ES-301 **Administrative Topics Outline** **Form ES-301-1**

Facility: SSES		Date of Examination:
Examination Level: **SRO-I**		Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations ★A-1.1	N, R	Heat up rate calculation General K/A – 2.1.25 RO 3.9 SRO 4.2
Conduct of Operations ★A-1.2	M, R	Review failed ST and determine required action General K/A – 2.2.12 RO 3.7 SRO 4.1
Equipment Control ★A-2	N, R	Blocking and tagging a pump General K/A – 2.2.41 RO 3.5 SRO 3.9
Radiation Control A-3	M, R	Review and approve a radioactive liquid release permit General K/A – 2.3.6 SRO 3.7
Emergency Procedures/Plan ★A-4	N, R	Make EAL classification General K/A – 2.4.44 SRO 4.4
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria:	(C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)	

★Note: Admin JPMs A-1.1, A-1.2, A-2 and A-4 are common JPMs for both RO and SRO candidates. Ensure administration of these common JPMs occurs for all candidates during the same exam day for each of these JPMs.

Facility: SSES		Date of Examination:
Examination Level: **RO**		Operating Test Number: 1
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations ★A-1.1	N, R	Heat Up rate Calculation General K/A – 2.1.25 RO 3.9 SRO 4.2
Conduct of Operations ★A-1.2	M, R	Review failed ST and determine required action General K/A – 2.2.12 RO 3.7 SRO 4.1
Equipment Control ★A-2	N, R	Blocking and tagging a pump General K/A – 2.2.41 RO 3.5 SRO 3.9
Radiation Control		
Emergency Procedures/Plan ★A-4	N, S	State and local notifications General K/A – 2.4.39 RO 3.9
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when all 5 are required.		
* Type Codes & Criteria:	(C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs & RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1; randomly selected)	

★Note: Admin JPMs A-1.1, A-1.2, A-2 and A-4 are common JPMs for both RO and SRO candidates. Ensure administration of these common JPMs occurs for all candidates during the same exam day for each of these JPMs.

Susquehanna Steam Electric Station

Job Performance Measure

Review pressure/temperature plots and determine compliance with TS 3.4.10

RO JPM Designation: A-1.1

Revision Number: 0

Date: 6/20/11

Developed By:	Lally	06/20/11
	Author	**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. Provide marked-up SO-100-011, "Reactor Temperature And Pressure Monitoring" with data

TASK STANDARD:

Review the data for a plant heatup, determine that 100°F ΔT was exceeded between 1930-2030.

TASK CONDITIONS:

1. Unit 1 is in MODE 2
2. A reactor startup/heatup is in progress
3. SO-100-011, "Reactor Temperature And Pressure Monitoring", is being conducted

RO INITIATING CUE:

Perform a review of the data recorded in SO-100-011 for 1800 through 2345 to confirm procedural compliance

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Review pressure/temperature plots and determine compliance with TS 3.4.10

JPM Number: A-1.1

Revision Number: 0

K/A Number and Importance: 2.1.25 RO 3.9 SRO 4.2

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

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

References:
1. NUREG 1123, Rev. 2 Supp. 1
2. SO-100-011, Rev. 17
3. SSES Unit 1 TS 3.4.10

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 review surveillance data for temperature/pressure plots recorded during a reactor startup/heatup to determine procedural compliance with all heatup rates.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: This JPM can be performed in the simulator, classroom or other similar environment. Ensure SO-100-011, Unit 1 Tech Specs, and a calculator are available for candidate use. **Ensure the answer key, which precedes the Cue Sheet page in the JPM package, are NOT given to the student.** **EVALUATOR CUE:** Provide the candidate with the task conditions, initiating cue, and the two pre-filled out SO-100-011 Attachment D pages 20 of 21 for the 1800 to 2045 and 2100 to 2345 times (last two pages of this JPM package)				
Obtain and review SO-100-011	Obtain and review surveillance procedure.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
(Step 5.1.5) Verify temperature change calculations	Verify heatup rate calculations for each 15 minute and 1 hour period during which the heatup was conducted.			
★(Step 5.1.5) Confirm calculated heatup rates comply with Tech Spec and procedure requirements	Confirm compliance with:<100°F heatup in any 1 hour period **Determine Steam Dome heatup rate between 1930 and 2030 exceeds 100°F/hr, actual ΔT=103°F** **Determine Steam Dome heatup rate between 1945 and 2045 exceeds 100°F/hr, actual ΔT=104°F**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Additional calculational and 15 minute heatup rate excursions **Evaluator Note:** TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup	Additionally, candidate should identify: 1. 815-1830: calculational error (actual ΔT=17) 2. 945-2045 Recirc Loop A HUR >100°F (actual ΔT=100.6) ; TS entry only required on steam dome ΔT 3. 045-Recirc loop A ΔT=27 4. 030-Recirc loop B ΔT=27 5. 000-Bottom head drain ΔT=28 6. 945-2000: calculational error (actual ΔT=28)			
★ SR 3.4.10 violation **EVALUATOR CUE:** Roleplay as unit supervisor and acknowledge applicant report	Applicant notifies evaluator that SR 3.4.10 and TS 3.4.10 for HUR >100°F/hr			
EVALUATOR CUE: No further actions are required for this JPM				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

JPM Stop Time _____

NOTE

Do **not** give the next page (Key) to the student!

They are given the cue sheet and the last two pages of the JPM package, which are marked “Student’s Copy” Page 1 of 2 and 2 of 2).

ANSWER KEY

TABLE 1

REACTOR PRESSURE VESSEL METAL TEMPERATURE LOG

All RPV Metal Temperature Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic Testing (ISLHT) is complete, until both temps > 200°F heating up or start when either temp < 200°F cooling down. Maintain the lowest recorded temperature to the right of:
Curve A for ISLHT
Curve B for Operation Mode 4 and coolant ≤ 100°F
Curve C for Critical Operation

	Temp Recorder Point #5	Temp Recorder Point #11	
TIME/DATE AS NECESSARY	VSL WALL BY FLANGE	VSL BOTTOM HEAD	CONFIRM COMPLIANCE W/SR 3.4.10.1
1700 TO/DA/Y	207	208	BBC

TABLE 2

REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE LOG

All Rx Coolant Temp and Press Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic testing is complete. TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup or cooldown, and ≤ 5° in any 15 minute period during system hydrotest.

CIRCLE DATA SOURCE WHERE APPLICABLE	PI-C32-1R605 NFP02 (NFP03)	TR-B31-1R650 NRT01 (NRT51) NRT52	NA	TR-B31-1R650 (NRT02) NRT53 NRT54	NA	TR-B21-1R006 (PT 8) (NLT01)	NA	(NEA05)	NA	
TIME/DATE AS NECESSARY	REACTOR PRESSURE PSIG	RECIRC LOOP A TEMP °F	RECIRC LOOP A DELTA TEMP °F	RECIRC LOOP B TEMP °F	RECIRC LOOP B DELTA TEMP °F	BOTTOM HEAD DRAIN TEMP °F	BTM HD DRAIN DELTA TEMP °F	RX STM DOME TEMP °F	RX STM DOME DELTA TEMP °F	CONFIRM COMPLIANCE W/SR 3.4.10.1
1800 TO/DA/Y	83	293.9	N/A	294.4	N/A	291	N/A	301	N/A	CBC
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	CBC
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	**16**	CBC
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	CBC
1900 TO/DA/Y	184	362.6	17.1	364.4	17.5	361	17	371	15	CBC
1915 TO/DA/Y	237	379.5	16.9	384.6	18.2	382	22	387	16	CBC
1930 TO/DA/Y	287	401.3	21.8	402.1	17.5	400	18	**404**	17	CBC
1945 TO/DA/Y	321	**421.5**	21.2	425.2	23.1	421	21	**428**	24	CBC
2000 TO/DA/Y	466	448.8	26.3	449.4	24.2	449	**28**	456	**25**	CBC
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	24	CBC
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	**27**	**507**	26	CBC
2045 TO/DA/Y	885	**522.1**	**27.0**	522.9	23.3	521	24	**532**	25	CBC

Shiftly Review and Confirmation above recorded data is accurate, compliant, and complete.

SHIFT SUPERVISION DATE TIME

Actual Steam Dome ΔT from 1930-2030 was 103°F, and 1945-2045 was 104°F; this exceeds the TS limit of ≤ 100°F/hr.
Other ΔTs highlighted should be noted, and although 100°ΔT was exceeded between 1945 and 2045 on recirc loop A, only steam dome ΔT is applicable

TASK CONDITIONS

1. Unit 1 is in MODE 2.

2. A reactor startup/heatup is in progress.

3. SO-100-011, “Reactor Temperature and Pressure Monitoring”, is being conducted.

INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 1800 through 2345 to confirm procedural compliance

TASK CONDITIONS

1. Unit 1 is in MODE 2.

2. A reactor startup/heatup is in progress.

3. SO-100-011, “Reactor Temperature and Pressure Monitoring”, is being conducted.

INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 1800 through 2345 to confirm procedural compliance

FOR TRAINING ONLY (STUDENT'S COPY Page 1 of 2)

TABLE 1

REACTOR PRESSURE VESSEL METAL TEMPERATURE LOG

All RPV Metal Temperature Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic Testing (ISLHT) is complete, until both temps > 200°F heating up or start when either temp < 200°F cooling down. Maintain the lowest recorded temperature to the right of:
Curve A for ISLHT
Curve B for Operation Mode 4 and coolant ≤ 100°F
Curve C for Critical Operation

	Temp Recorder Point #5	Temp Recorder Point #11	
TIME/DATE AS NECESSARY	VSL WALL BY FLANGE	VSL BOTTOM HEAD	CONFIRM COMPLIANCE W/SR 3.4.10.1
1700 TO/DA/Y	207	208	BBC

TABLE 2

REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE LOG

All Rx Coolant Temp and Press Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic testing is complete. TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup or cooldown, and ≤ 5° in any 15 minute period during system hydrotest.

CIRCLE DATA SOURCE WHERE APPLICABLE	PI-C32-1R605 NFP02 (NFP03)	TR-B31-1R650 NRT01 (NRT51) NRT52	NA	TR-B31-1R650 (NRT02) NRT53 NRT54	NA	TR-B21-1R006 (PT 8) (NLT01)	NA	(NFA05)	NA	
TIME/DATE AS NECESSARY	REACTOR PRESSURE PSIG	RECIRC LOOP A TEMP °F	RECIRC LOOP A DELTA TEMP °F	RECIRC LOOP B TEMP °F	RECIRC LOOP B DELTA TEMP °F	BOTTOM HEAD DRAIN TEMP °F	BTM HD DRAIN DELTA TEMP °F	RX STM DOME TEMP °F	RX STM DOME DELTA TEMP °F	CONFIRM COMPLIANCE W/SR 3.4.10.1
1800 TO/DA/Y	83	293.9	N/A	294.4	N/A	291	N/A	301	N/A	CBC
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	CBC
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	16	CBC
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	CBC
1900 TO/DA/Y	184	362.6	16.1	364.4	17.5	361	17	371	15	CBC
1915 TO/DA/Y	237	379.5	16.9	384.6	18.2	382	22	387	16	CBC
1930 TO/DA/Y	287	401.3	21.8	402.1	18.5	400	18	404	17	CBC
1945 TO/DA/Y	321	422.5	21.2	425.2	23.1	421	21	428	24	CBC
2000 TO/DA/Y	466	448.8	26.3	449.4	24.2	449	24	456	25	CBC
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	24	CBC
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	27	507	26	CBC
2045 TO/DA/Y	885	522.1	27.0	522.9	23.3	521	24	532	25	CBC

Shiftly Review and Confirmation above recorded data is accurate, compliant, and complete.

SHIFT SUPERVISION DATE TIME

FOR TRAINING ONLY (STUDENT'S COPY Page 2 of 2)

TABLE 1

REACTOR PRESSURE VESSEL METAL TEMPERATURE LOG

All RPV Metal Temperature Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic Testing (ISLHT) is complete, until both temps > 200°F heating up or start when either temp < 200°F cooling down. Maintain the lowest recorded temperature to the right of:
Curve A for ISLHT
Curve B for Operation Mode 4 and coolant ≤ 100°F
Curve C for Critical Operation

	Temp Recorder Point #5	Temp Recorder Point #11	
TIME/DATE AS NECESSARY	VSL WALL BY FLANGE	VSL BOTTOM HEAD	CONFIRM COMPLIANCE W/SR 3.4.10.1

TABLE 2

REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE LOG

All Rx Coolant Temp and Press Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic testing is complete. TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup or cooldown, and ≤ 5° in any 15 minute period during system hydrotest.

CIRCLE DATA SOURCE WHERE APPLICABLE	PI-C32-1R605 NFP02 (NFP03)	TR-B31-1R650 NRT01 (NRT51) NRT52	NA	TR-B31-1R650 (NRT02) NRT53 NRT54	NA	TR-B21-1R006 (PT_8) (NLT01)	NA	(NFA05)	NA	
TIME/DATE AS NECESSARY	REACTOR PRESSURE PSIG	RECIRC LOOP A TEMP °F	RECIRC LOOP A DELTA TEMP °F	RECIRC LOOP B TEMP °F	RECIRC LOOP B DELTA TEMP °F	BOTTOM HEAD DRAIN TEMP °F	BTM HD DRAIN DELTA TEMP °F	RX STM DOME TEMP °F	RX STM DOME DELTA TEMP °F	CONFIRM COMPLIANCE W/SR 3.4.10.1
2100 TO/DA/Y	890	522.4	0.3	524.5	1.6	523	2	532	0	CBC
2115 TO/DA/Y	894	523.6	1.2	526.8	2.3	524	1	533	1	CBC
2130 TO/DA/Y	908	524.7	1.1	529.9	3.1	524	0	534	1	CBC
2145 TO/DA/Y	917	525.9	1.2	533.6	3.7	525	1	536	2	CBC
2200 TO/DA/Y	918	526.0	0.1	533.7	0.1	526	1	536	0	DEF
2215 TO/DA/Y	925	527.1	1.1	537.1	3.4	528	2	537	1	DEF
2230 TO/DA/Y	928	527.4	0.3	537.2	0.1	528	0	537	1	DEF
2245 TO/DA/Y	930	530.4	3.0	537.4	0.2	530	2	538	1	DEF
2300 TO/DA/Y	934	532.7	2.3	537.6	0.2	531	1	538	0	DEF
2315 TO/DA/Y	945	533.4	0.7	537.9	0.3	533	2	538	0	DEF
2330 TO/DA/Y	955	533.7	0.3	538.1	0.2	533	0	540	2	DEF
2345 TO/DA/Y	957	533.8	0.1	538.2	0.1	533	0	541	1	DEF

Shiftly Review and Confirmation above recorded data is accurate, compliant, and complete.

SHIFT SUPERVISION DATE TIME

Susquehanna Steam Electric Station

Job Performance Measure

Review pressure/temperature plots and determine compliance with TS 3.4.10

SRO JPM Designation: A-1.1

Revision Number: 0

Date: 6/20/11

Developed By:	Lally	06/20/11
	Author	**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. Provide marked-up SO-100-011, "Reactor Temperature And Pressure Monitoring" with data

TASK STANDARD:

Review the data for a plant heatup, determine that 100°F ΔT was exceeded between 1930-2030 and determine TS 3.4.10 actions A.1 and A.2 are applicable.

TASK CONDITIONS:

1. Unit 1 is in MODE 2
2. A reactor startup/heatup is in progress
3. SO-100-011, "Reactor Temperature And Pressure Monitoring", is being conducted
4. The shiftly review of the SO-100-011 data is required

SRO INITIATING CUE:

Perform a review of the data recorded in SO-100-011 for 1800 through 2345 to confirm procedural compliance. Additionally, determine what actions are required, 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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Review pressure/temperature plots and determine compliance with TS 3.4.10

JPM Number: A-1.1

Revision Number: 0

K/A Number and Importance: 2.1.25 RO 3.9 SRO 4.2

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

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

References:
1. NUREG 1123, Rev. 2 Supp. 1
2. SO-100-011, Rev. 17
3. SSES Unit 1 TS 3.4.10

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 review surveillance data for temperature/pressure plots recorded during a reactor startup/heatup to determine procedural compliance with all heatup rates and determine required TS actions.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE: This JPM can be performed in the simulator, classroom or other similar environment. Ensure SO-100-011, Unit 1 Tech Specs, and a calculator are available for candidate use. **Ensure the answer key, which precedes the Cue Sheet page in the JPM package, are NOT given to the student**. **EVALUATOR CUE:** Provide the candidate with the task conditions, initiating cue, and the two pre-filled out SO-100-011 Attachment D pages 20 of 21 for the 1800 to 2045 and 2100 to 2345 times (last two pages of this JPM package)				
Obtain and review SO-100-011	Obtain and review surveillance procedure.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
(Step 5.1.5) Verify temperature change calculations	Verify heatup rate calculations for each 15 minute and 1 hour period during which the heatup was conducted.			
★(Step 5.1.5) Confirm calculated heatup rates comply with Tech Spec and procedure requirements	Confirm compliance with:<100°F heatup in any 1 hour period **Determine Steam Dome heatup rate between 1930 and 2030 exceeds 100°F/hr, actual ΔT=103°F** **Determine Steam Dome heatup rate between 1945 and 2045 exceeds 100°F/hr, actual ΔT=104°F**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Additional calculational and 15 minute heatup rate excursions **Evaluator Note:** TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup	Additionally, candidate should identify: 1. 815-1830: calculational error (actual ΔT=17) 2. 945-2045 Recirc Loop A HUR >100°F (actual ΔT=100.6) ; TS entry only required on steam dome ΔT 3. 045-Recirc loop A ΔT=27 4. 030-Recirc loop B ΔT=27 5. 000-Bottom head drain ΔT=28 6. 945-2000: calculational error (actual ΔT=28)			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
★ (Step 5.1.6) Refer to and evaluate compliance with Tech Spec 3.4.10 **EVALUATOR CUE:** When asked provide copy of TS 3.4.10	Refer to Tech Spec 3.4.10 and determine: LCO 3.4.10 NOT met: • Exceeded SR 3.4.10.1.b: ≤100°F/Hr Condition A is applicable: • Action A.1, Restore CDR within limits within 30 minutes • Action A.2, Determine RCS is acceptable for continued operation within 72 hours.			
★Verify current heatup rate complies with tech spec limits	Applicant states that action for A.1 is complete, current heatup rate is less than 100°F/Hr. Applicant states that analysis is required by engineering within 72 hours to comply with action A.2			
Initiate LCO/TRO tracking record in SOMs LCO module **EVALUATOR CUE:** No further actions are required for this JPM	Candidate states need to enter LCO into SOMs tracking software.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR: Do you have ALL your JPM exam materials? Task Cue Sheets? Procedures?				

JPM Stop Time _____

NOTE

Do **not** give the next page (Key) to the student!

They are given the cue sheet and the last two pages of the JPM package, which are marked “Student’s Copy” Page 1 of 2 and 2 of 2).

ANSWER KEY

TABLE 1

REACTOR PRESSURE VESSEL METAL TEMPERATURE LOG

All RPV Metal Temperature Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic Testing (ISLHT) is complete, until both temps > 200°F heating up or start when either temp < 200°F cooling down. Maintain the lowest recorded temperature to the right of:
Curve A for ISLHT
Curve B for Operation Mode 4 and coolant ≤ 100°F
Curve C for Critical Operation

	Temp Recorder Point #5	Temp Recorder Point #11	
TIME/DATE AS NECESSARY	VSL WALL BY FLANGE	VSL BOTTOM HEAD	CONFIRM COMPLIANCE W/SR 3.4.10.1
1700 TO/DA/Y	207	208	CBC

TABLE 2

REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE LOG

All Rx Coolant Temp and Press Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic testing is complete. TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup or cooldown, and ≤ 5° in any 15 minute period during system hydrotest.

CIRCLE DATA SOURCE WHERE APPLICABLE	PI-C32-1R605 NFP02 (NFP03)	TR-B31-1R650 NRT01 (NRT51) NRT52	NA	TR-B31-1R650 (NRT02) NRT53 NRT54	NA	TR-B21-1R006 (PT_8) (NLT01)	NA	(NFA05)	NA	
TIME/DATE AS NECESSARY	REACTOR PRESSURE PSIG	RECIRC LOOP A TEMP °F	RECIRC LOOP A DELTA TEMP °F	RECIRC LOOP B TEMP °F	RECIRC LOOP B DELTA TEMP °F	BOTTOM HEAD DRAIN TEMP °F	BTM HD DRAIN DELTA TEMP °F	RX STM DOME TEMP °F	RX STM DOME DELTA TEMP °F	CONFIRM COMPLIANCE W/SR 3.4.10.1
1800 TO/DA/Y	83	293.9	N/A	294.4	N/A	291	N/A	301	N/A	CBC
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	CBC
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	**16**	CBC
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	CBC
1900 TO/DA/Y	184	362.6	17.1	364.4	17.5	361	17	371	15	CBC
1915 TO/DA/Y	237	379.5	16.9	384.6	18.2	382	22	387	16	CBC
1930 TO/DA/Y	287	401.3	21.8	402.1	17.5	400	18	**404**	17	CBC
1945 TO/DA/Y	321	**421.5**	21.2	425.2	23.1	421	21	**428**	24	CBC
2000 TO/DA/Y	466	448.8	26.3	449.4	24.2	449	**28**	456	**25**	CBC
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	24	CBC
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	**27**	**507**	26	CBC
2045 TO/DA/Y	885	**522.1**	**27.0**	522.9	23.3	521	24	**532**	25	CBC

Shiftly Review and Confirmation above recorded data is accurate, compliant, and complete.

SHIFT SUPERVISION DATE TIME

Actual Steam Dome ΔT from 1930-2030 was 103°F, and 1945-2045 was 104°F; this exceeds the TS limit of ≤ 100°F/hr.
Other ΔTs highlighted should be noted, and although 100°ΔT was exceeded between 1945 and 2045 on recirc loop A, only steam dome ΔT is applicable

TASK CONDITIONS

1. Unit 1 is in MODE 2.

2. A reactor startup/heatup is in progress.

3. SO-100-011, "Reactor Temperature and Pressure Monitoring", is being conducted.

4. The shiftly review of the SO-100-011 data is required

INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 1800 through 2345 to confirm procedural compliance and determine what actions are required, if any

TASK CONDITIONS

1. Unit 1 is in MODE 2.

2. A reactor startup/heatup is in progress.

3. SO-100-011, "Reactor Temperature and Pressure Monitoring", is being conducted.

INITIATING CUE

Perform a review of the data recorded in SO-100-011 for 1800 through 2345 to confirm procedural compliance

(SRO only) Additionally, determine what actions are required, if any

FOR TRAINING ONLY (STUDENT'S COPY Page 1 of 2)

TABLE 1

REACTOR PRESSURE VESSEL METAL TEMPERATURE LOG

All RPV Metal Temperature Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic Testing (ISLHT) is complete, until both temps > 200°F heating up or start when either temp < 200°F cooling down. Maintain the lowest recorded temperature to the right of:
Curve A for ISLHT
Curve B for Operation Mode 4 and coolant ≤ 100°F
Curve C for Critical Operation

	Temp Recorder Point #5	Temp Recorder Point #11	
TIME/DATE AS NECESSARY	VSL WALL BY FLANGE	VSL BOTTOM HEAD	CONFIRM COMPLIANCE W/SR 3.4.10.1
1700 TO/DA/Y	207	208	BBC

TABLE 2

REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE LOG

All Rx Coolant Temp and Press Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic testing is complete. TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup or cooldown, and ≤ 5° in any 15 minute period during system hydrotest.

CIRCLE DATA SOURCE WHERE APPLICABLE	PI-C32-1R605 NFP02 (NFP03)	TR-B31-1R650 NRT01 (NRT51) NRT52	NA	TR-B31-1R650 (NRT02) NRT53 NRT54	NA	TR-B21-1R006 (PT_8) (NLT01)	NA	(NFA05)	NA	
TIME/DATE AS NECESSARY	REACTOR PRESSURE PSIG	RECIRC LOOP A TEMP °F	RECIRC LOOP A DELTA TEMP °F	RECIRC LOOP B TEMP °F	RECIRC LOOP B DELTA TEMP °F	BOTTOM HEAD DRAIN TEMP °F	BTM HD DRAIN DELTA TEMP °F	RX STM DOME TEMP °F	RX STM DOME DELTA TEMP °F	CONFIRM COMPLIANCE W/SR 3.4.10.1
1800 TO/DA/Y	83	293.9	N/A	294.4	N/A	291	N/A	301	N/A	CBC
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	CBC
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	16	CBC
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	CBC
1900 TO/DA/Y	184	362.6	16.1	364.4	17.5	361	17	371	15	CBC
1915 TO/DA/Y	237	379.5	16.9	384.6	18.2	382	22	387	16	CBC
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2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	27	507	26	CBC
2045 TO/DA/Y	885	522.1	27.0	522.9	23.3	521	24	532	25	CBC

Shiftly Review and Confirmation above recorded data is accurate, compliant, and complete.

SHIFT SUPERVISION DATE TIME

FOR TRAINING ONLY (STUDENT'S COPY Page 2 of 2)

TABLE 1

REACTOR PRESSURE VESSEL METAL TEMPERATURE LOG

All RPV Metal Temperature Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic Testing (ISLHT) is complete, until both temps > 200°F heating up or start when either temp < 200°F cooling down. Maintain the lowest recorded temperature to the right of:
Curve A for ISLHT
Curve B for Operation Mode 4 and coolant ≤ 100°F
Curve C for Critical Operation

	Temp Recorder Point #5	Temp Recorder Point #11	
TIME/DATE AS NECESSARY	VSL WALL BY FLANGE	VSL BOTTOM HEAD	CONFIRM COMPLIANCE W/SR 3.4.10.1

TABLE 2

REACTOR COOLANT SYSTEM TEMPERATURE AND PRESSURE LOG

All Rx Coolant Temp and Press Data shall be recorded until Heatup, Cooldown or Inservice Leak and Hydrostatic testing is complete. TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are > 100°F in any one hour. However, ALL ΔT's should be maintained <25° in any 15 minute period during heatup or cooldown, and ≤ 5° in any 15 minute period during system hydrotest.

CIRCLE DATA SOURCE WHERE APPLICABLE	PI-C32-1R605 NFP02 (NFP03)	TR-B31-1R650 NRT01 (NRT51) NRT52	NA	TR-B31-1R650 (NRT02) NRT53 NRT54	NA	TR-B21-1R006 (PT 8) (NLT01)	NA	(NFA05)	NA	
TIME/DATE AS NECESSARY	REACTOR PRESSURE PSIG	RECIRC LOOP A TEMP °F	RECIRC LOOP A DELTA TEMP °F	RECIRC LOOP B TEMP °F	RECIRC LOOP B DELTA TEMP °F	BOTTOM HEAD DRAIN TEMP °F	BTM HD DRAIN DELTA TEMP °F	RX STM DOME TEMP °F	RX STM DOME DELTA TEMP °F	CONFIRM COMPLIANCE W/SR 3.4.10.1
2100 TO/DA/Y	890	522.4	0.3	524.5	1.6	523	2	532	0	CBC
2115 TO/DA/Y	894	523.6	1.2	526.8	2.3	524	1	533	1	CBC
2130 TO/DA/Y	908	524.7	1.1	529.9	3.1	524	0	534	1	CBC
2145 TO/DA/Y	917	525.9	1.2	533.6	3.7	525	1	536	2	CBC
2200 TO/DA/Y	918	526.0	0.1	533.7	0.1	526	1	536	0	DEF
2215 TO/DA/Y	925	527.1	1.1	537.1	3.4	528	2	537	1	DEF
2230 TO/DA/Y	928	527.4	0.3	537.2	0.1	528	0	537	1	DEF
2245 TO/DA/Y	930	530.4	3.0	537.4	0.2	530	2	538	1	DEF
2300 TO/DA/Y	934	532.7	2.3	537.6	0.2	531	1	538	0	DEF
2315 TO/DA/Y	945	533.4	0.7	537.9	0.3	533	2	538	0	DEF
2330 TO/DA/Y	955	533.7	0.3	538.1	0.2	533	0	540	2	DEF
2345 TO/DA/Y	957	533.8	0.1	538.2	0.1	533	0	541	1	DEF

Shiftly Review and Confirmation above recorded data is accurate, compliant, and complete.

SHIFT SUPERVISION DATE TIME

Susquehanna Steam Electric Station

Job Performance Measure

Review failed surveillance test and determine action

JPM Designation: A-1.2

Revision Number: 0

Date: _6/10/11___

Developed By:	**Patel**_____	**06/10/11**_____
	Author	**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. Provide marked-up surveillance SO-151-A02 with data.

TASK STANDARD:

Review the data for a completed surveillance, and declare the Core Spray loop A inoperable. Enter appropriate TS.

TASK CONDITIONS:

Plant is at 100% power.

Plant is in a normal electrical line up with B EDG taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours.

RO INITIATING CUE:

Review the surveillance testing data and completed confirmation testing of SO-151-A02.

SRO INITIATING CUE:

Complete SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A, to a point where all Technical Specification required actions have been identified.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Emergency Plan communications

JPM Number: A-2

Revision Number: 0

K/A Number and Importance: 2.2.12 RO 3.7 SRO 4.1

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

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

References:
1. NUREG 1123
2. SO-151-A02, 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 review surveillance data for Core Spray pump A and determine its operability. The applicant will determine the pump to be inoperable and TS 3.0.3 LCO entry will be entered due to the EDG B OOS and the redundant required features of 'A' train Core Spray pump was declared inoperable.

JPM A-2

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
Evaluator Note • Provide mark-up copy of the SO-151-A02 with Attachment A completed. • Ensure that pump A discharge pressure is recorded as 262.5 psig (step 5.1.16b) and calculated delta-p value recorded in Attachment A acceptance criteria 7 is recorded as 264.5 psid. • Give the candidate a few minutes to read the Task Conditions/Cue Sheet.				
1. Reviews As-Found Column data on Attachment 'A'	Reviews data on SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A.			
*2. Identifies that there is a calculation error for calculating CS pump A delta-P. (Attachment A acceptance criteria 7)	Compares the calculated CS pump A delta-P of 264.5 psid with the actual discharge pressure and suction pressure valves (262.5 psig – 8psig) and determines that there is a math error. The actual calculated value would be 254.5 psid, and determines this to be UNACCEPTABLE.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*3. Notifies Shift Supervision that SO 151-A02 has failed its acceptance criteria. **Evaluator Note** This completes the JPM for the RO candidate.	IAW Attachment A. Under Required Action: Notifies Shift Supervision that SO-151-A02 failed its acceptance criteria. AND Initials the Confirm space.			
Evaluator Note If JPM is being used for a SRO candidate, continue the JPM.				
*4. Declares CS pump A inoperable.	IAW Attachment A. Under Required Action: Determines that the measured values of pump delta-P fall outside of their acceptance criteria, and the pump shall be **Declared INOPERABLE**. AND Initials the Confirm space.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5. Determines required TS action for CS inoperability. **Evaluator Cue** If necessary, ask SRO candidate to report the required TS actions to you (as the Shift Manager).	Determines Condition I Action I.1 is applicable and LCO entry 3.0.3 is required. For Two Core Spray subsystems inoperable OR One LPCI subsystem inoperable for reason other than condition B and One core spray subsystem inoperable. OR Two LPCI subsystems inoperable for reasons other than Condition B. OR HPCI System and one or more ADS valves inoperable. **Evaluator Note** A CS subsystem being inoperable due to the pump delta-P issue and 'B' EDG OOS leads to two core spray subsystems inoperable. (TS 3.5.1.I.1 & 3.8.1.B) TS 3.8.1 For One required DG INOPERABLE, Condition B.2 Declare required feature(s) supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. Identifies a LCO/TRO Sheet will be written. **Evaluator Cue** Inform the candidate it will not be necessary to complete a LCO/TRO Sheet at this time. **Evaluator Note** This completes the JPM	Identifies a LCO/TRO Sheet will be written.			

JPM Stop Time _____

JPM A-2

HANDOUT PAGE FOR RO:

TASK CONDITIONS:

Plant is at 100% power.

TRO 3.8.2.1 entry due to the Core Spray flow verification testing.

Plant is in a normal electrical line up with B EDG taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours.

INITIATING CUE:

Review the surveillance testing data and completed confirmation testing of SO-151-A02. Complete Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

REQUIRED ACTIONS:

HANDOUT PAGE FOR SRO:

TASK CONDITIONS:

Plant is at 100% power.

TRO 3.8.2.1 entry due to the Core Spray flow verification testing.

Plant is in a normal electrical line up with B EDG taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours.

INITIATING CUE:

Complete SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

REQUIRED ACTIONS:

HANDOUT PAGE FOR RO:

TASK CONDITIONS:

Plant is at 100% power.

TRO 3.8.2.1 entry due to the Core Spray flow verification testing.

Plant is in a normal electrical line up with B EDG taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours.

INITIATING CUE:

Review the surveillance testing data and completed confirmation testing of SO-151-A02. Complete Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

REQUIRED ACTIONS:

JPM A-2

HANDOUT PAGE FOR SRO:

TASK CONDITIONS:

Plant is at 100% power.

TRO 3.8.2.1 entry due to the Core Spray flow verification testing.

Plant is in a normal electrical line up with B EDG taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours.

INITIATING CUE:

Complete SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A, to a point where all required actions have been identified. Document all required actions below on the cue sheet.

REQUIRED ACTIONS:

Susquehanna Steam Electric Station

Job Performance Measure

Review and Verify Blocking Required per NDAP-QA-0322 "Energy Control Process"

RO JPM Designation: A-2

Revision Number: 1

Date: 6/20/11

Developed By:	Lally	06/20/11
	Author	**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

2. Rev 1: Split JPM to separate RO and SRO actions. RO to provide proposed blocking, SRO to review and correct proposed blocking

JPM Setup Instructions:

1. Provide NDAP-QA-0322
2. Provide access to mechanical/electrical prints
3. Provide blank Proposed Blocking Sheet

TASK STANDARD:

Provide a list of proposed blocking for 2A Service Water Pump IAW NDAP-QA-0322 IAW the attached Proposed Blocking List Key.

TASK CONDITIONS:

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump PM, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

RO INITIATING CUE:

Using the appropriate drawings, provide a list of proposed blocking that meets the requirements of NDAP-QA-0322. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service. Minimum required information for each point must include: Component Number, Component Description, and Required Position

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Review and Verify Blocking Required per NDAP-QA-0322 "Energy Control Process"

JPM Number: A-2

Revision Number: 1

K/A Number and Importance: 2.2.41 RO 3.5 SRO 3.9

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

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

References:
1. NUREG 1123 Rev. 2, Supp. 1
2. NDAP-QA-0322 Rev. 35
3. E-145 sh. 8
4. E-4 sh. 3
5. M-2109 sh. 1

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 review proposed blocking for the 2A Service Water Pump for a pump PM. The normal means of clearance development, eSoms, is unavailable. The applicant will provide proposed blocking IAW NDAP-QA-0322.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE • Ensure the following material is available to support performance of this JPM: ♦ Access to mechanical/electrical prints ♦ NDAP-QA-0322 ♦ Attached Proposed Blocking Sheet				
EVALUATOR NOTE To begin this JPM, provide the candidate with the Task Conditions and Initiating Cue Sheet.	Reviews Attachment N for General Equipment Blocking Rules under Pumps (3) and Attachment O for Electrical Blocking under 13.8kV breakers (2.1)			
Reviews the scope of work planned for 2A SWP.	Determines that motor needs blocked and should isolate all pump flowpaths to allow for work on pump.			
NDAP-QA-0322 is an information use only procedure. Candidate should reference clearance standards (6.1) and attachments N & O for general equipment blocking rules to develop proposed blocking	Locates and uses referenced drawings to review blocking, Uses M-2109 Sheet 1, E-145 Sheet 8, and E-4 Sheet 3 to develop proposed blocking list.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE Candidate may at anytime reference NDAP-QA-0322 to ensure compliance and follow appropriate check sheets.				
★Develops list of proposed blocking points based upon print review and NDAP-QA-0322 guidance	Proposed blocking list generated matches proposed blocking list key, all critical steps met.			
EVALUATOR CUE Role play the Unit Supervisor and acknowledge the receipt of the proposed blocking points/corrected blocking and inform candidate that it will be forwarded to the WCC.				
Give completed list of proposed blocking points to the Unit Supervisor to be forwarded to WCC.	Unit Supervisor is given the list of proposed blocking points.			
EVALUATOR CUE Once candidate turns in list of proposed blocking points, the JPM is complete. **DUE TO THE NATURE OF THIS JPM OTHER BLOCKING POINTS MAY BE ACCEPTABLE. CONSULT WITH ADDITIONAL SMEs AS NECESSARY TO DETERMINE ACCEPTABILITY OF ALTERNATE BLOCKING POINTS.**				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
DO YOU HAVE ALL OF YOUR JPM EXAM MATERIALS?				

JPM Stop Time _____

NOTE

Do **NOT** give the next page (Key) to the student!

They are given the cue sheet and proposed blocking sheet

PROPOSED BLOCKING KEY
DO NOT GIVE TO CANDIDATE

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

1.	★**2A10106** Service Water Pump A 2P502A 13.8kV breaker: ★**OPEN**, ★**RACKED OUT**, (applicant may also request breaker REMOVED)
2.	2A10106 Ground & Test Device: RACKED IN
3.	★**209001** Service Water Pump A Suction ISO VLV: ★**CLOSED**
4.	★**209004** Service Water Pump A Discharge ISO VLV: ★**CLOSED**
5.	★**209014** Service Wtr Pump A Seal Water Press CTL VLV Bypass VLV: ★**CLOSED**
6.	★**209016** Service Wtr Pump A Seal Water Press CTL VLV Outlet ISO VLV: ★**CLOSED**
7.	★**209166** Service Wtr Pump A Vent VLV: ★**CLOSED**
8.	★**209801** Service Water Pump A OB Casing Vent VLV: OPEN
9.	★**209802** Service Water Pump A IB Casing Vent VLV: OPEN
10.	★**209048** Service Water Pump A Drain VLV: OPEN
11.	★**209119** Service Water Pump A Drain VLV: OPEN

RO ONLY

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump PM, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

INITIATING CUE

Using the appropriate drawings, provide a list of proposed blocking that meets the requirements of NDAP-QA-0322. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service. Minimum required information for each point must include: Component Number, Component Description, and Required Position

RO ONLY

TASK CONDITIONS

Unit 2 is at 100% power.

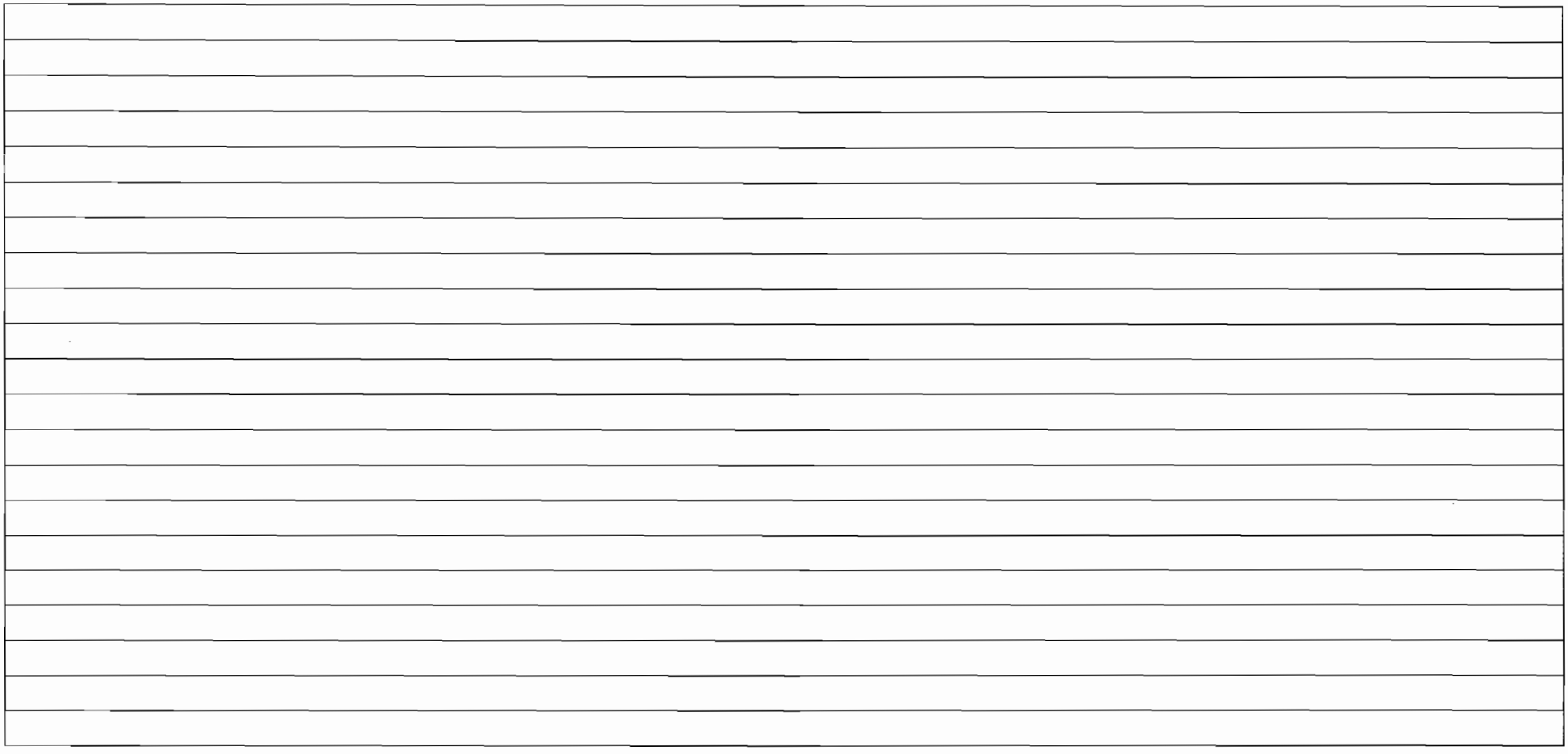
2A Service Water Pump has been scheduled for pump PM, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

INITIATING CUE

Using the appropriate drawings, provide a list of proposed blocking that meets the requirements of NDAP-QA-0322. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service. Minimum required information for each point must include: Component Number, Component Description, and Required Position

PROPOSED BLOCKING



Susquehanna Steam Electric Station

Job Performance Measure

Review and Verify Blocking Required per NDAP-QA-0322 "Energy Control Process"

SRO JPM Designation: A-2

Revision Number: 1

Date: 6/20/11

Developed By:	Lally	06/20/11
	Author	**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

2. Rev 1: Split JPM to separate RO and SRO actions. RO to provide proposed blocking, SRO to review and correct proposed blocking

JPM Setup Instructions:

1. Provide NDAP-QA-0322
2. Provide access to mechanical/electrical prints
3. Provide proposed 2A Service Water Pump Clearance

TASK STANDARD:

Review the list of proposed blocking for 2A Service Water Pump; discrepancies identified and noted IAW attached Key.

TASK CONDITIONS:

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump PM, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

SRO INITIATING CUE:

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking to ensure it meets the requirements of NDAP-QA-0322 for accuracy and adequacy. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Review and Verify Blocking Required per NDAP-QA-0322 "Energy Control Process"

JPM Number: A-2

Revision Number: 1

K/A Number and Importance: 2.2.41 RO 3.5 SRO 3.9

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

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

References:
1. NUREG 1123 Rev. 2, Supp. 1
2. NDAP-QA-0322 Rev. 35
3. E-145 sh. 8
4. E-4 sh. 3
5. M-2109 sh. 1

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 review proposed blocking for the 2A Service Water Pump for a pump PM. The normal means of clearance development, eSoms, is unavailable. The applicant will review proposed blocking and identify/document any discrepancies.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR NOTE • Ensure the following material is available to support performance of this JPM: ♦ Access to mechanical/electrical prints ♦ NDAP-QA-0322 ♦ Attached library clearance **EVALUATOR NOTE** To begin this JPM, provide the candidate with the Task Conditions and Initiating Cue Sheet. Reviews the scope of work planned for 2A SWP. NDAP-QA-0322 is an information use only procedure. Candidate should reference clearance standards (6.1) and attachments N & O for general equipment blocking rules for verifying correct blocking	Determines that motor needs blocked and should isolate all pump flowpaths to allow for work on pump.			
EVALUATOR NOTE Candidate may at anytime reference NDAP-QA-0322 to ensure compliance and follow appropriate check sheets.				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
★Using E-145, recognizes that the requested 13.8kV breaker listed (2A10103) is incorrect	Candidate identifies 2A10106 as correct 13.8kV breaker for 2A Service Water Pump.			
★Using E-145, recognizes that the requested location for the Ground and Test Device is also incorrect (2A10103).	Candidate identifies 2A10106 as the correct location for the Ground and Test device			
★Using M-2109, Sheet 2, candidate should recognize that the requested Service Water Pump vent valve is incorrect and is actually for 2B Service Water Pump (209167)	Candidate identifies 209166 as the correct 2A Service Water Pump vent valve			
EVALUATOR CUE Role play the Unit Supervisor and acknowledge the receipt of the corrected blocking and inform candidate that it will be forwarded to the WCC.				
Give completed list of corrected blocking sheet to the Unit Supervisor to be forwarded to WCC.	Unit Supervisor is given the corrected blocking sheet.			
EVALUATOR CUE Once candidate turns in list of corrected blocking sheet, the JPM is complete. **DUE TO THE NATURE OF THIS JPM OTHER BLOCKING POINTS MAY BE ACCEPTABLE. CONSULT WITH ADDITIONAL SMEs AS NECESSARY TO DETERMINE ACCEPTABILITY OF ALTERNATE BLOCKING POINTS.**				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
DO YOU HAVE ALL OF YOUR JPM EXAM MATERIALS?				

JPM Stop Time _____

NOTE

Do **NOT** give the next 2 pages (Key) to the student!

They are given the cue sheet and the library clearance order

SRO ONLY

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump PM, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

A paper copy of a library clearance has been sent to the Control Room for you to review the blocking request

INITIATING CUE

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking to ensure it meets the requirements of NDAP-QA-0322 for accuracy and adequacy. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service.

