED BY: ______________________ DATE/TIME: ______________

PURPOSE: ______________________

ITEM	PARAMETER	PANEL	INSTRUMENT	VALUE	UNITS
1.	Cleanup Inlet Temp	9-4	12TSS-142 POS 1	512	°F
2.	Cleanup Outlet Temp.	9-4	12TSS-142 POS 4	425	°F
3.	Cleanup Flow A	9-4	12FI-126A	160	GPM
4.	Cleanup Flow B	9-4	12FI-126B	155	GPM
5.	Power to Recirc. Pump A	9-4	RWR MG A GEN PWR	3.85	MW
6.	Power to Recirc. Pump B	9-4	RWR MG B GEN PWR	3.55	MW
7.	Total Core Flow	9-5	02-3DPR/FR-95	79	Mlb/hr
8.	Reactor Pressure (psig + 14.7)	9-5	06PR/FR-98	1057	PSIA
9.	CRD Flow to Reactor	9-5	03FI-310	59	GPM
9a	RWR & RWCU Pump Seal Flows		Constant	15	GPM
10.	CRD System Temp		Constant	95	°F
11.	Gross MW Electric	9-7	MAIN GEN MW	870	GMWE
*12.	Feedwater Flow Loop A	9-5	06FI-89A	5.44	MLB/HR
*13.	Feedwater Flow Loop B	9-5	06FI-89B	5.55	MLB/HR
14.	TFWA, use PTID 407/410 or	9-21	02TT-168A/C	423.6 / 423.6	°F
15.	TFWB, use PTID 408/411 or	9-21	02TT-168B/D	423.6 / 423.6	°F
	FEEDWATER FLOW CALCULATIONS				
*16.	Average TFWA (407+410)/2 or (168A+168C)/2			423.6	°F
*17.	Average TFWB (408+411)/2 or (168B+168D)/2			423.6	°F
*18.	Delta T Loop A (DTA) = TFWA - 420			3.6	°F
*19.	Delta T Loop B (DTB) = TFWB - 420			3.6	°F
*20.	C.F. = 1.0 + {DTA*[-3.8064E-4 + (DTA*-4.4310E-7)]}			0.99862	
*21.	C.F. = 1.0 + {DTB*[-3.8064E-4 + (DTB*-4.4310E-7)]}			0.99862	
*22.	Compensated Flow A		(#12 * #20)	5.43 (5.40-5.46)	MLB/HR
*23.	Compensated Flow B		(#13 * #21)	5.54 (5.51-5.57)	MLB/HR
	PARAMETER	**ITEM**	**DATA USED**	**VALUE**	**UNITS**
24.	HS	#8,	ASME Table	1190.7 (1190-1191.4)	BTU/LB
25.	HFG	#8,	ASME Table	639.6 (638-641.2)	BTU/LB
*26.	HFWA	#8, #16,	ASME Table	401.5 (398-405)	BTU/LB
*27.	HFWB	#8, #17,	ASME Table	401.5 (398-405)	BTU/LB
28.	HCUI	#8, #1,	ASME Table	502.0 (498-506)	BTU/LB
29.	HCUO	#8, #2,	ASME Table	403.0 (399-407)	BTU/LB
30.	HCR	#8, #10,	ASME Table	65.9 (61.9-69.9)	BTU/LB
	PARAMETER		**EQUATION (ITEM #"S)**	**VALUE**	**UNITS**
31.	Total Feedflow		(#22 + #23)	10.97 (10.91-11.03)	MLB/HR
32.	Feedwater Enthalpy		[(#26*#22) + (#27*#23)]/#31	401.5 (398-405)	BTU/LB
33.	Steam Enthalpy		[#24 - (0.000*#25)]	1190.7 (1190-1191.4)	BTU/LB
34.	Q to feedwater (QFW)		[#31*(#33 - #32)]/3.413	2537.9 (2532.9-2542.9)	MWt
35.	CRD flow (WCR)		[(#9 * 0.498E-3) + (#9a * 0.498E-3)]	.037 (.036-.038)	MLB/HR
36.	Q to CRD flow (QCR)		[#35 * (#33 - #30)]/3.413	12.2 (11.9-12.5)	MWt
37.	Total CU flow (WCU)		(#3 + #4) *(0.498E-3)	.157 (.155-.159)	MLB/HR
38.	HCUI - HCUO		(#28 - #29)	98.98 (96.98-100.98)	BTU/LB
39.	Q to Cleanup Sys		(#38 * #37)/3.413	4.55 (4.35-4.75)	MWt
40.	Vessel ambient loss			1.1	MWt
41.	QPUMP		(#5 + #6) * 0.93	6.88 (6.68-7.08)	MWt
42.	Core Thermal Power		(#34 + #36 + #39 + #40 - #41)	2548.8 (2447-2650)	MWt
43	CTP/2536		(#42/2536) * 100	100.5 (96.5-104.5)	%

* Not Applicable when Attachment 5 is used.

Contact Operations to determine if this is performed to satisfy Tech. Specs: ☐ YES ☐ NO

* If Yes, Second Verifier: ______________________ Date/Time: ______________

Reviewed By: ______________________ Date/Time: ______________
Reactor Engineering Superintendent

- This *IS* a Quality Record -

EXAM KEY

VERIFICATION OF CORE THERMAL HEAT BALANCE Page 1 of 1

DATE/TIME: ________/________

A. First stage pressure from EPIC 1299: 667.4 psig

[(0.1362 * 1^{st} stg pr) + 9.3] = 100.2 % power

B. Reactor power calculated from heat balance = 100.5 % power
(96.5-104.5)

C. The two methods are within 5% of rated power of each other. ☐ YES ☐ NO

D. If Not within 5%, investigation initiated. ☐ YES ☐ NO

E. If **GREATER THAN** 5%, and unexplained, General Manager Plant Operations notified. ☐ YES ☐ NO

	Print	Sign	Date
Performed By:	Applicant	Fills Out	
Reviewed By:			

REACTOR ENGINEERING SUPERINTENDENT

EXAM KEY

- This *IS* a Quality Record -

HANDOUT PAGE

TASK CONDITIONS:

Current indicated reactor power is 100% on APRM's.

Plant data has been recorded for steps 1 through 15 of attachment 1.

Turbine first stage pressure is 667.4 psig and has been recorded on attachment 2.

INITIATING CUE:

Perform section 9.3, Core Thermal Heat Balance Verification, of RAP-7.3.03, CORE THERMAL POWER EVALUATION. EPIC computer points are not available. Items 14 and 15 were obtained from 02TT-168A/C and B/D on attachment 3.

Determine what plant action, if any, is required.

VERIFICATION OF CORE THERMAL HEAT BALANCE Page 1 of 1

DATE/TIME: ________/________

A. First stage pressure from EPIC 1299: 667.4 psig

[(0.1362 * 1st stg pr) + 9.3] = ________ % power

B. Reactor power calculated from heat balance = ________ % power

C. The two methods are within 5% of rated power of each other. ☐ YES ☐ NO

D. If Not within 5%, investigation initiated. ☐ YES ☐ NO

E. If **GREATER THAN** 5%, and unexplained, General Manager Plant Operations notified. ☐ YES ☐ NO

	Print	**Sign**	**Date**
Performed By:			
Reviewed By:			

REACTOR ENGINEERING SUPERINTENDENT

- This *IS* a Quality Record -

HEAT BALANCE CALCULATION SHEET

PERFORMED BY: ______________________ DATE/TIME: ______________

PURPOSE: ______________________

ITEM	PARAMETER	PANEL	INSTRUMENT	VALUE	UNITS
1.	Cleanup Inlet Temp	9-4	12TSS-142 POS 1	512	°F
2.	Cleanup Outlet Temp.	9-4	12TSS-142 POS 4	425	°F
3.	Cleanup Flow A	9-4	12FI-126A	160	GPM
4.	Cleanup Flow B	9-4	12FI-126B	155	GPM
5.	Power to Recirc. Pump A	9-4	RWR MG A GEN PWR	3.85	MW
6.	Power to Recirc. Pump B	9-4	RWR MG B GEN PWR	3.55	MW
7.	Total Core Flow	9-5	02-3DPR/FR-95	79	Mlb/hr
8.	Reactor Pressure (psig + 14.7)	9-5	06PR/FR-98	1057	PSIA
9.	CRD Flow to Reactor	9-5	03FI-310	59	GPM
9a	RWR & RWCU Pump Seal Flows		Constant	15	GPM
10.	CRD System Temp		Constant	95	°F
11.	Gross MW Electric	9-7	MAIN GEN MW	870	GMWE
*12.	Feedwater Flow Loop A	9-5	06FI-89A	5.44	MLB/HR
*13.	Feedwater Flow Loop B	9-5	06FI-89B	5.55	MLB/HR
14.	TFWA, use PTID 407/410 or	9-21	02TT-168A/C	423.6/423.6	°F
15.	TFWB, use PTID 408/411 or	9-21	02TT-168B/D	423.6/423.6	°F
	FEEDWATER FLOW CALCULATIONS				
*16.	Average TFWA (407+410)/2 or (168A+168C)/2				°F
*17.	Average TFWB (408+411)/2 or (168B+168D)/2				°F
*18.	Delta T Loop A (DTA) = TFWA - 420				°F
*19.	Delta T Loop B (DTB) = TFWB - 420				°F
*20.	C.F. = 1.0 + {DTA*[-3.8064E-4 + (DTA*-4.4310E-7)]}				
*21.	C.F. = 1.0 + {DTB*[-3.8064E-4 + (DTB*-4.4310E-7)]}				
*22.	Compensated Flow A		(#12 * #20)		MLB/HR
*23.	Compensated Flow B		(#13 * #21)		MLB/HR
	PARAMETER	**ITEM**	**DATA USED**	**VALUE**	**UNITS**
24.	HS	#8,	ASME Table		BTU/LB
25.	HFG	#8,	ASME Table		BTU/LB
*26.	HFWA	#8, #16,	ASME Table		BTU/LB
*27.	HFWB	#8, #17,	ASME Table		BTU/LB
28.	HCUI	#8, #1,	ASME Table		BTU/LB
29.	HCUO	#8, #2,	ASME Table		BTU/LB
30.	HCR	#8, #10,	ASME Table		BTU/LB
	PARAMETER		**EQUATION (ITEM #"S)**	**VALUE**	**UNITS**
31.	Total Feedflow		(#22 + #23)		MLB/HR
32.	Feedwater Enthalpy		[(#26*#22) + (#27*#23)]/#31		BTU/LB
33.	Steam Enthalpy		[#24 - (0.000*#25)]		BTU/LB
34.	Q to feedwater (QFW)		[#31*(#33 - #32)]/3.413		MWt
35.	CRD flow (WCR)		[(#9 * 0.498E-3) + (#9a * 0.498E-3)]		MLB/HR
36.	Q to CRD flow (QCR)		[#35 * (#33 - #30)]/3.413		MWt
37.	Total CU flow (WCU)		(#3 + #4) *(0.498E-3)		MLB/HR
38.	HCUI - HCUO		(#28 - #29)		BTU/LB
39.	Q to Cleanup Sys		(#38 * #37)/3.413		MWt
40.	Vessel ambient loss			1.1	MWt
41.	QPUMP		(#5 + #6) * 0.93		MWt
42.	Core Thermal Power		(#34 + #36 + #39 + #40 - #41)		MWt
43	CTP/2536		(#42/2536) * 100		%

* Not Applicable when Attachment 5 is used.

Contact Operations to determine if this is performed to satisfy Tech. Specs: ☐ YES ☐ NO

* If Yes, Second Verifier: ______________________ Date/Time: ______________

Reviewed By: ______________________ Date/Time: ______________
Reactor Engineering Superintendent

- This *IS* a Quality Record -

Heat Balance Calculation Sheet (SRO Candidate Worksheet)

ITEM	PARAMETER	PANEL	INSTRUMENT	VALUE	UNITS
1.	Cleanup Inlet Temp.	09-4	12TSS-142, POS 1	512	°F
2.	Cleanup Outlet Temp.	09-4	12TSS-142, POS 4	425	°F
3.	Cleanup Flow A	09-4	12FI-126A	160	GPM
4.	Cleanup Flow B	09-4	12FI-126B	155	GPM
5.	Power to Recirc. Pump A	09-4	RWR MG A GEN PWR	3.85	MW
6.	Power to Recirc. Pump B	09-4	RWR MG B GEN PWR	3.55	MW
7.	Total Core Flow	09-5	02-3DPR/FR-95	79	Mlb/hr
8.	Reactor Pressure (psig + 14.7)	09-5	06PR/FR-98	1057	PSIA
9.	CRD Flow to Reactor	09-5	03FI-310	59	GPM
9a.	RWR & RWCU Pump Seal Flows		Constant	15	GPM
10.	CRD System Temp		Constant	95	°F
11.	Gross MW Electric	09-7	MAIN GEN MW	870	GMWE
*12.	Feedwater Flow Loop A	09-5	06FI-89A	5.44	Mlb/hr
*13.	Feedwater Flow Loop B	09-5	06FI-89B	5.55	Mlb/hr
14.	TFWA, use PTID 407/410 or	09-21	02TT-168A/C	423.6 / 423.6	°F
15.	TFWB, use PTID 408/411 or	09-21	02TT-168B/D	423.6 / 423.6	°F
	FEEDWATER FLOW CALCULATIONS				
*16.	Average TFWA (407+410) / 2 or (168A+168C) / 2				°F
*17.	Average TFWB (408+411) / 2 or (168B+168D) / 2				°F
*18.	Delta T Loop A (DTA) = TFWA – 420				°F
*19.	Delta T Loop B (DTB) = TFWB – 420				°F
*20.	C.F. = 1.0 + {DTA x [-3.8064E-4 + (DTA x -4.4310E-7)]}				
*21.	C.F. = 1.0 + {DTB x [-3.8064E-4 + (DTB x -4.4310E-7)]}				
*22.	Compensated Flow A		(#12 x #20)		Mlb/hr
*23.	Compensated Flow B		(#13 x #21)		Mlb/hr
	PARAMETER	**ITEM**	**DATA USED**	**VALUE**	**UNITS**
24.	HS	#8	ASME Table		BTU/lb
25.	HFG	#8	ASME Table		BTU/lb
*26.	HFWA	#8, #16	ASME Table		BTU/lb
*27.	HFWB	#8, #17	ASME Table		BTU/lb
28.	HCUI	#8, #1	ASME Table		BTU/lb
29.	HCUO	#8, #2	ASME Table		BTU/lb
30.	HCR	#8, #10	ASME Table		BTU/lb
	PARAMETER	**EQUATION (ITEM #'S)**		**VALUE**	**UNITS**
31.	Total Feedflow	(#22 + #23)			Mlb/hr
32.	Feedwater Enthalpy	{(#26 x #22) + (#27 x #23)} / #31			BTU/lb
33.	Steam Enthalpy	{#24 – (0.000 x #25)}			BTU/lb
34.	Q to Feedwater (QFW)	{#31 x (#33 - #32)} / 3.413			MWt
35.	CRD flow (WCR)	{(#9 x 0.498E-3) + (#9a x 0.498E-3)}			Mlb/hr
36.	Q to CRD Flow (QCR)	{#35 x (#33 - #30)} / 3.413			MWt
37.	Total CU flow (WCU)	(#3 + #4) x (0.498E-3)			Mlb/hr
38.	HCUI – HCUO	(#28 - #29)			BTU/lb
39.	Q to Cleanup Sys	(#38 x #37) / 3.413			MWt
40.	Vessel Ambient Loss			1.1	MWt
41.	QPUMP	(#5 + #6) x 0.93			MWt
42.	Core Thermal Power	(#34 + #36 + #39 + #40 - #41)			MWt
43.	CTP / 2536	(#42 / 2536) x 100			%

* Not applicable when Attachment 5 is used.

JAMES A. FITZPATRICK

Job Performance Measure

Revised step 2
JMcCam

Determine Required Event Followup

JPM Number: SRO A-1-2

Revision Number: 1

Date: 03/05/2010

Developed By:	**P. Presby**	**03/05/10**
	Author	**Date**
Validated By:		
	Facility Technical Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_______ 1. Task description and number, JPM description and number are identified.

_______ 2. Knowledge and Abilities (K/A) references are included.

_______ 3. Performance location specified. (in-plant, control room, or simulator)

_______ 4. Initial setup conditions are identified.

_______ 5. Initiating and terminating cues are properly identified.

_______ 6. Task standards identified and verified by Examiner review.

_______ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_______ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ___________

_______ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_______ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_______ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 1.

JPM Setup Instructions:

Provide applicant with the following:

- **JPM handout sheet**
- **Access to all plant procedures**

TASK CONDITIONS:

The plant is operating normally at full power with no evolutions in progress when the following events occur.

At T = 0

- **An electrician reports a large fire at Normal Station Service Transformer T-4. There are several wooden pallets laying against the transformer engulfed in flames. A large gas can is on the ground beside the pallets.**

At T= 2 min

- **Alarm 09-8-5-16, NSS XSFMR T-4 SUDDEN PRESS is received as the control room is dispatching the fire brigade,**
- **The reactor scrams automatically. All rods fully insert.**
- **EDG B and D have started and are carrying their buses.**

At T = 8 min

- **Breakers 10212 and 10412 CANNOT be closed to restore power to Buses 10200 and 10400, respectively.**
- **An operator reports from the East Electric Bay that it appears someone has wedged steel rods into the front of the breaker housings, jamming the trip mechanisms for Breakers 10212 and 10412. Maintenance must be performed before these breakers can be closed.**

At T = 13 min

- **The fire brigade leader reports the fire is out, Transformer T-4 appears intact, NO oil is leaking from the transformer.**
- **The 10100, 10300 and 10500 buses are now powered from Reserve Station Transformer T-3.**

INITIATING CUE:

You are an extra SRO on shift. The Shift Manager directs you to determine:

1) **the operations procedures that must be entered to mitigate the event conditions (examples:OP, AOP, EOP)**
2) **regarding off-site notification(s), what organization(s) or individual(s) must be notified and the required time limit(s) if applicable**
3) **The procedures which identify regulatory basis for any required notification(s) determined in Item #2 above**

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ____
Job Title: SRO

JPM Title: Determine Required Event Followup

JPM Number: SRO A-1-2 **Revision Number:** 0

K/A Number and Importance: K/A 2.1.20 IR: 4.6

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 minutes **Actual Time Used:** _____minutes

References: **AP-03.04, Information Reporting Requirements, Rev 13**
EOP-2, RPV Control, Rev 9
AOP-1, Reactor Scram, Rev 43
AOP-28, Operation During Plant Fires, Rev 18
AOP-70, Security Threat, Rev. 11
AOP-17, Loss of 10400 Bus, Rev 17
IAP-2, Classification of Emergency Conditions, Rev 28
EAP-1.1, Offsite Notifications, Rev 65
IAP-1, Emergency Plan Implementation Checklist. Rev 39
AP-12.11, Notifications and Response to Operational Concerns Rev 10
EAP-3; Fire Rev 25

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____
____

____
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. (*) The applicant determines the operations procedures that must be entered to mitigate the event conditions.	Applicant identifies each of the following procedures: • EOP-2 (low RPV level, normal for a scram) • AOP-1 (for the scram) • AOP-17 (for the 10400 Bus loss) • AOP-28(for the fire) • AOP-70 (for the security event / tampering) Note: Applicant may also identify other procedures that provide administrative guidance. Their identification is not critical to the JPM. However, any additional identified procedures must be appropriate to the plant conditions. Examples include: - Emergency Plan (IAP-2, EAP-1.1, EAP-3) - OP system procedures for electrical bus re-alignment			
* 2. **(*)** Applicant determines NRC notification requirement per AP-03.04. **Examiner NOTE: SAE is due to an intrusion into a vital area of the East Electric bay.**	Applicant identifies NRC prompt notification required within 1 hour by ENS phone per AP-03.04 Attachment 2, Item 138, based on 50.72(a)(3) after declaration of an Emergency Class (SAE under IAP-2, Category 8.1.9.)			
3. **(*)** Applicant determines E-Plan ERO callout required.	Applicant identifies E-Plan ERO callout required.			

* EVENT CLASSIFICATION WAS NOT A CRITICAL ASPECT OF THIS JPM BECAUSE THE ORGANIZATIONS AND INDIVIDUALS REQUIRING NOTIFICATION DID NOT CHANGE FOR AN ALERT VICE SAE. ~~NOTE~~: THIS WAS DISCUSSED WITH JOHN MUNRO PER TELECOM 6/10/10 [signature]

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. **(*)** Applicant determines off-site agency notification requirements under E-Plan.	Applicant identifies personnel / agencies that must be contacted 1) under EAP-1.1 Offsite Notifications: • New York State • Oswego County • Nine Mile Point Unit #1 • Nine Mile Point Unit #2 • NRC Operations Center • NRC Resident Inspector • Security Call-outs within 15 minutes of making EAL declaration. 2) under IAP-1, Emergency Plan Implementation Checklist Item B: • NRC via ENS phone within 15 minutes of recognition of security-based emergency.			
5. Applicant determines corporate notification per AP12.11	1) under AP 12-11 Notify for • EP Entry • Unplanned Power change • Reportable event (covered above in step 2) • Fire actuation • Plant fire • Security Threat			
Task is complete.				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

The plant is operating normally at full power with no evolutions in progress when the following events occur.

At T = 0

- **An electrician reports a large fire at Normal Station Service Transformer T-4. There are several wooden pallets laying against the transformer engulfed in flames. A large gas can is on the ground beside the pallets.**

At T= 2 min

- **Alarm 09-8-5-16, NSS XSFMR T-4 SUDDEN PRESS is received as the control room is dispatching the fire brigade,**
- **The reactor scrams automatically. All rods fully insert.**
- **EDG B and D have started and are carrying their buses.**

At T = 8 min

- **Breakers 10212 and 10412 CANNOT be closed to restore power to Buses 10200 and 10400, respectively.**
- **An operator reports from the East Electric Bay that it appears someone has wedged steel rods into the front of the breaker housings, jamming the trip mechanisms for Breakers 10212 and 10412. Maintenance must be performed before these breakers can be closed.**

At T = 13 min

- **The fire brigade leader reports the fire is out, Transformer T-4 appears intact, NO oil is leaking from the transformer.**
- **The 10100, 10300 and 10500 buses are now powered from Reserve Station Transformer T-3.**

INITIATING CUE:

You are an extra SRO on shift. The Shift Manager directs you to determine:

1) **the operations procedures that must be entered to mitigate the event conditions (examples:OP, AOP, EOP)**
2) **regarding off-site notification(s), what organization(s) or individual(s) must be notified and the required time limit(s) if applicable**
3) **the procedural or regulatory basis for any required notification(s) determined in Item #2 above**

JAMES A. FITZPATRICK

Job Performance Measure

Use Station Drawing to Predict Impact of Component Failure and Evaluate Technical Specification Implications

JPM Number: SRO A-2

Revision Number: 0

Date: 03/10/2010

Developed By: **P. Presby** **03/10/10**
Author **Date**

Validated By: ______________________ ________
Facility Technical Representative **Date**

Review By: ______________________ ________
Examiner **Date**

Approved By: ______________________ ________
Chief Examiner **Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:

1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 0.

JPM Setup Instructions:

1. Stage the following references for the applicant's use:
   - HPCI System Elementary Diagrams Sheets 1 thru 9 (File Numbers 1.61-140 thru 1.61-148, also referenced as Vendor Dwgs 791E471 Sh1 thru 9)
   - Fitzpatrick Station Technical Specifications
   - Entergy Nuclear Management Manual EN-OP Series Procedures
   - Plant Piping Drawings (to include the HPCI system drawings)

TASK STANDARD:

1. Determine broken lead causes Relay 23-K51 to initiate 1 of 2 required signals to automatically open HPCI Torus Suction Isolation Valves 23MOV-57 and 23MOV-58.
2. Determine HPCI Torus Suction Isolation Valves 23-57 and 23-58 will not automatically re-position on the failure.
3. Determine system remains functional as valves will reposition upon valid CST low level signal (low level initiation is one out of two, taken twice, with one signal effectively actuated).
4. Determine HPCI remains OPERABLE, based on TS 3.3.5.1 Action D completion time and bases discussion. (TS Table 3.3.5.1-1, Item 3.d.)
5. Identify required Tech Spec actions as follows:
   - Per 3.3.5.1 Action D, place affected low level channels in trip OR align HPCI pump suction to the suppression pool within 24 hours

TASK CONDITIONS:

You are the CRS

The plant is operating in a normal alignment at stable 75% power conditions.

Electricians have reported a broken (disconnected) power supply lead to HPCI Relay 23-K51 at Terminal Point 9-39/CC-14.

NO other damage is apparent.

INITIATING CUE:

You are directed to:

- determine how this failure impacts HPCI components
- determine if the HPCI system is functional
- determine if the HPCI system is operable
- identify required Tech Spec actions, if any

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ____

Job Title: SRO

JPM Title: Use Station Drawing to Predict Impact of Component Failure and Evaluate Technical Specification Implications

JPM Number: SRO A-2 **Revision Number:** 0

K/A Number and Importance: K/A 2.2.41, Ability to obtain and interpret station electrical and mechanical drawings. (3.5, 3.9)

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 27 minutes **Actual Time Used:** _____minutes

References:

- HPCI System Elementary Diagrams Sheets 1 thru 8 (File Numbers 1.61-140 thru 1.61-148, also referenced as Vendor Dwgs 791E471 Sh1 thru 9)
- Fitzpatrick Station Technical Specifications
- Entergy Nuclear Management Manual EN-OP-104Rev.4, Operability Determinations
- HPCI Plant Piping Drawings; FM-25A, Rev.71 and FM-25B, Rev.33

EVALUATION SUMMARY:

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Applicants review the handout sheet and ask any questions regarding the initial conditions or initiating cues.	Applicants review initial conditions and initiating cues. **Examiner Cue:** Hand the applicant HPCI Elementary Drawings (9 drawings, see references) and the cue handout sheet.			
*2. Review HPCI System Elementary Drawings. Determine how this failure impacts HPCI components.	Applicant determines 23-K51, normally energized, is de-energized by the failure, resulting in one of the two required signals to auto open HPCI suppression pool suction valves 23MOV-57 and 23MOV-58. Applicant identifies valves do not auto open on the failure but would open if low CST level sensed on other CST via channels (LS 23-74A or LS 23-75A) **Examiner Note:** • **Sht 3 (H-9)** • **Sht 1 (A-2/3, K-6)** • **Sht 8 (H-5, H-6)**			
*3. Determine system functionality.	Applicant determines system remains functional as valves will reposition upon valid CST low level signal from the other CST (low level initiation is one out of two, taken twice, with one signal effectively actuated). A low level in CST 'A' will still perform the auto suction swap function. Valves can still be operated manually.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4. Determine system operability.	Applicant determines HPCI remains operable. **Examiner Note:** TS 3.3.5.1 Action D directs system INOPERABILITY declaration. **However**, the completion time is "from discovery of **loss of HPCI initiation capability**, which indicates the inoperability call is **only** required for failures that result in loss of ability to auto swap. The TS bases explain "For Required Action D.1, the Completion Time only begins upon discovery that the HPCI System cannot be automatically aligned to the suppression pool due to two inoperable, untripped channels in the same Function."			
*5. Determine required Tech Spec actions.	Applicant identifies required Tech Spec actions as follows: • TS 3.3.5.1 Action D.2.1, place affected low level channels in trip **OR** TS 3.3.5.1 Action D.2.2, align HPCI pump suction to the suppression pool within 24 hours **Examiner Note:** See note in preceding JPM step. Critical that applicant identifies 3.3.5.1 Actions D.2.1 or D.2.2 and no other actions.			

HANDOUT PAGE

TASK CONDITIONS:

You are the CRS

The plant is operating in a normal alignment at stable 75% power conditions.

Electricians have reported a broken (disconnected) power supply lead to HPCI Relay 23-K51 at Terminal Point 9-39/CC-14.

NO other damage is apparent.

INITIATING CUE:

You are directed to:

- determine how this failure impacts HPCI components
- determine if the HPCI system is functional
- determine if the HPCI system is operable
- identify required Tech Spec actions, if any

Job Performance Measure

Determine Radiation Controls

JPM Number: SRO A-3

Revision Number: 2

Date: 03/30/2010

Developed By:	**Bernard Litkett**	**04/08/2010**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):
1. New JPM.

JPM Setup Instructions:
Ensure the following documents are available in the exam area:
- **EN-RP-201, Rev.3, Dosimetry Administration**
- **EN-RP-202, Rev.7, Personnel Monitoring**
- **EAP-15, Rev. 11 Emergency Radiation Exposure Criteria and control. Copies of attachment 4; Emergency Exposure authorization form.**

Instructions for explaining how to administer;
1. Provide page 1 of handout sheet to applicant.
2. If/when applicant returns handout with explanation that needs to authorize an emergency radiation exposure then, provide page 2 of handout sheet to applicant.

TASK STANDARD:
Determine which 2 workers must have Emergency exposure controls put in place due to anticipated dose during response to emergency conditions.

TASK CONDITIONS:

1. The plant is at 15% power.
2. A Site Area Emergency has been declared due to a steam line rupture with significant fuel damage.
3. Entry is required into the MSIV Room to close the outboard MSIVs to prevent event escalation.
4. Job conditions are as follows:
   - Two individuals are required to complete the job.
   - Each worker is expected to receive 500 mR in transit to the Main Steam line access door **AND** the same amount again while exiting the plant.
   - Each worker is expected to spend 2 minutes in an 800 mR/hr field in transit from the Main Steam line access door to the job site **AND** the same amount again while exiting the plant.
   - The job site is against the outer Containment Wall in a 2 R/hr field.
   - The job will take 1.5 hours at the job site with both workers working the full time.
5. Five workers are preparing to be briefed to complete the task.

Technician	Sex	Age	SSN	Marital Status	Dept	Volunteer	TLD	Pregnant
1. John Tech	M	45	123-45-6789	Married	Maint	No	145678	N/A
2. Henry Work	M	33	987-65-4321	Single	Ops	Yes	235699	N/A
3. Jane Riley	F	35	345-54-2456	Married	Ops	Yes	875231	No
4. Bill Smith	M	40	587-14-8741	Single	Maint	Yes	632587	N/A
5. Mike Long	M	47	512-57-2358	Married	Ops	Yes	421489	N/A

6. None of the individuals has ever received an emergency exposure.
7. During an initial entry under a modified RWP the workers received the following dose:
   - Technician 1 received 600 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1399 mR for the year.
   - Technician 2 received 600 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1399 mR for the year.
   - Technician 3 did not enter the area, has 1000 mR total exposure for the year.
   - Technician 4 received 900 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1678 mR for the year.
   - Technician 5 received 900 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1678 mR for the year.
8. The TSC has not been staffed yet.

