

Facility: SSES Examination Level: SRO-I		Date of Examination: 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.

9/11/12
NOTE: Although the RO & SRO Admin JPMs are similar, the SRO Admin test includes SRO responsibilities. John C 1/10/12

Facility: SSES Examination Level: RO		Date of Examination: 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: 1

Date: 10/24/11

Developed By: Lally 06/20/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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):

Rev 0

Rev 1: Edited data tables and made cue more specific

JPM Setup Instructions:

1. Provide SO-100-011, "Reactor Temperature And Pressure Monitoring", marked up through step 5.1.5

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 and document discrepancies found, 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: 25 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
<p><u>EVALUATOR NOTE:</u> 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.</p> <p>Ensure the answer key, which precedes the Cue Sheet page in the JPM package, are NOT given to the student.</p> <p><u>EVALUATOR CUE:</u> 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) Inform the candidate that they should assume all data entries are handwritten.</p>				
<p>Obtain and review SO-100-011</p>	<p>Obtain and review surveillance procedure.</p>			

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 $\Delta T=103^\circ F$ Determine Steam Dome heatup rate between 1945 and 2045 exceeds 100°F/hr, actual $\Delta T=104^\circ F$			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Additional calculational and 15 minute heatup rate excursions</p> <p><u>Evaluator Note:</u> TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are $> 100^{\circ}\text{F}$ in any one hour. However, <u>ALL</u> ΔT's should be maintained $<25^{\circ}$ in any 15 minute period during heatup</p>	<p>Additionally, candidate should identify:</p> <ol style="list-style-type: none"> 1. 1815-1830: Steam dome temperature calculational error (actual $\Delta T=17$) 2. 1945-2045 Recirc Loop A HUR $>100^{\circ}\text{F}$ (actual $\Delta T=100.6$) ; TS entry only required on steam dome ΔT 3. 2045-Recirc loop A $\Delta T=27$ 4. 2030-Recirc loop B $\Delta T=27$ 5. 2000-Bottom head drain $\Delta T=28$ 6. 1945-2000: Bottom head drain calculational error (actual $\Delta T=28$) 			
<p>★ SR 3.4.10 violation</p> <p><u>EVALUATOR CUE:</u> Roleplay as unit supervisor and acknowledge applicant report. <i>If applicant does not identify any TS violation, ask them if there are any TS concerns.</i></p>	<p>Applicant notifies evaluator that SR 3.4.10 and TS 3.4.10 are applicable for HUR $>100^{\circ}\text{F/hr}$</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<u>EVALUATOR CUE:</u> No further actions are required for this JPM				
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	<i>BBC</i>

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	<i>CBC</i>	
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	<i>CBC</i>	
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	16	<i>CBC</i>	
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	<i>CBC</i>	
1900 TO/DA/Y	184	362.6	17.1	364.4	15.5	361	17	371	15	<i>CBC</i>	
1915 TO/DA/Y	237	379.5	16.9	384.6	20.2	382	21	387	16	<i>CBC</i>	
1930 TO/DA/Y	287	401.3	21.8	402.1	17.5	400	18	404	17	<i>CBC</i>	
1945 TO/DA/Y	321	421.5	20.2	425.2	23.1	421	21	428	24	<i>CBC</i>	
2000 TO/DA/Y	466	448.8	27.3	449.4	24.2	449	28	456	28	<i>CBC</i>	
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	25	<i>CBC</i>	
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	27	507	26	<i>CBC</i>	
2045 TO/DA/Y	885	522.1	27.0	522.9	25.3	521	23	532	25	<i>CBC</i>	

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 ΔT's highlighted should be noted, and although 100°ΔT was exceeded between 1945 and 2045 on recirc loop A, only steam dome ΔT is applicable for TS entry

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 and document discrepancies found, 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 and document discrepancies found, 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

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

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	<i>CBC</i>
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	<i>CBC</i>
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	16	<i>CBC</i>
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	<i>CBC</i>
1900 TO/DA/Y	184	362.6	17.1	364.4	15.5	361	17	371	15	<i>CBC</i>
1915 TO/DA/Y	237	379.5	16.9	384.6	20.2	382	21	387	16	<i>CBC</i>
1930 TO/DA/Y	287	401.3	21.8	402.1	17.5	400	18	404	17	<i>CBC</i>
1945 TO/DA/Y	321	421.5	20.2	425.2	23.1	421	21	428	24	<i>CBC</i>
2000 TO/DA/Y	466	448.8	27.3	449.4	24.2	449	24	456	28	<i>CBC</i>
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	25	<i>CBC</i>
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	27	507	26	<i>CBC</i>
2045 TO/DA/Y	885	522.1	27.0	522.9	25.3	521	23	532	25	<i>CBC</i>

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	0	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

Shifty 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: 1

Date: 10/24/11

Developed By: Lally 06/20/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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):

Rev 0

Rev 1: edited data tables and made cue more specific

JPM Setup Instructions:

1. Provide SO-100-011, "Reactor Temperature And Pressure Monitoring" marked up through step 5.1.5

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 and document discrepancies found, if any. 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: 25 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
<p><u>EVALUATOR NOTE:</u> 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.</p> <p>Ensure the answer key, which precedes the Cue Sheet page in the JPM package, are NOT given to the student.</p> <p><u>EVALUATOR CUE:</u> 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) Inform the candidate that they should assume all data entries are handwritten</p>				
<p>Obtain and review SO-100-011</p>	<p>Obtain and review surveillance procedure.</p>			

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 $\Delta T=103^\circ F$ Determine Steam Dome heatup rate between 1945 and 2045 exceeds 100°F/hr, actual $\Delta T=104^\circ F$			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Additional calculational and 15 minute heatup rate excursions</p> <p>Evaluator Note: TS Required Actions should only be entered if Rx Steam Dome Temperature ΔT's are $> 100^{\circ}\text{F}$ in any one hour. However, <u>ALL</u> ΔT's should be maintained $< 25^{\circ}$ in any 15 minute period during heatup</p>	<p>Additionally, candidate should identify:</p> <ol style="list-style-type: none"> 1. 1815-1830: Steam dome temperature calculational error (actual $\Delta T=17$) 2. 1945-2045 Recirc Loop A HUR $> 100^{\circ}\text{F}$ (actual $\Delta T=100.6$) ; TS entry only required on steam dome ΔT 3. 2045-Recirc loop A $\Delta T=27$ 4. 2030-Recirc loop B $\Delta T=27$ 5. 2000-Bottom head drain $\Delta T=28$ 6. 1945-2000: Bottom head drain calculational error (actual $\Delta T=28$) 			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★ (Step 5.1.6) Refer to and evaluate compliance with Tech Spec 3.4.10</p> <p><u>EVALUATOR CUE:</u> When asked provide copy of TS 3.4.10</p>	<p>Refer to Tech Spec 3.4.10 and determine:</p> <p>LCO 3.4.10 NOT met:</p> <ul style="list-style-type: none"> • Exceeded SR 3.4.10.1.b: ≤100°F/Hr <p>Condition A is applicable:</p> <ul style="list-style-type: none"> • Action A.1, Restore CDR within limits within 30 minutes • Action A.2, Determine RCS is acceptable for continued operation within 72 hours. 			
<p>★ Verify current heatup rate complies with tech spec limits</p>	<p>Applicant states that action for A.1 is complete, current heatup rate is less than 100°F/Hr.</p> <p>Applicant states that analysis is required by engineering within 72 hours to comply with action A.2</p>			
<p>Initiate LCO/TRO tracking record in SOMs LCO module</p> <p><u>EVALUATOR CUE:</u> No further actions are required for this JPM</p>	<p>Candidate states need to enter LCO into SOMs tracking software.</p>			

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

Attachment D
SO-100-011
Revision 17
Page 20 of 21

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

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

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

SHIFT SUPERVISION _____ DATE _____ TIME _____

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.