SRO ONLY

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for pump PM, but due to an oversight, no clearance package was developed

Database problems within eSoms have prevented development of a clearance order by electronic means

A paper copy of a library clearance has been sent to the Control Room for you to review the blocking request

INITIATING CUE

Using the appropriate drawings referenced on the proposed clearance, review the requested blocking to ensure it meets the requirements of NDAP-QA-0322 for accuracy and adequacy. The Clearance Order Office will generate the associated Clearance Order when eSoms is returned to service.

Library Clearance Order
Susquehanna **##-##-2P502A SERVICE WATER PUMP**
0 -UNIT 2 SYS

2P502A

SERVICE WATER PUMP A (PP MOTOR MR N NOUN LOC TEXT:
RM:CW-020 A:52 E:676 R678.5'

Clearance Order Description:

SERVICE WATER PUMP 2P502A OOS FOR INSPECTION PM STANDARD CLEARANCE ORDER

Notes:

1) WORK GROUP VENT AND DRAIN, AS NEEDED (Waste Pregen form)
2) Clearance order effectiveness determined by Live-Dead-Live checks; no sustained pressure/flow exiting drains Opened within clearance order boundary

Impacts / Effects:

LOSS OF CONTROL AND INDICATION FOR 2A SERVICE WATER PP 2P502A

PMT: OPS- PLACE IN SERVICE IAW OP-211-001 AND VERIFY PROPER OPERATION.

REF. E-145 SH. 8, E-4 SH 3 & M-2109 SH. 1

Post Maintenance Testing Req.:

PSP-29; PLACE SW PUMP 2P502A I/S IAW OP-211-001

Level	Verified By	Verification Date / Time	Verification Description	Status
1	Wilkes, Barry	6/21/2011 12:58:07	Prepared	
2			Reviewed	
3			Approved for Use	

Attribute Description	Attribute Value
NVC Required	
Sequential Blocking Required	Y
Atypical Clearance	
Draining Complete	
Depressurized	
Continuously Vented	
Purge Complete	

Tagged Component	Description	Location	Tag Type	Pl. Seq.	Place Verif	Rest. Seq.	Rest Verif	Tagged Position	Restoration Position	Tag Placement Notes	Tag Removal Notes
NOTE 1	SEE BLOCKING COMMENTS FOR DETAILS NOUN LOC TEXT:	A:0 E:0	Info	1	NV	3	NV	SEE TAG PLACEMENT NOTES	SEE TAG REMOVAL NOTES	ENSURE SERVICE WATER PUMP 2P502A NOT IN SERVICE (and NOT in Standby) PER OP-211-001 SEC 2.7 PRIOR TO HANGING TAGS	
2A10103 (RM)	SERVICE WATER PUMP A 2P502A 13.8KV BKR	RM:II-220 A:13 E:699 R700' COL:8 S 30.2	Pink Tag	2	SC	2	CV	OPEN, RACKED OUT, REMOVED	RACKED IN		
2A10103 GROUND & TEST DEVICE	SERVICE WATER PUMP 2P502A	RM:II-220 A:13 E:699'	Red Tag	2	CV	2	CV	RACKED IN	RACK OUT REMOVE		
209001	SERVICE WATER PUMP A SUCTION ISO VLV NOUN LOC TEXT:	RM:CW-001 A:52 E:661 R668.5' COL:5 N 31.2	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209004	SERVICE WATER PUMP A DISCHARGE ISO VLV NOUN LOC TEXT:	RM:CW-001 A:52 E:661 R667' COL:2 S 30.2	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209014	SERVICE WTR PUMP A SEAL WATER PRESS CTL VLV BYPASS VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R681' COL:3 N 31.2	Red Tag	2	CV	2	CV	CLOSED	CLOSED		

Tagged Component	Description	Location	Tag Type	Pl. Seq.	Place Verif	Rest. Seq.	Rest Verif	Tagged Position	Restoration Position	Tag Placement Notes	Tag Removal Notes
209016	SERVICE WTR PUMP A SEAL WATER PRESS CTL VLV OUTLET ISO VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R682' COL:5 N 31.6	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209167	SERVICE WATER PUMP A VENT VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R686.5' COL:9 N 31.2	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209801	SERVICE WATER PUMP A OB CASING VENT VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R677.5' COL:8 N 31.2	No Tag	2	SC	1	CV	CLOSED	CLOSED		
209802	SERVICE WATER PUMP A IB CASING VENT VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R678.5' COL:10 N 31.	No Tag	2	SC	1	CV	CLOSED	CLOSED		
209048	SERVICE WATER PUMP A DRAIN VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R678' COL:4 N 31.2	No Tag	2	SC	1	CV	CLOSED	CLOSED		
209119	SERVICE WATER PUMP A DRAIN VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R678' COL:5 N 31.2	No Tag	2	SC	1	CV	CLOSED	CLOSED		

Library Clearance Order
Susquehanna **11-001 -2P502A SERVICE WATER PUMP**
0 -UNIT 2 SYS

2P502A

SERVICE WATER PUMP A (PP MOTOR MR N NOUN LOC TEXT:
RM:CW-020 A:52 E:676 R678.5'

Clearance Order Description:

SERVICE WATER PUMP 2P502A OOS FOR INSPECTION PM STANDARD CLEARANCE ORDER

Notes:

1) WORK GROUP VENT AND DRAIN, AS NEEDED (Waste Pregen form)
2) Clearance order effectiveness determined by Live-Dead-Live checks; no sustained pressure/flow exiting drains Opened within clearance order boundary

Impacts / Effects:

LOSS OF CONTROL AND INDICATION FOR 2A SERVICE WATER PP 2P502A

PMT: OPS- PLACE IN SERVICE IAW OP-211-001 AND VERIFY PROPER OPERATION.

REF. E-145 SH. 8, E-4 SH 3 & M-2109 SH. 1

Post Maintenance Testing Req.:

PSP-29; PLACE SW PUMP 2P502A I/S IAW OP-211-001

Level	Verified By	Verification Date / Time	Verification Description	[illegible]
1	Kirkpatrick, Michael C.	6/23/2010 12:58:07	Prepared	
2	Williams, James	4/24/2011 14:24:25	Reviewed	
3	Wolfe, John R.	4/25/2011 03:12:34	Approved for Use	

Attribute Description	Attribute [illegible]
NVC Required	
Sequential Blocking Required	
Atypical Clearance	
Draining Complete	
Depressurized	
Continuously Vented	
Purge Complete	

Tagged Component	Description	Location	Tag Type	Place Seq.	Place Verif	Rest. Seq.	Rest Verif	Tagged Position	Restoration Position	Tag Placement Notes	Tag Removal Notes
NOTE 1	SEE BLOCKING COMMENTS FOR DETAILS NOUN LOC TEXT:	A:0 E:0	[illegible]	1	NV	3	NV	SEE TAG PLACEMENT NOTES	SEE TAG REMOVAL NOTES	ENSURE SERVICE WATER PUMP 2P502A NOT IN SERVICE (and NOT in Standby) PER OP-211-001 SEC 2.7 PRIOR TO HANGING TAGS	
2A10106 (RM)	SERVICE WATER PUMP A 2P502A 13[illegible]KR	RM:II-220 A:13 E:699 R700' COL:8 S 30.2	Pink Tag	2	SC	2	CV	OPEN, RACKED OUT, REMOVED	RACKED IN		
2A10106 GROUND & TEST DEVICE	SERVICE WA PUMP 2P502	RM:II-220 A:13 E:699'	Red Tag	2	CV	2	CV	RACKED IN	RACK OUT REMOVE		
209001	SERVICE WATER PUMP A [illegible]CTION ISO VLV N[illegible]N LOC TEXT:	RM:CW-001 A:52 E:661 R668.5' COL:5 N 31.2	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209004	SERVICE WATER PUMP A DISCHARGE ISO VLV NOUN LOC TEXT:	RM:CW-001 A:52 E:661 R667' COL:2 S 30.2	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209014	SERVICE WTR PUMP A SEAL WATER PRESS CTL VLV BYPASS VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R681' COL:3 N 31.2	Red Tag	2	CV	2	CV	CLOSED	CLOSED		

Tagged Component	Description	Location	Tag Type	Pl. Seq.	Place Verif	Rest. Seq.	Rest Verif	Tagged Position	Restoration Position	Tag Placement Notes	Tag Removal Notes
209016	SERVICE WTR PUMP A SEAL WATER PRESS CTL VLV OUTLET ISO VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R682' COL:5 N 31.6	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209166	SERVICE WATER PUMP A VENT VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R686.5' COL:9 N 31.2	Red Tag	2	CV	2	CV	CLOSED	OPEN		
209801	SERVICE WATER PUMP A OB CASING VENT VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R677.5' COL:8 N 31.2	No Tag	2	SC	1	CV	CLOSED	CLOSED		
209802	SERVICE WATER PUMP A IB CASING VENT VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R678.5' COL:10 N 31.	No Tag	2	SC	1	CV	CLOSED	CLOSED		
209048	SERVICE WATER PUMP A DRAIN VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R678' COL:4 N 31.2	No Tag	2	SC	1	CV	CLOSED	CLOSED		
209119	SERVICE WATER PUMP A DRAIN VLV NOUN LOC TEXT:	RM:CW-020 A:52 E:676 R678' COL:5 N 31.2	No Tag	2	SC	1	CV	CLOSED	CLOSED		

Susquehanna Steam Electric Station

Job Performance Measure

Review and Approve Radioactive Liquid Release Permit

JPM Designation: A-3

Revision Number: 0

Date: _6/14/11___

Developed By:	**Patel**	**06/14/11**
	Author	**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. Provide marked-up surveillance authorization package.

TASK STANDARD:

Identify incorrect settings for Actual High Rad setpoint and Actual Alert Rad setpoint.

TASK CONDITIONS:

- Plant is at 100% power.
- Plant is in a normal electrical line up.
- OP-069-050, Release of Liquid Radioactive Waste Attachment D "LRW Sample Tank 0T303C&D Radioactive Liquid Release Permit" has been completed through step 2.3.7
- Background reading for LIQUID RADWASTE RADIATION MONITOR [RITS-06433] is 2.77E3 CPM

INITIATING CUE:

Review and approve a radioactive liquid release permit IAW OP-069-050. Document discrepancy if any?

Discrepancy 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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Review and Approve Radioactive Liquid Release Permit

JPM Number: A-3

Revision Number: 0

K/A Number and Importance: 2.3.6 SRO 3.7

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: No

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

References:
1. NUREG 1123,
2. OP-069-050, Rev. 41

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 independently verify LRW sample tank radioactive liquid release permit and determine that the actual settings for high rad and alert rad setpoints are incorrect due to a calculation error.

JPM A-4

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

	Action	Standard	SAT	UNSAT	Comment Number
	EVALUATOR NOTE: • Provide the candidate with a filled out copy of OP-069-050, Release of Liquid Radioactive Waste Attachment D "LRW Sample Tank OT303C&D Radioactive Liquid Release Permit" completed through step 2.3.7. Ensure that High Rad setpoint calculation (in step 2.3.6.n) AND ACTUAL High Rad setpoint (in step 2.3.7 Position 0) are filled out with the MATH errors specified in steps 3 and 4 of this JPM. Applicant may use OP-069-050, Release of Liquid Radioactive Waste for guidance. • Provide the candidate with a filled out OP-069-050, Release of Liquid Radioactive Waste Attachment D. • Provide the Applicant with a blank OP-069-050, Release of Liquid Radioactive Waste Attachment D. • A complete Release permit for LRW Sample tank OT303C&D will consist of Attachments D, F, and H.				
1	Obtain a controlled copy of OP-069-050, Release of Liquid Radioactive Waste.	Controlled copy obtained.			

	Action	Standard	SAT	UNSAT	Comment Number
2	Selects the correct section to perform. **EVALUATOR NOTE:** Due to the nature of this JPM, the applicant may elect to perform the calculations FIRST before proceeding to Radwaste to Verify the proper setpoints. This is acceptable. **EVALUATOR NOTE:** If candidate indicates that he/she would proceed to Radwaste to Verify the proper setpoints, provide the candidate with the following information: "All setpoints are set in Radwaste as noted on the data sheet"	Selects section step 2.3.7 which requires review of previously completed steps 2.3.4 through 2.3.6.r of OP-069-050, Release of Liquid Radioactive Waste Attachment D "LRW Sample Tank OT-303C&D Radioactive Liquid Release Permit"			
✳3	Verifies High Rad setpoint	**Performs the following calculation:** **1.25E4 + 2.77E4 = 4.02E4 and compares this to the number in block 2.3.6.n (4.02E4). The applicant also verifies the background countrate with chemistry sheet and initiating cue** **AND** Determines that there is an error in the value of background coutrate. Applicant determines the value should be 2.77E3.			

	Action	Standard	SAT	UNSAT	Comment Number
✳4	Verifies Alert Rad setpoint **EVALUATOR CUE:** If the applicant attempts to stop JPM here, tell the applicant to complete the verification of the Rad monitors setup.	**Performs the following calculation:** **1.00E4 + 2.77E4 = 3.77E4 and compares this to the number in block 2.3.6.o (3.77E4). The applicant also verifies the background countrate with chemistry sheet and initiating cue** **AND** Determines that there is an error in the value of background coutrate. Applicant determines the value should be 2.77E3.			
✳5	Verifies Liquid Radwaste Radiation Monitor Setpoint inputs for Function Switch position 0	Checks required setpoint and actual setpoint for High Rad setpoint. Determines Setpoints have been incorrectly set to the setpoints determined by incorrect use of the background countrate value.			
✳6	Verifies Liquid Radwaste Radiation Monitor Setpoint inputs for Function Switch position 1	Checks required setpoint and actual setpoint for High Rad setpoint. Determines Setpoints have been incorrectly set to the setpoints determined by incorrect use of the background countrate value.			

	Action	Standard	SAT	UNSAT	Comment Number
7	Resolves the discrepancies **EVALUATOR CUE:** That completes this JPM.	Determines: The background countrate and setpoint adjustments will need corrected before the permit can be authorized for discharge.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

- Plant is at 100% power.
- Plant is in a normal electrical line up.
- OP-069-050, Release of Liquid Radioactive Waste Attachment D "LRW Sample Tank 0T303C&D Radioactive Liquid Release Permit" has been completed through step 2.3.7
- Background reading for LIQUID RADWASTE RADIATION MONITOR [RITS-06433] is 2.77E3 CPM

INITIATING CUE:

Review and approve a radioactive liquid release permit IAW OP-069-050. Document discrepancy if any?

Discrepancy if any:

JPM A-4

TASK CONDITIONS:

- Plant is at 100% power.
- Plant is in a normal electrical line up.
- OP-069-050, Release of Liquid Radioactive Waste Attachment D "LRW Sample Tank 0T303C&D Radioactive Liquid Release Permit" has been completed through step 2.3.7
- Background reading for LIQUID RADWASTE RADIATION MONITOR [RITS-06433] is 2.77E3 CPM

INITIATING CUE:

Review and approve a radioactive liquid release permit IAW OP-069-050. Document discrepancy if any?

Discrepancy if any:

For Information Only

RETDAS v3.6.6 <SSES> VSSI

LIQUID RELEASE PERMIT REPORT

Permit Number: 2011025

Release Point: 2 LRW Sample Tanks C & D
Release Mode.: 2 Batch
Status.....: C Closed
Comment.....:

11-02681

=== ACCEPTANCE CRITERIA ==========
Diluted Sum(Cn/Ln)..... 7.215E-03
TR 3.11.1.1 Criteria met (<= 1.0)?..... YES

ACCEPTANCE CRITERIA Met (If No, Then Complete FORM SC-069-001-7) (YES) NO N/A

=== RELEASE DATA ==========
Permit Start Date/Time..... 03/09/2011 09:30
Permit End Date/Time..... 03/09/2011 14:20
Release Duration (minutes)..... 2.900E+02

Plant Blowdown flowrate (gpm)..... 1.410E+04
River Depth at MCR (inches)..... 205.80
Transit Time (hours)..... 2.580E+01

Release volume (gal)..... 2.390E+04
Maximum release flowrate (gpm)..... 8.900E+01
Composite Sample Volume (ml)..... 4.780E+02

Undiluted Sum (Cn/Ln)..... 1.143E+00
Spectrum File Name..... 08-Mar-2011-290006.doc

FORM SC-069-001-4 Rev. 4

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For Information Only

RETDAS v3.6.6 <S8ES> VSSI

LIQUID RELEASE PERMIT REPORT

Permit Number: 2011025

Tritium and Gross Alpha
Composite Sample No. 11-2221
Volume of sample added to composite 478.0 ml N/A

Strontium 89/90 and Iron-55 Composite
Composite Sample No. 11-0002
Volume of sample added to composite 478.0 ml N/A

Sum (Cn/Ln) = Sum (Cn/Ln(undil)) X Max.Release F.R. / Blowdown F.R.
= (1.143E+00 X 8.900E+01) / 1.410E+04
= 7.215E-03

FORM SC-069-001-1 has been updated (YES)/NO N/A

FORM SC-069-001-4 Rev. 4

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For Information Only

RETDAS v3.6.6 <SSES> VSSI

LIQUID PRE-RELEASE PERMIT REPORT

Permit Number: 2011025

Release Point: 2 LRW Sample Tanks C & D
Release Mode.: 2 Batch
Status.....: P Pre-Release
Comment.....: 11-02681

=== PRE-RELEASE DATA ==========
Estimated release volume (gal)..... 2.390E+04

Monitor Operable?..... YES
Monitor Calibration (uCi/ml/cpm)..... 2.160E-09

CHEMISTRY TEST EQUIPMENT

Type	Stand. No.	Stand. Date	Stand. Exp. Date
Gamma Anal. Sys(1st Sample)	30-2-1-0-21	9-13-11	12-13-12
Gamma Anal. Sys(2nd Sample)	NA	NA	NA

=== FIRST ISOTOPIC: 08-Mar-2011-290006.doc ==========

Nuclide	Undiluted uCi/ml	Ln	Cn/Ln
CR-51	1.14E-06	5.00E-03	2.28E-04
CO-58	1.65E-07	2.00E-04	8.25E-04
CO-60	3.61E-07	3.00E-05	1.20E-02
Gamma	1.67E-06		1.31E-02
H-3	1.13E-02	1.00E-02	1.13E+00
FE-55	0.00E+00	1.00E-03	0.00E+00
SR-89	0.00E+00	8.00E-05	0.00E+00
SR-90	0.00E+00	5.00E-06	0.00E+00
Beta	1.13E-02		1.13E+00
ALPHA	0.00E+00	2.00E-08	0.00E+00

FORM SC-069-001-2 Rev. 15

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For Information Only

RETDAS v3.6.6 <SSES> VSSI

LIQUID PRE-RELEASE PERMIT REPORT

Permit Number: 2011025

=== FIRST ISOTOPIC: 08-Mar-2011-290006.doc ==========

Nuclide	Undiluted uCi/ml	Ln	Cn/Ln
Alpha	0.00E+00		0.00E+00
Total	1.13E-02		1.14E+00

FORM SC-069-001-2 Rev. 15

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For Information Only

RETDAS v3.6.6 <SSES> VSSI

LIQUID PRE-RELEASE PERMIT REPORT

Permit Number: 2011025

=== FLOW RATE AND RAD MONITOR SETPOINTS ==========
LRW Flowrate (gpm)..... 4.793E+02

High Rad Setpoint (cpm)..... 1.250E+04
But Not Greater Than (cpm)..... 8.400E+05

Alert Rad Setpoint (cpm)..... 1.000E+04
But Not Greater Than (cpm)..... 8.400E+05

Sample Acidified and Saved for Compositing Confirm OF/EJF

But Not Greater Than (cpm) = cpm @ 5% loss per Current CDS Confirm OF/EJF

FORM SC-069-001-2 Rev. 15

Date/Time: TODAY 10:40 tech1 ID: Retdas Page - 3

RETDAS v3.6.6 <SSES> VSSI

LIQUID PRE-RELEASE PERMIT REPORT

Permit Number: 2011025

=== PERMIT DOSE BY ORGAN AND AGE GROUP (mrem) ==========

Agegrp	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI	Skin	TBody
ADULT	1.41E-06	3.50E-05	3.45E-05	3.45E-05	3.45E-05	4.67E-05	1.65E-06	3.57E-05
TEEN	7.85E-06	3.25E-05	3.20E-05	3.20E-05	3.20E-05	4.04E-05	9.23E-06	3.32E-05
CHILD	1.64E-06	3.76E-05	3.71E-05	3.71E-05	3.71E-05	4.01E-05	1.93E-06	3.85E-05
INFANT	0.00E+00	2.69E-05	2.69E-05	2.69E-05	2.69E-05	2.69E-05	0.00E+00	2.69E-05

=== PERMIT DOSE ANALYSIS ==========

Maximum Any Organ Dose (mrem)..... 4.670E-05
Maximum Whole Body Dose (mrem)..... 3.850E-05

FORM SC-069-001-2 Rev. 15

For Information Only

GAMMA SPECTRUM ANALYSIS

Spectrum Number	: TODAY 290006	Facility	: Chemistry
Sample Description	: 11-02681, CDST		
Sample Type	: Routine		
Unit	: R		
Sample Point	: C AND D SAMPLE TANKS		
Sample Taken On	: TODAY 9:34:57AM	Acquisition Started	: TODAY 8:34:57AM
Nuclide Library	: RXH2O1	Operator	: CF/EJF
Procedure	: *1L Marinelli no decay*		
Sample Size	: 1.000E+03 mL	Detector Name	: DET02
Live Time	: 1200.0 seconds	Geometry	: 1L_Marinelli
Dead Time	: 0.01 %	Real Time	: 1200.1 seconds
Peak Significance Threshold	: 3.00	Identification Energy Tolerance	: 1.000 keV
Peak Locate Range (in channels)	: 100 - 4096	Energy Calibration Date	: 3/5/2012
Eff Calibration/Validation Date	: 9/13/2011	Apex Number (Liqdos spectrum)	: 32395

30-2-1-0-21 9-13-10

PEAK WITH NID REPORT

Peak Analysis Performed on 3/8/2011 8:55:00AM

Peak Number	Energy	Area	Bkgd	Channels	Peak Eff	% Error	Nuclide
1	320.09	93	10	635 - 644	1.87E-02	24.33	CR-51
2	810.94	60	9	1617 - 1627	8.37E-03	30.63	CO-58
3	1173.28	109	2	2340 - 2353	6.09E-03	19.76	CO-60
4	1332.74	79	0	2659 - 2672	5.47E-03	22.50	CO-60

M = First peak in a multiplet region
\+ = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

Analysis Report for 08-Mar-2011-290006

11-02681, CDST

INTERFERENCE CORRECTED REPORT

Nuclide Name	Nuclide Decay Factor	Nuclide Id Confidence	Wt mean Activity (uCi/mL)	Wt mean Activity %Error	Comments
Nuclide Type: ACTIVATION					
CR-51	1.00	1.000	**1.138E-06**	25.79	
CO-58	1.00	0.560	**1.647E-07**	31.72	
CO-60	1.00	0.995	**3.612E-07**	16.13	
		Total Activity:	**1.664E-06**		

? = nuclide is part of an undetermined solution

Errors quoted at 2.000 sigma

Analysis Report for 08-Mar-2011-290006

11-02681, CDST

UNIDENTIFIED PEAKS

Peak Locate Performed on : TODAY :55:00AM
Peak Locate From Channel : 100
Peak Locate To Channel : 4096

Peak No.	Energy (keV)	Peak Rate (CPS)	Peak Rate Uncertainty (%)

All peaks were identified.

M = First peak in a multiplet region
m = Other peak in a multiplet region
F = Fitted singlet
Errors quoted at 2.000 sigma

NUCLIDE MDA REPORT

Nuclide Library Used : \\APPAPEX1\ApexRoot\Chemistry\Library\RXH2O1.NLB

Nuclide Name	Nuclide MDA (uCi/mL)
NA-24	5.10E-08
AR-41	5.18E-08
MN-54	6.91E-08
FE-59	1.11E-07
ZN-65	1.40E-07
CU-67	5.66E-08
KR-85	1.34E-05
KR-85M	3.06E-08
KR-87	7.43E-08
KR-88	9.53E-08
NB-95	5.00E-08
ZR-95	8.31E-08
MO-99	3.93E-07
I-131	4.06E-08
I-132	4.39E-08
I-133	4.22E-08
XE-133	7.95E-08
XE-133M	2.75E-07
CS-134	4.02E-08
I-134	7.29E-08

Analysis Report for 08-Mar-2011-290006

11-02681, CDST

Nuclide Name	Nuclide MDA (uCi/mL)
I-135	1.68E-07
XE-135	3.26E-08
XE-135M	6.97E-08
CS-137	5.33E-08
XE-138	1.50E-07
BA-140	1.20E-07
LA-140	4.66E-08
CE-141	4.76E-08
CE-144	1.80E-07
TA-182	1.06E-07

\+ = Nuclide identified during the nuclide identification
\> = MDA value not calculated
@ = Half-life too short to be able to perform the decay correction

LRW SAMPLE TNK 0T303C&D
RADIOACTIVE LIQUID RELEASE PERMIT

PERMIT # 2011025 (assigned by Chemistry) DATE TODAY

Section 2.3.3 - Tank Data (To be completed by Operations)

a. Calculation of Required Recirc Time:

LRW Sample TkC & D 0T303 $\frac{89}{\%\text{static level}} \times \frac{0.75\text{ min}}{\%} = 66.75\text{ minutes}$

(Volume indication) X (Conversion factor) = (Required recirc time)

b. Actual Recirc Start Time 05 hrs. 45 min.

c. Earliest Possible Sample Time:

Required Recirc time + Actual Recirc start time

1 hr. 6.75 min. (2.3.3.a) + 05 hr. 45 min. (2.3.3.b) = 06 hr. 51.75 min

d. Treatment used prior to release (check one or more).

LRW Filter X LRW Demineralizer X (If only LRW Filter, perform and attach dose projection for respective collection tank)

g. LIQUID RADWASTE RADIATION MONITOR RITS-06433 CHANNEL CHECK (check one)

X Satisfactory ____ Unsatisfactory (TR 3.11.1.4 Condition B Actions)

h. LIQUID RADWASTE RADIATION MONITOR RITS-06433: X OP ____ INOP

Completed By: R.W. NPO (R.W. NPO) / TODAY (Date) / 0555 (Time)

i. Chemistry to implement Liquid Radwaste Sampling and Plant Effluent Radiation Monitor status verified:

Shift Supervisor (Shift Supervision) / TODAY (Date)

Section 2.3.4 - Sampling and Pre-Release Analysis
(To be completed by Chemistry in accordance with SC-069-001)

a. Sampled on 11-02681 (Sample No.) _____ (Date) 0750 (Time) By EJF (Chemistry Technician)

(1) Expected Volume to be Released (release tank only)
LRW Sample Tank C&D 0T303C&D

89 (Level (2.3.3a)) %–4%= 85 %X 281= 23,885 (Volume) gal.X 3.79= 90,524 (Volume) liters

(2) Maximum Liquid Radwaste Release Flowrate 4.79 E2 gpm

(3) Total Gamma Activity for Release 1.66 E-6 µci/ml

(4) Expected Check Source Countrate (Fill in countrate, 2.3.6.k)

(5) Calculated High Rad Countrate (Fill in Countrate, 2.3.6.n)

(6) Calculated Alert Rad Countrate (Fill in Countrate, 2.3.6.o)

(7) Monitor Maximum Countrate (Fill in Countrate, 2.3.6.r)

(8)(9) Required Setpoint value column for Section 2.3.7 is complete for function Switch 2 and 8.

Completed By: CF / EJF (Chemistry Technician) / TODAY (Date) / 1055 (Time)

Section 2.3.4.d LIQUID RADWASTE RADIATION MONITOR RITS-06433 Inoperable Requirements

Sample Verification

(1)	NA	NA	N/A	NA	NA
	Tank Sampled	Sample No.	Date	Time	By
(2)	NA	NA	NA	NA	NA
	Tank Sampled	Sample No.	Date	Time	By

Analysis and Release Rate Verification

(1)	NA	NA	NA
	Chemistry Technician	Date	Time
(2)	NA	NA	NA
	Chemistry Technician	Date	Time

Approval for Release

The tank described in Section 2.3.3 of this form has been analyzed, is acceptable for release and dose projection on respective collection tank has been completed if required.

Chemistry Technician Level II	TODAY	1100
Chemistry Technician Level II	Date	Time

Section 2.3.5 thru 2.3.6 - LIQUID RADWASTE RADIATION MONITOR RITS-06433 Setup
(To be completed by Operations)

2.3.5.g Present Background Countrate 2.77E4 cpm < 5.00 + 03 cpm (10 minute minimum count time).

CONFIRMED BY: MBP VERIFIED BY: TJC

2.3.6.b(2) Notify Control Room to perform Attachment H MBP

2.3.6.f Actual Check Source Countrate 2.96E4 cpm

NOTE:	The Minimum Required Check Source Countrate in step 2.3.6.k **Shall** be rounded **UP**.

2.3.6.k Expected Check Source Countrate 1.84E4 (2.3.4.a(4)) cpm+BackgroundCountrate 2.77E4 (2.3.5.g) cpm

= Minimum Required Check Source Countrate 2.12E4 cpm

2.3.6.l Is Item f ≥ Item k? (check one)

✓ YES (Source Check is Satisfactory)
____ NO (Source Check is Unsatisfactory, TR 3.11.1.4 Condition B Actions entered)

MPP
Confirmed By

NOTE:	The High Rad Setpoint and the Alert Rad Setpoint/Monitor Limit in step 2.3.6.n and 2.3.6.o **Shall** be rounded **DOWN**.

2.3.6.n High Rad Setpoint
High Rad Countrate 1.25E4 (2.3.4.a(5)) cpm+Background 2.77E4 (2.3.5.g) cpm= 4.02E4 cpm

2.3.6.o Alert Rad Setpoint/Monitor Limit
Alert Rad Countrate 1.00E4 (2.3.4.a(6)) cpm+Background 2.77E4 (2.3.5.g) cpm= 3.77E4 cpm

2.3.6.r Are both setpoints in n and o < than Monitor Maximum Countrate of 8.4E5 (2.3.4a(7)) cpm?

(YES) NO (circle) (If NO, contact Shift Supervision)

MPP
Confirmed By

Section 2.3.7 thru 2.3.8 - LIQUID RADWASTE RADIATION MONITOR RITS-06433 Setup
(To be completed by Operations)

2.3.7 LIQUID RADWASTE RADIATION MONITOR Setpoint Input

FUNCTION SWITCH POSITION	DESCRIPTION	REQUIRED SETPOINT	ACTUAL SETPOINT	CONFIRMED BY	VERIFIED BY
0	High Rad Setpt. (2.3.6.n)	4.02 E4 cpm	4.02E4 cpm	MBP	TJC
1	Alert Rad Setpt./Monitor Limit (2.3.6.o)	3.77E4 cpm	3.77E4 cpm	MBP	TJC
2	Low Rad (Fail) (2.3.4.a(8))	5.00 E1 cpm	5.00+01 cpm	MBP	TJC
4	Background	00 cpm	0.00+00 cpm	MBP	TJC
8	High Voltage (2.3.4.a(9))	1.00 E3 volts	1.00+03 volts	MBP	TJC

CAUTION

Do not place Time Constant Toggle Switch to 600 sec. without Shift Supervisor approval. Setpoint will be non-conservative.

Toggle Switch Time Constant	60 sec	60 sec	MBP	TJC

2.3.8 LIQUID RADWASTE RADIATION MONITOR Setup is complete and in service.

MBP
Confirmed By

INDEPENDENT VERIFICATION
by Shift Supervision

Section 2.3.9 - Cooling Tower Blowdown Flow Instrumentation Channel Check

g. Unit 1 Cooling Tower Blowdown Flow Instrumentation Channel Check

____SAT (Operable) ____UNSAT (Inoperable)

Unit 2 Cooling Tower Blowdown Flow Instrumentation Channel Check

____SAT (Operable) ____UNSAT (Inoperable)

h. Form OP-069-050-7 complete.

_____ _____
Confirmed By Date

i. Unit 1 (Unit 2) Cooling Tower Blowdown Flowrate Instrument Inoperable

Place Cooling Tower Blowdown HSS-01503 to **UNIT 1 BYPASS** (**UNIT 2 BYPASS**)

_____ _____
Confirmed By Date

j. Unit 1 AND Unit 2 Cooling Tower Flowrate Instruments Inoperable

(1) Shift Supervision notified to enter TR 3.11.1.4 Condition D Actions.

_____ _____
Confirmed By Date

(2) Permission to BYPASS CLTWR LOW FLOW interlock

_____
Shift Supervision

(4) **Place** CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A to **BYPASS**

_____ _____ _____ _____
CONFIRM DATE TIME VERIFICATION

(5) CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A green light is **ON**.

_____
CONFIRM

(6) LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **ON**.

_____
CONFIRM

Section 2.3.10 - Liquid Radwaste Radiation Monitor RITS-06433 Inoperable

Permission to bypass LRW Effluent Radiation Monitor.

_____
Shift Supervision

Place LRW EFFLUENT RAD MON BYPASS HS-06443B to **BYPASS**.

_____	_____	_____	_____
CONFIRM	DATE	TIME	VERIFICATION

LRW EFFLUENT RAD MON BYPASS HS-06443B green light is **ON**.

_____
CONFIRM

LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **ON**.

_____
CONFIRM

Section 2.3.11 - Plant Effluent Discharge Flow Recorder, FR-06433 (Red Pen) Channel Check

c. Plant Effluent Discharge Flow Recorder FR-06433

Channel Check (check one)

____SAT (Operable) ____UNSAT, (Inoperable, TR 3.11.1.4 Condition B or D Actions entered)

d.(2) Maximum Allowable Liquid Radwaste Release Flowrate _____ gpm > 125 gpm?
(2.3.4a(2))

YES NO (CIRCLE) _____ / _____
Confirmed By Date

(If Plant Effluent Discharge Flow Recorder inop and release flowrate is < 125 gpm, contact Shift Supervision)

==========

2.3.14.a(2) Actual Flowrate Using Cooling Tower Blowdown (every four (4) hours)

Unit 1 Blowdown Flowrate	+	Unit 2 Blowdown Flowrate	=	Total Blowdown Flowrate	Date	Time	Confirmed By
	+		=				
	+		=				
	+		=				

Section 2.3.14.a(3) Estimate Blowdown Flowrate (every four (4) hours)
per Attachment F

Unit	Cooling Tower Level	Blowdown Vlv Position	Blowdown Flowrate	Date	Time	Confirmed By

Section 2.3.14.I Estimate Plant Effluent Discharge Flow (every four (4) hours)

125 (est) Effluent Flow Rate	Date	Time	By
125 (est) Effluent Flow Rate	Date	Time	By
125 (est) Effluent Flow Rate	Date	Time	By
125 (est) Effluent Flow Rate	Date	Time	By

Section 2.3.12 Pre Release Activities

b. Release Position valve lineup is completed and independently verified. _____ Confirmed By

c. Pre-Release Tank Levels: % Level

Laundry Drain Sample Tnk, 0T312 _____
Evap. Dist. Sample Tnk 0T321 _____
LRW Sample Tnk A&B, 0T303 A&B _____
LRW Sample Tnk E&F, 0T303 E&F _____

m. **Contact** Unit Supervisor to Ensure Operability of Attachment H equipment immediately prior to start of LRW release. _____ Shift Supervision

n. Shift Manager approval to commence release. _____ Shift Supervision

Section 2.3.13 In-Service Check of LIQUID RADWASTE RADIATION MONITOR RITS-06433

Actual Radiation Monitor Response

d(3) LIQUID RADWASTE RADIATION RR-06433 (during flush) _____ Countrate cpm

Additional flushes (if required) _____ Countrate cpm

_____ Confirmed By

Section 2.3.14 Release Activities

a. Control Room Operator notified of release to begin. _____ Date _____ Time _____ Confirmed By

CAUTION

Blowdown Flow Recorders TR/FR-1(2)1501 are calibrated for flows up to 12000 gpm. Both units may display a digital flow of greater than 12000 gpm. Do not use for indicated flows greater than 12000 gpm.

(1) Blowdown Flow Instrumentation
TR/FR-11501 CW TEMP/CT BLOWDOWN FLOW _____ gpm

TR/FR-21501 CW TEMP/CT BLOWDOWN FLOW _____ gpm

_____ gpm + _____ gpm = _____ gpm
TR/FR-11501 TR/FR-21501 Sum Cooling Tower Blowdown

Does the sum of the Cooling Tower Blowdown flows ≥ 6000 gpm?
YES NO (Circle) (If NO, Contact Shift Supervision)

_____ Confirmed By _____ Verified By Shift Supervision

a(4) **Notify** Unit 1 Control Room PCO to install plastic cover "RELEASE IN PROGRESS" over HV-11503 handswitch. _____ Confirmed By / _____ Date

a(5) **Notify** Unit 2 Control Room PCO to install plastic cover "RELEASE IN PROGRESS" over HV-21503 handswitch. _____ Confirmed By / _____ Date

b(4) LIQUID RADWASTE RADIATION RR-06433 (with pump running) _____ Countrate cpm

d. LIQUID RADWASTE RADIATION RR-06433 (prior to discharge) _____ Countrate cpm

e. Actual LIQUID RADWASTE RADIATION RR-06433 is less than Alert Rad Setpoint/Monitor Limit in Step 2.3.6.o.

_____ Confirmed By / _____ Date

m. Release status board updated and progress templates hung. _____ Confirmed By _____ Verified By Shift Supervision

n. Release of LRW Sample Tk 0T303C&D started I.A.W. OP-069-050 Section 2.3.14. _____ Confirmed By _____ Verified By Shift Supervision

q. Start/Stop Log

Release Started		Release Stopped			
Time/Date	Rels. Tk % Level	Time/Date	Rels. Tk % Level	Time Interval (Min)	Confirmed By

Total % level released _____% (total of intervals) Actual Release Time _____ min

NOTES:	Record all starts and stops, even momentary, until the release is complete. If release automatically terminates, PERFORM ON-069-001.

Section 2.3.16 Post Release Activities

i. **Notify** Unit 1 Control Room PCO to remove plastic cover "RELEASE IN PROGRESS" from HV-11503 handswitch. _____ / _____ Confirmed By / Date

j. **Notify** Unit 2 Control Room PCO to remove plastic cover "RELEASE IN PROGRESS" from HV-21503 handswitch. _____ / _____ Confirmed By / Date

k. **Set** LIQUID RADWASTE RADIATION MONITOR Function Switch **POSITION 2** Low Radiation Trip to 999 + 19 _____ / _____ Confirmed By / Date

l. **Flush** the Plant Effluent Radiation Monitor I.A.W. OP-069-050, Sect. 2.4. _____ / _____ Confirmed By / Date

m. **IF** Total Gamma Activity for release > 2.1-05 µCi/ml, **Flush** LRW Sample Tank Flow Discharge pipe IAW OP-069-050, Section 2.5. _____ / _____ Confirmed By / Date

o. Final position valve lineup is completed and independently verified. _____ / _____ Confirmed By / Date

q. **Post** Release Tank Levels: % Level

Laundry Drain Sample Tank, 0T312 _____
Evap Dist Sample Tank, 0T321 _____
LRW Sample Tank A&B, 0T303A&B _____
LRW Sample Tank E&F, 0T303E&F _____

r. Have any tank(s) other than the release Tank experienced a decrease in level? YES NO (circle)
If Yes - Explain

t. Unit 1 AND Unit 2 Cooling Tower Flowrate Instruments Inoperable Restoration

Permission to restore Cooling Tower Blowdown LOW FLOW interlock.

_____
Shift Supervision

Place CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A to **COOLING TOWER.**

_____ _____ _____ _____
CONFIRM DATE TIME VERIFICATION

CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A green light is **OFF**.

_____
CONFIRM

LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **OFF**
(If LRW EFFLUENT RAD MON BYPASS HS-06443B is in **NORMAL**).

_____
CONFIRM

u. **Confirm OR Place** CTWR BLOWDOWN LOW FLOW BYPASS HS-06443A to **COOLING TOWER**.

_____
CONFIRM

v. LIQUID RADWASTE RADIATION MONITOR RITS-06433 Restoration.

Permission to restore LRW Effluent Radiation Monitor

_____
Shift Supervision

Place LRW EFFLUENT RAD MON BYPASS HS-06443B to **NORMAL**.

_____ _____ _____ _____
CONFIRM DATE TIME VERIFICATION

LRW EFFLUENT RAD MON BYPASS HS-06443B green light is **OFF**.

_____
CONFIRM

LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **OFF**
(If CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A is not in BYPASS).

_____
CONFIRM

w. **Confirm OR Place** Cooling Tower Blowdown HSS-01503 to **BOTH** position.

_____
CONFIRM

x. Actual Volume Released

LRW Sample Tnk, 0T303C&D (2.3.14.q) _____ % x 281 = _____ gal. X 3.79 = _____ liters
Level Volume Volume

y. Actual Radioactive Liquid Release Flowrate
Maximum Effluent Flowrate (from FR-06433 Red Pen) _____ gpm
Average Effluent Flowrate (from FR-06433 Red Pen) _____ gpm

z. Actual Plant Blowdown Flowrate (includes radioactive liquid)

(1) Unit 1 Blowdown _____ gpm (TR/FR–11501) + Unit 2 Blowdown _____ gpm (TR/FR–21501) + Average Effluent Flowrate _____ gpm (FR-06433 Red Pen) = Total _____ gpm

aa. Actual Average Plant Effluent Radiation (from RR-06433) _____ cpm

bb. Performed by _____
Radwaste NPO

Comments on release:

dd. (1) Released reviewed:

_____ _____
(1) Shift Supervision Date

(2) **Forward** THIS FORM TO THE CHEMISTRY GROUP WHEN COMPLETE FOR INCORPORATION INTO RELEASE RECORDS. (SC-069-001)

UNIT - COMMON
LRW Sample Tanks C & D

Release #_____

	VALVE	NAME	LOCATION	RELEASE POSITION	REL POS CHECKED BY*		FINAL POSITION	FIN POS CHECKED BY*	
1.	HV-06432A1	LRW STATION DSCH INBD ISOL	RWCR	CLOSED			CLOSED		
2.	HV-06432A2	LRW STATION DSCH OUTBD ISOL	RWCR	CLOSED			CLOSED		
3.	HV-06287	SAMPLE TNKS DSCH TO EFFLUENT LINE	RWCR	CLOSED			CLOSED		
4.	HV-06358A3	EVAP DISTILLATE STATION DSCH	RWCR	CLOSED			CLOSED		
5.	HV-06285B2	LRW SAMPLE TNK PUMP B DSCH	RWCR	CLOSED			CLOSED		
6.	HV-06281B	LRW SAMPLE TNKS C&D INLET	RWCR	CLOSED			CLOSED		
7.	064124	LDRY DRN SAMPLE TNK DSCH VLV TO EFFLUENT LINE	42-646'	CLOSED			CLOSED		
8.	063618	EVAP DIST SAMPLE TNK MANUAL DSCH ISOL TO EFF LINE	41-646'	CLOSED			CLOSED		
9.	062638	LRW INBD SAMP TK DISCH TO EFF LINE TKS C&D	39-646'	OPEN			CLOSED		
10.	062639	LRW OUTBD SAMPLE TK DSCH TO EFF LINE TKS C&D	39-646'	OPEN			CLOSED		
11.	062640	LRW INBD SAMPLE TK DSCH TO EFF LINE TKS E&F	39-646'	CLOSED			CLOSED		
12.	062641	LRW OUTBD SAMPLE TK DSCH TO EFF LINE TKS E&F	39-646'	CLOSED			CLOSED		
13.	062636	LRW INBD SAMP TK DSCH TO EFF. LINETKS A&B	39-646'	CLOSED			CLOSED		
14.	062637	LRW OUTBD SAMP TK DSCH TO EFF LINE TKS A&B	39-646'	CLOSED			CLOSED		

* The Release positions are to be checked by two independent operators prior to start of a release and the Final positions are to be checked by two independent operators after release is completed.

LRW SAMPLE TNK 0T303E&F
RADIOACTIVE LIQUID RELEASE PERMIT

PERMIT # _____ DATE _____
(assigned by Chemistry)

Section 2.3.3 - Tank Data (To be completed by Operations)

a. Calculation of Required Recirc Time:

LRW Sample Tk E & F 0T303 _____ % static level X 0.75 min/% = _____ minutes

(Volume indication) X (Conversion factor) = (Required recirc time)

b. Actual Recirc Start Time _____ hrs. _____ min.

c. Earliest Possible Sample Time:

Required Recirc time + Actual Recirc start time

_____ hr._____ min. (2.3.3.a) + _____ hr. _____ min. (2.3.3.b) = _____ hr. _____ min

d. Treatment used prior to release (check one or more).

LRW Filter _____ LRW Demineralizer _____ (If only LRW Filter, perform and attach dose projection for respective collection tank)

g. LIQUID RADWASTE RADIATION MONITOR RITS-06433 CHANNEL CHECK: (check one)

____ Satisfactory ____ Unsatisfactory (TR 3.11.1.4 Condition B Actions entered)

h. LIQUID RADWASTE RADIATION MONITOR RITS-06433: ____ OP ____ INOP

Completed By: _____ / _____ / _____
R.W. NPO Date Time

i. Chemistry to implement Liquid Radwaste Sampling and Plant Effluent Radiation Monitor status verified:

_____ / _____
Shift Supervision Date

Section 2.3.4 - Sampling and Pre-Release Analysis
(To be completed by Chemistry in accordance with SC-069-001)

a. Sampled on _____ (Sample No.) _____ (Date) _____ (Time) By _____ (Chemistry Technician)

(1) Expected Volume to be Released (release tank only)
LRW Sample Tank E&F 0T303E&F

$$\underset{Level\ (2.3.3a)}{\_\_\_\_}\%-4\%=\_\_\_\_\%\ X\ 281=\underset{Volume}{\_\_\_\_}\ gal.X\ 3.79=\underset{Volume}{\_\_\_\_}\ liters$$

(2) Maximum Liquid Radwaste Release Flowrate _____ gpm

(3) Total Gamma Activity for Release _____ µci/ml

(4) Expected Check Source Countrate (Fill in countrate, 2.3.6.k)

(5) Calculated High Rad Countrate (Fill in Countrate, 2.3.6.n)

(6) Calculated Alert Rad Countrate (Fill in Countrate, 2.3.6.o)

(7) Monitor Maximum Countrate (Fill in Countrate, 2.3.6.r)

(8)(9) Required Setpoint value column for Section 2.3.7 is complete for function Switch 2 and 8.