INITIATING CUE:

1. Anticipate dose to be accumulated by each worker.
2. Select two (2) workers to complete the task.
3. Authorize work using the appropriate exposure limits to allow completion of the required task.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ______________________________

Job Title: ☐ NLO ☐ RO ☒ SRO ☐ STA ☐ SRO Cert

JPM Title: **Perform ED Functions**

JPM Number: **SRO A-3** **Revision Number:** 0

K/A Number and Importance:
K/A Generic 2.3.4 (3.7)

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Simulate

Alternate Path: No

Time Critical: No

Estimated Time to Complete: **30 minutes** **Actual Time Used:** _______minutes

References:
1. EN-RP-201, Rev.3, Dosimetry Administration
2. EN-RP-202, Rev.7, Personnel Monitoring
3. EAP-15, Rev. 11, Emergency Radiation Exposure Criteria and control

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

Description:
This JPM is used to test generic knowledge in calculation of overall dose and control mechanisms to allow the selection of individuals to continue or perform work in high dose areas. This JPM tests basic mathematics and understanding of stay times and the authorization of emergency radiation exposure.

This is a new JPM.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EXAMINER NOTE: ***Examiner to provide page 1 of handout sheet to applicant.***	**EXAMINER NOTE:** ***Examiner to provide page 1 of handout sheet to applicant.***			
1. Determine dose to be received for each worker	N/A			
*2. For each worker, the applicant:				
2.a Determine anticipated dose from task performance in the work area.	Dose Rate * Time = Task Dose 2000 mR/hr * 1.5 hr = 3000 mR			
2.b Determine anticipated dose from transit to and from the Main Steam chase	Dose To Location + Dose From Location = Travel Dose 500mR + 500 mR = 1000 mR			
2.c Determine anticipated dose from transit to the work area in the steam chase.	Dose Rate * Time = Transit Dose 800 mR/hr * (2 min/60) = 26 mR			
2.d Determine anticipated dose from transit from the work area in the steam chase.	Dose Rate * Time = Task Dose 800 mR/hr * (2 min/60) = 26 mR			
*2.e Determine the total dose for each worker from @a through 2d.	Task Dose + Travel Dose + Transit Dose = Total Dose 3000 + 1000 + (26*2) = 4052 mR			
*3. Determine that task performance is not allowable per normal controls.	* The applicant determines that total dose is greater than the annual 4500 mR administrative limit for radiation exposure per **EN-RP-201** and the 5000 mR federal limit			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4. Determines that emergency exposure controls are required per EAP-15.	*The applicant evaluates the total expected dose and recognizes that emergency exposure controls are required to raise the limit above 5 R for each individual per EAP-15			
EXAMINER NOTE: ***Examiner should only provide EAP-15 and handout sheet page 2 if the applicant determines emergency radiation exposure authorization is required.***	**EXAMINER NOTE:** ***Examiner should only provide EAP-15 and handout sheet page 2 if the applicant determines emergency radiation exposure authorization is required.***			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4.a Implements EAP-15; step 4.2.1	The applicant Implements EAP-15;step 4.2.1.. Selects a TEDE Limit of up to 10 Rem from dose limit			
4.3 Selects personnel for Task per Step 4.3	The applicant using currently identified workers verifies workers: - Personnel selected have volunteered - are not declared pregnant workers - Volunteers should be more than 45 years of age, if possible. - have not received a previous emergency exposure - have not received a planned special exposure Recognizes no initial condition specifies one of these abnormal conditions			
* 5. Applicant does not complete Attachment 4 for Technician 1 to authorize the emergency exposure.	Applicant does **NOT** complete Attachment 4 for Technician 1 to authorize the emergency exposure. John Tech did not volunteer			
6. Applicant does not complete Attachment 4 for Technician 2 to authorize the emergency exposure. **Examiner Note:** Although this individual is the youngest he also has the lowest dose. IAW EAP-15 this is acceptable to select him.	Applicant does **NOT** complete Attachment 4 for Technician 2 to authorize the emergency exposure. Henry Work is the youngest of the five technicians. **Examiner Note:** Although this individual is the youngest he also has the lowest dose. IAW EAP-15 this is acceptable to select him.			
* 7. Applicant does not complete Attachment 4 for Technician 3 to authorize the emergency exposure.	Applicant does **NOT** complete Attachment 4 for Technician 3 to authorize the emergency exposure. Jane Riley is the second youngest of the five technicians.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*8. Completes Attachment 4 for Technician 4 to authorize the emergency exposure based on he has volunteered for the emergency exposure and his age. Although he is only 40 years, procedure EAP-15 step 4.3.4 states, volunteers should be more than 45 years of age, if possible.	* Completes Attachment 4 Section A for Technician 4, Bill Smith per the attached mark-up of attachment 4. **Note:** The Employer / JAF Dept block is **NOT** a Critical component of this Step.			
*9. Completes Attachment 4 for Technician 5 to authorize the emergency exposure based on his age and that he has volunteered for the emergency exposure.	* Completes Attachment 4 Section A for Technician 5, Mike Long per the attached mark-up of attachment 4. **Note:** The Employer / JAF Dept block is **NOT** a Critical component of this Step.			
(**<u>Examiner Cue:</u>** "You may stop here, you have met the termination criteria for this JPM")	N/A			

JPM Stop Time ___________

Answer Key

ATTACHMENT 4

EMERGENCY EXPOSURE AUTHORIZATION FORM

SECTION A

Name of Individual to Receive Exposure: Bill Smith

SSN: 587-14-8741

TLD Badge No: 632587

Employer/JAF Department: Entergy - Maintenance

Date of Authorization: Today's Date

Authorized Exposure Limit: 10 Rem

Emergency Director: Your Signature
(Signature)

Date: Today's Date

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

SECTION B

I have volunteered to perform the task(s) during which I will receive the emergency exposure and I have been briefed on the potential biological consequences of the proposed emergency exposure.

Individual to Receive Exposure: Bill Smith
(Signature)

Date: Today's Date

Individual Conducting Briefing: ______________________
(Signature)

Date: ______________________

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

ANSWER KEY ATTACHMENT 4 Page 1 of 2

EMERGENCY EXPOSURE AUTHORIZATION FORM

SECTION A

Name of Individual to Receive Exposure: Mike Long

SSN: 512-57-2358

TLD Badge No: 421489

Employer/JAF Department: Entergy-Operations

Date of Authorization: Today's Date

Authorized Exposure Limit: 10 Rem

Emergency Director: Your Signature
(Signature)

Date: Today's Date

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

SECTION B

I have volunteered to perform the task(s) during which I will receive the emergency exposure and I have been briefed on the potential biological consequences of the proposed emergency exposure.

Individual to Receive Exposure: Mike Long
(Signature)

Date: Today's Date

Individual Conducting Briefing:

(Signature)

Date:

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

HANDOUT PAGE 2

TASK CONDITIONS:

1. Five workers are preparing to be briefed to complete the task:

Technician	Sex	Age	SSN	Marital Status	Dept	Volunteer	TLD	Pregnant
1. John Tech	M	45	123-45-6789	Married	Maint	No	145678	N/A
2. Henry Work	M	33	987-65-4321	Single	Ops	Yes	235699	N/A
3. Jane Riley	F	35	345-54-2456	Married	Ops	Yes	875231	No
4. Bill Smith	M	40	587-14-8741	Single	Maint	Yes	632587	N/A
5. Mike Long	M	47	512-57-2358	Married	Ops	Yes	421489	N/A

2. None of the individuals has ever received an emergency exposure.

HANDOUT PAGE 1

TASK CONDITIONS:

1. The plant is at 15% power.

2. A Site Area Emergency has been declared due to a steam line rupture with significant fuel damage.

3. Entry is required into the MSIV Room to close the outboard MSIVs to prevent event escalation.

4. Job conditions are as follows:
   - Two individuals are required to complete the job.
   - Each worker is expected to receive 500 mR in transit to the Main Steam line access door **AND** the same amount again while exiting the plant.
   - Each worker is expected to spend 2 minutes in an 800 mR/hr field in transit from the Main Steam line access door to the job site **AND** the same amount again while exiting the plant.
   - The job site is against the outer Containment Wall in a 2 R/hr field.
   - The job will take 1.5 hours at the job site with both workers working the full time.

5. Five workers are preparing to be briefed to complete the task.

6. During an initial entry under a modified RWP the workers received the following dose:
   - Technician 1 received 600 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1399 mR for the year.
   - Technician 2 received 600 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1399 mR for the year.
   - Technician 3 did not enter the area, has 1000 mR total exposure for the year.
   - Technician 4 received 900 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1678 mR for the year.
   - Technician 5 received 900 mR on his Electronic Dosimeter from his first entry, resulting in a total exposure of 1678 mR for the year.

7. The TSC has not been staffed yet.

INITIATING CUE:

1. Anticipate dose to be accumulated by each worker.

2. Select two (2) workers to complete the task.

3. Authorize work using the appropriate exposure limits to allow completion of the required task.

JAMES A. FITZPATRICK

Job Performance Measure

Determine Protective Action Recommendations
and Complete Event Notification Form

JPM Number: SRO A-4

Revision Number: 1

Date: 04/12/2010

Developed By:	**P. Presby**	**04/12/10**
	Author	**Date**
Validated By:		
	Facility Technical Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_______ 1. Task description and number, JPM description and number are identified.

_______ 2. Knowledge and Abilities (K/A) references are included.

_______ 3. Performance location specified. (in-plant, control room, or simulator)

_______ 4. Initial setup conditions are identified.

_______ 5. Initiating and terminating cues are properly identified.

_______ 6. Task standards identified and verified by Examiner review.

_______ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_______ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

_______ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_______ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_______ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Technical changes and modifications:
1. Not Applicable

REVISION RECORD (Summary):

1. This JPM is the original revision 1.

JPM Setup Instructions:

1. Hand out the following materials:
   - Calculator
   - Blank EAP-1.1 Attachment 1 Notification Form
   - Legible EAL Flowchart
   - Legible EAP-4 Attachment 1 Flowchart

2. Handout copies of following procedures:
   - EAP-4.1, Release Rate Determination, Rev 19
   - EAP-42, Obtaining Meteorological Data, Rev 23
   - IAP-2, Classification of Emergency Conditions, Rev 28
   - IAP-1, Emergency Plan Implementation Checklist, Rev 39
   - EAP-1.1, Offsite Notifications, Rev 65

3. Have copies available of following procedure:
   - EAP-4, Dose Assessment Calculations, Rev 39

TASK STANDARD:

1. Complete the upgrade offsite notification message form, including correct PARs.

TASK CONDITIONS:

At 0342 today (May 12, 2010), an earthquake with a magnitude of 0.08g caused a loss of offsite power.

Plant conditions:

- At 0342, a large break LOCA occurred.
- The reactor automatically scrammed.
- Multiple failures in safety systems caused the operators to conduct an emergency depressurization.
- RPV level dropped to minus (-) 9".
- Drywell pressure peaked at 55 psig.
- Secondary containment radiation levels increased to >EOP-5 Maximum Normal values in the Reactor Building 344 foot elevation.
- At 0352, a Site Area Emergency was declared with a release in progress based on an unisolable MSL break outside primary containment.
- At 0401, the initial offsite notification message was transmitted.
- ERO is staffing the emergency response facilities. Neither the TSC nor the EOF has been fully activated (the earthquake caused damage to local roads).

At 0412, (when you start the JPM) the following plant conditions exist:

- Drywell pressure has dropped rapidly to 3 psig.
- RPV level = minus (-) 9", going up slowly.
- You are the Emergency Director until relieved and have just declared an EAL upgrade to General Emergency at Time 0412.
- EAL upgrade based on radioactivity release as indicated on effluent radiation monitors, exceeding EAL threshold for >15 minutes.
- **NO** other General Emergency EAL thresholds have been reached.
- Stack flow rate = 12,000 cfm, with 1 SGT train and 1 stack dilution fan operating.

(continued on next page)

- EPIC "Rad Release" screen shows the following relating to the offsite release:

HIGH RANGE CONTINUOUS OFFSITE REL RATES			
LOCATION	RATES X	CF	= CI/SEC
STACK	11,700 MR/HR	CF	2.9718E+04 CI/SEC
TURB BLDG EXH	0 MR/HR	CF	0.0000E+00 CI/SEC
RADW BLDG EXH	0 MR/HR	CF	0.0000E+00 CI/SEC

- Meteorological conditions are provided in the following EDAMS report:

Emergency Meteorology Report

Last 15 Minute Emergency Meteorology Report Data

Data from Nine Mile Point Met System

Date: 5/12/10 Time (Local): 4:00:00

Elevated				Ground			
200'	Wind Dir From	271	(deg)	30'	Wind Dir From (Main)	261	(deg)
200'	Wind Speed	6.1	(mph)	30'	Wind Speed (Main)	3.8	(mph)
200'	Delta Temperature	-1.49	(deg F)	100'	Delta Temperature	-.56	(deg F)
	Stability Class	C			Stability Class	D	
30'	Air Temperature	45.6	(deg F)		Precipitation (15 min)	0.00	(in)

INITIATING CUE:

Complete the required E-plan upgrade notification form for the current conditions.

THIS IS A TIME-CRITICAL JPM.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the candidate to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the candidate acknowledges the initiating cue.

Operator's Name: ______________________________
Job Title: SRO

JPM Title: Determine Protective Action Recommendations and Complete Event Notification Form

JPM Number: SRO A-4 **Revision Number:** 1

K/A Number and Importance: K/A 2.4.38, Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. (4.4)

Suggested Testing Environment: Classroom/Simulator

Actual Testing Environment:

Testing Method: Table-Top

Alternate Path: No

Time Critical: Yes

Estimated Time to Complete: 12 minutes **Actual Time Used:** _____ minutes

References:

- IAP-2, Classification of Emergency Conditions, Rev 28
- EAP-1.1, Offsite Notifications, Rev 65
- IAP-1, Emergency Plan Implementation Checklist, Rev 39
- EAP-4.1, Release Rate Determination, Rev 19
- EAP-4, Dose Assessment Calculations, Rev 39
- EAP-42, Obtaining Meteorological Data, Rev 23

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

____
____
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Applicants review the handout sheet and ask any questions regarding the initial conditions or initiating cues.	Applicants review initial conditions and initiating cues.			
2. Handout the references with the handout sheet and the initiating cue sheet. **Examiner Cue:** Remind applicant the task is time critical.	Start the JPM. **Record START Time:** ____________________			
3. Obtains Notification Form (Attachment 1 of EAP-1.1, Offsite Notifications)	Applicant completes Notification Form Item #2, circling "B. Actual Event".			
*4. Record the correct event classification.	Applicant completes Notification Form Item #3, circling "D. General Emergency".			
*5. Record the correct declaration date and time.	Applicant completes Notification Form Item #4, recording today's date (5/12/2010) and event declaration time (0412)			
*6. Determine release rate using EAP-4 and EAP-4.1 (Step 4.1.2 or Attachment 2 from mr/hr * 2.54 factor)	Applicant determines release rate is 29,718 Ci/sec.			
*7. Record the radioactive release information based on EAP-4.1 Attachment 11.	Applicant completes Notification Form Item #5, circling "C. Release ABOVE federal limits Technical Specification".			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*8. Determine and record the protective active recommendations using EAP-4 Attachment 1, Tables 4.1.1 and 4.1.2.	Applicant completes Notification Form Item #6, circling "B. EVACUATE and IMPLEMENT the KI PLAN for the following ERPAs and All remaining ERPAs MONITOR the EMERGENCY ALERT SYSTEM" and by circling ERPAs # 1,2,3,4,7,9,26,27. **Examiner Note:** These are 2 mile radius and 5 mile downwind ERPAs.			
*9. Record appropriate EAL number and brief description.	Applicant completes Notification Form Item #7, recording EAL # 5.1.4 and brief description "high elevated rad release rate from main vent stack".			
*10. Record reactor status.	Applicant completes Notification Form Item #8, circling "B. Shutdown" and date time of 5/12/10 at 0342.			
*11. Record appropriate wind speed	Records wind speed by filling in Notification Form Item #9 as "A. 6.1 Miles/Hour at elevation 200 Feet (Elevated)".			
*12. Record meteorological stability class as determined using provided data per EAP-42.	Determines Stability Class "C", based on wind direction variation and 30 to 200 foot delta T. Records stability class by circling "C Neutral" in Notification Form Item #11.			
*13. Turn in notification form within required time.	Applicant turns in notification form within 15 minutes of start of JPM. **Record Stop Time:** ________________			

JPM ANSWER KEY

PART ONE GENERAL INFORMATION Page 1 of 1

NEW YORK STATE
UPSTATE RADIOLOGICAL EMERGENCY DATA FORM
PART 1 Notification # ________

"This is to report an incident at the James A. FitzPatrick Power Plant. Standby for confirmation." (Conduct roll call to include the following stations:) ☑ New York State Warning Point ☑ Oswego County Warning Point ☑ Nine Mile Point Unit #1 ☑ Nine Mile Point Unit #2

FROM: (CR, TSC, EOF, OTHER) ED Approval: Applicant Signature

GENERAL INFORMATION (Note: ○ When checked indicates change in status, NOT for place keeping)

Ø1 Message transmitted on: (Date) ________ at (Time) ______ 24 Hour Clock Via: A. RECS B. Other

- ☐ NY State : 518-292-2200
- ☐ Oswego Co.: 591-9150 or 911
- ☐ NMP # 1: 349-5201 or Control Room Hotline
- ☐ NMP # 2: 349-5202 or Control Room Hotline

Ø2. This is : A. An Actual Emergency B. An Exercise

Ø3 The Emergency Classification is:
A. UNUSUAL EVENT C. SITE AREA EMERGENCY E. EMERGENCY TERMINATED
B. ALERT D. GENERAL EMERGENCY F. Other________

Ø4. This Emergency Classification declared on: 05/12/2010 (date) at 0412 (time-24 hr clock)

○5. Release of Radioactive Materials due to the classified event:
A. No Release
B. Release BELOW federal limits Technical Specification
□ To Atmosphere □ To Water
C. Release ABOVE federal limits Technical Specification
☑ To Atmosphere □ To Water
D. Unmonitored release requiring evaluation

Ø6. The following Protective Actions are recommended to be implemented as soon as practicable:

A. NO NEED for PROTECTIVE ACTIONS outside the site boundary

B. EVACUATE and IMPLEMENT the KI PLAN for the following ERPAs and
All remaining ERPAs MONITOR the EMERGENCY ALERT SYSTEM
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

NOTE: OFFSITE AUTHORITIES SHOULD CONSIDER SHELTER-IN-PLACE + TAKE KI IF EVACUATION IS NOT FEASIBLE

C. SHELTER-IN-PLACE and IMPLEMENT the KI PLAN for the following ERPAs and
All remaining ERPAs MONITOR the EMERGENCY ALERT SYSTEM
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

Ø7. EAL # 5.1.4

Brief Event Description & Other Significant Information: High elevated radioactivity release from main vent stack

Ø8. Reactor Status: A. Operational B. Shutdown 05/12/2010 (date) at 0342 (time 24 hr clock)

Ø9. Wind Speed: A. 6.1 Miles/Hour at elevation 200 Feet (Elevated)
B. 3.8 Miles/Hour at elevation 30 Feet (Ground)

Ø10. Wind Direction: A. (From) 271 Degrees at elevation 200 Feet (Elevated)
B. (From) 261 Degrees at elevation 30 Feet (Ground)

Ø11. Stability Class Elevated: Unstable - A B C Neutral - D Stable - E F G

○12. Reported By - Communicator's name: ________ Telephone # ________

"(Name of Agency), Do you have any questions?"
☐ New York State Warning Point ☐ Oswego County Warning Point ☐ Nine Mile Point Unit #1 ☐ Nine Mile Point Unit #2
"James A. FitzPatrick Nuclear Power Plant out at (date, time)"

JPM ANSWER KEY

EAP-1.1 Rev. No. 64	OFFSITE NOTIFICATIONS	ATTACHMENT 1 Page 31 of 59

HANDOUT PAGE

TASK CONDITIONS:

At 0342 today (May 12, 2010), an earthquake with a magnitude of 0.08g caused a loss of offsite power.

Plant conditions:

- At 0342, a large break LOCA occurred.
- The reactor automatically scrammed.
- Multiple failures in safety systems caused the operators to conduct an emergency depressurization.
- RPV level dropped to minus (-) 9".
- Drywell pressure peaked at 55 psig.
- Secondary containment radiation levels increased to >EOP-5 Maximum Normal values in the Reactor Building 344 foot elevation.
- At 0352, a Site Area Emergency was declared with a release in progress based on an unisolable MSL break outside primary containment.
- At 0401, the initial offsite notification message was transmitted.
- ERO is staffing the emergency response facilities. Neither the TSC nor the EOF has been fully activated (the earthquake caused damage to local roads).

At 0412, (when you start the JPM) the following plant conditions exist:

- Drywell pressure has dropped rapidly to 3 psig.
- RPV level = minus (-) 9", going up slowly.
- You are the Emergency Director until relieved and have just declared an EAL upgrade to General Emergency at Time 0412.
- EAL upgrade based on radioactivity release as indicated on effluent radiation monitors, exceeding EAL threshold for >15 minutes.
- **NO** other General Emergency EAL thresholds have been reached.
- Stack flow rate = 12,000 cfm, with 1 SGT train and 1 stack dilution fan operating.

(continued on next page)

- EPIC "Rad Release" screen shows the following relating to the offsite release:

HIGH RANGE CONTINUOUS OFFSITE REL RATES			
LOCATION	RATES X	CF	= CI/SEC
STACK	11,700 MR/HR	CF	2.9718E+04 CI/SEC
TURB BLDG EXH	0 MR/HR	CF	0.0000E+00 CI/SEC
RADW BLDG EXH	0 MR/HR	CF	0.0000E+00 CI/SEC

- Meteorological conditions are provided in the following EDAMS report:

Emergency Meteorology Report

Last 15 Minute Emergency Meteorology Report Data

Data from Nine Mile Point Met System

Date: 5/12/10 Time (Local): 4:00:00

Elevated				Ground			
200'	Wind Dir From	271	(deg)	30'	Wind Dir From (Main)	261	(deg)
200'	Wind Speed	6.1	(mph)	30'	Wind Speed (Main)	3.8	(mph)
200'	Delta Temperature	-1.49	(deg F)	100'	Delta Temperature	-.56	(deg F)
	Stability Class	C			Stability Class	D	
30'	Air Temperature	45.6	(deg F)		Precipitation (15 min)	0.00	(in)

INITIATING CUE:

Complete the required E-plan upgrade notification form for the current conditions.

THIS IS A TIME-CRITICAL JPM.

James A. Fitzpatrick Generating Station

Job Performance Measure

Initiate RCIC in Pressure Control with Speed Control Failure

JPM Number: S-1

Revision Number: 1

Date: 1/13/10

Developed By:	**Bernard Litkett**	**4/08/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Initialize the simulator to IC-38.
2. Establish the following simulator conditions:
   A. Plant in a post scram condition with RPV level between 177" and 222.5"
   B. RPV pressure between 700 psig and 1000 psig and rising slowly
   C. Main Steam Isolation Valves closed.
3. Insert malfunction RC07 selected high speed failure
4. HPCI is not available.

TOOLS AND EQUIPMENT

None

TASK STANDARD:

Successfully initiate RCIC in the Pressure Control Mode re-establish control after a speed control failure.

TASK CONDITIONS:

1. Plant is in a post-scram condition with RPV level between 177" and 222.5".
2. RPV pressure is between 700 psig and 1000 psig and rising slowly.
3. Main Steam Isolation valves are closed.
4. HPCI is not available.

INITIATING CUE:

You are the RO, 'The CRS directs you to start the RCIC System for RPV pressure control. Maximize heat removal with RCIC to minimize SRV operations.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ______________________________
Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: Initiate RCIC in the Pressure Control Mode re-establish control after a speed control failure.

JPM Number: S-1

Revision Number: 0

K/A Number and Importance: KA 217000; A4.07; 3.9; 3.8

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 20 min. Actual Time Used: _______minutes

References:
1. NUREG 1123, 217000; A4.07; 3.9; 3.8
2. OP-19; D.2 Reactor Core Isolation Cooling System, Current Revision or posted attachment at panel 09-4.
3. EN-OP-115, Conduct of Operations, Paragraph 5.3 Manual Control of Automatic Systems

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ____________

Description: This JPM has the applicant initiate RCIC in the Pressure Control Mode using OP-19 or posted instructions at panel 09-4. Maximize heat removal with RCIC to minimize SRV operations.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of posted attachment, RCIC MANUAL START UP FOR RPV PRESSURE CONTROL; OP-19,D.2 or posted instructions at panel 09-4. **Caution**: Operating RCIC in pressure control mode with suction from the CST and CST level below 79.5 inches could cause vortexing.	The applicant locates and obtains from a controlled copy of OP-19; D.2. Applicant should verify that CST level is greater than 79.5 inches.			
2. (step D.2.1) Verify HPCI auto-initiation condition is clear	Applicant verifies that there is no HPCI automatic initiating condition present of high drywell pressure or low RPV water level. **EVALUATOR NOTE:** HPCI is not available			
3. (Step D.2.2) Verify Annunciator 09-4-0-32 RCIC LOGIC RX LVL HI is clear.	Applicant verifies Annunciator 09-4-0-32 RCIC LOGIC RX LVL HI is clear.			
4. (Step D.2.3) Align RCIC to CSTs as follows. a. Ensure open CST SUCT VLV 13MOV-18 b. Ensure closed the following valves: • INBD TORUS SUCT 13MOV-41 • OUTBD TORUS SUCT 13MOV-39	Applicant verifies: a. CST Suct VLV 13MOV-18 red – open indicating light is on. b. INBD TORUS SUCT 13MOV-41 – closed c. OUTBD TORUS SUCT 13MOV-39 - closed			
SIMULATOR BOOTH OPERATOR Insert malfunction RC07; RCIC speed control failure high.	**EVALUATOR NOTE:** This malfunction will cause RCIC speed control to fail to high speed stop if operating in automatic.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 5.(Step D.2.4)Open HPCI and RCIC TEST VLV TO CST 23MOV-24.	Applicant at Panel 09-3, opens 23MOV-24 by placing its control switch to the OPEN position.			
* 6. (Step D.2.5) Start VAC PMP 13P-3.	Applicant at Panel 09-4, starts pump 13P-3 by placing its control switch to the START position.			
* 7.(Step D.2.6) Open OIL CLR WTR SUPP 13MOV-132.	Applicant at Panel 09-4 opens 13MOV-132 by placing its control switch to the OPEN position.			
* 8. (Step D.2.7) Open TEST VLV TO CST 13MOV-30.	Applicant at Panel 09-4 opens 13MOV-30, by placing its control switch to the OPEN position.			
* 9. (Step D.2.8) Opens TURB STM SUPP VLV 13MOV-131. **CAUTION:** Operating RCIC at less than 2200 rpm could cause improper oil system operation and insufficient exhaust flow resulting in check valve banging or steam flow reversals.	Applicant at Panel 09-4, opens 13MOV-131, by placing its control switch to the OPEN position.			
* 10. (Step D.2.9) Verify RCIC Flow rate is approximately 400 gpm.	Applicant adjusts RCIC flow rate is approximately 400 gpm on 13FI-91.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: Applicant should recognize RCIC speed as failed high.	Applicant should inform the CRS of the failure of automatic speed control of the RCIC turbine; follow guidance of EN-OP-115 to place the RCIC turbine speed controller in manual. **Examiner Note:** The applicant may trip RCIC manually when speed fails high in order to protect the RCIC turbine. **Examiner Note: If applicant trips RCIC they need to call out to the field to have an NPO to reset the RCIC trip throttle valve. The booth operator will reset.** **Examiner Note**: **Role Play as CRS** to direct the RO candidate to take manual control and establish pressure control with RCIC. **For SRO** candidates ask them what they recommend for this situation.			
* 11. Applicant places RCIC flow controller in manual to control speed	Applicant places RCIC flow controller in manual to control speed			
12. (Step D.2.10) Ensure closed the following valves: • MIN FLOW VLV 13MOV-27. • STM LINE DRN TO RADW 13AOV-34 • STM LINE DRN TO RADW 13AOV-35	Applicant observes that the green – closed indicating light for: • 13MOV-27 is on. • 13AOV-34 is on. • 13AOV-35 is on.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE As RPV pressure lowers, indicated level on 02-3LI-283A may rise and result in an undesired trip at the red line high level trip value. Posted attachment 3 will give an equivalent trip level for 06LI-94/A/B/C indicators on panel 09-5.	**NOTE** As RPV pressure lowers, indicated level on 02-3LI-283A may rise and result in an undesired trip at the red line high level trip value. Posted attachment 3 will give an equivalent trip level for 06LI-94/A/B/C indicators on panel 09-5.			
CAUTION Operating RCIC at less than 2200 rpm could cause improper oil system operation and insufficient exhaust flow resulting in check valve banging or steam flow reversals.	**CAUTION** Operating RCIC at less than 2200 rpm could cause improper oil system operation and insufficient exhaust flow resulting in check valve banging or steam flow reversals.			
* 15.(Step D.2.11) **WHILE** controlling RPV pressure, maintain RCIC speed GREATER THAN 2200 rpm by throttling closed TEST VLV TO CST 13MOV-30.	At 09-4 Panel, monitors RCIC turbine speed on 13SPI-1 and throttles closed 13MOV-30 to ensure RCIC only runs below 2200 rpm during transient operation.			
* 16. (Step D.2.12) Throttle TEST VLV TO CST 13MOV-30, to obtain the desired RPV pressure control.	At Panel 09-4, throttles closed 13MOV-30 to begin the RPV depressurization by minimizing SRV operation.			
17. (Step D.2.13) Startup RHR Torus cooling per Section D of OP-13B, as soon as practicable.	**EVALUATOR**: Inform the applicant that another operator has been tasked with initiating Torus cooling.			
18. (Step D.2.14) Monitor Torus water temperature and level.	Observes EPIC or 09-3 Panel indicators to monitor Torus water temperature and level.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
19. (Step D.2.15) **WHEN** time permits, verify the following RCIC parameters: • Oil pump discharge pressure: 12 to 15 psig. • Oil temperature from cooler: **GREATER THAN** 60°F. • Oil temperature from the turbine bearings: **LESS THAN** 160°F	Applicant verifies the following RCIC parameters: • Oil pump discharge pressure: 12 to 15 psig. • Oil temperature from cooler: **GREATER THAN** 60°F. • Oil temperature from the turbine bearings: **LESS THAN** 160°F			
EVALUATOR: Terminate the task at this point.				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. Plant is in a post-scram condition with RPV level between 177" and 222.5".
2. RPV pressure is between 700 psig and 1000 psig and rising slowly.
3. Main Steam Isolation valves are closed.
4. HPCI is not available.

INITIATING CUE:

You are the RO, 'The CRS directs you to start the RCIC System for RPV pressure control. Maximize heat removal with RCIC to minimize SRV operations.