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	<i>CBC</i>
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	<i>CBC</i>
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	16	<i>CBC</i>
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	<i>CBC</i>
1900 TO/DA/Y	184	362.6	17.1	364.4	15.5	361	17	371	15	<i>CBC</i>
1915 TO/DA/Y	237	379.5	16.9	384.6	20.2	382	21	387	16	<i>CBC</i>
1930 TO/DA/Y	287	401.3	21.8	402.1	17.5	400	18	404	17	<i>CBC</i>
1945 TO/DA/Y	321	421.5	20.2	425.2	23.1	421	21	428	24	<i>CBC</i>
2000 TO/DA/Y	466	448.8	27.3	449.4	24.2	449	28	456	28	<i>CBC</i>
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	25	<i>CBC</i>
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	27	507	26	<i>CBC</i>
2045 TO/DA/Y	885	522.1	27.0	522.9	25.3	521	23	532	25	<i>CBC</i>

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 ΔT's 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 shift 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 document discrepancies found, if any. Additionally, 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.
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 document discrepancies found, if any. 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	<i>BBQ</i>

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) NLTO7	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	<i>CBC</i>
1815 TO/DA/Y	111	313.9	20.0	317.7	23.3	315	24	321	20	<i>CBC</i>
1830 TO/DA/Y	134	329.5	15.6	334.8	17.1	331	16	338	16	<i>CBC</i>
1845 TO/DA/Y	162	345.5	16.0	348.9	14.1	344	13	356	18	<i>CBC</i>
1900 TO/DA/Y	184	362.6	17.1	364.4	15.5	361	17	371	15	<i>CBC</i>
1915 TO/DA/Y	237	379.5	16.9	384.6	20.2	382	21	387	16	<i>CBC</i>
1930 TO/DA/Y	287	401.3	21.8	402.1	17.5	400	18	404	17	<i>CBC</i>
1945 TO/DA/Y	321	421.5	20.2	425.2	23.1	421	21	428	24	<i>CBC</i>
2000 TO/DA/Y	466	448.8	27.3	449.4	24.2	449	24	456	28	<i>CBC</i>
2015 TO/DA/Y	603	471.9	23.1	472.6	23.2	471	22	481	25	<i>CBC</i>
2030 TO/DA/Y	738	495.1	23.2	497.6	25.0	498	27	507	26	<i>CBC</i>
2045 TO/DA/Y	885	522.1	27.0	522.9	25.3	521	23	532	25	<i>CBC</i>

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: 3

Date: 12/17/11

Developed By: Patel 06/10/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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 3

JPM Setup Instructions:

1. Provide marked-up surveillance SO-151-A02 with data up through step 5.2 checked off as completed with Attachment B filled out with independent verification signed off.
2. Provide marked-up surveillance Authorization Cover Sheet with Date and Time information as current time minus 1 hour.

TASK STANDARD:

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

TASK CONDITIONS:

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

RO INITIATING CUE:

Review the surveillance testing data for SO-151-A02. Complete Attachment A and document status below.

SRO INITIATING CUE:

Unit 1 was in a normal electrical line up, then B EDG was taken OOS unplanned due to part 21 issue related to agastat relay. Expected recovery time of B EDG is 8 hours.

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.

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 RO and SRO applicants will determine the pump to be inoperable. The RO will inform the SRO on the operability status. The SRO applicant will also determine that the Core Spray Pump to be inoperable and determine that TS 3.5.1 Action A.1 to Restore low pressure ECCS injection/spray subsystem to OPERABLE status within 7days applies. Also TS 3.8.1 Action B.2 to declare Core Spray Pump B INOPERABLE within 4 hours of entering TS 3.5.1 Action A.1. SRO will further determine that TS 3.5.1 Action I.1 applies when 5 hours has been elapsed since declaring Core Spray Pump A INOPERABLE.

NRC SSES INITIAL EXAMINATION

JPM A-1.2

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><u>Evaluator Note</u></p> <ul style="list-style-type: none"> • Provide marked-up surveillance SO-151-A02 with data up through step 5.2 checked off as completed with Attachment B filled out with independent verification signed off. • Provide marked-up surveillance Authorization Cover Sheet with Date and Time information as "TO/DAY" and "Now - 1 hr." • 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. 				
<p>1. Reviews As-Found Column data on Attachment 'A'</p>	<p>Reviews data on SO-151-A02, Quarterly Core Spray Flow Verification Division 1, Attachment A.</p>			
<p>*2. Identifies that there is a calculation error for calculating CS pump A delta-P. (Attachment A acceptance criteria 7)</p>	<p>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 due to being outside the criteria of 256.5 and 313.5 psid.</p>			

NRC SSES INITIAL EXAMINATION

JPM A-1.2

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

NRC SSES INITIAL EXAMINATION

JPM A-1.2

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*5. Determines required TS action for CS inoperability.</p> <p><u>Evaluator Cue</u> If necessary, ask SRO candidate to report the required TS actions to you (as the Shift Manager).</p>	<p>Determines TS 3.5.1 Condition A.1 applies.</p> <p>One low pressure ECCS injection/spray subsystem inoperable for reasons other than Condition B (One LPCI pump in one or both LPCI subsystems inoperable) Restore low pressure ECCS injection/spray subsystem to OPERABLE status within 7 days.</p> <p>AND</p> <p>TS 3.8.1 Condition B.2 applies</p> <p>When one required DG is inoperable, Declare the required feature(s), supported by the inoperable DG, inoperable when the redundant required feature(s) are inoperable within 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s) INOPERABLE,</p>			

NRC SSES INITIAL EXAMINATION

JPM A-1.2

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>6. Identifies a LCO/TRO will be entered in eSOMS.</p> <p><u>Evaluator Cue</u></p> <p>Inform the applicant that it will not be necessary make an eSOMS LCO/TRO entry at this time.</p> <p><u>Evaluator Note</u></p> <p>This completes the JPM</p>	<p>Identifies a LCO/TRO entry in eSOMS is required.</p>			
<p>*7. <u>Identifies TS 3.0.3 entry.</u></p> <p><u>Evaluator Cue</u></p> <p>Inform the applicant that 5 hours has been elapsed since TS 3.5.1 Action A.1 entry and there is no change in equipment operability status. 'E' EDG is unavailable for substitution.</p> <p>Identify TS required actions.</p>	<p>Determines Condition I Action I.1 is applicable and LCO entry 3.0.3 is required.</p> <p>For Two Core Spray subsystems inoperable</p> <p>TS 3.0.3</p> <p>Identifies that actions need to be initiated within 1 hour to place Unit 1 in Mode 4 within 37 hours.</p>			

JPM Stop Time _____

HANDOUT PAGE FOR RO:

TASK CONDITIONS:

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

INITIATING CUE:

Review the surveillance testing data for SO-151-A02. Complete Attachment A and document status below.

REQUIRED ACTIONS:

NRC SSES INITIAL EXAMINATION

JPM A-1.2

HANDOUT PAGE FOR RO:

TASK CONDITIONS:

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

INITIATING CUE:

Review the surveillance testing data for SO-151-A02. Complete Attachment A and document status below.

REQUIRED ACTIONS:

HANDOUT PAGE FOR SRO:

TASK CONDITIONS:

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

Unit 1 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:

NRC SSES INITIAL EXAMINATION

JPM A-1.2

HANDOUT PAGE FOR SRO:

TASK CONDITIONS:

Unit 1 is at 100% power.

SO-151-A02, Quarterly Core Spray Flow Verification Division 1, was performed and is ready for review.

Unit 1 was in a normal electrical line up, then B EDG was taken out of service 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

Determine Blocking Required per NDAP-QA-0322 "Energy Control Process"

RO JPM Designation: A-2

Revision Number: 2

Date: 10/26/11

Developed By: Lally 06/20/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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):

Rev 0

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

Rev 2: Edited per licensee comments to provide specific prints

JPM Setup Instructions:

1. Provide NDAP-QA-0322
2. Provide prints E-145 sh. 8, E-4 sh. 3, and M-2109 sh. 1 and 2
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 impeller replacement, 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, Required Position, and Tag Type

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: Determine Blocking Required per NDAP-QA-0322 "Energy Control Process"

JPM Number: A-2

Revision Number: 2

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, 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 determine 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
<p><u>EVALUATOR NOTE</u></p> <ul style="list-style-type: none"> • Ensure the following material is available to support performance of this JPM: <ul style="list-style-type: none"> ◆ Prints: E-145 sh. 8, E-4 sh. 3, and M-2109 sh. 1 and 2 ◆ NDAP-QA-0322 ◆ Attached Proposed Blocking Sheet <p><u>EVALUATOR NOTE</u> To begin this JPM, provide the candidate with the Task Conditions, Initiating Cue Sheet and Proposed Blocking Sheet.</p> <p>Reviews the scope of work planned for 2A SWP.</p> <p>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</p>	<p>Reviews Attachment N for General Equipment Blocking Rules under Pumps (3) and Attachment O for Electrical Blocking under 13.8kV breakers (2.1)</p> <p>Determines that motor needs blocked and should isolate all pump flowpaths to allow for work on pump.</p> <p>Locates and uses referenced drawings to review blocking, Uses M-2109 Sheet 1/2, E-145 Sheet 8, and E-4 Sheet 3 to develop proposed blocking list.</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><u>EVALUATOR NOTE</u> Candidate may at anytime reference NDAP-QA-0322 to ensure compliance and follow appropriate check sheets.</p>				
<p>★Develops list of proposed blocking points based upon print review and NDAP-QA-0322 guidance</p>	<p>Proposed blocking list generated matches attached proposed blocking list key, all critical steps met.</p>			
<p><u>EVALUATOR CUE</u> 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.</p>				
<p>Give completed list of proposed blocking points to the Unit Supervisor to be forwarded to WCC.</p>	<p>Unit Supervisor is given the list of proposed blocking points.</p>			
<p><u>EVALUATOR CUE</u> Once candidate turns in list of proposed blocking points, the JPM is complete.</p> <p>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.</p>				

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.