Completed By: _____ (Chemistry Technician) / _____ (Date) / _____ (Time)

Section 2.3.4.d LIQUID RADWASTE RADIATION MONITOR RITS-06433 Inoperable Requirements

Sample Verification

(1) _____ _____ _____ _____ _____
Tank Sampled | Sample No. | Date | Time | By

(2) _____ _____ _____ _____ _____
Tank Sampled | Sample No. | Date | Time | By

Analysis and Release Rate Verification

(1) _____ _____ _____
Chemistry Technician | Date | Time

(2) _____ _____ _____
Chemistry Technician | Date | Time

Approval for Release

The tank described in Section 2.3.3 of this form has been analyzed, is acceptable for release and dose projection on respective collection tank has been completed if required.

_____ _____ _____
Chemistry Technician Level II | Date | Time

Section 2.3.5 thru 2.3.6 - LIQUID RADWASTE RADIATION MONITOR RITS-06433 Setup
(To be completed by Operations)

2.3.5.g Present Background Countrate _____ cpm < 5.00 + 03 cpm (10 minute minimum count time).

	CONFIRMED BY	VERIFIED BY
	_____	_____

2.3.6.b(2) Notify Control Room to perform Attachment H _____.

2.3.6.f Actual Check Source Countrate _____ cpm

NOTE:	The Minimum Required Check Source Countrate in step 2.3.6.k **Shall** be rounded **UP**.

2.3.6.k Expected Check Source Countrate _____ (2.3.4.a(4)) cpm+BackgroundCountrate _____ (2.3.5.g) cpm

= Minimum Required Check Source Countrate _____ cpm

2.3.6.l Is Item f ≥ Item k? (check one)

_____YES (Source Check is Satisfactory)
_____NO (Source Check is Unsatisfactory, TR 3.11.1.4 Condition B Actions entered)

_____
Confirmed By

NOTE:	The High Rad Setpoint and the Alert Rad Setpoint/Monitor Limit in step 2.3.6.n and 2.3.6.o **Shall** be rounded **DOWN**.

2.3.6.n High Rad Setpoint

High Rad Countrate _____ (2.3.4.a(5)) cpm+Background _____ (2.3.5.g) cpm= _____ cpm

2.3.6.o Alert Rad Setpoint/Monitor Limit

Alert Rad Countrate _____ (2.3.4.a(6)) cpm+Background _____ (2.3.5.g) cpm= _____ cpm

2.3.6.r Are both setpoints in n and o < Monitor Maximum Countrate of _____ (2.3.4a(7)) cpm?

YES NO (circle) (If NO, contact Shift Supervision)

_____
Confirmed By

Section 2.3.7 thru 2.3.8 - LIQUID RADWASTE RADIATION MONITOR RITS-06433 Setup
(To be completed by Operations)

2.3.7 LIQUID RADWASTE RADIATION MONITOR Setpoint Input

FUNCTION SWITCH POSITION	DESCRIPTION	REQUIRED SETPOINT	ACTUAL SETPOINT	CONFIRMED BY	VERIFIED BY
0	High Rad Setpt. (2.3.6.n)	_____ cpm	_____ cpm	_____	_____
1	Alert Rad Setpt./Monitor Limit (2.3.6.o)	_____ cpm	_____ cpm	_____	_____
2	Low Rad (Fail) (2.3.4.a(8))	_____ cpm	_____ cpm	_____	_____
4	Background	00 cpm	_____ cpm	_____	_____
8	High Voltage (2.3.4.a(9))	_____ volts	_____ volts	_____	_____

CAUTION

Do not place Time Constant Toggle Switch to 600 sec. without Shift Supervisor approval. Setpoint will be non-conservative.

Toggle Switch Time Constant	60 sec	_____ sec	_____	_____

2.3.8 LIQUID RADWASTE RADIATION MONITOR Setup is complete and in service.

_____ Confirmed By

_____ INDEPENDENT VERIFICATION by Shift Supervision

Section 2.3.9 - Cooling Tower Blowdown Flow Instrumentation Channel Check

g. Unit 1 Cooling Tower Blowdown Flow Instrumentation Channel Check

____SAT (Operable) ____UNSAT (Inoperable)

Unit 2 Cooling Tower Blowdown Flow Instrumentation Channel Check

____SAT (Operable) ____UNSAT (Inoperable)

h. Form OP-069-050-7 complete.

_____ _____
Confirmed By Date

i. Unit 1 (Unit 2) Cooling Tower Blowdown Flowrate Instrument Inoperable

Place Cooling Tower Blowdown HSS-01503 to **UNIT 1 BYPASS (UNIT 2 BYPASS)**

_____ _____
Confirmed By Date

j. Unit 1 AND Unit 2 Cooling Tower Flowrate Instruments Inoperable

(1) Shift Supervision notified to enter TR 3.11.1.4 Condition D Actions.

_____ _____
Confirmed By Date

(2) Permission to BYPASS CLTWR LOW FLOW interlock

_____
Shift Supervision

(4) **Place** CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A to **BYPASS**

_____ _____ _____ _____
CONFIRM DATE TIME VERIFICATION

(5) CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A green light is **ON**.

_____
CONFIRM

(6) LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **ON**.

_____
CONFIRM

Section 2.3.10 - Liquid Radwaste Radiation Monitor RITS-06433 Inoperable

Permission to bypass Plant Effluent Radiation Monitor.

_____
Shift Supervision

Place LRW EFFLUENT RAD MON BYPASS HS-06443B to **BYPASS**.

_____	_____	_____	_____
CONFIRM	DATE	TIME	VERIFICATION

LRW EFFLUENT RAD MON BYPASS HS-06443B green light is **ON**.

_____
CONFIRM

LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **ON**.

_____
CONFIRM

Plant Effluent Flow Instrument Inoperable Requirements.

Section 2.3.11 - Plant Effluent Discharge Flow Recorder, FR-06433 (Red Pen) Channel Check

c. Plant Effluent Discharge Flow Recorder FR-06433

Channel Check: (check one)

____SAT (Operable) ____UNSAT, (Inoperable, TR 3.11.1.4 Condition B or D Actions entered)

d.(2) Maximum Allowable Liquid Radwaste Release Flowrate _____ gpm > 125 gpm?
(3.3.4a(2))

YES NO (CIRCLE) _____ / _____
Confirmed By Date

(**IF** Plant Effluent Discharge Flow Recorder inop and release flowrate is < 125 gpm, **Contact** Shift Supervision)

==========

2.3.14.a(2) Actual Flowrate Using Cooling Tower Blowdown (every four (4) hours)

Unit 1 Blowdown Flowrate	+	Unit 2 Blowdown Flowrate	=	Total Blowdown Flowrate	Date	Time	Confirmed By
	+		=				
	+		=				
	+		=				

Section 2.3.14.a(3) Estimate Blowdown Flowrate (every four (4) hours)
per Attachment F

Unit	Cooling Tower Level	Blowdown Vlv Position	Blowdown Flowrate	Date	Time	Confirmed By

Section 2.3.14.l Estimate Plant Effluent Discharge Flow (every four (4) hours)

125 (est) Effluent Flow Rate	Date	Time	By
125 (est) Effluent Flow Rate	Date	Time	By
125 (est) Effluent Flow Rate	Date	Time	By
125 (est) Effluent Flow Rate	Date	Time	By

Section 2.3.12 Pre Release Activities

b. Release Position valve lineup is completed and independently verified. _____ Confirmed By

c. Pre-Release Tank Levels: % Level

Laundry Drain Sample Tnk, 0T312 _____
Evap. Dist. Sample Tnk 0T321 _____
LRW Sample Tnk A&B, 0T303 A&B _____
LRW Sample Tnk C&D, 0T303 C&D _____

m. **Contact** Unit Supervisor to Ensure Operability of Attachment H equipment immediately prior to start of LRW release. _____ Shift Supervision

n. Shift Manager approval to commence release. _____ Shift Supervision

Section 2.3.13 In-Service Check of LIQUID RADWASTE RADIATION MONITOR RITS-06433

Actual Radiation Monitor Response

d(3) LIQUID RADWASTE RADIATION RR-06433 (during flush) _____ cpm
Countrate

Additional flushes (if required) _____ cpm
Countrate

_____ Confirmed By

Section 2.3.14 Release Activities

a. Control Room Operator notified of release to begin. _____ Date _____ Time _____ Confirmed By

CAUTION

Blowdown Flow Recorders TR/FR-1(2)1501 are calibrated for flows up to 12000 gpm. Both units may display a digital flow of greater than 12000 gpm. Do not use for indicated flows greater than 12000 gpm.

(1) Blowdown Flow Instrumentation
TR/FR-11501 CW TEMP/CT BLOWDOWN FLOW _____ gpm

TR/FR-21501 CW TEMP/CT BLOWDOWN FLOW _____ gpm

_____ gpm + _____ gpm = _____ gpm
TR/FR-11501 TR/FR-21501 Sum Cooling Tower Blowdown

Does the sum of the Cooling Tower Blowdown flows ≥ 6000 gpm?
YES NO (Circle) (If NO, Contact Shift Supervision)

_____ Confirmed By _____ Verified By Shift Supervision

a(4) **Notify** Unit 1 Control Room PCO to install plastic cover "RELEASE IN PROGRESS" over HV-11503 handswitch. _____ Confirmed By / _____ Date

a(5) **Notify** Unit 2 Control Room PCO to install plastic cover "RELEASE IN PROGRESS" over HV-21503 handswitch. _____ Confirmed By / _____ Date

b(4) LIQUID RADWASTE RADIATION RR-06433 (with pump running) _____ Countrate cpm

d. LIQUID RADWASTE RADIATION RR-06433 (prior to discharge) _____ Countrate cpm

e. Actual LIQUID RADWASTE RADIATION RR-06433 is less than Alert Rad Setpoint/Monitor Limit in Step 2.3.6.o. _____ Confirmed By / _____ Date

m. Release status board updated and progress templates hung. _____ Confirmed By _____ Verified By Shift Supervision

n. Release of LRW Sample Tk 0T303E&F started I.A.W. OP-069-050 Section 2.3.14 _____ Confirmed By _____ Verified By Shift Supervision

p. Start/Stop Log

Release Started		Release Stopped			
Time/Date	Rels. Tk % Level	Time/Date	Rels. Tk % Level	Time Interval (Min)	Confirmed By

Total % level released _____% Actual Release Time _____ min
(total of intervals)

NOTE:	Record all starts and stops, even momentary, until the release is complete. If release automatically terminates, PERFORM ON-069-001.

Section 2.3.16 Post Release Activities

i. **Notify** Unit 1 Control Room PCO to remove plastic cover "RELEASE IN PROGRESS" from HV-11503 handswitch. _____ / _____ Confirmed By / Date

j. **Notify** Unit 2 Control Room PCO to remove plastic cover "RELEASE IN PROGRESS" from HV-21503 handswitch. _____ / _____ Confirmed By / Date

k. **Set** LIQUID RADWASTE RADIATION MONITOR Function Switch **POSITION 2** Low Radiation Trip to 999 + 19 _____ / _____ Confirmed By / Date

l. **Flush** Plant Effluent Radiation Monitor I.A.W. OP-069-050, Sect. 2.4. _____ / _____ Confirmed By / Date

m. **IF** Total Gamma Activity for release > 2.1-05 µCi/ml, **Flush** LRW Sample Tank Pair Discharge Pipe IAW OP-069-050, Section 2.5. _____ / _____ Confirmed By / Date

o. Final position valve lineup is completed and independently verified. _____ / _____ Confirmed By / Date

q. **Post** Release Tank Levels:

	% Level
Laundry Drain Sample Tank, 0T312	_____
Evap Dist Sample Tank, 0T321	_____
LRW Sample Tank A&B, 0T303A&B	_____
LRW Sample Tank C&D, 0T303C&D	_____

r. Have any tank(s) other than the release tank experienced a decrease in level? YES NO (circle)
If Yes - Explain

t. Unit 1 AND Unit 2 Cooling Tower Flowrate Instruments Inoperable Restoration

Permission to restore Cooling Tower Blowdown LOW FLOW interlock.

_____
Shift Supervision

PLACE CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A to **COOLING TOWER**.

_____	_____	_____	_____
CONFIRM	DATE	TIME	VERIFICATION

CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A green light is OFF.

_____
CONFIRM

LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is OFF (if LRW EFFLUENT RAD MON BYPASS HS-06443B is in NORMAL).

_____
CONFIRM

u. **Confirm OR Place** CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A to **COOLING TOWER**.

_____
CONFIRM

v. LIQUID RADWASTE RADIATION MONITOR RITS-06433 Restoration.

Permission to restore LRW Effluent Radiation Monitor

_____
Shift Supervision

Place LRW EFFLUENT RAD MON BYPASS HS-06443B to **NORMAL**.

_____	_____	_____	_____
CONFIRM	DATE	TIME	VERIFICATION

LRW EFFLUENT RAD MON BYPASS HS-06443B green light is **OFF**.

_____
CONFIRM

LIQ RW EFFLUENT RELEASE BYPASS annunciator (AR-107-001-D6) at 1C601 is **OFF** (if CLTWR BLOWDOWN LOW FLOW BYPASS HS-06443A not in BYPASS.

_____
CONFIRM

w. **Confirm OR Place** Cooling Tower Blowdown HSS-01503 to **BOTH** position.

_____
CONFIRM

x. Actual Volume Released

LRW Sample Tnk, 0T303E&F (2.3.16.q) _____ % (Level) x 281 = _____ gal. (Volume) X 3.79 = _____ liters (Volume)

y. Actual Radioactive Liquid Release Flowrate
Maximum Effluent Flowrate (from FR-06433 Red Pen) _____ gpm
Average Effluent Flowrate (from FR-06433 Red Pen) _____ gpm

z. Actual Plant Blowdown Flowrate (includes radioactive liquid)

(1) _____ gpm (Unit 1 Blowdown (TR/FR–11501)) + _____ gpm (Unit 2 Blowdown (TR/FR–21501)) + _____ gpm (Average Effluent Flowrate (FR - 06433 Red Pen)) = _____ gpm (Total)

aa. Actual Average Plant Effluent Radiation (from RR-06433) _____ cpm

bb. Performed by _____
Radwaste NPO

Comments on release:

dd. (1) Released reviewed:

_____ _____
(1) Shift Supervision Date

(2) **Forward** THIS FORM TO THE CHEMISTRY GROUP WHEN COMPLETE FOR INCORPORATION INTO RELEASE RECORDS. (SC-069-001)

UNIT - COMMON
LRW Sample Tanks E & F

Release #_____

	VALVE	NAME	LOCATION	RELEASE POSITION	REL POS CHECKED BY*		FINAL POSITION	FIN POS CHECKED BY*	
1.	HV-06432A1	LRW STATION DSCH INBD ISOL	RWCR	CLOSED			CLOSED		
2.	HV-06432A2	LRW STATION DSCH OUTBD ISOL	RWCR	CLOSED			CLOSED		
3.	HV-06287	SAMPLE TNKS DSCH TO EFFLUENT LINE	RWCR	CLOSED			CLOSED		
4.	HV-06358A3	EVAP DISTILLATE STATION DSCH	RWCR	CLOSED			CLOSED		
5.	HV-06281C	LRW SAMPLE TNKS E&F INLET	RWCR	CLOSED			CLOSED		
6.	HV-06285C2	LRW SAMPLE TNK PUMP C DSCH	RWCR	CLOSED			CLOSED		
7.	064124	LDRY DRN SAMPLE TNK DSCH VLV TO EFFLUENT LINE	42-646'	CLOSED			CLOSED		
8.	063618	EVAP DIST SAMPLE TNK MANUAL DSCH ISOL TO EFFLUENT LINE	41-646'	CLOSED			CLOSED		
9.	062640	LRW INBD SAMPLE TK DSCH TO EFF LINE TKS E&F	39-646'	OPEN			CLOSED		
10.	062641	LRW OUTBD SAMPLE TK DSCH TO EFF LINE TKS E&F	39-646'	OPEN			CLOSED		
11.	062638	LRW OUTBD SAMP TK DSCH TO EFF LINE TKS C&D	39-646'	CLOSED			CLOSED		
12.	062639	LRW OUTBD SAMPLE TK DSCH TO EFF LINE TKS C&D	39-646'	CLOSED			CLOSED		
13.	062636	LRW INBD SAMP TK DSCH TO EFF LINE TKS A&B	39-646'	CLOSED			CLOSED		
14.	062637	LRW OUTBD SAMP TK DSCH TO EFF LINE TKS A&B	39-646'	CLOSED			CLOSED		

* The Release positions are to be checked by two independent operators prior to start of a release and the Final positions are to be checked by two independent operators after release is completed.

BLOWDOWN FLOW INSTRUMENTATION VALIDATION AND ESTIMATION GRAPHS
(Satisfies Channel Check per TR Table 3.11.1.4 Function 2.b)

NOTE:	IF the combined Cooling Tower blowdown flow, i.e., total flow from Unit 1 & 2, will be reduced to < 6000 gpm for longer than 15 minutes, notification to Nuclear Security is required.

1. Unit 1 Cooling Tower Blowdown Flowrate

   a. **Confirm** LIQ RW EFFLUENT RELEASE BYPASS, AR-107-001-D06 at 1C601 is **OFF**.

   _____
   CONFIRMED BY

   b. **Close** Cooling Tower Basin Blowdown Vlv HV-11503.

   _____
   CONFIRMED BY

   c. **Confirm** Cooling Tower Basin Blowdown Vlv position is less than 2% on ZI-11503.

   _____
   CONFIRMED BY

   d. **Confirm** TR/FR-11501 CW TEMP/CT BLOWDOWN FLOW indicates less than 200 gpm.

   _____
   CONFIRMED BY

* e. **Open** and **Adjust** Cooling Tower Basin Blowdown Vlv HV-11503 to desired position.

   _____%

   _____
   CONFIRMED BY

   f. **Ensure** Unit 2 Blowdown Flow is 4500 gpm or less.

   _____
   CONFIRMED BY

* Sum of both units blowdown flow need to exceed 6000 gpm to perform release.

g. **Determine** validation between Unit 1 Estimation Graph and actual flowrate.

_____ _____
Actual Flowrate CONFIRMED BY

OR

h. **IF** Unit 1 Cooling Tower is drained, **Confirm** TR/FR-11501 CW TEMP/CT BLOWDOWN FLOW indicates less than 200 gpm.

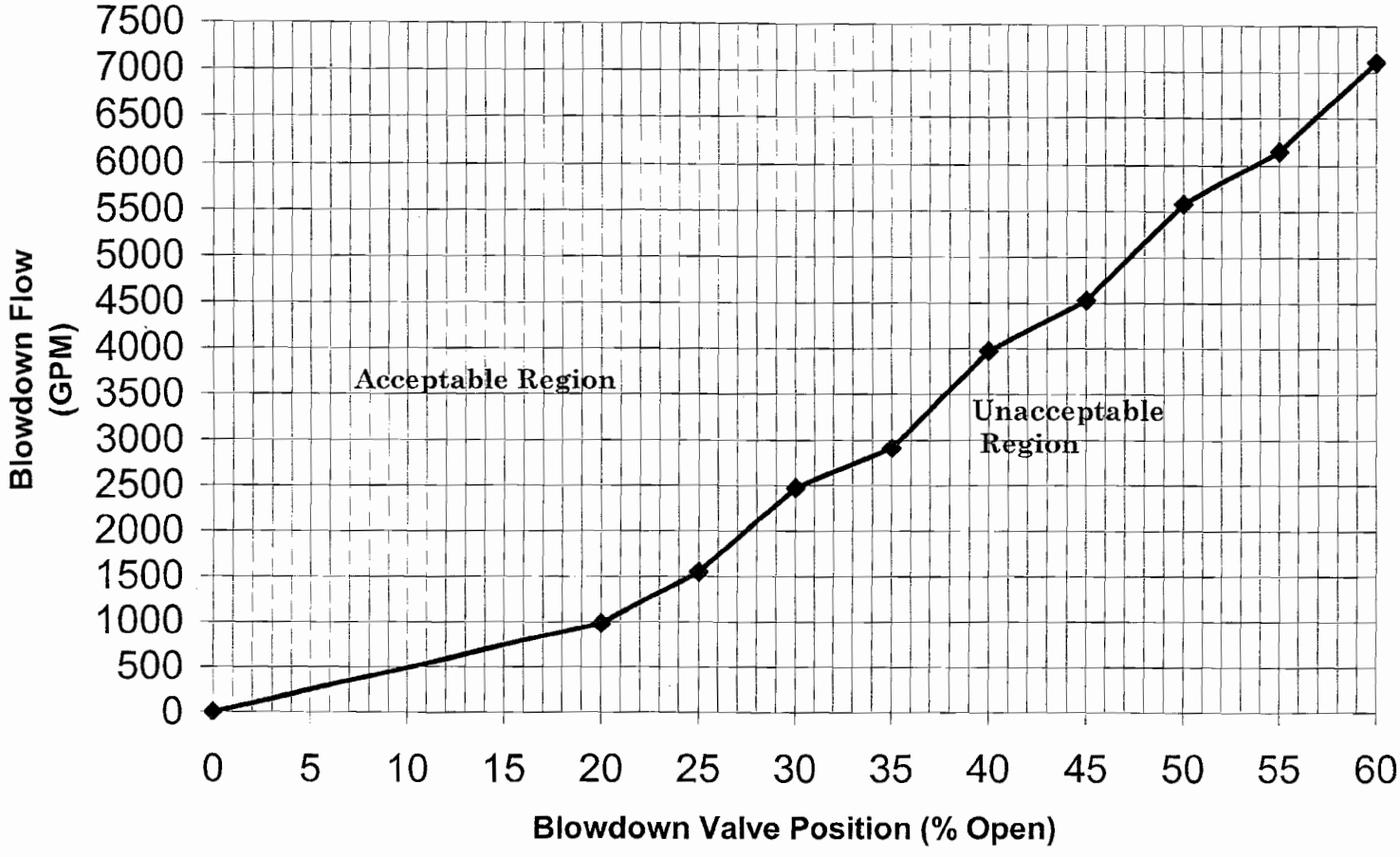
_____
CONFIRMED BY

AND

i. Validation check has been completed for Unit 1 Cooling Tower Blowdown Flow Instruments.

_____ _____ _____
TIME DATE UNIT SUPERVISOR

* Unit 1 Cooling Tower Blowdown Flow Versus Valve Position



* NOTE: The following criteria was used to develop plot on graph above.

1. Unit 2 blowdown at 4500 gpm or less in Step 1.f.
2. Unit 1 Cooling Tower level no less than 6.3 ft. minimum.

BLOWDOWN FLOW INSTRUMENTATION VALIDATION AND ESTIMATION GRAPHS
(Satisfies Channel Check per TR Table 3.11.1.4 Function 2.b)

NOTE:	IF the combined Cooling Tower blowdown flow, i.e., total flow from Unit 1 & 2, will be reduced to < 6000 gpm for longer than 15 minutes, notification to Nuclear Security is required.

2. Unit 2 Cooling Tower Blowdown Flowrate

a. **Confirm** LIQ RW EFFLUENT RELEASE BYPASS, AR-107-001-D06 at 1C601 is **OFF**.

_____
CONFIRMED BY

b. **Close** Cooling Tower Basin Blowdown Vlv HV-21503.

_____
CONFIRMED BY

c. **Confirm** Cooling Tower Basin Blowdown Vlv position is less than 2% on ZI-21503.

_____
CONFIRMED BY

d. **Confirm** TR/FR-21501 CW TEMP/CT BLOWDOWN FLOW indicates less than 200 gpm.

_____
CONFIRMED BY

* e. **Open** And **Adjust** Cooling Tower Basin Blowdown Vlv HV-21503 to desired position.

_____%

_____
CONFIRMED BY

f. **Ensure** Unit 1 Blowdown Flow is 4500 gpm or less.

_____
CONFIRMED BY

* Sum of both units blowdown flow need to exceed 6000 gpm to perform release.

g. **Determine** validation between Unit 2 Estimation Graph and actual flowrate.

_____ _____
Actual Flowrate CONFIRMED BY

OR

h. If Unit 2 Cooling Tower is drained, CONFIRM TR/FR-21501 CWTEMP/CT BLOWDOWN FLOW indicates less than 200 gpm.

_____
CONFIRMED BY

AND

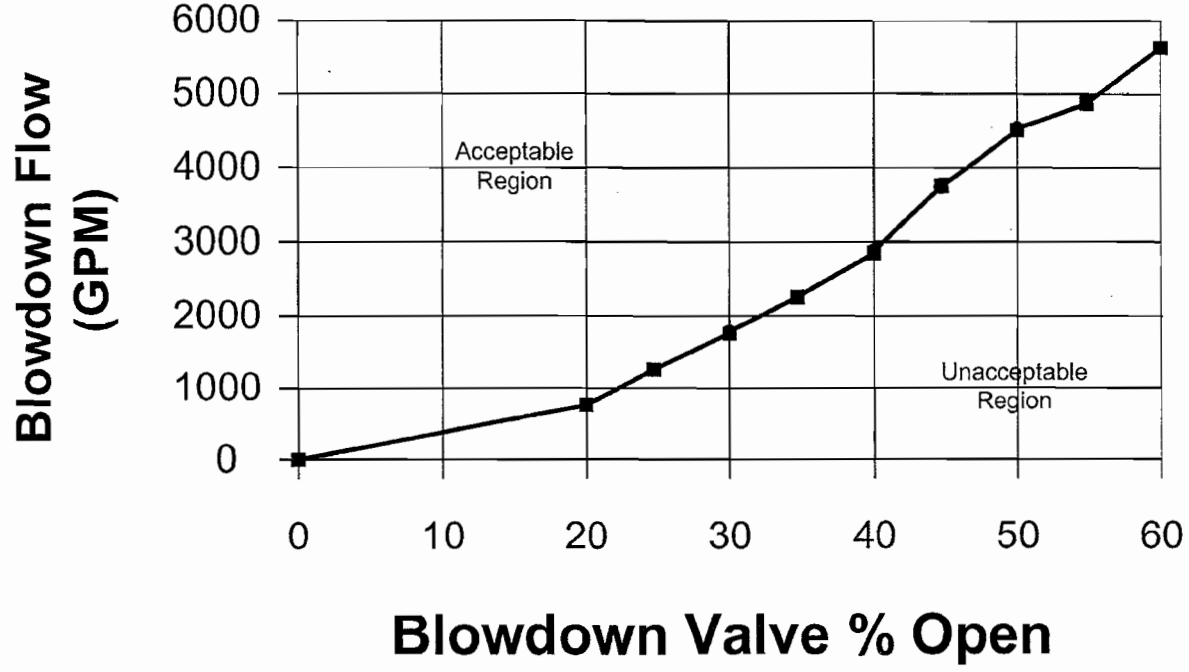
i. Validation check has been completed for the Unit 2 Cooling Tower Blowdown Flow Instruments.

_____ _____ _____
TIME DATE UNIT SUPERVISOR

3. The validation and operability checks have been completed and the Cooling Tower Discharge Flow Monitor Channels may be used to perform the release.

Release Permit # _____

* Unit 2 Cooling Tower Blowdown Flow Versus Valve Position - 6/16/09



NOTE: The following criteria was used to develop this graph.

1. Unit 1 blowdown ≤ 4500 gpm or less.
2. Unit 2 Cooling Tower level at 6.3 feet or greater.

INSTRUCTIONS

This form is to be completed in Main Control Room if Cooling Tower Discharge Flow instruments/interlocks are to be used.

1. Step 1.a-g, Unit 1 PCO performs the indicated steps and initials steps.

   OR

2. Step 1.h, if Unit 1 Cooling Tower is drained, Unit 1 PCO performs and initials this step.

   AND

3. Step 1.i, Unit Supervisor reviews performed steps and signs indicating validation results where acceptable.

4. Step 2.a-g, Unit 2 PCO performs the indicated steps and initials the steps.

   OR

5. Step 2.h, if Unit 2 Cooling Tower is drained, Unit 2 PCO performs and initials this step.

   AND

6. Step 2.i, Unit Supervisor reviews performed steps and signs indicating validation results where acceptable.

7. Step 3, Blowdown Flow Instrument validation have not changed operable status for Release Permit Number.

8. Form completion is used in Pre Release Activities on Forms OP-069-050-2,(3)(4)(5)(6) Radioactive Liquid Release Permit.

9. Prior to release, Form OP-069-050-7 is forwarded to Radwaste Control Room to be included in Release Permit.

THIS ATTACHMENT INTENTIONALLY LEFT BLANK

REVIEW EQUIPMENT STATUS FILE (SYSTEMS 41, 42, 69)
FOR ERF'S OR LCO'S FOR THE FOLLOWING: (3)

1. Navigate to "WMXRPTS1" screen in NIMS.
2. Ensure "Active" is selected for the "Release Status" drop-down menu.
3. Type "RW" in the block labeled "Special Requirement 1", or enter systems "41", "42", and "69" in the "System 1", "System 2", and "System 3" blocks.
4. Click on "System Status Report" Block.
5. Enter NIMS password on new form and click "submit" on that screen.
6. Click "Submit Report" on the next screen that appears.
7. Click on "SUBMIT" Button.
8. When ORACLE opens, Click on "SUBMIT QUERY" Button.
9. When report opens, review the "System Status Record Report" for the following components:

A. DISCHARGE FLOW INSTRUMENTS

(1) FR-06433

B. U1 COOLING TOWER BLOWDOWN FLOW

(1) FSL-01503
(2) FSL-11503
(3) FE-11503
(4) FT-11503
(5) FY-11503
(6) FY-11504
(7) FY-01501
(8) FY-01501A
(9) TR/FR-11501
(10) ZT-11503
(11) FQI-01501A
(12) FY-01503
(13) FR-01503

C. U2 COOLING TOWER BLOWDOWN FLOW

(1) TR/FR-21501
(2) FE-21503
(3) FT-21503
(4) FY-21504
(5) FY-21503
(6) ZT-21503

D. LRW RADIATION MONITOR

(1) RITS-06433
(2) OP 310
(3) RE-06433
(4) FSL-06433
(5) RR-06433

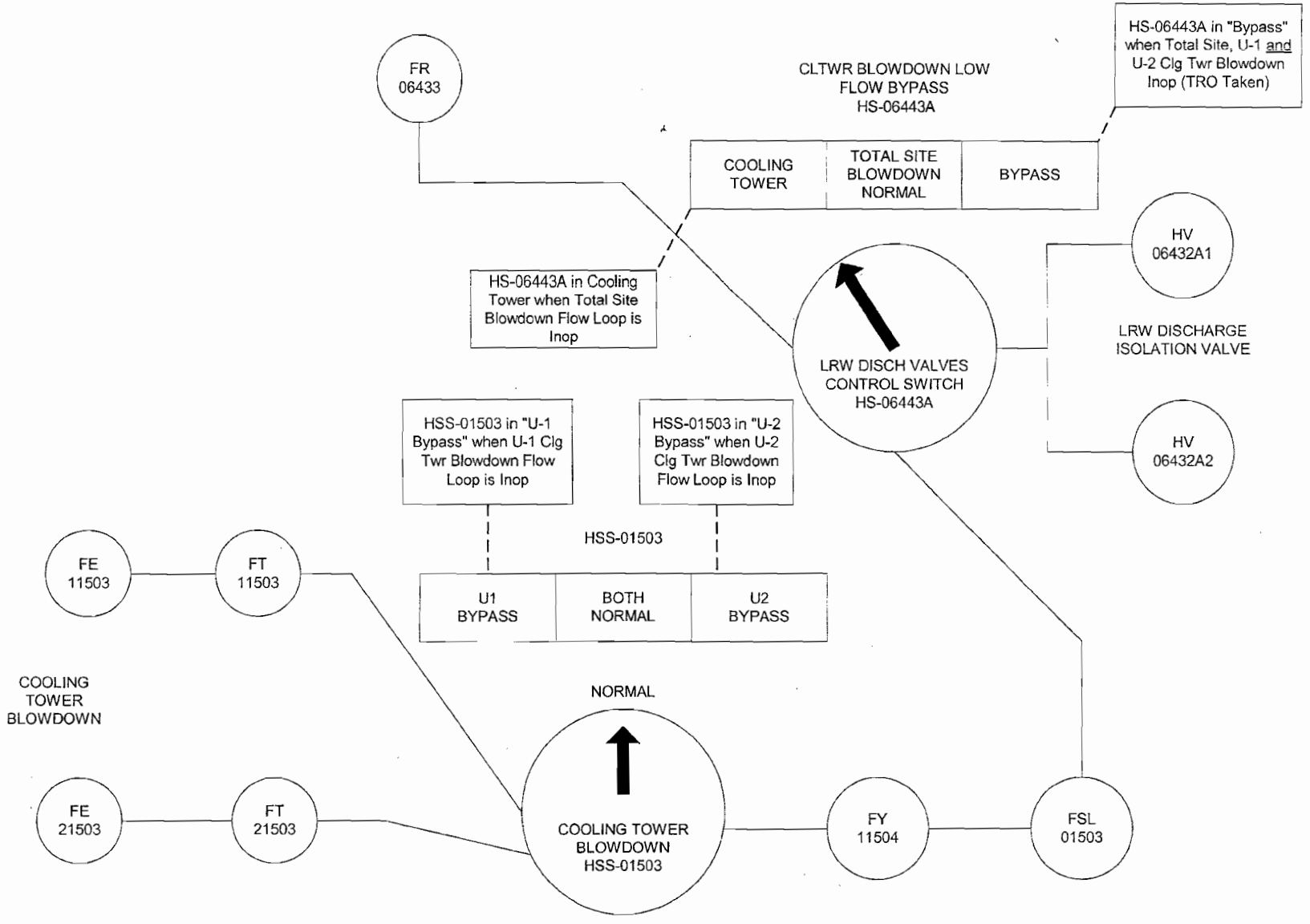
If any of the instruments are inoperable, Shift Supervision shall direct switch lineup and status tag HS-06443A, HS-06443B, and/or HS-01503 that are out of NORMAL position for release per OP-069-050 and this Attachment H, page 2. Required switch positions can be marked on the next page.

COMMENTS:

_____ / _____
Shift Supervision Date

BLOWDOWN CONFIGURATION LOGIC

Dual Pen Recorder @ 0C301
Blue: Total Site Blowdown Flow
Red: LRW Effluent Flow



Susquehanna Steam Electric Station

Job Performance Measure

Emergency Plan communications

RO JPM Designation: A-4

Revision Number: 1

Date: _6/10/11___

Developed By:	**Patel**_____	**06/10/11**_____
	Author	**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. Provide Event Notification Report.
2. Fill in the declaration time as the current time (when applicant starts the Admin JPM)
3. Sign the ENR form under approved section on bottom and fill in the current time as the time approved.

TASK STANDARD:

The applicant should verbally communicate the ENR form to the offsite agencies by utilizing backup telephone numbers.

TASK CONDITIONS:

See Emergency Notification Report

INITIATING CUE:

1. A General Emergency has been declared at _____(declaration time) as the initial emergency classification due to an airborne radiological release in progress.

2. Complete the emergency plan communication to the offsite agencies.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Emergency Plan communications

JPM Number: A-4

Revision Number: 0

K/A Number and Importance: 2.4.39 RO 3.9

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

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,
2. EP-PS-126-A, Emergency Plan Communicator, Rev. 27

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 communicate the ENR form to the offsite agencies utilizing backup telephone numbers.

JPM A-6

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews procedure, prerequisites, and precautions	Obtains EP-PS-126 and ENR form.			
2. Obtain and review Event Notification Report (ENR) form with the Shift Manager/ED.	Applicant reviews ENR report. **Evaluator Note:** Applicant may request to review form with Shift Manager/ED. **Evaluator Cue:** Notify Applicant Shift Manger/ED are busy and you may proceed with notification with this ENR report.			
*3. If the Shift Manger has not already done so, obtain a label containing the Brief Non-technical Descriptions of the EALs and affix the description to the ENR form in the space on the form.	Obtains label for General Emergency containing the brief Non-technical Descriptions of the EALs and affix the description to the ENR form in the space on the form.			
*4. Pre-printed labels containing the Brief Non-technical Descriptions of the EALs are located in a marked folder in the center console desk drawer.	Obtains label for General Emergency containing the brief Non-technical Descriptions of the EALs and affix the description to the ENR form in the space on the form.			
5. Log time for "Notification Time" when first individual answers the phone in the next step: _____	Logs the time for "Notification Time" when the first agency answers the phone.			
6. Within 15 minutes of declaration, using the purple colored phone button, dial "191" to transmit the ENR form to the following: (Dialing 191 will simultaneously connect the listed agencies in a conference call.)	**Evaluator Note:** Applicant will not be successful in using speed dial "191" to transmit the ENR form. The applicant will need to utilize backup telephone numbers.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7. If the "191" function does not work, attempt to use conference line "196", then contact the Emergency Agencies directly. The JIC should be contacted last.	**Evaluator Note:** Applicant will not be successful in using speed dial "196" to transmit the ENR form. The applicant will need to utilize backup telephone numbers.			
***BACKUP TELEPHONE NUMBERS** If calling from a **4xxx extension**, dial the backup numbers as follows: **PEMA**: 4960, 4961 or 8-1-717-651-2001 **LCEMA**: 4906, 4907, or 8-1-800-821-3715 **CCDPS**: 4955, 4956, or 8-1-570-389-5720 **PIM:** 4901, 4902 **JIC:** 4903	The applicant uses the following backup numbers and dials JIC last: **PEMA**: 4960, 4961 or 8-1-717-651-2001 **LCEMA**: 4906, 4907, or 8-1-800-821-3715 **CCDPS**: 4955, 4956, or 8-1-570-389-5720 **PIM:** 4901, 4902 **JIC:** 4903			
*If calling from a **3xxx extension**, dial the backup numbers as follows: **PEMA**: 8-353-4960, 8-353-4961, or 8-1-717-651-2001 **LCEMA**: 8-353-4906, 8-353-4907, or 8-1-800-821-3715 **CCDPS**: 8-353-4955, 8-353-4956, or 8-1-570-389-5720 **PIM:** 8-353-4901, 8-353-4902 **JIC:** 8-353-4903				
*8. Verbally communicate the ENR form to the offsite agencies. During pre-validation please provide NRC pre-printed labels or verbatim text of the labels that is applicable to this ENR.	Communicates ENR form verbally to the offsite agencies.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

See Emergency Notification Report

INITIATING CUE:

1. A General Emergency has been declared at _____ as the initial emergency classification due to an airborne radiological release in progress.

2. Complete the emergency plan communication to the offsite agencies.

TASK CONDITIONS:

See Emergency Notification Report

INITIATING CUE:

1. A General Emergency has been declared at _____ as the initial emergency classification due to an airborne radiological release in progress.
2. Complete the emergency plan communication to the offsite agencies.

EMERGENCY NOTIFICATION REPORT

Control # CR-1

1. Call Status: ☐ **THIS IS A DRILL** ☒ **THIS IS AN ACTUAL EVENT**

2. This is: _____ at PPL Susquehanna, LLC
(Communicator's Name)

My telephone number is: 570-542 3
570-759 4
(Callback telephone number)

Notification time is: _____.
(Time notification initiated)

3. **EMERGENCY CLASSIFICATION:**
☐ **UNUSUAL EVENT**
☐ **ALERT**
☐ **The event has been terminated.**
☐ **SITE AREA EMERGENCY**
☒ **GENERAL EMERGENCY**

UNIT: ☒ **ONE** ☐ **TWO** ☐ **ONE & TWO**

Declaration Time: _____ (Time classification/ termination declared)

DATE: TODAY (Date classification/ termination declared)

THIS REPRESENTS A/AN:
☒ **INITIAL DECLARATION**
☐ **ESCALATION**
☐ **NO CHANGE**
} **IN CLASSIFICATION STATUS**

4. **The Classification Designation is:** CG4

BRIEF NON-TECHNICAL DESCRIPTION OF THE:
☒ **EMERGENCY EVENT (Initial declaration and escalations) OR**
☐ **OTHER SIGNIFICANT EVENT (No change in emergency classification or classification time)**

5. **THERE IS:**
☐ **NO**
☒ **AN AIRBORNE**
☐ **A LIQUID**
} **RADIOLOGICAL RELEASE IN PROGRESS DUE TO THE EVENT**

A Rad Release is in Progress if: in the judgment of ED/RM radioactive material is being released to the environment or into an area of the plant that will result in a release to the environment that is a result of the event. Example conditions that result in a rad release; **Fuel Clad Barrier AND Containment** Barrier LOSS, **RCS Barrier AND Containment** Barrier LOSS, RG1, RS1, RA1, RU1, MU7, SBGT initiation on RB Vent hi-rad, an increase in the detected gaseous radiation effluents that is a result of the event, or any radioactive liquid released beyond the Protected Area that is a result of the event.

6. **WIND DIRECTION IS** 277°. **WIND SPEED IS:** 5 **mph.**
(Data from 10 meter meteorological tower, available on PICSY.)

7. **REPEAT:** ☒ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**

(When communicating form, request a repeat back by one of the agencies.)

APPROVED: _____ (ED, RM, or EOFSS) **Time:** _____ (Time form approved) **Date:** TODAY (Date form approved)

Susquehanna Steam Electric Station

Job Performance Measure

Classify and Communicate a Site Area Emergency, Upgrade to General Emergency and Make Protective Action Recommendations

SRO JPM Designation: A-4

Revision Number: 0

Date: 6/21/11

Developed By:	Lally	06/21/11
	Author	**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. Ensure sufficient quantity of EP-PS-100 Tabs 5 and 9 forms on hand
2. Provide EP-TP-001
3. Provide EP-PS-100

TASK STANDARD:

1. Declaration of a Site Area Emergency based on classification FS1 within 15 minutes

2. Declaration of a General Emergency based on classification FG1 within 15 minutes of second set of conditions

3. Make Protective Action Recommendation (PAR) [evacuate 0 to 2 miles, shelter 2 to 10 miles, and advise citizens take KI per state plans] within 15 minutes of declaring a General Emergency

TASK CONDITIONS:

At 1500, an earthquake with a magnitude of 0.07g occurred near the plant and was confirmed with seismic instrumentation and control room operators

Due to the earthquake activity, a loss of offsite power has occurred

Unit 1 plant conditions:

At 1500, a LOCA occurred as a result of the seismic activity

RPV level is -175" and rising slowly due to A Loop RHR injection

All control rods are fully inserted

Drywell pressure is 25 psig and rising

INITIATING CUE:

Initiating Cue #1: Classify the Event, and implement the Emergency Plan as the Control Room Emergency Director in accordance with EP-PS-100. **THIS IS A TIME CRITICAL JPM**

Initiating Cue #2: At time T= 30 minutes,

- EDG 'A' tripped, resulting in RPV level momentarily reaching -215" and recovering to -182" and rising slowly by starting B RHR pump
- Due to inability to spray, drywell pressure is currently 54 psig and rising slowly

Assuming the other initial conditions are still valid, determine if this new condition will affect the current EAL classification, AND if so perform any other additional actions that may be required. **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 timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: Classify and Communicate a Site Area Emergency, Upgrade to General Emergency and Make Protective Action Recommendations

JPM Number: A-4

Revision Number: 0

K/A Number and Importance: 2.4.44 SRO 4.4

Suggested Testing Environment: Classroom

Actual Testing Environment: Classroom

Testing Method: Perform in Classroom

Alternate Path: No

Time Critical: Yes

Estimated Time to Complete: 30 min. Actual Time Used: _____minutes

References:

1. NUREG 1123 Rev. 2, Supp. 1
2. EP-PS-100, Rev. 26
3. EP-PS-100, Tab A, Rev. 18
4. EP-PS-100, Tab D, Rev. 23
5. EP-PS-100, Tab E, Rev. 28
6. EP-AD-000-126, Rev. 17
7. EP-AD-000-077 Rev 3.
8. EP-PS-100, Tab 9, Rev.
9. EP-TP-001, 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 has the operator review plant conditions and make an emergency declaration of Site Area Emergency and perform actions to communicate the declaration. A second cue will be provided in which the operator will then declare a General Emergency and make Protective Action Recommendations.