James A. Fitzpatrick Generating Station

Job Performance Measure

HPCI Full Flow Test

JPM Number: S-2

Revision Number: 1

Date: 02/04/2010

Developed By:	**B. Litkett**	**04/08/10**
	Author	**Date**
Validated By:	______________________	__________
	Facility Representative	**Date**
Review By:	______________________	__________
	Examiner	**Date**
Approved By:	______________________	__________
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Reset simulator to IC-41.
2. Place RHR in torus cooling mode IAW OP-13B, Section D.
3. Start GLAND SEAL CNDSR BLOWER 23P-140.
4. Throttle open TEST VALVE TO CST 23MOV-21 for 5 seconds.
5. Simulator operator override RED light ON, GREEN light OFF for TEST VALVE TO CST 23MOV-24. ZLO23AS9-1, GREEN and ZLO23AS9-2, RED.
6. Simulator operator override TEST VALVE TO CST 23MOV-24 handswitch to CLOSE. ZD123AS9. (Setup Steps #5 and #6 above simulate sheared valve stem. 23MOV-24 is closed, but indicates open.)
7. Simulator operator override MIN FLOW VALVE 23MOV-25 handswitch to CLOSE. ZD123AS8. (simulates switch problem which maintains min flow valve closed).
8. Override MIN FLOW VALVE 23MOV-25 lights

   a. HPZLO23SA8(1) minFlow bypass valve 23MOV-25 (green) - on

   b. HPZLO23SA8(2) minflow bypass valve 23MOV-25 (red) - off
9. Markup copy of ST-4N, HPCI QUICK-START, INSERVICE, AND TRANSIENT MONITORING TEST (IST), completed through Section 8.3. and Venting Torus per OP-37, Section E..
10. Initiate EPIC four-parameter plot TRHPCI.
11. Place 23VM-100 toggle switch to up position

TOOLS AND EQUIPMENT

- Marked-up copy of ST-4N, HPCI QUICK-START, INSERVICE, AND TRANSIENT MONITORING TEST (IST), completed through Section 8.3 and thru Step 8.4.6.
- Stopwatches

TASK STANDARD:

Start HPCI for testing in accordance with procedure. Identify the pump has inadequate (no) flow and trip HPCI before the pump is damaged.

TASK CONDITIONS:

1. The plant is operating at-power.
2. Field personnel are briefed and stationed to support performance of ST-4N.
3. One loop of RHR is in Torus Cooling Mode.
4. Another operator is monitoring and controlling Torus level and temperature.
5. Torus venting is in progress per OP-37 section E.

INITIATING CUE:

You are directed to continue performance of ST-4N, HPCI QUICK-START, INSERVICE, AND TRANSIENT MONITORING TEST (IST) at Step 8.4.7

JPM Title: HPCI Full Flow Test

JPM Number: S-2

Revision Number: 0

K/A Number and Importance:

206000 A2.06 - High Pressure Coolant Injection System. The ability to (a) predict the impacts of the following on the HIGH PRESSURE COOLANT INJECTION SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Inadequate system flow (3.3, 3.5)

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 15 min **Actual Time Used:**_______minutes

References:
1. NUREG 1123, Knowledge and Abilities Catalog for Nuclear Power Plant Operators - Boiling Water Reactors
2. ST-4N, HPCI QUICK-START, INSERVICE, AND TRANSIENT MONITORING TEST (IST)
3. OP-37; Venting the Torus per section E.

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ____________

Description: This JPM has the applicant start the HPCI pump for a full flow test from the Torus back to the CST through Test MOVs 24 and 21. Upon start, the flow will remain at 0 gpm due to MOV-24 sheared stem and a failure of the Min Flow MOV-25 to open. The applicant is expected to recognize the unacceptable operational conditions and trip the HPCI pump turbine before the pump is damaged.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain procedure	Applicant reviews completed sections of ST and begins implementation at Section 8.4			
* 2. (Step 8.4.7) IF RPV pressure is GREATER THAN OR EQUAL TO 165 psig, THEN open and time OUTBD STM SUPP VLV 23MOV-16. Opening time _____ secs (IST: 4.9 to 8.2)	Applicant opens 23MOV-16 and records open stroke time within limits of 4.9 to 8.2 seconds.			
3. (Step 8.4.8) Ensure open OUTBD STM SUPP VLV 23MOV-16.	Applicant verifies OUTBD STM SUPP VLV 23MOV-16 is open.			
4(Step 8.4.9) Verify the following: • EPIC-D-457 HPCI STM OUTB ISO-C indicates OPEN • EPIC-D-458 HPCI STM OUTB ISO-0 indicates NFC	Applicant calls up EPIC points and verifies D-457 OPEN and D-458 NFC			
Note: Loss of inventory to torus will cause hotwell level to trend down.				
5. (Step 8.4.10) Automatic or manual compensation may be required to maintain hotwell level.	No response required.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. (Step 8.4.11) Perform the following in any order, just before turbine startup: A. Initiate EPIC manual transient data capture per CDSO-3.600. B. IF RPV pressure is GREATER THAN OR EQUAL TO 165 psig, THEN direct I&C to start all installed transient recorder(s) at desired speed (normally 25 mm/sec).	**Evaluator Cue:** I&C has started all installed transient recorders at the desired speed. **Evaluator Cue:** Another operator has initiated data capture.			
7. (Step 8.4.12) **IF** test is being performed to satisfy SR 3.5.1.9, **THEN** RPV pressure must be >150 psig but ≤165 psig and HPCI steam supply pressure must be ≥135 psig.	No response required.			
8. * **(Step 8.4.13)** Simultaneously perform the following: • Open TURB STM SUPP VLV 23MOV-14. • Start AUX OIL PMP 23P-150. • **IF** RPV pressure is **GREATER THAN OR EQUAL TO** 165 psig, **THEN** Start stopwatches.	Applicant simultaneously opens 23MOV-14 and starts 23P-150. **Evaluator Cue:** 1.Operators are stationed with stop watches. 2. Evaluator records time HPCI was started. **HPCI start time** ________			
9. (Step 8.4.14) **IF** RPV pressure is **GREATER THAN OR EQUAL TO** 970 psig, **THEN** record null voltage for approximately 1 to 2 minutes during turbine startup (cold condition).	**Evaluator Cue**: I&C are recording voltage.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
10. ***(Step 8.4.15)** Verify the following: • Turbine speed stabilized after startup transient and remained **LESS THAN** 4200 rpm during the startup transient (23SPI-161 or EPIC TRHPCI speed trace) • 23HOV-1 opens smoothly by local observation. • Turbine vibration is **LESS THAN OR EQUAL TO** limits (0.385 IPS) • Turbine accelerates smoothly (by observing TURB SPEED 23SPI-161 OR EPIC TRHPCI speed trace). • HPCI pump discharge flow rate stabilizes **at GREATER THAN OR EQUAL TO** 3400 gpm on 23FI-108-1 • MIN FLOW VLV 23MOV-25 is closed. • STM LINE DRN TO RADW 23AOV-43 is closed. • STM LINE DRN TO RADW 23AOV-42 is closed.	Applicant notes HPCI pump discharge flow rate does **NOT** stabilize at $\geq$3400 gpm **AND** Min Flow Valve 23MOV-25 is closed. **CUE**: If applicant informs CRS that pump is running without adequate flow, then acknowledge the report. **EXAMINER NOTE**: Applicant may trip the HPCI pump at this time. If so, **terminate the JPM.**			
11. Acknowledge alarms.	Applicant acknowledges alarms and refers to 09-3-3-15 HPCI PMP FLOW LO			
12. (ARP Step 1) Verify open MIN FLOW VLV 23MOV-25.	Applicant determines MOV-25 is not open.			
13. (ARP Step 2) Verify expected turbine speed and pump discharge pressure.	Applicant determines speed is normal and pump discharge pressure is high.			
14. (ARP Step 3) IF HPCI initiation signal is present, THEN ensure open: • INJ VLV 23MOV-19 • PMP DISCH VLV 23MOV-20	No response required. HPCI initiate signal not present.			
15. * **(ARP Step 4)** Consider securing HPCI if flow can not be restored.	Applicant trips HPCI pump.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE TO EXAMINER: 1. **IF** applicant stops HPCI pump, **THEN TERMINATE THE JPM**. 2. **IF** applicant does **NOT** stop HPCI pump, **THEN ALLOW JPM TO CONTINUE** to provide opportunity for applicant to stop HPCI pump before it becomes damaged from inadequate flow. JPM should be terminated after several minutes of pump operation without flow.				
NOTE TO EXAMINER: The following steps may be performed **if applicant does not immediately recognize need to trip HPCI pump.**				
16. (Step 8.4.16) IF RPV pressure is GREATER THAN OR EQUAL TO 165 psig, THEN perform the following in any order or concurrently: A. WHEN all parameters have stabilized on EPIC plot TRHPCI, AND AT LEAST two minutes have elapsed, direct I&C to stop all installed transient recorder(s). B. Record the following: • 23HOV-1 response time • 23HOV-1 opening time (IST: 15.4 to 25.6 secs) • 23MOV-14 opening time (IST: 6.4 to 10.5 secs)	**EVALUATOR CUE**: I&C has stopped recorders. Times are as follows: • 23HOV-1 response time = 19.3 sec • 23HOV-1 opening time = 17.4 sec • 23MOV-14 opening time = 8.1 sec			
NOTE 1: TRHPCI printout is required within 15 minutes of turbine startup to ensure starting transient is included on plot.				
NOTE 2: Test may be continued before the next step is complete.				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
17. (Step 8.4.17) **IF** RPV pressure is **GREATER THAN OR EQUAL TO** 165 psig, THEN I&C or Engineering review recorder trace and verify the following: • HPCI flow rate reached **GREATER THAN OR EQUAL TO** 3400 gpm within 60 seconds of initiation. • HPCI flow rate remained **GREATER THAN OR EQUAL TO** 3400 gpm after 60 seconds from initiation and through stabilization.	**EVALUATOR CUE:** I&C is reviewing data.			
NOTE: HPCI response time is measured from Step 8.4.13 until flow rate reaches and remains GREATER THAN OR EQUAL TO 3400 gpm. • HPCI response time from recorder trace is ***LESS THAN*** 60 seconds.				
18. (Step 8.4.18) **IF** RPV pressure **is LESS THAN** 165 psig, **THEN** review EPIC TRHPCI trace and verify the following: • HPCI flow rate reached **GREATER THAN OR EQUAL TO** 3400 gpm. • HPCI flow rate remained **GREATER THAN OR EQUAL TO** 3400 gpm through stabilization.	No response required. RPV pressure is greater than 165 psig.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CAUTION Failure to closely monitor HPCI pump discharge pressure could result in exceeding HPCI piping design pressure of 1320 psig.				
19. (Step 8.4.19) Establish HPCI pump discharge pressure as follows: A. **IF** RPV pressure is **GREATER THAN OR EQUAL TO** 970 psig, **THEN** throttle TEST VLV TO CST 23MOV-21 to establish **BOTH** of the following conditions: • HPCI turbine speed **GREATER THAN** 2100 rpm on TURB SPEED 23SPI-161 **AND** • HPCI pump discharge pressure **GREATER THAN OR EQUAL TO 1250** psig on DISCH PRESS 23PI-109				
20. (Step 8.4.19 continued) B. **IF** RPV pressure is **LESS THAN** 970 psig, ...	Not applicable. RPV pressure is greater than 970 psig.			

EXAMINER:

The pump has been running without flow for several minutes. Terminate the task at this point.

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is operating at-power.
2. Field personnel are briefed and stationed to support performance of ST-4N.
3. One loop of RHR is in Torus Cooling Mode.
4. Another operator is monitoring and controlling Torus level and temperature.
5. Torus venting is in progress per OP-37 section E.

INITIATING CUE:

You are directed to continue performance of ST-4N, HPCI QUICK-START, INSERVICE, AND TRANSIENT MONITORING TEST (IST) at Step 8.4.7.

James A. Fitzpatrick Generating Station

Job Performance Measure

Reactor Scram with a Control Rod Insertion Failure

JPM Number: S-3

Revision Number: 1

Date: 1/13/10

Developed By:	**Bernard Litkett**	**4/08/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ______________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):
1. Rev 0

JPM Setup Instructions:
Reset the simulator to appropriate IC-48, Reactor Power should be approximately 5%.
Insert Malfunction (RD13; 18:27) for Stuck Rod for a Full-out Control Rod 18:27.

TOOLS AND EQUIPMENT
1. Key to bypass RWM

TASK STANDARD:
Insertion of Manual Reactor Scram with a Control Rod insertion failure

TASK CONDITIONS:
1. The reactor is operating near 5% reactor power and conditions exist that require a reactor scram.

INITIATING CUE:
You are the RO. The CRS directs you to manually scram the reactor and carry out the actions of AOP-1.

Information for Evaluator's Use:
UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ____
Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: Insertion of Manual Reactor Scram with a Control Rod insertion failure

JPM Number: S-3

Revision Number: 0

K/A Number and Importance: KA 212000 A4.01 4.6 (SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: YES

Time Critical: No

Estimated Time to Complete: 20 min. Actual Time Used: _______minutes

References:
1. NUREG 1123, 212000 A4.01 4.6 (SRO)
2. AOP-1; Reactor Scram, Rev.43

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**
Comments:____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ____________

Description: This JPM will require insertion of Manual Reactor Scram with a Control Rod insertion failure

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 1.(Step E.1) If a manual scram is required, THEN depress the following pushbuttons: • MANUAL SCRAM A • MANUAL SCRAM B	Applicant depresses the manual scram pushbuttons. NOTE: The applicant should observe: Annunciators 09-5-1-13, 14, RPS MAN SCRAM alarms. SCRAM GROUPS 1, 2, 3, 4 lights are off.			
* 2. (Step E.2) Place RX MODE switch in SHUTDOWN.	Applicant places RX MODE switch in the SHUTDOWN position.			
NOTE: The immediate operator actions in Steps 3 through 7 may be performed concurrently.				
* 3. (Step E.3) Fully insert the IRMs and SRMs. **NOTE:** Since low power IRMs are already inserted.	Applicant select and drive in fully all IRMs and SRMs. **NOTE:** Since low power IRMs are already inserted.			
4. (Step E.4) Verify reactor power is rapidly lowering using any of the following nuclear instrumentation responses: • APRMs recorders or downscale indicating lights • Fully inserted IRMs trending down (recorder selector switch to IRM position) • Fully inserted SRMs trending down	Applicant verifies power rapidly lowering using one of the following: • APRM recorders indicate downscale and/or observing that the APRM downscale lights are lit • Fully inserted IRMs trending down for those IRMs selected on the recorder • Fully inserted SRMs trending down on recorder or meters			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 5. (Step E.5) Verify the reactor will remain shutdown under all conditions without boron using one or more of the following methods: • Green FULL IN light on full core display (preferred method) • Rods In Monitor Program indication (EPIC Screen RIMP) • SPDS plant display control rods full-in indication • Four rod display notch position indication • EPIC full core rod scan notch position	Applicant using one or more of the methods listed observes that one control rod is full out, all others are full in and informs CRS that one rod is full out.			
6. (Step E.6) If multiple rods are withdrawn, then initiate ARI.	Applicant observes that only 1 rod is full out, all others are full in. **NOTE:** It is plausible that the applicant could initiate ARI due to the rod not full in. This would however, be contrary to the guidance in AOP-1. With the RD13 simulator malfunction inserted the rod will not insert.			
7. (Step E.7) Ensure closed SDIV vent and drain valves.	Applicant observes SDIV vent and drain valve position indicating lights. Verify that the green (closed) lights come on after the red (open) indicating lights go off.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
8. (Step E.8) WHEN APRM's are downscale, THEN perform the following: a. Ensure Main Turbine is tripped. b. Verify 4 KV loads transfer to reserve power.	Applicant ensure main turbine is tripped by observing: a. • Annunciator 09-5-2-9 MAIN TURB TRIP is in alarm • Amber (tripped) light is on at EHC control on 09-5 Panel • Position indicating meters for main turbine SV's, CV's and CIV's indicate 0% at EHC control. b. • Verify 4KV loads transferred by observing greater than 3.9 KV on: • Bus 10500 volt meter on Panel 09-8. • Bus 10600 voltmeter on Panel 09-8.			
9. (Step E.9) If circulating water pumps are tripped, then ensure closed MSIV's.	Applicant observes circulating water pumps A and/or B running with red indicating light on.			
10. (Step E.10) If both recirc pumps are tripped, then minimize RPV bottom head cooldown per Attachment 6 of AOP-1. **<u>EVALUATOR CUE</u>**: If recirc pumps have tripped, inform applicant that Attachment 6 of AOP-1 will be performed by another operator	Applicant observes Recirc pumps status by checking red/green light indication and/or pump flows. **<u>EVALUATOR CUE</u>**: If recirc pumps have tripped, inform applicant that Attachment 6 of AOP-1 will be performed by another operator.			
11. (Step F.1.1) IF any control rod **<u>IS NOT</u>** full in, AND **<u>NO</u>** EOP-3 entry condition is present, THEN perform attachment 4 or 5 as directed by the SM or CRS. **<u>EVALUATOR CUE</u>**: When asked, CRS directs inserting control rod with RMCS applicant selects attachment 4.	**<u>EVALUATOR CUE</u>**: When asked, CRS directs inserting control rod with RMCS. Applicant selects attachment 4.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 12. (Attachment 4, step 2) Place RWM keylock switch in BYPASS in RWM console.	Applicant places RWM keylock switch in BYPASS.			
13.(Attachment 4, step 3) Reset Reactor Scram as follows: If ARI has actuated then reset ARI. **EVALUATOR CUE**: ARI should not have actuated during the scram, but if it did then reset it per Attachment 4, step 3	**EVALUATOR CUE**: ARI should not have actuated during the scram, but if it did then reset it per Attachment 4, step 3			
14. (Attachment 4, step 3.b) Verify Annunciator 09-5-1-33 MODE SW IN SHUTDOWN TRIP BYPASSED is in alarm.	Applicant verifies 09-5-1-33 is in alarm.			
15. (Attachment 4, step 3.c) Place SDIV HI LVL TRIP keylock switch in BYPASS.	Applicant places SDIV HI LVL TRIP keylock switch in BYPASS.			
16. (Attachment 4, step 3.d) Place RX SCRAM RESET switch to group 2 & 3 then to 1 & 4, spring return to NORM. **CAUTION:** If only RPS Group 1 and 4 is reset, SDIV vent and drain valves will open, creating a drain path from the RPV, through the RPS Group 2 and 3 scram outlet valves, to the Reactor Building equipment drain sumps.	Applicant places RX SCRAM RESET switch in group 2 & 3, then to group 1 & 4, spring return to NORM.			
17. (Attachment 4,step 3.e) Verify RPS A and B Scram Group 1, 2, 3, and 4 lights are on.	Applicant verifies RPS A and B Scram Groups 1, 2, 3, and 4 lights are on.			
18. (Attachment 4,step 3.f) Verify closed all scram inlet and outlet valves using one or a combination of the following methods: • Blue SCRAM lights on FULL CORE DISPLAY • Local valve position indication	Applicant verifies all blue SCRAM lights are out on FULL CORE DISPLAY.			
19. (Attachment 4,step 3.h) Verify open SDIV vent and drain valves.	Applicant verifies red open lights are on and green closed lights are out for SDIV vent and drain valves at panel 09-5.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
20a. (Attachment 4,step 3.i) When the following annunciators are clear: • 09-5-1-1 SDIV A or B HI LVL TRIP • 09-5-1-44 SDIV A or B NOT DRAINED Place SDIV HI LVL TRIP keylock switch in NORMAL.	a. Applicant observes that annunciators 09-5-1-1 and 09-5-1-44 are clear. Applicant places SDIV HI LVL TRIP keylock switch in NORMAL.			
EVALUATOR CUE: The next step may be performed after rod insertion as there is only one rod out.				
21. (Attachment 4,step 3.j) Perform post scram reset control rod position check per section G.2. as soon as practicable.	Goes to section G.2 for post scram reset control rod position check.			
* 22. (Attachment 4, step 6) • Raise CRD drive water differential pressure using one or more of the following methods in the listed order of priority: **CAUTION:** Drive water differential pressure is limited to less than 600 psid with reactor pressure below 650 psig to prevent damage to drive mechanism seals. **EVALUATOR CUE:** If asked, inform applicant to use the first priority option. Other options may be selected and utilized. • Close CRD DRV WTR PRESS VLV 03MOV-20 • Raise CRD System flow using CRD FLOW CNTRL 03FIC-301 • Start second CRD pump • Close 03CRD-56 (CRD charging water supply header isol valve) • Close the following valves: • 03CRD-177A (CRD water pump A min flow isol valve) • 03CRD-177B (CRD water pump B min flow isol valve)	Applicant closes or throttles closed 03MOV-20 without exceeding 600 psid drive water D/P to establish elevated drive water D/P. **EVALUATOR CUE:** If asked, inform applicant to use the first priority option. Other options may be selected and utilized. **EVALUATOR NOTE:** 03MOV -20 is throttled but indicates closed.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 23.(Attachment 4, step 7) Attempt to insert each withdrawn control rod in the order specified in Attachments 1,2 and 4 as follows: a. Select control rod on ROD SEL matrix. b. Insert control rod using one of the following switches: • ROD MOVEMENT CNTRL • ROD EMERG IN NOTCH OVERRIDE	Applicant selects stuck rod on ROD SEL matrix. • Inserts rod to full in using either the ROD MOVEMENT CNTRL held in the IN position. OR • Holding the ROD EMERG IN NOTCH OVERRIDE IN EMERG ROD IN.			
24. Reports that all rods are full in.	Reports all rods are full in.			
EVALUATOR: **Terminate the task after reports all rods are full in.**				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:
1. The reactor is operating near 5% reactor power and conditions exist that require a reactor scram.

INITIATING CUE:
You are the RO. The CRS directs you to manually scram the reactor and carry out the actions of AOP-1.

James A. Fitzpatrick Generating Station

Job Performance Measure

SPRAY THE DRYWELL WITH RHRSW (ALTERNATE PATH)

JPM Number: S-4

Revision Number: 2

Date: 1/20/10

Developed By:	**Bernard Litkett**	**4/08/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Simulator should be reset to an IC-46 that has the following conditions:
    - Reactor level is at TAF
    - DW spray is required with temperature and pressure within DWSIL
    - RHR Pump 'A' and 'C' is not available for DW spray. RHR 'A' and 'C' breakers are racked out. (RH42A - RHR A racked out and RH42C – RHR C racked out.)
    - Insert RH12 TORUS OUTLET VLV (151B) TO RHR LOOP B to close valve and use override to have the valve indicate open.
      (OL-RHZL010151B(1) Mimic RHR Suct from JP (green light off)- reset
      (OL-RHZ1010151B(2) Mimic RHR Suct from JP (red light on) - reset

TOOLS AND EQUIPMENT

1. None

TASK STANDARD:

Due to RHR strainers clogged, drywell sprays will be performed using RHRSW as alternate containment spray in service IAW EP-14; Rev. 3

TASK CONDITIONS:

1. A steam leak in the drywell has occurred and a reactor scram was performed.
2. The CRS has implemented the appropriate EOPs.
3. ESW is in service.
4. Suppression chamber pressure is greater than 15 psig.
5. 'A' loop of RHR was OOS for maintenance prior to the transient and is unavailable.
6. Both reactor Recirc pumps are shutdown and all drywell cooling fans have been stopped.
7. Drywell sprays are required for High Drywell temperature IAW with the EOPs.
8. RPV level is being restored with HPCI.
9. Torus Spray Valve 10MOV-38B has failed to open.

INITIATING CUE:

You are the RO. The CRS has directed you to lineup to spray the Drywell using 'B' and 'D' RHR pumps.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ____

Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: SPRAY THE DRYWELL WITH RHRSW (ALTERNATE PATH)

JPM Number: S-4

Revision Number: 2

K/A Number and Importance: KA 226001 A2.15 3.6, 3.8

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: YES

Time Critical: No

Estimated Time to Complete: 20 min. Actual Time Used: _______minutes

References:

1. NUREG 1123, 226001 A2.15 3.6, 3.8
2. Posted instructions for Drywell Spray startup. OP-13B, RHR Containment Control, Attachment 3.
3. EP-14,Section 5.2 Alternate Containment Sprays, Rev. 3

EVALUATION SUMMARY:

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ___________

Description: This JPM will have the applicant place drywell spray using 'B' and 'D' RHR pumps in service IAW the posted attachment but due to strainer clogging will have to re-align and spray the Drywell with alternate containment sprays - RHRSW loop 'B' cross-tie containment spray (drywell) in service.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Applicant obtains posted instructions for Drywell Spray	Applicant obtains posted instructions for Drywell Spray			
2. Ensure the following components are tripped: RWR Pumps • 02-2P-1A • 02-2P-1B Drywell Cooling Fans • 68FN-2A, B, C, and D • 68FN-4A, B, C, and D	Applicant ensures the following components are tripped: RWR Pumps • 02-2P-1A • 02-2P-1B Drywell Cooling Fans • 68FN-2A, B, C, and D • 68FN-4A, B, C, and D			
3. Applicant verifies drywell temperature and pressure are within the Drywell Spray Initiation Limit	Applicant verifies drywell temperature and pressure are within the Drywell Spray Initiation Limit.			
* 4. IF RPV water level is **LESS THAN** 10 inches on fuel zone water level indication, AND the EOPs permit diverting LPCI flow, **THEN** place DW & Torus Spray VLV OVERRIDE OFFUEL ZONE LVL10A-S18A(B) keylock in **MANUAL OVERRD**	Applicant verifies IF RPV water level is **LESS THAN** 10 inches on fuel zone water level indication, AND the EOPs permit diverting LPCI flow, **THEN** place DW & Torus Spray VLV OVERRIDE OFFUEL ZONE LVL10A-S18A(B) keylock in **MANUAL OVERRD**			
* 5. Place SPRAY CNTRL 10A-S17B switch to MANUAL, spring return to normal.	Applicant places SPRAY CNTRL 10A-S17B switch to MANUAL, spring return to normal.			
6. Verify white SPRAY PERM 10A-DS67B light is on.	Applicant verifies white SPRAY PERM 10A-DS67B light is on.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CAUTION Starting an RHR pump in an RHR loop that is not full could result in severe water hammer and equipment damage. RHR piping shall be full prior to manually starting an RHR pump in that loop.	**CAUTION** Starting an RHR pump in an RHR loop that is not full could result in severe water hammer and equipment damage. RHR piping shall be full prior to manually starting an RHR pump in that loop.			
7. Ensure available RHR pumps in RHR Loop B are running: • RHR PMP 1OP-3B • RHR PMP 1OP-3D	Applicant ensures available RHR pumps in RHR Loop B are running: • RHR PMP 1OP-3B • RHR PMP 1OP-3D			
* 8. Open DW SPRAY OUTBD VLV 10MOV-26B.	Applicant opens DW SPRAY OUTBD VLV 10MOV-26B.			
SIMULATOR BOOTH OPERATOR Insert RH12 TORUS OUTLET VLV (151B) TO RHR LOOP B to close valve and use override to have the valve indicate open. Malfunction to clog RHR Suction strainers and produce indications of severe cavitation due to insufficient NPSH will be evident once flow is commenced.	**SIMULATOR BOOTH OPERATOR** Insert RH12 TORUS OUTLET VLV (151B) TO RHR LOOP B to close valve and use override to have the valve indicate open. Malfunction to clog RHR Suction strainers and produce indications of severe cavitation due to insufficient NPSH will be evident once flow is commenced.			
* 9. Throttle DW SPRAY INBD VLV 10MOV-31B to establish desired drywell spray flow rate.	Applicant throttles DW SPRAY INBD VLV 10MOV-31B to establish desired drywell spray flow rate.			
10. **WHEN** RHR Loop B flow is **GREATER** THAN 1500 gpm, ensure closed MIN FLOW VLV 10MOV-16B	Applicant ensures **WHEN** RHR Loop B flow is **GREATER** THAN 1500 gpm, ensure closed MIN FLOW VLV 10MOV-16B			
* 11. Applicant should recognize RHR strainer are clogged by fluctuating motor amps and discharge pressure.	Applicant should recognize RHR strainer are clogged by fluctuating motor amps and discharge pressure.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CAUTION Blockage of ECCS pump suction strainers could occur due to debris in the Torus. Within the latitude provided by EOPs to restore and maintain parameters within specified limits, potential mitigative actions may include: • Minimizing ECCS flow or removing affected ECCS pumps from service • Alternating ECCS pumps from one division to another, if available. • Shifting ECCS pump suction to another source,if available • Operation of alternate injection sources	**CAUTION** Blockage of ECCS pump suction strainers could occur due to debris in the Torus. Within the latitude provided by EOPs to restore and maintain parameters within specified limits, potential mitigative actions may include: • Minimizing ECCS flow or removing affected ECCS pumps from service • Alternating ECCS pumps from one division to another, if available. • Shifting ECCS pump suction to another source,if available • Operation of alternate injection sources			
* 12. Ensure the following RHR pumps are stopped: • RHR PMP 10P-3B • RHR PMP 10P-3D	Applicant ensures pumps are stopped. ***EVALUATOR:* Observe applicant identifies the pumps are stopped.**			
13. Applicant ensures **WHEN** RHR Loop B flow is LESS THAN 1500 gpm, ensure open MIN FLOW VLV 10MOV-16B	Applicant ensures **WHEN** RHR Loop B flow is LESS THAN 1500 gpm, ensure open MIN FLOW VLV 10MOV-16B			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 14. Applicant should recognize the need to use Alternate Drywell Spray ***EVALUATOR CUE FOR SRO:*** **If necessary ask applicant to recommend a course of action.** ***EVALUATOR CUE FOR RO:*** **If necessary ask applicant What alternate methods are available for to spray the drywell?** **1. RHRSW** **2. FIRE PROTECTION**	Applicant should recognize the need to use Alternate Drywell Spray; EP-14 ***EVALUATOR CUE:*** ***Once the RO or SRO states RHRSW is an alternate method for drywell spray, state "Use 'B' RHRSW to spray the drywell.*** ***EVALUATOR NOTE:*** ***Applicant may perform step F.8 of OP-13B; RHR Loop B shutdown from Torus Cooling or Containment Spray Mode before going to EP-14.***			
15. Obtain a controlled copy of procedure and selects the correct section to perform.	Obtains a controlled copy of EP-14 and selects section 5.2 to perform.			
16. Reviews precautions, prerequisites and special instructions associated with the procedure: • This procedure shall be used only when no RHR pumps are available for containment spray. • This procedure secures LPCI injection in order to maximize spray flow. The SM or CRS will determine the priority between containment spray or RPV injection. • If using only one RHR subsystem, drywell and torus should be sprayed individually to maximize spray flow. • The minimum drywell spray flow for an effective spray pattern is 5260 gpm for RHR Subsystem A and 4420 gpm for RHR Subsystem B. Minimum torus spray flow for an effective spray pattern is 600 gpm. • Fire water cross-tie spray flow is approximately 1000 gpm. Using this method for drywell spray might not achieve the desired effect.	Reviews applicable section of the procedure and notes requirements for Drywell spray flow rate.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
17. Verify the following RHR pumps are stopped: • RHR PMP 10P-3B • RHR PMP 10P-3D	Applicant verifies pumps are stopped. ***EVALUATOR:*** ***Observe applicant identifies the pumps are stopped.***			
18. Ensure closed at least one of the following valves: • DW SPRAY OUTBD VLV 10MOV-26B • DW SPRAY INBD VLV 10MOV-31B	Applicant ensures at least one of the valves is closed. ***EVALUATOR:*** ***Observe applicant identifies the valves are closed.***			
19. Ensure closed at least one of the following valves: • RHR TEST TORUS CLG & SPRAY 10MOV-39B • TORUS SPRAY INBD VLV 10MOV-38B	Applicant ensures at least one of the valves is closed. ***EVALUATOR:*** ***Observe applicant identifies the valves are closed.***			
20. Ensure closed at least one of the following valves: • RHR TEST TORUS CLG & SPRAY 10MOV-39B • RHR TEST & TORUS CLG 10MOV-34B	Applicant ensures at least one of the valves is closed. ***EVALUATOR:*** ***Observe applicant identifies the valves are closed.***			
21. Ensure closed at least one of the following valves: • LPCI INBD INJ VLV 10MOV-25B • LPCI OUTBD INJ VLV 10MOV-27B	Applicant ensures at least one of the valves is closed. ***EVALUATOR:*** ***Observe applicant identifies the valves are closed.***			
* 22. Ensure available RHRSW pumps in RHRSW Loop B are running: • RHRSW PMP 10P-1B • RHRSW PMP 10P-1D	Applicant ensures pumps are started. ***EVALUATOR:*** ***Observe applicant starts the pumps.***			
* 23. Ensure RHRSW DISCH VLV FROM HX B 10MOV-89B is throttled to establish 2500 to 4000 gpm per RHRSW pump.	Applicant throttles HX discharge valve 5000 to 8000 gpm on 10FI-132B. ***EVALUATOR:*** ***Observe applicant throttles valve to required flow.***			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
24. **NOTE:** Steps 5.2.8 and 5.2.9 may be performed and repeated in any order to alternate between drywell and torus spray.	Reviews NOTE and requirements for alternating between drywell and torus as necessary. ***<u>EVALUATOR:</u> Acknowledge if applicant states that the order may be alternated as necessary.***			
* 25. **IF** drywell spray is required, **THEN** perform the following: • Ensure open the following valves: o RHRSW to RHR 10MOV-148B o RHRSW to RHR 10MOV-149B	Applicant opens the valves. o RHRSW to RHR 10MOV-148B o RHRSW to RHR 10MOV-149B			
26. Verifies the following are tripped: o RWR PMP 02-2P-1A o RWR PMP 02-2P-1B o DW CLG FN 68FN-2A o DW CLG FN 68FN-2B o DW CLG FN 68FN-2C o DW CLG FN 68FN-2D o DW CLG FN 68FN-4A o DW CLG FN 68FN-4B o DW CLG FN 68FN-4C o DW CLG FN 68FN-4D	Applicant verifies the pumps and fans are tripped or trips them. ***<u>EVALUATOR:</u>*** This step was previously performed.			
* 27. Verify drywell temperature and pressure are within the Drywell Spray Initiation Limit.	Applicant verifies the DWSIL within the curve. ***<u>EVALUATOR:</u> Acknowledge when applicant states that the drywell temperature and pressure are within the DWSIL.***			
28. IF RPV water level is less than 10 inches on fuel zone water level indication, THEN place DW & TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18B keylock switch in MANUAL OVERRD.	Applicant verifies the RPV level is less than TAF and places keylock switch in OVERRIDE. ***<u>EVALUATOR:</u>*** This step was previously performed			
<u>NOTE:</u> The following step must be performed each time drywell spray is initiated or re-initiated.	Applicant reviews NOTE and requirements for DW spray initiation.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*29. Place SPRAY CNTRL 10A-S17B switch to MANUAL, spring return to normal.	Applicant places spray control switch to MANUAL.			
30. Verify white SPRAY PERM 10A-DS67B light is on.	Applicant verifies SPRAY PERM light is ON.			
31. Ensure closed RHRSW DISCH VLV FROM HX A 10MOV-89B.	Applicant ensures RHRSW DISCH VLV FROM HX A 10MOV-89B is closed.			
* 32. Ensure open DW SPRAY OUTBD VLV 10MOV-26B.	Applicant ensures DW SPRAY OUTBD VLV 10MOV-26B is open.			
* 33. Throttle DW SPRAY INBD VLV 10MOV-31B to establish desired flow while maintaining RHRSW pump motor current **LESS THAN OR EQUAL TO** max normal amps.	Applicant throttles DW SPRAY INBD VLV 10MOV-31B spray control switch to establish desired flow and pump ampere relationship.			
EVALUATOR: Terminate the task at this point				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. A steam leak in the drywell has occurred and a reactor scram was performed.
2. The CRS has implemented the appropriate EOPs.
3. ESW is in service.
4. Suppression chamber pressure is greater than 15 psig.
5. 'A' loop of RHR was OOS for maintenance prior to the transient and is unavailable.
6. Both reactor Recirc pumps are shutdown and all drywell cooling fans have been stopped.
7. Drywell sprays are required for High Drywell temperature IAW with the EOPs.
8. RPV level is being restored with HPCI.
9. Torus Spray Valve 10MOV-38B has failed to open.