Component	Position	Tag Type
1. ★ 2A10106 Service Water Pump A 2P502A 13.8kV breaker	★ OPEN, ★RACKED OUT , (applicant may also request breaker REMOVED)	★Red tag
2. ★ 209001 Service Water Pump A Suction ISO VLV	★ CLOSED	★Red tag
3. ★ 209004 Service Water Pump A Discharge ISO VLV	★ CLOSED	★Red tag
4. ★ 209014 Service Wtr Pump A Seal Water Press CTL VLV Bypass VLV	★ CLOSED	★Red tag
5. ★ 209016 Service Wtr Pump A Seal Water Press CTL VLV Outlet ISO VLV	★ CLOSED	★Red tag
6. ★ 209166 Service Wtr Pump A Vent VLV	★ CLOSED	★Red tag
7. ★ 209801 Service Water Pump A OB Casing Vent VLV	★ OPEN	No tag/Pink tag
8. ★ 209802 Service Water Pump A IB Casing Vent VLV	★ OPEN	No tag/Pink tag
9. ★ 209048 Service Water Pump A Drain VLV	★ OPEN	No tag/Pink tag
10. ★ 209119 Service Water Pump A Drain VLV	★ OPEN	No tag/Pink tag

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for impeller replacement, 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, Required Position, and Tag Type

TASK CONDITIONS

Unit 2 is at 100% power.

2A Service Water Pump has been scheduled for impeller replacement, 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, Required Position, and Tag Type

Library Clearance Order Susquehanna
0 -Unit 2 SYS
2P502A

##-### -2P502A SERVICE WATER PUMP

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 IMPELLER REPLACEMENT STANDARD CLEARANCE ORDER

- Notes:**
- 1) OPERATIONS VENT AND DRAIN
 - 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	1/16/2012 08:58:07	Prepared	
2				
3				

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

ANSWER KEY

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	
2A10106 (RM)	SERVICE WATER PUMP A 2P502A 13.8KV BKR	RM:II-220 A:13 E:699 R700' COL:8 S 30.2	Red Tag	2	CV	2	CV	OPEN, RACKED OUT	RACKED IN		
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		

Tagged Component	Description	Location	Tag Type	Pl. Seq.	Place Verif	Rest. Seq.	Rest Verif	Tagged Position	Restoration Position	Tag Placement Notes	Tag Removal Notes
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		
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	OPEN	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 31.2	No Tag	2	SC	1	CV	OPEN	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	OPEN	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	OPEN	CLOSED		

ANSWER KEY

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: 2

Date: 10/26/11

Developed By: Lally 06/20/11

Author Date

Review By: Hedigan 01/05/12

Examiner Date

Approved By: Caruso 01/05/12

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):

Rev 0

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

Rev 2: Revised per licensee comments following pre-validation

JPM Setup Instructions:

1. Provide NDAP-QA-0322
2. Provide prints E-145 sh. 8, E-4 sh. 3, and M-2109 sh. 1 and 2
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 impeller replacement, 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: 2

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 and 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 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
<p><u>EVALUATOR NOTE</u></p> <ul style="list-style-type: none"> • Ensure the following material is available to support performance of this JPM: <ul style="list-style-type: none"> ◆ Prints: E-145 sh. 8, E-4 sh. 3, and M-2109 sh. 1 and 2 ◆ NDAP-QA-0322 ◆ Attached library clearance <p><u>EVALUATOR NOTE</u></p> <p>To begin this JPM, provide the candidate with the Task Conditions and Initiating Cue Sheet.</p> <p>Reviews the scope of work planned for 2A SWP.</p> <p>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</p>	<p>Determines that motor needs blocked and should isolate all pump flowpaths to allow for work on pump.</p>			
<p><u>EVALUATOR NOTE</u></p> <p>Candidate may at anytime reference NDAP-QA-0322 to ensure compliance and follow appropriate check sheets.</p>				

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 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			
<p><u>EVALUATOR CUE</u></p> <p>Role play the Unit Supervisor and acknowledge the receipt of the corrected blocking and inform candidate that it will be forwarded to the WCC.</p>				
Give completed list of corrected blocking sheet to the Unit Supervisor to be forwarded to WCC.	Unit Supervisor is given the corrected blocking sheet.			
<p><u>EVALUATOR CUE</u></p> <p>Once candidate turns in list of corrected blocking sheet, the JPM is complete.</p> <p>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.</p>				

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

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.

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
0 –Unit 2 SYS
2P502A**

##-### -2P502A SERVICE WATER PUMP

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 IMPELLER REPLACEMENT STANDARD CLEARANCE ORDER

Notes:

- 1) OPERATIONS VENT AND DRAIN
- 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	1/16/2012 08:58:07	Prepared	
2				
3				

Attribute Description	Attribute Value
NVC Required	
Sequential Blocking Required	
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	Red Tag	2	CV	2	CV	OPEN, RACKED OUT	RACKED IN		
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		

Tagged Component	Description	Location	Tag Type	Pl. Seq.	Place Verif	Rest. Seq.	Rest Verif	Tagged Position	Restoration Position	Tag Placement Notes	Tag Removal Notes
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		
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	OPEN	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	OPEN	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	OPEN	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	OPEN	CLOSED		

Susquehanna Steam Electric Station

Job Performance Measure

Review and Approve Radioactive Liquid Release Permit

JPM Designation: A-3

Revision Number: 1

Date: 12/06/11

Developed By: Patel 06/14/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
Chief Examiner Date

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

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

- _____ 1. Task description and number, JPM description and number are identified.
- _____ 2. Knowledge and Abilities (K/A) references are included.
- _____ 3. Performance location specified. (in-plant, control room, or simulator)
- _____ 4. Initial setup conditions are identified.
- _____ 5. Initiating and terminating cues are properly identified.
- _____ 6. Task standards identified and verified by Examiner review.
- _____ 7. Critical steps meet the criteria for critical steps and are identified with an asterisk (*).
- _____ 8. Verify the procedure referenced by this JPM matches the most current revision of that procedure:
Procedure Rev. _____ Date _____
- _____ 9. Pilot test the JPM:
 - a. verify cues both verbal and visual are free of conflict, and
 - b. ensure performance time is accurate.
- _____ 10. If the JPM cannot be performed as written with proper responses, then revise the JPM.
- _____ 11. When JPM is revalidated, Examiner sign and date JPM cover page.

REVISION RECORD (Summary):

1. Rev 1

JPM Setup Instructions:

1. Provide marked-up surveillance authorization package.

TASK STANDARD:

Identify less than required LRW sample tank recirculation time, incorrect settings for Actual High Rad setpoint and Actual Alert Rad setpoint, and determine that U1 & U2 Cooling Tower Blowdown Flow instrumentation is inoperable, requiring blowdown flow instruments to be bypassed.

TASK CONDITIONS:

- Preparations are in progress to release LRW Sample Tanks OT303C&D.
- OP-069-050, Release of Liquid Radioactive Waste Attachments 'D', 'F' and 'H' have been prepared.

INITIATING CUE:

FUS is unavailable, Shift Manager directed you to review and approve OP-069-050 attachment D, F and H. Document any required actions below.

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. Applicants should identify various issues with the permit. Applicants should identify less than required LRW sample tank recirculation time, incorrect settings for Actual High Rad setpoint and Actual Alert Rad setpoint, and determine that U1 & U2 Cooling Tower Blowdown Flow instrumentation is inoperable, requiring blowdown flow instruments to be bypassed.