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR CUE: To begin this JPM provide the candidate with CUE SHEET#1: • When the candidate is ready to begin the JPM, inform the candidate that this is a TIME CRITICAL JPM. Record START TIME _____				
★ (EP-PS-100 Tab A, steps 1 and 2) Classify the emergency as conditions indicate. **EVALUATOR CUE:** If asked, conditions have not changed. **EVALUATOR NOTE:** When candidate declares the initial EAL classification, Record TIME _____ **Time to determine correct EAL must be within 15 minutes of START TIME**	(Step 1a) Evaluate updated information. (Step 2a) Review Emergency Classification Level Manual, EP-TP-001 table F. Declare a SITE AREA EMERGENCY in accordance with Classification FS1 (RPV level < -161") Candidate will also refer to Table M for the loss of offsite power, but the FS1 declaration is the overriding classification for the site.			
(Tab A step 4) Refer to EP-PS-100, "Emergency Director, Control Room; Emergency-Plan Position Specific Instruction"	Obtain a copy of EP-PS-100 and refer to tab D, Manage the SITE AREA EMERGENCY.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
(EP-PS-100 Tab D) Document and communicate the emergency classification.	(Step 1) Announce to Control Room personnel 1) Assuming duties of Emergency Director 2) Emergency Classification 3) Time and Date of Classification			
(Step 2) Appoint E-Plan Communicator. **EVALUATOR CUE:** Acknowledge the appointment of the E-Plan Communicator, when given the ENR form indicate that the E-Plan Communicator will transmit the form.	Appoint E-Plan Communicator. Instruct E-Plan Communicator to immediately perform EP-PS-126.			
(Step 3) Appoint NRC Communicator. **EVALUATOR CUE:** Acknowledge the appointment of the NRC Communicator.	Appoint NRC Communicator. Instruct NRC Communicator to perform EP-PS-135, NRC Communicator.			
★ (Step 4) Generate and approve ENR Form for transmittal. **EVALUATOR CUE:** Provide ENR form if requested. If JPM is not performed in the simulator, when requested, inform the student that: • Wind Direction is 157 degrees • Wind Speed is 9 mph If performed in the Simulator, student should use current PICSY data.	Fill out ENR Form from Tab 9, refers to Tab H to determine a release is NOT in progress and authorizes Form for transmittal. Review ENR Form with E-Plan Communicator prior to transmittal.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
EVALUATOR CUE: 1. Inform the student that no further EP-PS-100 actions are required with respect to the previous classification. 2. Provide candidate with CUE SHEET #2. 3. Record START TIME _____				
★ (Tab D, step 16) Refer to EP-TP-001 and evaluate the impact of new conditions. Reclassify emergency and appropriate tab for classification level: Tab E. **EVALUATOR NOTE:** When candidate identifies the upgrade EAL classification Record TIME _____ **Time to determine correct EAL must be within 15 minutes of START TIME noted in 3, above.**	Refer to EP-TP-001 Table F, and determine that RPV level exceeded Fuel Clad barrier LOSS criteria of <205", and with drywell pressure >53 psig and rising, has also met Primary Containment POTENTIAL LOSS. An escalation to GENERAL EMERGENCY FG1 is now required; EP-PS-100 tab E must now be implemented.			
★(Step 4) Generate and approve ENR Form for transmittal. **EVALUATOR CUE:** Provide ENR form if requested. If JPM is not performed in the simulator, when requested, inform the student that: • Wind Direction is 157 degrees • Wind Speed is 9 mph If performed in the Simulator, student should use current PICSY data.	Fill out ENR Form from Tab 9, also refers to Tab H to determine a release is NOT in progress and authorizes Form for transmittal. Review ENR Form with E-Plan Communicator prior to transmittal.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
★ (Step 5) When a General Emergency is declared, make Protective Action Recommendation (PAR) within 15 minutes.	Refer to EP-PS-100 tab E step 5 and determine that a PAR must also be performed in accordance with EP-PS-100 Tab 5			
EVALUATOR CUE: After the candidate determines a PAR is required, direct the candidate to determine the correct PAR for current plant conditions				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number

★Perform EP-PS-100 Tab 5, "PPL Emergency Dose Assessment and Protective Action Recommendation (PAR) Guide"
EVALUATOR CUE:
When asked, inform student that a valid offsite dose projection is NOT available yet.
 	
EVALUATOR NOTE:
When candidate completes PAR and indicates need to transmit it to the Senior State Official:
Record TIME _____
 	
Time to determine PAR must be within 15 minutes of General Emergency declaration time noted in Step 7.
	Refer to EP-PS-100 Tab 5 and determine:
	• PA-2: Has a GE been declared? **YES**
	• PA-3: Release via controlled direct containment vent < 1 hr? **NO**
	• PA-6: Valid Dose projection? **NO**
	• Per PA-7:
	  • **Evacuate 0-2 miles**
	  • **Shelter 2-10 miles**
	  • **Citizens take KI per state plans**
	
	(Tab E, step 5c) Notify Senior State Official, using PAR State Notification Form, at 717-651-2148.			

EVALUATOR CUE: When student indicates need to transmit PAR to Senior State Official, inform student "This completes the JPM."				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
DO YOU HAVE ALL OF YOUR JPM EXAM MATERIALS?				

JPM Stop Time _____

NOTE

Do **not** give the next 5 pages (Key) to the student!

They are given the cue sheet, and when directed by JPM, the 2nd cue sheet; also ENR forms are supplied when requested

ANSWER KEY

EMERGENCY NOTIFICATION REPORT

Control # CR-1

1. Call Status: ☒ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**

2. This is: at PPL Susquehanna, LLC
(Communicator's Name)

My telephone number is: 570-542 3
570-759 4
(Callback telephone number)

Notification time is: .
(Time notification initiated)

3. **EMERGENCY CLASSIFICATION:**
☐ **UNUSUAL EVENT**
☐ **ALERT**
☐ **The event has been terminated.**
☒ **SITE AREA EMERGENCY**
☐ **GENERAL EMERGENCY**

UNIT: ☒ **ONE** ☐ **TWO** ☐ **ONE & TWO**
Declaration Time: (Time classification/ termination declared)
DATE: TODAY (Date classification/ termination declared)

THIS REPRESENTS A/AN: ☒ **INITIAL DECLARATION** ☐ **ESCALATION** ☐ **NO CHANGE** } **IN CLASSIFICATION STATUS**

4. **The Classification Designation is:** CS4
BRIEF NON-TECHNICAL DESCRIPTION OF THE:
☒ **EMERGENCY EVENT (Initial declaration and escalations) OR**
☐ **OTHER SIGNIFICANT EVENT (No change in emergency classification or classification time)**

CS4 or Loss OR Potential Loss of ANY Two Fission Product Barriers

5. **THERE IS:** ☒ **NO** ☐ **AN AIRBORNE** ☐ **A LIQUID** } **RADIOLOGICAL RELEASE IN PROGRESS DUE TO THE EVENT**

A Rad Release is in Progress if: in the judgment of ED/RM radioactive material is being released to the environment or into an area of the plant that will result in a release to the environment that is a result of the event. Example conditions that result in a rad release; **Fuel Clad Barrier AND Containment** Barrier LOSS, **RCS Barrier AND Containment** Barrier LOSS, RG1, RS1, RA1, RU1, MU7, SBGT initiation on RB Vent hi-rad, an increase in the detected gaseous radiation effluents that is a result of the event, or any radioactive liquid released beyond the Protected Area that is a result of the event.

6. **WIND DIRECTION IS FROM:** 157° . **WIND SPEED** 9 **mph.**
(Data from 10 meter meteorological tower, available on PICSY.)

7. **REPEAT:** ☒ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**
(When communicating form, request a repeat back by one of the agencies.)

APPROVED: **Time:** **Date** TODAY
:
(ED, RM, or EOFSS) (Time form approved) (Date form approved)

ANSWER KEY

ANSWER KEY

EMERGENCY NOTIFICATION REPORT

Control # CR-2

1. Call Status: ☒ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**

2. This is: at PPL Susquehanna, LLC
(Communicator's Name)

My telephone number is: 570-542 3
570-759 4
(Callback telephone number)

Notification time is: .
(Time notification initiated)

3. **EMERGENCY CLASSIFICATION:**
☐ **UNUSUAL EVENT**
☐ **ALERT**
☐ **SITE AREA EMERGENCY**
☒ **GENERAL EMERGENCY**
☐ **The event has been terminated.**

UNIT: ☒ **ONE** ☐ **TWO** ☐ **ONE & TWO**

Declaration Time: (Time classification/ termination declared)

DATE: TODAY (Date classification/ termination declared)

THIS REPRESENTS A/AN:
☐ **INITIAL DECLARATION**
☒ **ESCALATION**
☐ **NO CHANGE**
} **IN CLASSIFICATION STATUS**

4. **The Classification Designation is:** CG4
BRIEF NON-TECHNICAL DESCRIPTION OF THE:
☒ **EMERGENCY EVENT** (Initial declaration and escalations) **OR**
☐ **OTHER SIGNIFICANT EVENT** (No change in emergency classification or classification time)

CG4 or Loss of ANY Two Fission Product Barriers AND Loss OR Potential Loss of Third Barrier

5. **THERE IS:**
☒ **NO**
☐ **AN AIRBORNE**
☐ **A LIQUID**
} **RADIOLOGICAL RELEASE IN PROGRESS DUE TO THE EVENT**

A Rad Release is in Progress if: in the judgment of ED/RM radioactive material is being released to the environment or into an area of the plant that will result in a release to the environment that is a result of the event. Example conditions that result in a rad release; **Fuel Clad Barrier AND Containment** Barrier LOSS, **RCS Barrier AND Containment** Barrier LOSS, RG1, RS1, RA1, RU1, MU7, SBGT initiation on RB Vent hi-rad, an increase in the detected gaseous radiation effluents that is a result of the event, or any radioactive liquid released beyond the Protected Area that is a result of the event.

6. **WIND DIRECTION IS FROM:** 157° . **WIND SPEED** 9 **mph.**
(Data from 10 meter meteorological tower, available on PICSY.)

7. **REPEAT:** ☒ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**
(When communicating form, request a repeat back by one of the agencies.)

APPROVED: **Time:** **Date** TODAY
:
(ED, RM, or EOFSS) (Time form approved) (Date form approved)

ANSWER KEY

CUE SHEET #1:

TASK CONDITIONS

- At 1500, an earthquake with a magnitude of 0.07g occurred near the plant and was confirmed with seismic instrumentation and control room operators
- Due to the earthquake activity, a loss of offsite power has occurred
- Unit 1 plant conditions:
- At 1500, a LOCA occurred as a result of the seismic activity
- RPV level is -175" and rising slowly due to A Loop RHR injection
- All control rods are fully inserted
- Drywell pressure is 25 psig and rising

INITIATING CUE

Classify the Event, and implement the Emergency Plan as the Control Room Emergency Director in accordance with EP-PS-100. **THIS IS A TIME CRITICAL JPM**

CUE SHEET #1:

TASK CONDITIONS

- At 1500, an earthquake with a magnitude of 0.07g occurred near the plant and was confirmed with seismic instrumentation and control room operators
- Due to the earthquake activity, a loss of offsite power has occurred
- Unit 1 plant conditions:
- At 1500, a LOCA occurred as a result of the seismic activity
- RPV level is -175" and rising slowly due to A Loop RHR injection
- All control rods are fully inserted
- Drywell pressure is 25 psig and rising

INITIATING CUE

Classify the Event, and implement the Emergency Plan as the Control Room Emergency Director in accordance with EP-PS-100. **THIS IS A TIME CRITICAL JPM**

CUE SHEET #2: (Do not provide until directed to by JPM.)

TASK CONDITIONS

At time T= 30 minutes,

- EDG 'A' tripped, resulting in RPV level momentarily reaching -215" and recovering to -182" and slowly rising by starting B RHR pump
- Due to inability to spray, drywell pressure is currently 54 psig and rising slowly

INITIATING CUE

Assuming the other initial conditions are still valid, determine if this new condition will affect the current EAL classification, AND if so perform any other additional actions that may be required. **THIS IS A TIME CRITICAL JPM**

CUE SHEET #2: (Do not provide until directed to by JPM.)

TASK CONDITIONS

At time T= 30 minutes,

- EDG 'A' tripped, resulting in RPV level momentarily reaching -215" and recovering to -182" and slowly rising by starting B RHR pump
- Due to inability to spray, drywell pressure is currently 54 psig and rising slowly

INITIATING CUE

Assuming the other initial conditions are still valid, determine if this new condition will affect the current EAL classification, AND if so perform any other additional actions that may be required. **THIS IS A TIME CRITICAL JPM**

EMERGENCY NOTIFICATION REPORT

Control #

1. Call Status: ☐ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**

2. This is: _____ at PPL Susquehanna, LLC
(Communicator's Name)

My telephone number is: 570-542 3
570-759 4
(Callback telephone number)

Notification time is: _____ .
(Time notification initiated)

3. **EMERGENCY CLASSIFICATION:**
☐ **UNUSUAL EVENT**
☐ **ALERT**
☐ **SITE AREA EMERGENCY**
☐ **GENERAL EMERGENCY**
☐ **The event has been terminated.**

UNIT: ☐ **ONE** **Declaration Time:** _____ **DATE:** _____
☐ **TWO** (Time classification/ termination declared) (Date classification/ termination declared)
☐ **ONE & TWO**

THIS REPRESENTS A/AN: ☐ **INITIAL DECLARATION**
☐ **ESCALATION** } **IN CLASSIFICATION STATUS**
☐ **NO CHANGE**

4. **The Classification Designation is**:
BRIEF NON-TECHNICAL DESCRIPTION OF THE:
☐ **EMERGENCY EVENT** (Initial declaration and escalations) **OR**
☐ **OTHER SIGNIFICANT EVENT** (No change in emergency classification or classification time)

5. **THERE IS:** ☐ **NO**
☐ **AN AIRBORNE** } **RADIOLOGICAL RELEASE IN PROGRESS DUE TO THE EVENT**
☐ **A LIQUID**

A Rad Release is in Progress if: in the judgment of ED/RM radioactive material is being released to the environment or into an area of the plant that will result in a release to the environment that is a result of the event. Example conditions that result in a rad release; **Fuel Clad Barrier AND Containment** Barrier LOSS, **RCS Barrier AND Containment** Barrier LOSS, RG1, RS1, RA1, RU1, MU7, SBGT initiation on RB Vent hi-rad, an increase in the detected gaseous radiation effluents that is a result of the event, or any radioactive liquid released beyond the Protected Area that is a result of the event.

6. **WIND DIRECTION IS FROM:** _____ ° . **WIND SPEED** _____ **mph.**
(Data from 10 meter meteorological tower, available on PICSY.)

7. **REPEAT:** ☐ **THIS IS A DRILL** ☐ **THIS IS AN ACTUAL EVENT**

(When communicating form, request a repeat back by one of the agencies.)

APPROVED: _____ **Time:** _____ **Date** _____ :
(ED, RM, or EOFSS) (Time form approved) (Date form approved)

PUBLIC PROTECTIVE ACTION RECOMMENDATION GUIDE

AIRBORNE RELEASES

☑ **PA-1 MONITOR CONDITIONS FOR PAR APPLICATION**

The following conditions should be continuously evaluated to determine if a PAR should be implemented or changed:

- Plant status and prognosis for changes in conditions
- Onsite radiological conditions
- Status of actual or potential radioactive releases
- Offsite dose projections or actual offsite radiological conditions
- Escalation in Emergency Classification (i.e., General)

(Go to PA-2)

☑ **PA-2 HAS A GENERAL EMERGENCY BEEN DECLARED?**

☑ **YES —** If a GENERAL EMERGENCY has been declared, a PAR must be made within 15 minutes of the emergency declaration. The PAR requirement is found in NUREG-0654. **(Go to PA-3)**

☐ **NO —** If a GENERAL EMERGENCY has not been declared, continue to monitor plant status, parameter trends, and prognosis for termination or escalation of the event. **(Go to PA-1)**

☑ **PA-3 IS THERE A RELEASE BEING MADE VIA CONTROLLED DIRECT CONTAINMENT VENT WITH A DURATION OF LESS THAN ONE HOUR?**

☐ **YES —** Proceed to PA-4 and evaluate dose projections

☑ **NO — (Go to PA-6)**

Answer Key

☐ **PA-4 IS THE DOSE PROJECTION > 500 mREM TEDE AND < 5000 mREM TEDE AND < 5000 mREM ADULT THYROID CDE?**

☐ **YES —** Recommended sheltering a 2 mile radius and 5-miles downwind; recommended KI for the general public in the sheltered areas; and recommend advising the remainder of the EPZ to monitor EAS messages. Then CONTINUE ASSESSMENT.

NOTE:	PA-4 Requires a dose Projection for adult thyroid CDE. If an adult thyroid CDE dose calculation is not available, use a child thyroid calculation since it is more conservative.

In a situation where there is a controlled release of radiation from a direct containment vent and the duration is less than one hour, sheltering may be a preferred protective action provided that the projected dose from the release is within the limits specified. I.e. greater than 500 mREM TEDE and less than 5000 mREM TEDE and 5000 mREM adult thyroid CDE.

Refer to Sector Map at end of this procedure.

☐ **NO — (Go to PA-6)**

☑ **PA-6 IS THERE A VALID DOSE PROJECTION INDICATING DOSES OF ≥ 1000 mREM TEDE OR ≥ 5000 mREM CDE CHILD THYROID AT A DISTANCE OF > 2 MILES?**

☐ **YES —** If the projected dose at 2 miles are ≥ 1000 mREM TEDE or ≥ 5000 mREM CDE child thyroid, then full evacuation (0-10 miles) is recommended. **(Go to PA-8)**

☑ **NO/UNKNOWN — (Go to PA-7)**

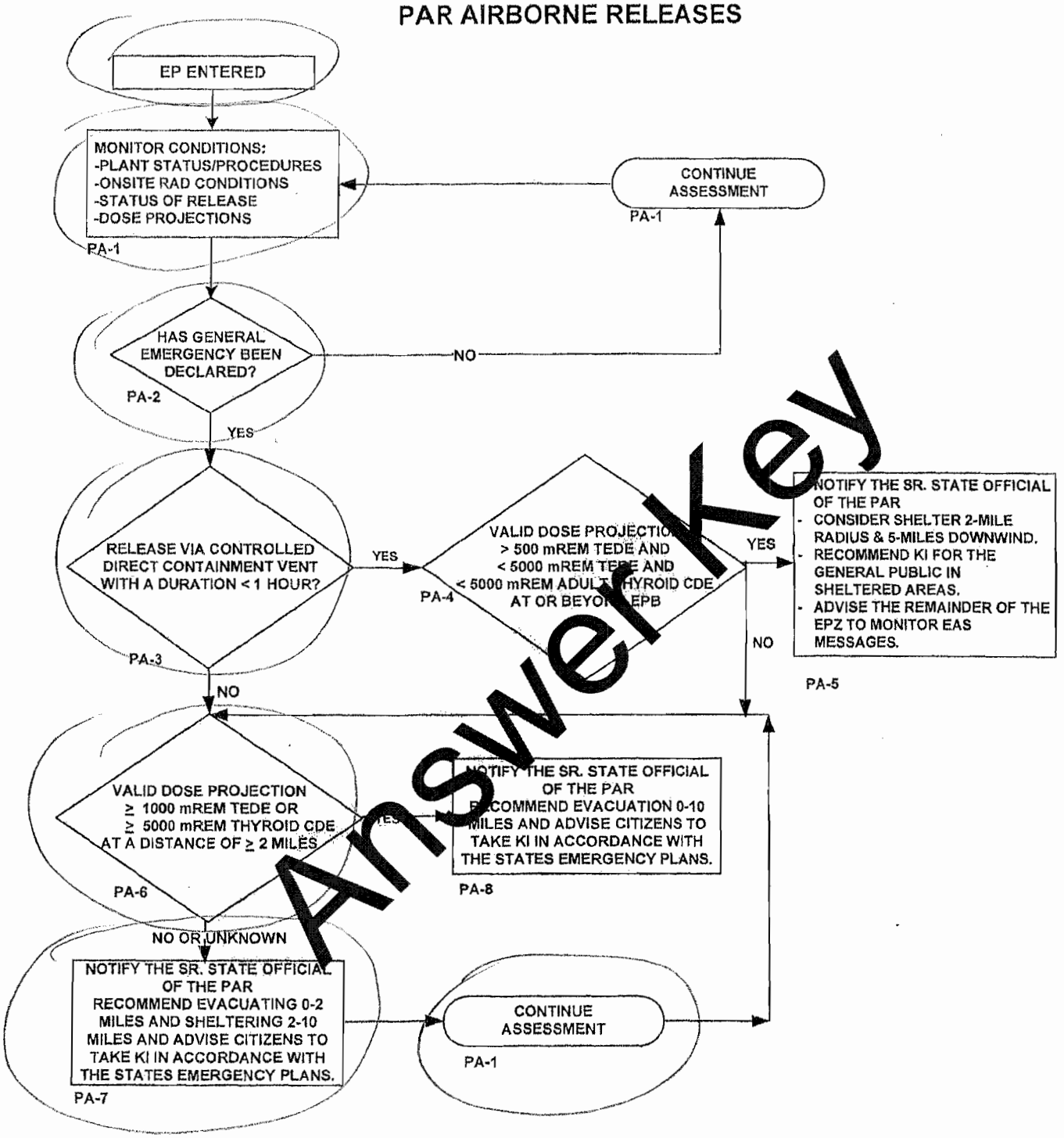
☑ **PA-7 RECOMMEND EVACUATION 0-2 MILES; SHELTER 2-10 MILES AND ADVISE CITIZENS TO TAKE KI IN ACCORDANCE WITH THE STATE'S EMERGENCY PLANS.**

Limited Evacuation (0-2 miles) and sheltering is appropriate for events that are significant enough to cause a General Emergency classification and dose projections are low, unknown, or below full evacuation guidelines. A recommendation is also given to the state to advise citizens to take KI in accordance with the state's emergency plans.

☐ **PA-8 EVACUATE 0-10 MILES AND ADVISE CITIZENS TO TAKE KI IN ACCORDANCE WITH THE STATE'S EMERGENCY PLANS.**

Full evacuation of members of the general public is recommended at this point based on the emergency classification and dose projections. A recommendation is also given to the state to advise citizens to take KI in accordance with the state's emergency plans.

PAR AIRBORNE RELEASES



NOTES:

1. DOSE PROJECTIONS DO NOT INCLUDE DOSE ALREADY RECEIVED.
2. TEDE - WHOLE BODY (TEDE) IS THE SUM OF EFFECTIVE DOSE EQUIVALENT RESULTING FROM EXPOSURE TO EXTERNAL SOURCES AND THE COMMITTED EFFECTIVE DOSE EQUIVALENT (CEDE) FROM ALL SIGNIFICANT INHALATION PATHWAYS AND THE DOSE DUE TO GROUND DEPOSITION.
3. CDE - COMMITTED DOSE EQUIVALENT TO THE THYROID (TYPICALLY CHILD).

Facility: SSES Date of Examination: _____

Exam Level: RO ■ SRO-I ☐ SRO-U ☐ Operating Test No.: _____

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. CRD Mechanism / 201003 (Chris)	A, L, N, S	1
b. Perform HPCI Quarterly Surveillance / 206000 (Manan)	A, N, S	2
c. Quarterly Turbine Valve Cycling / 241000 (Chris)	A, N, S	3
d. Core Spray System Shutdown / 209001 (Chris)	L, N, S	4
e. PCIS/SDC restoration / 223002 (Manan)	A, L, N, S	5
f. Manually Synchronize Diesel Generator B / 264000 (Manan)	A, N, S	6
g. SBGT System Startup / 288000 (Chris)	N, S	9
h. APRM Gain Adjustment / 215005 (Manan)	N, S	7
In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Venting Scram Air Header during ATWS (Manan)	D, E, L, R	1
j. Maintaining RCIC Suction Source during SBO (Chris)	A, E, N, R	2
k. Secure Non-Class 1E 250 VDC loads IAW E0-100-030 (Manan)	N, E, R	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: SSES Date of Examination: _____

Exam Level: RO ☐ SRO-I ■ SRO-U ☐ Operating Test No.: _____

Control Room Systems@ (8 for RO); (7 for SRO-I); (2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. CRD Mechanism / 201003 (Chris)	A, L, N, S	1
b. Perform HPCI Quarterly Surveillance/ 206000 (Manan)	A, N, S	2
c. Quarterly Turbine Valve Cycling / 241000 (Chris)	A, N, S	3
d. Core Spray System Shutdown / 209001 (Chris)	L, N, S	4
e. PCIS/SDC restoration / 223002 (Manan)	A, L, N, S	5
f. Manually Synchronize Diesel Generator B / 264000 (Manan)	A, N, S	6
g. SBGT System Startup / 288000 (Chris)	N, S	9

In-Plant Systems@ (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)

i. Venting Scram Air Header during ATWS (Manan)	D, E, L, R	1
j. Maintaining RCIC Suction Source during SBO (Chris)	A, E, N, R	2
k. Secure Non-Class 1E 250 VDC loads IAW E0-100-030 (Manan)	N, E, R	6

@ All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

* Type Codes	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Susquehanna Steam Electric Station

Job Performance Measure

Uncoupled Control Rod During Startup

JPM Designation: A

Revision Number: 2

Date: 4/15/11

Developed By:	**Chris Lally**	**4/15/11**
	Author	**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
2. Rev 1: Editorial changes via comments from branch, and changed JPM such that alternate path begins on second withdrawn rod vice first 5/9/11
3. Rev 2: Added procedure step numbers

JPM Setup Instructions:

1. Set Simulator to IC 10, approximately 2% power
2. Insert malfunction RD155007 for rod ____-____
3. Provide marked up copy of GO-100-002
4. Provide OP-156-001 Reactor Manual Control System
5. Provide SO-156-007 Control Rod Coupling Check
6. Provide RE approved pull sheet indicating current rod step

TASK STANDARD:

Successfully insert Control Rod ____ per ON-155-001, Control Rod Problems Rev 34

TASK CONDITIONS:

1. The plant is at power, startup in progress at step 5.60.6 of GO-100-002 Rev 71
2. CRD Hydraulic System in operation in accordance with OP-155-001
3. Scram is reset
4. Rod Withdraw Block not present
5. RMCS operational in accordance with Section 2.1 of OP-156-001
6. All rod movements shall be performed in accordance with NDAP-QA-0338
7. You are on step __ of the rod pull sheet provided

INITIATING CUE:

Continue power ascension; raise reactor power to 7-10% by withdrawing control rods. Continue at current rod step per pull sheet

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Uncoupled control rod during startup

JPM Number: A

Revision Number: 2

K/A Number and Importance: 201003 A2.02 RO 3.7 SRO 3.8

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, 201003 A2.02 RO 3.7 SRO 3.8
2. GO-100-002 Rev 71
3. ON-155-001 Rev 34
4. AR-104-001 Rev 28
5. OP-156-001 Rev 16
6. SO-156-007 Rev 10

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 withdraw control rods for power ascension, and upon finding an uncoupled control rod (second withdrawn rod), has the operator attempt to re-couple and eventually fully insert and disarm the control rod.

Evaluator Note: The steps of OP-156-001 are listed for reference and tracking of applicant's actions. Per OP-156-001 note: "This procedure section is Information Use; however, the steps must be performed in the order written. Operator training ensures the steps are performed in the proper sequence without procedure in hand".

JPM A

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews	**Evaluator Note**: Per caution (2) of GO-100-002: "**Single notch withdrawal is to be maintained up to Position 32 for each control rod until the point of adding heat is achieved**". With the reactor above POAH, it is expected that the applicants will choose continuous rod withdrawal under section 2.4 of OP-156-001 Applicant obtains OP-156-001, references section 2.4 and reads 2.4.1 Prerequisites and 2.4.2 Precautions			
2. (OP-156-001 Step 2.4.3) **Establish** a target position that is one notch less than the desired position. (Exception: The withdraw of control rods to the **FULL OUT** position and those control rods with settle times greater than 30 seconds.)	Applicant establishes target position of 48			
*3. (Step 2.4.4) Select control rod to be withdrawn continuously by **Depressing** corresponding CONTROL ROD SELECTION pushbuttons.	Selects control rod __-__			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. (Step 2.4.5) **Observe**: a. CONTROL ROD SELECTION pushbuttons **ILLUMINATED** b. FULL CORE DISPLAY **ILLUMINATED GREEN** at selected location. c. Present position of selected rod **Indicated** on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652.	Applicant Observes: a. CONTROL ROD SELECTION pushbuttons **ILLUMINATED** b. FULL CORE DISPLAY **ILLUMINATED GREEN** at selected location. c. Present position of selected rod **Indicated** on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652.			
*5. (Step 2.4.6) **Depress** and **Hold** CONT W/DRAW ROD pushbutton **AND**	Applicant **Depresses** and **Holds** CONT W/DRAW ROD pushbutton **AND**			
*6. (Step 2.4.7) **Depress** and **Hold** W/DRAW ROD pushbutton	**Depresses** and **Holds** W/DRAW ROD pushbutton			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
7. (Step 2.4.8) **Observe:** a. ROD INSERT light **MOMENTARILY ILLUMINATES** b. ROD W/DRAWG light **ILLUMINATES** c. CONT W/DRAWG light **ILLUMINATES** d. Withdrawal drive flow of approx. 2-3 gpm during control rod withdrawal on CRT FOUR ROD DISPLAY e. Changing rod position indicated on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652 for selected rod.	**Note**: Additional expected applicant actions per precaution 2.4.2.b of OP-156-001, "Nuclear instrumentation must be monitored during any rod movement" Applicant **Observes:** a. ROD INSERT light **MOMENTARILY ILLUMINATES** b. ROD W/DRAWG light **ILLUMINATES** c. CONT W/DRAWG light **ILLUMINATES** d. Withdrawal drive flow of approx. 2-3 gpm during control rod withdrawal on CRT FOUR ROD DISPLAY e. Changing rod position indicated on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652 for selected rod.			
8. (Step 2.4.9) One notch prior to target position: a. **Release** CONT W/DRAW ROD pushbutton **AND** b. **Release** W/DRAW ROD pushbutton	At approximately rod position 46, applicant: a. **Releases** CONT W/DRAW ROD pushbutton **AND** b. **Releases** W/DRAW ROD pushbutton			

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. (Step 2.4.10) **Observe:** a. CONT W/DRAW light **EXTINGUISHES** b. ROD W/DRAWG light **EXTINGUISHES** c. ROD SETLG light **ILLUMINATES THEN EXTINGUISHES** at end of withdraw cycle	**Applicant Observes:** a. CONT W/DRAW light **EXTINGUISHES** b. ROD W/DRAWG light **EXTINGUISHES** c. ROD SETLG light **ILLUMINATES THEN EXTINGUISHES** at end of withdraw cycle			
10. (Step 2.4.11) **Observe** control rod position with FOUR ROD DISPLAY at desired notch position **AND** position indicated is an even number.	**Evaluator Note**: Control rod should have settled at position 48 and applicant should proceed to performing coupling check per SO-156-007			
11. (SO-156-007 Step 5.3.1) **Maintain** the WITHDRAW command or single notch withdrawal. Confirm the rod does not uncouple. Uncoupling is demonstrated by: a. Loss of position 48 **AND** b. Loss of full out red indicator **OR** c. ROD OVERTRAVEL alarm	Applicant maintains withdraw signal to perform coupling check, notes control rod at position 48, full out red indicator is lit, and no ROD OVERTRAVEL alarm.			
12. (Step 5.3.2) **Depress** Display Rods Full-in/Full-out test button and **Confirm** the FULL OUT red indicator **ILLUMINATED**. **AND/OR** (Step 5.3.3) **Confirm** the control rod remains at position **48** on the 4 rod display.	Applicant depresses test button and confirms red FULL OUT indicator is illuminated **OR** Confirms control rod remains at position 48 on the 4 rod display			
13. (Step 5.3.4) **Record** date and initials in appropriate space for the control rod in COUPLING CHECK on Attachment C, Page 1.	Applicant records date and initials for control rod			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
14. (OP-156-001 Step 2.4.3) **Establish** a target position that is <u>one notch less</u> than the desired position. (Exception: The withdraw of control rods to the **FULL OUT** position and those control rods with settle times greater than 30 seconds.)	Applicant establishes target position of 48			
*15. (Step 2.4.4) Select control rod to be withdrawn continuously by **Depressing** corresponding CONTROL ROD SELECTION pushbuttons.	Selects control rod __-__			
16. (Step 2.4.5) **Observe**: a. CONTROL ROD SELECTION pushbuttons **ILLUMINATED** b. FULL CORE DISPLAY **ILLUMINATED GREEN** at selected location. c. Present position of selected rod **Indicated** on FOUR ROD DISPLAY on CRT <u>and</u> Standby Information Panel 1C652.	Applicant Observes: a. CONTROL ROD SELECTION pushbuttons **ILLUMINATED** b. FULL CORE DISPLAY **ILLUMINATED GREEN** at selected location. c. Present position of selected rod **Indicated** on FOUR ROD DISPLAY on CRT <u>and</u> Standby Information Panel 1C652.			
*17. (Step 2.4.6) **Depress** and **Hold** CONT W/DRAW ROD pushbutton **<u>AND</u>**	Applicant **Depresses** and **Holds** CONT W/DRAW ROD pushbutton **<u>AND</u>**			
*18. (Step 2.4.7) **Depress** and **Hold** W/DRAW ROD pushbutton	**Depresses** and **Holds** W/DRAW ROD pushbutton			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
19. (Step 2.4.8) **Observe:** a. ROD INSERT light **MOMENTARILY ILLUMINATES** b. ROD W/DRAWG light **ILLUMINATES** c. CONT W/DRAWG light **ILLUMINATES** d. Withdrawal drive flow of approx. 2-3 gpm during control rod withdrawal on CRT FOUR ROD DISPLAY e. Changing rod position indicated on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652 for selected rod.	**Note**: Additional expected applicant actions per precaution 2.4.2.b of OP-156-001, "Nuclear instrumentation must be monitored during any rod movement" Applicant **Observes:** a. ROD INSERT light **MOMENTARILY ILLUMINATES** b. ROD W/DRAWG light **ILLUMINATES** c. CONT W/DRAWG light **ILLUMINATES** d. Withdrawal drive flow of approx. 2-3 gpm during control rod withdrawal on CRT FOUR ROD DISPLAY e. Changing rod position indicated on FOUR ROD DISPLAY on CRT and Standby Information Panel 1C652 for selected rod.			
*20. (Step 2.4.9) One notch prior to target position: a. **Release** CONT W/DRAW ROD pushbutton **AND** b. **Release** W/DRAW ROD pushbutton	At approximately rod position 46, applicant: a. **Releases** CONT W/DRAW ROD pushbutton **AND** b. **Releases** W/DRAW ROD pushbutton **Evaluator Note: Alternate path begins here**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
21. (Step 2.4.10) **Observe:** a. CONT W/DRAW light **EXTINGUISHES** b. ROD W/DRAWG light **EXTINGUISHES** c. ROD SETLG light **ILLUMINATES THEN EXTINGUISHES** at end of withdraw cycle **Evaluator Note:** Alarm AR-104-001 H06 is an expected alarm for this JPM.	**Applicant Observes:** a. CONT W/DRAW light **EXTINGUISHES** b. ROD W/DRAWG light **EXTINGUISHES** c. ROD SETLG light **ILLUMINATES THEN EXTINGUISHES** at end of withdraw cycle **Evaluator note:** Applicant may or may not observe these indications as the ROD OVERTRAVEL alarm (AR-104-001 H06) will actuate here or during the coupling check			
22. (Step 2.4.11) **Observe** control rod position with FOUR ROD DISPLAY at desired notch position **AND** position indicated is an even number.	**Evaluator Note**: Control rod should have settled at position 48 and applicant should proceed to performing coupling check per SO-156-007			
*23. (SO-156-007 Step 5.3.1) **Maintain** the WITHDRAW command or single notch withdrawal. Confirm the rod does not uncouple. Uncoupling is demonstrated by: a. Loss of position 48 **AND** b. Loss of full out red indicator **OR** c. ROD OVERTRAVEL alarm	Applicant maintains withdraw signal to perform coupling check, ***notes control rod position becomes blank, loss of the full out red indicator, and receipt of the ROD OVERTRAVEL alarm.***			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*24. Annunciator response to ROD OVERTRAVEL (AR-104-001 H06)	Applicant: a. Acknowledges alarm b. Reports alarm to Unit Supervisor c. References alarm response for AR-104-001 H06) d. Notifies Shift Supervision e. Performs ON-155-001 **Evaluator Note:** Critical portion of this step is ON-155-001 entry. Crew may recognize entry condition and directly enter ON-155-001 'Control Rod Problems', vice entry from AR.			
*25. ON-155-001 'Control Rod Problems' entry	Applicant obtains ON-155-001, recognizes symptoms for rod overtravel and proceeds to step 4.5			
*26. (Step 4.5.1) **IF** Rod Overtravel alarm **ANNUNCIATES** with rod beyond 48, **Perform** the following only once: a. **Insert** rod to **46.** b. **Withdraw** rod to **48.** c. With Rod at position **48**, **Notch** Rod **OUT OR Continuously withdraw** Rod. **AND** d. **Confirm** control rod is coupled by observing: (1) **POSITION 48** on Standby Information Panel or other available rod position indication **AND** (2) **FULL OUT RED** indicator on full core display **AND** (3) Rod Overtravel annunciator is **CLEAR**.	Applicant **Perform** the following only once: a. **Insert** rod to **46.** b. **Withdraw** rod to **48.** c. With Rod at position **48**, **Notch** Rod **OUT OR Continuously withdraw** Rod. d. Applicant will again receive the "Rod Overtravel" annunciator and recognize that the control rod is still uncoupled. **Applicant recognizes that rod is still uncoupled and proceeds to step 4.5.2**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*27. (Step 4.5.2) **IF** rod fails to couple through one performance of Step 4.5.1: a. **Promptly Insert** rod to position **00**. b. **Contact** Reactor Engineering. c. **IF** < LPSP power: (1) **Comply** with TS 3.1.3 and 3.9.5 (2) **Hydraulically Disarm** HCU IAW OP-155-001 Control Rod Drive Hydraulic System (3) **DO NOT** continue to **Move** rods until Reactor Engineering has supplied new control rod withdraw sequence.	**Evaluator Note:** Some roleplay as Unit Supervisor may be required if applicant requests/recommends inserting rod and contacting Reactor Engineering. Direct applicant to continue with the procedure, and notify applicant that Reactor Engineering has been contacted, and Tech Spec entries are being prepared. Applicant: a. **Promptly Inserts** rod to position **00**. b. **Contacts** or recommends contacting Reactor Engineering. c. Recognizes power is <LPSP power and: (1) Notifies Unit Supervisor that TS 3.1.3 and 3.9.5 compliance is required (2) Notifies Unit Supervisor that HCU must be hydraulically disarmed IAW OP-155-001 **Evaluator Note**: Only the rod insertion to **00** portion of this step is the critical task.			
CUE: JPM is complete.				

JPM Stop Time _____

JPM A

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at power, startup in progress at step 5.60.6 of GO-100-002 Rev 71.
2. CRD Hydraulic System in operation in accordance with OP-155-001
3. Scram is reset
4. Rod Withdraw Block not present
5. RMCS operational in accordance with Section 2.1 of OP-156-001
6. All rod movements shall be performed in accordance with NDAP-QA-0338

INITIATING CUE:

Continue power ascension; raise reactor power to 7-10% by withdrawing control rods. Continue at current rod step per pull sheet

Susquehanna Steam Electric Station

Job Performance Measure

Perform HPCI Quarterly Surveillance

JPM Designation: B

Revision Number: 1

Date: _05/25/2011___

Developed By:	**Patel**	**05/25/11**
	Author	**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. Set Simulator to IC 11.
2. Align HPCI Support System per SO-152-002 Section 5.1.
3. Place HPCI System in test status per SO-152-002 Section 5.2.
4. Insert malfunction **cmfHX01_1E213**, HPCI LUBE OIL COOLER.TUBE SIDE FOULING 90%, upon simulator booth instruction.

TASK STANDARD:

Successfully start HPCI for TS surveillance testing and secure HPCI upon high oil cooler discharge temperature.

Materials Needed:

Stop Watch.

TASK CONDITIONS:

1. The plant is at 10% power, and continuing plant startup at step 5.62 of GO-100-002.
2. The plant is in a normal electric line-up.
3. Local indication of HV-155-F008, HPCI TEST LINE TO CST ISO, is OOS for routine maintenance.

INITIATING CUE:

You are directed by Shift Supervision to perform HPCI TS surveillance test IAW SO-152-002 Rev 47.

All of the Prerequisites/Limitations of SO-152-002 have been satisfied.

HPCI support systems have been aligned per section 5.1, and HPCI system is placed in test status per section 5.2 of SO-152-002. You may proceed with HPCI auto quick start section to conduct TS surveillance test.

Last TS quarterly surveillance was completed on October 13, 2011.

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 timeclock starts when the candidate acknowledges the initiating cue.

Operator's Name: _____

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

JPM Title: Perform HPCI Quarterly Surveillance

JPM Number: B

Revision Number: 0

K/A Number and Importance: 206000 A4.03 3.1/3.0 (RO/SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

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, 206000, A4.03, RO/SRO 3.1/3.0
2. SO-152-002 Rev. 47
3. AR-114-001, 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:** _____

_____

Description: This JPM has the operator start HPCI per quarterly performance testing IAW SO-152-002 Revision 47 and upon successful start of the HPCI pump, oil cooler discharge high temp condition will be inserted by the simulator booth operator. The operator needs to recognize the abnormal condition and secure HPCI.

JPM B

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews procedure, prerequisites, and precautions	Obtains SO-152-002			
2. Recognizes that HPCI Auto Quick Start needs to be performed to satisfy TS quarterly surveillance requirements.	Applicant recognizes to perform HPCI Auto Quick Start to satisfy TS quarterly surveillance requirements per section 5.3 by reading the prerequisite note, purpose/scope section of the SO-152-002, or initiating cue.			
3. Step 5.3.1 **IF** Cold Auto Quick Start is being performed, **Ensure** HPCI turbine shutdown > 16 previous hours. **Enter** present date and time.	Notes present date and time. _____ _____ Date Time **Evaluator Note:** Per initiating cue, applicant should recognize that last HPCI turbine start was greater than 16 hours. (October 13, 2011)			
4. Step 5.3.2 **Check** HPCI TEST LINE TO CST ISO HV-155-F011 **CLOSED**.	Applicant checks HPCI TEST LINE TO CST ISO HV-155-F011 is **CLOSED**. (Verifies Green Light Lit and Red Light Extinguished)			

*5. Step 5.3.3 At HPCI Relay Panel Div 2, 1C620, **Instruct** qualified work group personnel to Lift both leads at terminal 3 of Relay E41A-K2 **AND CLAMP** together.	Applicant orders **_I&C_** group to Lift both leads at terminal 3 of Relay E41A-K2 AND CLAMP together. **Evaluator Note:** Applicant may request this field action. **Evaluator Cue:** Notify Applicant that the qualified work group has completed lifting leads per SO-152-002 step 5.3.3 and verification process has been completed satisfactory.			

*6. Step 5.3.4 Position HPCI TEST LINE TO CST ISO HV-155-F008 as follows: a. While moving HPCI TEST LINE TO CST ISO HV-155-F008 in the open direction, **Position** valve to 32% **OPEN** based on local observation **OR** **Note:** Intent of next step is for operator to release the valve handswitch when stopwatch reaches 13.6 seconds. It is not necessary to stroke valve exactly 13.6 seconds. The 13.6 second time allows for reaction time of the operator. b. As an alternate method when local indication is not available, **Stroke** HPCI TEST LINE TO CST ISO HV-155-F008 in the open direction for 13.6 seconds.	Applicant positions HPCI TEST LINE TO CST ISO HV-155-F008 in the open direction for 13.6 seconds. **Evaluator Note:** Applicant should recognize that local indication is not available per initial conditions. **If applicant request field action**, make note of it, and request applicant to review initial conditions. **Evaluator Cue:** (If required) Notify Applicant to review initial conditions.			
7. Step 5.3.5 **Open** Breaker 1D274081, HPCI Test LINE TO CST ISO VLV HV-155F008 BKR (25-683').	Applicant requests field action to OPEN Breaker 1D274081, HPCI Test LINE TO CST ISO VLV HV-155F008. **Evaluator Cue:** Notify Applicant that Bkr 1D274081 has been opened.			
8. Step 5.3.6 **Evacuate** personnel from HPCI pump room **AND Close** water tight doors. Once HPCI is operating pump room may be accessed again.	Applicant utilizes plant page system to evacuate personnel from the HPCI pump room area.			

*9. Step 5.3.7 **Rotate** collar on HPCI MAN INIT HS-E41-1S33 pushbutton to **ARMED** position.	Applicant **Rotates** collar on HPCI MAN INT HS-E41-1S33 pushbutton to **ARMED** position.			
10. Step 5.3.8 **Confirm** HPCI MAN INITIATION SWITCH ARMED annunciator **ALARMS**.	Applicant **Confirms** HPCI MAN INITIATION SWITCH ARMED annunciator **alarm**.			
11. Step 5.3.9 **Instruct** STA to **Start** Transient Monitoring System TRA.	Applicant requests STA to start Transient Monitoring System TRA. **Evaluator Cue:** Notify Applicant that Transient Monitoring system has been started.			
*12. Step 5.3.10 & 5.3.11 **Simultaneously Start** stopwatch **AND** **Depress AND Hold** HPCI MAN INIT HS-E41-1S33 pushbutton until TURBINE STEAM SUPPLY HV-155-F001 Starts to **OPEN**.	Applicant **Simultaneously Starts** stopwatch and **Depresses AND Holds** HPCI MAN INIT HS-E41-1S33 pushbutton until TURBINE STEAM SUPPLY HV-155-F001 Starts to **OPEN**. **Evaluator Note:** If applicant requests a second operator for stopwatch operation, inform applicant that you will simulate stop watch function and will let you know the final time value when needed for recording purpose.			
*13. Step 5.3.12 **WHEN** HPCI pump discharge pressure indicates 100 psig increasing on PI-E41-1R601, **Promptly Open** HPCI TEST LINE TO CST ISO HV-155-F011.	Applicant observes discharge pressure reading 100 psig and increasing on PI-E41-1R601, and **promptly opens** HPCI TEST LINE TO CST ISO HV-155-F011.			
14. **Simulator Booth Instruction:** Insert malfunction of high HPCI oil cooler discharge temperature. (cmfHX01_1E213)				

15. Step 5.3.12 **WHEN** flow reaches 5000 gpm as indicated on FI-E41-1R600-1: a. **Stop** stopwatch b. **Record** time on Attachment A. c. **Confirm** HPCI successfully actuated by observing flow as indicated on FI-E41-1R600-1, ≥ 5000 gpm **AND Record** on Attachment A. d. **IF** PICSY is available, **Record** time of HPCI startup. HPCI START TIME _____	WHEN flow reaches 5000 gpm as indicated on FI-E41-1R600-1 Applicant: e. Stops stopwatch f. Records time on Attachment A. g. Confirms HPCI successfully actuated by observing flow as indicated on FI-E41-1R600-1, ≥ 5000 gpm AND Record on Attachment A. h. IF PICSY is available, Records time of HPCI startup. HPCI START TIME _____ **Evaluator Note:** Applicant may not perform these step due to the malfunction occurring at the same time.			
*16. Step 5.3.13 Applicant **recognizes** increase trend in HPCI oil cooler discharge temperature. **OR** Recognizes HPCI Turbine Oil Cooler DSCH HI TEMP alarm (D03).	Applicant recognizes increase trend in HPCI oil cooler discharge temperature. **OR** Recognizes HPCI Turbine Oil Cooler DSCH HI TEMP alarm (D03).			