INITIATING CUE:

You are the RO. The CRS has directed you to lineup to spray the Drywell using 'B' and 'D' RHR pumps.

James A. Fitzpatrick Generating Station

Job Performance Measure

Manual Isolation and Verification of Reactor Building Ventilation System

JPM Number: S-5

Revision Number: 1

Date: 1/13/10

Developed By:	**Bernard Litkett**	**4/08/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Reset to IC-114 or any IC that supports isolating Reactor Building Ventilation.
2. A copy of OP-51A; Reactor Building Ventilation, section G.1
3. A copy of OP-20; Standby Gas treatment, section D.1

TOOLS AND EQUIPMENT

1. None

TASK STANDARD:

Manual Isolation and Verification of Reactor Building Ventilation System

TASK CONDITIONS:

1. Reactor Building Ventilation manual isolation is required to support a maintenance activity.
2. Standby Gas Treatment System must be started to support the manual isolation of the Reactor Building.

INITIATING CUE:

You are the RO. The CRS has directed you to manually isolate the Reactor Building Ventilation System per OP-51A.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ______________________________
Job Title: ☐ NLO ☒ RO ☒ SRO ☐ STA ☐ SRO Cert

JPM Title: Manual Isolation and Verification of Reactor Building Ventilation System

JPM Number: S-5

Revision Number: 0

K/A Number and Importance: KA 288000 K4.02 3.6, 3.8

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: ________minutes

References:
1. NUREG 1123, 288000 K4.02 3.6, 3.8
2. Reactor Building and Ventilation System OP-51A; Sections G.1 and G.2, Rev.48
3. Standby Gas Treatment System OP-20: section D.1, Rev. 36

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____
____
____
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

Description: This JPM has the applicant perform a manual isolation and verification of reactor building ventilation system

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure OP-51A; Sections G.1 and G.2 and OP-20. **EVALUATOR NOTE:** **Applicant may use hard card for OP-20. This jpm was written for OP-20.**	The applicant determines where to obtain a controlled copy of OP-51A and OP-20. (Control Room, Merlin) **EVALUATOR NOTE:** **Applicant may use hard card for OP-20. This jpm was written for OP-20.**			
2. Review precautions associated with the procedure	Applicant review Section C of the procedure and notes precaution relating to changing building ventilation line-ups.			
3. Selects the correct section to perform the task.	Applicant reviews Section G of the procedure and selects Section G.1 for Manual Isolation.			
4. Ensure SBGT is running per OP-20.	Applicant obtains a current copy of OP-20 and reviews precautions associated with the operation of the SBGT System.			
5. Selects the correct section to perform the task. **EVALUATOR CUE:** Act as the CRS/SNO and when asked, order the "A" SBGT Train started. If asked, inform operator that no painting, welding or smoke fumes have been in the Reactor Building in the last 24 hours.	Applicant reviews the procedure and selects Section D.1 for the "A" SBGT Train. **EVALUATOR CUE:** Act as the CRS/SNO and when asked order the "A" SBGT Train started. If asked, inform operator that no painting, welding or smoke fumes have been in the Reactor Building in the last 24 hours.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 6. Ensure **OPENS** the following: ABOVE EL 369' SUCT. 01-125MOV-11	Applicant at the 09-75 panel locates the control switch and **OPENS** the following valve: 01-125MOV-11			
* 7.Ensure **OPEN** "A" Inlet Valve: 01-125MOV-14A	Applicant locates and **OPENS** 01-125MOV-14A			
8. Verify the following system response on startup: • White light for AIR HTR 01-125E-5A is **ON.** • Red light for AIR HTR 01-125E-5A is **ON.** • TRAIN A CLG VLV 01-125MOV-100A is **CLOSED.** • FN DISCH 01-125MOV-15A is **OPEN.** • TRAIN A FN 01-125FN-1A is running.	Applicant observes and verifies component operation during the startup of the "A" SBGT Train • White light for AIR HTR 01-125E-5A is **ON.** • Red light for AIR HTR 01-125E-5A is **ON.** • TRAIN A CLG VLV 01-125MOV-100A is **CLOSED.** • FN DISCH 01-125MOV-15A is **OPEN.** • TRAIN A FN 01-125FN-1A is running.			
9. SBGT to Support: • TORUS Venting • Drywell Venting • HPCI Operation • MSLCS Operation • AGT System Operation	**EVALUATOR CUE:** SBGT "A" is not being used to support any of these activities. **This step is not on the hard card for OP-20.**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
10. IF SBGT "B" is shutdown" Verify open 01-125MOV-100B Verify flowrate on SGT flow 01-125FI-106A	For the "B" SBGT train: Applicant verifies open TRAIN "B" CLG VLV 01-125MOV-100B. **(this step is not on the hard card.)** Applicant verifies flowrate on SGT flow 01-125FI-106A • RB un-isolated – Approximately 6000 SCFM • RB isolated – Approximately 5600 to 5800			
11. Applicant verifies Rx Building differential pressure	Applicant verifies Rx Building DIFF Pressure 01-125DPI-100A is less negative than -.25 inches			
* 12. Depress pushbuttons: (OP-51A; G.1): • RB VENT ISOL A • RB VENT ISOL B	Applicant at the 09-75 panel, locates the isolation pushbuttons and depresses both isolation pushbuttons.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
13. Verifies the following to ensure Reactor Building Ventilation Isolation (OP-51A; G.2) • INBD SUPP ISOL 66AOV-100A **CLOSED** • OUTBD EXH ISOL 66AOV-101A **CLOSED** • BELOW EL 369' RECIRC 66AOD-105 **OPEN** • EL 369' RECIRC 66AOD-108; **OPEN** • OUTBD SUPP ISOL 66AOV-100B; **CLOSED** • INBD EXH ISOL 66AOV-101B **CLOSED** • SUPP FN 66FN-5A, 5B, 5C (2 OF 3) **ON** • BELOW EL 369' EXH FN 66FN-12A OR 66FN-12B: **ON** • EL 369' EXH FN 66FN-13A AND 13B; **OFF** • TK EXH FN 66FN-35; **OFF** • CRESC SUPP FN 66FN-26A OR 66FN-26B; **ON** • SBGT SYSTEM; RUN **PER OP-20** • RX BLDG D/P; -0.25 TO –2.5 in. WATER GAUGE	Applicant at the 09-75 panel verifies the isolation using the posted attachment or OP-51A • INBD SUPP ISOL 66AOV-100A; **CLOSED** • OUTBD EXH ISOL 66AOV-101A; **CLOSED** • BELOW EL 369' RECIRC 66AOD-105; **OPEN** • EL 369' RECIRC 66AOD-108; **OPEN** • OUTBD SUPP ISOL 66AOV-100B; **CLOSED** • INBD EXH ISOL 66AOV-101B; **CLOSED** • SUPP FN 66FN-5A, 5B, 5C (TWO OF 3); **ON** • BELOW EL 369' EXH FN 66FN-12A OR 66FN-12B; **ON** • EL 369' EXH FN 66FN-13A AND 66FN-13B; **OFF** • TK EXH FN 66FN-35; **OFF** • CRESC SUPP FN 66FN-26A OR 66FN-26B; **ON** • SBGT SYSTEM; RUN **PER OP-20** • RX BLDG D/P; -0.25 TO –2.5 in. WATER GAUGE			
EVALUATOR: Terminate the task at this point.				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. Reactor Building Ventilation manual isolation is required to support a maintenance activity.
2. Standby Gas Treatment System must be started to support the manual isolation of the Reactor Building.

INITIATING CUE:

You are the RO. The CRS has directed you to manually isolate the Reactor Building Ventilation System per OP-51A.

James A. Fitzpatrick Generating Station

Job Performance Measure

PERFORM ST-9BB, EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST

JPM Number: S-6

Revision Number: 1

Date: 2/02/10

Developed By:	**Bernard Litkett**	**4/12/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ____________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 1

JPM Setup Instructions:

1. Initialize the simulator to IC-41
2. Obtain a controlled copy of ST-9BB, EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST. Initial as complete Section 4.0, 5.0 and Steps 8.1 through and including Steps 8.12.
3. Copies of EDG Demand Log for EDG B & D forms from OP-22, DIESEL GENERATOR EMERGENCY POWER.
4. Simulator booth operator simulate strainer clogging sometime after EDG carrying bus load by:
   a.) Overriding ESW pump strainer d/p alarm on (09-6-2-24) on **trigger #1**
   b.) Indications on control board should show pump running when model knows it is not running, EPIC flow point will show no flow
5. Simulator booth operator to override MAINT switches for EDG B and D and place in MAINT on **trigger #2.**

TOOLS AND EQUIPMENT

1. Stopwatch
2. Synchronizing Switch

TASK STANDARD:

Perform surveillance test ST-9BB EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST. Determine EDGs have no cooling and shutdown prior to engine damage.

TASK CONDITIONS:

1. The plant is at power.
2. All steps up to step 8.12 have been completed sat

INITIATING CUE:

You are the RO. The CRS directs you to perform ST-9BB, EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST, commencing at Step 8.13 for EDG B & D.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ____
Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: Perform the Emergency Diesel Generator Load Test (S/U and Load EDG's)

JPM Number: S-6

Revision Number: 1

K/A Number and Importance: KA 264000; A4.04; 3.7; 3.7

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 30 min. **Actual Time Used:** _______minutes

References:
1. NUREG 1123, 264000; A4.04; 3.7 ; 3.7
2. ST-9BB; Rev.11, EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST.
3. OP-22; Rev. 53; DIESEL GENERATOR EMERGENCY POWER.
4. Alarm response for ESW strainer (09-06-2-24)

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**
Comments:____
____
____
____
____
____
Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ________________________________(Print)

Evaluator's Signature: ________________________________ **Date:** ___________

Description: This JPM asks the applicant to perform ST-9BB; EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure ST-9BB; Rev.11, EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST	Obtains a controlled copy of ST-9BB; Rev.11			
2. Reviews the precautions	Reviews the precautions, making note of any that are applicable			
3. Select the correct section to perform the task.	Applicant selects step 8.13 of ST-9BB ***EVALUATOR CUE:*** If asked, the other ROs will perform the stopwatch function.			
* 4. Simultaneously place the EDG B & D control switches to START and start stopwatch ***EVALUATOR CUE:*** If asked, the second RO will perform the stopwatch function.	Applicant simultaneously places the EDG B & D control switches in START and starts stopwatch ***EVALUATOR CUE:*** If asked, the other ROs will perform the stopwatch function.			
5. If EDG frequency does not stabilize between 58 and 62 Hz after reaching normal voltage, then immediately place the affected EDG CNTRL switch in STOP.	If EDG frequency does not stabilize between 58 and 62 Hz after reaching normal voltage, then applicant immediately places the affected EDG CNTRL switch in STOP.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. ***EVALUATOR CUE:*** If asked, the other ROs perform the stopwatch function. • Step 8.15 Operator 1 time: 6.92 sec • Step 8.16 Operator 2 time: 7.05 sec • Step 8.17 Operator 3 time: 8.46 sec • Step 8.18 Operator 1 to record frequency and voltage	***EVALUATOR CUE:*** If asked, the other ROs perform the stopwatch function. • Step 8.15 Operator 1 time: 6.92 sec • Step 8.16 Operator 2 time: 7.05 sec • Step 8.17 Operator 3 time: 8.46 sec • Step 8.18 Operator 1 to record frequency and voltage			
7. Verify the following: • EDG B & D TIE BKR 10604 is closed. • ESW Pump 46P-2B is running.	Applicant verifies the following: • EDG B & D TIE BKR 10604 is closed. • ESW Pump 46P-2B is running.			
* 8. Trip EDG B & D TIE BKR 10604, allow switch to spring return to AUTO and record time.	Applicant trips EDG B & D TIE BKR 10604, allow switch to spring return to AUTO and record time.			
9. Applicant records frequency.	Applicant records frequency.			
10. Verify EPIC-D-732 closed and open on alarm typer.	Applicant verifies EPIC-D-732 closed and open on alarm typer.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 11. Place the following switches in DROOP: **EVALUATOR NOTE:** **(When placed in droop the following alarms will annunciate.)** **09-8-4-5 EDG B FUEL CUTOFF OR CNTRLS OFF NORMAL** **09-8-4-8 EDG D FUEL CUTOFF OR CNTRLS OFF NORMAL** • EDG B GOV MODE • EDG D GOV MODE	Applicant places the following switches in DROOP: • EDG B GOV MODE • EDG D GOV MODE			
12. IF an EDG functions improperly while paralleled with 10600 bus, THEN perform the following: • Trip associated EDG load breaker. • Shut down malfunctioning EDG per Section G of OP-22 (Single EDG Shutdown from Control Room). • Shut down other EDG per Section G of OP-22 (Single EDG Shutdown from Control Room) • Initiate a WR to troubleshoot EDG. OR Applicant may determine OP-22 G.17 Emergency EDG Shutdown is more appropriate. ***EVALUATOR Note:*** **No issues with EDG at this time. EDGs are operating as expected.** ***EVALUATOR CUE:*** **If asked, the other ROs will initiate a WR**	Applicant reviews steps. ***EVALUATOR Note:*** **No issues with EDG at this time. EDGs are operating as expected. Apllicant may come back to this step when ESW flow fails low.** ***EVALUATOR CUE:*** **If asked, the other ROs will initiate a WR**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
CAUTION Operation of the T-4 load tap changer during paralleling and loading of the EDG could cause the EDG to trip.	**CAUTION** Operation of the T-4 load tap changer during paralleling and loading of the EDG could cause the EDG to trip.			
13. While performing the next 2 steps do not operate the T-4 load tap changer.	While performing the next 2 steps do not operate the T-4 load tap changer.			
NOTE Steps 14 and 15 may be performed in any order per SM direction.	**NOTE** Steps 14 and 15 may be performed in any order per SM direction.			
14. Parallel EDG B with the 10600 Bus as follows.	Parallel EDG B with the 10600 Bus as follows			
* 15. Place EDG B LOAD BKR SYNCH SW in ON.	Applicant places EDG B LOAD BKR SYNCH SW in ON.			
* 16. Adjust EDG B VOLT REG to match INCOMING and RUNNING voltages.	Applicant matches INCOMING (EDG) and RUNNING (bus 10600) voltages with EDG B VOLT REG adjustments.			
* 17. Adjust EDG B GOV to rotate synchroscope slowly in the FAST direction (clockwise).	Applicant adjusts EDG B GOV to rotate synchroscope slowly in fast direction.			
NOTE Steps 18 and 19 may be checked after step 19 is complete	**NOTE** Steps 18 and 19 may be checked after step 19 is complete			
* 18. When EDG B and the 10600 BUS are in phase (synchroscope at 12 o'clock) close EDG B LOAD BKR 10602. **Aunniciator 9-8-4-3 EDG B LOAD BKR 10602 CLOSED will alarm when breaker is closed.**	Applicant places the control switch 10602, EDG B LOAD BKR, to CLOSE when synchroscope is at 12:00. **Aunniciator 9-8-4-3 EDG B LOAD BKR 10602 CLOSED will alarm when breaker is closed.**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 19. Adjust EDG B GOV to raise EDG B load between 100 to 300 kW.	Applicant places the EDG B GOV switch to RAISE and loads EDG B between 100 to 300 kW.			
20. Place EDG B LOAD BKR SYNCH SW in OFF and removes sync switch handle.	Applicant places the EDG B LOAD BKR SYNCH SW to OFF removes sync switch handle.			
21. IF EDG B is the second diesel paralleled THEN, balance EDG B and D using voltage regulator(s) to establish LESS THAN 100 KVAR difference between EDG B and EDG D.	IF EDG B is the second diesel paralleled THEN, balance EDG B and D using voltage regulator(s) to establish LESS THAN 100 KVAR difference between EDG B and EDG D.			
* 22. Adjust EDG B GOV to raise EDG B load to 2600 kW over 3 to 5 minutes in approximately 800 kW increments ***<u>EVALUATOR CUE:</u>*** State after initial 800 kW increment, "for JPM 1.5 minutes have passed", after next 800 kw increment state "a total of 3 minutes have passed."	Applicant adjusts EDG B GOV to raise EDG B load to 2600 kW over 3 to 5 minutes in 800 kW increments ***<u>EVALUATOR CUE:</u>*** State after initial 800 kW increment, "for JPM 1.5 minutes have passed", after next 800 kw increment state "a total of 3 minutes have passed."			
23. Parallel EDG D with the 10600 Bus as follows	Parallel EDG D with the 10600 Bus as follows			
* 24. Place EDG D LOAD BKR SYNCH SW in ON	Applicant places EDG D LOAD BKR SYNCH SW in ON			
* 25. Adjust EDG D VOLT REG to match INCOMING and RUNNING voltages	Applicant matches INCOMING (EDG) and RUNNING (bus 10600) voltages with EDG D VOLT REG adjustments			
* 26. Adjust EDG D GOV to rotate synchroscope slowly in the FAST direction (clockwise)	Applicant adjusts EDG D GOV to rotate synchroscope slowly in fast direction			
<u>NOTE</u> Steps 27 and 28 may be checked after step 28 is complete	**<u>NOTE</u>** Steps 27 and 28 may be checked after step 28 is complete			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 27. When EDG D and the 10600 BUS are in phase (synchroscope at 12 o'clock) close EDG D LOAD BKR 10612	Applicant places the control switch 10612, EDG D LOAD BKR, to CLOSE when synchroscope is at 12:00			
* 28. Adjust EDG D GOV to raise EDG B load between 100 to 300 kW	Applicant places the EDG D GOV switch to RAISE and loads EDG B between 100 to 300 kW			
29. Place EDG D LOAD BKR SYNCH SW in OFF and removes sync switch handle.	Applicant places the EDG D LOAD BKR SYNCH SW to OFF and removes sync switch handle.			
* 30. IF EDG D is the second diesel paralleled THEN, balance EDG B and D using voltage regulator(s) to establish LESS THAN 100 KVAR difference between EDG B and EDG D.	IF EDG D is the second diesel paralleled THEN, balance EDG B and D using voltage regulator(s) to establish LESS THAN 100 KVAR difference between EDG B and EDG D.			
* 31. Adjust EDG D GOV to raise EDG B load to 2600 kW over 3 to 5 minutes in approximately 800 kW increments ***EVALUATOR CUE:*** State after initial 800 kW increment, "for JPM 1.5 minutes have passed", after next 800 kw increment state "a total of 3 minutes have passed.".	Applicant adjusts EDG D GOV to raise EDG B load to 2600 kW over 3 to 5 minutes in 800 kW increments ***EVALUATOR CUE:*** State after initial 800 kW increment, "for JPM 1.5 minutes have passed", after next 800 kw increment state "a total of 3 minutes have passed."			
Simulator booth operator simulate strainer clogging a.) Overriding ESW pump strainer d/p alarm on (09-6-2-24) .				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
32. Applicant responds to ARP 09-6-2-24 and recognizes ESW 'B' pump strainer has HI D/P **Simulator booth operator simulate strainer clogging** a.) Indications on control board should show pump running **EVALUATOR NOTE:** **Evaluator is to log the time when annuciator 09-06-2-24 alarms.** ***EVALUATOR CUE:*** **Evaluator is to tell applicant this is your alarm.**	**Annunciator:** 09-6-2-24 for ESW PMP A or B STRAINER DIFF PRESS HI Applicant responses to ARP 09-6-2-24. ***EVALUATOR CUE:*** **If applicant does not reference EPIC point EPIC – A-711, asks is there anyway to check ESW flow?** • EPIC –A-711: ESW B Loop flow • ESW flow is zero ***EVALUATOR CUE:*** • If applicant calls up ESW Pp B Strainer D/P. ***The cue is that D/P is the max value for the instrument*** • ***If applicant responds to shift strainer basket respond that the strainer baskets have been swapped. Strainer basket D/P is still high.***	**Log**	**Time**	______ For annuciator 09-6-2-24
SIMULATOR BOOTH OPERATOR: **simulate strainer clogging.** **a.) if after 10 minutes of operation and the applicant has not tripped 'B' and 'D' EDG. The Booth Operator is to trip 'B' and 'D' EDG.**	**CRITICAL TASK** **EVALUATOR NOTE:** If EDG destroyed, terminate this JPM, applicant critical task to shutdown EDG within 10 minutes not met. ***EVALUATOR CUE:*** • **If applicant calls for NPO for EDG status reply ' Jacket water temperature is 170°F and rising.**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 33. IF an EDG functions improperly while paralleled with 10600 bus, THEN applicant performs the following: **Applicant may determine OP-22 G.17 Emergency EDG Shutdown is more appropriate.** **OR** • Trip associated EDG load breaker. • Shut down malfunctioning EDG per Section G of OP-22 (Single EDG Shutdown from Control Room). • Shut down other EDG per Section G of OP-22 (Single EDG Shutdown from Control Room) • Initiate a WR to troubleshoot EDG. ***EVALUATOR CUE:*** **If asked, the other ROs will initiate a WR** ***EVALUATOR NOTE:*** Step OP-22 G.6.1 contradicts a critical step in the JPM if using OP-22 to shutdown the EDG until after 10 minutes have elapsed(cylinder cooldown time) ***EVALUATOR CUE:*** ***If asked by the applicant to bypass the 10 minute cooldown time; Allow the applicant to bypass the 10 minute wait in the procedure and shutdown the EDG to prevent damage.***	Applicant refers to step 8.24 (or step 12 of JPM) and performs actions: if an EDG functions improperly while paralleled with 10600 bus, THEN applicant performs the following: **Applicant may determine OP-22 G.17 Emergency EDG Shutdown is more appropriate.** **OR** • Trip associated EDG load breaker. • Shut down malfunctioning EDG per Section G of OP-22 (Single EDG Shutdown from Control Room). • Shut down other EDG per Section G of OP-22 (Single EDG Shutdown from Control Room) • Initiate a WR to troubleshoot EDG. ***EVALUATOR CUE:*** **If asked, the other ROs will initiate a WR**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 34. Ensure EDG load breakers are tripped and placed in PULL TO LOCK position. • EDG B; 71-10602 • EDG D; 71-10612	Applicant ensures load breakers are tripped and placed in PULL TO LOCK position. • EDG B; 71-10602 • EDG D; 71-10612			
EVALUATOR: **Terminate the task at this point if EDGs load breakers are tripped.**				
* 35. **OP-22; G-17 EMERGENCY EDG SHUTDOWN.**	**OP-22; G-17 EMERGENCY EDG SHUTDOWN.**			
* 36. Ensure EDG load breakers are tripped and placed in PULL TO LOCK position. • EDG B; 71-10602 • EDG D; 71-10612	Applicant ensures load breakers are tripped and placed in PULL TO LOCK position. • EDG B; 71-10602 • EDG D; 71-10612			
* 37. Ensure EDG tie breaker is tripped • EDG B/D; 10604	Applicant ensures EDG tie breaker is tripped. • EDG B/D; 10604			
NOTE: The EDG B/D; EDG FUEL CUTOFF OR CNTRLS OFF NORMAL annunciator will alarm at panel 09-8 in the following step. (This alarm is already in due the EDG being placed in droop)	**NOTE:** The EDG B/D; EDG FUEL CUTOFF OR CNTRLS OFF NORMAL annunciator will alarm at panel 09-8 in the following step. (This alarm is already in due the EDG being placed in droop)			
* 38. Place EDG B/D CONTROL SWITCH in MAINT at panel 93ECP-B/D. **SIMULATOR BOOTH OPERATOR:** Override MAINT switches for EDG B and D. Place in MAINT	Applicant contacts in plant operator to place EDG B/D CONTROL SWITCH in MAINT at panel 93ECP- B/D. **SIMULATOR BOOTH OPERATOR:** Override MAINT switches for EDG B and D. Place in MAINT.			
* 39. Place EDG B/D CNTRL switches to STOP at panel 09-8.	Applicant places EDG B/D CNTRL switches to STOP at panel 09-8.			
EVALUATOR: **Terminate the task at this point.**				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at power.
2. All steps up to step 8.12 have been completed sat

INITIATING CUE:

You are the RO. The CRS directs you to perform ST-9BB, EDG B & D FULL LOAD TEST AND ESW PUMP OPERABILITY TEST, commencing at Step 8.13 for EDG B & D.

James A. Fitzpatrick Generating Station

Job Performance Measure

SRM SIGNAL TO NOISE RATIO DETERMINATION TEST (ST-5H)

JPM Number: S-7

Revision Number: 1

Date: 2/3/10

Developed By:	**Bernard Litkett**	**4/08/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Initialize the simulator to an IC-48 with the plant in Mode 3.
2. Copy of ST-5H; Rev.2; SRM Signal to Noise Ratio Determination Test (ST-5H); section 8.2.
3. Simulator Booth operator ensure remote RP-26 is installed on trigger #1.
4. Range IRM's.
5. Deselect SRMs/IRMs.

TASK STANDARD:

Applicant is to perform SRM Signal to Noise Ratio Determination Test; ST-5H; Section 8.2 for SRM 'A'.