NRC SSES INITIAL EXAMINATION

JPM A-3

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

	Action	Standard	SAT	UNSAT	Comment Number
	<p><u>EVALUATOR NOTE:</u></p> <ul style="list-style-type: none"> • Provide the candidate with a filled out copy of OP-069-050, Release of Liquid Radioactive Waste Attachment D, F & H of "LRW Sample Tank OT303C&D Radioactive Liquid Release Permit". • Provide the Applicant with a blank OP-069-050, Release of Liquid Radioactive Waste procedure. 				
1	Refers to a blank copy of OP-069-050, Release of Liquid Radioactive Waste and completed attachment D, F, and H.	Refers to a copy of OP-069-050, and completed attachment D, F, and H.			
2	Selects the correct section to perform review.	Selects section step 2.3.3 through 2.3.9 of OP-069-050, Release of Liquid Radioactive Waste Attachment D "LRW Sample Tank OT-303C&D Radioactive Liquid Release Permit". Also, reviews form OP-069-050-7, attachment F of OP-069-050.			
	<p><u>EVALUATOR NOTE:</u></p> <p>If the applicant indicates that he/she would send this release back due to not enough recirculation time prior to sample, then indicate to applicant to finish review of the entire procedure.</p>				

NRC SSES INITIAL EXAMINATION

JPM A-3

	Action	Standard	SAT	UNSAT	Comment Number
*3	Verifies Calculation of Required Recirculation Time	<p>Performs the following calculations: $98 \times 0.75 = 73.5$ minutes. Compares this number with 71.5 minutes, and determines that Calculated required recirculation time is incorrect, and the earliest possible sample time would be 10:03 (not 10:01).</p>			
*3	Verifies High Rad setpoint	<p>Performs the following calculation: $1.25E4 + 2.77E3 = 1.527E4$ and compares this to the number in block 2.3.6.n (4.02E4). The applicant identifies that background count rate was inappropriately carried forward into high rad setpoint calculation as 2.77E4. Therefore, the correct rad setpoint value should be 1.527E4.</p>			
*4	Verifies Alert Rad setpoint	<p>Performs the following calculation: $1.00E4 + 2.77E3 = 1.277E4$ and compares this to the number in block 2.3.6.o (3.77E4). The applicant identifies that background count rate was inappropriately carried forward into Alert rad setpoint calculation as 2.77E4. Therefore, the correct rad setpoint value should be 1.277E4.</p>			

NRC SSES INITIAL EXAMINATION

JPM A-3

	Action	Standard	SAT	UNSAT	Comment Number
*5	Compares Calculated required High Rad and Alert Rad setpoint with required setpoint and actual setpoint in step 2.3.7.	Determines that the actual setpoint set out in the field are incorrectly set and requires corrections.			
*6	Determines that Unit 1 <u>AND</u> Unit 2 Cooling Tower Flowrate Instruments are INOPERABLE, and requires permission from shift supervisor to bypass cooling tower low flow interlock to be bypassed.	<p>Reviews Attachment F, to determine the satisfactory test results of blowdown flow instrumentation for Unit 1 and Unit 2.</p> <p>Determines that for Unit 1 based on actual Cooling Tower Basin Blowdown valve position indication (45%) and blowdown flow rate (4000gpm) Unit 1 blowdown flow instrumentation falls within the Unacceptable Region of the Graph on Page 158 of Attachment F.</p> <p>Determines that based on the Graph results, Unit 1 Blowdown flow instrumentation should be declared INOPERABLE and require to be bypassed.</p> <p>Determines that for Unit 2 based on actual Cooling Tower Basin Blowdown valve position indication (40%) and blowdown flow rate (2500gpm) Unit 1 blowdown flow instrumentation falls within the Unacceptable Region of the Graph on Page 161 of Attachment F.</p> <p>Determines that based on the Graph results, Unit 1 Blowdown flow instrumentation should be declared INOPERABLE and require to be bypassed.</p>			

NRC SSES INITIAL EXAMINATION

JPM A-3

	Action	Standard	SAT	UNSAT	Comment Number
*7	<p><u>EVALUATOR CUE:</u> If the applicant indicates that he/she would send this release back due to not enough recirculation time prior to sample, incorrect RAD setpoint, AND flowrate instruments are INOPERABLE then indicate to applicant that:</p> <ul style="list-style-type: none"> • Recirculation time has been satisfactory been met per the corrected calculation • High Rad and Alert Rad Setpoints are properly set in accordance with the corrected calculation • Both U1 and U2 Flowrate instruments are INOPERABLE <p>As a Shift Supervisor, complete review and approval of OP-069-050 attachment D, F and H and determine whether a discharge can continue and if it can under what conditions.</p> <p>Determines that HS-06443A is required to be in "Bypass" when total site, U-1 and U-2 Cooling tower blowdown instruments are INOPERABLE.</p> <p>AND</p> <p>Determines that TR 3.11.1.4 Condition D Actions apply, and Cooling Tower level, Blowdown valve position and flowrate needs to be logged every 4 HOURS IAW step 2.3.14.a(3).</p>	<p><u>Evaluator Note:</u></p> <p>In summary, once calculations errors are corrected for recirc flow, rad setpoints are appropriately set, and HS-06443A is in the "Bypass" position, applicant should determine that it is SAFE to discharge as long as TR 3.11.1.4 Condition D Action to estimate blowdown flow rate every 4 hours, and log Cooling Tower level, Blowdown valve position and flowrate every 4 hours IAW step 2.3.14.a(3).</p> <p>Marks up Attachment H to proper Switch Alignment of HS-06443A. Indicating the HS-06443A, Cooling water blowdown low flow needs to be place in Bypass Position.</p> <p>Draws Arrow towards "BYPASS" position.</p> <p>Determines that TR 3.11.1.4 Condition D Actions apply, and Cooling Tower level, Blowdown valve position and flowrate needs to be logged every 4 HOURS IAW step 2.3.14.a(3).</p>			

NRC SSES INITIAL EXAMINATION

JPM A-3

	Action	Standard	SAT	UNSAT	Comment Number
	<u>EVALUATOR CUE:</u> That completes this JPM.				

JPM Stop Time _____

NRC SSES INITIAL EXAMINATION

JPM A-3

HANDOUT PAGE

TASK CONDITIONS:

- Preparations are in progress to release LRW Sample Tanks OT303C&D.
- OP-069-050, Release of Liquid Radioactive Waste Attachments 'D', 'F' and 'H' have been prepared.

INITIATING CUE:

FUS is unavailable, Shift Manager directed you to review and approve OP-069-050 attachment D, F and H. Document any required actions below.

HANDOUT PAGE

TASK CONDITIONS:

- Preparations are in progress to release LRW Sample Tanks OT303C&D.
- OP-069-050, Release of Liquid Radioactive Waste Attachments 'D', 'F' and 'H' have been prepared.

INITIATING CUE:

FUS is unavailable, Shift Manager directed you to review and approve OP-069-050 attachment D, F and H. Document any required actions below.

Susquehanna Steam Electric Station

Job Performance Measure

Emergency Plan communications

RO JPM Designation: A-4

Revision Number: 3

Date: /11

Note: This JPM is paired with Sim JPM E.

Developed By:	<u>Patel</u>	<u>06/10/11</u>
	Author	Date
Review By:	<u>Hedigan</u>	<u>01/05/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>01/05/12</u>
	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 3

JPM Setup Instructions:

- Provide Event Notification Report.
- Fill in the declaration time as **two minutes prior to** the current time

Sign the ENR form under approved section on bottom and fill in the current time as the time approved. (when applicant starts the Admin JPM)

TASK STANDARD:

The applicant should obtain appropriate BNTD sticker and 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 for Unit 1 as the initial emergency classification due to an airborne radiological release in progress.
2. Complete the emergency plan communication to the offsite agencies.
3. 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: 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: Yes

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.

NRC SSES INITIAL EXAMINATION

JPM A-4

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

PERFORMANCE CHECKLIST:

JPM Start Time _____ (Record Start of JPM Time when applicant acknowledges the initiating cue) Official start time for Time Critical JPM

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><u>Evaluator Notes</u></p> <ul style="list-style-type: none"> • Finish the remainder of the attached ENR form when applicant is ready to begin JPM: <ol style="list-style-type: none"> a. Fill in the declaration time (in Section 3) as two minutes prior to the current time b. Sign the ENR form under approved section at the bottom of the form and fill in the current time as the time approved. • Remind Simulator Booth Operator to NOT answer any of the Notification calls 				
<p>1. Obtains procedure and reviews procedure, prerequisites, and precautions</p>	<p>Obtains EP-PS-126 and ENR form.</p>			
<p>2. Obtain and review Event Notification Report (ENR) form with the Shift Manager/ED.</p>	<p>Applicant reviews ENR report. <u>Evaluator Note:</u> Applicant may request to review form with Shift Manager/ED. <u>Evaluator Cue:</u> Notify Applicant Shift Manger/ED are busy and you may proceed with notification with this ENR report.</p>			

NRC SSES INITIAL EXAMINATION

JPM A-4

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*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 Obtains "CG4" Brief Non-technical Description Sticker from the EAL folder in the center console desk drawer and applies it in the field block located above #5..	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. Evaluator Note: . Pre-printed labels containing the Brief Non-technical Descriptions of the EALs are located in a marked folder in the center console desk drawer.			
5. Log time for "Notification Time" when first individual answers the phone in the next step: _____ Time Critical Stop Time: _____	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: The Simulator Booth Operator will not answer the "191" call.			
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: The Simulator Booth Operator will not answer the "196.			