17. HPCI Turbine Oil Cooler DSCH HI TEMP alarm (D03) Operator Action: i. ENSURE HPCI L-O CLG WTR HV-156-F059 OPEN. ii. DISPATCH Operator to HPCI Pump Room to perform following: CHECK for cooling water leaks, low oil pressure or bearing overheating. CHECK cooling water alignment to lube oil cooler. MONITOR HPCI System for increasing bearing oil temperatures iii. TRIP HPCI Turbine if bearing temperatures exceed 180°F, unless required for adequate core cooling as determined by Shift Supervision.	Applicant performs Operator actions: Ensures **HPCI L-O CLG WTR HV-156-F059 OPEN.** Dispatches operator to HPCI pump room to perform following: CHECK for cooling water leaks, low oil pressure or bearing overheating. CHECK cooling water alignment to lube oil cooler. **Evaluator Note:** Role play as field operator and acknowledge to check for cooling water degradation. MONITOR HPCI System for increasing bearing oil temperatures. TRIP HPCI Turbine if bearing temperatures exceed 180°F, unless required for adequate core cooling as determined by Shift Supervision.			
*17. Refers to alarm response AR-114-001, Revision 23 and notes turbine bearing temperatures exceeding 180°F or approaching **TRIP** criteria per AR procedure.	Applicant Refers to alarm response AR-114-001, Revision 23 and notes turbine bearing temperatures exceeding 180°F or approaching TRIP criteria per AR procedure.			
*18. **Trips** HPCI Turbine based on bearing temperatures exceeding 180°F or approaching 180°F rapidly.	Applicant Trips HPCI Turbine based on bearing temperatures exceeding 180°F or approaching 180°F rapidly.			

*19. **Depress AND Maintain** HPCI TURBINE TRIP HS E41 1S19 pushbutton.	**Evaluator Note: Pushbutton depressed** in next step must be maintained **until step 22**, when turbine steam supply valve reaches full **closed**. **Depress AND Maintain** HPCI TURBINE TRIP HS E41 1S19 pushbutton.			
20. **Confirm** following events occur: HPCI AUXILIARY OIL PP 1P213 **STARTS** on low oil pressure. HPCI TURB STOP FV 15612 **CLOSES AND Record** on Attachment A. HPCI MIN FLOW TO SUPP POOL HV 155 F012 **CLOSES**. HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator **ALARMS**. HPCI TURBINE TRIPPED annunciator **ALARMS** HPCI L-O CLG WTR HV-156-F059 **CLOSES**	**Confirm** following events occur: HPCI AUXILIARY OIL PP 1P213 **STARTS** on low oil pressure. HPCI TURB STOP FV 15612 **CLOSES AND Record** on Attachment A. HPCI MIN FLOW TO SUPP POOL HV 155 F012 **CLOSES**. HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator **ALARMS**. HPCI TURBINE TRIPPED annunciator **ALARMS** HPCI L-O CLG WTR HV-156-F059 **CLOSES**			

*21. **Close** HPCI TURBINE STEAM SUPPLY HV-155-F001.	Applicant **Closes** HPCI TURBINE STEAM SUPPLY HV-155-F001.			
*22. **WHEN** TURBINE STEAM SUPPLY HV-155-F001 reaches **FULL CLOSED** position, **Release** HPCI TURBINE TRIP HS-E41-1S19 pushbutton.	**WHEN** TURBINE STEAM SUPPLY HV-155-F001 reaches **FULL CLOSED** position, **Release** HPCI TURBINE TRIP HS-E41-1S19 pushbutton			
23. **Confirm** following events occur: a. HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator CLEARS. b. HPCI TURB STOP FV 15612 OPENS.	Applicant **Confirm** following events occur: a. HPCI TURBINE TRIP SOLENOID ENERGIZED annunciator CLEARS. b. HPCI TURB STOP FV 15612 OPENS.			
24. **Confirm** following HV 155 F001 close events occur: a. HPCI STM LINE DRN TO CDSR IB ISO HV 155 F028 OPENS. b. HPCI STM LINE DRN TO CDSR OB ISO HV 155 F029 OPENS. c. IF condenser level high, HPCI BARO CDSR COND PP DSCH DRN HV 156 F025 OPENS. d. HPCI BARO CDSR COND PP DSCH DRN HV 156 F026 OPENS. e. HPCI PUMP DSCH LO FLOW annunciator CLEARS. f. HPCI TURBINE TRIPPED annunciator CLEARS. g. HPCI Rm Unit Clr 1V209A(B) STOPS at Panel 1C681	Applicant **Confirms** following HV 155 F001 close events occur: a. HPCI STM LINE DRN TO CDSR IB ISO HV 155 F028 OPENS. b. HPCI STM LINE DRN TO CDSR OB ISO HV 155 F029 OPENS. c. IF condenser level high, HPCI BARO CDSR COND PP DSCH DRN HV 156 F025 OPENS. d. HPCI BARO CDSR COND PP DSCH DRN HV 156 F026 OPENS. e. HPCI PUMP DSCH LO FLOW annunciator CLEARS. f. HPCI TURBINE TRIPPED annunciator CLEARS. g. HPCI Rm Unit Clr 1V209A(B) STOPS at Panel 1C681			
*25. **Close** HPCI TEST LINE TO CST ISO HV 155 F011.	Applicant **Closes** HPCI TEST LINE TO CST ISO HV 155 F011.			
CUE: JPM is complete.				

JPM Stop Time _____

JPM B

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at 10% power, and continuing plant startup at step 5.62 of GO-100-002.
2. The plant is in a normal electric line-up.
3. Local indication of HV-155-F008, HPCI TEST LINE TO CST ISO, is OOS for routine maintenance.

INITIATING CUE:

You are directed by Shift Supervision to perform HPCI TS surveillance test IAW SO-152-002 Rev 47.

All of the Prerequisites/Limitations of SO-152-002 have been satisfied.

HPCI support systems have been aligned per section 5.1, and HPCI system is placed in test status per section 5.2 of SO-152-002. You may proceed with HPCI auto quick start section to conduct TS surveillance test.

Last TS quarterly surveillance was completed on October 13, 2011.

Susquehanna Steam Electric Station

Job Performance Measure

Quarterly Turbine Valve Cycling

JPM Designation: C

Revision Number: 1

Date: 4 / 18 / 11

Developed By:	Chris Lally	4/18/11
	Author	**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
2. Rev 1: altered JPM such that alternate path begins on second turbine control valve tested

JPM Setup Instructions:

1. Set Simulator to IC 17.
2. Insert trigger TU193008_____for main turbine vibration on CV-1 TEST pushbutton
3. Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)
4. Ensure LOAD LIMIT SET vernier to 8.9 turns.
5. Key #1-37 provided
6. Provide marked up copy of SO-193-001
7. Prepare remote function RFTU193004 for step 5.4.5.a (HS-11982 @1C6100A to bypass)

TASK STANDARD:

Main turbine tripped by applicant upon sustained vibration >10 mils after releasing CV test pushbutton

TASK CONDITIONS:

1. The plant is at 70% power, quarterly turbine testing in progress IAW SO-193-001.

INITIATING CUE:

Shift turnover is complete, you have been directed to continue with quarterly turbine valve cycling IAW SO-193-001, continuing at step 5.4.1

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 candidate 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 candidate acknowledges the initiating cue.

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

JPM Title: Quarterly Turbine Valve Cycling

JPM Number: C

Revision Number: 1

K/A Number and Importance: 241000 A2.22 RO 2.8 SRO 2.9

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, 241000 A2.22 RO 2.8 SRO 2.9
2. SO-193-001 Rev 30
3. AR-105-001 (D05) Rev 33
4. AR-105-001 (E05) 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:** _____

Description: This JPM has the operator conduct Quarterly Turbine Valve Cycling IAW SO-193-001, beginning at the control valve cycling step 5.4.3. Upon cycling the second control valve (CV-1), the turbine vibration will ramp up rapidly and remain >10 mils even after releasing the Test Pushbutton. Per direction in SO-193-001, the operator is then directed to trip the main turbine.

Evaluator Note: Expected alarms for this evolution are:

AR105 F05 MN TURB/RFPT VIB TRIP DISABLE
AR103 A01 RPS CHANNEL A1/A2 AUTO SCRAM
AR103 E01 TURB CV FAST CLOSURE TRIP
AR104 A01 RPS CHANNEL B1/B2 AUTO SCRAM
AR104 I06 MAIN TURBINE BYPASS VALVES OPEN
AR106 D17 HYD FLUID FILTER PANEL 1C122 TROUBLE

JPM C

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews	Obtains SO-193-001 and reviews			
2. (Step 5.4.1) To ensure adequate PCIOMR margins are maintained **Ensure** Reactor power established in accordance with Shift Supervision direction based on Reactor Engineering Instructions in Core Reactivity Control Book	Applicant references Core Reactivity Control Book or prompts Unit Supervisor **Evaluator Cue**: The unit supervisor has determined that reactor power is SAT in accordance with the core reactivity control book			
3. (Step 5.4.2) **Record** reactor power level	Applicant **Records** reactor power level.			
4. (Step 5.4.3) **Perform** following: a. **Ensure** MAXIMUM COMBINED FLOW LIMIT vernier set at **12.5 turns (125%).** b. **Record** value of LOAD SET. c. **Record** value of LOAD LIMIT SET vernier.	Applicant **Performs** following: a. **Ensure** MAXIMUM COMBINED FLOW LIMIT vernier set at **12.5 turns (125%).** b. **Record** value of LOAD SET at 12.5 turns. c. **Record** value of LOAD LIMIT SET vernier at 8.9 turns.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*5. (Step 5.4.4) **Perform** following: a. **Ensure** LOAD LIMIT SET vernier to **8.9 TURNS**. NA if already performed in section 5.1.7. b. **Increase** LOAD SET to maximum value **(1400 MW)** to allow Control Valves to cycle open and limit BYPASS VALVE opening.	Applicant **Performs** following: a. Verifies LOAD LIMIT SET vernier to **8.9 TURNS**. (Performed by previous operator, N/A in this case) b. **Increase** LOAD SET to maximum value **(1400 MW)** to allow Control Valves to cycle open and limit BYPASS VALVE opening. **Evaluator Note**: LOAD LIMIT SET should be verified to 8.9 turns by applicant, as this was already performed earlier in the procedure, but applicant **will** adjust LOAD SET to maximum value, which is a critical step.			

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
NOTE: The following step disables the Main Turbine vibration trips *6. (Step 5.4.5) **Perform** the following: Note: The following step is a key lock switch and requires key #1-37 a. At Panel 1C6100A, **Place** HS-11982 to **BYPASS**. b. **Confirm** Annunciator AR105, F05 MN TURB/RFPT VIB TRIP DISABLE **ALARMS**	**Note:** Expected annunciator AR105 F05. **Evaluator note**: This switch is a remote switch. Communication with booth operator is necessary to perform this step. **Booth operator note**: When requested by applicant, insert remote function RFTU193004 to simulate HS-11982 to bypass Applicant **Performs** the following: a. Contacts plant operator at Panel 1C6100A to **Place** HS-11982 to **BYPASS**. b. **Confirm** Annunciator AR105, F05 MN TURB/RFPT VIB TRIP DISABLE **ALARMS**			
7. (Step 5.4.6) During the time vibration trips are disabled: a. **IF** any bearing on the Main Turbine exceeds 10 mils, **Immediately Release** the Test Pushbutton b. **IF** any bearing on the Main Turbine exceeds and sustains 10 mils, **Perform** a trip of the Main Turbine	Applicant reads and understands procedure step			

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*8. (Step 5.4.7) **Test** CONTROL VLV-4 as follows: *a. **Depress AND Hold** CV-4 TEST pushbutton. b. **Confirm** CONTROL VLV-4 **SLOWLY CLOSES** for approximately first 90% of travel **AND THEN FAST CLOSES** remaining 10% as indicated on CONTROL VLV-4 POSITION indicator. c. **Confirm** annunciator AR104 E01 TURB CV FAST CLOSURE TRIP **ALARMS**. (**Record** on Attachment A.) * d. **Release** CV-4 TEST pushbutton. e. **Confirm** CV-4 returns to **PRETEST POSITION** as indicated at CONTROL VLV-4 POSITION indicator. f. **IF** half scram condition occurred, **Reset** half scram condition; else NA. g. **Confirm** annunciator AR104, E01 TURB CV FAST CLOSURE TRIP **CLEARS**. h. At 1C601, **Confirm** four (4) MSIV STATUS LOGIC A through D lights **ILLUMINATED.**	Applicant **Tests** CONTROL VLV-4 as follows: a. **Depress AND Hold** CV-4 TEST pushbutton. b. **Confirm** CONTROL VLV-4 **SLOWLY CLOSES** for approximately first 90% of travel **AND THEN FAST CLOSES** remaining 10% as indicated on CONTROL VLV-4 POSITION indicator. c. **Confirm** annunciator AR104 E01 TURB CV FAST CLOSURE TRIP **ALARMS**. (**Record** on Attachment A.) d. **Release** CV-4 TEST pushbutton. e. **Confirm** CV-4 returns to **PRETEST POSITION** as indicated at CONTROL VLV-4 POSITION indicator. f. **IF** half scram condition occurred, **Reset** half scram condition; else NA. g. **Confirm** annunciator AR104, E01 TURB CV FAST CLOSURE TRIP **CLEARS**. h. At 1C601, **Confirm** four (4) MSIV STATUS LOGIC A through D lights **ILLUMINATED.**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*9. (Step 5.4.8) **Test** CONTROL VLV-1 as follows: * a. **Depress AND Hold** CV-1 TEST pushbutton. b. **Confirm** CONTROL VLV-1 **SLOWLY CLOSES** for approximately first 90% of travel **AND THEN FAST CLOSES** remaining 10% as indicated on CONTROL VLV-1 POSITION indicator. c. **Confirm** annunciator AR103 E01 TURB CV FAST CLOSURE TRIP **ALARMS**. (**Record** on Attachment A.) * d. **Release** CV-1 TEST pushbutton. **Booth operator cue**: When CV-1 TEST pushbutton is depressed, trigger malfunction TU193008 to begin turbine vibration.	**Evaluator note**: **Alternate path begins here** *Expected alarms: AR105 E05 TURB GEN BRG HI VIBRATION and AR105 D05 TURB GE BRG HI VIBRATION TRIP* Applicant **Tests** CONTROL VLV-1 as follows: a. **Depress AND Hold** CV-1 TEST pushbutton. b. **Confirm** CONTROL VLV-1 **SLOWLY CLOSES** for approximately first 90% of travel **AND THEN FAST CLOSES** remaining 10% as indicated on CONTROL VLV-1 POSITION indicator. c. **Confirm** annunciator AR103 E01 TURB CV FAST CLOSURE TRIP **ALARMS**. (**Record** on Attachment A.) d. **Release** CV-1 TEST pushbutton. **Evaluator note**: Expected action is for operator to release CV-1 TEST pushbutton when vibration alarms are received.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*10. Main turbine vibration alarms AR105 E05 TURB GEN BRG HI VIBRATION and AR105 D05 TURB GEN BRG HI VIBRATION TRIP Per step 5.4.6: During the time vibration trips are disabled: * a. **IF** any bearing on the Main Turbine exceeds 10 mils, **Immediately Release** the Test Pushbutton * b. **IF** any bearing on the Main Turbine exceeds and sustains 10 mils, **Perform** a trip of the Main Turbine	Applicant: a. Notes Main Turbine vibration exceeds 10 mils, **Immediately Releases** the Test Pushbutton b. Notes Main Turbine exceeds and sustains 10 mils after release of CV-1 TEST pushbutton, **Performs** a trip of the Main Turbine **Evaluator note**: Roleplay as Unit Supervisor as necessary; applicant may recommend tripping turbine or performing ON-100 Scram, Scram Imminent actions prior to tripping turbine. Applicant may also take mode switch to shutdown prior to tripping turbine, but mode switch operation is not required for critical task completion.			
CUE: JPM is complete.				

JPM Stop Time _____

JPM C

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at 70% power, quarterly turbine testing in progress IAW SO-193-001.
2. The Electric Plant is in a normal at-power line-up.

INITIATING CUE:

Shift turnover is complete, you have been directed to continue with quarterly turbine valve cycling IAW SO-193-001, continuing at step 5.4.1

Susquehanna Steam Electric Station

Job Performance Measure

Core Spray System Shutdown

JPM Designation: D

Revision Number: 0

Date: 4/19/11

Developed By:	Chris Lally	4/19/11
	Author	**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. Set Simulator to IC ___
2. Provide marked up copy of SO-151-A02

TASK STANDARD:

Core Spray system shutdown IAW SO-151-A02

TASK CONDITIONS:

1. The plant is operating at ___% power
2. The Electric Plant is in a normal at-power line-up.
3. Core Spray Loop A flow verification in progress IAW SO-151-A02

INITIATING CUE:

Core Spray pump 1P206C has been running for 10 minutes, and all data for step 5.1.25 is complete. Continue with SO-151-A02 at step 5.1.26.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Core Spray System Shutdown

JPM Number: D

Revision Number: 0

K/A Number and Importance: 209001 A4.01 RO 3.8 SRO 3.6

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, 209001 A4.01 RO 3.8 SRO 3.6
2. SO-151-A02 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 complete the Quarterly Core Spray Flow Verification for Division I in accordance with SO-151-A02 by securing the running pump, verifying proper min flow, check valve and keepfill operation.

JPM D

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews	Obtains marked up copy of SO-151-A02 and reviews			
2. (Step 5.1.26) **Confirm AND Record** on Attachment A CORE SPRAY PP C MIN FLOW CKV 152F036C **OPEN** by performing the following: * a. **Close** CORE SPRAY LOOP A TO SUPP POOL HV-152-F015A, holding the control switch for at least 10 seconds after the full closed indication **ILLUMINATES** (1) **Record** Date/Time HV-152-F015A is **CLOSED** on the Core Spray Full Flow Test Hours Log (Form OP-151-001-4). b. **Observe** CORE SPRAY LOOP A MIN FLOW HV-152-F031A **OPENS** as flow decreases below approximately 635 gpm **AND Observe** a decrease in Core Spray Loop A discharge pressure (PI-E21-1R600A). Record on Attachment A. * c. **Close** CORE SPRAY LOOP A MIN FLOW HV-152-F031A and observe an increase in Core Spray Loop A discharge pressure (PI-E21-1R600A).	Applicant **Confirms AND Records** A CORE SPRAY PP C MIN FLOW CKV 152F036C **OPEN** by performing the following: a. **Closes** CORE SPRAY LOOP A TO SUPP POOL HV-152-F015A, and holds control switch for at least 10 seconds after *red light out, yellow light lit* (1) **Records** Date/Time HV-152-F015A is **CLOSED** on SO-151-001 Attachment D. b. **Observes** MIN FLOW HV-152-F031A *red light is lit and yellow light out* as flow decreases **AND Observes** a decrease in Core Spray Loop A discharge pressure (PI-E21-1R600A) and records on Attachment A. c. **Closes** MIN FLOW HV-152-F031A (*red light out, yellow light lit)* and observes an increase in Core Spray Loop A discharge pressure (PI-E21-1R600A).			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*3. (Step 5.1.27) **Stop** CORE SPRAY PUMP 1P206C.	Applicant **Stops** CORE SPRAY PUMP 1P206C, observes *red light out, yellow light lit, pump amps drop to 0.*			
*4. (Step 5.1.28) **Confirm** CORE SPRAY LOOP A MIN FLOW HV-152-F031A **OPEN.**	Applicant **Confirms** CORE SPRAY LOOP A MIN FLOW HV-152-F031A **OPEN** (*red light lit, yellow light out*)**.**			
*5. (Step 5.1.29) **Wait** 2 minutes, the **Return** CORE SPRAY LOOP A MOV OL BYPS HS-E21-1S12A to **NORMAL.**	After 2 minutes, applicant **Returns** CORE SPRAY LOOP A MOV OL BYPS HS-E21-1S12A to **NORMAL.**			
6. (Step 5.1.30) **Confirm** CORE SPRAY LOOP A OUT OF SERVICE annunciator CLEARS.	Applicant **Confirms** CORE SPRAY LOOP A OUT OF SERVICE annunciator CLEARS.			
7. (Step 5.1.31) **Clear** TRO 3.8.2.1.	Applicant notifies Unit Supervisor that they are no longer in TRO 3.8.2.1. **Evaluator Cue**: Roleplay as Unit Supervisor and acknowledge report.			
*8. (Step 5.1.32) **Confirm** Core Spray Pp A Dsch Ck 152F003A external indicator is in **CLOSED** position. **Record** on Attachment A.	Applicant **Confirms** Core Spray Pp A Dsch Ck 152F003A external indicator is in **CLOSED** position (*red light out, yellow light lit).* **Records** on Attachment A.			
*9. (Step 5.1.33) **Confirm** Core Spray Pp A Dsch Ck 152F003A external indicator is in **CLOSED** position. **Record** on Attachment A.	Applicant **Confirms** Core Spray Pp A Dsch Ck 152F003A external indicator is in **CLOSED** position (*red light out, yellow light lit).* **Records** on Attachment A.			
*10. (Step 5.1.34) **Confirm** CORE SPRAY A/C DSCH PRESS PI-E21-1R600A indicates ≥ 150 psig. **Record** on Attachment A.	Applicant **Confirms** CORE SPRAY A/C DSCH PRESS PI-E21-1R600A indicates ≥ 150 psig. **Records** on Attachment A.			
CUE: JPM is complete.				

JPM Stop Time _____

JPM D

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is operating at ___% power
2. The Electric Plant is in a normal at-power line-up.
3. Core Spray Loop A flow verification in progress IAW SO-151-A02

INITIATING CUE:

Core Spray pump 1P206C has been running for 10 minutes, and all data for step 5.1.25 is complete. Continue with SO-151-A02 at step 5.1.26.

Susquehanna Steam Electric Station

Job Performance Measure

PCIS/SDC restoration

JPM Designation: E

Revision Number: 1

Date: _05/25/2011___

Developed By:	**Patel**_____	**05/25/11**___
	Author	**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. Set Simulator to IC XXX.
2. Insert malfunction diHS15115A, SWITCH:RHR INJ OB ISO HV-1F015A (E11A-S8A) to close, per simulator operator booth instructions.

TASK STANDARD:

Successfully establish alternate decay hear removal system in service upon loss of normal SDC.

TASK CONDITIONS:

1. The plant entered cold shutdown for refueling outage with reactor coolant temperature of 150°F. (2nd day into the outage)
2. Time to boil is ~ 30 mins.
3. B train of RHR is OOS for maintenance. Estimated time to recovery is 16 hours.
4. Decay heat removal availability is provided by the outage plant status log.
5. The Electric Plant is in a normal line-up.
6. TRO 3.8.2.1 entry has been entered appropriately for SDC temperature control preparation.

INITIATING CUE:

You are directed by Shift Supervision to lower reactor coolant temperature to 140°F IAW OP-149-002, Attachment F step 6.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Perform PCIS/SDC restoration

JPM Number: E

Revision Number: 0

K/A Number and Importance: 223002 K1.08 3.4/3.5 (RO/SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

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, 223002, K1.08, RO/SRO 3.4/3.5
2. ON-149-001 Rev. 23
3. OP-149-002 Rev. 45
4. GO-100-010, Rev. 19
5. AR-109-001 Rev. 26

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 establish preferred alternate decay heat removal system in service upon isolation of the normal SDC due to a spurious auto closure of HV-151-F015A RHR injection valve.

JPM E

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews procedure, prerequisites, and precautions	**Obtains** OP-149-002, attachment F.			
2. Step 6.1 **Ensure** TRO 3.8.2.1 **ENTERED.**	Applicant recognizes that TRO entry has been entered appropriately per initial conditions. **Evaluator Note:** TRO entry has been identified in initial condition as appropriately entered, if applicant request TRO entry, notify the applicant to review initial conditions.			
3. Step 6.1 **Place** HS-E11-1S62A(B) RHR LOOP A(B) MOV OL BYPS Keyswitch to **TEST**	Applicant **places** HS-E11-1S62A RHR LOOP A MOV OL BYPS Keyswitch to **TEST**.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. **Perform** any combination of the following: *6.3.1 **Open** HV-151-F047A. *6.3.2 **Throttle Open** HV-151-F003A RHR HX A SHELL SIDE OUTLET. a. **Maintain** ≥ 20% OPEN *6.3.3 **WITH** HV-151-F003A **OPEN**, **Throttle Closed** on HV-151-F048A RHR HX A SHELL SIDE BYPS. *6.3.4 **Throttle Open** on HV-151-F017A RHR INJ FLOW CTL while maintaining RHR flow < 10,000 gpm. *6.3.5 **Raise** RHRSW flow. a. At Panel 0C697, **Place** HS-11210A1 RHRSW System Unit 1 Div I(II) to **TEST**. b. Throttle **Open** HV-11210A RHRSW HX A INLET maintaining 6000-9000 gpm on FI-1R602A. (5) c. AFTER 2 minutes, **Place** HS-11210A1 RHRSW System Unit 1 Div I to **OPERATE**.	Applicant performs any combination of the following to lower reactor coolant temperature: 6.3.1 **Open** HV-151-F047A. 6.3.2 **Throttle Open** HV-151-F003A RHR HX A SHELL SIDE OUTLET. a. **Maintain** ≥ 20% OPEN 6.3.3 **WITH** HV-151-F003A **OPEN**, **Throttle Closed** on HV-151-F048A RHR HX A SHELL SIDE BYPS. 6.3.4 **Throttle Open** on HV-151-F017A RHR INJ FLOW CTL while maintaining RHR flow < 10,000 gpm. 6.3.5 **Raise** RHRSW flow. a. At Panel 0C697, **Place** HS-11210A1 RHRSW System Unit 1 Div I to **TEST**. b. **Throttle Open** HV-11210A RHRSW HX A INLET maintaining 6000-9000 gpm on FI-1R602A. (5) c. **AFTER** 2 minutes, **Place** HS-11210A1 RHRSW System Unit 1Div I to **OPERATE.**			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	Evaluator Note: While the applicant is performing any of the above steps to reduce reactor temperature, F015 auto closure will be inserted by the simulator booth operator. **Simulator Booth Operator Instructions:** Insert F015 auto closure override malfunction (diHS15115A).			
5. Applicant may request field action to identify the cause of the isolation.	**Evaluator Cue:** I&C investigated the instrument failure to be the cause of F015 isolation and determined that estimated time of recovery is 3 hours.			
6. Applicant should recognize the HV-151-F006A/C AND HV-151-F007A OPEN DRAIN RX VESSEL (C09) alarm.	**Evaluator Note:** After 30 second time delay of F015A isolation , annunciator "HV-151-F006A/C AND HV-151-F007A OPEN DRAIN RX VESSEL" (C09) will **ALARM**. This occurs due to min flow valve and pump suction being open at the same time, creating a Rx drain path to suppression pool.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*7. The applicant will respond to HV-151-F006A/C AND HV-151-F007A OPEN DRAIN RX VESSEL" (C09) **ALARM**, and reference AR-109-001 operator actions: 2.1 **Increase** RHR System flow above minimum flow of 3000 gpm. *2.2 **IF** RHR Pump A/C MIN FLOW HV-151-F007B cannot be closed, **Stop** RHR Pump(s) and **Close** SHUTDOWN CLG SUCT OB ISO HV-151-F008 and/or SHUTDOWN CLG SUCT IB ISO HV-151-F009 to stop pumping Reactor Coolant into Suppression Pool.	Applicant will **NOT** be able to **increase** RHR System flow above minimum flow of 3000 gpm due to the malfunction of the RHR INJ FLOW CTL valve. Applicant recognizes that A MIN FLOW cannot be closed and potential drain down path existed of reactor to the suppression pool. The applicant **Trips** RHR Pump 1P202A and closes SHUTDOWN CLG SUCT OB ISO HV-151-F008 and/or SHUTDOWN CLG SUCT IB ISO HV-151-F009 to stop pumping Reactor Coolant into Suppression Pool.			
8. Applicant will **enter** ON-149-001, Loss of RHR SHUTDOWN COOLING MODE.	**Enter** ON-149-001 based on Isolation signals to SDC F0015A isolation.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. Step 3.2 Determine **cause of loss of RHR Shutdown Cooling,** AND IF **loss occurred in Mode 3 or Mode 4,** Perform **Section 3.3 of this procedure**	Applicant determines that the loss of instrumentation is unrecoverable, and needs to perform section 3.3 of ON-149-001. **Evaluator Note:** Applicant may request an operator to investigate the instrument failure. **Evaluator Cue:** I&C investigated the instrument failure to be the cause of F015 isolation and determined that estimated time of recovery is 3 hours.			
10. Step 3.3.2 **IF** RHR Shutdown Cooling lost in Mode 3 or Mode 4: **IF** in Mode 4, **Comply** with TS 3.4.9	The applicant will review TS 3.4.9. **Evaluator Cue:** Shift Manager will address the TS actions.			
11. Step 3.3.3 **IF** in Mode 4, **Review** Attachment G to determine estimated "Time to 200 F."	Applicant will determine from "Time to 200 F" curve that based on 2 days after shutdown Time to 200 F is ~ 35 - 45 mins.			
12. Step 3.3.4 **IF** SDC lost due to Loss of RHRSW, **Restart** RHRSW IAW OP-116/216-001, else N/A	Applicant will determine this step to be N/A.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
13. Step 3.3.6 **IF** all RHR Shutdown Cooling lost: a. **Promptly Establish** reactor coolant circulation using **ONE** of following alternate methods: 1. **Maintain** water level ≥ 45 inches. 2. **Ensure** Reactor Recirculation System in service.	Applicant determines that water level ≥ 45 inches or reactor recirculation system in service.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
14. Step 3.3.6b **Determine** heatup rate from SO-100-011, Reactor Vessel Temperature and Pressure Recording using: 1. **Notify** the STA to **Perform** OI-TA-009 using Historical Computer Data. **OR** 2. SRV Tailpipe Temperature from recorder TRS-B21-1R614 at Panel 1C614, **IF** Reactor Vessel is flooded to Main Steam lines **AND AT LEAST** one SRV is opened. **OR** 3. Bottom Head Drain Temperature, if RWCU in service, CRD out of service and there is not forced core flow (A) NLT01 or (B) TR-B21-1R006 at Panel 1C007. **OR** 4. Bottom Head Drain Temperature, if RWCU in service, and there is forced core flow (A) NLT01, (B) TR-B21-1R006 at Panel 1C007. **OR** 5. Reactor vessel skin temperature from TE-B21-1N030E on recorder TR-B21-1R006 at Panel 1C007, **IF ALL** RHR Shutdown Cooling is lost **AND NO** Reactor Recirculation Pumps are in service.	**Evaluator Cue:** The STA will perform OI-TA-009 using Historical Computer Data.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
15. Step 3.3.6c **WITHIN** 1 hour, **Verify** functionality of **TWO** alternate methods capable of decay heat removal from Attachment A by **Performing** a system status file check **AND Logging** these systems in the eSOMS log.	Applicant will determine that the **two** alternate methods are available and are capable of decay heat removal from the initial condition. **Evaluator Cue:** Which two alternate methods are available? Notify applicant that eSOMS log entry will be performed by shift manager.			
16. Step 3.3.6d Classify plant status in accordance with EP-PS-100, Emergency Director, Control Room.	**Evaluator Cue:** Shift manager will classify plant status in accordance with EP-PS-100.			
17. Step 3.3.7 Determine status of systems/equipment on Attachment B.	**Evaluator Cue:** Hand out the marked up copy of the Attachment B to the applicant.			
18. Step 3.3.8 **Place** any available alternate Decay Heat Removal System in service using Attachment D, E, or F.	Applicant will select **Attachment E** based on preferred method identified to be available from initial condition and other marked up attachment B system status.			
19. Step 1 **Close/Ensure CLOSED** all MSIV's and Drains	**Close/Ensure CLOSED** all MSIV's and Drains			
20. Step 2 Using preferred SRV's PSV-141-F013C, E, F, L, M, or R, **IF POSSIBLE**, **Open** 2 Safety Relief Valves.	Applicant opens 2 of the preferred SRVs. (C,E,F,L, M or R)			
21. Step 3 **Comply** with TRO 3.8.2.1.	**Evaluator Cue:** Shift Manager will address the TRO 3.8.2.1 actions.			
*22. Step 4 **Place** HS-E11-1S62A RHR Loop B Motor OL Bypass Switch to **TEST.**	**Place** HS-E11-1S62A RHR Loop B Motor OL Bypass Switch to **TEST.**			
*23. Step 5 **Close** Shutdown Cooling Suction HV-151-F006A.	**Close** Shutdown Cooling Suction HV-151-F006A. (Verify Green Light Lit)			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*24. Step 6 **Close** Shutdown Cooling Suction HV-151-F006C.	**Close** Shutdown Cooling Suction HV-151-F006C. (Verify Green Light Lit)			
*25. Step 7 **Open** RHR PUMP SUCTION HV-151-F004A.	**Open** RHR PUMP SUCTION HV-151-F004A. (Verify Red Light Lit and Green Light Extinguished)			
*26. Step 8 **Open** RHR PUMP SUCTION HV-151-F004C.	**Open** RHR PUMP SUCTION HV-151-F004C. (Verify Red Light Lit and Green Light Extinguished)			
*27. Step 9 **lose** RHR INJECTION FLOW CNTL HV-151-F017A.	**Close** RHR INJECTION FLOW CNTL HV-151-F017A. (Verify Green Light Lit)			
*28. Step 10 **Depress** HS-E11-1S32A RHR LOOP B SHUTDOWN CLG RESET Pushbutton.	**Depress** HS-E11-1S32A RHR LOOP B SHUTDOWN CLG RESET Pushbutton.			
*29. Step 11 **Open** RHR INJ OB ISO HV-151-F015A.	**Open** RHR INJ OB ISO HV-151-F015A. (Verify Red Light Lit and Green Light Extinguished)			
*30. Step 12 **Start** RHR PUMP 1P202A.	**Start** RHR PUMP 1P202A. (Verify Red Light Lit and Green Light Extinguished)			
*31. Step 13 **Throttle Open** RHR INJECTION FLOW CNTL HV-151-F017A, **VERY Slowly Raise** reactor water level to ~ 131" to flood main steam lines and establish flow through open SRV's to suppression pool.	**Throttle Open** RHR INJECTION FLOW CNTL HV-151-F017A, **VERY Slowly Raise** reactor water level to ~ 131" to flood main steam lines and establish flow through open SRV's to suppression pool.			
*32. Step 14 **WHEN** flow to reactor vessel ≥ 3000 gpm, **Ensure** RHR PP A/C MIN FLOW VALVE HV-151-F007A **CLOSES.**	**WHEN** flow to reactor vessel ≥ 3000 gpm, **Ensure** RHR PP A MIN FLOW VALVE HV-151-F007A **CLOSES.**			
CUE: JPM is complete.				

JPM Stop Time _____

JPM E

HANDOUT PAGE

TASK CONDITIONS:

1. The plant entered cold shutdown for refueling outage with reactor coolant temperature of 150°F. (2nd day into the outage)
2. Time to boil is ~ 30 mins.
3. B train of RHR is OOS for maintenance. Estimated time to recovery is 16 hours.
4. Decay heat removal availability is provided by the outage plant status log.
5. The Electric Plant is in a normal line-up.
6. TRO 3.8.2.1 entry has been entered appropriately for SDC temperature control preparation.

INITIATING CUE:

You are directed by Shift Supervision to lower reactor coolant temperature to 140°F IAW OP-149-002, Attachment F step 6.

Susquehanna Steam Electric Station

Job Performance Measure

Manually Synchronize Diesel Generator B

JPM Designation: F

Revision Number: 1

Date: _05/25/2011___

Developed By:	**Patel**_____	**05/25/11**_____
	Author	**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. Set Simulator to IC 20.
2. EDG B running with output breaker open.
3. Insert EDG malfunction to prevent hi priority trouble trip.

TASK STANDARD:

Successfully secure EDG B upon loss of jacket water cooling during synchronization of diesel generator to grid.

TASK CONDITIONS:

1. Unit 1 is at 100% power.
2. The Electric Plant is in a normal line-up.
3. Prior shift has performed all of the prerequisites and the EDG has been running unloaded for 5 minutes now.

INITIATING CUE:

You are directed by Shift Supervision to perform monthly EDG surveillance testing of EDG B IAW OP-024-001 step 2.3.3.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Perform Manually Synchronize Diesel Generator B

JPM Number: F

Revision Number: 0

K/A Number and Importance: 264000 A1.03 2.8/2.9 (RO/SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

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
2. OP-024-001 Rev 56
3. AR-015-001 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 operator synchronize EDG B to grid per monthly performance test IAW OP-024-001 Revision 56 and upon successful synchronization; a loss of jacket water cooling condition will be inserted by the simulator booth operator. The operator needs to recognize the abnormal condition and secure the EDG.

JPM F

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews procedure, prerequisites, and precautions.	Obtains OP-024-001 section 2.3.3			
*2. Step 2.3.3a **Place** DG B to Bus 1B Sync Sel HS-00040A switch to ON.	Applicant **places** DG B to Bus 1B Sync Sel HS-00040A switch to ON.			
3. Step 2.3.3b **Adjust** DG B Voltage Adjust HS-00053B so red scale 4 KV Diff AC Volts XI-00036 indicates slightly right of 0 and not exceed 35 volts AC. The Green Band on XI-00036 is the acceptable area.	Applicant **Adjusts** DG B Voltage Adjust HS-00053B so red scale 4 KV Diff AC Volts XI-00036 indicates slightly right of 0 and does not exceed 35 volts AC.			
4. Step 2.3.3c **Adjust** DG B Speed Governor HS-00054B so Synchroscope XI-00037 rotating in FAST (clockwise) direction at ~1 (one) revolution per 60 seconds.	Applicant **Adjusts** DG B Speed Governor HS-00054B so Synchroscope XI-00037 is rotating in FAST (clockwise) direction at ~1 (one) revolution per 60 seconds. **Evaluator Note:** Alternate Path Begins Here:			
*5. Step 2.3.3d **Close** DG B to Bus 1B Bkr 1A20204 when synchroscope at or slightly before "12 o'clock" position. **Simulator Booth Instruction:** Once EDG output breaker is closed, insert malfunction to fail TCV 03412A open to full bypass jacket water HX continuously.	Applicant **closes** DG B to Bus 1B Bkr 1A20204 when synchroscope at or slightly before "12 o'clock" position.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*6. Step 2.3.3e **Promptly** go to **RAISE** and **Slowly** increase load to 1000 KW over 30-45 second period using DG B Speed Governor HS-00054B switch.	Applicant **promptly raises** and **slowly** increases load to 1000 KW over 30-45 second period using DG B speed governor HS-00054B switch. **Evaluator Note:** DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm will come in at any time. When alarm comes in go to element 10.			
7. Step 2.3.3f **Promptly Position** DG B Voltage Adjust HS-00053B to maintain 0 to 900 KVARs but as close to 0 on positive side as possible on DG B KVARs GVARM on Panel 0C519B and/or PICSY Format Diesel Generator B.	Applicant **promptly positions** DG B Voltage Adjust HS-00053B to maintain 0 to 900 KVARs but as close to 0 on positive side as possible on DG B KVARs GVARM on Panel 0C519B **and/or** PICSY Format Diesel Generator B. **Evaluator Note:** DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm will come in at any time. When alarm comes in go to element 10.			
8. Step 2.3.3g **Place** DG B to Bus 1B Sync Sel HS-00040A switch to **OFF**.	Applicant **places** DG B to Bus 1B Sync Sel HS-00040A switch to **OFF**. **Evaluator Note:** DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm will come in at any time. When alarm comes in go to element 10.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. Step 2.3.3h **AT** Diesel Engine Control Panel 0C521B, **Observe** Running Loaded light **ILLUMINATED**.	Applicant **observes** running loaded light **ILLUMINATED**. **Evaluator Note:** DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm will come in at any time. When alarm comes in go to element 10.			
*10. AR-015-001, Operator Actions: 2.1 **Ensure** Automatic Actions. 2.2 **Dispatch** Operator to perform LA-0521-002 Diesel Generator B OC521B. 2.6 **Perform** ON-024-001 Diesel Generator Trip.	Dispatches operator to perform LA-0521-002 and/or check for local panel alarms. **Evaluator Note:** The applicant will request field operator to perform LA-0521-002 and/or report local alarms annunciating. **Evaluator Cue:** It appears that TCV 03412A has failed OPEN, and is fully bypassing Jacket Water cooler. Jacket Water Hi Temperature alarms is annunciating on panel 0C521B.			
*11. DG B Panel 0C521B **HI PRIORITY TROUBLE** (B13) alarm response.	Applicant promptly **secures** emergency diesel generator by **depressing emergency stop pushbutton**, to ensure automatic actions. **Evaluator Note:** High priority trouble alarm should have tripped the EDG, but the malfunction prevents automatic EDG trip. Applicant recognizes DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm and takes action IAW AR-015-001 to **trip** diesel generator per ON-024-001.			
12. **Perform** ON-024-001 Diesel Generator Trip.	**Evaluator Note:** The applicant will start to perform ON-024-001 Diesel Generator Trip.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
13. **CUE**: JPM is complete.				

JPM Stop Time _____

JPM F

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 is at 100% power.
2. The Electric Plant is in a normal line-up.
3. Prior shift has performed all of the prerequisites and the EDG has been running unloaded for 5 minutes now.

INITIATING CUE:

You are directed by Shift Supervision to perform monthly EDG surveillance testing of EDG B IAW OP-024-001 step 2.3.3.

Susquehanna Steam Electric Station

Job Performance Measure

Standby Gas Treatment System Startup

JPM Designation: G

Revision Number: 0

Date: 4/20/11

Developed By:	Chris Lally	4/20/11
	Author	**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. Set Simulator to IC ___
2. Provide marked up copy of OP-070-001.

TASK STANDARD:

'A' Standby Gas Treatment System manually started up IAW OP-070-001 in preparation for Quarterly HPCI Flow Verification

TASK CONDITIONS:

1. The plant is at ____% power, preparing for Quarterly HPCI Flow Verification
2. The Electric Plant is in a normal at-power line-up.
3. Instructor to ask operator for any questions.

INITIATING CUE:

Manually start the 'A' Standby Gas Treatment System in accordance with OP-070-001 in preparation for a Quarterly HPCI flow verification

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Standby Gas Treatment System Startup

JPM Number: G

Revision Number: 0

K/A Number and Importance: 261000 A4.03 RO 3.0 SRO 3.0

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, 261000 A4.03 RO 3.0 SRO 3.0
2. OP-070-001 Rev 21

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 manually start up the 'A' Standby Gas Treatment System IAW OP-070-001 in preparation for a Quarterly HPCI Flow Verification

JPM G

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains procedure and reviews procedure, prerequisites, and precautions	Obtains OP-070-001 and reviews procedure, prerequisites, and precautions			
*2. (Step 2.2.3) At Panel 0C681, **Depress** SGTS Clg 0A Dmp HD07555A **OPEN** pushbutton	Depresses SGTS Clg 0A Dmp HD07555A **OPEN** pushbutton. **Evaluator Note**: HD07555A remains open for approximately 120 seconds after its pushbutton is released. JPM steps 2-4 must be completed in expeditious manner to allow SGTS system start. If damper closes due to delay by applicant, roleplay as Unit Supervisor may be necessary to allow applicant to repeat JPM steps 2-4.			
3. (Step 2.2.4) **Observe** SGTS Clg 0A Dmp HD07555A **OPENS** to allow suction flow path for start of SGTS Fan A.	Observes SGTS Clg 0A Dmp HD07555A OPENS (*yellow light out, red light lit*).			
*4. (Step 2.2.5) At panel 0C681, **Start** Standby Gas Treatment System A by placing selector switch for SGTS Fan 0V109A to **START**	Places selector switch for SGTS Fan 0V109A to **START,** *observes yellow light out, red light lit.*			
*5. (Step 2.2.6) When fan starts, **Observe** flow increases >3000 cfm on SGTS Air Flow FR07553A	**Observes** flow increases >3000 cfm on SGTS Air Flow FR07553A			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. (Step 2.2.7) Check following positioned as indicated: a. SGTS Makeup 0A Dmp FD07551A2(B2) **MODULATED/OPEN** approximately 120 seconds after SGTS Fan 0V109A(B) started. b. SGTS Fan Inlet Dmp HD07552A(B) **FULL OPEN**. c. SGTS A(B) Inlet Dmp HD07553A(B) **FULL OPEN**.	Checks following positioned as indicated: a. SGTS Makeup 0A Dmp FD07551A2(B2) **MODULATED/OPEN** approximately 120 seconds after SGTS Fan 0V109A(B) started (*yellow and red lights lit or only red light lit*). b. SGTS Fan Inlet Dmp HD07552A(B) **FULL OPEN** (*yellow light out, red light lit*). c. SGTS A(B) Inlet Dmp HD07553A(B) **FULL OPEN** (*yellow light out, red light lit*).			
7. (Step 2.2.8) **Vent** desired system to SGTS Inlet Header as follows: a. For processing HPCI Barometric Condenser Vacuum Pump discharge, no further action required.	Applicant recognizes that initiating cue directed manual start of Standby Gas Treatment System in preparation for Quarterly HPCI Flow Verification, and no further action is required.			
CUE: JPM is complete.				

JPM Stop Time _____

JPM G

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at ____ % power
2. The Electric Plant is in a normal at-power line-up.
3. Standby Gas Treatment System is aligned in accordance with section 2.1 of OP-070-001

INITIATING CUE:

Manually start the 'A' Standby Gas Treatment System in accordance with OP-070-001 in preparation for a Quarterly HPCI flow verification

Susquehanna Steam Electric Station

Job Performance Measure

APRM Gain Adjustment

JPM Designation: H

Revision Number: 1

Date: 05/25/2011

Developed By:	**Patel**	**05/25/11**
	Author	**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. Set Simulator to IC 20.
2. Bypass APRM 3.

TASK STANDARD:

Successfully perform manual APRM GAF adjustments for APRM 3.

TASK CONDITIONS:

1. The plant is at 97% CTP and power level is stable.
2. The Electric Plant is in a normal line-up.
3. Process Computer and PowerPlex operable and available to provide CTP data.

INITIATING CUE:

Perform manual APRM GAF adjustment of APRM 3.

The calculated CTP value is 100%.

APRM Channel 3 has already been bypassed by the PCO.