TASK CONDITIONS:

1. The plant is in Mode 3.

INITIATING CUE:

You are the RO. The CRS directs you to perform the SRM Signal to Noise Ratio Determination Test; ST-5H; Section 8.2 for SRM 'A'. The prerequisites steps 4.1 through 4.8 are completed and steps 8.2.1 thru 8.2.4 have also been completed.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ______________________________

Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: SRM Signal to Noise Ratio Determination Test; ST-5H

JPM Number: S-7

Revision Number: 0

K/A Number and Importance: KA 215004; A4.07; 3.4; 3.6

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 20 min. Actual Time Used: ________minutes

References:
1. NUREG 1123, KA 215004; A4.07; 3.4; 3.6
2. ST-5H; SRM Signal to Noise Ratio Determination Test; ST-5H; Section 8.2 for SRM 'A'. Rev.2

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________(Print)

Evaluator's Signature: ______________________ **Date:** __________

Description: This JPM has the applicant perform the SRM Signal to Noise Ratio Determination Test; ST-5H; Section 8.2 for SRM ‘A’.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure, ST-5H.	Applicant obtains a controlled copy of procedure and proceeds to the 09-12 panel in the Control Room. **EVALUATOR:** A controlled copy of the procedure is available in the SM office.			
2. Reviews prerequisites, precautions, limitations and general test methods associated with the procedure.	**EVALUATOR CUE:** All prerequisites, precautions, limitations are satisfied.			
3. Ensure **SRM A** may be fully withdrawn.	Applicant ensures **SRM A** may be fully withdrawn.			
4. Ensure **SRM A** is fully inserted.	Applicant ensures **SRM A** is fully inserted.			
5. Ensure **POWER ON** light is on.	Applicant ensures **POWER ON** light is on.			
6. Declare **SRM A** inoperable **EVALUATOR CUE:** State as CRS **'A' SRM** has been declared inoperable	**EVALUATOR CUE:** State as CRS **'A' SRM** has been declared inoperable			
* 7. Select **SRM A**.	Applicant selects **SRM A**.			
8. Ensure **SELECT** lights are off for **SRM B, C**, and **D**.	Applicant ensures **SELECT** lights are off for **SRM B, C,** and **D**.			
9. Record **SRM A** initial count rate	Applicant records **SRM A** initial count rate. ________ cps.			
* 10. Depress **DRIVE OUT/DRIVING OUT** pushbutton.	Applicant depresses **DRIVE OUT/DRIVING OUT** pushbutton.			
11. Verify **DRIVE OUT** light is on.	Applicant verifies **DRIVE OUT** light is on.			
12. Verify **DRIVING OUT** light comes on.	Applicant verifies **DRIVING OUT** light is on.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 13. When **SRM OUT** indicating light comes on, depress **DRIVE OUT/DRIVING OUT** pushbutton. **EVALUATOR NOTE** 1. 09-5-2-21 SRM DET RETRACTED WHEN NOT PERMITTED will annunciate when SRM count rate drops below 100 cps. This alarm is expected for this condition. 2. Takes 3.5 minutes for SRM to drive out. **Cue:** if applicant does not report that the alarm is expected, then ask if this alarm is expected? If answer is no then ask how to determine if the alarm is an expected alarm. If applicant can not determine that the alarm is expected then direct applicant to proceed with ST. If answer is yes then direct applicant to proceed with ST.	Applicant depresses **DRIVE OUT/DRIVING OUT** pushbutton, when **SRM OUT** indicating light comes on. **EVALUATOR NOTE** 1. 09-5-2-21 SRM DET RETRACTED WHEN NOT PERMITTED will annunciate when SRM count rate drops below 100 cps. This alarm is expected for this condition. 2. Takes 3.5 minutes for SRM to drive out. **Cue:** if applicant does not report that the alarm is expected, then ask if this alarm is expected? If answer is no then ask how to determine if the alarm is an expected alarm. If applicant can not determine that the alarm is expected then direct applicant to proceed with ST. If answer is yes then direct applicant to proceed with ST.			
14. Verify the following lights are off: • **DRIVE OUT** • **DRIVING OUT**	Applicant verifies the following lights are off: • **DRIVE OUT** • **DRIVING OUT**			
* 15. Record **SRM A Full Out** count rate.	Applicant records **SRM A FULL OUT** count rate _______ cps			
* 16. Depress **DRIVE IN** pushbutton	Applicant depresses **DRIVE IN** pushbutton.			
17. Verify top half of **DRIVE IN** light is on.	Applicant verifies top half of **DRIVE IN** light is on.			
18. Verify bottom half of **DRIVE IN** light comes on.	Applicant verifies bottom half of **DRIVE IN** light comes on.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 19. When **SRM IN** indicating light comes on, depress **DRIVE IN** pushbutton. **EVALUATOR NOTE** Takes 3.5 minutes for SRM to drive in.	Applicant depresses **DRIVE IN** pushbutton, When **SRM IN** indicating light comes on. **EVALUATOR NOTE** Takes 3.5 minutes for SRM to drive in.			
* 20. Verify **DRIVE IN** light is off	Applicant verifies **DRIVE IN** light is off			
* 21. Deselect **SRM A**	Applicant deselects **SRM A**			
22. Verify **SRM A** light is off.	Applicant verifies **SRM A** light is off.			
* 23. Calculate signal to noise ratio for SRM A as follows: (_____ - _____) / ______ = _____ 8.2.11 8.2.17 8.2.17 TS ≥ 2	Applicant calculates signal to noise ratio for SRM A as follows: (_____ - _____) / ______ = _____ 8.2.11 8.2.17 8.2.17 TS ≥ 2			
24. Consider declaring **SRM A** operable. **EVALUATOR CUE:** Applicant should state the status of **SRM A**.				
EVALUATOR: Terminate the task at this point.				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is in Mode 3.

INITIATING CUE:

You are the RO. The CRS directs you to perform the SRM Signal to Noise Ratio Determination Test; ST-5H; Section 8.2 for SRM 'A'. The prerequisites steps 4.1 through 4.8 are completed and steps 8.2.1 thru 8.2.4 have also been completed.

James A. Fitzpatrick Generating Station

Job Performance Measure

Perform RPV Isolation During Plant Fire

RO ONLY

JPM Number: S-8

Revision Number: 1

Date: 1/15/10

Developed By:	**Bernard Litkett**	**4/08/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 0

JPM Setup Instructions:

1. Initialize the simulator to IC-48, full power.
2. Manually scram the Reactor and stabilize vessel level and pressure.
3. Manually override activate the Reactor Building West Crescent indication on the fire panel; 227' RCIC RM SD to ON.
4. Manually override start the fire pump.
5. Manually override the RCIC HOV-1 trip pushbutton so the valve will not trip. Override to normal.
6. When contacted to open breaker 71BCB-2A-B05, Insert Malfunction RC03; Trigger 1.
7. Have 'A' Core Spray running with HS green flagged.
8. **PRESET:** M:CU10,RWCU 12MOV-18 Auto isolation failure.

TASK STANDARD:

Successfully perform RPV isolation during Plant Fire

TASK CONDITIONS:

1. A serious fire in the Reactor Building West Crescent has been confirmed by the Fire Brigade.
2. The Reactor has just been scrammed from rated power.
3. The CRS has determined that RPV isolation is desired.
4. A spurious start of 'A' Core Spray pump has occurred.

INITIATING CUE:

You are the RO, The CRS directs you to perform the override actions of AOP-28 for a fire in the Reactor Building West Crescent Area. Another operator will handle the balance of plant.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ____

Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: **Perform RPV Isolation during plant fire**

JPM Number: S-8

Revision Number: 0

K/A Number and Importance: KA 286000; A4.05; 3.3; 3.3

Suggested Testing Environment: Simulator

Actual Testing Environment:

Testing Method: Perform in Simulator

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 min. Actual Time Used: _______minutes

References:

1. NUREG 1123, KA 286000 A4.05 3.3; 3.3
2. AOP-28, Operation During Plant Fires, Rev. 18

EVALUATION SUMMARY:

1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** __________

Description: This JPM has the operator perform RPV Isolation during Plant Fire

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure AOP-28, Operation During Plant Fires.	Obtains a controlled copy of AOP-28.			
2. Select the correct attachment to perform the task.	Applicant selects Attachment 2, Step 1.1 of AOP-28 by referencing attachments 27,28 and 29.			
* 3. Close CLN UP SUCT 12MOV-18.	Applicant closes CLN UP SUCT 12MOV-18 by placing associated control switch on Panel 09-3 in the CLOSE position.			
4. Ensure close OUTBD STM SUPP VLV 23MOV-16.	Applicant verifies closed 23MOV-16.			
* 5. Close STM LINE WARMING VLV 23MOV-60	Applicant closes 23MOV-60 by placing associated control switch on panel 09-3 in the CLOSE position.			
* 6. Close Outboard MSIVs	Applicant closes outboard MSIVs by placing associated control switches (4) on panel 09-3 in the CLOSE position.			
*7. Ensure closed 13MOV-16 in drywell entrance.	Applicant closes 13MOV-16 by placing associated control switch on Panel 09-4 in the CLOSE position.			
8. Attempt to trip TURB STOP VLV 13HOV-1 at panel 09-4.	Applicant attempts to trip 13HOV-1 by depressing red TURBINE TRIP pushbutton 13A-S17 09-4. If 13HOV-1 fails to close then perform step 9 and 10..			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 9.Open breaker DC MOTOR CONTROL CENTER 71BCB-2A-B05, (71BMCC-1) at 71BCB-2A in Station Battery Charger Room A. **<u>EVALUATOR</u>: INSERT Malfunction RC03, Role play as in-plant operator and report 71BCB-2A-B05, (71BMCC-1) at 71BCB-2A has been opened**.	Contacts in-plant operator using Gaitronics or other acceptable method and directs operator to open breaker 71BCB-2A-B05, (71BMCC-1) at 71BCB-2A in Station Battery Charger Room A. **<u>EVALUATOR</u>: INSERT Malfunction RC03, Role play as in-plant operator and report 71BCB-2A-B05, (71BMCC-1) at 71BCB-2A has been opened.**			
10. Ensure closed, manually if required, 13MOV-16 in drywell entrance.	Contacts in-plant operator using Gaitronics or other acceptable method and directs operator to ensure closed 13MOV-16.			
<u>EVALUATOR</u>: Terminate the task at this point.				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. A serious fire in the Reactor Building West Crescent has been confirmed by the Fire Brigade.
2. The Reactor has just been scrammed from rated power.
3. The CRS has determined that RPV isolation is desired.
4. A spurious start of 'A' Core Spray pump has occurred.

INITIATING CUE:

You are the RO, The CRS directs you to perform the override actions of AOP-28 for a fire in the Reactor Building West Crescent Area. Another operator will handle the balance of plant.

Job Performance Measure

Changing In-service CRD Pump Suction Filters

JPM Number: P-1

Revision Number: 1

Date: 1/15/10

Developed By:	**Bernard Litkett**	**1/15/10**
	Author	**Date**
Validated By:		
	Facility Representative	**Date**
Review By:		
	Examiner	**Date**
Approved By:		
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

_________ 1. Task description and number, JPM description and number are identified.

_________ 2. Knowledge and Abilities (K/A) references are included.

_________ 3. Performance location specified. (in-plant, control room, or simulator)

_________ 4. Initial setup conditions are identified.

_________ 5. Initiating and terminating cues are properly identified.

_________ 6. Task standards identified and verified by Examiner review.

_________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

_________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ______________

_________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

_________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

_________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. None

JPM Setup Instructions:

1. Copy of procedure OP-25; Rev. 79;section G.11

Tools and Equipment

1. None

TASK STANDARD:

Successfully swap in-service CRD suction filters

TASK CONDITIONS:

1. The plant is at 100% power.
2. The in-service CRD pump suction filter indicates 1 psid on 03PIS-246.

INITIATING CUE:

You are directed to change the in-service CRD pump suction filter.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the applicant acknowledges the initiating cue.

Operator's Name: ______________________________

Job Title: ☐ NLO ■ RO ☒ SRO ☐ STA ☐ SRO Cert

JPM Title: **Successfully swap in-service CRD suction filters**

JPM Number: P-1 **Revision Number:** 1

K/A Number and Importance: KA 201001 A2.06; 2.9; 2.9

Suggested Testing Environment: Plant

Actual Testing Environment: Plant

Testing Method: Simulate

Alternate Path: No

Time Critical: No

Estimated Time to Complete: **15** **Actual Time Used:** _______minutes

References:
1. NUREG 1123, KA 201001 A2.06; 2.9; 2.9
2. OP-25; Rev. 79;Section G.11

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ___________

Description: This JPM has the applicant place the standby CRD suction filter in service and isolate the previously in-service filter.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure OP-25; REV.79; G.11, changing in-service CRD suction filter	The applicant determines where to obtain a controlled copy OP-25; Rev. 79;G.11, changing CRD suction filters **EVALUATOR;** Provide trainee a current copy of OP-25			
2. Select the correct section to perform the task.	Selects section G.11 from OP-25; REV.79. **EVALUATOR:** Provide applicant with copy of section G.11.			
3. Applicant notifies the control room that CRD suction filter will be changed.	Applicant notifies the control room that CRD suction filter will be changed.			
4. Applicant notifies Radiation Protection that potentially radioactive water will be vented from the CRD pump suction filter.	Applicant notifies Radiation Protection that potentially radioactive water will be vented from the CRD pump suction filter.			
* 5. Perform the following for the filter to be placed in-service. a.) Verify open inlet isolation valve • 03CRD-151A (CRD water pump 'A' Suct filter 'A' inlet isol valve) or • 03CRD-151B (CRD water pump 'B' Suct filter 'B' inlet isol valve)	Applicant opens inlet isolation valve. • 03CRD-151A (CRD water pump 'A' Suct filter 'A' inlet isol valve) or • 03CRD-151B (CRD water pump 'B' Suct filter 'B' inlet isol valve) **Cue:** After correct operation is simulated, inform applicant that handwheel turns several rotations in CCW direction, then hits a hard stop.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 5b. Crack open vent valve: • 03CRD-400A (CRD water pump 'A' suct filter 'A' vent valve or • 03CRD-400B (CRD water pump 'B' suct filter 'B' vent valve	Applicant cracks open: • 03CRD-400A (CRD water pump 'A' suct filter 'A' vent valve or • 03CRD-400B (CRD water pump 'B' suct filter 'B' vent valve **EVALUATOR CUE:** Valve is cracked open, water is flowing free of air from the vent.			
* 5c. When water flowing from the vent is free of air, close the vent valve.	Applicants closes the vent valve when the water flowing is free of air. **EVALUATOR CUE:** Valve is closed.			
* 5d. Slowly open outlet isolation valve: • 03CRD-152A (CRD water pump 'A' suct filter 'A' outlet isol valve) or • 03CRD-152B (CRD water pump 'B' suct filter 'B' outlet isol valve)	Applicant slowly opens outlet isolation valve. • 03CRD-152A (CRD water pump 'A' suct filter 'A' outlet isol valve) or • 03CRD-152B (CRD water pump 'B' suct filter 'B' outlet isol valve) **EVALUATOR CUE:** After correct operation is simulated, inform applicant that handwheel turns several rotations in CCW direction, then hits a hard stop.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 6. Close outlet isolation valve for the filter to be removed from service	Applicant closes outlet isolation valve. • 03CRD-152A (CRD water pump 'A' suct filter 'A' outlet isol valve) or • 03CRD-152B (CRD water pump 'B' suct filter 'B' outlet isol valve) **EVALUATOR CUE:** After correct operation is simulated, inform applicant that handwheel turns several rotations in CW direction, then hits a hard stop.			
EVALUATOR: Terminate the task at this point				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at 100% power.
2. The in-service CRD pump suction filter indicates 1 psid on 03PIS-246.

INITIATING CUE:

You are directed to change the in-service CRD pump suction filter.

Job Performance Measure

EOP Isolation Interlock Overrides – HPCI System Isolation Valves on Low Steam Supply Pressure

JPM Number: P-2

Revision Number: NRC 2010

Date: 1/14/10

Developed By:	**Bernard Litkett**	**1/14/10**
	Author	**Date**
Validated By:	______________________	__________
	Facility Representative	**Date**
Review By:	______________________	__________
	Examiner	**Date**
Approved By:	______________________	__________
	Chief Examiner	**Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date ____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. None

JPM Setup Instructions:

1. Performance of this JPM shall be simulated. Inadvertent manipulation of a component could result in unwanted system actuations.
2. When opening cabinets with energized equipment inside, ensure appropriate EN-IS-123 requirements are met.
3. Make a copy of EP-2; Section 5.8 for use by applicant.
4. Obtain Shift Manager approval prior to entering panel 09-32 and 09-39.

TOOLS AND EQUIPMENT:

Screwdriver/Nutdriver (JPM is to be simulated)

TASK STANDARD:

Install EOP Isolation Interlock Overrides – HPCI System Isolation Valves on Low Steam Supply Pressure

TASK CONDITIONS:

1. Emergency depressurization has been ordered due to high secondary containment temperature (EOP-5), but only 3 SRV's can be opened.
2. The SM has issued direction to override the HPCI System low steam pressure isolation interlock to allow use of HPCI to rapidly depressurize the RPV IAW EOP-2.

INITIATING CUE:

You are the RO. The CRS directs you to override the isolation on low steam supply pressure for the HPCI System per EP-2, Isolation/Interlock Overrides.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The timeclock starts when the applicant acknowledges the initiating cue.

Operator's Name: ______________________________

Job Title: ☐ NLO ■ RO ■ SRO ☐ STA ☐ SRO Cert

JPM Title: EOP Isolation Interlock Overrides – HPCI System Isolation Valves on Low Steam Supply Pressure

JPM Number: P-2 **Revision Number:** NRC 2010

K/A Number and Importance: KA 206000; A2.10; 4.0; 4.1

Suggested Testing Environment: Plant

Actual Testing Environment: Plant

Testing Method: Simulate

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 15 **Actual Time Used:** _______minutes

References:
1. NUREG 1123, 206000 A2.10; 4.0; 4.1
2. EP-2; Section 5.8; HPCI Steam Supply Valves - Low Steam Supply Pressure Isolation, Rev 7

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:______________________________

____

____

____

____

____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ___________

Description: This JPM has the applicant defeat HPCI System Isolation on Low Steam Supply Pressure

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure EP-2, Isolation/Interlock Overrides	The applicant determines where to obtain a controlled copy of EP-2. (EOP supply cabinet, Control Room, Merlin) **EVALUATOR;** Provide trainee a current copy of EP-2			
2. Select the correct section to perform the task.	Selects section 5.8 from EP-2. **EVALUATOR:** Provide applicant with copy of section 5.8.			
* 3. For 23MOV-15, disconnect lead from one of the following terminals in panel 09-32: (_) TBC-5 Or (_) TBC-7	**EVALUATOR:** When the applicant proceeds to panel 09-32 in the Relay Room and locates and identifies terminals and states that he/she would disconnect a lead from either terminal TBC-5 or TBC-7, then inform the applicant "Lead disconnected".			
4. Initials for lifting lead.	Initials block for lifting lead from terminal.			
* 5. For 23MOV-16 and 60, disconnect lead from one of the following terminals in panel 09-39: (_) DD-17 Or (_) DD-18	**EVALUATOR:** When the applicant proceeds to panel 09-39 in the Relay Room and locates and identifies terminals and states that he/she would disconnect a lead from either terminal DD-17 or DD-18, then inform the applicant "Lead disconnected".			
6. Initials step for lifting lead.	Initials block for lifting lead from terminal.			
7. Contact the Control Room and inform them that the low steam pressure isolation has been overridden per EP-2	**EVALUATOR:** Acknowledge the communication as the CRS.			
EVALUATOR: Terminate the task at this point.				

JPM Stop Time ___________

HANDOUT PAGE

TASK CONDITIONS:

1. Emergency depressurization has been ordered due to high secondary containment temperature (EOP-5), but only 3 SRV's can be opened.
2. The SM has issued direction to override the HPCI System low steam pressure isolation interlock to allow use of HPCI to rapidly depressurize the RPV IAW EOP-2.

INITIATING CUE:

You are the RO. The CRS directs you to override the isolation on low steam supply pressure for the HPCI System per EP-2, Isolation/Interlock Overrides.

Job Performance Measure

Alternate Depressurization Using SRVs From Panel 02ADS-71

JPM Number: P-3

Revision Number: 1

Date: 1/19/10

Developed By: **Bernard Litkett** **1/19/10**

Author **Date**

Validated By: ______________________ ________

Facility Representative **Date**

Review By: ______________________ ________

Examiner **Date**

Approved By: ______________________ ________

Chief Examiner **Date**

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

NOTE: All steps of this checklist should be performed upon initial validation. Prior to JPM usage, revalidate JPM using steps 8 through 11 below.

________ 1. Task description and number, JPM description and number are identified.

________ 2. Knowledge and Abilities (K/A) references are included.

________ 3. Performance location specified. (in-plant, control room, or simulator)

________ 4. Initial setup conditions are identified.

________ 5. Initiating and terminating cues are properly identified.

________ 6. Task standards identified and verified by Examiner review.

________ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).

________ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____________

________ 9. Pilot test the JPM:
a. verify cues both verbal and visual are free of conflict, and
b. ensure performance time is accurate.

________ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.

________ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

Review Questions and Comments:

REVISION RECORD (Summary):

1. None

JPM Setup Instructions:

1. EP-11;Rev.1 , Alternate depressurization using SRVs from 02ADS-71
2. Obtain Shift Manager's permission prior to performing this task.
3. Ensure Control Room is aware that the door to the remote ADS panel will be opened.

TOOLS AND EQUIPMENT:

1. Key for Remote ADS Cabinet 02ADS-71 is located in equipment cabinet near Remote Shutdown Panel 25RSP, RB 300 el., north.
2. Key to access equipment cabinet near Remote Shutdown Panel 25RSP, RB 300 el., north.

TASK STANDARD:

Successfully perform alternate depressurization using SRVs from panel 02ADS-71

TASK CONDITIONS:

1. Torus water level is 13.9 feet
2. The Shift Manager has identified the need to use the remote ADS cabinet 02ADS-71to depressurize the RPV,per EP-11; Rev.1.
3. No SRVs have been opened from the Control Room.

INITIATING CUE:

You are the RO. The CRS has directed you to emergency depressurize the RPV per EP-11.

Information For Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

Number any comments in the "Comment Number" column. Then annotate that comment in the "Comments" section. The comment section should be used to document the reason that a step is marked as unsatisfactory and to document unsatisfactory performance relating to management expectations.

Some operations that are performed from outside of the control room may require multiple steps. These items may be listed as individual steps in this JPM. It is acceptable for the applicant to direct the local operator to perform groups of procedure steps instead of calling for each individual item to be performed.

The time clock starts when the applicant acknowledges the initiating cue.

Operator's Name: ____

Job Title: ☐ NLO ■ RO ☒ SRO ☐ STA ☐ SRO Cert

JPM Title: **Perform alternate depressurization using SRVs from panel 02ADS-71**

JPM Number: P-3 **Revision Number:** 1

K/A Number and Importance:
NUREG 1123, 239002 A2.04; 4.1; 4.2

Suggested Testing Environment: Plant

Actual Testing Environment: Plant

Testing Method: Simulate

Alternate Path: No

Time Critical: No

Estimated Time to Complete: **15** **Actual Time Used:** _______minutes

References:
1. NUREG 1123; 239002 A2.04; 4.1; 4.2
2. EP-11; Rev. 1; Use the remote ADS cabinet 02ADS-71 to depressurize the RPV

EVALUATION SUMMARY:
1. Were all the Critical Elements performed satisfactorily? ☐ Yes ☐ No
2. Was the task standard met?

The operator's performance was evaluated against the standards contained in this JPM, and has been determined to be: ☐ **Satisfactory** ☐ **Unsatisfactory**

Comments:____
____
____
____
____
____

Note: Any grade of UNSAT requires a comment.

Evaluator's Name: ______________________________(Print)

Evaluator's Signature: ______________________________ **Date:** ___________

Description: This JPM has the applicant perform an emergency depressurization IAW EP-11.

NOTE: Critical Element(s) indicated by * in Performance Checklist.

PERFORMANCE CHECKLIST:

JPM Start Time ___________

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtain a controlled copy of procedure	Obtains a controlled copy of EP-11; Rev.1.			
2. Reviews precautions associated with the procedure: • Torus water level shall be greater than or equal to 5.5 feet to open an SRV. Opening an SRV with Torus water level less than 5.5 feet will cause direct pressurization of the containment and possible containment damage.	Applicant reviews applicable section of the procedure and verifies Torus water level is >5.5 ft. **EVALUATOR CUE:** When applicant requests information regarding Torus water level, inform applicant level is greater than 13.9 ft.			
3. Reviews prerequisites associated with the procedure: • Performance of this procedure has been directed by the EOPs or SAOGs.	Applicant reviews applicable sections of the procedure.			
4. Reviews special instructions associated with the procedure • Tools and materials for this procedure are located in the equipment cabinets near Remote Shutdown Panel 25RSP and panel 02ADS-71. • Notify RES prior to entering the RB due to potentially changing radiation conditions.	Applicant reviews applicable section of the procedure.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
5. Establish communications between the Control Room and ADS RELIEF VALVE CONTROL PANEL 02ADS-71.	Applicant proceeds to RB 300 el. and establishes communications. **EVALUATOR CUE:** Inform applicant that communications have been established and you will respond as control room operator.			
6. Verify the following control switches are in SOL DEENG at panel 02ADS-71: • ADS & SRV 02RV-71C • SRV 02RV-71F • SRV 02RV-71J • SRV 02RV-71L • ADS & SRV 02RV-71B • ADS & SRV 02RV-71E • ADS & SRV 02RV-71H • SRV 02RV-71K • ADS & SRV 02RV-71A • ADS & SRV 02RV-71D • ADS & SRV 02RV-71G	Applicant verifies the control switches are in SOL DEENG. **EVALUATOR CUE:** When applicant identifies the switches, inform applicant that switches are in SOL DEENG.			
* 7. Place CONTROL POWER breaker in ON at panel 02ADS-71.	Applicant places CONTROL POWER breaker in ON. **EVALUATOR CUE:** When applicant requests information regarding response, inform applicant that control power is ON.			
8. Verify in the control room, annunciator 09-4-3-3 ADS REMOTE CNTRL PNL BKR CLOSED is in alarm.	Applicant verifies the alarm has actuated. **EVALUATOR CUE:** When applicant requests, inform applicant that alarm has actuated.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. WHILE performing Step 5.1.7, monitor the following to verify SRV operation: • Annunciator 09-4-2-6 SRV SONIC MON ALARM HI • ADS & SRV ACOUSTIC MONITOR 02VMR-071 at panel 09-4 • White light at SRV control switch at panel 09-4 • Red SOL ENGD and green SOL DEENG lights at panel 02ADS-71	Applicant verifies each of the indications while performing Step 11 of this JPM (Procedure step 5.1.7). **EVALUATOR CUE:** When applicant requests each SRV indication, inform applicant that each has occurred.			
10. IF torus water level is LESS THAN 5.5 feet, THEN perform the following: • Notify SM or CRS that SRVs cannot be opened. • Restore panel 02ADS-71 per subsection 5.2.	Applicant verifies that torus water level is >5.5 ft. **EVALUATOR CUE:** When applicant verifies the torus water level, inform applicant that level is 13.9 ft.			
* 11.Place one or more of the following control switches in SOL ENGD at panel 02ADS-71, as necessary to establish seven SRVs open: • ADS & SRV 02RV-71C • SRV 02RV-71F • SRV 02RV-71J • SRV 02RV-71L • ADS & SRV 02RV-71B • ADS & SRV 02RV-71E • ADS & SRV 02RV-71H • SRV 02RV-71K • ADS & SRV 02RV-71A • ADS & SRV 02RV-71D • ADS & SRV 02RV-71G	Applicant opens seven SRVs. **EVALUATOR CUE:** When applicant indicates the switch for opening an SRV, inform applicant that SRV has opened.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
* 12. **IF** any SRV was opened from panel 02ADS-71, **THEN** perform the following: • Close and lock panel door. • Notify Control Room. • Do not perform subsection 5.2 until directed by the SM or CRS.	Applicant closes the door and Control room notified. **EVALUATOR CUE:** Acknowledge when applicant informs the control room. Subsection 5.2 is the restoration section.			
EVALUATOR: Terminate the task at this point.				

JPM Stop Time __________

HANDOUT PAGE

TASK CONDITIONS:

1. Torus water level is 13.9 feet.
2. The Shift Manager has identified the need to use the remote ADS cabinet 02ADS-71 to depressurize the RPV per EP-11.
3. No SRVs have been opened from the Control Room.

INITIATING CUE:

You are the RO. The CRS has directed you to emergency depressurize the RPV per EP-11.

Facility: Fitzpatrick Scenario No.: 1 Op-Test No.: 1

Examiners: ______________ Operators: ______________

Initial Conditions: Reactor startup is in progress with power at 90%. SWS pumps 46P-1A and 46P-1B are in service with 46P-1C in standby.

Turnover: Continue power ascension to 100% IAW RAP-7.3.16. Maintenance is required on 46P-1A. Place 46P-1C in service.

Event No.	Malf. No.	Event Type*	Event Description
1.	N/A	N-SNO	Swap SWS pumps. Place 46P-1C in service and remove 46P-1A.
2.	N/A	R-SNO	Raise power to 100% power using Rx recirc
3.	RR23:A	I-ATC TS-CRS	'A' Recirc Flow unit failure. TS call
4.	RR19:B	I-SNO2 TS-CRS	Upscale failure of 06LT-52B; FWLC level transmitter. TS call
5.	FW01:B	R-ATC C-SNO2	Trip of 'B' RFPT; Rx Recirc runbacks to 44% speed.
6.	RR15:A RP01AA RP01AB	M-ALL	Coolant leakage inside primary containment. Defeat Auto Scram Function
7.	ED43:A ED43:B DG03:A DG03:C	M-ALL	Loss of offsite AC power. Failure of 'A' and 'C' EDG output breakers to close.
8.	AD07:A	C-SNO2	'A' ADS fails to open

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

SCENARIO SUMMARY

Shift orders are to swap SWS pumps. Place 46P-1C in service and remove 46P-1A from service.

As part of turnover the crew is directed to raise power to 100% using recirc flow. Initial condition. 90% Continue with startup. OP-65 Startup and Shutdown procedure; step D.24.18.

The 'A' Recirc flow unit will fail downscale. This instrument failure should result in a half scram condition. The SRO must assess Tech Spec for the failed flow unit T/S 3.3.1.1 for RPS and T/S SNO2 will be required to bypass the 'A' Flow unit in order to reset the half scram.

The FWLC level transmitter 06LT-52B will fail upscale. Reactor feedwater controls will respond as though vessel level has increased and immediately begin to reduce feedwater flow to the RPV. The SRO must assess Tech Spec for the failed transmitter. T/S 3.3.2.2 Feedwater and Main Turbine High Water Level Trip instrumentation

'B' RFPT will trip causing a recirc runback to 44% speed, power reduction and the ATC to insert cram rods to exit buffer zone.

A medium size LOCA will begin and progress. Drywell temperature and pressure will be rising requiring a manual scram. The auto scram functions are defeated. Upon the scram a Loss of offsite AC power will occur and the 'A' and 'C' EDG output breakers will fail to close potentially causing a challenge to ECCS systems operability.

As the LOCA size increases RPV water level will continue to lower requiring emergency depressurization. The ADS auto initiation function is defeated. When 7 ADS valves are open, the 'A' ADS valve will fail closed, requiring another SRV to be opened.

The scenario will be terminated when reactor level is being controlled in band using Low pressure ECCS pumps.

INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	- Reset simulator to Protected IC -43
	■ Apply Information Tags on the following components: - None
	■ Take out of FREEZE and ensure the following: - 46P-1A and 46P-1B; SWS pumps are in service - Service Water Pump 46P-1C is powered from the 10700 bus and will not be available when Normal Station Service Transformer T-4 is de-energized - 'A' EHC regulator is in control.
	■ Ensure materials for applicants: - OP-65; Startup and Shutdown procedure. Marked up to step D.24.18 - OP-42 : SWS; Marked up to step D.5 - OP-27; RWR system - RAP-7.3.16 plant power ascension with recirc - Reactivity maneuvering sheet
	■ **Ensure** the following malfunctions are loaded: - RR23:A; 'A' Recirc Flow unit failure; trigger 1; severity 0% - RR19:B; Upscale failure of 06LT-52B; FWLC level transmitter; trigger 2; severity 100%. - FW01:B; 'B' RFPT trip; trigger 3 - RR15:A; Coolant leakage inside primary containment; trigger 4, initial severity at 2 % with ramp 20 min, final severity 40%. - RP01AA; 'A' RPS Auto scram failure; trigger 7 - RP01AB; 'B' RPS Auto scram failure; trigger 7 - ED43:A and B; Loss of offsite AC power; trigger 5; Manual trigger 4 minutes after D/W pressure of 2.7 psig. - DG03:A;failure of 'A' EDG output breaker to close: **PRESET** - DG03:C;failure of 'C' EDG output breaker to close: **PRESET** - AD07:A : **PRESET** - AD03:A,B,C,D,E,F,G: **PRESET** ■ **Ensure** the following remote functions are loaded**:** - None ■ **Ensure** the following overrides are loaded**: None** - HPZDI23AS19- HPCI turbine trip – trigger 6. Insert 60 seconds after restoring HPCI injection. - Remove malfunction AD03:A,B,C,D,E,F and G when ADS is overridden. ■ **Ensure** the following triggers are built**:**

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	- trigger 1; RR23:A; 'A' Recirc Flow unit failure - trigger 2; RR19:B; Upscale failure of 06LT-52B; FWLC level transmitter - trigger 3; FW01:B; 'B' RFPT trip. - trigger 4; RR15:A ; Severity initial 2% with ramp to 100% severity over 20 minutes, final severity 40%. - trigger 5; ED43:A and ED43:B. Manual trigger 4 minutes after Drywell pressure reaches 2.7 psig. - Trigger 7; RP01AA and RP01AB. 'A' and 'B' Auto scram failure.
	■ Reset any annunciators that should not be present

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Swap SWS pumps. Place 46P-1C in service and remove 46P-1A

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Place 46P-1C in service and remove 46P-1A from service; per OP-42;step G.1 for Startup of third SWS pump. Changing SWS pump lineup.
	■ Respond as NPO during SWS pump swap

EVENT 2: Raise power to 100% using Rx Recirc

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Continue power ascension with Rx Recirc IAW RAP—7.3.16 , OP-27and OP-65
	■ At the discretion of the Chief examiner after observing a rise in Reactor power, move to the next event.
	■ Respond to request for assistance as appropriate.

EVENT 3: 'A' Recirc Flow unit failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 1 after events 1 and 2 are completed
	■ Respond to request for assistance as appropriate.

EVENT 4: Upscale failure of 06LT-52B; FWLC level transmitter

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 2 after TS call has been made or at discretion of lead examiner.
	■ Respond to request for assistance as appropriate.

EVENT 5: 'B' RFPT trip

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 3 after TS call has been made or at discretion of lead examiner.
	■ Respond to request for assistance as appropriate.

EVENT 6: Coolant leakage inside primary containment

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 4 and trigger 7 after actions are complete.
	■ Auto RPS scram failure on 'A' and 'B' RPS.
	■ Respond to request for assistance as appropriate.

EVENT 7: Loss of Offsite AC power and failure of 'A' and 'C' EDG output breakers to close.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Manually activate trigger 5 ; 4 minutes after Drywell pressure reaches 2.7 psig.
	■ PRESET malfunction, DG03:A and DG03:C
	■ Trigger 6; HPCI trip insert 60 seconds after restoring HPCI injection.
	■ Respond to request for assistance as appropriate.

EVENT 8: Emergency RPV Depressurization

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When RPV level can not be maintained above -19 inches
	■ Respond to request for assistance as appropriate.

EVENT 9: 'A' ADS fails to open

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ PRESET malfunction AD07:A
	■ Delete PRESET malfunctions AD03:A,B,C,D,E,F,G after ADS has been inhibited.
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. EOP-2: Scrams the reactor prior to 5 psig Drywell pressure with auto RPS scram defeated.

   Standard: Expected action to occur when Drywell pressure is > 2.3 psig IAW OPG-13; Transient Mitigation.

   Basis: The scram reduces the rate of energy production and thus the rate of drywell leakage. Basis from MIT-301.11C; EOP-2 basis

2. EOP-2 Perform Emergency RPV Depressurization.

   Standard: Before RPV water level reaches – 19 inches; Emergency de-pressurizes per EOP-2, open 7 ADS valves.

   Basis: If an injection source is available but the decreasing RPV water level trend cannot be reversed before RPV water level drops to the Minimum Steam Cooling RPV Water Level, a blowdown is performed to permit injection from low head systems, maximize flow from available injection sources, and minimize the flow through any primary system break. Basis from MIT-301.11C ; EOP-2 basis for Emergency RPV depressurization.

SHIFT TURNOVER INFORMATION

OFF GOING SHIFT D ☐ N ■ DATE: Today

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM,CRS,STA,RO,SNO2)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Manager Log (SM,CRS,STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM,CRS,STA,RO, SNO2)
- Shift Turnover Checklist (ALL)
- LCO Status (SM,CRS,STA)
- Computer Alarm Summary (RO)

Evolutions/General information/Equipment Status:

Plant startup in progress from a refuel outage.
Plant is at approximately 90% power

PART III: Remarks/Planned Evolutions:

1. Swap SWS pumps. Place 46P-1C in service and remove 46P-1A from service following pump swap.
2. Continue power ascension to 100% power IAW RAP-7.3.16, OP-27 and OP-65 using Recirc.

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (SNO2)

TITLE	NAME	TITLE	NAME
SRO			
ATC			
SNO2			

Op-Test No.: 1 Scenario No.: 1 Event No.: 1

Event Description: Swap SWS pumps. Place 46P-1C in service and remove 46P-1A from service

Time	Position	Applicant's Actions or Behavior
	CRS	Orders SNO2 to start 46P-1C per OP-42 and remove 46P-1A from service.
		Note 1: OP-42; section G.1
	SNO2	Informs Chemistry that SWS pumps will be swapped to 46P-1B and 46P-1C pumps in service.
	SNO2	Coordinate with NPO to monitor SWS pump swap and screen wash booster pump alignment.
	SNO2	Starts 46P-1C by placing pump to start
		Note 2: OP-42 contains tap changer steps for adjusting 12500 bus voltage. This may be done
	Sim Booth Operator	Respond as NPO that 46P-1C pump start is SAT.
	SNO2	Remove 46P-1A from service by placing pump to stop.
		Note 3: Reduce voltage on 12500

Examiner Note:

Proceed to the next event

Op-Test No.: 1	Scenario No.: 1 Event No.: 2
Event Description:	Raise Reactor Power with recirc IAW RAP-7.3.16; OP-27 and OP-65

Time	Position	Applicant's Actions or Behavior
	CRS	If not already performed, CRS conducts reactivity brief on raising Reactor Power with recirc IAW RAP-7.3.16; OP-27; and OP-65. Reviews Reactor Engineering RAP-7.3.16 and reactivity maneuvering guidance, if not previously performed.
	CRS	CRS Orders SNO2 to raise reactor power with reactor recirc pumps to 100% power. Provides Reactivity CRS monitoring.
	SNO2	IAW RAP-7.3.16 and OP-27; step E.2.1; Recirculation system commences raising Reactor Power : a. Guidance given in RAP-7.3.16 for adjusting reactor power, including maximum rate of power change. b. Maintain core flow less than or equal to 80.85 Mlb/hr. c. Control mismatch between recirculation loop jet pump flow as follows: 1) if operating at less than 70% of rated core flow, THEN maintain mismatch less than or equal to 10% of rated core flow. 2) if operating at greater than or equal to 70% of rated core flow, then maintain mismatch less than or equal to 5% of rated core flow d. Adjust speed in 1 to 3% increments.
	ATC	Monitors plant for correct response as power is raised.
		Examiner Note: ***Proceed to next event when sufficient change in power level is observed.***

Op-Test No.: 1	Scenario No.: 1	Event No.: 3
Event Description: 'A' Recirc Flow unit downscale failure		

Time	Position	Applicant's Actions or Behavior
	ALL	Responds to alarms: 09-5-1-3 RPS A AUTO SCRAM 09-5-2-2 ROD WITHDRAW BLOCK 9-5-2-25 FLOW REF OFF NORM 09-5-1-41 NEUTRON MON SYS TRIP 9-5-2-44 APRM UPSCALE 9-5-2-54 APRM TRIP SYS A INOP OR UPSCALE TRIP
	ATC/ SNO2	Determines 'A' Flow unit downscale failure. Indication in back panel 09-14.
	CRS	Enters AOP-59 for loss of RPS bus power and CRS orders ATC to bypass 'A' flow unit.

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: 'A' Recirc Flow unit downscale failure

Time	Position	Applicant's Actions or Behavior
	ATC/ SNO2	Bypasses 'A' Flow unit per OP-16. **NOTE** : The INOP, UPSCALE, and COMPARATOR indicating lights on panel 09-14 are unaffected by bypass switch. E.21.1 Place RWR FLOW UNIT BYP switch in (A). E.21.2 Verify the following FLOW UNIT indications: • Associated BYPASS indicating light is on • Associated UPSC OR INOP light is off • Associated COMPAR light is off E.21.3 Verify BYPASS light is off for other flow unit channel on the same side. E.21.4 Verify white BYP light in on at top of panel 09-14 for Flow Unit (A). **NOTE:** Refer to Tech Spec Bases 3.3.1.1.2.b and TRM Table T3.3.B-1. E.21.5 **IF** the flow unit comparator function is the only function to be bypassed, **THEN** Steps E.21.6 and E.21.7 are not required. E.21.6 **IF** a flow unit is declared inoperable, **THEN** one of the two required APRM Neutron Flux-High (flow biased) Channels in the associated trip system must be declared inoperable. NOTE: The following step may cause a half-scram. E.21.7 Place switch S-1 on FLOW UNIT A to INT TEST at panel 09-14.
	ATC	Resets half scram.
	CRS	Makes Tech Spec call for an inoperable APRM neutron flux – High; flow biased. T/S 3.3.1.1 Action A.A1 place channel in the tripped condition in 12 hours RPS. **Examiner Note: Actions to be entered when flow unit fails downscale. Once OP-16; step E.21.7 is completed. LCO can not be exited per basis 3.3.1.1. With a flow unit inoperable a loss of a single flow unit lose single failure criteria. (page B.3.3.1.1-11.)**
	CRS	Briefs crew on the event.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 1 Event No.: 4

Event Description: Upscale failure of 06LT-52B; FWLC level transmitter

Time	Position	Applicant's Actions or Behavior
	ALL	Responds to alarms : 09-5-1-28 RX WTR LVL ALARM HI OR LO 09-5-2-29 FDWTR CH A or B or C RX WTR LVL HIGH TRIP
	CRS	Enters AOP-42; Determines upscale failure of 06LT-52B.
	CRS	Orders SNO2 to place feedwater controls in manual and attempt to maintain RPV water level between 196.5 inches and 206.5 inches. Swap to other level channel and restore feedwater controls to automatic per OP-2A, G.30.
	SNO2	Place feedwater in manual control to maintain RPV water level between 196.5 inches and 206.5 inches. Swap to other level channel per OP-2A. Verifies the following: Operating condensate and condensate booster and feedwater pumps lineup.
	CRS	Orders SNO2 to place feedwater control back in automatic per OP-2A, section G.7

Op-Test No.: 1 Scenario No.: 1 Event No.: 4

Event Description: Upscale failure of 06LT-52B; FWLC level transmitter

Time	Position	Applicant's Actions or Behavior
	SNO2	G.7.1 Stabilize RPV water level at 196.5 to 203 inches on 06LI-94A,B and C. G.7.2 Verify the following controllers are in MAN: • RFP A FLOW CONTROL 06-84A • RFP B FLOW CONTROL 06-84B G.7.3 Place RX WTR LVL CNTRL 06LC-83 in MAN. G.7.4 Slowly adjust RX WTR LVL CNTRL 06LC-83 manual control knob to balance RFP A FLOW CNTRL 06-84A. G.7.5 .Place RFP A FLOW CNTRL 06-84A in BAL. G.7.6 Line up RX WTR LVL CNTRL 06LC-83 as follows: a. Balance controller by adjusting setpoint tape. b. Place controller in BAL. G.7.7 Line up RFP B CNTRL 06-84B as follows **NOTE:** Adjusting 06-84B manual control knob will result in RPV water level changes. a. Balance controller by adjusting manual control knob. b. Place controller in BAL.
	CRS	CRS enters OP-27A and makes Tech Spec call for failure of 06LT-52B. T/S 3.3.2.2. A. A1 Feedwater and Main Turbine High Water Level Trip Instrumentation. With 1 channel inoperable, place channel in the tripped condition within 7 days.
	CRS	Briefs crew on the event

Examiner Note: At discretion of lead examiner.

Proceed to the next event

Op-Test No.: 1 Scenario No.: 1 Event No.: 5

Event Description: 'B' RFPT trip and recirc runback to 44% speed.

Time	Position	Applicant's Actions or Behavior
		Responds to alarms: 09-5-1-28 RX WTR LVL ALARM HI OR LO 09-6-4-9 RX FEED PMP B TRIP
	ATC/ SNO2	Report observation of lowering RPV level to CRS
	CRS	CRS enters AOP-42; Feedwater malfunction lowering feedwater flow and AOP-8; Loss or reduction of reactor coolant flow. • Directs ATC to monitor for onset of thermal –hydraulic instabilities per OP-16 posted attachment. • Directs SNO2 to determines operating point on power to flow map and refers to attachment 1 • Directs ATC to insert cram rods based on operating point on power to flow map
	SNO2	• Monitors feedwater discharge header pressure returns to normal. • Determines operating point on power to flow map and refers to attachment 1.
	ATC	• Monitor for onset of thermal –hydraulic instabilities per OP-16 posted attachment. • Inserts cram rods to exit buffer zone.
	SNO2	Resets recirc runback signal on Rx recirc.
	CRS	Briefs crew on the event.

Proceed to the next event

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description: Coolant leakage inside primary containment

Time	Position	Applicant's Actions or Behavior
	ALL	Annunciator 09-5-1-34 DW PRESS ALARM HI OR LO. Report of rising drywell pressure.
	CRS	Enters AOP-39 for loss of coolant. Orders SNO2 to attempt to detect and locate leak per Attachment 1.
	CRS	Orders Torus venting.
		CONTINUE TO NEXT PAGE

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description: Coolant leakage inside primary containment

Time	Position	Applicant's Actions or Behavior
	SNO2	Starts SBGT IAW OP-20 D.1 Train A Startup **CAUTION** Operating a standby gas treatment train with the charcoal filters installed to vent paint fuses, welding fumes, smoke from a fire, or chemical release could damage the charcoal filter. See precaution C.2.4. D.1.1 Ensure open ABOVE EL 369' SUCT 01-125MOV-11. D.1.2 Ensure open TRAIN A INLET 01-125MOV-14A. D.1.3. Verify the following: - White light for AIR HTR 01-125E-5A is on. - Red light for AIR HTR 01-125E-5A is on. - TRAIN A CLG VLV 01-125MOV-100A is closed. - FN DISCH 01-125MOV-15A is open. - TRAIN A FN 01-125FN-1A is Running. D.1.4 If SBGT is being placed in service to support any of the following: - Tours venting - Drywell venting - HPCI operation - Main steam leakage collection system operation - Auxiliary Gas treatment system operation. Then ensure required SBGT suction valves are lined up per the applicable procedure prior to proceeding to step D.1.5. D.1.5 If SGT Train B is shutdown then perform the following: a. Verify open TRAIN B CLG VLV 01-125MOV-100B b. Verify flow rate on SGT FLOW 01-125FI-106A: - RB un-isolated – approximately 6000 scfm - RB isolated – approximately 5600 to 5800 scfm D.1.6 If RB DIFF PRESS 01-125DPI-100A or B indicates less negative than -0.25 inches water, then ensure SGT TRAIN B is in service per subsection D.2.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6
Event Description: Coolant leakage inside primary containment

Time	Position	Applicant's Actions or Behavior
	SNO2	Starts SBGT IAW OP-20 D.2 Train B Startup **CAUTION** Operating a standby gas treatment train with the charcoal filters installed to vent paint fuses, welding fumes, smoke from a fire, or chemical release could damage the charcoal filter. See precaution C.2.4. D.2.1 Ensure open ABOVE EL 369' SUCT 01-125MOV-12. D.2.2 Ensure open TRAIN A INLET 01-125MOV-14B. D.2.3. Verify the following: - White light for AIR HTR 01-125E-5B is on. - Red light for AIR HTR 01-125E-5B is on. - TRAIN A CLG VLV 01-125MOV-100B is closed. - FN DISCH 01-125MOV-15B is open. - TRAIN A FN 01-125FN-1B is Running. D.2.4 If SBGT is being placed in service to support any of the following: - Tours venting - Drywell venting - HPCI operation - Main steam leakage collection system operation - Auxiliary Gas treatment system operation. Then ensure required SBGT suction valves are lined up per the applicable procedure prior to proceeding to step D.2.5. D.2.5 If SGT Train A is shutdown then perform the following: a. Verify open TRAIN A CLG VLV 01-125MOV-100A b. Verify flow rate on SGT FLOW 01-125FI-106A: - RB un-isolated – approximately 6000 scfm - RB isolated – approximately 5600 to 5800 scfm D.2.6 If RB DIFF PRESS 01-125DPI-100A or B indicates less negative than -0.25 inches water, then ensure SGT TRAIN B is in service per subsection D.2.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description: Coolant leakage inside primary containment

Time	Position	Applicant's Actions or Behavior
	SNO2	Performs Attachment 1 of AOP-39.
CT	CRS	Orders manual scram if drywell pressure > 2.3 psig. Enters AOP-1.
		NOTE: Auto RPS scram function are defeated.
	ATC	Inserts Manual Scram and perform AOP-1 Immediate Actions • Depress Manual Scram pushbuttons • Reactor Mode Switch to Shutdown • Fully Insert all SRM's and IRM's • Verify all rods in • Verify SDIV Vent and Drain valves closed • Verify APRM's downscale • Verify RWR pumps running • Verify/Trip Main Turbine • Verify electrical distribution fast transfer • Verify at least 1 Circ Water pump running
	CRS	Orders SNO2 to control level with Feed/Condensate at 177-222.5 in.
	SNO2	Trend level performance and manipulate GEMAC Master/Individual controllers, RFP discharge valves and RFP trip as necessary to control level.
	CRS	Enters EOP-2 and EOP-4 when drywell pressure exceeds 2.7 psig. Other EOP entry conditions EOP-2; RPV water level below 177 inches. EOP-4; Drywell temperature above 135°F.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 1 Event No.: 7

Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.

Time	Position	Applicant's Actions or Behavior
	Sim Booth Oper	Trigger 5 for ED43: A and B; 4 minutes after Drywell pressure reaches 2.7 psig.
	CRS	References AOP-72; 115 KV Grid loss, AOP-16; Loss of 10300; AOP-18; Loss of 10500; and AOP-69;CRD pump trouble but other EOPs.
	ATC	Verifies all EDG starts.
	SNO2	With no circ water pumps running, closes MSIVs.
	ATC	Identifies and reports to CRS the failure of 'A' and 'C'EDG output breakers to close.
	CRS	Directs ATC to shutdown 'A' and 'C' EDG IAW AOP-18; Loss of 10500.

Op-Test No.: 1 Scenario No.: 1 Event No.: 7

Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.

Time	Position	Applicant's Actions or Behavior
	ATC	AOP-18: Step F.1.1 If EDG A is to be shutdown, then perform the following: a. Ensure EDG A LOAD BKR 10502 is tripped and placed in pull to lock. b. Ensure EDG A & C TIE BKR 10504 is tripped. c. Place EDG A CONTROL SWITCH in MAINT at panel 93ECP-A. d. Place EDG A CNTRL control switch to STOP at panel 09-8. e. If EDG A fails to shutdown, then perform emergency EDG shutdown per section G of OP-22. f. If resumption of EDG A operation is desired, then place EDG A CONTROL SWITCH in STANDBY at panel 93ECP-A. Step F.1.2 If EDG C is to be shutdown, then perform the following: a. Ensure EDG C LOAD BKR 10512 is tripped and placed in pull to lock. b. Ensure EDG A & C TIE BKR 10504 is tripped. c. Place EDG C CONTROL SWITCH in MAINT at panel 93ECP-C. d. Place EDG C CNTRL control switch to STOP at panel 09-8. e. If EDG C fails to shutdown, then perform emergency EDG shutdown per section G of OP-22. f. If resumption of EDG C operation is desired, then place EDG C CONTROL SWITCH in STANDBY at panel 93ECP-C.
	SNO2	Verifies all available ECCS pumps start.
	CRS	Orders SNO2 to prevent injection from those CS and RHR pumps not required for adequate core cooling per (EP-5)
	SNO2	Prevents injection from CS and RHR pumps not required for adequate core cooling per (EP-5)

Op-Test No.: 1 Scenario No.: 1 Event No.: 7

Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.

Time	Position	Applicant's Actions or Behavior
	CRS	Orders SNO2 to maintain RPV level between 177 and 222.5 inches using RCIC and HPCI align suctions from the CST. Defeat HPCI HI area temperature and High Torus water level suction transfer **if necessary** IAW EP-2. Defeat RCIC low RPV pressure and high area temperature isolations **if necessary** IAW EP-2.
	SNO2	Maintains RPV level between 177 and 222.5 inches using RCIC and HPCI align suctions from the CST. • Defeats HPCI Hi area temperature and High Torus water level suction transfer **if necessary** IAW EP-2. • Defeats RCIC low RPV pressure and high area temperature isolations **if necessary** IAW EP-2.
	SNO2	**HPCI HI AREA TEMPERATURE DEFEAT** 5.7.1 Verify one of the following conditions exist: • A steam leak does not exist in HPCI steam piping outside the containment. **OR** • Operation of both HPCI AND RCIC is required to maintain RPV water level. 5.7.2 For 23MOV-15, place HPCI STM LEAK AUTO ISOL DIV I2F-S6A keylock switch in TEST at panel 09-21. 5.7.3 For 23MOV-16 and 60, place HPCI STM LEAK AUTO ISOL DIV I1 2F-S6B keylock switch at panel 09-21.

Op-Test No.: 1	Scenario No.: 1	Event No.: 7
Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.		

Time	Position	Applicant's Actions or Behavior
	SNO2	**HPCI HIGH TORUS WATER LEVEL SUCTION TRANSFER DEFEAT** 5.13.1 Place HPCI TORUS SUCT BYPASS SW 23A-S31 keylock switch in BYPASS at panel 09-3. 5.13.2 Verify white HPCI TORUS SUCT BYPASS LT 23A-DS76 light is on at panel 09-3. 5.13.3 Perform one of the following: A. IF HPCI not running, AND HPCI suction has swapped to torus, **THEN** restore HPCI to CST as follows: 1. Close the following valves: • 23MOV-57 • 23MOV-58 2. Open 23MOV-17. B. IF HPCI must remain running, AND HPCI suction has swapped to torus, **THEN** place in close the following valves: • 23MOV-57 • 23MOV-58 When 23MOV-57 and 23MOV-58 have dual indication open 23MOV-17.
	SNO2	**RCIC LOW RPV PRESSURE DEFEAT** 5.17.1 For 13MOV-15, disconnect lead from one of the following terminals in panel 09-33: AA-71 **OR** AA-72 5.17.2 For 13MOV-16, disconnect lead from one of the following terminals in panel 09-30: AA-28 **OR** AA-29

Op-Test No.: 1	Scenario No.: 1	Event No.: 7
Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.		

Time	Position	Applicant's Actions or Behavior
	SNO2	**RCIC HIGH AREA TEMPERATURE DEFEAT** 5.16.1 Verify one of the following conditions exist: A steam leak does not exist in RCIC steam piping outside the containment. **OR** Operation of both HPCI AND RCIC is required to maintain RPV water level. 5.16.2 For 13MOV-16, place RCIC STM LEAK AUTO ISOL DIV I 2F-S5A keylock switch in TEST at panel 09-21. 5.16.3 For 13MOV-15, place RCIC STM LEAK AUTO ISOL DIV I1 2F-S5B keylock switch in TEST at panel 09-21.
	CRS	Orders SNO2 to spray the Torus before Torus pressure reaches 15 psig using the posted instructions.

Op-Test No.: 1 Scenario No.: 1 Event No.: 7

Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.

Time	Position	Applicant's Actions or Behavior
	SNO2	**Places RHR in Torus spray mode using the posted instructions.** 1.Verify torus pressure is **GREATER THAN** 2.7 psig. 2. IF RPV water level is LESS THAN 10 inches on fuel zone water level indication, and the EOPs permit diverting LPCI flow, THEN place DW & TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18A (B) keylock switch in MANUAL OVERRD. 3. Place SPRAY CNTRL 10A-S17A (B) switch to MANUAL, spring return to normal. 4. Verify white SPRAY PERM 10A-DS-67A(B) light is on. 5. Ensure available RHR pumps in RHR loop A(B) are running: • RHR PMP 10P-3A(B) • RHR PMP 10P-3C(D) **NOTE:** 10MOV-3/A(B) may be throttled when 10MOV-39A(B) has dual position indication. 6. Open RHR TEST TORUS CLG & SPRAY 10MOV-39A(B). 7. Throttle TORUS SPRAY INBD VLV 10MOV-38A(B) to establish desired torus spray flow rate. 8. **WHEN** RHR Loop A(B) flow is **GREATER THAN** ensure closed MIN FLOW VLV I0MOV-16A(B).1500 gpm, 9. Throttle RHR TEST & TORUS CLG 10MOV-34A(B) to divert excess flow to the torus to maintain > 6,500 gpm RHR Loop A(B) flow with one RHR pump operating or > 13,000 gpm RHR Loop A(B) flow with two RHR pumps operating. **NOTE:** Procedure may be continued while condensate transfer is being isolated. 10. IF RHR Loop A(B) condensate transfer keep-full is in service, AND RHR Loop A(B) pressure is LESS **THAN** condensate transfer pressure, **THEN** close I0RHR-274(I0RHR-260). 11. Establish RHRSW flow and temperature control.
	CRS	Orders SNO2 to place RHR in Drywell spray mode using the posted instructions.

Op-Test No.: 1 Scenario No.: 1 Event No.: 7

Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.

Time	Position	Applicant's Actions or Behavior
	SNO2	Places RHR in Drywell Spray mode 1. ensure the following components are tripped: **RWR Pumps**: - 02-2P-1A; - 02-2P-1B **Drywell Cooling Fans**: - 68FN-2A,B,C, and D; - 68FN-4A,B,C, and D 2. Verify drywell temperature and pressure are within the Drywell Spray Initiation Limit. 3. If RPV water level is less than 10 inches on fuel zone water level indication, and the EOPs permit diverting LPCI flow, then place DW & TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18A(b) keylock switch to MANUAL OVERRD. 4. Place SPRAY CNTRL 10A-S17A(B) switch to MANUAL, spring return to normal. 5. Verify white SPRAY PERM 10A-DS67A(B) light is on. **CAUTION** Starting an RHR pump loop that is not full could result in severe water hammer and equipment damage. RHR loop piping shall be full prior to manually starting an RHR pump in that loop. 6. Ensure available RHR pumps in RHR Loop A(B) are running: - RHR PUMP 10P-3A(B) - RHR PUMP 10P-3C(D) 7. Open DW SPRAY OUTBD VLV 10MOV-26A(B). 8. Throttle DW SPRAY INBD VLV 10MOV-31A(B) to establish desired drywell spray flow. 9. when RHR Loop A(B) flow is greater than 1500 gpm, ensure closed MIN FLOW 10MOV-16A(B). **NOTE** Procedure maybe continued while condensate transfer is being isolated. 10. If RHR Loop A(B) condensate transfer keep-full is in service, and RHR Loop a(B) pressure is less than condensate transfer pressure, then close 10RHR-274(10RHR-260). 11. Establish RHRSW flow and temperature control.

Op-Test No.: 1	Scenario No.: 1	Event No.: 7
Event Description: Loss of offsite AC power and failure of 'A' and 'C' EDG output breakers to close.		

Time	Position	Applicant's Actions or Behavior
	CRS	Orders SNO2 to place RHR in Torus cooling mode using the posted instructions.
	SNO2	Places RHR in Torus cooling mode using the posted instructions. 1. **IF** a LPCI auto-initiation signal is sealed in, **THEN** perform the following: a. **IF** RPV water level is LESS **THAN** 10 inches on fuel zone water level indication, and the EOPs permit diverting LPCI flow,THEN place DW & TORUS SPRAY VLV OVERRIDE OF FUEL ZONE LVL 10A-S18A(B) keylock switch in MANUAL OVERRD. b. Place SPRAY CNTRL 10A-S17A(B) switch to MANUAL, spring return to normal. c. Verify white SPRAY PERM 10A-DS-67A(B) light is on. 2. Ensure at least one of the following RHR pumps is running: • RHR PMP 10P-3A(B) • RHR PMP 10P-3C(D) **NOTE:** 10MOV-3/A(B) may be throttled when 10MOV-39A(B) has dual position indication. 3. Open RHR TEST TORUS CLG & SPRAY 10MOV-39A(B). 4. Throttle RHR TEST & TORUS CLG 10MOV-34A(B) to establish desire flow. 5. **WHEN** RHR Loop A(B) flow is **GREATER THAN** 1500 gpm, ensure closed MIN FLOW VLV I0MOV-I6A(B). **NOTE:** Procedure may be continued while condensate transfer is being isolated. 6. **IF** RHR Loop A(B) condensate transfer keep-full is in service, AND RHR Loop A(B) pressure is **LESS THAN** condensate transfer pressure, close 10RHR-274(10RHR-260). 7. Establish RHRSW flow and temperature control.
		NOTE If Torus sprays have been initiated, terminate Torus sprays before Torus pressure drops below 0 psig.
	SNO2	Terminates Torus sprays before Torus pressure drops below 0 psig.

Examiner Note:

Proceed to the next event

Op-Test No.: 1	Scenario No.: 1	Event No.: 8
Event Description: Emergency RPV depressurization; 'A' ADS valve fails to open		

Time	Position	Applicant's Actions or Behavior
		EXAMINER NOTE: **Monitor for annuciator 09-4-1-28 ADS TIMER ACTUATED start recording time for the alarm. Time ______________**
	CRS	Orders SNO2 to line up CS and RHR for injection
	SNO2	Lines up CS and RHR for injection.
	CRS	Orders ATC to override ADS.
	ATC	Overrides ADS and reports back to CRS.
CT	CRS	**Before RPV water level reaches – 19 inches; CRS enters Emergency Depressurization and Orders opening 7 ADS Valves.**
	ATC	Opens 7 ADS valves and reports 'A' ADS valve has failed to open.
	CRS	Orders ATC to open another SRV.
	ATC	Opens another SRV.
	CRS	Orders SNO2 to maintain RPV level above 177 inches with LPCI and Core Spray.

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **RPV level is controlled with band of 177 inches and 222.5 inches with LPCI and Core Spray.**

POST-SCENARIO:

HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

Alert: 3.1.1. due to Coolant leakage

Facility: Fitzpatrick Scenario No.: 2 Op-Test No.: 1

Examiners: ______________ Operators: ______________

Initial Conditions: Reactor is in Mode 1 with power at 80%. Power ascension on hold for CRD pump swap.