NRC SSES INITIAL EXAMINATION

JPM A-4

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*8. Contact the Emergency Agencies directly. The JIC should be contacted last.</p>	<p>Evaluator Note: When the applicant dials the first agencies number, role play as John Smith from that agency (PEMA)</p> <p>The applicant will need to utilize backup telephone numbers.</p>			
<p>*BACKUP TELEPHONE NUMBERS</p> <p>If calling from a 4xxx extension, dial the backup numbers as follows:</p> <p>PEMA: 4960, 4961 or 8-1-717-651-2001</p> <p>LCEMA: 4906, 4907, or 8-1-800-821-3715</p> <p>CCDPS: 4955, 4956, or 8-1-570-389-5720</p> <p>PIM: 4901, 4902</p> <p>JIC: 4903</p>	<p>The applicant uses the following backup numbers and dials JIC last:</p> <p>PEMA: 4960, 4961 or 8-1-717-651-2001</p> <p>LCEMA: 4906, 4907, or 8-1-800-821-3715</p> <p>CCDPS: 4955, 4956, or 8-1-570-389-5720</p> <p>PIM: 4901, 4902</p> <p>JIC: 4903</p>			
<p>*If calling from a 3xxx extension, dial the backup numbers as follows:</p> <p>PEMA: 8-353-4960, 8-353-4961, or 8-1-717-651-2001</p> <p>LCEMA: 8-353-4906, 8-353-4907, or 8-1-800-821-3715</p> <p>CCDPS: 8-353-4955, 8-353-4956, or 8-1-570-389-5720</p> <p>PIM: 8-353-4901, 8-353-4902</p> <p>JIC: 8-353-4903</p>				

NRC SSES INITIAL EXAMINATION

JPM A-4

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*9. Verbally communicate the ENR form to the offsite agencies.</p>	<p>When the first agency answers the phone, communicates ENR form verbally to the offsite agencies.</p> <ul style="list-style-type: none"> • Identifies His/her Name. • Call back number • Declaration Time • Event Classification (GE) • Unit-1 • “The water level inside the Unit 1 reactor has dropped and does not completely cover the uranium fuel. The unit has been shut down prior to the event and remains shut down. Protective actions will be recommended for the public”. • “The water level inside the Unit 1 reactor has dropped and does not completely cover the uranium fuel. The unit has been shut down prior to the event and remains shut down. Protective actions will be recommended for the public”. • There is an airborne radiological release in progress due to the event. 			

NRC SSES INITIAL EXAMINATION

JPM A-4

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	<p>Evaluator Cue: If required(requested by applicant), repeat back applicant message to complete 3 way communication.</p> <p>Understand that U1 Declared a GE at (T-2min).</p> <p>“The water level inside the Unit 1 reactor has dropped and does not completely cover the uranium fuel. The unit has been shut down prior to the event and remains shut down. Protective actions will be recommended for the public”.</p> <p>There is an airborne radiological release in progress due to the event.</p> <p>Your call back # is 570-759-4915</p> <p>Evaluator Note: <u>Once the applicant has successfully communicated the event to the first offsite agency (PEMA), upon dialing the correct extension number for the next agency (LCEMA), you may END the JPM.</u></p>			

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

See Emergency Notification Report

INITIATING CUE:

1. A General Emergency has been declared for Unit 1 as the initial emergency classification due to an airborne radiological release in progress.
2. Complete the emergency plan communication to the offsite agencies.
3. This is a time critical JPM

HANDOUT PAGE

TASK CONDITIONS:

See Emergency Notification Report

INITIATING CUE:

1. A General Emergency has been declared for Unit 1 as the initial emergency classification due to an airborne radiological release in progress.
2. Complete the emergency plan communication to the offsite agencies.
3. This is a time critical JPM

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 Notification time is: _____
570-759 4 (Time notification initiated)
(Callback telephone number)

3. **EMERGENCY CLASSIFICATION:**
 UNUSUAL EVENT SITE AREA EMERGENCY
 ALERT GENERAL EMERGENCY
 The event has been terminated.
UNIT: ONE **Declaration Time:** _____ **DATE:** TODAY
 TWO (Time classification/termination declared) (Date classification/termination declared)
 ONE & TWO

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

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 } **RADIOLOGICAL RELEASE IN PROGRESS DUE TO THE EVENT**
 AN AIRBORNE }
 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, SGBT 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: Shift Manager **Time:** _____ **Date:** TODAY
(ED, RM, or EOFSS) (Time form approved) (Date form approved)

Susquehanna Steam Electric Station

Job Performance Measure

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

SRO JPM Designation: A-4

Revision Number: 1

Date: 10/24/11

Developed By: Lally 06/21/11

Author Date

Review By: Hedigan 01/05/12

Examiner Date

Approved By: Caruso 01/05/12

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):

Rev 0

Rev 1: Edited per licensee comments to correct answer key and task conditions

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 of initiating cue
2. Declaration of a General Emergency based on classification FG1 within 15 minutes of second initiating cue
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:

Unit 1 was initially at 100% power

At T + 0 sec 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

At T + 30 sec, 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: 1

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
<p><u>EVALUATOR CUE:</u> To begin this JPM provide the candidate with CUE SHEET#1:</p> <ul style="list-style-type: none"> When the candidate is ready to begin the JPM, inform the candidate that this is a TIME CRITICAL JPM. <p>Record START TIME _____</p>				
<p>★ (EP-PS-100 Tab A, steps 1 and 2) Classify the emergency as conditions indicate.</p> <p><u>EVALUATOR CUE:</u> If asked, conditions have not changed.</p> <p><u>EVALUATOR NOTE:</u> When candidate declares the initial EAL classification, Record TIME _____</p> <p>Time to determine correct EAL must be within 14 minutes, 30 seconds of START TIME</p>	<p>(Step 1a) Evaluate updated information.</p> <p>(Step 2a) Review Emergency Classification Level Manual, EP-TP-001 table F.</p> <p>Declare a SITE AREA EMERGENCY in accordance with Classification FS1 (RPV level < -161")</p> <p>Candidate will also refer to Table M for the loss of offsite power, but the FS1 declaration is the overriding classification for the site.</p>			
<p>(Tab A step 4) Refer to EP-PS-100, "Emergency Director, Control Room; Emergency-Plan Position Specific Instruction"</p>	<p>Obtain a copy of EP-PS-100 and refer to tab D, Manage the SITE AREA EMERGENCY.</p>			

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. <u>EVALUATOR CUE:</u> 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. <u>EVALUATOR CUE:</u> 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. <u>EVALUATOR CUE:</u> Provide ENR form if requested. If JPM is not performed in the simulator, when requested, inform the student that: <ul style="list-style-type: none"> • 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. <u>Evaluator Note:</u> Acknowledge receipt of ENR form			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><u>EVALUATOR CUE:</u></p> <ol style="list-style-type: none"> 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 _____ 				
<p>★ (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.</p> <p><u>EVALUATOR NOTE:</u></p> <p>When candidate identifies the upgrade EAL classification Record TIME _____</p> <p>Time to determine correct EAL must be within 15 minutes of START TIME noted in 3, above.</p>	<p>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;</p> <p>EP-PS-100 tab E must now be implemented.</p>			
<p>★(Step 4) Generate and approve ENR Form for transmittal.</p> <p><u>EVALUATOR CUE:</u></p> <p>Provide ENR form if requested. If JPM is not performed in the simulator, when requested, inform the student that:</p> <ul style="list-style-type: none"> • Wind Direction is 157 degrees • Wind Speed is 9 mph <p>If performed in the Simulator, student should use current PICSY data.</p>	<p>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.</p> <p><u>Evaluator Note:</u> Acknowledge receipt of ENR form</p>			

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★ (Step 5) When a General Emergency is declared, make Protective Action Recommendation (PAR) within 15 minutes.</p>	<p>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</p>			
<p><u>EVALUATOR CUE:</u> After the candidate determines a PAR is required, direct the candidate to determine the correct PAR for current plant conditions</p>				

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>★Perform EP-PS-100 Tab 5, “PPL Emergency Dose Assessment and Protective Action Recommendation (PAR) Guide”</p> <p><u>EVALUATOR CUE:</u> When asked, inform student that a valid offsite dose projection is <u>NOT</u> available yet.</p> <p><u>EVALUATOR NOTE:</u> When candidate completes PAR and indicates need to transmit it to the Senior State Official: Record TIME _____</p> <p>Time to determine PAR must be within 15 minutes of General Emergency declaration time noted in Step 7.</p>	<p>Refer to EP-PS-100 Tab 5 and determine:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Evacuate 0-2 miles • Shelter 2-10 miles • Citizens take KI per state plans <p>(Tab E, step 5c) Notify Senior State Official, using PAR State Notification Form, at 717-651-2148.</p>			
<p><u>EVALUATOR CUE:</u> When student indicates need to transmit PAR to Senior State Official, inform student “This completes the JPM.”</p>				

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 (Keys) to the student!