Normal System line up procedure section has 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 candidate 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 candidate acknowledges the initiating cue.

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

JPM Title: Perform APRM Gain Adjustment

JPM Number: H

Revision Number: 0

K/A Number and Importance: 215005 A1.07 3.0/3.4 (RO/SRO)

Suggested Testing Environment: Simulator

Actual Testing Environment: Simulator

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
2. OP-178-002 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 operator perform manual APRM GAF adjustment of APRM 3 channel.

JPM H

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. **Obtains** procedure and reviews	**Obtains** OP-178-002			
2. **IF** desired to perform manual APRM GAF adjustment, Perform the following:	Applicant refers to **Section 2.2.4.**			
3. **Establish** communication with Plant Control Operator (PCO).	Applicant uses plant communication system to **establish** contact with PCO. **Evaluator Note:** Applicant may perform communication check with PCO. Role play as PCO and acknowledge communication.			
4. **IF** desire, Request PCO bypass APRM to be adjusted. **AND** **Confirm** at **ALL** four 2/4 Voters, Bypassed LEDs for bypassed APRM **ILLUMINATED**.	Applicant request field action to confirm **ALL** four 2/4 Voters, Bypassed LEDs for APRM 3 **ILLUMINATED.** **Evaluator Note:** Applicant recognizes from initial conditions that APRM 3 is bypassed, and needs to confirm bypassed LEDs by requesting PCO to confirm APRM bypass. **Evaluator Cue:** Once applicant request to confirm bypass, notify Applicant that **ALL** four 2/4 Voters, Bypassed LEDs for bypassed APRM 3 are **ILLUMINATED**.			
5. On appropriate APRM module, **press** ETC soft key as required until ENTER SET MODE is displayed above a soft key pushbutton across bottom of display.	On APRM 3 module, **press** ETC soft key as required until ENTER SET MODE is displayed above a soft key pushbutton across bottom of display.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. **Press** ENTER SET MODE soft key.	**Press** ENTER SET MODE soft key.			
7. **Enter** password "1234" **AND Press** ENT.	**Enter** password "1234" **AND Press** ENT.			
8. **Confirm** OPER-SET mode indicated on APRM or ODA.	**Confirm** OPER-SET mode indicated on APRM or ODA.			
9. **Select** APRM GAIN using (↑↓) CURSOR keys to scroll.	**Select** APRM GAIN using (↑↓) CURSOR keys to scroll.			
10. **Press** SET PARAMETERS soft key.	**Press** SET PARAMETERS soft key.			
11. **Ensure** APRM indicates SET PARAMETERS: APRM GAIN display.	**Ensure** APRM indicates SET PARAMETERS: APRM GAIN display.			
*12. **Adjust** the APRM GAIN DESIRED **UNTIL** PROJECTED FLUX (%) is ± 2% of calculated CTP.	**Adjust** the APRM GAIN DESIRED **UNTIL** PROJECTED FLUX (%) is ± 2% of calculated CTP (98-100% CTP).			
13. **Press** ACCEPT soft key.	**Press** ACCEPT soft key.			
14. **Confirm** the APRM GAIN PRESENT changes to equal the APRM GAIN DESIRED.	**Confirm** the APRM GAIN PRESENT changes to equal the APRM GAIN DESIRED.			
15. **Confirm** ACTUAL FLUX (%) is ± 2% of calculated CTP.	**Confirm** ACTUAL FLUX (%) is ± 2% of calculated CTP.			
16. **Press** EXIT soft key.	**Press** EXIT soft key.			
17. **Press** EXIT SET MODE soft key.	**Press** EXIT SET MODE soft key.			
18. **Press** YES soft key.	**Press** YES soft key.			
19. **Confirm** APRM upper display section indicates **OPERATE** on top right corner of display.	**Confirm** APRM upper display section indicates **OPERATE** on top right corner of display.			
20. **Ensure** reading on NMSB display and APRM ODA reading within 2% of desired APRM reading.	**Ensure** reading on NMSB display and APRM ODA reading within 2% of desired APRM reading.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
21. **IF** required, **Notify** PCO APRM adjustment is complete APRM may be removed from **BYPASS** position **AND** **Confirm** at **ALL** four 2/4 Voters BYPASSED LEDs **NOT ILLUMINATED**.	When applicant **Notifies** PCO to remove **BYPASS** condition, **end JPM**.			
22. **CUE**: JPM is complete.				

JPM Stop Time _____

JPM H

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at 97% CTP and power level is stable.
2. The Electric Plant is in a normal line-up.
3. Process Computer and PowerPlex operable and available to provide CTP data.

INITIATING CUE:

Perform manual APRM GAF adjustment of APRM 3.

The calculated CTP value is 100%.

APRM Channel 3 has already been bypassed by the PCO.

Normal System line up procedure section has been completed.

Susquehanna Steam Electric Station

Job Performance Measure

Venting Scram Air Header during ATWS

JPM Designation: I (In-Plant)

Revision Number: 0

Date: _5/25/2011___

Developed By:	**Patel**_____	**5/25/11**____
	Author	**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. Provide marked up copy of EO-100-113, Sheet 2 OR Local posted instructios.

TASK STANDARD:

Air supply valves to the Unit 2 scram air header simulated closed, with vent valve simulated uncapped and closed.

TASK CONDITIONS:

1. Unit 2 has just received a reactor scram signal; however RPS has failed to actuate.
2. All control rods are withdrawn and power is ~21 percent.
3. Both channels of RPS are energized.
4. Manual initiation of ARI has failed to depressurize the Scram Air Header.

INITIATING CUE:

Vent the Unit 2 Scram Air Header to insert control rods IAW E0-100-113, Sheet 2.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Venting Scram Air Header during ATWS

JPM Number: I

Revision Number: 0

K/A Number and Importance: 295037 EA1.05 3.9/4.0 (RO/SRO)

Suggested Testing Environment: In Plant Simulation

Actual Testing Environment: In Plant Simulation

Testing Method: Simulate in Plant

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 30 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 295037, EA1.05, RO/SRO 3.9/4.0
2. EO-100-113, Sheet 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: Applicant will vent Unit 2 Scram Air Header to insert control rods IAW E0-100-113, Sheet 2.

JPM I

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Review EO-100-113, Sheet 2.	EOP reviewed. **EVALUATOR NOTE** Applicant may use the local posted instructions, or ask for the EOP procedure. **EVALUATOR CUE** If applicant asks for the EOP procedure, ask why? And Provide the applicant local posted instructions.			
*2. Bypass the scram header block valves.	Open ARI Solenoid Valve Bypass Valve 247021.			
*3. Isolate the Scram Air Header.	Close SCRAM AIR SUPPLY Valves 247002A and 247002B. **EVALUATOR NOTE** Since only one valve is normally open, the other valve should be checked closed.			
*4. Vent off the Scram Air Header.	Uncap and open SCRAM AIR HDR VENT Valve 247007.			
*5. Verify air is being vented.	Check for air at discharge vent. **EVALUATOR CUE** Inform applicant that air is being vented.			
6. Notify Control Room that Air Header is vented.	Contact Control Room by Radio or Page that air is venting from the 247007 Valve.			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	EVALUATOR CUE Inform applicant Control Room has been notified and all control rods have inserted.			
	EVALUATOR CUE This completes the JPM.			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 2 has just received a reactor scram signal; however RPS has failed to actuate.
2. All control rods are withdrawn and power is ~21 percent.
3. Both channels of RPS are energized.
4. Manual initiation of ARI has failed to depressurize the Scram Air Header.

INITIATING CUE:

Vent the Unit 2 Scram Air Header to insert control rods IAW E0-100-113, Sheet 2.

Susquehanna Steam Electric Station

Job Performance Measure

Maintaining RCIC Suction Supply With Loss of AC and DC Power

JPM Designation: J

Revision Number: 1

Date: 4/29/11

Developed By:	**Chris Lally**	**4/29/11**
	Author	**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

2. Rev 1: changed initial conditions to reflect loss of AC and DC power, and altered initiating cue to remove ambiguity

JPM Setup Instructions:

1. Provide marked up copy of ES-150-003
2. Provide marked up copy of EO-100-030

TASK STANDARD:

RCIC suction aligned to Suppression Pool per ES-150-003, step 4.4.1.b

TASK CONDITIONS:

1. The plant is currently in a loss of all AC & DC power following an earthquake and small break LOCA
2. RCIC was just placed in service per ES-150-003 for level control and CST inventory is low; makeup cannot be established.

INITIATING CUE:

Crosstie the RWST to Unit 1 CST by performing step 4.4.1 of ES-150-003 to maintain RCIC suction supply

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Maintaining RCIC Suction Supply During SBO

JPM Number: J

Revision Number: 1

K/A Number and Importance: 217000 A2.16 RO 3.5 SRO 3.4

Suggested Testing Environment: Plant

Actual Testing Environment:

Testing Method: Simulated performance in plant

Alternate Path: Yes

Time Critical: No

Estimated Time to Complete: 25 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 217000 A2.16 RO 3.5 SRO 3.4
2. ES-150-003 Rev 5
3. EO-100-030 Rev 26

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 actions of section 4.4.1 of ES-150-003 to maintain RCIC suction during an SBO condition with a small break LOCA initiated by an earthquake. The initial operator actions to cross-tie the RWST to CST will not be possible due to stuck valves. This will force the operator to manually align RCIC suction to the suppression pool using step 4.4.1.b of ES-150-003.

JPM J

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Obtains ES-150-003, step 4.4.1 and reviews	Applicant discusses where they would retrieve procedures			
2. (ES-150-003 Step 4.4.1) **IF** CST inventory is low **OR** CST's are unavailable: a. RWST may be crosstied to Unit 1 and Unit 2 CST as directed in EO-100-030 Unit 1 RESPONSE TO A STATION BLACKOUT **(Step 2.16 →Attachment G)**	References partially completed EO-100-030 at step 2.16. Goes to Attachment G, notes location and begins heading to first valve located at 10-656'.			
*3. (EO-100-030 Attachment G Step 1) **CLOSE** valve 105001 Cdsr Hotwell Level 4" Makeup Inlet Iso	Applicant will find Valve 105001 Cdsr Hotwell Level 4" Makeup Inlet Iso is **OPEN** and will attempt to **CLOSE** the valve. **Evaluator Cue**: Valve is bound in its current position and will not reposition.			
*Unable to complete valve alignment	**Evaluator Note**: Upon noting that they cannot complete the valve alignment per Attachment G, applicant should report back to Unit Supervisor. Roleplay as Unit Supervisor and acknowledge report. Applicant should recommend instead manually aligning RCIC suction to the suppression pool per ES-150-003, step 4.4.1.b. If applicant asks for direction, ask for their recommendation for next action (should reply with step 4.4.1.b).			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
4. (ES-150-003 prior to 4.4.1.b) **CAUTION**: If aligned to suppression pool, RCIC operability is affected when suppression pool temperatures exceed 140 F (cooling water to RCIC lube oil). Elevated RCIC lube oil temperatures cause lube oil to break down	Applicant reads caution and may question current suppression pool temperature. **Evaluator Cue**: Suppression Pool temperature is 91 F and rising slowly			
*5. (ES-150-003 Step 4.4.1.b) RCIC suction may be aligned to the Suppression Pool as follows (if allowed by plant conditions, Attachment C may be performed prior to the alignment): (1) **Open** 1D254041 RCIC PUMP SUCTION CST SUPPLY VLV HV-149F010 BKR (27-670') (2) **Open** 1D254042 RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-149F031 BKR (27-670') (3) **Open** RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-149F031 (28-645') (4) **Close** RCIC PUMP SUCTION CST SUPPLY VLV HV-149F010 (28-645') (5) **Supply** cooling for lube oil cooler and barometric condenser from Fire Protection System, in accordance with Attachment C	Applicant: (1) **Opens** 1D254041 RCIC PUMP SUCTION CST SUPPLY VLV HV-149F010 BKR (27-670') (2) **Opens** 1D254042 RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-149F031 BKR (27-670') (3) **Opens** RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-149F031 (28-645') (4) **Closes** RCIC PUMP SUCTION CST SUPPLY VLV HV-149F010 (28-645') (5) **Evaluator Cue:** When prompted by applicant: Attachment C has been completed by another operator			
CUE: JPM is complete.				

JPM Stop Time _____

JPM J

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is currently in a loss of all AC & DC power following an earthquake and small break LOCA
2. RCIC was just placed in service per ES-150-003 for level control and CST inventory is low; makeup cannot be established.

INITIATING CUE:

Crosstie the RWST to Unit 1 CST by performing step 4.4.1 of ES-150-003 to maintain RCIC suction supply

Susquehanna Steam Electric Station

Job Performance Measure

Secure Non-Class 1E 250 VDC loads IAW E0-100-030

JPM Designation: K (In-Plant)

Revision Number: 0

Date: _5/25/2011___

Developed By:	**Patel**_____	**5/25/11**____
	Author	**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. Provide marked up copy of EO-100-030

TASK STANDARD:

Secure Non-Class 1E 250 V DC loads during SBO condition.

TASK CONDITIONS:

1. The plant is currently in a station blackout condition following an earthquake and small break LOCA.

INITIATING CUE:

It has been 35 minutes since the station blackout condition; you are directed by shift supervisor to secure Non-Class 1E 250 V DC loads IAW E0-100-030.

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 timeclock starts when the candidate acknowledges the initiating cue.

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

JPM Title: Secure Non-Class 1E 250 VDC loads IAW E0-100-030

JPM Number: K

Revision Number: 0

K/A Number and Importance: 263000 A4.01 3.3/3.5 (RO/SRO)

Suggested Testing Environment: In Plant Simulation

Actual Testing Environment: In Plant Simulation

Testing Method: Simulate in Plant

Alternate Path: No

Time Critical: No

Estimated Time to Complete: 25 min. Actual Time Used: _____minutes

References:
1. NUREG 1123, 263000, A4.01, RO/SRO 3.3/3.5
2. E0-100-030 Rev. 26.

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: Secure Non-Class 1E 250 VDC loads IAW E0-100-030 Appendix F.

JPM K

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Review EO-100-030, Attachment F.	Applicant recognizes that Attachment F is applicable.			
2. Applicant will review cautions in Attachment F. **Caution (2):** If lube oil pumps are shed in less than 30 minutes, equipment damage is more likely to occur. Shedding loads in more than 45 minutes may result in battery capacity less than 4 hours.	Applicant recognizes time critical procedural steps.			
*3. **Open** Bkr 1D662-23, 72-66223 Turb Bldg CC 1D165 at Location 12-771'	Applicant **opens** Bkr 1D662-23, 72-66223 Turb Bldg CC 1D165 at Location 12-771'			
*4. **Open** Bkr 1D652-23, 72-66223 Turb Bldg CC 1D155 at Location 12-771'	Applicant **opens** Bkr 1D652-23, 72-66223 Turb Bldg CC 1D155 at Location 12-771'			
*5. **Open** Bkr 1D652-24, 72-65224 Computer UPS 1D656 at Location 12-771'	Applicant **opens** Bkr 1D652-24, 72-65224 Computer UPS 1D6565 at Location 12-771'			
EVALUATOR CUE This completes the JPM.				

JPM Stop Time _____

JPM K

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is currently in a station blackout condition following an earthquake and small break LOCA.

INITIATING CUE:

It has been 35 minutes since the station blackout condition; you are directed by shift supervisor to secure Non-Class 1E 250 V DC loads IAW E0-100-030.

Facility: Susquehanna Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____

Initial Conditions: Unit 1 70% power, EOL, 'B' Condensate Pump out of service for motor replacement Unit 2 60% for waterbox cleaning and rod pattern exchange

Turnover: Shift orders are to swap from 1A EHC pump to 1B EHC pump due to rising vibration trend on 1A EHC pump

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Swap running EHC pumps from 1A to 1B
2	NM178022	I-ATC, TS-SRO	APRM Critical Self Test Fault
3	HP152004	C-BOP, TS-SRO	Inadvertent start of HPCI
4	RP158008A	C-ATC, BOP	A RPS MG Set Shaft Seizure
5	RD1550043027 RD1550063027	TS-SRO C-ATC	Rod drifts in to position 04 due to failed B RPS fuse
6	FW144003D cmfRL03_K2A cmfRL03_K2B	R-ATC	'D' Condensate Pump trip with failed runback
7	AV01_XV147F011	C-ATC, TS-SRO	Loose SDV Inboard Drain Air Fitting
8	RD155017 cmfPM03_1P113B cmfPM07_1P113A cmfBR04_1A10101	M-ALL, C-ATC,	Hydraulic ATWS, EHC pump failure causes turbine trip and loss of bypass valves, failure of 11A Aux Bus to fast transfer
9	SL153002 PM02_1P208A	C-BOP	'A' SLC pump relief valve lift, Failure of 'B' SLC pump on thermal overloads
10	cmfNB01_LISB211N 031A2B, cmfRL01_e111K79B	C-BOP	RCIC Auto Initiation Failure
11	HP152014B	C-ATC	Running CRD Pump Trips
12	HP152015	C-BOP	HPCI Turbine Trips requiring performance of ED

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

Scenario Summary

The crew begins with the plant at 70% power. As part of turnover, the crew is directed to swap running EHC pumps from 1A to 1B due to a rising vibration trend in 1A. Once the EHC pump swap is complete, APRM fails INOP. The crew will take action per alarm response to bypass the APRM and the SRO will reference Tech Specs. Once the Tech Spec call is complete for the failed APRM, HPCI will start inadvertently. The crew will take action per ON-156-001 and OP-152-001 to override HPCI injection. Once the HPCI injection is overridden, the A RPS MG set fails due to a locked rotor, causing a trip of A RPS on overvoltage. This will cause a half SCRAM and half NSSS isolation. The crew will respond with ON-158-001 and transfer A RPS to alternate power and reset the SCRAM.

Once recovery from the loss of RPS is complete, a loose fuse on the B RPS side for control rod 30-27 fails, causing the scramming of control rod 30-27. Although, due to high channel friction, the control rod stops at position 04 and must be fully inserted. The crew will respond by using ON-155-001, control rod problems. Since the rod drifted in and did not go to position 00, ON-155-001 directs insertion of the rod to 00 and disarming of the HCU. CRS will address Tech Specs for the inoperable control rod.

Once the Tech Spec call is complete, the 'D' Condensate Pump will trip on overcurrent. Both recirc pumps will fail to runback, and the crew must perform this manually. During the flow reduction, an air fitting for SV-147-F009 disconnects, causing the inboard SDV drain valve to fail closed. CRS will address Tech Specs for the failed closed valve. With the SDV drain valve closed, the SDV will slowly fill due to the SSPV's for control rod 30-27 being open. The crew will respond to the SDV filling by entering ON-100 SCRAM, SCRAM IMMINENT. Due to the filling SDV, when the mode switch is taken to SHUTDOWN, control rods only partially insert, resulting in a hydraulic ATWS.

The crew will enter EO-100-113 for power/level control. The CRS will direct injection of SBLC. The 'A' SBLC discharge relief valve will lift, preventing injection. The crew will recognize this and swap to the 'B' SBLC pump which will run for approximately 30 seconds, and then trip on thermal overloads. The crew will then direct SBLC injection using RCIC in accordance with ES-150-002. Additionally, when SBLC injection is attempted, the 1B EHC pump will trip and the 1A EHC pump will fail to start, resulting in a turbine trip with loss of bypass capability. This will result in use of SRV's for pressure control and entry into EO-100-103, PC control due to rising suppression pool temperature, and direction to place suppression pool cooling in service. Additionally, 11A Aux Bus will fail to fast transfer during the turbine trip, resulting in the loss of the two remaining condensate pumps and transition of level control to HPCI/RCIC. During the initial level reduction, RCIC will fail to auto initiate, but will start via operator actions. Additionally, during control rod insertion, the in-service CRD pump will trip, forcing the ATC operator to start the standby CRD pump to continue rod insertion.

Once actions have been completed to bypass ARI and RPS, the ATC will begin venting and draining the SDV and re-SCRAM the reactor. At this time, HPCI will trip and remain out of service, forcing the crew to perform Rapid Depressurization due to being unable to maintain Rx water level >-161". The scenario may be terminated when Rapid Depressurization is in progress with rod insertion maintaining reactor power <5%.

Critical Tasks

1.

★ **Inserts control rods IAW EO-100-113 Sht. 2.**

Safety Significance

Control rod insertion initiates power reduction immediately

Consequences for Failure to Perform Task

Failure to insert control rods allows power to remain elevated with resultant power oscillations and potential core damage.

Indications/Cues for Event Requiring Critical Task

Exceeding a RPS scram setting with NO reactor scram signal, or RPS/ARI fail to fully insert all control rods.

Performance Criteria

Insert Control Rods by one or more of the following methods:
Maximize CRD to drift control rods.
Drive control rods after bypassing RWM and RSCS.
Reset and Scram again by performing ES-158-002 Bypass RPS logic trips.

Performance Feedback

Successful insertion of control rods will be indicated by:

Rod position full in indication for manual insertion of control rods, venting scram air header or de-energizing RPS solenoids.

Rod position full in after resetting scram, draining scram discharge volume and re-scram

2.

★ **Inhibits ADS and Lowers RPV level to <-60" but >-161".**

Safety Significance

Inhibiting ADS prevents uncontrolled injection of large amounts of relatively cold, unborated low pressure ECCS water when the reactor is not shutdown with control rods.

Core damage due to unstable operation can be prevented or at least mitigated by promptly reducing feedwater flow so that level is lowered below the feedwater spargers.

Consequences for Failure to Perform Task

A General Electric Company study (NEDO-32047) indicates that the major threat to fuel integrity from ATWS is caused by large-amplitude power/flow instabilities. The power oscillations can become large enough to cause melting of fuel in high-power bundles.

Failure to inhibit ADS can result in large amounts of positive reactivity addition due to boron dilution and cold water injection.

SSES EOP Basis for:

LQ/Q-3 **IF** INITIAL ATWS PWR **> 5%**
OR CANNOT BE DETERMINED

INJECT SLC
AND
INHIBIT ADS

When scram and ARI have failed, reactor power must be considered to determine if immediate boron injection is required. If initial ATWS power was greater than 5%, then a relatively large number of control rods have failed to insert. The seriousness of this condition requires immediate injection of boron to positively terminate the ATWS event.

ADS initiation may result in the injection of large amounts of relatively cold, unborated water from low pressure injection systems. With the reactor either critical or shutdown on boron, the positive reactivity addition due to boron dilution and temperature reduction through the injection of cold water may result in a reactor power excursion large enough to cause substantial core damage. Preventing ADS is therefore appropriate whenever boron injection is required.

LQ/L-13 MAINTAIN LVL BETWEEN **-60"** AND **-161"**
USING TABLE 15 SYSTEMS
BYPASSING INTERLOCKS AS NECESSARY IAW ANY:

This step identifies the widest, acceptable water level control band. Although level fluctuations within this band are safe, it is very desirable to maintain level within the more restrictive target area of -110" to -60". The target area and expanded band are shown in Figure 8, Water Level Operation Guidance. The intent of this step is to remain within the target band at all times unless prohibited by system perturbations, and remain within the expanded band at all times.

Operation outside the target area has the following disadvantages:

The basis for an upper level of -60" is given in LQ/L-6.

A lower level of -110" is specified for the following reasons:

1. *Provides a margin for core coverage.*

2. *Avoids operation near TAF where core power is more responsive to RPV pressure fluctuations.*

3. *Makes level control easier by maintaining level above the narrow region of the downcomer.*

   Below -110" the downcomer free area reduces from 300 ft^2 to 88 ft^2 resulting in increased magnitude of indicated level oscillations.

4. *Maintains sufficient core flow to carry liquid boron from lower plenum upward into the core.*

   As level is decreased below -110", boron mixing efficiency is reduced because the natural circulation flow rate through the jet pumps is reduced and not as efficient at carrying the injected boron from the lower plenum upward into the core.

   At very low downcomer water levels near or below top of active fuel, there is little water available in the region above the jet pump throat for mixing with boron injected via RCIC. In this situation, there is concern that boron may accumulate in the stagnant region of the downcomer which is below the jet pump throat.

5. *Water level can be determined from wide range level instrumentation.*

6. *Avoids MSIV isolation setpoint of -129".*

RPV level below TAF is <u>not</u>, by itself, a determination of whether or not level can be maintained > -161". The determination that level cannot be maintained > -161" must be made based upon:

- *availability of high pressure injection systems, <u>and</u>,*
- *present level trend*

This decision must not be made prematurely since depressurization of a critical core results in destabilizing affects and has a potential to cause core damage.

Controlling reactor pressure, power and level with condensate and SRVs at 500 psig is difficult because all 3 parameters affect each other. Therefore, rapid depressurization is recommended when high pressure injection cannot be obtained.

The initial influence of reactor depressurization is stabilizing since the additional flashing of liquid phase required for depressurization introduces excess voids in the reactor core which can essentially terminate the fission process if the rate of depressurization is high enough. Once the depressurization is complete, however, the result is the immediate initiation of power excursions. Core damage is expected to occur from high clad stresses induced by: temperature excursions above the rewet temperature, PCI, cyclic fatigue, burnout or having the fuel enthalpy exceed the cladding failure threshold.

Indications/Cues for Event Requiring Critical Task

ATWS with initial reactor power level greater than 5% APRM power.

Performance Criteria

Inhibit ADS by placing 1C601 keylock switches to INHIBIT
Lower reactor water level by manually controlling injection rate from Feedwater, HPCI and/or RCIC.

Performance Feedback

Successful ADS inhibiting is indicated by Green Indicating Light at switch illuminating.
Lowering water level to –60 to –110 inches will result in power level lowering as indicated on the Average Power Range Monitors.

3.

★ **Stops and prevents injection except from SLC and CRD /Perform Rapid Depressurization when RPV level cannot be restored and maintained > -161"**

Safety Significance

Loss of injection systems impacts the ability to provide continued adequate core cooling through core submergence based on inventory loss. Uncontrolled injection of relatively cold, unborated water into the RPV with the core not shutdown will cause a power spike. Uncontrolled criticality and possible significant fuel damage may result from the injection.

Consequences for Failure to Perform Task

Failure to take the EOP actions will result in uncovering the core and breach of the fuel clad due to overheating.

SSES EOP Basis for:

LQ/L-14 **IF** LVL CANNOT BE RESTORED AND MAINTAINED **> -161"**

1 GO TO LQ/L-18
2 GO TO RAPID DEPRESS

This step is applicable to all subsequent steps within this flowpath. It remains applicable to those steps until flowchart is exited.

The intent of this step is to specify the limit when rapid depressurization of the RPV is appropriate despite the possibility of creating power/flow instabilities at low pressure.

Depressurizing a critical core results in destabilizing effects and has a potential to cause core damage. The initial influence of reactor depressurization is stabilizing since the additional flashing of liquid phase required for depressurization introduces excess voids in the reactor core which can essentially terminate the fission process if the rate of depressurization is high enough. Once the depressurization is complete, however, the result is the immediate initiation of power excursions. Core damage is expected to occur from high clad stresses induced by: temperature excursions above the rewet temperature, PCI, cyclic fatigue, burnout or having the fuel enthalpy exceed the cladding failure threshold.

Core destabilizing effects are mitigated by boron injection. Therefore, the decision to perform rapid depressurization must not be made too early since an earlier RD results in less boron being present in the RPV when the RD is taken. While the goal is to perform the RD as close to -161" as possible, the wording of the step gives flexibility to perform the action after reaching -161".

The determination that level cannot be restored and maintained > -161" must be based upon:

- availability of high pressure injection systems, and

- present level trend

For example, level may have dropped below -161", but the level trend shows that it will be able to be recovered above the limit. In this case, rapid depressurization should be deferred.

Controlling reactor pressure, power and level with condensate and SRVs at 500 psig is difficult because all 3 parameters affect each other. Therefore, rapid depressurization is recommended when high-pressure injection cannot be obtained.

(Reference: PSTG C5-5 and C5-6)

LQ/L-18 STOP INJECTION
AND
PREVENT INJECTION

EXCEPT FROM:

- SLC
- CRD
- RCIC
- HPCI

Injection into the RPV is stopped and prevented, while rapid RPV depressurization proceeds, in order to prevent uncontrolled injection of cold water as RPV pressure decreases below the shutoff head of operating system pumps. Injection from boron injection systems and CRD is not terminated because operation of these systems may be needed to establish and maintain reactor shutdown. Further, the injection flowrates from these systems are small compared to those of the other Table 15 systems. Injection from RCIC is not stopped because the injection flowrate from this system is small. Injection from HPCI is permitted to avoid potential isolation and minimize the transient that may occur when RPV injection is restored. It also helps reduce RPV pressure by spraying cold water into the steam space.

Indications/Cues for Event Requiring Critical Task
Loss of or insufficient high pressure injection sources with Reactor water level trending downward, eventually indicating less than the top of active fuel height on the Fuel Zone Level Indicator.

Performance Criteria
If any system is injecting, other than the exceptions listed, this step requires that these systems stop injection.

All injection systems other than the exceptions listed must be prevented from injection. For feedwater, this would mean tripping feedwater pumps or closing their discharge valves.

For condensate, this would mean preventing injection below RPV pressure of 600 psig using valves or if needed, tripping condensate pumps.

For RHR and Core Spray this would require preventing injection in accordance with overriding section of their respective operating procedures.

Perform a Rapid Depressurization per EO-100-112 when water level cannot be restored or maintained > –161" as read on the Fuel Zone Instrument.

Initiate ADS / Manually open all 6 ADS valves

Performance Feedback

RPV injection from systems not listed as exceptions is either stopped or prevented
Initiating a rapid depressurization causes Reactor pressure to lower to the shutoff head of the low pressure injection systems allowing water level to rise on the Fuel Zone and Wide Range level instruments.

Verify ADS valves are open using light red light indication, acoustic monitoring and lowering Reactor pressure and rising reactor water level.
The success path for ATWS termination is control rod insertion and resetting/scramming again.

The scenario can be terminated once rapid depressurization has commenced with control rod insertion maintaining ATWS power <5%.

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Reset simulator to Scenario IC or IC-43 and perform the following: - 70% Power - 'B' Condensate Pump OOS
	■ Apply Information Tags on the following components: - 'B' Condensate Pump
	■ Take out of FREEZE and ensure the following: - Reactor Power is 70% with stable reactor water level - With the exception 'B' Condensate Pump, all other equipment is OPERABLE - 'B' CRD pump in service
	■ Ensure materials for applicants: - Markup of GO-100-012 - Turnover sheet
	■ Ensure the following malfunctions are loaded: - RD155017 SDV Plugging/Hydraulic ATWS - cmfNB01_LISB211N031A2B & cmfRL01_e111K79B RCIC Auto Initiation Failure ■ **Ensure** the following remote functions are loaded: - crfPM13_1P102B 'B' condensate pump breaker racked out ■ **Ensure** the following overrides are loaded: - cmfRL03_K2A RR A Flow Runback Fail As-Is - cmfRL03_K2B RR A Flow Runback Fail As-Is - cmfBR04_1A10101 AUX XFMR 11 to bus 11A Bkr Auto Logic Fails - SL153002 SBLC failure to inject, removed by trigger 2 ■ **Ensure** the following triggers are built: - Trigger 1 remove RD1550063027 when rod insert pushbutton is depressed - Trigger 2 remove SL153002 when SBLC pump switch taken to B - Trigger 3 insert PM02_1P208A with 30 second delay when SBLC pump switch taken to B - Trigger 4 remove RD155017 when reactor water level reaches -60" - Trigger 5 remove AV01_XV147F011 when reactor water level reaches -60" - Trigger 6 insert HP152014B when 'B' recirc pump drive breaker 'STOP' button is depressed - Trigger 7 remove RC150001 when RCIC MAN INIT HS-E51-1S32 is depressed

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ **Ensure** the following Soft Keys are built: {Key[1]} NM178007B — APRM B Fails High {Key[2]} HP152004 — Inadvertent Start of HPCI {Key[3]} RP158008A — A RPS MG Set Shaft Seizure {Key[4]} MRF RM179024 RESET — MSL RAD MON 'A' RESET {Key[5]} MRF RM179026 RESET — MSL RAD MON 'C' RESET {Key[6]} RD1550043027/ RD1550063027 — Control Rod 30-27 Drift In/stop at 04 {Key[7]} FW144003D — D Cond Pump Trip {Key[8]} cmfPM07_1P113A — EHC Pump A Bkr Fail As-Is {Key[9]} AV01_XV147F011 — Loose SDV I/B Drain Air Fitting {Key[10]} cmfPM03_1P113B — B EHC Pump Motor Short Circuit {Key[11]} MRF RD155017 0 — 146F034 CRD Charging ISO VLV Closed {Key[12]} MRF RD155017 1 — 146F034 CRD Charging ISO VLV Open {Key[13]} bat RPB.DISABLARI — Opens ARI Bkrs IAW ES-158-002 {Key[14]} bat RPB.ES158002 — Bypasses RPS IAW ES-158-002 {Key[15]} HP152015 — HPCI Turbine Trip
	■ Reset any annunciators that should not be present

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Swapping EHC pumps

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Per section 2.10 of OP-193-003 respond for equipment operators during EHC pump start ■ Respond that your are stationed locally to observe EHC Pump Discharge pressure at PI10180B ■ When prompted, report EHC Pump 1P113B discharge pressure is 1625# on PI10180B
	■ Respond to request for assistance as appropriate.

EVENT 2: APRM B Critical Self Test Failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 1 when chief examiner ready to proceed
	■ Respond to request for assistance as appropriate

EVENT 3: Inadvertent Start of HPCI

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 2 when chief examiner ready to proceed
	■ Respond to request for assistance as appropriate.

EVENT 4: A RPS MG Set Shaft Seizure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 3 when chief examiner ready to proceed
	■ Activate Soft Keys 4 and 5 when NPO requested to reset MSL Rad Monitors
	■ As NPO dispatched to investigate RPS MG Set, report indications of a seized bearing
	■ Respond to request for assistance as appropriate

EVENT 5: Rod 30-27 Drifts In to Position 04

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 6 when RBCW isolation restored and chief examiner ready to proceed
	■ As NPO dispatched to HCU 30-27, report that the scram valves appear open by local indication and the lines are hot
	■ Acknowledge request to disarm HCU 30-27, and report its completion
	■ As FIN Team sent to investigate, report finding a blown fuse on RPS 'B' side for rod 30-27, locating a replacement fuse
	■ Respond to request for assistance as appropriate

EVENT 6: 'D' Condensate Pump Trip with Failed Runback

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once control rod tech spec call complete and when chief examiner ready to proceed, activate Soft Key 7, and Soft Key 8
	■ Respond to request for I&C/Work Week Manager support
	■ Once manual runback is completed, activate Soft Key 9
	■ If NPO dispatched, acknowledge direction to investigate; report back that Condensate Pump 'D' tripped on ground instantaneous overcurrent, no other abnormalities
	■ Respond to request for assistance as appropriate

EVENT 7: Disconnected SDV Inboard Drain Air Fitting

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When dispatched as NPO, report a loose air fitting at the valve and attempting to reconnect, but fitting appears cross-threaded
	■ Respond to request for assistance as appropriate

EVENTS 8, 9, 10, 11, 12: Hydraulic ATWS, CRD Pump Trip, HPCI Trip, Rapid Depressurization

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 10 when deliberate level reduction for ATWS has begun and chief examiner ready to proceed
	■ Once level reduction has begun, as NPO report that you were able to re-connect the air fitting for the SDV I/B Drain Valve, and that the valve should now function correctly
	■ As NPO, acknowledge direction to perform ES-150-002 but do not perform
	■ As NPO, acknowledge direction to perform ES-158-002
	■ (If requested) As NPO, acknowledge direction to ***CLOSE*** CRD Charging Water Isolation Valve 146F034. Wait 1 minute and activate Soft Key 11 ■ (If requested) As NPO, acknowledge direction to ***OPEN*** CRD Charging Water Isolation Valve 146F034. Wait 1 minute and activate Soft Key 12
	■ When the PCOM has inserted approximately 6 control rods, call the Unit Supervisor on the page and ask permission to open ARI breakers 1D614006 and 1D624016. Wait 1 minute and activate Soft Key 13
	■ As NPO, report that the ARI breakers have been opened IAW ES-158-002. Call the Unit Supervisor on the page and request permission to bypass RPS trips IAW ES-158-002. Wait 2 minutes and activate Soft Key 14
	■ When PCO has commenced draining the SDV, activate Soft Key 15
	■ Respond to request for assistance as appropriate

Op-Test No.: _____ Scenario No.: 1 Event No.: 1 Page ___ of ___

Event Description: Swap running EHC pumps from 1A to 1B

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to swap running EHC pumps from 1A to 1B
	BOP	Obtains copy of OP-193-003 and proceeds to section 2.10, Swapping EHC Pumps
	BOP	(Step 2.10.3) Contacts NPO to ensure they are stationed locally to observe EHC Pump Discharge pressure at PI10180B
	BOP	(Step 2.10.4) Starts 1P113B EHC pump by depressing RUN pushbutton
	BOP	(Step 2.10.5) Contacts NPO at local PI to observe EHC pump discharge pressure increases to ~1500-1700 psig (should report back 1625 psig).
	BOP	(Step 2.10.6) Stops EHC pump 1P113A by pushing AUTO pushbutton and then STOP pushbutton
	BOP	(Step 2.10.7) Places EHC pump 1P113A in standby by pushing AUTO pushbutton
	BOP	(Step 2.10.8) Verifies discharge pressure using Computer Point TLP03 ~1625 psig
	BOP	(Step 2.10.9) Determines step N/A and reports completion of pump swap to SRO

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 1 Event No.: 2 Page ___ of ___

Event Description: APRM Critical Self Test Fault

Time	Position	Applicant's Actions or Behavior
	ATC	Reports AR-103-A06 APRM UPSCALE/INOP TRIP alarm and the AR-103-D06 APRM TROUBLE alarm. (Also have a concurrent rod block alarm)
		Refers to the alarm response and verifies the indications on 1C651 and ODAs.
	BOP	Directs an operator to the Lower Relay Room, Panel 1C608 to perform OP-178-002, Section 2.7 for Self-Test Faults.
		Refers to OP-178-002, PRNMS procedure and attachment.
	ATC	Based on control room indications, reports a Fault on APRM 3 with an INOP trip and rod block.
	SRO	Consults Tech Specs 3.3.1.1 and TRO 3.1.3 and 3.3.9, notes no required actions as only 3 channels are required for operation, PTSA entry only.
		Declares APRM 3 Inoperable and recognizes the failed APRM should be bypassed.
		Directs bypassing APRM 3.
	ATC	Bypasses APRM 3 at Panel 1C651 and reports that APRM 3 is bypassed.

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 1 Event No.: 3 Page ___ of ___

Event Description: Inadvertent Start of HPCI

Time	Position	Applicant's Actions or Behavior
	BOP	Reports HPCI start. Verifies adequate core cooling by two independent means and ensures Drywell pressure is < 1.72 psig Obtains SRO permission to Override HPCI
	SRO	Verifies no valid initiation signal exists Direct HPCI overridden per OP-152-001 Directs BOP to enter ON-156-001. Declares HPCI Inoperable Enter TS LCO 3.5.1 Condition D Required Action D.1: Verify RCIC Operable immediately and Required Action D.2: restore HPCI to Operable within 14 days, Contacts Work Week Manger concerning the HPCI injection, requests FIN support, and notification of the Duty Manager.
	BOP	Executes OP-152-001 Attachment C, Step 3 (Hard Card) To stop injection/shutdown HPCI: a. **Ensure** HPCI AUXILIARY PUMP 1P213 switch placed to **START**. b. **Depress** HPCI INT SIG RESET HS-E41-1S17 RESET pushbutton. c. **IF** HPCI initiation resets, **Shut Down** HPCI in accordance with "Shutdown" section of OP-152-001. d. **IF** HPCI initiation does not reset, stop injection/shut down using following sections (1) preferred, **OR** (2): (1) **Reduce** HPCI turbine speed to stop injection: (a) **Place** HPCI TURBINE FLOW CONTROL FC-E41-1R600 in **MANUAL**. (b) **Reduce** demand to stop HPCI flow. (c) **Ensure** MIN FLOW TO SUPP POOL HV-155-F012 **OPENS** (d) **Ensure** HPCI Auxiliary Oil Pump 1P213 does not cycle on and off. (e) **Monitor** frequently HPCI speed for oscillations. (f) **IF** turbine speed oscillations occur **Increase** HPCI turbine speed.

	SRO	Directs BOP to enter ON-156-001. Declares HPCI Inoperable Enter TS LCO 3.5.1 Condition D, Required Action D.1: Verify RCIC Operable immediately **AND** Required Action D.2: Restore HPCI to Operable within 14 days, Contacts Work Week Manger concerning the HPCI injection, requests FIN support, and notification of the Duty Manager.
	ATC	Refers to ON-156-001 and determines no other reactivity control systems were responsible for the power increase.

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 1 Event No.: 4 Page ___ of ___

Event Description: 'A' RPS MG Set Shaft Seizure

Time	Position	Applicant's Actions or Behavior
	ATC	Reports RPS half scram condition.
	BOP	Identifies RPS MG Set 'A' power available light OFF.
		Dispatches plant operator to RPS MG Set 'A'.
		Implements ON-158-001, LOSS OF RPS.
	SRO	Directs implementation of ON-158-001, LOSS OF RPS.
		Directs BOP to transfer to alternate power source.
		Directs BOP to monitor Reactor Recirc Pump motor temperatures.
	BOP	(ON-158-001 Step 1.2) Transfers RPS 'A' to alternate power source as follows: 1.2.1 **Ensure** ALTERNATE A FEED White indicating light **ILLUMINATED**. 1.2.2 **Ensure** RPS M-G SET TRANSFER SWITCH HS-C72B-S1 in **NORM** position.
		Directs NPO to reset the MSL Rad Monitors 'A' & 'C'.
	SRO	Directs PCO to reset RPS half scram on Div 1.
		Directs PCO to reset N4S isolation signals and restore RRP cooling.
	ATC	(ON-158-001 Step 3.0) Resets A RPS half scram by momentarily positioning REACTOR SCRAM RESET HS-C72A-1S05 to **GROUP 1/4** position **AND THEN** to **GROUP 2/3** position
	BOP	Monitors RRP temperatures at TRS B31-1R626 on 1C614.

	BOP	(ON-158-001 Step 4.0) Resets NSSSS isolation logic as follows: 4.1 **Depress** MN STM LINE DIV 1 ISO RESET HS-B21-1S32. 4.2 **Depress** MN STM LINE DIV 2 ISO RESET HS-B21-1S33.
		(ON-158-001 Step 6.0) Recovers from RBCW isolation as follows: 6.1 **Ensure** RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 **CLOSED**. 6.2 **Ensure** RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 **CLOSED**. 6.3 **Depress** HV-18791A1&A2 ISOLATION RESET. 6.4 **Depress** HV-18792A1&A2 ISOLATION RESET. 6.5 **Ensure** RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 **OPEN**. 6.6 **Ensure** RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 **OPEN**.

Op-Test No.: _____ Scenario No.: 1 Event No.: 5 Page ___ of ___

Event Description: Rod 30-27 Drifts In to Position 04

Time	Position	Applicant's Actions or Behavior
	SRO	Directs implementation of ON-155-001
	ATC	Implements ON-155-001, section 4.4 for Rod Drift or Rod Scram: 4.4.1 Check Full Core Display for identification of any drifting control rod by Depressing DISPLAY RODS DFTING Pushbutton, notes control rod 30-27 has drifted in to position 04. 4.4.2 Check for any open scram valves by Depressing DISPLAY SCRAM VALVES OPEN pushbutton, notes scram valves open for rod 30-27. 4.4.3 Select rod 30-27 to determine position, reports position 04. 4.4.4 Reset the Rod Drift Alarm as follows: a. Depress the Rod Drift Reset pushbutton. b. Verify Rod Drift Alarm clears. 4.4.6 Ensure proper cooling water diff/pressure being maintained by observing PDI-C12-1R603 Cooling Water Diff Pressure indicator and FI-C12-1R605 Cooling Water Flow. 4.4.9 Perform the following for any drifted or partially scrammed rod(s a. Promptly Inserts rod to position 00. Selects control rod 30-27 and depresses insert pushbutton b. Directs NPO to Hydraulically Disarm HCU in accordance with OP-155-001 Control Rod Drive Hydraulic System section 2.6.
	SRO	Declares control rod 30-27 inoperable. Complies with TS 3.1.3, condition C Action C.1 Fully insert inoperable control rod within 3 hours AND Action C.2 Disarm the associated CRD within 4 hours Contacts Reactor Engineering Contacts Work Week Manager/FIN

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page ___ of ___

Event Description: Trip of Condensate Pump 'D' with failed recirc pump runback

Time	Position	Applicant's Actions or Behavior
	ATC	Reports trip of 'D' Condensate Pump and responds to annunciators AR-101-A09 CONDENSATE PUMP D TRIP, and AR-102-C01/C04 RECIRC A/B FLOW LIMIT RUNBACK , reports that runback did not occur
		Performs section 2.14 of OP-164-002 for manual flow reduction (information use only, applicant will likely not reference procedure) (Step 2.14.4.a) Ensures SRO concurs or has provided direction to initiate a Manual Rx Recirc Pump Speed reduction to Limiter #2. (Step 2.14.4.b)Touch <u>any one</u> of the following buttons on the vertical selection list. (1)RRP DUAL SCRN (Manual Mode Screen) (2)RRP_A (3)RRP_B (Step 2.14.4.c) <u>IF</u> on RRP DUAL SCRN, Touch <u>either</u> the 'A' or 'B' Screen Select <u>MANUAL</u> button. (Step 2.14.4.d) Touch <u>MANUAL FLOW REDUCTION INITIATION</u> button. (Step 2.14.4.e) Touch <u>LIMITER # 2 48%</u> button on the overlay screen. (Step 2.14.4.f) Ensure the information is correct for a Limiter #2, and Touch <u>INITIATE RRP FLOW REDUCTION</u> button on the confirmation overlay screen. (Step 2.14.4.g) Ensure <u>both</u> Rx Recirc pumps run back to the 48% Gen 1A(1B) Speed on SI-14032A(B). (Step 2.14.4.h) Perform the applicable section(s) of ON-164-002, Loss of Rx Recirculation Flow.
	SRO	Directs ATC entry into ON-164-002 and performance of section 4.4

	ATC	Performs ON-164-002 section 4.4 **Plot** position on Power/Flow Map. **Ensure** a Non-Peripheral Control Rod selected. **AND** **Monitor** LPRM's for Limit Cycle Oscillations.