Turnover: Swap CRD pumps. Place 'A' CRD pump in service and remove 'B' CRD pump from service.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-SNO2	Place 'A' CRD pump in service and remove 'B' CRD pump from service.
2	HP05	TS-SRO C-SNO2	Inadvertent HPCI initiation
3	FW13:A	R-ATC C-SNO2	33E-6A Feedwater Heater Tube Leak.
4	ED04:A	C-SNO2 TS-SRO	Inverter failure 71-INV-3A failure
5	MC01	C-ATC	Main condenser air In-leakage; Loss of condenser vacuum
6	RP01A RP01B RP09	M-ALL	Failure to scram; RPS is still energized, ARI fails to actuate.
7	SL01:A or B SL03:A or B	C-ATC	Trip of the in service SLC pump with SLC pump 'A' or 'B' relief 11-RV-39A or 11-39B lifts

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

SCENARIO SUMMARY

Initial conditions are a reactor startup is in progress with power at 80%. Shift orders are to place 'A' CRD pump 03P-16A in service and remove 'B' CRD pump 03P-16B IAW OP-25 G.10.

HPCI will inadvertently initiate, requiring crew actions to validate HPCI response and trip HPCI. Enters TS 3.5.1.D and C, 14 day LCO, verify RCIC operable. 72 hours to restore HPCI or LPCI.

33E-6A FWH will develop a tube leak. CRS will enter AOP-62 and will need to order power reduction IAW AOP-62; Loss of Feedwater Heating guidance

LPCI 'A' Inverter output breaker trips. TS call for the SRO. T/S 3.8.4.D. declares the associated LPCI subsystem inoperable immediately.

There will be a main condenser in-leakage causing condenser vacuum to degrade. CRS enters AOP-31 for loss of Condenser Vacuum. Eventually the main turbine will trip on loss of vacuum and the MSIV will need to be closed..

There will be a failure to scram when the scram is attempted. Entry into EOP-2 and then EOP-3 will be required. The first SLC pump when started will trip after about 1 minute and the second SLC pump will not inject. The operators will be required to vent the scram air header to insert control rods..

The scenario will be terminated when all control rods are inserted to or beyond position 02 and EOP-2 has been entered.

INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	- Reset simulator to : Protected IC - 44
	■ Apply Information Tags on the following components: - None
	■ Take out of FREEZE and ensure the following: Rx power is at 80% ready to swap CRD pumps
	■ Ensure materials for applicants: - OP-65; Startup and shutdown procedure; step D.21.4 - OP-27; RWR system - OP-25; Changing in-service CRD pumps; step G.10
	■ **Ensure** the following malfunctions are loaded: - HP05; HPCI inadvertent initiation; trigger 1 - FW13:A; 33E-6A Feedwater Heater Tube Leak trigger 3; severity 100%; 5 min ramp - ED04:A; LPCI inverter 71-INV-3A; trigger 4 - MC01; Main condenser in-leakage; trigger 5; severity 50%; 7 min ramp. - RP01A; RP01B and RP09; **PRESET** ; Failure to scram - SL01:A; 'A' SLC pump trip trigger 6 allow pump to run for 1 minute before inserting malfunction - SL01:B; 'B' SLC pump trip trigger 7 allow pump to run for 1 minute before inserting malfunction. - SL03: A; 'A' SLC pump relief 11-RV-39A lifts or SL03:B; 'B' SLC pump relief 11-RV-39B lifts.; Preset Both ■ **Ensure** the following remote functions are loaded: - IA07 then a 5 minute delay before inserting IA01, 100% severity with 2 minute ramp. (trigger 9) ■ **Ensure** the following overrides are loaded: **None** ■ **Ensure** the following triggers are built: - trigger 1; HP05; HPCI inadvertent initiation - trigger 3; FW13:A; 33E-6A Feedwater Heater Tube Leak - trigger 4; ED04:A; LPCI inverter 71-INV-3A; trigger 4 - SIM BOOTH OPERATOR Need to insert both R:ED24 and ED28 to close maint fdr bkrs to go to Alt feed trigger 8. - trigger 5; MC01; Main condenser in-leakage. - trigger 6; SL01:A insert after 1 minute of SLC pump running. - trigger 7; SL01:B insert after 1 minute of SLC pump running.

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Reset any annunciators that should not be present

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Swap in-service CRD pumps

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond as NPO during the start of 'A' CRD pump

EVENT 2: HPCI inadvertent initiation

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Trigger 1 after CRD pumps are swapped
	■ Respond to request for assistance as appropriate.

EVENT 3: 33E-6A Feedwater Heater Tube Leak AOP-62

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 3 after TS call has been made.
	■ Respond to request for assistance as appropriate.

EVENT 4: Loss of LPCI inverter 71-INV-3A

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 4 after event 4 is completed
	■ SIM BOOTH OPERATOR Need to insert both R:ED24 and ED28 to close maint fdr bkrs to go to Alt feed trigger 8.
	■ Respond to request for assistance as appropriate.

EVENT 5: Main Condenser in-leakage Enter AOP-31

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate trigger 5 after TS call has been made.
	■ Report a tear in the "A" RFPT Exhaust Boot
	■ Respond to request for assistance as appropriate.

EVENT 6: Failure to scram

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ **PRESET RP01A; RP01B and RP09**
	■ Booth operator responds to de-energize scram solenoids by removing fuses states unable to open the doors to remove the fuses.
	■ When requested by the control room to vent the scram air header insert trigger 9.
	■ Respond to request for assistance as appropriate.

EVENT 7: Trip the in service SLC pump and SLC pump relief valve lifts 11-RV-39A or B

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Booth Operator insert malfunction SL01:A; trigger 6 and SL01:B trigger 7 as appropriate. Allow pumps to run for 1 minute before inserting and insert malfunction when operator has walked away from SLC.
	■ Relief valve malfunctions are PRESET.
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. EOP-3 Terminate and prevent all RPV injection sources except RCIC, CRD and SLC when BIIT is exceeded per EP-5. re-inject to maintain RPV water level -19 inches and either:
the level to which RPV water level was lowered, if it was deliberately lowered or
222.5 inches, if RPV water level was not deliberately lowered.

Standard: Terminate and prevent all RPV injection sources except RCIC, CRD and SLC when BIIT is exceeded per EP-5. re-inject to maintain RPV water level -19 inches and either:
the level to which RPV water level was lowered, if it was deliberately lowered or
222.5 inches, if RPV water level was not deliberately lowered.

Basis: RPV water level is lowered to prevent thermal-hydraulic instabilities. Core instabilities may occur in a BWR when the reactor is operated at relatively high power-to-flow ratios and recirculation flow is reduced. The potential for instabilities is largely dependent upon core inlet subcooling. The greater the subcooling, the more likely that power oscillations will occur and increase in magnitude. Prompt level reduction is the most effective method of preventing or suppressing power oscillations.

2. EOP-3: Before Torus Temperature reaches the Boron Injection Initiation Temperature, Boron Injection is required.

Standard – Inject Boron using available systems. When pumps trip inject using alternate method per EP-4.

Basis: In the absence of large irregular oscillations induced by neutronic/thermal-hydraulic instabilities, fuel integrity and RPV integrity are not directly challenged even under failure-to-scram conditions as long as the core remains submerged (the preferred method of core cooling). A scram failure coupled with an MSIV isolation, however, results in rapid heatup of the torus water due to the steam discharged from the RPV via SRVs. The challenge to containment thus becomes the limiting factor which defines the second of the two possible conditions listed in this step requiring initiation of boron injection. If torus temperature and RPV pressure cannot be maintained below the Heat Capacity Temperature Limit, emergency RPV depressurization will be required. To avoid depressurizing the RPV with the reactor at power, it is desirable to shut down the reactor prior to reaching the Heat Capacity Temperature Limit. The Boron Injection Initiation Temperature is defined so as to achieve this goal when practicable.

3 EOP-3: Vent the scram air header per EP-3 until all control rods are fully inserted

Standard: With failure of RPS and ARI to actuate control rod insertion is required by venting the scram air header.

Basis: EP-3 basis for backup control rod insertion methods.

SHIFT TURNOVER INFORMATION

OFF GOING SHIFT D ☐ N ■ DATE: Today

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM,CRS,STA,RO,SNO2)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Manager Log (SM,CRS,STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM,CRS,STA,RO, SNO2)
- Shift Turnover Checklist (ALL)
- LCO Status (SM,CRS,STA)
- Computer Alarm Summary (RO)

Evolutions/General information/Equipment Status:

Plant startup in progress from a refuel outage.
Plant is at approximately 80% power

PART III: Remarks/Planned Evolutions:

1. Swap in-service CRD pumps. Place 'A' CRD pump in service and remove 'B' CRD pump
2. Continue power ascension to 85% power IAW RAP-7.3.16 by withdrawing control rods

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (SNO2)

TITLE	NAME	TITLE	NAME
SRO			
ATC			
SNO2			

Op-Test No.: 1 Scenario No.: 2 Event No.: 1

Event Description: Swap in-service CRD pumps. Place 03P-16A in service and remove 03P-16B

Time	Position	Applicant's Actions or Behavior
	CRS	Orders SNO2 to place 03P-16A; 'A' CRD pump in service and then remove 03P-16' 'B' CRD pump per OP-25; section G.10
		Note: Procedure marked up, "OP-25"; Changing in-service CRD pumps; steps completed up to step G.10.2
	SNO2	Coordinate with NPO to monitor 03P-16A pump start.
	SNO2	• Adjust CRD FLOW CNTRL 03FIC-301 to establish 20 to 30 gpm on 03FIC-301 or 03FI-310. • Starts CRD PMP 03P-16A.
	Sim Booth Operator	Respond as NPO that 03P-16A pump start is sat.
	SNO2	• Stop CRD PMP 03P-16B. • Adjust CRD FLOW CNTRL 03FIC-301 to establish 59 to 61 gpm on 03FI-310 or 03FIC-301. • Verify normal operating values on the following indicators at panel 09-5: - CHG WTR PRESS 03PI-302: BETWEEN 1390 and 1580 psig, not to exceed 1670 psig - DRV WTR DIFF PRESS 03DPI-303: 260 to 270 psid - CLG WTR DIFF PRESS 03DPI-304: approximately 10 to 26 psid - DRV WTR FLOW 03FI-305: zero when no CRD is being driven - CLG WTR FLOW 03FI-306: 59 to 61 gpm

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Inadvertent HPCI Initiation

Time	Position	Applicant's Actions or Behavior
	All	Recognize HPCI is starting
	CRS	Directs crew to verify the validity of the HPCI auto start using multiple indications.
	SNO2	Observes indications for Drywell pressure and reactor water level, determines HPCI start is not valid
	CRS	Directs SNO2 to trip HPCI
	SNO2	Trips HPCI (OP-15 HPCI Section F Shutdown)
		The following alarms will annunciate: • 9-3-3-15 HPCI PMP FLOW LO • 9-3-3-25 HPCI TRIP • 9-3-3-28 HPCI TURB TRIP SOLENOID ENERGIZED • 09-3-3-17 HPCI STM LINE DRN POT LVL HI
	CRS	(If HPCI injects and power changes), CRS enters AOP-32 Unexplained/Unanticipated reactivity change
	CRS	Enters TS 3.5.1.C.1 and C.2, verify RCIC operable immediately and 14 day LCO for HPCI inoperable.
	SNO2	SBGT started on HPCI start, secures SBGT or lineup flowpath by opening suction valve per OP-20 section F.
		NOTE: Shutdown of a SBT Train with a initiation signal present will prevent restart on a subsequent or different initiation signal.

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Inadvertent HPCI Initiation

Time	Position	Applicant's Actions or Behavior
	SNO2	Performs shutdown of 'A' SGT OP-20 F.1.1 ensure SGT Train A operation is not required F.1.3 Close TRAIN A INLET 01-125MOV-14A F.1.4 Close ABOVE EL 369' 01-125MOV-11 F.1.5 Verify the following: • White light for AIR HTR 01-125E-5A is on. • Red light for AIR HTR 01-125E-5A is off. • TRAIN A CLG VLV 01-125MOV-100A is open. • FN DISCH 01-125MOV-15A is closed. • TRAIN A FN 01-125FN-1A is stopped.
		NOTE: Shutdown of a SBT Train with a initiation signal present will prevent restart on a subsequent or different initiation signal.
	SNO2	Performs shutdown of 'B' SGT OP-20 F.2.1 ensure SGT Train B operation is not required F.2.3 Close TRAIN A INLET 01-125MOV-14A F.2.4 Close ABOVE EL 369' 01-125MOV-11 F.2.5 Verify the following: • White light for AIR HTR 01-125E-5B is on. • Red light for AIR HTR 01-125E-5B is off. • TRAIN A CLG VLV 01-125MOV-100B is open. • FN DISCH 01-125MOV-15B is closed. • TRAIN B FN 01-125FN-1B is stopped.

Examiner Note:

Proceed to next event

Op-Test No.: 1	Scenario No.: 2	Event No.: 3
Event Description: 33E-6A Feedwater Heater Tube Leak		

Time	Position	Applicant's Actions or Behavior
		OVERRIDES **IF indications of thermal-hydraulic instability occur, THEN insert a manual scram and exit this procedure.**
		CAUTIONS **Lower feedwater temperature reduces the margin to the onset of core thermal-hydraulic instability.**
		Respond to the following alarms: • 09-6-3-36 FW HTR LEVEL 6A HI • 09-6-3-26 FW HTR LEVEL 6A HI HI • 09-7-3-12 2nd STAGE RHTR DR TNK 4A LEVEL HI
	ALL	A noticeable rise in core thermal power or APRM power in conjunction with a lowering RPV feedwater inlet temperature (EPIC Screen FDWTR) caused by the following: • Loss of feedwater heater level control • Closure of reheat steam supply valve • Drag dump valve in mid-position • Isolation of extraction steam to the feedwater heater(s) • High level in first point feedwater heater
	ATC/ SNO2	Identifies 33E-6A Feedwater Heater Tube leak
	CRS	Enters AOP-62 for a loss of feed water heating
	CRS	Orders ATC to monitor for indications of thermal-hydraulic instability per OP-16 posted attachment. And monitors APRM power and RPV feedwater inlet temperature changes on EPIC Screen FDWTR or EPIC points A-3411 and A-3412.
	ATC	Monitors for indications of thermal-hydraulic instability per OP-16 posted attachment. And monitors APRM power and RPV feedwater inlet temperature changes on EPIC Screen FDWTR or EPIC points A-3411 and A-3412.
		CONTINUE TO NEXT PAGE

Op-Test No.: 1	Scenario No.: 2	Event No.: 3
Event Description: 33E-6A Feedwater Heater Tube Leak		

Time	Position	Applicant's Actions or Behavior
	CRS	• CRS orders if initial reactor power is LESS THAN OR EQUAL TO 90%, AND core flow is GREATER THAN 55%, THEN perform the following: • Lower RWR flow to establish approximately 55% core flow. • Insert cram groups per RAP-7.3.16 UNTIL reactor power is BELOW 100% rod line. • Maintain reactor power at least 20% below the pre-transient power level. **NOTE** Two CRAM groups of control rods need to be inserted
	ATC	• Lowers RWR flow to establish approximately 55% core flow. • Inserts cram groups per RAP-7.3.16 UNTIL reactor power is BELOW 100% rod line. • Maintains reactor power at least 20% below the pre-transient power level. **NOTE** Two CRAM groups of control rods need to be inserted
	SNO2	Monitors secondary side of the plant and performs verifications for ATC.
	CRS	• WHEN reactor power is stable demand an Official 3D Program and review core thermal-hydraulic parameters. • If Feedwater Heater 33E-6A, 33E-6B, OR a Feedwater Heater String isolates,**THEN** reduce power to less than 25%per AOP-62 and OP-3
	CRS	• Orders SNO2 when reactor power is stable demand an Official 3D Program and review core thermal-hydraulic parameters. Orders ATC If Feedwater Heater 33E-6A, 33E-6B, OR a Feedwater Heater String isolates, **THEN** reduce power to less than 25% per AOP-62 and OP-3
		CONTINUE TO NEXT PAGE

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: 33E-6A Feedwater Heater Tube Leak

Time	Position	Applicant's Actions or Behavior
	SNO2	Demands an Official 3D program and reviews core thermal-hydraulic parameters.
	ATC	If Feedwater Heater 33E-6A, 33E-6B, OR a Feedwater Heater String isolates, **THEN** reduce power to less than 25% per AOP-62 and OP-3
	CRS	Briefs crew on the event.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: Failure of LPCI inverter 71-INV-3A

Time	Position	Applicant's Actions or Behavior
	All	• 09-8-3-15 LPCI MOV IPS A 71INV-3A MINOR ALARM TROUBLE • 09-8-3-2 LPCI MOV IPS A AC INPUT LOSS • 09-8-3-7 LPCI IPS A BATT VOLTS LO OR BKR TRIP • 09-8-3-8 LPCI MOV IPS A C OUTPUT VOLTS LO OR LOSS • 09-8-3-10 LPCI MOV IPS A 71-INV-3A MAJOR ALARM S/D • 09-3-1-3 RHR A VLV OVERLOAD OR PWR LOSS • 09-3-1-13 RHR A INJ VLV OVERLOAD OR PWR LOSS • 09-4-0-8 RCIC PMP ENCL EXH FAN 13FN-2A TROUBLE • 09-4-3-12 RWR LOOP A VLV OVERLOAD OR PWR LOSS (various power supply trouble alarms)
	CRS	Investigate the cause of the alarm.
	SNO2	Sends a NPO to the LPCI inverter
	CRS	If the cause of the alarm is not readily apparent, then place LPCI MOV BUS A on alternate feed. CRS directs SNO2 to place LPCI MOV BUS A on alternate feed per ARP 09-8-3-2.
	SIM BOOTH OPER	***Need to insert both R:ED24 and ED28 to close maint fdr bkrs to go to Alt feed***
	SNO2	• Verifies L-15 is energized at panel 09-8 • Places LPCI MOV A PWR SUPP switch in ALT PULL TO LOCK at panel 09-8. Step F.1.13.a.6 of OP-43C. • When the cause of the alarm is known and corrected, LPCI MOV Bus A may be restored to normal per Section G.4 of OP-43C

Op-Test No.: 1   Scenario No.: 2   Event No.: 4

Event Description: Failure of LPCI inverter 71-INV-3A

Time	Position	Applicant's Actions or Behavior
	CRS	Enters T/S 3.8.4.D.1 declares the associated LPCI 'A'subsystem inoperable immediately. With HPCI enters T/S 3.5.1D.1 and D.2 Restore HPCI or LPCI within 72 hours with HPCI inoperable and Cond A entered for T/S 3.5.1.A.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 2 Event No.: 5

Event Description: Main condenser in-leakage

Time	Position	Applicant's Actions or Behavior
		Any of the following conditions exist: • Annunciator 09-3-1-28 OFFGAS RECOMBINER TROUBLE • Annunciator 09-6-1-29 CNDSR VAC LO alarms • Main Condenser vacuum is in Region 1 or 2 of Attachment 1 • Main Condenser vacuum is less than expected for current plant conditions
	CRS	Enters AOP-31 for loss of Condenser Vacuum
		OVERRIDES 1. IF any of the following occur: • Turbine load is LESS THAN 255 MWe AND vacuum is LESS THAN 25 inches Hg (Region 1 of Att 1) • Condenser vacuum lowers to OR is rapidly approaching the main turbine trip setpoint. THEN perform the following: • IF reactor power is GREATER THAN 29%, THEN insert a Manual Scram. • Trip the main turbine 2. As Main Condenser Vacuum lowers, Verify Automatic Actions of Section C. As condenser vacuum trends downward, the following occurs: 22.5 inches Hg - Main turbine trips 20 inches Hg - Reactor feed pump turbines trip 8 inches Hg - Turbine bypass valves close 8 inches Hg - MSIVs close (this isolation is bypassed if main turbine stop valves are closed AND the reactor mode switch is not in RUN) 3. Before main condenser vacuum lowers to 8 inches Hg, ensure MSIVs are closed.
	CRS	Orders SNO2 to perform the actions of AOP-31 for loss of condenser vacuum

Op-Test No.: 1 Scenario No.: 2 Event No.: 5

Event Description: Main condenser in-leakage

Time	Position	Applicant's Actions or Behavior
	CRS	Set a manual scram benchmark for ATC. (Typically ~23 inches)
	SNO2	Obtain AOP-31 for loss of condenser vacuum:
	SNO2	♦ At 09-6, Trip the Recombiner and verify The Hydrogen Addition System trips ♦ Dispatch an NPO to verify valve positions at the Off Gas System Recombiner Panel (01-107OGR)
	SNO2	Dispatch NPO to place spare SJAE's in service
	SNO2	At 09-6, Observe Off Gas Flow on 38FR-101 and determine that the source of condenser vacuum loss is air in leakage
	SNO2	Dispatch NPO(s) to inspect for source of air in leakage.
	SNO2	At 09-7 monitor Turbine Steam Seal Pressure and SPE Vacuum
	CRS	Trend Condenser Vacuum and Orders SNO2 to perform a power reduction with recirculation flow to combat trend. Limit the SNO2 to maintain $\geq$ 55% Core Flow. Rapid rates may apply. **Examiner Note: Expect power to be low due to earlier loss of feedwater heating.**
	SNO2	Obtain OP-27, Section E: (Normal Rates at $\leq$ 200 Mwth/min)
	ATC	Obtain RAP-7.3.16, Attachment 1 (Posted at panel 09-5) At panel 09-5 Fully Insert CRAM RODS

Op-Test No.: 1 Scenario No.: 2 Event No.: 5

Event Description: Main condenser in-leakage

Time	Position	Applicant's Actions or Behavior
	SNO2	At 09-4, Simultaneously lower recirculation pump speeds while monitoring: ♦ Jet Pump Loop Mismatch $\leq$ 5% (7.7 Mlbm/hr) ♦ Core Flow > 55% ♦ RPV Water Level < 222.5 inches **Examiner Note: Expect power to be low due to earlier loss of feedwater heating.**
	CRS	Trend condenser vacuum and Orders ATC to insert Control Rod Cram Groups to combat trend.

Examiner Note:

Proceed to the next event

Op-Test No.: 1	Scenario No.: 2	Event No.: 6

Event Description: Turbine trip on loss of vacuum and Failure to scram

Time	Position	Applicant's Actions or Behavior
	CRS	Orders ATC to perform a manual scram and AOP-1 immediate actions. Note: If CRS does not order a manual scram before 22.5 inches HG the turbine will trip and automatic scram will occur.
	ATC	Insert Manual Scram and perform AOP-1 Immediate Actions • Depress Manual Scram pushbuttons • Reactor Mode Switch to Shutdown • Fully Insert all SRM's and IRM's • Verifies all rods did not scram • Verifies SDIV Vent and Drain valves are open • Verifies APRM's are not downscale • Verifies Main Turbine is still on line • Verifies at least 1 Circ Water pump running
	CRS	Orders SNO2 to maintain RPV water band of 177 inches to 222.5 inches using condensate and feed water.
	SNO2	Trend level performance and manipulate GEMAC Master/Individual controllers, RFP discharge valves and RFP trip as necessary to control level.
	CRS	Enters EOP-2 and then EOP-3; Failure to scram.
	CRS	Orders ATC to initiate ARI.
	ATC	Initiate ARI and recognizes all 5 valves did not de-energize. Reports RPS and ARI failed to actuate to CRS.
	CRS	Orders ATC to reduce recirculation to minimum and trip Recirc Pumps

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: Turbine trip on loss of vacuum and Failure to scram

Time	Position	Applicant's Actions or Behavior
	SNO2	Reduces Recirculation flow to minimum
	SNO2	Trips Recirc Pumps
	CRS	Orders SNO2 to control RPV pressure between 800-1000 psig with SRVs.
	SNO2	Controls RPV pressure between 800-1000 psig with SRVs.
CT	CRS	Orders ATC to vent the scram air header per EP-3 section 5.3
	SIM BOOTH OPER	***If CRS determines to de-energize scram solenoids by removing fuses. Report unable to open the doors to remove the fuses.***
	ATC	Determine EP-3 success path is to vent the scram air header • Dispatches NPO to vent the scram air header per EP-3; section 5.3.
	SIM BOOTH OPER	***Insert trigger 9***
	CRS	Orders ATC to Override ADS.
	ATC	ATC places both ADS Override switches to Override.

Op-Test No.: 1	Scenario No.: 2	Event No.: 6
Event Description: Turbine trip on loss of vacuum and Failure to scram		

Time	Position	Applicant's Actions or Behavior
	CRS	**If Reactor power is above 2.5% or cannot be determined and RPV water level is above 110 in.** Orders T/P all injection except SLC, CRD and RCIC per EP-5. Terminate high pressure sources first. Identify reinjection source as feedwater with a level band of 80-100" and caution against rapid level changes during reinjection.
CT	SNO2	SNO2 lowers RPV water level to below 110 inches by terminating and preventing all injections except for SLC, RCIC, and CRD (EP-5). • At 09-3, Depress HPCI Turbine Trip Pushbutton • At 09-5, Select both RFP GEMAC Controllers to Manual • At 09-5, Reduce both RFP GEMAC Controllers to Minimum • At 09-6, Ensure both RFP Min Flow Valves are Open • At 09-6, As necessary, adjust RFP speed, Feedwater Startup Valve position and RFP Discharge Valve position to maintain level 80-100 inches. Exercise caution against rapid level rise. • At 09-3, Place both 14MOV-11A and B Auto Actuation Bypass switches in Bypass. • At 09-3, Verify both white Auto Actuation Bypass lamps are lit. • At 09-3, Ensure closed 14MOV-11A and B • At 09-3, Ensure both Core Spray pumps are stopped • At 09-3, Place both 10MOV-27A and B Auto Control Bypass switches in Bypass. • At 09-3, Verify both white Auto Control Bypass lamps are lit. • At 09-3, Ensure closed 10MOV-27A and B. • At 09-3, Ensure RHR pumps not required to be running are stopped

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: Turbine trip on loss of vacuum and Failure to scram

Time	Position	Applicant's Actions or Behavior
	CRS	Assign either operator to hang MSIV Low Water Level Jumpers per EP-2. EXAMINER NOTE: If MSIV Low Water Level jumpers are not installed per EP-2 then MSIVs will close. HPCI then maybe used to inject to the RPV.
	SNO2	Dispatch NPO to hang MSIV Low Water Level Jumpers

Examiner Note:

Proceed to the next event

Op-Test No.: 1	Scenario No.: 2	Event No.: 7
Event Description: Trip the in-service SLC pump and relief valve lift on the second SLC pump.		

Time	Position	Applicant's Actions or Behavior
	CRS	Orders SNO2 **If** a high Drywell pressure ECCS initiation signal exists (2.7 psig) THEN prevent injection from those CS and RHR pumps not required to assure adequate core cooling before depressurizing below their maximum injection pressures (EP-5)
	SNO2	Prevents injection if a high Drywell pressure ECCS initiation signal exists (2.7 psig) THEN prevent injection from those CS and RHR pumps not required to assure adequate core cooling before depressurizing below their maximum injection pressures (EP-5)
	CRS	Orders ATC to initiate SLC either SYS –A or Sys-B
	ATC	Initiates SLC either SYS –A or Sys-B - Verifies white SQUIB VLVS READY lights are on. - Notes level on TK LVL IILI-66. - Places SLC pump keylock switch in START SYS-A or START SYS-B. - Verifies red SLC pump running light is on. - Verifies SLC pump discharge pressure on DISCH PRESS 11PI-65 is greater than or equal to RPV pressure. - Verifies the following: RWCU trips And the following valves are closed: • CLN UP SUCT 12MOV-18 • CLN UP RETURN ISOL VALVE 12MOV-69
	SIM BOOTH OPER	***Insert malfunction SL01:A or malfunction SL01:B 1 minute after the respective SLC pump is started.***
	ATC	Recognizes the trip of the in-service SLC and reports this to the CRS.
	CRS	Orders ATC to start the other SLC system and to Orders an NPO to the tripped SLC pump.

Op-Test No.: 1 Scenario No.: 2 Event No.: 7

Event Description: Trip the in-service SLC pump and relief valve lift on the second SLC pump.

Time	Position	Applicant's Actions or Behavior
	ATC	Initiates SLC the other SYS - A or Sys-B - Verifies white SQUIB VLVS READY lights are on. - Notes level on TK LVL IILI-66. - Places SLC pump keylock switch in START SYS-A or START SYS-B. - Verifies red SLC pump running light is on. - Verifies SLC pump discharge pressure on DISCH PRESS 11PI-65 is greater than or equal to RPV pressure.
	SIM BOOTH OPER	***Insert malfunction SL03:A or malfunction SL03:B; When the respective SLC pump is started.***
	ATC	ATC recognizes that the in service SLC pump discharge pressure is not greater than or equal to RPV pressure and reports this to the CRS.
CT	CRS	Enters EP-4; Boron injection using CRD and executes it concurrently with this procedure
	ATC	Dispatches NPO to commence EP-4 field actions.
	SIM BOOTH OPER	***Report back to ATC that the first SLC pump started has a tripped breaker and the motor is hot to the touch and acknowledge ATC report to commence EP-4 field actions.***

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 2 Event No.: 7

Event Description: Trip of the in-servicw SLC pump and relief valve lift on the second SLC pump

Time	Position	Applicant's Actions or Behavior
	CRS	If BIIT exceeded while power is > 2.5%: Order T/P all injection except SLC, CRD and RCIC per EP-5. Terminate high pressure sources first. Identify reinjection source as feedwater or HPCI with a level band of -19" to the level at which injection may recommence. Caution against rapid level changes during reinjection.
	SNO2	At 09-3, confirm all other terminate and prevent actions are complete.
	CRS	When Rx Power <2.5%, or RPV level at TAF (0") or SRV's will remain closed order injection with feedwater at a level band of current RPV level to -19".
	SNO2	At 09-6, As necessary, adjust RFP speed, Feedwater Startup Valve position and RFP Discharge Valve position to maintain level 80-100 inches. Exercise caution against rapid level rise.
CT	ATC	When scram air header is vented and verifies reactor is shutdown.
TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET: • **When all control rods are inserted to or beyond postion 02.** • **EOP- 3 has been exited and EOP-2 has been entered.**		

POST-SCENARIO:

HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

SAE 2.2.2 Any RPS setpoint has been exceeded and automatic and manual scrams fail to result in a control rod pattern which assures reactor shutdown under all conditions without boron and either:

Reactor power > 2.5%

OR

Torus Temperature > Boron Injection Initiation Temperature

Facility: Fitzpatrick	Scenario No.: 4	Op-Test No.: 1
Examiners: ______	Operators: ______	

Initial Conditions: Reactor power is 60%. ST-3PA, 'A Core Spray Valve IST' is marked as complete up to step 8.2.

Turnover: Power was lowered to 60% power to perform a rod pattern adjustment. Perform section 8.2 of ST-3PA for Core Spray Loop A Quarterly Operability Test (IST), and then perform rod pattern adjustment.