Also, there are two sets of cue sheets. The 1st is given to the applicant at the beginning of the JPM. The JPM will direct when to provide the 2nd cue sheet. There are also two blank ENR forms in the package as well

ANSWER KEY (for 1st ENR form)

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 **SITE AREA EMERGENCY**
 ALERT **GENERAL EMERGENCY**
 The event has been terminated.

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

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

4. The Classification Designation is: **FS1**

BRIEF NON-TECHNICAL DESCRIPTION OF THE:

- EMERGENCY EVENT** (Initial declaration and escalations) **OR**
 OTHER SIGNIFICANT EVENT (No change in emergency classification or classification time)

Applicant applies "FS1" Brief Non-technical Description Sticker here.

5. **THERE IS:** **No** } **RADIOLOGICAL RELEASE IN PROGRESS DUE TO THE EVENT**
 AN AIRBORNE
 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, SGBT 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: *Applicant signature* **Time:** *Current time* **Date** **TODAY**
(ED, RM, or EOFSS) (Time form approved) (Date form approved)

ANSWER KEY

ANSWER KEY (for 2nd ENR form)

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 570-542 3

Notification time is:

number is: 570-759 4

(Time notification initiated)

(Callback telephone number)

3. **EMERGENCY CLASSIFICATION:**

UNUSUAL EVENT

SITE AREA EMERGENCY

ALERT

GENERAL EMERGENCY

The event has been terminated.

UNIT:

ONE

Declaration Time: *Classification time*

DATE: TODAY

TWO

(Time classification/ termination declared)

(Date classification/ termination declared)

ONE & TWO

THIS REPRESENTS A/AN:

INITIAL DECLARATION

ESCALATION

NO CHANGE

} **IN CLASSIFICATION STATUS**

4. **The Classification Designation is:** FG1

BRIEF NON-TECHNICAL DESCRIPTION OF THE:

EMERGENCY EVENT (Initial declaration and escalations) **OR**

OTHER SIGNIFICANT EVENT (No change in emergency classification or classification time)

Applicant applies "FG1" Brief Non-technical Description Sticker here.

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, SBTG** 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: *Applicant signature*

Time: *Current time*

Date TODAY

(ED, RM, or EOFSS)

(Time form approved)

(Date form approved)

ANSWER KEY

CUE SHEET #1:

TASK CONDITIONS

- Unit 1 was initially at 100% power
- At T + 0 sec, 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
- At T + 30 sec, 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

- Unit 1 was initially at 100% power
- At T + 0 sec, 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
- At T + 30 sec, 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 SITE AREA EMERGENCY
 ALERT GENERAL EMERGENCY
 The event has been terminated.

UNIT: ONE TWO ONE & TWO

Declaration Time: _____ DATE: _____
(Time classification/termination declared) (Date classification/termination declared)

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

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 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, SGBT 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)

Facility: SSES Date of Examination: 1/17/12
 Exam Level: RO SRO-I SRO-U Operating Test No.: 1

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 Control Rod Withdrawals	A, N, S	1
b. Perform HPCI Quarterly Surveillance/206000	A, N, S	2
c. Quarterly Turbine Valve Cycling/241000	A, N, S	3
d. Core Spray System Shutdown/209001	N, S	4
e. PCIS/SDC restoration/223002	A, L, N, S	5
f. Manually Synchronize Diesel Generator B/264000	A, N, S	6
g. SGBT System Startup/288000	N, S	9
h. APRM Gain Adjustment/215005	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	D, E, R	1
j. Maintaining RCIC Suction Source during SBO	A, E, N, R	2
k. Secure Non-Class 1E 250 VDC loads IAW E0-100-030	N, E	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: <u> SSES </u>		Date of Examination: <u> 1/17/12 </u>
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test No.: <u> 1 </u>
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 Control Rod Withdrawals	A, N, S	1
b. Perform HPCI Quarterly Surveillance/206000	A, N, S	2
c. Quarterly Turbine Valve Cycling/241000	A, N, S	3
d. Core Spray System Shutdown/209001	N, S	4
e. PCIS/SDC restoration/223002	A, L, N, S	5
f. Manually Synchronize Diesel Generator B/264000	A, N, S	6
g. SBT System Startup/288000	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	D, E, R	1
j. Maintaining RCIC Suction Source during SBO	A, E, N, R	2
k. Secure Non-Class 1E 250 VDC loads IAW E0-100-030	N, E	6
<p>[@] 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.</p>		
* 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 Rod Withdrawals At Power

JPM Designation: A

Revision Number: 4

Date: 10/26/11

Note: This JPM is paired with JPM D with a staggered start

Developed By: Chris Lally 4/15/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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):

Rev 0

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

Rev 2: Added procedure step numbers

Rev 3: Revised following licensee review

Rev 4: Revised following licensee request to perform at higher power level to support JPM pairing

JPM Setup Instructions:

1. Reset Simulator to **IC 391**, approximately 76% power
2. Run scenario file **JPMA.scn** to Insert uncoupled rod malfunction (IMF mfRD1550074631) for control rod 46-31
3. Provide OP-156-001 Reactor Manual Control System
4. Provide copy of SO-156-007 Control Rod Coupling Check
5. Provide copy of JPMA Reactivity Manipulation Request and Control Rod Movement Sheet

TASK STANDARD:

Successfully insert Control Rod 46 - 31 per ON-155-001, Control Rod Problems Rev 34

TASK CONDITIONS:

1. The plant is operating at reduced power after the crew inserted control rods per steps 185 – 177 of the CRC book due to an Offgas problem.
2. The Offgas system problem has been corrected and condenser vacuum is restored to normal.
3. Reactor Engineering has provided the SRO with the approved Reactivity Manipulation Package to return the nine rods to their target positions.
4. CRD Hydraulic System is in operation in accordance with OP-155-001
5. RMCS is 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. The reactivity briefing has been completed.

INITIATING CUE:

The SRO has directed you to complete the requested reactivity manipulations by withdrawing control rods per the Reactivity Manipulation Request and Control Rod Movement 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 withdrawals at power

JPM Number: A

Revision Number: 4

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: 25 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 35
- 4. AR-104-001 Rev 31
- 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".