Op-Test No.: _____ Scenario No.: 1 Event No.: 7 Page ___ of ___

Event Description: Disconnected SDV Inboard Drain Air Fitting

Time	Position	Applicant's Actions or Behavior
	ATC	Responds to AR-103-G02 SCRAM DISCHARGE VOLUME NOT DRAINED (Step 2.2) Check Vent and Drain Valves indicate open. (Step 2.3) IF Scram Discharge Volume does not drain, Ensure Vent and Drain Valves physically open. Dispatches NPO to investigate locally, will receive report back that the air fitting is disconnected from the valve and that the NPO is working on getting it re-connected.
	SRO	Requests assistance from Work Week Manager/FIN Upon learning that SDV drain valve has no air supply and SDV is filling up due to scrammed control rod 30-27, will direct entry into ON-100-001 SCRAM, SCRAM IMMINENT
	ATC	(Step 3.1.1) Verifies recirc flow has been reduced by Rx Recirc Limiter #2 (already performed due to condensate pump trip)
	ATC	(Step 4.1) Place Mode Switch HS-C72A-1S01 to SHUTDOWN (Step 4.2) Observe all Control Rods indicate fully inserted (using two indications, OD-7 completed as soon as possible). (Step 4.3) IF more than 1 control rod > 00: (Step 4.3.1) Arm AND Depress manual scram pushbuttons. a. RPS MAN SCRAM CHAN A1 HS-C72A-1S03A b. RPS MAN SCRAM CHAN B1 HS-C72A-1S03B c. RPS MAN SCRAM CHAN A2 HS-C72A-1S03C d. RPS MAN SCRAM CHAN B2 HS-C72A-1S03D

	BOP	(Step 4.3.2) Initiate ARI by arming and depressing: a. ARI DIV 1 MAN TRIP HS-147103A1 TRIP b. ARI DIV 2 MAN TRIP HS-147103B1 TRIP
	SRO	(Step 4.3.3) IF more than 1 control rod remains > 00, Enter EO-100-113 at step LQ/Q-2.

Op-Test No.: _____ Scenario No.: 1 Event No.: 8, 9, 10, 11, 12 Page ___ of ___

Event Description: Hydraulic ATWS, Main Turbine Trip with loss of bypass capability, SBLC injection failure, RCIC auto start failure, HPCI trip requiring Rapid Depressurization

★Contains action items to complete critical task 1, Inserts control rods IAW EO-100-113 Sht. 2
●Contains action items to complete critical task 2, Inhibits ADS and Lowers RPV level to <-60" but >-161"
■Contains action items to complete critical task 3, Stops and prevents injection except from SLC and CRD /Perform Rapid Depressurization when RPV level cannot be restored and maintained > -161"

Time	Position	Applicant's Actions or Behavior
	ATC	Reports failure to SCRAM, completes ON-100-001 actions listed in event 7
	BOP	Initiates ARI per ON-100-001 required actions listed in event 7
	SRO	Announces entry into EO-100-113 Power/Level Control due to power >5%
	SRO	(LQ/Q-3) Directs BOP to inject SBLC
	BOP	(OP-153-001 Attachment A) 1. Place HS-14804 SBLC MANUAL INITIATION keylock control switch to A START. 2. Observe SBLC PUMPS 1P208A STARTS 3. Once initiated, Observe the following a. HV-144-F004 RWCU INLET OB ISO CLOSES b. SBLC SQUIB READY A-B white indicating lights EXTINGUISHED c. SBLC SQUIB VALVES LOSS OF CKT CONTINUITY annunciator ALARMS d. Pump 1P208A(B) Red indicating light ILLUMINATED e. SBLC PUMP discharge header pressure ~ 200 psig greater than reactor pressure f. SBLC FLOW Indicates ~ ≥ 40 GPM *(flow will indicate ZERO due to lifting relief valve on A SBLC pump)* g. SBLC Storage Tank level decreasing *(will not be occurring due to no SBLC injection)* h. Reactor power level decreasing *(will not be occurring due to no SBLC injection)*
	BOP	Reports to SRO that A SBLC injection failed, proceeding to inject with B SBLC

	BOP	1. Place HS-14804 SBLC MANUAL INITIATION keylock control switch to B START. 2. Observe SBLC PUMPS 1P208B STARTS 3. Once initiated, Observe the following d. Pump 1P208(B) Red indicating light ILLUMINATED e. SBLC PUMP discharge header pressure ~ 200 psig greater than reactor pressure f. SBLC FLOW Indicates ~ ≥ 40 GPM g. SBLC Storage Tank level decreasing h. Reactor power level decreasing
	BOP	B SBLC pump will trip on thermal overloads after ~30 seconds; BOP should recognize and report to SRO
	SRO	(LQ/Q-4) Directs BOP to inject SBLC using RCIC via ES-150-002
	●SRO	**(LQ/L-5) Directs BOP to inhibit ADS**
	BOP	(LQ/Q-4) Directs NPO to perform ES-150-002
	SRO	(LQ/Q-6) Directs ATC to ensure SRM/IRM inserted
		(LQ/Q-7) Directs ATC to run recirc pumps back to minimum
		(LQ/Q-8) Directs ATC to trip both recirc pumps
	●BOP	**(OP-183-001 Step 2.6.4) Places following keylock switches to INHIBIT:** **ADS A Logic Control** **ADS B Logic Control**
	ATC	(OP-145-001 Hard Card Step 2) Lower Rx Recirc Pump Speeds to Minimum on any Rx Recirc (Manual) HMI screen as follows: (2.19.4) a) Touch the MANUAL FLOW REDUCTION INITIATION button. (2.19.4a) b) Touch the RRP SPEED TO MINIMUM button on the Manual Flow Reduction Initiation overlay. (2.19.4b) c) Touch the INITIATE RRP FLOW REDUCTION button on the confirmation overlay screen and Observe both Rx Recirc Pump Gen Speeds lowering. (2.19.4c) Report completion to SRO

		(OP-145-001 Hard Card Step 4) WHEN directed by Shift Supervision, Perform the following: (2.19.6) a) Ensure Rx Recirc A and B Gen Speed is ~ 20%. (2.19.6a) b) TRIP the 'A' and 'B' Rx Recirc Pumps one at a time. (2.19.6b) and reports completion to SRO; also reports trip of 'B' CRD pump
	SRO	(LQ/Q-9) Directs ATC to maximize CRD/start 'A' CRD pump
	●SRO	**(LQ/L-6) Directs BOP to terminate and prevent injection, reduce level to -60" → -110"**
	ATC	(OP-155-001) Maximizing CRD (Step 2.13.3) Start standby CRD pump as follows: (Step 2.13.3.a) Place control switch CRD Pump 1P132A to RUN, to start 1P132A, Ctl Rod Drive Water Pump A Step 2.13.4) Using FC-C12-1R600, CRD Flow Controller, in MANUAL, Fully Open FV-146-F002A(B), CRD Flo Ctl (Step 2.13.5) Fully Open THTLG PV-146-F003, Drive Wtr Press

	●BOP	**(OP-145-001 Hard Card Step 3) Place the FW LO LOAD DEMAND SIGNAL TO LV-10641, controller LIC-C32-1R602 in MANUAL with a controller output of 0%. (2.19.5)** **5) WHEN directed by Shift Supervision, Continue with this procedure to lower RPV Water Level to the assigned Level Band. (2.19.7)** **6) Ensure the HPCI and RCIC Systems have been overridden prior to lowering RPV Water Level to < -30". (2.19.8)** **(OP-150-001 Attachment A) To prevent Auto Injection if RCIC NOT initiated, Close RCIC TURBINE TRIP AND THROTTLING HV-15012** **(OP-152-001 Attachment C) To prevent auto injection if HPCI not initiated.** **Place HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL AND Reduce demand to zero (0)** **7) Place FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 in MANUAL. (2.19.9)** **8) Lower FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 output in order to establish a Feedwater Flow which is at least 1 Mlbm/hr less than Steam Flow. (2.19.10)** **9) Perform the following for the Reactor Feed Pump which will continue feeding: (2.19.11)** **a) On the HMI Vertical Selection menu, Touch the applicable RFP A(B)(C) button. (2.19.11a)** **b) Touch the A(B)(C) RFPT MAN VLV CTL button. (2.19.11b)** **c) Touch the icon for the RFP A(B)(C) Pump. (2.19.11c)** **d) Touch the MAN button on the RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C). (2.19.11d)** **10) Place the remaining in-service Reactor Feed Pumps in the Idle Mode as follows: (2.19.12)** **a) On the HMI Vertical Selection menu, Touch the applicable RFP A(B)(C) button (2.19.12a)** **b) Touch the A(B)(C) RFPT IDLE MODE button. (2.19.12b)**
		When main turbine trips with failure of aux bus to transfer, report loss of Aux Bus 11A and trip of condensate/feed pumps to SRO

	●SRO	**(LQ/L-13) Upon trip of condensate and feedwater, directs BOP to maintain Rx water level <-60" but >-161" using HPCI and RCIC**
	SRO	(LQ/P-6) Directs BOP to stabilize Rx Pressure <1087# by using bypass valves/SRV
	BOP	Operates SRV control switches as necessary to stabilize Rx Pressure <1087#
	●BOP	**Restores and maintains Rx water level <-60" but >-161" using HPCI and RCIC:** **HPCI -- Takes action to restore Rx water level by raising and lowering HPCI flow controller to maintain level in directed band** **RCIC –** **1. Close TURBINE TRIP AND THROTTLING HV-15012.** **2. Open RCIC L-O COOLER WTR SUPPLY HV-150-F046.** **3. Start RCIC BARO CDSR VACUUM PP 1P219.** **4. Open STEAM TO RCIC TURBINE HV-150-F045.** **5. Throttle Open TURBINE TRIP AND THROTTLING HV-15012 until turbine speed > 2200 rpm.** **6. <u>WHEN</u> RCIC Pump discharge pressure > 190 psig with flow < 75 gpm, Ensure RCIC MIN FLOW TO SUPP POOL FV-149-F019 OPENS.** **7. Using TURBINE TRIP AND THROTTLE HV-15012, Raise RCIC pump discharge pressure within 50 psig of reactor pressure.** **8. Open RCIC INJECTION HV-149-F013.** **9. Using TURBINE TRIP AND THROTTLING HV-15012, Establish desired flow.**
	★SRO	**(LQ/Q-4) Directs ATC to insert control rods by driving control rods <u>AND</u>** **Upon receiving communication from NPO that SDV drain valve function has been restored, directs ATC to also insert rods by resetting and scramming again**

	★ATC	**(CR-6) Bypasses RWM by:** **Insert key into RWM Normal/Bypass keylock** **AND** **Turn fully clockwise to BYPASS position**
	★ATC	**(CR-7) Establish approximately (if obtainable):** **63 GPM cooling water flow AND 350 PSID drive water pressure (applicant adjusts drive pressure MOV and flow control valve to achieve parameters if possible)** **Selects rods in rotating quadrants AND depresses continuous insert pushbutton until Full-In or rod will not move for:** **1. Intermediate position rods** **2. Full out rods**
	★ATC	**Directs FUS/NPO to disable ARI and bypass RPS logic trips as necessary IAW ES-158-002**
	★ATC	**Once notified by FUS/NPO that ES-158-002 has been performed:** **(OP-158-001) Resets SCRAM by:** **(Step 2.6.4) Placing SCRAM DSCH VOL HI WTR LVL TRIP BYPS HS-C72A-1S04 control switch to BYPASS.** **(Step 2.6.6) Reset ARI:** **(Step 2.6.6.b.1) Place ARI DIV 1 MAN TRIP HS-147103A1 in DISARMED position.** **(Step 2.6.6.b.2) Depress ARI DIV 1 RESET HS-147103A2 push button.** **(Step 2.6.6.b.3) Place ARI DIV 2 MAN TRIP HS-147103B1 in DISARMED position.** **(Step 2.6.6.b.4) Depress ARI DIV 2 RESET HS-147103B2 push button.** **(Step 2.6.7) Reset RPS Trip System by Momentarily Positioning RPS SCRAM RESET Control Switch HS-C72A-1S05 as follows:** **(Step 2.6.7.a) To GRP 1/4 position.** **(Step 2.6.7.b) To GRP 2/3 position** **(Step 2.6.11) Ensure Open Charging Wtr Hdr Iso 146F034 (Also CR-20)**

	★ATC	**(Step 2.6.12) WHEN SCRAM DISCHARGE VOLUME NOT DRAINED alarm CLEARS, Return SCRAM DSCH VOL HI WTR LVL TRIP BYPS control switch HS-C72A-1S04 to NORMAL** **(Step CR-20) When SDV partially drains, insert manual scram by arming and depressing one manual scram pushbutton per RPS subsystem (A1 or A2 AND B1 or B2)** .
	BOP	Recognizes HPCI turbine trip and cause unknown. Reports trip to SRO
	■SRO	**(LQ/L-14) If level cannot be restored and maintained >-161"** **1. Go to LQ/L-18** **2. Go to Rapid Depress** **(LQ/L-18) Directs BOP to stop and prevent injection from FW/Cond/LPCI/Core Spray**
	■SRO	**Announces entry into EO-100-112 Rapid Depressurization** **(RD-8) Directs BOP to open all ADS valves**
	■BOP	**When directed to open all ADS valves, places handswitches PSV-141-F013G, J, K, L, M, and N to open, verifies valve function by acoustic monitors and lowering RPV pressure**
	SRO	Once rapid depressurization has begun, directs BOP to restore level <-60" → >161" using LPCI while coordinating with ATC to monitor NI's due to injection of cold, unborated water Directs ATC to monitor NI's while restoring Rx water level due to injection of cold, unborated water
	BOP	Starts LPCI pump and begins raising Rx water level while communicating with ATC, who is monitoring NI's
	ATC	Communicates with BOP while monitoring NI's for level restoration, and continues to reset and SCRAM

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: Susquehanna Scenario No.: ___2____ Op-Test No.: _____

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
Unit at 10% power

Turnover: Unit 1 is at 950 psig and ~ 11% power, continuing plant startup at step 5.65.1 of GO-100-002. The crew is expected to resume startup actions IAW GO-100-002 step 5.65.1 to ensure 3 element control and place the first RFP in flow control mode in accordance with the transfer of the first RFP A to flow control mode and continue with subsequent actions in GO-100-002.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-ATC	Place first RFP in flow control mode.
2	N/A	R-ATC SRO	Raise power until reactor power is close to but less than ~ 16%.
3	cmfRL02_PDSLX07554A1, cmfAV03_HV15713	I -ATC TS - SRO	SGTS A flow instrument fails high with failure of the one of the inboard purge and make-up valve to isolate.
4	IRF rfdB105101_f:open	C- BOP TS- SRO	Failure of MCC 1B217, which causes loss of 'A' loop of DW spray and ½ Scram which needs to be reset and swap power supply to RPS.
5	N/A	C- BOP SRO	RBCCW pump swap due to excessive seal leakage on running pump.
6	mfNM178013A	C- ATC TS- SRO	'A' Recirc pump speed oscillation (TS)/Lock up the 'A' Recirc pump.
7	IMF_mfMS183011B IMF_mfMS183010B d:1 f:100	C – BOP TS- SRO	SRV 'B' inadvertently opens (TS)/ maximize torus cooling (ON-183-001, Stuck Open Safety Relief Valve)
8	mfMS183013B	M – ALL	SRV 'B' SUPP Chamber Tailpipe Break.
9	IMF cmfPM06_1P202B r:4:00 f:100	C- BOP/ATC	Running RHR pump trips on pre-overload (shaft shear).
10		ALL	Initiate DW Spray.

	Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1.	Total malfunctions (5–8)	7
2.	Malfunctions after EOP entry (1–2)	1
3.	Abnormal events (2–4)	3
4.	Major transients (1–2)	1
5.	EOPs entered/requiring substantive actions (1–2)	2
6.	EOP contingencies requiring substantive actions (0–2)	1
7.	Critical tasks (2–3)	2

Scenario Summary

The scenario begins with Unit 1 at ~950 psig and ~11% power during reactor startup. Following turnover the crew is expected to resume startup actions IAW GO-100-002 by ensuring 3 element control and placing the first RFP in flow control mode. After the first RFP is placed in flow control mode, the crew will continue with subsequent actions in GO-100-002 to raise power until reactor is close to but less than ~ 16%.

After the power increase, a radiation monitor in the SGTS common exhaust vent duct will fail high causing isolation signals to inboard purge and makeup valves. One of the inboard purge and makeup valve will fail to isolate, crew should recognize and take actions to close the valve and reference TS.

After manual isolation of the inboard valve, the essential MCC 1B217 will trip on a fault causing RPS MG set to trip creating ½ scram. The crew will swap RPS to alternate power supply and reset the scram. TS will be referenced.

Following the reset of ½ scram, the crew will be required to swap RBCCW pump due to a report from the field indicating excessive seal leakage from the running RBCCW pump.

A failure in the controller for the 'A' recirc M-G set will cause the recirc pump speed to oscillate. The crew should recognize the changes in core and jet pump flows and "lock up" the 'A' recirc pump. Following this, the 'B' SRV will inadvertently open, requiring the crew to take actions to close the valve, and will place suppression pool cooling in accordance with ON-183-001. The crew will not be successful in closing the SRV (per ON requiring manual scram), and a rupture in the suppression pool chamber tail pipe will occur. The crew will initiate a manual scram and execute PC control E0-100-103 due to DW pressure increase.

The running RHR pump 1P202B will trip on pre-overload due to shaft shear, the crew should recognize that only one RHR pump is available for Drywell sprays due to the loss of MCC 1B217 taking out 'A' loop of DW spray. The crew will initiate Suppression chamber spray and when suppression chamber pressure exceeds 13 psig, the crew will initiate drywell spray using 1P202D RHR pump. The scenario will be terminated after DW spray has been initiated.

INSTRUCTIONS FOR SIMULATOR OPERATOR

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Reset simulator to Scenario IC or IC-11 and perform the following: - Place the mode switch to "RUN" - Raise power until reactor thermal power is approximately 11%
	■ Ensure materials for applicants: - Markup of GO-100-002.
	■ Ensure the following malfunctions are loaded: - IMFcmfMV07_HV151F016B_f:0 - cmfRL02_PDSLX07554A1, cmfAV03_HV15713 - IRF rfdB105101_f:open - mfNM178013A - IMF_mfMS183011B - IMF_mfMS183010B d:1 f:100 - mfMS183013B ■ **Ensure** the following Soft Keys are built: {Key[1]} cmfRL02_PDSLX07554A1 — SGTS A flow instrument fails high {Key[2]} cmfAV03_HV15713 — Failure of DW Vent to SGTS Inbd Isolation valve {Key[3]} IRF rfdB105101_f:open — Failure of MCC 1B217 {Key[4]} mfNM178013A — Recirc pump Speed Oscillation {Key[5]} IMF_mfMS183011B — SRV 'B' stuck open {Key[6]} IMF_mfMS183010B d:1 f:100 — SRV 'B' stuck open {Key[7]} mfMS183013B — SRV 'B' Suppression Chamber Tailpipe Break {Key[8]} IMF cmfPM06_1P202B r:4:00_f:100 — Running RHR pump B trips on pre-overload (shaft shear)
	■ Reset any annunciators that should not be present

EVENT 1: Place first RFP in flow control mode

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate.

EVENT 2: Raise power until reactor power is close to but less than ~ 16%

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate

EVENT 3: SGTS A flow instrument fails high.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Key 1 and Key 2 after reactivity manipulation has been satisfied. (upon chief examiner's call)
	■ Acknowledge the request of de-activating and ensuring closure of the Primary Containment Isolation valve. ■ Respond to request for assistance as appropriate.

EVENT 4 : Failure of MCC 1B217

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Key 3 after manual closure of purge and make-up valve and TS call has been made.
	■ Respond to request for assistance as appropriate.

EVENT 5 : RBCCW pump swap due to excessive seal leakage.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ After ½ scram reset, notify the control room that there is excessive seal leakage on running RBCCW pump and report as the floor supervisor that the running RBCCW pump should be removed from service immediately.
	■ Respond to request for assistance as appropriate

EVENT 6: 'A' Recirc pump speed oscillation

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Key 4 upon RBCCW pump swap completion.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate

EVENT 7: SRV 'B' inadvertently opens

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Key 5 and 6 after 'A' recirc pump scoop tube lockup.
	■ Respond to request for assistance as appropriate.

EVENT 8: SRV 'B' SUPP Chamber Tailpipe Break

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Key 7 after 2 min of event 7.
	■ Respond to request for assistance as appropriate.

EVENT 9: RHR pump trips on pre-overload

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Key 8 after 1 min of event 8.
	■ Respond to request for assistance as appropriate.

CRITICAL TASKS

1. **Spray the Drywell when Suppression Chamber pressure exceeds 13 psig.**

Safety Significance

Maintenance of primary containment integrity.

Actions are taken to spray the Drywell during a LOCA when the Suppression Chamber pressure exceeds 13 psig. From the Susquehanna Emergency Operating Procedures basis document, EO-000-103, "The value of 13 psig is the lowest suppression chamber pressure which can occur when 95% of the non-condensables (Nitrogen) in the drywell have been transferred to the suppression chamber." At 13 psig suppression chamber pressure, 5% of the non-condensables remain in the drywell. This 5% value is the limit established to preclude "chugging" – the cyclic condensation of steam at the downcomer openings of the drywell vents. Values in excess of 13 psig are indicative of more non-condensables in the drywell, meaning chugging is more probable.

Chugging (steam bubble collapse at the downcomer exit resulting in a water in-rush to fill the voided areas) induces stresses at the junction of the downcomers and the drywell floor. Repeated such stresses may result in failure of these joints, creating a direct bypass from drywell to suppression chamber. Bypassing the suppression pool will directly pressurize the primary containment during a LOCA may result in failure.

By requiring drywell sprays at 13 psig in the suppression chamber (5% non-condensables in the drywell), a drywell non-condensable value of >1% will be maintained and chugging should not occur.

From Appendix D of NUREG-1021, Draft Revision 9, the critical task listed above has essential safety action that correctly completed, will prevent "degradation of any barrier to fission product release" and the crew will take action to "effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition describe in the previous paragraph."

Consequences of Failure to Perform the Task

Potential failure of primary containment.

SSES EOP Basis for:

SSES EOP Basis for:

PC/P-5 **WHEN** SUPP CHMBR PRESS **> 13 PSIG**
CONTINUE
[Directions to initiate drywell sprays]

Drywell spray operation may affect the availability of electrical equipment located in the drywell. Therefore, suppression chamber sprays are given the maximum time allowable to reduce primary containment pressure before operation of drywell sprays is required.

The allowable time is determined by the suppression chamber pressure which is equated to the amount of non-condensables remaining in the drywell.

The value of 13 psig is the lowest suppression chamber pressure which can occur when 95% of the non-condensables (N2) in the drywell have been transferred to the suppression chamber. That is, at least 5% non-condensables remain in the drywell when suppression chamber pressure reaches 13 psig. This non-condensable concentration limit is established to preclude chugging - the cyclic condensation of steam at the downcomer openings of the drywell vents. A suppression chamber pressure greater than 13 psig could be indicative of a lower concentration of non-condensables in the drywell, thereby meaning that chugging is more probable.

Chugging occurs when a steam bubble collapses at the exit of the downcomers, the rush of water drawn into the downcomers to fill the void induces stresses at the junction of the downcomers and the drywell floor. Repeated occurrence of such stresses could cause fatigue failure of these joints, thereby creating a direct path between the drywell and suppression chamber. Steam discharged through the downcomers could then bypass the suppression pool and directly pressurize the primary containment. Scale model tests have demonstrated that chugging will not occur so long as the drywell contains at least 1% non-condensables. To preclude conditions under which chugging may occur, drywell sprays are conservatively required when at least 5% non-condensables remain in the drywell, i.e., suppression chamber pressure reaches 13 psig.

Both wide range and narrow range suppression chamber pressure indication is available in the control room. Wide range suppression chamber pressure indication is available locally on Containment H2/O2 Analyzer Panel if analyzer is selected to suppression chamber.

Indications/Cues for the Event Requiring Critical Task

Multiple control board and control room indications of suppression chamber and drywell pressures.

Performance Criteria

Start an operable RHR loop
Perform a valve alignment to provide a flowpath for spray.

Performance Feedback

RHR pump, valve and system flow indications are available.
Multiple indications of Drywell pressure dropping.

2. **Limits Drywell Spray flow to between 1000 and 2800 gpm for the first 30 seconds.**

Safety Significance

Maintenance of primary containment integrity.

Actions are taken to limit the system flowrates when first initiating drywell sprays (1000 to 2800 gpm for the first 30 seconds). The reason for this restriction is to limit the magnitude of the drywell pressure reduction such that it will not go less than atmospheric (prevents air from being drawn in to containment) and ensures a margin to the negative design pressure of the containment.

The BWR Owners Group Emergency Operating Procedures Basis document discusses drywell spray limitations utilizing a Drywell Spray Initiation Limit Curve to protect against containment damage from exceeding the design drywell to suppression chamber differential pressure. From the Susquehanna Emergency Operating Procedures basis document, EO-000-103, "A drywell spray initiation limit has been developed by PPL" which provides the same protection guarantees without necessitating the use of an additional curve on the EOP flowcharts. "By limiting drywell spray flow to between 1000 and 2800 gpm for the first 30 seconds of drywell spray operation, drywell sprays can be initiated without concern" in all regions of the BWR Owners Group curve. "After 30 seconds of operation, the drywell atmosphere contains sufficient vapor to allow full drywell sprays flow." In other words, spraying the drywell within these limits will not result in a drywell pressure rapid reduction such that the differential pressure limit would be challenged.

From Appendix D of NUREG-1021, Draft Revision 9, the critical task listed above has essential safety action that correctly completed, will prevent "degradation of any barrier to fission product release" and the crew will take action to "effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition describe in the previous paragraph."

Consequences of Failure to Perform the Task

Potential failure of primary containment.

SES EOP Basis for:

PC/P-7	SHUT DOWN DW COOLERS SHUT DOWN RECIRC PUMPS INITIATE DW SPRAYS UNLESS PUMPS CONTINUOUSLY NEEDED FOR ADEQUATE CORE COOLING LIMITING FLOW TO BETWEEN **1000** AND **2800 GPM** FOR FIRST **30 SEC**

A DWSIL (Drywell Spray Initiation Limit) has been developed by PPL which provides protection against containment damage from exceeding the design differential pressure, yet does not restrict operation of the drywell sprays. By limiting drywell spray flow to between 1000 and 2800 gpm for the first 30 seconds of drywell spray operation, drywell sprays can be initiated without concern in all regions of this curve. After 30 seconds, the drywell atmosphere contains sufficient vapor to allow full drywell sprays flow. For this reason, the curve is not included.

Indications/Cues for the Event Requiring Critical Task

The Unit Supervisor will direct drywell sprays be initiated, limiting flow to between 1000 and 2800 gpm for the first 30 seconds. The PCO will initiate drywell sprays monitoring the flowrate on available digital and analog indications on 1C601, limiting flow to between 1000 and 2800 gpm for at least the first 30 seconds of operation before increasing flow.

Performance Criteria

Manually throttle HV151-F016A and B and monitor drywell spray
Use clock to determine 30 seconds has elapsed.

Performance Feedback

Monitor Drywell spray flow indications during first 30 seconds of drywell spray operation.

Op-Test No.: ___ Scenario No.: 2 Event No.: 1

Event Description: Place first RFP in flow control mode.

Time	Position	Applicant's Actions or Behavior
	SRO	Direct BOP to place the first RFP in flow control mode per OP-145-001
	BOP	Obtains OP-145-001 and determines Section 2.10 is applicable.
	BOP	Step 2.10.3 **Ensure** the C RFP VLV CONTROL is selected to **AUTO**, by observing the C RFPT AUTO VLV CTL button is backlit yellow and Auto text appears next to the 603C and 651C valve icons.
	BOP	Step 2.10.4 **Ensure** the LIC-C32-1R602 FW LO LOAD DEMAND SIGNAL to LV-10641 is in **AUTO**.
	BOP	Step 2.10.5 **Ensure** the Level Setpoint on the FW LEVEL CTL/DEMAND SIGNAL controller, LIC-C32-1R600 is set for 35 inches
	BOP	Step 2.10.6 **Place** Rx FEED PUMP A RECIRC FLOW controller FIC-10604A in **MANUAL** and **Adjust** output to 10%.
	BOP	Step 2.10.7 **Ensure** FWLC-3E Control is Enabled, by **Observing/Performing** the following as applicable: a. FWLC-3E ENABLED text appears in the FWLC status information box on any Feedwater HMI screen b. **IF** required, Enable FWLC-3E Control in accordance with OP-145-006.
	BOP	Step 2.10.8 **Touch** the A RFPT FLOW CTL MODE button on the RFP_A HMI screen.

Op-Test No.: ___ Scenario No.: 2 Event No.: 1

Event Description: Place first RFP in flow control mode.

Time	Position	Applicant's Actions or Behavior
	BOP	Step 2.10.9 **Touch** the ENTER FLOW CONTROL MODE button on the confirmation overlay screen.
	BOP	Step 2.10.10 Observe the following sequence of events: a. Satisfies permissive for 3 Element Control as indicated by 3E-CONTROL being displayed in the FWLC Status information box on any Feedwater HMI screen. b. AFTER a 20 second time delay, the RFP A DISCH ISO HV-10603A automatically OPENS. c. On the Master Level Controller LIC-C32-1R600, Observe that the yellow TRACKING light goes OFF and that the Reactor Feed Pump speed automatically adjusts and stabilizes to maintain Reactor Water Level at the controller Level Setpoint. d. FW LO LOAD VALVE LV-10641 Closes after the RFP A DISCH ISO VLV HV-10603A(B)(C) is FULLY OPEN. e. RFP A STARTUP ISO HV-10651A(B)(C) automatically **Closes** ~ 10 seconds after the RFP Discharge Isolation valve HV-10603A is **FULLY OPEN**. f. **Adjust** output of FIC-10604A to maintain flow through Rx FEED PUMP A RECIRC VLV FV-10604A at or above the required min flow. 1. **WHEN** RFP Discharge Flow is ~ 1.50 Mlbm/hr, the Rx FEED PUMP A RECIRC VLV FV-10604A **FULLY CLOSES**, if in **AUTO**.
	BOP	Step 2.10.11 IF not aligned in a RFP Warming Alignment, Align the FW LO LOAD DEMAND SIGNAL TO LV-10641 controller in Auto Standby as follows: a. Touch the INC/DEC LEVEL SETPT buttons as necessary to lower the Level Setpoint to 18". b. Ensure the FW LO LOAD DEMAND SIGNAL TO LV-10641 controller to LIC-C32-1R602 is in AUTO AND CLOSED.

Op-Test No.: ___ Scenario No.: 2 Event No.: 1		
Event Description: Place first RFP in flow control mode.		
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	Step 2.10.12 Perform the following on the RFP_A HMI screen to ENABLE the RFP Suction Pressure Feature: a. Ensure SIC-C32-1R601A RFP A SPD CTL/DEMAND SIGNAL is in AUTO. b. Place FIC-10604A RX FEED PUMP A RECIRC FLOW is in AUTO. c. Touch the A RFPT SUCT PRESS FEATURE button. d. Touch the ENABLE RFP SUCT PRSS button on the overlay screen. e. Ensure the A RFPT SUCT PRESS FEATURE button is backlit yellow. f. Ensure the text LSP ENABLED appears next to the A RFP symbol
		PROCEED TO THE NEXT EVENT.

Op-Test No.: ___ Scenario No.: 2 Event No.: 2		
Event Description: Raise power until reactor power is close to but less than ~ 16%		
Time	**Position**	**Applicant's Actions or Behavior**
	SRO	Directs ATC to raise power IAW GO-100-002 step 5.66.
	ATC	**Raise** power until reactor thermal power is **CLOSE TO BUT LESS** than 16% (approximately 3 Bypass Valves full open). Raises power to ~ 16% using Rods. References XXXXXXXXXXX rod pull sheet. (during validation please provide NRC pull sheet reference)
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: 2 Event No.: 3

Event Description: SGTS A flow instrument fails high with failure of one of the inboard purge and make-up valve to isolate.

Time	Position	Applicant's Actions or Behavior
	CREW	• Acknowledges the following alarm: • SGTS Exhaust Vent Hi-Hi Radiation (H01) • Identifies that inboard purge and makeup isolation signal is present • Identifies that HV-15713 failed to isolate • Isolation occurred due to High-High radiation monitor failing high.
	SRO	• Directs BOP/ATC to close the valve manually by using the handswitch on the control board. • References TS 3.6.1.3 • Requests Isolation of the inoperable isolation valve to be de-activated in closed position. • Secures containment venting/purging operations in accordance with OP-173(273)-001, Containment Atmosphere Control. • Performs ON-070-001 Abnormal Radiation Release-Gaseous.
	BOP/ATC	• Places the HV-15713 valve to close position. Verifies valve closed.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: _2__ Event No.: __4__

Event Description: Failure of MCC 1B217 resulting in loss of 'A' loop of DW spray and ½ scram.

Time	Position	Applicant's Actions or Behavior
	BOP ATC	Respond to the following alarms: ▪ ESS 480V LC 1B210 Trouble (A04) ▪ RPS Channel A1/A2 Auto Scram (A01)
	SRO	Enters ON-104-201 Loss of 4KV ESS Bus 1A (1A201) ▪ Refers to MCC 1B217 load list on Attachment E. ▪ Recognizes loss of 'A' train of Containment spray. ▪ Recognizes loss of RPS channel A. ▪ Directs reset of half scram IAW OP-158-001. ▪ Refers to TS 3.8.1.
	BOP	▪ Dispatches Operator to LC 1B210 to determine the cause.

Op-Test No.: ___ Scenario No.: 2 Event No.: 4

Event Description: Failure of MCC 1B217 resulting in loss of 'A' loop of DW spray and ½ scram.

Time	Position	Applicant's Actions or Behavior
	ATC	▪ Aligns RPS M-G Set to Alternate Power IAW OP-158-001 step 2.4.4 ▪ Step 2.4.4 ▪ At Reactor Control Rod Test Instrument Panel 1C610: o **Check** Alternate A Feed To RPS Bus A white indicating light **ILLUMINATED.** o **Check** M-G Set Transfer switch in **NORM** position. ▪ Note: Following step must be **Performed Slowly** (approximately 2 seconds) to allow sufficient time for all expected actuations and isolations to occur prior to Transfer Switch reaching **Alt A** position. o **Slowly Place** RPS M-G Set Transfer switch HS-C72B-S1 in the **ALT-A** position. ▪ **Restore** systems in accordance with Attachment C. ▪ Attachement C, Step 1. ▪ Resets RPS Trip System by Momentarily Positioning RPS SCRM RESET control Switch HS-C72A-1S05 as follows: o **To GRP 1/4 position** o To GRP 2/3 position ▪ Observes following alarm CLEAR: o **RPS Channel A1/A2 AUTO SCRAM** o RPS Channel B1/B2 AUTO SCRAM o SCRAM PILOT VALVE AIR HEADER LO PRESS. ▪ Step 2, **Reset** NSSSS isolation logic as follows: 2.1 **Depress** MN STM LINE DIV 1 ISO RESET HS-B21-1S32. 2.2 **Depress** MN STM LINE DIV 2 ISO RESET HS-B21-1S33.

Op-Test No.: ___ Scenario No.: 2 Event No.: 4

Event Description: Failure of MCC 1B217 resulting in loss of 'A' loop of DW spray and ½ scram.

Time	Position	Applicant's Actions or Behavior
	ATC	▪ Step 3, **Recover** from RBCW isolation as follows: 3.1 **Ensure** RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 **CLOSED**. 3.2 **Ensure** RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 **CLOSED**. 3.3 **Depress** HV-18791A1&A2 ISOLATION RESET. 3.4 **Depress** HV-18792A1&A2 ISOLATION RESET. 3.5 **Ensure** RRP A CLG WTR OB ISO VALVES HV-18791A1&A2 **OPEN**. 3.6 **Ensure** RRP B CLG WTR IB ISO VALVES HV-18792A1&A2 **OPEN**
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: 2 Event No.: 5 Event Description: RBCCW pump swap due to excessive seal leakage on running pump.		
Time	**Position**	**Applicant's Actions or Behavior**
	SRO	▪ Directs the ATC to swap RBCCW pump IAW OP-114-001, Reactor Building Close Loop Cooling Water System (RBCCW).
	BOP	Step 2.2 of OP-114-001 2.2.3 At Panel 1C668, **Start** standby RBCCW PUMP 1P210B(A) by **Depressing** START push button. 2.2.4 **Observe** RBCCW Pump B(A) discharge pressure between 90-110 psig on local pressure gage PI-11306B(A). 2.2.5 **Slowly Close** running RBCCW Pump A(B) Dsch 113062(113068). 2.2.6 **Stop** running RBCCW PUMP 1P210A(B) by **Depressing** STOP push button. 2.2.7 **Check** RBCCW Pump B(A) discharge pressure between 80-95 psig on local gauge PI-11306B(A). 2.2.8 **Check** RBCCW HX discharge pressure on PI-11308, Panel 1C668 stabilizes between 72-82 psig. 2.2.9 **Open** RBCCW Pump A(B) Dsch 113062(113068).
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: 2 Event No.: 6

Event Description: 'A' Recirc pump speed oscillation/ Lock up the 'A' recirc pump.

Time	Position	Applicant's Actions or Behavior
	ATC	▪ Recognizes and reports the 'A' recirc pump oscillations. ▪ Recognizes and reports the oscillation as an entry into ON-156-001, Unanticipated Reactivity Change. ▪ May reduce power AND lock the affected scoop tube OR trip the affected pump. ▪ ON-156-001, Unanticipated Reactivity Change Immediate Operator Actions ▪ **IF** a rapid speed change is experienced on a Reactor Recirc Pump, take immediate action to Reduce Power **AND** Lock the affected scoop tube **OR** trip the affected pump. (Provide NRC how much power level expected to be reduced) ▪ ON-156-001, Unanticipated Reactivity Change, ▪ Step 4.2, **Check** current rod position, OD-7 against rod patterns provided in the CRC Book to determine drifted or scrammed rods. ▪ Step 4.3, **IF** time permits, **Initiate** TRA. ▪ Step 4.4, **IF** applicable, **Perform** ON-178-002 Core Flux Oscillations.
	SRO	▪ Directs ATC to reduce power AND lock the affected scoop tube OR trip the affected pump. ▪ Enters ON-156-001, Unanticipated Reactivity Change ▪ Refers to TS 3.1.2 ▪
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: _2__ Event No.: __7_ Event Description: SRV 'B' inadvertently opens and stays open		
Time	**Position**	**Applicant's Actions or Behavior**

Op-Test No.: ___ Scenario No.: 2 Event No.: 7

Event Description: SRV 'B' inadvertently opens and stays open

Time	Position	Applicant's Actions or Behavior
	BOP/ATC	▪ Recognizes and reports SRV 'B' open ▪ Takes action IAW AR-110-001, Main Steam Div 2 SRV open (E03) o Check for any Division 2 Safety Relief Valve open. o Check relief valve discharge line temperatures on SRV/ADS Temperature TR-B21-1R614 at Panel 1C614. o IF no reason apparent for alarm, Notify I&C to troubleshoot TEC Valve Flow Monitor System. o IF safety relief valve open, Perform ON-183-001 Stuck Open Safety-Relief Valve. o IF steam discharged to Suppression Pool, Comply with TS 3.6.1.6 within 2 hours. o IF a failed Acoustic Monitor channel is the cause of the alarm, Comply with TR 3.3.4. ON-183-001, ▪ Step 3.3, **IF** SRV open due to other than RPV high pressure, **Place** affected SRV control switch to **OFF.** ▪ Step 3.5, **IF** the SRV Control Switch was placed in **OFF** and indications are that the SRV did not **CLOSE**, **Perform** the following: o **Obtain** concurrence from Shift Supervision, **THEN Place** the 'B' SRV control switch to **OPEN**. o **Return** SRV control switch to **OFF**. o **Check** for SRV closure IAW Section 3.4 of this procedure. o As directed by Shift Supervision, **Repeat** steps 3.5.1 through 3.5.3 until evident SRV will not close, **AND/OR** Continue with next step

Op-Test No.: ___ Scenario No.: 2 Event No.: 7 Event Description: SRV 'B' inadvertently opens and stays open		
Time	**Position**	**Applicant's Actions or Behavior**
		▪ Step 3.6, **IF** SRV did **NOT** close when control switch was placed in **OFF**, attempt to **Close** SRV by removal of fuses per Attachment A for affected SRV as follows: ▪ Pull fuses at 1C628 (12/754') and Verify. ▪ Check for SRV CLOSURE IAW Section 3.4 of this procedure. ▪ IF SRV closure successful, Leave fuses removed and Apply SCT. ▪ IF SRV fails to CLOSE, Restore fuses pulled in Step 3.6.1 and Independently Verify ▪ Step 3.7, **IF NOT** required for adequate core cooling, **Place** at least one loop of RHR in Suppression Pool Cooling Mode in accordance with OP-149-005. 1. Places ESW in service. 2. Places RHRSW in service to RHR heat exchanger A (B). 3. Opens Suppression Chamber test shutoff valve HV-151-F028A(B). 4. Starts RHR pump 1P202A(B)(C)(D). 5. Throttles open test line control valve HV-F024A(B) to achieve ≤ 10,000 gpm on FI-E11-1R603 A(B). 6. Observes minimum flow valve HV-151-F007A(B) closes at ~ 3000 gpm. 7. Closes heat exchanger bypass HV-151-F048A(B). 8. Checks RHR pump room coolers 1V210A(B)(C)(D) started.

Op-Test No.: ___ Scenario No.: 2 Event No.: 7

Event Description: SRV 'B' inadvertently opens and stays open

Time	Position	Applicant's Actions or Behavior
	ATC	ON-100-101, SCRAM, SCRM IMMINENT Immediate Operator Actions: Steps: 4.1 **Place** Mode Switch HS-C72A-1S01 to **SHUTDOWN** 4.2 **Observe** all Control Rods indicate fully inserted (using two indications, OD-7 completed as soon as possible) 4.3 **IF** more than 1 control rod >00: 4.3.1 **ARM AND Depress** manual scram pushbuttons. a. RPS MAN SCRAM CHAN A1 HS-C72A-1S03A b. RPS MAN SCRAM CHAN B1 HS-CS72A-1S03B c. RPS MAN SCRAM CHAN A2 HS-C72A-1S03C d. RPS MAN SCRAM CHAN B2 HS-C72A-1S03D 4.3.2 **Initiate** ARI by arming and depressing: a. ARI DIV 1 MAN TRIP HS-147103A1 TRIP b. ARI DIV 2 MAN TRIP HS-147103B1 TRIP 4.3.2 **IF** more than 1 control rod remains > 00, **Enter** EO-100-113 at step LQ/Q2. 4.4 **Insert** IRMs and SRMs.

Op-Test No.: ___ Scenario No.: 2 Event No.: 7 Event Description: SRV 'B' inadvertently opens and stays open		
Time	**Position**	**Applicant's Actions or Behavior**
	SRO	▪ Enters ON-183-001 Stuck Open Safety-Relief Valve. ▪ Directs **Reactor Scram** ▪ **Immediately Scram** Reactor for **ANY** of the following: o It is evident SRV **WILL NOT** close. o SRV is open **AND BEFORE** suppression pool temperature reaches 110°F. (TS 3.6.2.1) o Reactor Pressure approaching **OR** exceeds 1087 psig. ▪ **Concurres** on placing the 'B' SRV control switch to **OPEN** and returning SRV control switch to **OFF**. ▪ **Refer** to NDAP-QA-0720 for required ENS notification
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: 2 Event No.: 8

Event Description: SRV 'B' Suppression Chamber Tailpipe Break

Time	Position	Applicant's Actions or Behavior
	BOP/ATC	• Recognizes drywell pressure increase. • Responds to ECCS LOOP B HI DRWL PRESS (A03) alarm • Responds to HI DRYWELL PRESS SIGNAL B SEALED-IN (B04) alarm. • Recognizes pipe rupture inside the drywell. **IF** RHR LOOP B initiated, Ensure Automatic Actions following system initiation in accordance with OP-149-001. • Check Drywell Inerting System for proper operation. • Check Recirculation Pump Seal pressures to determine if any failed. • Check Containment Cooling System for proper operation in accordance with OP-134-001. • Perform ON-159-002. • Perform EO-100-102. • Perform EO-100-103. • Ensure adequate cooling to Diesels in accordance with OP-024-001 as soon as possible (preferably within 8 min Unloaded, 4 to 5 min Loaded). • IF Core Spray Loop B initiated, Ensure system initiation in accordance with OP-151-001 AUTOMATIC ACTION: • RHR LOOP B initiates if both pressure switches pick up along wit low Reactor pressure. • HPCI System initiates if both pressure switches pick up. • Core Spray LOOP B initiates if both pressure switches pick up alc with a low Reactor pressure. • Diesel Generators B&D Auto **START**. • Drywell Area Unit Coolers **TRIP**.