Event No.	Malf. No.	Event Type*	Event Description
1	OVR 1	N-SNO2 TS-SRO	Perform ST-3PA Sect 8.2 only. A Core Spray Valve IST
2	RD11 :18 : 15	R-ATC C-ATC	Perform Rod Pattern adjustment and uncoupled control rod 18 :15
3	RD03:B	C-SNO2	B CRD Flow control valve fails partially closed. Swap to A valve.
4	RR22:A RPO1AA	TS-SRO I-SNO2	Reactor Level Transmitter 02-3LT-101A fails low with failure to half scram.
5	ED10 ED03:C	C-Crew	UPS Bus Failure causes loss of L15, L25 and UPS.
6	RX01	M-Crew	Fuel failure leads to High Rad. MSL.
7	MS05	M-Crew	MSL break. Enter Radioactivity Release Control EOP-6 and Emergency Depressurization.
8	MS08B:C MS08B:G	C-SNO2	Initiate Manual MSL isolation. One MSL fails to isolate

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

SCENARIO SUMMARY

1. Perform section 8.2 of ST-3PA for Core Spray Loop A Quarterly Operability Test (IST). One valve will stroke longer than technical specifications allow. TS call for SRO.

2. A minor rod pattern adjustment will be performed at 60% reactor power using control rods. During the rod pattern adjustment control rod 18:15 will become uncoupled at position 48.

3. At the end of the rod pattern adjustment, the in service flow control valve for CRD will fail partially closed. Operators will have to diagnose the failure and swap to the other flow control valve.

4. Reactor Level Transmitter 02-3LT-101A fails low with failure to half scram. Operators will have to diagnose and make TS call. Can manually put trip in on RPS system A.

5. UPS Bus Failure causes loss of L15, L25 and UPS. When a fault occurs on the UPS bus the normal feeder breaker for the UPS MG set trips resulting in a trip of the UPS MG set and a momentary loss of power to the UPS bus as it auto transfers to the Alternate supply breaker. The Alternate feeder breaker will then trip on overcurrent, resulting in a complete loss of the UPS bus. Transformer T15 overloads causing a loss of L15 and L25. The fault for T15 will be removed and L15 and L25 can be recovered. Loss of UPS causes a RWR runback and the turbine driven feed pumps need to be manually adjusted to maintain reactor level. Possible that CRS determines to manually scram the reactor per AOP override statement.

6. Fuel failure leads to High Radiation MSL.

7. MSL break. Enter Radioactivity Release Control EOP-6 when above the alert level. Radiation levels approach the GE level and the operators then enter RPV control and Emergency Depressurization prior to GE.

8. Initiate Manual Isolation of Main steam Lines. One MSL fails to isolate.

INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	Reset simulator to a IC-45 with power at 60%.
	■ Apply Information Tags on the following components: NA
	■ Take out of FREEZE and ensure the following: B CRD flow control valve in service. A CRD Pump in service.
	■ Ensure materials for applicants: - Stopwatch and a copy of ST-3PA marked up to step 8.2. - Copy of ST-23B; Control rod coupling integrity test. (Simulator Booth operator is to keep the copy of ST-23B until requested.)
	■ **Ensure** the following malfunctions are loaded: RPO1AA- Failure to auto half scram PRESET MS08B:C- PRESET MS08B:G- PRESET ■ **Ensure** the following remote functions are loaded: RD08 for event 3. 3-68A, 3-69A, FCV-19A ISOL VLVS RD12; 3-FCV-19A on 3-FCV-19B select. Initial – A –Final-B ED 12 and ED-39C for event 5. BKR 10660 LO RELAY – RESET (trigger 10) ED13 – trigger 11. ■ **Ensure** the following overrides are loaded: Override 1: 14MOV-11A takes 15 seconds to close ■ **Ensure** the following triggers are built: Trigger 1: OVR CSZLO14AS1A(2) Core Spray OTBD Valve (ST malf) Trigger 2: RD03:B CRD FCV B FAIL set to 25% Trigger 9: RD11= 18:15 control rod uncoupled Trigger 4 RR22:A Set to 10% Trigger 5: ED10 which triggers ED03:C Trigger 6: RX01 Set to 15% Ramp 10 minutes Trigger 7: MS05; Severity 30% ramp 30 seconds delay 180 seconds • RM01:15 PRM 17-RM-434A, 27% severity, 9:20 delay,6:40 ramp.

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	• RM01:16 PRM 17-RM-434B, 27% severity, 9:20 delay,, 6:40 ramp • RM01:23 PRM 17-RIS-431,99% severity,3:00 delay, 10:00 ramp • RM01:24 PRM 17-RES-432,99% severity, 3:00 delay, 10:00 ramp
	■ Reset any annunciators that should not be present

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Perform ST-3PA Sect 8.2 only. A Core Spray Valve IST

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert override to make 14MOV-11A closing time slow
	■ Respond to request for assistance as appropriate.
	■ Delete override after 15 seconds CSZLO14AS2A(2) Core Spray OTB Valve

EVENT 2: Perform Control Rod pattern adjustment at 60% power and uncoupled control rod 18-15

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Withdraw 3 control rods to position 48. Control rods 26-07; 26-31; and 26-23. On fourth control rod 18-15 the rod will uncouple.
	■ Insert trigger 9 when control rod 18-15 coupling check is performed.
	■ Simulator Booth Operator is to keep a copy of ST-23B until requested
	■ Respond to request for assistance as appropriate.

EVENT 3: B CRD Flow control valve fails partially closed

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 2 when directed by chief examiner
	■ When requested use remote function RD08 to permit the standby (A) flow control valve to be valved in. R:RD08-open (trigger3) R:RD12
	■ Respond to request for assistance as appropriate.

EVENT 4: Reactor Level Transmitter 02-3LT-101A fails low with failure to half scram.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 4 when directed by chief examiner
	■ Failure to auto half scram is PRESET.
	■ Respond to request for assistance as appropriate

EVENT 5: UPS Bus Failure causes loss of L15, L25 and UPS.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 5 when directed by chief examiner
	■ Role play that the trip was an overload on T15 caused by the UPS bus failure and tripped breaker 10560 which has an 86 lockout. Inform CRS that 86 can be reset and 10560 re-energized.
	■ Remove malfunction ED03C and reset using RF ED 13 and ED-12 to reset lockout when requested.
	■ Respond to request for assistance as appropriate

EVENT 6: Fuel failure leads to High Rad. MSL.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 6 when directed by chief examiner
	■ At Chief Examiner direction, Sim Booth Operator to raise severity of fuel failure if radiation levels do not approach GE levels.
	■ Respond to request for assistance as appropriate

EVENT 7: MSL break. Enter Rad Control EOP-6

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Insert trigger 7 when directed by chief examiner or when Rx mode switch is taken to shutdown.
	■ Once Turbine Low Range Monitor is high, report to CRS that site dose projection is 450 mREM and rising.
	■ 10 minutes after reporting above dose, if ED has not been performed, report to CRS that site dose projection is 1100 mREM and rising.
	■ Respond to request for assistance as appropriate

EVENT 8: Initiate Manual MSL Isolation. One MSL fails to isolate.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ PRESET Malfunctions MS08B:C and MS08B:G
	■ Respond to request for assistance as appropriate

CRITICAL TASKS

1. EOP-6 Scram the reactor

   Standard:
   1. Expected when Offgas timer times out, then manually scrams the reactor per AOP-3. Due to the loss of the UPS, the timer will not time out.
   2. Failure criteria, before the offsite release rate reaches the E-Plan General Emergency Level, Verify Reactor Scram.

   Basis: The scram reduces the rate of energy production and thus the rate of radioactivity release. EOP-6 Basis.

2. EOP-6 Perform emergency depressurization

   Standard: Before the offsite release rate reaches the Emergency Plan "General Emergency" level: perform Emergency RPV Depressurization per EOP-6 , open 7 ADS valves. Note: 1000 mRem TEDE is the GE criteria.

   Basis: An offsite release rate above the General Emergency level is an indication of Degrading conditions and presents a more immediate threat to the health and safety of the public. If a primary system is discharging outside the primary and secondary containments, a blowdown is performed before the release reaches the General Emergency level to reduce the discharge rate. EOP-6 Basis.

Op-Test No.: 1	Scenario No.: 4	Event No.: 1
Event Description: Perform ST-3PA Sect 8.2 only. A Core Spray Valve IST		

Time	Position	Applicant's Actions or Behavior
	CRS	Perform brief for performing ST-3PA, "CORE SPRAY LOOP A QUARTERLY OPERABILITY TEST (IST)" .Declare Core Spray Loop A inoperable.
		NOTE: A Core Spray Loop A Keep-full alarm could occur while testing core spray loop valves. The keep-full alarm is cleared in Subsection 8.3.
	SNO2	Close and time MIN FLOW VLV 14MOV-5A. Closing time secs (IST: 15.2 to 20.5) Open and time MIN FLOW VLV 14MOV-5A. Opening time secs (IST: 15.2 to 20.4) Ensure closed INBD INJ VLV 14MOV-12A. Close and time OUTBD INJ VLV 14MOV-11A. Closing time secs (IST: 7.2 to 11.9) **NOTE: (Actual time will be 15 seconds)** Open and time OUTBD INJ VLV 14MOV-11A. Opening time secs (IST: 6.9 to 11.3)
		CAUTION Failure to minimize time that 14MOV-7A is closed will cause a loss of suction to the core spray holding pump.
	SNO2	SNO2 reports to CRS that 14MOV-11A closing time is out of band.
	CRS	Stops ST-3PA, Core Spray Loop A Quarterly Operability Test
	CRS	Review surveillance. Determine 14MOV-11A is inoperable. TS 3.6.1.3.A; 4 hours to isolate and de-activate 14MOV-11A and TS 3.5.1.A.A1 7 day LCO.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 4 Event No.: 2

Event Description: Perform Control Rod pattern adjustment at 60% power and uncoupled control rod 18:15.

Time	Position	Applicant's Actions or Behavior
	CRS	If not already performed, CRS conducts reactivity brief on performing control rod pattern adjustment IAW RAP-7.3.16. Reviews Reactor Engineering RAP-7.3.16, if not previously performed.
	CRS	CRS directs ATC to perform control rod pattern adjustment. Provides Reactivity CRS monitoring
	ATC	IAW RAP-7.3.16 and OP-26; Control rod drive manual control system step E.1; Notch withdrawal; commences rod withdrawal to perform control rod pattern adjustment.
	SNO2	Monitors plant for correct response as control rods are manipulated.
	CREW	When control rod 18:15 is withdrawn to position 48, the following annuciators will alarm: • 09-5-2-3; ROD DRIFT • 09-5-2-4 ROD OVERTRAVEL
	CRS	Enters AOP-27; Control rod drift and AOP-25; Uncoupled Control rod
	CRS	Directs ATC to perform AOP-25 for uncoupled control rod.

Op-Test No.: 1 Scenario No.: 4 Event No.: 2

Event Description: Perform Control Rod pattern adjustment at 60% power and uncoupled control rod 18:15.

Time	Position	Applicant's Actions or Behavior
	ATC	E.2 Perform the following steps several times, to attempt to couple the control rod: • E.2.1 Insert the control rod to position 44 using notch insert per section E of OP-26; RMCS. OP-26; section E.3 Control rod insertion one notch E.3.1 Review Reactor Engineer's instructions concerning control rod positioning. E.3.2 **WHILE** inserting control rod perform the following: a. Monitor the following: - Nuclear instrumentation; To include **SRM/IRM** meters/recorders, reactor period meters and APRM recorders as appropriate - Control rod position indication on four rod display b. **IF** control rod inserts two notches, AND is not in the rod sequence final intended position, **THEN** perform the following: 1) Withdraw control rod to its intended position. 2) Notify SM. SM is not required to take any action. c. **I F** control rod inserts **GREATER THAN** two notches, **THEN** perform the following: 1) Notify SM. 2) Position control rod per RAP-7.3.16. E.3.3 Ensure ROD SEL PWR switch is in ON. E.3.4 Ensure control rod to be moved is selected by depressing rod select pushbutton on ROD SEL matrix, if necessary. E.3.5 Verify the following: • Select pushbutton is brightly backlit • Control rod indicating light is on (light with coordinates on FULL CORE DISPLAY) • Annunciator 09-5-2-1 RWM ROD BLOCK RPIS INOP is clear. E.3.6 Momentarily place ROD MOVEMENT CNTRL switch to IN, spring return to OFF. E.3.7 Verify control rod latches in the expected even numbered position before ROD SETTLE light goes off. E.3.8 Verify ROD SETTLE light is off. E.3.9 IF additional notch insertion is desired, **THEN** return to Step .3.4. E.3.10 IF control rod movement is no longer required, **THEN** perform the following to prevent overheating rod select matrix pushbuttons: a. Place ROD SEL PWR switch in OFF. b. Place ROD SEL PWR switch in ON.

Op-Test No.: 1	Scenario No.: 4	Event No.: 2

Event Description: Perform Control Rod pattern adjustment at 60% power and uncoupled control rod 18:15.

Time	Position	Applicant's Actions or Behavior
	ATC	E.2.2 Withdraw control rod to position 48 using notch withdrawal per section E.1 of OP-26; RMCS. E.I.I Review Reactor Engineer's instructions concerning control rod positioning. E.1.2 **IF** reactor is in Mode 5, **THEN** perform ST-23F. E.1.3 **WHILE** withdrawing control rod, perform the following: a. Monitor the following: • Nuclear instrumentation; To include SRM/IRM meters/recorders, reactor period meters and APRM recorders as appropriate • Control rod position indication on four rod display b. **IF** control rod withdraws **GREATER THAN** two notches, **THEN** perform the following: 1) Notify Shift Manager. 2) Position control rod per RAP-7.3.16. c. IF control rod double notches, and is not in the rod sequence final intended position, **THEN** perform the following: 1) Insert control rod one notch. 2) Notify Shift Manager. 3) Stop all further control rod withdrawals until Shift Manager reviews event and approves continued rod withdrawal. E.1.4 Ensure ROD SEL PWR switch is in ON. E.1.5 Ensure control rod to be moved is selected by depressing rod select pushbutton on ROD SEL matrix, if necessary. E.1.6 Verify the following: • Select pushbutton is brightly backlit • Control rod indicating light is on (light with coordinates on FULL CORE DISPLAY) • ROD OUT PERM light is on E.1.7 Perform one of the following: a. **IF** control rod at position 46, **THEN** rod may be withdrawn to position 48 with coupling test per ST-23B. b. Single notch as follows: 1.) Place ROD MOVEMENT CNTRL switch to OUT NOTCH, spring return to OFF. 2.) Verify control rod latches in the expected even numbered position **BEFORE** ROD SETTLE light goes off. 3) Verify ROD SETTLE light is off. **UCOMA. 3 . 2** 4) **IF** control rod is withdrawn to position 48

Op-Test No.: 1 Scenario No.: 4 Event No.: 2

Event Description: Perform Control Rod pattern adjustment at 60% power and uncoupled control rod 18:15.

Time	Position	Applicant's Actions or Behavior
	ATC	4.) If control rod is withdrawn to position 48, THEN ensure control rod coupling integrity test is completed per ST-23B. E.1.8 if additional control rod notch withdrawal is desired, THEN return to step E.1.5. E.1.9. If control rod movement is no longer required, THEN perform the following to prevent overheating rod select matrix pushbuttons: a. Place ROD SEL PWR switch in OFF. b. Place ROD SEL PWR switch in ON.

Examiner Note: When chief examiner has seen enough of the reactivity manipulations, and prior to completion of rod manipulations move on to the next event. The next malfunction is based on control rod manipulations.

Proceed to the next event

Op-Test No.: 1	Scenario No.: 4	Event No.: 3
Event Description: B CRD Flow control valve fails partially closed		

Time	Position	Applicant's Actions or Behavior
		NOTE: When the CRD flow control valve is in service and failed close (0%), the effect is a decrease in CRD system flow, indicated on 03FI-310; an increase in charging water header pressure as indicated on 3PI- 302; drive water header differential pressure, (03DPI-303), and Cooling water differential pressure, (03DPI-304), will decrease to low values. Subsequent movement of control rods by normal operation is impossible since the differential pressure developed across the piston in the CRD mechanism is too low. Prolonged operation without adequate cooling water will result in higher CRD temperatures than normal. This is indicated on temperature recorder 03TR-244, on panel 25-09, and may result in actuating Alarm CRD HI TEMP, on panel 09-5, depending on the duration of reduced flow. The in service CRD flow control valve will be partially closed and therefore the affects will be less severe than noted above. EXAMINER NOTE Crew may take manual control of flow controller OP-25.G.15
	ATC	Determines that Control Rod will not move.
	Crew	Diagnose that CRD flow is low and the cause of Control Rods not being able to move.
	CRS	Brief crew on swapping to the A CRD flow control valve per G.14 of OP-25.
	SNO2	• Establish communications NPO and Control room • Ensures controller is in auto • Adjust controller setpoint to zero gpm • Verify open 03CRD-68A • Slowly open outlet isolation valve 03CRD69A • Close 03CRD-69B

Op-Test No.: 1 Scenario No.: 4 Event No.: 3

Event Description: B CRD Flow control valve fails partially closed

Time	Position	Applicant's Actions or Behavior
	SNO2	Have EO at Flow Control Hand Select Station place AUTO-MAN select knob for 03HSS-245A in AUTO Have EO at Flow Control Hand Select Station place AUTO-MAN select knob for 03HSS-245B in MAN
	SNO2	Slowly raise setpoint on CRD FLOW CNTRL 03FIC-301 to establish 59 to 61 gpm on 03FIC-301
	SNO2	Verify normal operating values on the following indicators: • CHG WATER PRESS 03PI-302 Between 1390 and 1580 psig • DRV WTR DIFF PRESS 03DPI-303: 260-270 psid • CLG WTR DIFF PRESS 03DPI-304 approx. 10 to 26 psid • DRV WTR FLOW 03FI-305 zero with no CRD is being driven • CLG WTR FLOW 03FI-306 59 to 61 gpm
	CRS	May continue with rod pattern adjustment after CRD flow control is re-established.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 4 Event No.: 4

Event Description: Reactor Level Transmitter 02-3LT-101A fails low with failure to half scram

Time	Position	Applicant's Actions or Behavior
		NOTE: The following alarms will come in • 09-5-1-31 RPS RX VESSEL LO LVL TRIP • EPIC Point A #963 & D 1207 will respond
	CREW	Responds to alarm. Determines that 02-3LT-101A is reading approx. 170.488". Determines that half scram on RPS CH A1 did not occur as expected.
	CRS	1.)Determines TS call 3.3.1.1-1 Condition A, One or more required channels inoperable. Required Action A.1: Place channel in Trip or A.2 Place associated trip system in trip. 12 hour completion time. Condition C, One or more functions with RPS Trip capability not maintained. Required Action C.1: Restore RPS Trip Capability. (Place associated trip system in trip.) 1 hour completion time. 2.) Determines TS call 3.3.6.1-1 Functions 2a,2g and 5e Condition A, One or more required channels inoperable Required Action A.1: Place channel in Trip. 12 hour completion time. 3.) Determines TS call 3.3.6.2-1 Function 1 Condition A. One or more required channels inoperable Required Action A.1: Place channel in Trip. 12 hour completion time. **Note:** Since Lo LVL Trip alarm came in and half scram did not occur, the trip function is not operable and also requires entry into C.1 which requires restoring trip capability within 1 hour.
	CRS	Briefs crew on placing a trip in the A RPS resulting in a half scram.
	ATC	Places a manual scram in RPS channel A.

Op-Test No.: 1 Scenario No.: 4 Event No.: 4

Event Description: Reactor Level Transmitter 02-3LT-101A fails low with failure to half scram

Time	Position	Applicant's Actions or Behavior
		Examiner Note: **Proceed to the next event**

Op-Test No.: 1 Scenario No.: 4 Event No.: 5

Event Description: **UPS Bus Failure causes loss of L15, L25 and UPS.**

Time	Position	Applicant's Actions or Behavior
		Note: Large amount of alarms are going to come in. L15 and L25 4KV SUPP FDR TRIP OR CNTRL PWR LOSS is the cause of the loss of L15, L25 and UPS. Automatic Actions from a Complete Loss of UPS 15 seconds after loss of UPS, RWR MG sets run back to min-speed. RFP MGUs lose power and remain at the pre-power loss position. If RWR pumps run back, RPV water level rises rapidly due to steam flow - feed flow mismatch. RWCU isolates due to loss of power to demin inlet temperature switch. Automatic Actions from loss of L25 Loss of RPS Bus A PCIS Group I Half Isolation (Alarm only) PCIS Group II half Isolation Loss of IIA" Drywell Cams Loss of "A" Hydrogen/Oxygen Monitor 27PCX-101A Loss of Reactor Building Vent Rad Monitor 17RM-452A Numerous FPP Alarms due to loss of MPX Power Automatic Actions from loss of L15 Loss of "A" CRD Drive Water Pump Loss of "A" STBY Gas Treatment Train Loss of "A" SLC Pump and SLC suction heat trace Loss of Drywell Cooling Assemblies 68FN-2Af 2C, 4A, 4C

Op-Test No.: 1 Scenario No.: 4 Event No.: 5

Event Description: **UPS Bus Failure causes loss of L15, L25 and UPS.**

Time	Position	Applicant's Actions or Behavior
	Crew	Responds to alarms and runback. Recognizes loss of UPS. If recognizes prior to runback starting (15 seconds) immediate action is to lock scoop tubes by taking RWR A & B Scoop Tube to Trip
	CRS	**Note: Override in AOP-21 Loss of UPS states** **IF plant shutdown is required as determined by CRS, Then shutdown shall be completed by inserting manual scram.** Directs operator to trip one feed pump and take manual control of feed pump speed.
	SNO2	May trip one RFP if recirc runback starts.. Take manual control of one RFP as follows: a. Lower MSC until speed reduction is observed b. Place the associated RFPT A(B) MGU HYD JACK switch in High Speed Stop c . Control RPV water level with MSC.
	ATC	WHEN RWR MG set runback is complete, perform the following: a. Place the following control switches to TRIP, spring return to normal: RWR A SCOOP TUBE RWR B SCOOP TUBE b. Verify the following annunciators in alarm: 09-4-3-11 RWR MG A SCOOP TUBE LOCK 09-4-3-20 RWR MG B SCOOP TUBE LOCK c. Place the following control switches in ON: SCOOP TUBE A AUTO UNLOCK SCOOP TUBE B AUTO UNLOCK NOTE: Cram groups can not be inserted due to loss of power to rod select relays and RPIS.

Op-Test No.: 1 Scenario No.: 4 Event No.: 5

Event Description: **UPS Bus Failure causes loss of L15, L25 and UPS.**

Time	Position	Applicant's Actions or Behavior
	CRS	Directs entry into AOP-69 CRD Pump Trouble To restore CRD Directs execution of the following actions: Execute AOP-8 Loss or reduction of RWR flow. Verify cleanup auto isolation per section G of OP-28 Execute AOP-59 Loss of A RPS Execute AOP-18A Loss of L15 Execute AOP-18B Loss of L25
	ATC	Places CRD flow controller to manual. Rotates flow control fully counter clockwise. Starts the B CRD Pump. Adjusts for 60 gpm and places back in manual.
		Note: fault is recoverable.
	CRS	Investigates cause of loss of UPS. Is told from field that the trip was an overload on T15 caused by the UPS bus failure and tripped breaker 10560 which has an 86 lockout. Informed that 86 can be reset and 10560 re-energized. Directs Reset of 86 and close breaker 10560.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: Fuel failure leads to High Rad. MSL.

Time	Position	Applicant's Actions or Behavior
		Entry conditions for AOP-3;: 09-3-2-27 OFF GAS RAD MON HI is in alarm and is not an expected condition. Any of the following annunciators are in alarm: - 09-3-2-10 OFF GAS TIMER INITIATED - 09-3-2-38 OFF GAS RAD MON HI-HI - 09-3-3-1 MAIN STM RAD MON HI - 09-5-1-32 MAIN STM LINE RADIATION HI-HI
	Crew	Responds to increasing radiation levels. Enter AOP-3 High Activity in Reactor coolant or Off-Gas.
	CRS	Directs Chemistry to sample reactor coolant an off-gas. Directs Rad Pro to survey for changing rad levels.
	SNO2	When 2 or more main steam line rad monitors are tripped on hi-hi radiation then ensure condenser air removal pumps are tripped. Ensure closed the following valves: • Main Steam drain 29MOV-74 • Main Steam drain 29MOV-77 • RWR Loop B Sample Isol VLV 02-2AOV-39 & 40 • Air Removal PMP Suct VLV 38AOV-111 & 112
	CRS	Enter EOP-5 Secondary Containment Control Consider inserting manual scram and closing MSIV's to minimize release.

Op-Test No.: 1 Scenario No.: 4 Event No.: 6

Event Description: Fuel failure leads to High Rad. MSL.

Time	Position	Applicant's Actions or Behavior
CT	CRS	When off-gas rad timer 17-157 times out directs a manual scram.
		Note: Use attachment 2 of AOP-21 Loss of UPS to assist in performance of AOP-1 actions if UPS is de-energized.
	ATC	Insert Manual Scram and perform AOP-1: Reactor Scram Immediate Actions • Depress Manual Scram pushbuttons • Reactor Mode Switch to Shutdown • Fully Insert all SRM's and IRM's • Verify all rods in • Verify SDIV Vent and Drain valves closed • Verify APRM's downscale • Verify/Trip Main Turbine • Verify electrical distribution fast transfer
	CRS	Enters EOP-2 and then EOP-3 (Unable to verify all control rods are in) ARMs are in alarm for Reactor Building. CRS enters EOP-5
	CRS	Directs SNO2 to close MSIVs
	SNO2	Manually closes MSIV's Determines that MSL C failed to isolate. MSIV 29AOV-86C & 29AOV-80C

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 4 Event No.: 7

Event Description: MSL break. Enter Rad Control EOP

Time	Position	Applicant's Actions or Behavior
		Note: the following alarms will come in during this event, 1) TURB BLDG ARM RAD HI 2) DIV I AMBIENT TEMP HI 3) DIV II AMBIENT TEMP HI
	Crew	Responds to temperature alarms.
	CRS	Enters AOP-40; Main steam Line Break.
	CRS	Determines that Turb Building exhaust is above 9.9E5 cpm (Alert level) and enters EOP-6 Isolates Control Room and Relay Room ventilation within 30 minutes
		Continue to next page

Op-Test No.: 1 Scenario No.: 4 Event No.: 7

Event Description: MSL break. Enter Rad Control EOP

Time	Position	Applicant's Actions or Behavior
	SNO2	CRS directs SNO2 to isolate Control Room Ventilation per section G of OP-55B at panel 09-75. G.I.I Place Control Room Ventilation ISOL & PURGE CNTRL switch in ISOL. G.1.2 Verify closed the following dampers and valves: • EXH 70MOD-109 • INLET 70MOD-105 • EXH ISOL 70MOV-107 • INLET ISOL 70MOV-108 G.1.3 Verify open the following dampers: • RECIRC A 7OMOD-110A • RECIRC B 7OMOD-110B G.1.4 Verify one of the following control room emergency air supply fans is running with its discharge damper open : **Supply Fan** **Discharge Damper** • FRESH AIR SUPP 70FN-6A DISCH 70MOD-II2A • FRESH AIR SUPP 70FN-6B DISCH 70MOD-II2B G.1.5 Close 70DMPR-105 (control room vent supply isolation 70Mod 105 manual bypass damper) (located near 70MOV-108) G.1.6 Ensure closed all access doors to Control Room. G.1.7 **IF** differential pressure is **LESS THAN** +0.125 inches water gauge on CNTRL RM DIFF PRESS 70DPI-063, **THEN** ensure Office Area Ventilation is in normal operation or shutdown per OP-59B. **NOTE** : Step G.1.8 and G.1.9 may be performed after Step G.I.I0. G.1.8 **WHILE** control room ventilation is operating in isolate mode, perform the following: a. Record control room dP in the narrative log once per shift. b. Notify system engineer if **LESS THAN** +0.2 inches
		Continue to next page.

Op-Test No.: 1 Scenario No.: 4 Event No.: 7

Event Description: MSL break. Enter Rad Control EOP

Time	Position	Applicant's Actions or Behavior
	SNO2	CRS directs SNO2 to isolates Relay Room Ventilation per section G of OP-56 at panel 09-75. G.I.10 **IF** Control Room Ventilation is being isolated as a result of high radiation in the air supply header, **THEN** isolate Relay Room ventilation as follows: a. Place the following Relay Room Ventilation control switches in ISOL: • ISOL & PURGE CNTRL A • ISOL & PURGE CNTRL B b. Verify closed the following dampers and valves: • EXH ISOL 70MOV-105 • INLET ISOL 70MOV-106 • RR VENT DAMPER 70MOD-115 c. **IF** either 70MOV-105 or 70MOV-106 failed to close, **THEN** perform the following: 1) De-energize valve by opening associated circuit breaker: **Valve** **Circuit Breaker** 70MOV-105 7IMCC-253-OA2 70MOV- 106 7IMCC-263-OA2 **NOTE:** Electric brakes need to be disengaged for manual operation. 2) Manually close valve. **d. IF** RR VENT DAMPER 70MOD-115 is not closed, **THEN** unlock and close 70DMPR-115 (relay room vent manual isol damper). e. Verify open the following dampers: • RECIRC A 70MOD-I04A • RECIRC B 70MOD-I04B f. Ensure closed all access doors t o Relay Room.
	CRS	TSC filtered ventilation system is activated within 60 minutes and dispatches a team to check turbine building integrity
		EXAMINER NOTE: AT Chief Examiner direction. Sim Booth Operator is to raise severity of fuel failure to GE radiation levels

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 4 Event No.: 8

Event Description: Initiate MSL Manual Isolation. One MSL fails to isolate and Enter RPV control and Emergency Depressurization prior to GE.

.

Time	Position	Applicant's Actions or Behavior
		EXAMINER NOTE: Crew may have performed MSIV isolation early based on MSL High radiation.
	CRS	Directs SNO2 to close MSIVs
	SNO2	Manually closes MSIV's Determines that MSL C failed to isolate. MSIV 29AOV-86C & 29AOV-80C
		Note: >12mR/hr on Turbine Building Exhaust Monitor for > 15 minutes is the GE criteria. However power is lost to the high range monitor. The booth will call in to the CRS and inform him that TEDE dose at the site boundary is 450mr/hr and rising (which is above the SAE setpoint of 100mRem). 10 minutes later if have not entered emergency depressurization steps, the booth will call with a TEDE dose of 1100mRem and rising (which is above the GE setpoint of 1000mRem.)
CT	CRS	Trends Turbine Building exhaust High Range Monitor. Prior to GE (Note: 1000 mRem TEDE is the GE criteria) enters EOP-2 (scrams if not already done) and performs an Emergency RPV Depressurization.
	ATC	Performs Emergency RPV Depressurization by opening all 7 ADS valves.

	SNO2	Maintains reactor level with feedwater in manual.
TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET: **Blowdown has been complete and reactor level is being controlled in the normal range.**		

POST-SCENARIO :

HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

General Emergency 5.2 Dose Projections.