NRC SSES INITIAL EXAMINATION

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	Applicant may obtain 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 <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			
*3. (Step 2.4.4) Select control rod to be withdrawn continuously by Depressing corresponding CONTROL ROD SELECTION pushbuttons.	Applicant depresses rod select pushbutton for rod (14-31)			
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 <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.			
*5. (Step 2.4.6) Depress and Hold CONT W/DRAW ROD pushbutton AND	Applicant Depresses and Holds CONT W/DRAW ROD pushbutton AND			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*6. (Step 2.4.7) Depress and Hold W/DRAW ROD pushbutton</p> <p>Evaluator Note: During rod withdrawal, the applicant will likely receive AR-103-001 (C04) RBM ROD BLOCK and AR-104-001 (H03) ROD OUT BLOCK. This is caused by the expected change in local core power around the withdrawing control rod. Expected operator actions are to verify correct rod selected, verify position on power/flow map, and confirm with RE that adequate margin exists to thermal limits.</p> <p><i>Roleplay as reactor engineer as necessary to inform applicant that adequate thermal limit margin for the control rod exists.</i></p> <p>Applicant will de-select and re-select the control rod to clear the rod block alarm and continue with control rod withdrawal.</p>	<p>Depresses and Holds W/DRAW ROD pushbutton</p>			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>7. (Step 2.4.8) Observe:</p> <ul style="list-style-type: none"> 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. 	<p>Note: Additional expected applicant actions per precaution 2.4.2.b of OP-156-001, "Nuclear instrumentation must be monitored during any rod movement"</p> <p>Applicant Observes:</p> <ul style="list-style-type: none"> 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. 			
<p>8. (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:</p> <ul style="list-style-type: none"> a. Loss of position 48 <p>AND</p> <ul style="list-style-type: none"> b. Loss of full out red indicator <p>OR</p> <ul style="list-style-type: none"> c. ROD OVERTRAVEL alarm 	<p>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.</p>			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>9. (Step 5.3.2) Depress Display Rods Full-in/Full-out test button and Confirm the FULL OUT red indicator ILLUMINATED.</p> <p>AND/OR</p> <p>(Step 5.3.3) Confirm the control rod remains at position 48 on the 4 rod display.</p>	<p>Applicant depresses test button and confirms red FULL OUT indicator is illuminated</p> <p>OR</p> <p>Confirms control rod remains at position 48 on the 4 rod display</p>			
<p>10. (Step 5.3.4) Record date and initials in appropriate space for the control rod in COUPLING CHECK on Attachment C, Page 1.</p>	<p>Applicant documents control rod 14-31, date and initials for coupling check on Attachment C</p>			
<p>11. (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.)</p>	<p>Applicant establishes target position of 48</p>			
<p>*12. (Step 2.4.4) Select control rod to be withdrawn continuously by Depressing corresponding CONTROL ROD SELECTION pushbuttons.</p>	<p>Applicant depresses rod select pushbutton for rod (46-31)</p>			
<p>13. (Step 2.4.5) Observe:</p> <ul style="list-style-type: none"> 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. 	<p>Applicant Observes:</p> <ul style="list-style-type: none"> 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. 			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*14. (Step 2.4.6) Depress and Hold CONT W/DRAW ROD pushbutton AND	Applicant Depresses and Holds CONT W/DRAW ROD pushbutton AND			
<p>*15. (Step 2.4.7) Depress and Hold W/DRAW ROD pushbutton</p> <p>Evaluator Note: During rod withdrawal, the applicant will likely receive AR-103-001 (C04) RBM ROD BLOCK and AR-104-001 (H03) ROD OUT BLOCK. This is caused by the expected change in local core power around the withdrawing control rod. Expected operator actions are to verify correct rod selected, verify position on power/flow map, and confirm with RE that adequate margin exists to thermal limits.</p> <p>Roleplay as reactor engineer as necessary to inform applicant that adequate thermal limit margin for the control rod exists.</p> <p>Applicant will de-select and re-select the control rod to clear the rod block alarm and continue with control rod withdrawal.</p>	Depresses and Holds W/DRAW ROD pushbutton			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><u>ALTERNATE PATH BEGINS HERE</u></p> <p>16. (Step 2.4.8) Observe:</p> <ul style="list-style-type: none"> 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. <p><u>Evaluator Note:</u> Alarm AR-104-001 (H06) is an expected alarm for this JPM</p>	<p><u>ALTERNATE PATH BEGINS</u></p> <p><u>Note:</u> Additional expected applicant actions per precaution 2.4.2.b of OP-156-001, "Nuclear instrumentation must be monitored during any rod movement"</p> <p>Applicant Observes:</p> <ul style="list-style-type: none"> 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. 			
<p>*17. (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:</p> <ul style="list-style-type: none"> a. Loss of position 48 <p><u>AND</u></p> <ul style="list-style-type: none"> b. Loss of full out red indicator <p><u>OR</u></p> <ul style="list-style-type: none"> c. ROD OVERTRAVEL alarm 	<p>Applicant maintains withdraw signal to perform coupling check, <i>notes control rod position becomes blank, loss of the full out red indicator, and receipt of the ROD OVERTRAVEL alarm.</i></p>			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
18. Annunciator response to ROD OVERTRAVEL [AR-104-001 (H06)]	Applicant: <ul style="list-style-type: none"> 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 <p><u>Evaluator Note:</u> Candidate may recognize entry condition and directly enter ON-155-001 'Control Rod Problems', vice entry from AR.</p>			
*19. Enter ON-155-001 'Control Rod Problems'	Applicant obtains ON-155-001, recognizes symptoms for rod overtravel and proceeds to step 4.5 <p><u>Evaluator cue:</u> Perform the required actions</p>			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*20. (Step 4.5.1) IF Rod Overtravel alarm ANNUNCIATES with rod beyond 48, Perform the following only once:</p> <ul style="list-style-type: none"> a. Insert rod to 46. b. Withdraw rod to 48. c. With Rod at position 48, Notch Rod OUT OR Continuously withdraw Rod. <p>AND</p> <ul style="list-style-type: none"> d. Confirm control rod is coupled by observing: <ul style="list-style-type: none"> (1) POSITION 48 on Standby Information Panel or other available rod position indication <p>AND</p> <ul style="list-style-type: none"> (2) FULL OUT RED indicator on full core display <p>AND</p> <ul style="list-style-type: none"> (3) Rod Overtravel annunciator is CLEAR. 	<p>Applicant Perform the following only once:</p> <ul style="list-style-type: none"> a. Insert rod (46-31) to 46 by depressing INSERT pushbutton one time. b. Withdraw rod (46-31) to 48 by depressing WITHDRAW pushbutton one time. c. With Rod at position 48, applicant Notches Rod OUT by depressing WITHDRAW pushbutton one time OR Continuously withdraw Rod by depressing and holding CONT W/DRAW ROD pushbutton and depressing and holding W/DRAW ROD pushbutton. d. Applicant will again receive the "Rod Overtravel" annunciator and recognize that the control rod is still uncoupled. <p>Applicant recognizes that rod is still uncoupled and proceeds to step 4.5.2</p>			

NRC SSES INITIAL EXAMINATION

JPM A

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*21. (Step 4.5.2) IF rod fails to couple through one performance of Step 4.5.1:</p> <ul style="list-style-type: none"> a. Promptly Insert rod to position 00. b. Contact Reactor Engineering. c. IF < LPSP power: <ul style="list-style-type: none"> (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. 	<p>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.</p> <p>Applicant:</p> <ul style="list-style-type: none"> a. Promptly Inserts rod 46-31 to position 00 by depressing and holding the INSERT pushbutton. <p>Evaluator Note: Reactor power is above the Low Power Setpoint (LPSP). Step 4.5.2.c is N/A</p>			
<p>CUE: JPM is complete.</p>				

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is operating at reduced power after the crew inserted control rods per steps 185 – 177 of the CRC book due to an Offgas problem.
2. The Offgas system problem has been corrected and condenser vacuum is restored to normal.
3. Reactor Engineering has provided the SRO with the approved Reactivity Manipulation Package to return the nine rods to their target positions.
4. CRD Hydraulic System in operation in accordance with OP-155-001
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. The reactivity briefing has been completed.

INITIATING CUE:

The SRO has directed you to complete the requested reactivity manipulations by withdrawing control rods per the Reactivity Manipulation Request and Control Rod Movement Sheet.

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is operating at reduced power after the crew inserted control rods per steps 185 – 177 of the CRC book due to an Offgas problem.
2. The Offgas system problem has been corrected and condenser vacuum is restored to normal.
3. Reactor Engineering has provided the SRO with the approved Reactivity Manipulation Package to return the nine rods to their target positions.
4. CRD Hydraulic System in operation in accordance with OP-155-001
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. The reactivity briefing has been completed.

INITIATING CUE:

The SRO has directed you to complete the requested reactivity manipulations by withdrawing control rods per the Reactivity Manipulation Request and Control Rod Movement Sheet.

REACTIVITY MANIPULATION REQUEST ⁽⁵⁾

Unit #: 1 Cycle #: 17

STEP # _____ of _____ (*PAGE 1 of 1)

Initial Conditions Confirmed By:

APPROVAL to Start:

Qualified Reactor Engineer / Date / Time <i>R. Rx. Engineer Today / Current</i>	Reactivity Manager (SRO) / Date / Time <i>Unit Supervisor Today / Current</i>
--	--

***Description of Manipulation:**

Withdraw control rods 14-31, 46-31, 30-47, 30-15, 22-39, 38-39, 38-23, 22-23, and 30-31 per the control rod movement sheet.

*** Precautions and Limitations:**

Continuously withdraw rods in steps 1 through 4 (position 00 - 48)
Single Notch Withdraw rods in steps 5 through 9.

***Critical Parameters to be Observed During the Manipulation**

Critical Parameter	As applicable, describe method of monitoring, frequency, and contingency actions	High	Low
Rod Position	Monitor 4 Rod Display and PICSY. During rod maneuver.	X	
Core Flow	Monitor PICSY and SIP. During rod maneuver	X	
Rx Power	Monitor APRMs. During rod maneuver	X	
Gen Power	Monitor Capability curve as power is raised	X	

* Use multiple pages as necessary.