Op-Test No.: ___ Scenario No.: 2 Event No.: 8

Event Description: SRV 'B' Suppression Chamber Tailpipe Break

Time	Position	Applicant's Actions or Behavior
	SRO	• Enters EO-000-102, RPV CONTROL, and EO-000-103, PRIMARY CONTAINMENT CONTROL, when drywell pressure exceeds 1.72 psig: Directs PCOs to perform panel walkdown for: • Isolations • Initiations • D/G starts • Directs RPV level band +13 to +54 inches with RCIC and HPCI • Directs prevention of uncontrolled condensate injection, and injection from LPCI and CS pumps. • Directs Suppression Chamber Spray.
	BOP	OP-149-004, Step 2.8.2 • IF directed to spray Suppression Chamber: a) Throttle Open HV-151-F027B SUPP POOL SPRAY CTL, as necessary, to maintain ≤ 500 GPM as indicated on FI-15120B CONT SPRAY DIV 2 AND Maintain total-loop flowrate ≤ 10,000 gpm. b) Monitor Suppression Chamber pressure c) IF required, Place RHRSW in service to RHR HX per section 2.9. <u>Caution</u> Before Supp. Chamber pressure drops to 0 psig stop Supp. Chamber Spray
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ___ Scenario No.: 2 Event No.: 9 Event Description: Running RHR pump B trips on pre-overload causing loss of suppression pool cooling.		
Time	**Position**	**Applicant's Actions or Behavior**
	* **SRO**	▪ **Directs alignment of RHR for Drywell Sprays when Supp Chamber exceeds 13 psig (CT-1).** ▪ **Directs Drywell spray flow limited to between 1000 and 2800 gpm for first 30 seconds (CT-2).**
	BOP	▪ Recognizes and reports that running RHR pump B tripped. ▪ Acknowledges the following alarm: o RHR Pump B pre-overload (A07/08).
	SRO	▪ Directs to start RHR D if not running and align RHR D for DW spray.
	* **BOP**	▪ **Aligns RHR pump D for DW sprays when suppression chamber pressure exceeds 13 psig (CT-1).** **OP-149-004, Step 2.8.3** ▪ **Open** HV-151-F021B DRWELL SPRAY IB ISO ▪ **Ensure** both RRP's, all DW coolers and fans are shutdown ▪ **Throttle** HV-151-F016B DRYWELL SPRAY OB ISO, as necessary, to establish a flowrate **BETWEEN 1000 AND 2800 GPM** for the first 30 seconds as indicated on FI-15120B CONTN SPRAY DIV 2 **AND Maintain** total loop flowrate ≤ 10,000 gpm. ▪ **AFTER** 30 seconds, **Throttle Open** HV-151-F016B to establish a total loop flowrate 9,500 to 10,000 GPM as indicated on FI-E11-1R603B RHR D FLOW. ▪ **Monitor** Drywell pressure. ▪ **IF** required, **Place** RHRSW in service to RHR HX per section 2.9
	* **BOP**	▪ **Limits DW spray flow to between 1000 and 2800 gpm for first 30 seconds (CT-2).**

POST-SCENARIO :
HAVE THE APPLICANT IN THE CRS POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

Facility: Susquehanna Scenario No.: 3 Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Unit 1 100% power, EOL, Unit 2 10% for drywell entry/leak identification

Turnover: Shift orders are to perform SO-155-006, Quarterly ARI Manual Trip Channel Functional Test

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Quarterly ARI Manual Trip Channel Functional Test
2	FW145012	I-ATC	Leading Edge Flow Meter Computer Failure
3	MS1460013A	C-BOP TS-SRO, R-ATC	3A Feedwater Heater Extraction Steam Isolation, Power Reduction
4	CN02_TIC11028 f:0	C-BOP	RBCCW Temperature Controller Fails in Auto
5	mfAN_AR103B01 4	I-ATC, TS-SRO	Drywell Pressure Instrument Failure Without ½ Scram
6	DB157001	C-ATC, C-BOP	Loss of 1Y218
7	HP152009	M-All	HPCI Equipment Room Steam Leak, HPCI Isolation Failure
8	RP158007B, mfFW145009A-C	C-BOP	Loss of all RFP, Failure of 'B' RPS, ARI Completion of Scram
9	mfAD183001, diHSB211530AA f:norm, diHSB211530BA f:norm	C-BOP	Failure of All SRV, Depress Using BPV

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

Scenario Summary

The crew begins with the plant at 100% power. As part of turnover, the crew is directed to perform SO-155-006, Quarterly ARI Manual Trip Channel Functional Test. When testing is complete, a failure of the LEFM computer will require entry into ON-100-006. The crew will take action to suspend all activities affecting core reactivity and will reduce core flow using recirc by 0.5 Mlbm/hr.

Once the core thermal feedwater input has been changed from LEFM to Venturi, the 3A Feedwater Heater Extraction Steam Isolation Valve will spuriously close. The crew will take action per ON-147-001 Loss of Feedwater Heating Extraction Steam to lower reactor power ≤71% power; SRO will address thermal limit Tech Specs.

Once the Tech Spec call is complete, the RBCCW temperature controller will fail in automatic, causing a rise in temperatures on all RBCCW cooled components. The crew will take action in accordance with ON-114-001 to begin monitoring Recirc Pump motor bearing and seal cavity temperatures. The crew will diagnose a failure of the temperature controller in AUTO and take manual control to restore system temperatures.

When RBCCW cooled component temperatures begin to recover, a failure of a drywell pressure transmitter will fail high without an accompanying ½ scram. The crew will respond per alarm response, diagnose a failed transmitter and failure to ½ scram, and the SRO will consult Tech Specs. The crew will insert a ½ scram on 'A' RPS and contact I&C to insert a trip on the failed instrument.

Once ½ scram insertion is complete, the feeder breaker for 1Y218 will trip, resulting in a loss of instrument bus 1Y218, requiring the crew to enter ON-117-001. The crew will take action in accordance with ON-117-001 to place Refueling Water Pumps in service to supply Condensate Transfer System, in accordance with OP-037-003, take local manual control of the in-service CRD flow control valve, reset Recirc MG set lockups, and respond to a loss of Zone 1 and U1 Zone 3 ventilation. They will also note that they have lost several wide range level indicators, ARM's, full core display, and other ancillary indications. Partial restoration of the instrument panels will be successful, but the crew will be unable to restore 1Y219.

When the crew has stabilized the plant, a steam leak starts in the HPCI pump/equipment room. The crew will respond per alarm response to high room temperatures and will diagnose the steam leak. The crew will enter EO-100-104 Secondary Containment Control, focusing on the Secondary Containment Temperature leg. When the decision is made that a primary system is discharging into a table 8 RB area and a SCRAM is about to be performed, a trip of all three RFP's will occur.

The resultant loss of level will cause a low level SCRAM signal to be generated; however 'B' RPS will not generate a SCRAM signal, requiring the use of ARI to complete the SCRAM. Efforts to isolate the leak will be ineffective by automatic and manual means due to a loss of control power for the inboard isolation valve and mechanically bound outboard isolation valve.

Due to the loss of feedwater, this will prompt the crew to reduce reactor pressure using bypass valves to transition level control to condensate. Upon reactor building temperatures exceeding max safe values in two areas, the SRO will direct entry into EO-100-112 Rapid Depressurization. The SRO will direct opening of all ADS valves; upon discovering that no ADS

and only 1 other SRV will open, the SRO will direct alternate depressurization using bypass valves.

The scenario can be terminated once emergency depressurization using bypass valves has commenced.

Critical Tasks

1.

★ **Manually scram the reactor before any *Secondary Containment Area* temperature / radiation reaches Max Safe Temperature.**

Safety Significance

High-energy leakage into the Secondary Containment Area impacts the integrity of Secondary Containment. Failure of the Secondary Containment directly relates to the 10CFR50.67 design criteria of dose to the General Public.

Action is taken to isolate systems that are discharging into secondary containment to terminate possible sources of radioactivity release. If these efforts are unsuccessful, whatever reason, or conditions are approaching max safe thresholds, the reactor (source term) is placed in a low energy state, or shutdown.

Consequences for Failure to Perform Task

Failure to take actions to mitigate the energy released to the secondary containment directly affects the radiation dose to the General Public.

SSES EOP Basis for:

SC/T-8 **BEFORE** ANY RB AREA TEMP REACHES MAX SAFE

GO TO RPV CONTROL

Areas monitored by steam leak detection (RWCU equipment, main steam line tunnel, HPCI and RCIC pipe routing, HPCI equipment, and RCIC equipment) are assigned a Max Safe temperature equal to the steam leak detection isolation setpoint. "The setpoints are designed to detect a leakage rate below the leak rate corresponding to critical crack size for the smallest high energy line in the room which is part of the respective system." (FSAR 5.2.5.1.3). Instrumentation and components required for isolation are qualified up to the isolation temperature setpoints.

(Reference: SSES-EPG SC/T-4.1)

SC/R-5 **BEFORE** ANY RB AREA RAD REACHES MAX SAFE

GO TO RPV CONTROL

The Max Safe operating radiation level is the most limiting area radiation level which will ensure personnel exposure is kept below the emergency exposure limit (25 Rem) while performing EOP actions in the secondary containment for a period no longer than 2.5 hours (i.e., 25 Rem/2.5 hr = 10 Rem/hr).

A reactor scram through entry to EO-000-102, RPV Control, promptly reduces to decay heat levels the energy that the RPV may be discharging to the secondary containment. The instruction to take this action at any time between the Max Normal and the Max Safe operating value may help avoid reaching the more severe action of rapidly depressurizing the RPV.

(Reference: SSES-EPG SC/R-2.1)

Indications/Cues for Event Requiring Critical Task

Simplex Fire Detection alarms indicating High temperatures in RB Areas
Increasing area radiation and alarms for RB Areas
Increasing Steam Leak Detection System temperatures and alarms

Performance Criteria

Manually Scram the Reactor prior to Exceeding Max Safe Temperature/Radiation as indicated by associated control room alarms and PICSY radiation indications.

Performance Feedback

Initiating a reactor scram reduces the heat load that will be absorbed and released by the Secondary Containment as well as the radioactive source term.

Rods inserted
Power lowering

2.

★ **Rapidly depressurize the reactor when two Secondary Containment Areas exceed Max Safe Rad / Temperature / Water levels.**

Safety Significance

High-energy leak in the Secondary Containment Area impacts the integrity of Secondary Containment. Failure of the Secondary Containment directly relates to the 10CFR50.67 design criteria of dose to the General Public.

Action is taken to isolate systems that are discharging into secondary containment to terminate possible sources of radioactivity release. Minimizing radioactive release to secondary containment also helps accomplish the objective of precluding a radioactive release outside secondary containment under conditions where secondary containment integrity cannot be maintained. Previous containment control actions have not, for whatever reason, mitigated the event and now potentially large areas of the secondary containment have been challenged.

Consequences for Failure to Perform Task

Failure to take actions to mitigate the energy released to the secondary containment directly affects the radiation dose to the General Public.

SSES EOP Basis for:

SC/T-9 **WHEN** RB AREA TEMP EXCEEDS MAX SAFE
IN **2** OR MORE AREAS

RAPID DEPRESS IS REQ'D

SC/R-6 **WHEN** RB AREA RAD EXCEEDS MAX SAFE
IN **2** OR MORE AREAS

RAPID DEPRESS IS REQ'D

SC/L-7 **WHEN** RB AREA WATER LEVEL EXCEEDS MAX SAFE
IN **2** OR MORE AREAS

RAPID DEPRESS IS REQ'D

Should secondary containment area temperatures/radiation/water levels continue to increase to their Max Safe values in more than one area with a primary system discharging into secondary containment, the RPV must be rapidly depressurized. Depressurizing the RPV promptly places the primary system in its lowest possible energy state, rejects heat to the suppression pool in preference to outside the containment, and reduces the driving head and flow of primary systems that are un-isolated and discharging into the secondary containment.

The criteria of "2 or more areas" identifies the increase in temperature (radiation or water level) trend as a wide spread problem which may pose a direct and immediate

threat to secondary containment integrity, equipment located in the secondary containment, or continued safe operation of the plant.

Indications/Cues for Event Requiring Critical Task

Increasing Steam Leak Detection System temperatures and alarms indicating levels at Max Safe values.
Increasing area radiation and alarms for RB Areas indicating levels at Max Safe values.
PICSY formats indicating radiation values greater than Max Safer values.
Reactor Building room levels above high level annunciation or as confirmed by local evaluation.

Performance Criteria

Perform a Rapid Depressurization per EO-100-112 when two or more RB areas exceed max safe temperatures per EO-100-104 Table 8
Perform a Rapid Depressurization per EO-100-112 when two or more RB areas exceed max safe radiation per EO-100-104 Table 9 (10 R/hr for all areas)
Perform a Rapid Depressurization per EO-100-112 when two or more RB areas exceed max safe water level per EO-100-104 Table 10

Initiate ADS / Manually open all 6 ADS valves

Performance Feedback

Initiating a rapid depressurization causes Reactor pressure to lower which lowers the driving force of any primary system breach.

Verify ADS valves are open using light red light indication, acoustic monitoring and lowering Reactor pressure and rising reactor water level.

The scenario may be terminated once emergency depressurization using bypass valves has commenced

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ Reset simulator to Scenario IC or IC-43 and perform the following: - 100% Power - 'B' CS loop out of service
	■ Apply Information Tags on the following components: - 'B' CS loop components
	■ Take out of FREEZE and ensure the following: - Reactor Power is 100% with stable reactor water level
	■ Ensure materials for applicants: - Turnover sheet - SO-155-006
	■ Ensure the following malfunctions are loaded: - cmfHV09_HV155F003 HPCI steam isolation valve binding during motion (set to bind after split indication) - RP158007B B RPS failure - IMF mfAD183001 ADS initiation failure - IOR diHSB211530AA f:norm - IOR diHSB211530BA f:norm - IMF cmfNB01_PSB211N022A(through S) - IMF cmfRB02_PSV141013A(through S) - IOR diHS14113(G, J, K, L, M, N)3 f:auto - IOR diHS14113(A, B, C, D, E, H, P, R, S)1 f:auto (F SRV is allowed to work) ■ **Ensure** the following remote functions are loaded: - None ■ **Ensure** the following overrides are loaded: - mfAN_AR101F11 2 RFP A BRG OIL LO PRESS Alarm Off - mfAN_AR101F13 2 RFP A BRG OIL LO PRESS Alarm Off - mfAN_AR101F15 2 RFP A BRG OIL LO PRESS Alarm Off ■ **Ensure** the following triggers are built: - Trigger 1 activate cmfHV01_HV155F002 when F002 keylock switch taken to close

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	■ **Ensure** the following Soft Keys are built: {Key[1]} FW145012 LEFM Computer Failure {Key[2]} MS1460013A 3A Feedwater Heater Extraction Steam Isolation {Key[3]} CN02_TIC11028 f:0 RBCCW temperature controller fails in AUTO {Key[4]} mfAN_AR103B01 4 Pri Cont High Press Trip Annunciator ON {Key[5]} DB157001 1Y218 feeder breaker trip {Key[6]} HP152009 HPCI Equipment Room Steam Leak {Key[7]} mfFW145009A-C RFP A-C trip
	■ Reset any annunciators that should not be present

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Quarterly ARI Manual Trip Channel Functional Test

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Respond to request for assistance as appropriate

EVENT 2: LEFM Failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 1 when chief examiner ready to proceed
	■ When dispatched as NPO, report that breaker 1Y128-38 is tripped
	■ As NPO, if directed to reset and re-close 1Y128-38, report that breaker will not stay closed
	■ As I&C, report that there appears to be an internal problem, unsure when LEFM will be restored to service
	■ Respond to request for assistance as appropriate

EVENT 3: 3A Feedwater Heater Extraction Steam Isolation & Power Reduction

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Activate Soft Key 2 after CTP indication has stabilized and chief examiner ready to proceed
	■ As NPO dispatched to 1C101: Wait 1 minute and report no apparent reason for valve closure
	■ As I&C, contact the control room and report that you had arced across several contacts with your multimeter. Upon reviewing the prints, it appears that the terminals are connected to HV-10240A. Report that you are checking all points to verify proper voltages and that the crew should be able to re-open the valve in approximately 45 minutes.
	■ Respond to request for assistance as appropriate

EVENT 4: RBCCW Temperature Controller Fails in Auto

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once step 3.6.5 of ON-147-001 is complete and chief examiner ready to proceed, activate Soft Key 3
	■ If dispatched as NPO, report no abnormalities at temperature control valve
	■ Respond to request for assistance as appropriate.

EVENT 5: Drywell Pressure Instrument Failure without ½ SCRAM

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once RBCCW temperatures have begun to stabilize and chief examiner ready to proceed, activate Soft Key 4
	■ When dispatched as NPO, report no abnormalities locally
	■ As I&C, report failure of PSH-C72-1N002A, still investigating cause of RPS logic failure
	■ Respond to request for assistance as appropriate.

EVENT 6: Loss of 1Y218

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once Tech Spec call is complete and chief examiner ready to proceed, activate Soft Key 5
	■ When dispatched as NPO to 120V Instrument AC UPS 1D240, report an acrid smell in the room, and alarm lamp number 7 is lit, indicating an output overload. Sequentially restore breakers on the panel as required by procedure. About 5 minutes later, report that the acrid smell is dissipating, 1Y218 has been restored, but breaker 38-40-42 cannot be reclosed, so 1Y219 will remain de-energized until troubleshooting/repair is completed
	■ As NPO, acknowledge and take local control of CRD flow control valves to restore CRD system flow
	■ As NPO, acknowledge and place Refueling Water Pumps in service to supply Condensate Transfer System IAW OP-037-003, section 2.22.
	■ As NPO, when dispatched to recirc mg set 1CB137A(B): ■ Report that you are properly grounded ■ Report current simulator values for recirc positioned command and position values when requested by ATC ■ When requested, press HS-B31-1S03A(B) scoop tube reset pushbuttons
	■ Respond to request for assistance as appropriate

EVENT 7: HPCI Equipment Room Steam Leak

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ When chief examiner ready to proceed, activate Soft Key 6
	■ If dispatched as NPO to investigate possibility of steam leak, report loud flow noise inside HPCI room and that the door is warm to the touch.
	■ When dispatched to investigate MOV failures, report 1B237-082 for F002 is tripped; if requested to re-close breaker report that cannot be re-closed. Report no abnormalities at 1D264-081 for F003.
	■ Respond to request for assistance as appropriate

EVENT 8: Loss of all RFP, Failure of 'B' RPS, ARI Completion of SCRAM

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Once level control established using RFP and with chief examiner concurrence, activate Soft Key 7
	■ Respond to request for assistance as appropriate

EVENT 9: Failure of all SRV, Rapid Depressurization Using Bypass Valves

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	■ Adjust leak rate as required by scenario/chief examiner to ensure leak rate will result in multiple areas above max safe temperature
	■ Respond to request for assistance as appropriate.

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 1 Page ___ of ___

Event Description: Performance of SO-155-006, QUARTERLY ARI MANUAL TRIP CHANNEL FUNCTIONAL TEST

Time	Position	Applicant's Actions or Behavior
	BOP	**Evaluator note**: *This test contains sections of steps that must be performed in close succession to ensure proper timing of system response* (Step 5.1) Confirm Following: (Step 5.1.1) ARI DIV 1 SCRAM AIR HDR VENT SV-14799 CLOSED. (Step 5.1.2) ARI DIV 2 SCRAM AIR HDR VENT SV-147100 CLOSED. (Step 5.1.3) ARI DIV 1 SCRAM AIR HDR BLOCK SV-147101 OPEN. (Step 5.1.4) ARI DIV 2 SCRAM AIR HDR BLOCK SV-147102 OPEN.
		(Step 5.2) Test ARI DIV 1 MAN TRIP as follows: (Step 5.2.1) Place collar of ARI DIV 1 MAN TRIP HS-147103A1 to ARMED position. (Step 5.2.2) Confirm ARI MAN TRIP DIV 1 SWITCH ARMED annunciator ALARMS. (Step 5.2.3) Perform following in immediate succession: (Step 5.2.3.a) Depress ARI DIV 1 MAN TRIP HS-147103A1 and Release. AND (Step 5.2.3.b) Simultaneously Start timing 25 second time delay relay which inhibits system reset. THEN (Step 5.2.4) Depress and Hold ARI DIV 1 RESET HS-147103A2 push button. (Step 5.2.5) Confirm and Record Attachment A the following: (Step 5.2.5.a) ARI DIV 1 SCRAM AIR HDR VENT SV-14799 OPEN. (Step 5.2.5.b) ARI DIV 1 SCRAM AIR HDR BLOCK SV-147101 CLOSED.

		(Step 5.2.7) Stop timing relay when following occurs: (Step 5.2.7.a) ARI DIV 1 SCRAM AIR HDR VENT SV-14799 CLOSED. AND (Step 5.2.7.b) ARI DIV 1 SCRAM AIR HDR BLOCK SV-147101 OPEN. (Step 5.2.8) Confirm ARI TRIP DIV 1 annunciator CLEARED at Panel 1C651. (Step 5.2.9) Release ARI DIV 1 RESET HS-147103A2 pushbutton. (Step 5.2.10) Record ARI DIV 1 time delay for resetting system logic on Attachment A. (1)

		(Step 5.3) Test ARI DIV 2 MAN TRIP as follows: (Step 5.3.1) Place collar of ARI DIV 2 MAN TRIP HS-147103B1 to ARMED position. (Step 5.3.2) Confirm ARI MAN TRIP DIV 2 SWITCH ARMED annunciator ALARMS. (Step 5.3.3) Perform following in immediate succession. (Step 5.3.3.a) Depress ARI DIV 2 MAN TRIP HS-147103B1 and Release. AND (Step 5.3.3.b) Simultaneously Start timing 25 second time delay relay which inhibits system reset. THEN (Step 5.3.4) Depress and Hold ARI DIV 2 RESET HS-147103B2 pushbutton. (Step 5.3.5) Confirm and Record on Attachment A the following: (Step 5.3.5.a) ARI DIV 2 SCRAM AIR HDR VENT SV-147100 OPEN. (Step 5.3.5.b) ARI DIV 2 SCRAM AIR HDR BLOCK SV-147102 CLOSED. (Step 5.3.6) Confirm ARI TRIP DIV 2 annunciator ALARMS at Panel 1C651. (Step 5.3.7) Stop timing relay when following occurs: (Step 5.3.7.a) ARI DIV 2 SCRAM AIR HDR VENT SV-147100 CLOSED. AND (Step 5.3.7.b) ARI DIV 2 SCRAM AIR HDR BLOCK SV-147102 OPEN.
	BOP	Informs SRO of satisfactory test completion

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 2 Page ___ of ___

Event Description: Leading Edge Flow Meter Computer Failure

Time	Position	Applicant's Actions or Behavior
	ATC	Recognize and respond to Computer Alarm and indications: PICSY core thermal power indication indicating white Alarm CRT message "1C1107 Trouble" PICSY LEFM FW Flow computer points indicating white PICSY LEFM FW Temperature computer points indicating white Reports indications to SRO
	SRO	Directs entry in ON-100-006, LOSS OF REACTOR HEAT BALANCE CALCULATION (Step 3.2) Directs crew to suspend any activities related to reactivity increase in the core. (Step 3.2.1) Directs ATC to utilize APRMs for indication of Reactor Power (Step 3.2.2) Once Core thermal power heat balance is unavailable for >15 minutes, directs ATC to reduce core flow by approximately 0.5 Mlbm/hr (Step 3.2.3) Requests STA to select FW Venturi Flow Elements IAW OP-131-002. Upon discovering STA is unavailable, directs ATC/BOP to perform this action
	ATC	Monitors APRMs for power indication Dispatches NPO to investigate loss of LEFM, check breakers per step 3.2.7 (OP-164-002 Step 2.1.6 at Rx Recirc HMI screens) Touch the MANUAL MODE SELECT button (Step 2.1.7) Touch the MANUAL MODE SELECT button on the confirmation overlay screen. (Step 2.1.7.a) Ensure the MANUAL Screen Select button and MANUAL MODE SELECT buttons change color from blue to yellow. (Step 2.1.7.b) Ensure the MANUAL MODE SELECT button text now reads MANUAL MODE SELECTED
		(Step 2.1.8) Slowly Adjust REACTOR RECIRC PUMP A(B) SPEED SY-B31-1R621A(B) Controller Demand with the applicable DEC pushbuttons until core flow has been reduced 0.5 Mlbm/hr

	SRO	Upon receiving communication from NPO that LEFM breaker has tripped, directs NPO to re-close breaker 1Y128-38; breaker will not remain closed
	ATC	Performs OP-131-002 Section 2.5 to swap feedwater inputs into OD-3 (Step 2.5.5) Press the ESC key on the PICSY keyboard. (Step 2.5.6) Type LEFMP in the Turn-On Code (TOC) field and Press ENTER. (Step 2.5.7) Ensure the desired feedwater source (venturi or LEFM) is providing data to the OD3 program. (Step 2.5.8) IF the OD3 input is not correct, Swap to the other input as follows: (Step 2.5.8.a) Type FWFETOGL in the TOC field and Press ENTER (Step 2.5.8.b) Type Y in response to the prompt "CHANGE FW FLOW INPUTS TO CTP (Y/N)?" and Press ENTER. (Step 2.5.8.c) Ensure the message on the LEFMP screen changes and indicates the correct feedwater input NOTE: It may take up to 4 minutes for indicated CTP to stabilize. (Step 2.5.9) Notify Unit Supervisor to evaluate need to perform SO-178-004, Weekly APRM Calibration.

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 3 Page ___ of ___

Event Description: 3A Feedwater Heater Extraction Steam Isolation, power reduction

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	Note rising reactor power, may or may not immediately know the cause. Reports rising reactor power to SRO.
	SRO	Announces entry into ON-156-001 Unanticipated Reactivity Change. When reactor power reported to be exceeding 3952 MWth, announces entry into ON-100-004, Reactor Power greater than the Authorized Limit
		(ON-156-001 Step 4.5) IF change resulted in power increase: (Step 4.5.1) IF > 3952 MWth as indicated on computer point NBA 100 (1 minute average), Perform ON-100-004, "Reactor Power greater than Authorized Limit," OTHERWISE (Step 4.5.2) Reduce reactor power to level at which it was prior to reactiv change (Step 4.7) AS REQUIRED, Take Action to correct any apparent change in any following variable which could affect reactivity:
	ATC	Notes core thermal power >3952 MWth, reports to SRO
	SRO	Per ON-100-004 step 3.2, directs ATC to reduce core thermal power <3952 MWth using recirc (Step 3.3) Requests STA determine the maximum thermal power excursion by using PICSY Notifies Reactor Engineering
	ATC	(OP-164-002 Step 2.1.8) Slowly Adjust REACTOR RECIRC PUMP A(B) SPEED SY-B31-1R621A(B) Controller Demand with the applicable DEC pushbuttons until core thermal power has been reduced below and remains below 3952 MWth

	BOP	Discovers cause of reactivity excursion to be isolation of extraction steam to 3A Feedwater heater, finds Extraction Steam to 3A Heater Isolation Valve HV-10240A closed Dispatches NPO to local alarm/control panel 1C101 to investigate
	SRO	Announces entry into ON-147-001 Loss of Feedwater Heating Extraction Steam
		(ON-147-001 Step 3.2) Direct ATC to Immediately Reduce Reactor Power IAW RE Instructions in CRC Book to ≤71% RTP by Performing step 3.2
		(Step 3.3) Directs ATC to perform ON-164-002 Loss of Reactor Recirculation Flow (Step 3.4.1) Directs ATC to monitor position and comply with Stability Region Requirements on Power/Flow map.
		(Step 3.4.2) Directs BOP to monitor Main Steam Line Radiation Monitor RR-D12-1R603 and Offgas Pretreatment Log Radiation Monitor RR-D12-1R601
		Contacts Reactor Engineering, I&C, Work Week Manager
		Announces that they are entering LCO 3.2.2 for MCPR, and if feedwater heating is lost and cannot be restored within 2 hours, they are required to isolate the affected feedwater string. Maximum power level with 2 feedwater strings is 71%.
	ATC	(OP-164-001 Step 3.2.2.b) Adjust the double chevron DEC buttons on the REACTOR RECIRC PUMP A(B) SPEED controllers SY-B31-1R621A & B as required to establish the final Core Flow value stated in the CRC Book until reactor power ≤71% RTP
		(Step 3.2.1) IF required, Insert Control Rods as necessary to obtain a Rod Line which is less than the value stated in the CRC Book (Step 3.2.2) Initiate the required flow/power reduction by performing either of the following: (Step 3.2.2.a) Initiate a Manual Rx Recirc Limiter #2 Runback in accordance with OP-164-001 OR (Step 3.2.2.b) Adjust the double chevron DEC buttons on the REACTOR RECIRC PUMP A(B) SPEED controllers SY-B31-1R621A & B as required to establish the final Core Flow value stated in the CRC Book

		(ON-164-002 Step 4.4.1) Plots position on Power/Flow Map (Step 4.4.2) Selects a Non-Peripheral Control Rod (Step 4.4.3) Monitors LPRM for power oscillations
	BOP	(ON-147-001 Step 3.6) IF extraction steam lost to Feedwater Heater(s) 3A(B)(C) or 4A(B)(C), Ensure ISOLATION of extraction steam and drain inputs to any higher pressure heater(s) in same string as affected heater as follows: (Requires coordination with ATC, as removing 4th and 5th stage extraction steam will cause a rise in reactor power, and require subsequent reduction by ATC)
	BOP	(Step 3.6.1) Closes HTR 5A HP EXTR ISO HV-10242A (Step 3.6.2) Closes HTR 4A LP EXTR ISO HV-10241A (Step 3.6.3) Closes MSEP B DRN TO HTR 4A HV-10216A (Step 3.6.4) Closes MSEP A DRN TO HTR 4A HV-10213A (Step 3.6.5) Directs NPO to perform step 3.6.5 Reports completion to SRO
	ATC	While extraction steam valves are being closed to the A Feedwater string, monitors reactor power and reduces recirc flow to maintain reactor power <71%.

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 4 Page ___ of ___

Event Description: RBCCW Temperature Controller Fails in Auto

Time	Position	Applicant's Actions or Behavior
	BOP	Responds to AR-123-E05 RBCCW Header HI Temp
		Verifies alarm by checking temperature on RBCCW HX DSCH
	SRO	Announces entry in ON-114-001, directs BOP to perform ON-114-001
	BOP	(Step 3.2) Monitors and records Recirc Pump A&B motor bearing and seal cavity temperatures on TRSH-B31-1R601 at Panel 1C614, reports trends to SRO
	BOP	Reads AR-123-E05 probable causes: Loss of service water flow to RBCCW heat exchangers. High service water temperature. **Temperature control valve malfunction.** **Temperature controller malfunction.** RBCCW heat exchanger malfunction. RWCU Non-Regenerative Heat Exchanger Tube Leak. Reactor coolant leak into RBCCW at Recirc Pump Cover Cooler. Restart of RWCU under hot reactor conditions (expected thermal transient lasting several minutes until RBCCW stabilizes.(1)
		During investigation, notices RBCCW temperature controller TIC-11028 has failed in automatic and its output is zero
		Reports malfunctioning RBCCW temperature controller to SRO
	SRO	Directs BOP to take manual control of RBCCW temperature
	BOP	Takes manual control of RBCCW temperature controller TIC-11028 and opens TCV to restore system temperature
		Continues to monitor Recirc Pump A&B motor bearing and seal cavity temperatures while restoring normal system temperature

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 5 Page ___ of ___

Event Description: Drywell Pressure Instrument Failure Without ½ Scram

Time	Position	Applicant's Actions or Behavior
	ATC	Responds to AR-103-B01 Primary Containment HI Press Trip
		(Step 2.1) Ensure Automatic actions ('A' Scram solenoids for all 185 control rods deenergize)
		Checks drywell pressure to confirm alarm indication (drywell pressure is normal)
		Reports to SRO that drywell pressure is normal; suspect failed instrument
		Dispatches NPO to investigate locally
	BOP	Checks power to 'A' Scram groups, finds 'A' control rod solenoids still energized. Reports to SRO
	SRO	Determines that an instrument failure has occurred, but the attendant ½ scram did not come in. Determines that there is also a fault in the RPS subsystem in addition to the failed instrument due to the lack of ½ scram.
		Requests I&C, Work Week Manager support
		Declares entry into TS 3.3.1.1, condition A, which directs: A.1: Place channel in trip within 12 hours **OR** A.2 Place Associated trip system in trip Due to failure of the RPS logic, SRO will direct action A.2 to place the associated trip system in trip
		Directs ATC to insert an A1 RPS ½ scram
	ATC	Arms and depresses RPS MAN SCRAM CHAN A1 HS-C72A-1S03A

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 6 Page ___ of ___

Event Description: Loss of 1Y218

Time	Position	Applicant's Actions or Behavior
	ATC	Reports AR-106-F11 Instrument AC 1Y218/1Y219 Power Failure
	SRO	Announces entry into ON-117-001 Loss of Instrument Bus, and proceeds to section 3.4 for Instrument bus 1Y218/1Y219 trouble Requests Work Week Manager and electrical maintenance/FIN support
		(Step 3.4.1) Directs ATC/BOP to determine if 1Y218/1Y219 are energized by checking against list in Attachment E
		(Step 3.4.3) If 1Y218/1Y219 not energized: (Step 3.4.1.b) Refer to Attachment E for functions/instrumentation lost and recommended actions
		(Step 3.4.1.c) Directs ATC to dispatch NPO to 120V Instrument AC UPS 1D240 and Panel 1Y218/1Y219
		(Attachment E function 1) Directs BOP to perform ON-134-001
		(Attachment E function 2) Directs BOP to place Refueling Water Pumps in service to supply Condensate Transfer System in accordance with OP-037-003 and monitor ECCS Keepfill pressures
		(Attachment E function 3) Direct ATC to call up OD-7, Option 2 from Process Computer for rod position indication
		(Attachment E function 4) Direct ATC to dispatch NPO to take manual control of CRD flow control valves and restore system flow
		(Attachment E function 5/6) Request Chemistry initiate alternate reactor coolant sampling and local turbine bldg, SBGT and reactor building sampling
	BOP	(ON-134-001 Step 3.2) Monitors recirc pump A(B) motor winding temperatures
		(Step 3.3.2) Proceeds to section 3.5 due to loss of both chillers

	BOP	(Step 3.5.4.c) Perform the actions of Section 3.8, "IF Drywell Cooling Shifts from Reactor Building Chilled Water to RBCCW". (Step 3.8) IF Drywell Cooling Shifts from Reactor Building Chilled Water to RBCCW: (Step 3.8.1) At 1CB216A, Ensure RWCU Non-regen Heat Exchanger RBCCW Inlet Valve HV-11315 AUTO ISOLATES if drywell cooling water switched to RBCCW (Step 3.8.2) At 1C279, Check valves positioned as follows: (Step 3.8.2.a) RBCCW Supply Vlv FV-18771D OPENS. (Step 3.8.2.b) RBCCW Return Vlv FV-18771C OPENS. (Step 3.8.2.c) Chilled Water Supply Vlv to Drywell Coolers FV-18771B CLOSES. (Step 3.8.2.d) Chilled Water Return Vlv from Drywell Coolers FV-18771A CLOSES. (Step 3.8.3) Fully Open RBCCW COOLER TEMP TIC-11028 to maximize RBCCW cooling.
		At 1C693, Monitor Drywell temperature on DRYWELL ATMOS TEMP TR-15790A(B). IF average Drywell temperature exceeds 135 deg F, Comply with TS 3.6.1.5. Monitor Drywell pressure on Containment Atmosphere Parameters/Post Accident Monitor Recorder UR15701A(B) at Panel 1C601
	ATC	Proceeds to process computer and calls up OD-7 to monitor control rod positions due to loss of full core display Dispatches NPO to take local manual/auto control of CRD flow control valves to restore system flow
	BOP	Directs NPO to perform section 2.22 of OP-037-003 to supply the condensate transfer header using the refuel water pumps Continues to monitor ECCS keepfill pressures on 1C601

	SRO	Briefs crew on lost instrumentation and further required actions (Attachment E Step 14) Directs BOP to Reclose extraction steam valves HV10209B, HV10218B and HV10246B by using pushbutton and HV10204B, HV10205B and HV10220B by having Electrical Maintenance reenergize seal-in relays in Panel 1C102. (Step 34) Directs BOP to perform ON-134-002 due to loss of Zone 1 and U1 Zone 3 ventilation
	BOP	(Attachment E Step 14) Depresses common Close pushbutton for HTR STRING B EXTR LINE DRNS HS-10220B (Attachment E Step 14) Directs electrical maintenance to reenergize seal-in relays in Panel 1C102 to Reclose Extraction Steam Before Seat Drain Valves HV10204B, HV10205B and HV10220B for Feedwater Heaters 1-3B,1-4B,1-5B
		(ON-134-002 Step 3.2.4) IF Reactor Building Zone 1 or Zone 3 HVAC is NOT in service: (Step 3.2.4.a) IF Zone 1 HVAC is NOT in service for 4 hours, Be In HOT SHUTDOWN in accordance with GO-100-004 within next 6 hours unless Zone 1 HVAC is restored. (Step 3.2.4.c)**IF Zone 1 HVAC cannot be started, Start Reactor Building Cooling:** (Step 3.2.4.c.1) Start both loops of ESW in accordance with OP-054-001. (Step 3.2.4.c.2) Start all individual room cooler fans in accordance wit OP-134-002, Reactor Building HVAC Zone 1 and 3. (Step 3.2.4.d) Monitor Secondary Containment area temperatures. (Step 3.2.4.e) Obtains Maintenance Support.
	ATC	Directs NPO to perform step 3.4.3.f of ON-117-001 to restore power to 1Y218/1Y219

	BOP	(OP-054-001 Step 2.2.4) Places one pump in each ESW Loop in service by depressing ESW Pump 0P504A(C) AND (0P504B(D)) RUN push button. (Step 2.2.5) Ensure OPEN: N/A steps(s) not required. HV-01222A(B) ESW Pond Spr Bpv A(B). OR HV-01224A1(B1) ESW Pond Spr In A1(B1). AND/OR HV-01224A2(B2) ESW Pond Spr In A2(B2). (Step 2.2.6) On Panel 0C681, Ensure ESW Pp Supply Fan 0V521A(C)(0V521B(D)) STARTS
		At panel 1C681 (OP-134-002 Step 2.7.5.a) Place RCIC RM UNIT CLR 1V208A(B) control switch to START (Step 2.8.5.a) Place HPCI RM UNIT CLR 1V209A(B) control switch to START (Step 2.9.6.a) Place CORE SPRAY RM UNIT COOLER 1V211A(B)(C)(D) control switch to START (Step 2.10.6.a) Place RHR RM UNIT CLR 1V210A(B)(C)(D) control switch to START
	SRO	(Attachment E function 30) Once 1Y218 restored, directs ATC to reset MG set scoop tube lockup IAW OP-164-001.

	ATC	Dispatches NPO to scoop tube positioner/amplifier panels (Step 2.8.3) Ensure Reactor Recirculation Pump A(B) Speed Controller SY-B31-1R621A (B) is in MANUAL Mode on the RRP_A(B) HMI screen. (Step 2.8.4) Observe White indicator light above Scoop Tube A(B) LOCK OR RESET HS-B31-1S03A(B) pushbutton ILLUMINATED (Step 2.8.5) Establish communications between control room and local panel (Step 2.8.7.c) Touch the INC/DEC buttons on the SY-B31-1R621A(B) controllers in order to have the CMD value ~ 0.3% less than the POS value as displayed at the 1CB137A(B) panel on the RRP_A(B) HMI screen: CMD - MG SET A(B) % Controller Output signal. POS - MG SET A(B) Scoop Tube Position signals
		(Step 2.8.7.f) Directs NPO to depress scoop tube A(B) reset pushbutton at local panel (Step 2.8.7.g) Monitors recirc pump speeds to ensure stable speeds following reset. (Step 2.8.7.i) Observe RECIRC MG A(B) SCOOP TUBE DRIVE LOCK annunciator EXTINGUISHED. (Step 2.8.7.j) Adjust REACTOR RECIRC PUMP A(B) SPEED controller SY-B31-1R621A(B) controller(s) in MANUAL to balance Loop A and B flows AS REQUIRED

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 7 Page ___ of ___

Event Description: HPCI Equipment Room Steam Leak, HPCI Isolation Failure

Time	Position	Applicant's Actions or Behavior
	BOP	Reports Fire Protection SIMPLEX alarm. Reports HPCI Equipment Room is cause of fire suppression and refers to AR-SP-001 for Fire Sup X228_Z7 ALM. Reports HPCI Leak Detect Hi Temp alarms AR114-001 (E05). (AR-114-0E05 Step 2.1) DETERMINE cause of alarm by observing URS-G33-1N604 on Panel 1C614 Dispatches NPO to investigate HPCI Fire Suppression alarm.
	SRO	Assigns BOP to check / monitor Secondary Containment Temperatures Monitors RB rad levels.
	BOP	When directed to report secondary containment temperatures: • Checks URS-G33-1N604 and URS-G33-1N605 on 1C614. • Observes elevated HPCI Equipment Area (Pt #4) and HPCI Pipe Routing (Pt #6) temperatures and notes using EO-100-104 Table 8 Hard Card. • Reports elevated RB temperatures to SRO Requests U-2 to evacuate U-1 RB due to steam leak and rising rad levels.
	SRO	When HPCI areas exceed Max Normal Temp (120 F) or Max Normal ΔT (45 F) Enters EO-100-104, Secondary Containment Control. (SC/T-2) Directs BOP to start all ESW and Unit Coolers Contacts Security to determine if steam exiting HPCI blowout panel. (SC/T-4) Directs BOP to isolate HPCI Steam Supply.

	BOP	(Step SC/T-2) Verifies an ESW Pump in each loop and all ECCS/RCIC/HPCI room coolers are running. (Step SC/T-4) Attempts to isolate HPCI: • Places key switches for HV-155-F002 and HV-155-F003 to close • Reports HPCI F002 failed to close, then reports loss of indication for F003. • Recognize and reports HPCI failed to isolate. • Dispatches NPO to 1B237-082 (F002) and 1D264-081 (F003) to investigate.
	SRO	Contacts Work Week Manager for assistance in closing HPCI F002 and F003

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 8 Page ___ of ___

Event Description: Loss of all RFP, Failure of 'B' RPS, ARI Completion of Scram
★Contains action items to complete critical task 1, Manually scram the reactor before any *Secondary Containment Area* temperature / radiation reaches Max Safe Temperature

Time	Position	Applicant's Actions or Behavior
	SRO	Determines Primary System is discharging into Table 8 Area on failure to isolate. (Note 1)
	★SRO	Performs crew update to inform the crew of the need to Scram the reactor. Announces entry into ON-100-101, Scram, Scram Imminent **(SC/T-7) Direct Manual Scram before any RB Area Temp reaches Max Safe**
	★ATC	(ON-100-101 Step 3.1.1.c.2) Initiate the required flow/power reduction by Adjusting the double chevron DEC buttons on the REACTOR RECIRC PUMP A(B) SPEED controllers SY-B31-1R621A & B as required to establish the final Core Flow value stated in the CRC Book **(Step 4.1) Place Mode Switch HS-C72A-1S01 to SHUTDOWN** **(Step 4.2) Observe all Control Rods indicate fully inserted (using two indications, OD-7 completed as soon as possible).** Reports to SRO that control rods failed to move Receives direction from SRO to insert a manual SCRAM (Step 4.3) IF more than 1 control rod > 00: **(Step 4.3.1) Arm AND Depress manual scram pushbuttons.** **(Step 4.3.1.a) RPS MAN SCRAM CHAN A1 HS-C72A-1S03A** **(Step 4.3.1.b) RPS MAN SCRAM CHAN B1 HS-C72A-1S03B** **(Step 4.3.1.c) RPS MAN SCRAM CHAN A2 HS-C72A-1S03C** **(Step 4.3.1.d) RPS MAN SCRAM CHAN B2 HS-C72A-1S03D**
	★SRO	**(Step 4.3.2) Directs BOP to initiate ARI**
		(EO-100-102 RC/L-4) Directs BOP to reduce reactor pressure using bypass valves to allow level control using condensate

	★BOP	**(Step 4.3.2) Initiate ARI by arming and depressing:** **(Step 4.3.2.a) ARI DIV 1 MAN TRIP HS-147103A1 TRIP** **(Step 4.3.2.b) ARI DIV 2 MAN TRIP HS-147103B1 TRIP** **Report ARI functioning correctly and scram air header is depressurizing**
		Utilizes ON-100-101 1C601 Hard Card (Attachment B) to assess ECCS status and electric plant. Reports status to SRO.
	ATC	References ON-100-101 Hard Card (Attachment A) to complete SCRAM actions: (Step 3) Insert SRMs and IRMs (Step 4) Stop Condensate Pumps 1P102A(B)(C)(D) as necessary to leave 2 pumps in operation (Step 5) Check SDV Vent and Drain valves closed (Step 6) Check RPV level between 13" and 54" (Step 7) Check RPV pressure <1087 psig (Step 8) Trip Turbine when <150MWe (Step 9) Check Turbine speed is decreasing (Step 10) Check status of MSIV (Step 11) Report anything abnormal to Unit Supervisor (Step 12) Ensure FW is aligned for Start Up Level Control
	SRO	Conducts crew brief to explain the requirement to Rapidly Depressurize the RPV if two RB Area Temperatures reach Max Safe. Directs BOP to continue monitoring Secondary Containment Area Temperatures
	BOP	Reports HPCI Room Flooded AR-114-001 (H03) due to Fire Suppression. Continues to monitor secondary containment temperatures
	SRO	Re-enters EO-100-104, Secondary Containment Control due to HPCI room flood alarm

Appendix D **Required Operator Actions** **Form ES-D-2**

Op-Test No.: _____ Scenario No.: 3 Event No.: 9 Page ___ of ___

Event Description: Failure of All SRV, Depress Using BPV
★Contains action items to complete critical task 2, Rapidly depressurize the reactor when two Secondary Containment Areas exceed Max Safe Rad / Temperature / Water levels

Time	Position	Applicant's Actions or Behavior
	BOP	Reports to SRO that Max Safe Temp has been exceeded in second area
	★SRO	**(SC/T-8) When RB Area Temp Exceeds Max Safe in 2 or more areas, Rapid Depress is required** **Announces entry into EO-100-112, Rapid Depressurization**
		(Step RD-8) Directs BOP to open all ADS valves
	★BOP	**Turns control switches for all 6 ADS SRVs to OPEN. Recognizes that valves do not open. Reports that no ADS SRVs are open**
	★SRO	**(Step RD-10) Directs BOP to open SRVs until 6 are open**
	★BOP	**Returns ADS SRV switches to AUTO, attempts placing all other SRV control switches in OPEN, notes that only 1 SRV opens.**
	★SRO	**(Step RD-13) Directs BOP to depressurize RPV using bypass**
	★BOP	**Depresses and holds INCREASE pushbutton for bypass valve opening jack until bypass valves are fully open**