Reactivity Manipulation Completed:

POST Manipulation Conditions Confirmed:

Reactivity Manager (SRO) / Date / Time	Qualified Reactor Engineer / Date
--	-----------------------------------

CONTROL ROD MOVEMENT SHEET

If applicable, then identify the corresponding RMR Step # _____

<u>STEP</u>	<u>ROD ID</u>	<u>FROM</u>	<u>TO</u>	<u>MANIPULATOR INITIALS</u>	<u>VERIFIER INITIALS</u>
<u>1</u>	<u>14-31</u>	<u>00</u>	<u>48</u>	_____	_____
<u>2</u>	<u>46-31</u>			_____	_____
<u>3</u>	<u>30-47</u>			_____	_____
<u>4</u>	<u>30-15</u>			_____	_____
Reselect and confirm previous moves:				_____	_____
<u>5</u>	<u>22-39</u>	<u>00</u>	<u>12</u>	_____	_____
<u>6</u>	<u>38-39</u>			_____	_____
<u>7</u>	<u>38-23</u>			_____	_____
<u>8</u>	<u>22-23</u>			_____	_____
Reselect and confirm previous moves:				_____	_____
<u>9</u>	<u>30-31</u>	<u>00</u>	<u>08</u>	_____	_____
_____	_____			_____	_____
_____	_____			_____	_____
_____	_____			_____	_____
Reselect and confirm previous moves:				_____	_____
_____	_____			_____	_____
_____	_____			_____	_____
_____	_____			_____	_____
Reselect and confirm previous moves:				_____	_____
_____	_____			_____	_____
_____	_____			_____	_____
_____	_____			_____	_____
Reselect and confirm previous moves:				_____	_____

SURVEILLANCE AUTHORIZATION

PART I. GENERAL INFORMATION

PROCEDURE NUMBER: SO-156-007 RTSV Number: N/A
Activity Number: N/A
PROCEDURE TITLE: Qtrly HPCI Flow Due Date: N/A
Verification Violation Date: N/A

UNIT

1

PART II. REASON FOR PERFORMANCE

- Routine Event or Condition Initiated
(Described in Remarks) Post Maint/Mod Test
(Described in Remarks)
 LCO Action Statements TRO Action Statements Other (Described in Remarks)

PART III. EXTENT OF TESTING

- Complete Partial Delete

PART IV. AUTHORIZATION TO COMMENCE

Shift Supervision Signature: M. Jacopetti Date: TODAY Time: - 1 hr

Surveillance was: Supervisor/Foreman Signature: _____ Date: _____
 Out of Service Out of Mode

PART V. REMARKS

1. Performed for rod withdraws (14-31, 46-31, 30-47, 30-15) to return to full power operation.

PART VI. AS-FOUND OPERABILITY (Systems/Components were found:)

- OPERABLE and Acceptance Criteria passed INOPERABLE or Acceptance Criteria failed (Notify Shift Supervision)

PART VII. AS-LEFT OPERABILITY

OPERABLE RETEST ATTACHED: YES N/A

PART VIII. COMPLETION

ACTUAL COMPLETION DATE: _____ TIME: _____

PART IX. CLOSURE

- Shift Supervision Notified

Responsible Individual: _____ A Complete Retest was Performed

Supervisor Signature: _____ Commencement Date: _____

PART X. FINAL CLOSURE

_____ Work Group closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to WCC Admin. Group)

_____ WCC Admin. Group final closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to DCS)

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.

Susquehanna Steam Electric Station

Job Performance Measure

Perform HPCI Quarterly Surveillance

JPM Designation: B

Revision Number: 3

Date: 12/17/2011

Note: This JPM is paired with JPM G with a staggered start.

Developed By: Patel _____ 05/25/11 _____

Author

Date

Review By: Hedigan _____

Examiner

Date

Approved By: Caruso _____

Chief Examiner

Date

REVISION RECORD (Summary):

1. Rev 3

JPM Setup Instructions:

1. Build the following JPMB scenario and event trigger support files used below:
2. Build the support IC # 392 for the initial conditions, to include.
 - Align HPCI Support System per SO-152-002 Section 5.1. ('B' RHR Pp is SPC, 'A' and 'B' ESW Pumps and 'A' SGTS running)
 - Place HPCI System in test status per SO-152-002 Section 5.2.
3. Reset the simulator to required IC # 392
4. Load the following JPM scenario files:

JPMB.scn

```
aet JPMB ET
IMF cmfMV06_HV155F011
IRF rfDC188118 f:OPEN
{Key[1]} IRF rfDC188135 f:OPEN
{Key[2]} MRF rfDC188135 f:CLOSE
{Key[3]} IOR doHS15659_1 f:OFF
{Key[3]} IOR doHS15659_2 f:ON
{Key[3]} IMF cmfMV07_HV156F059 d:1 f:0
{Key[3]} IOR aoTRE411R605G r:10:00 f:300
{Key[3]} IOR aoTRE411R605D r:15:00 f:400
{Key[3]} IOR aoTRE411R605F r:15:00 f:400
{Key[3]} IOR aoTRE411R605E r:15:00 f:400
```

And Trigger / Scn files

JPMB ET.et

```
;METER:HPCI TURB OIL COOLER DSCH
aoTRE411R605G.CurrValue >= 155
```

JPMB ET.scn

```
IMF annAR114D03 f:ALARM_ON
```

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 unavailable
4. 1B RHR Pp is in Suppression Pool Cooling, A & B ESW Pumps and A SGTS are in service to support the surveillance.

INITIATING CUE:

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

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 5.3 to conduct TS surveillance test.

Surveillance was last 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. 49
- 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 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.

NRC SSES INITIAL EXAMINATION

JPM B

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>NRC Examiner Note: Use Headset to communicate with booth operator for this JPM. (to ensure timely insertion of malfunctions)</p> <p>1. Obtains procedure and reviews procedure, prerequisites, and precautions</p>	Obtains SO-152-002			
<p>2. Recognizes that HPCI Auto Quick Start needs to be performed to satisfy TS quarterly surveillance requirements.</p>	Applicant identifies that HPCI Auto Quick Start needs to be performed 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.			
<p>3. Step 5.3.1</p> <p>IF Cold Auto Quick Start is being performed, Ensure HPCI turbine shutdown > 16 previous hours. Enter present date and time.</p>	<p>Notes present date and time.</p> <p>_____</p> <p align="center">Date Time</p> <p>Evaluator Note: Per initiating cue, applicant should recognize that the last HPCI turbine start was greater than 16 hours ago. (October 13, 2011)</p>			
<p>4. Step 5.3.2</p> <p>Check HPCI TEST LINE TO CST ISO HV-155-F011 CLOSED.</p>	Applicant checks HPCI TEST LINE TO CST ISO HV-155-F011 is CLOSED . (Verifies Amber Light Lit and Red Light Extinguished)			

NRC SSES INITIAL EXAMINATION

JPM B

<p>*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.</p>	<p>Applicant orders _I&C_ group to Lift both leads at terminal 3 of Relay E41A-K2 AND CLAMP together.</p> <p>Evaluator Note: Applicant may request this field action.</p> <p>Booth Operator 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.</p> <p>Evaluator Note: These leads cannot be lifted in the Simulator model. This malfunction has the same effect:</p> <p>IMF cmfMV06_HV155F011</p>			
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NRC SSES INITIAL EXAMINATION

JPM B

<p>*6. Step 5.3.4</p> <p>Position HPCI TEST LINE TO CST ISO HV-155-F008 as follows:</p> <p>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</p> <p align="center"><u>OR</u></p> <p>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.</p> <p>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.</p>	<p>Applicant positions HPCI TEST LINE TO CST ISO HV-155-F008 in the open direction for 13.6 seconds.</p> <p>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.</p> <p>Evaluator Cue: (If required) Notify Applicant to review initial conditions.</p>			
<p>7. Step 5.3.5</p> <p>Open Breaker 1D274081, HPCI Test LINE TO CST ISO VLV HV-155F008 BKR (25-683').</p>	<p>Applicant requests field action to OPEN Breaker 1D274081, HPCI Test LINE TO CST ISO VLV HV-155F008.</p> <p>Booth Operator Cue:</p> <p>When contacted to open 1D274-081, depress Soft Key #1</p> <p>{Key[1]} IRF rDC188135 f:OPEN</p> <p>Booth Operator Cue: Notify Applicant that Bkr 1D274081 has been opened.</p>			

NRC SSES INITIAL EXAMINATION

JPM B

<p>8. Step 5.3.6</p> <p>Evacuate personnel from HPCI pump room AND Close water tight doors. Once HPCI is operating pump room may be accessed again.</p>	<p>Applicant utilizes plant page system to evacuate personnel from the HPCI pump room area.</p> <p>Evaluator Cue: If applicant is going to make the PA announcement, tell them it has already been made (for exam security reasons)</p>			
<p>*9. Step 5.3.7</p> <p>Rotate collar on HPCI MAN INIT HS-E41-1S33 pushbutton to ARMED position.</p>	<p>Applicant Rotates collar on HPCI MAN INT HS-E41-1S33 pushbutton to ARMED position.</p>			
<p>10. Step 5.3.8</p> <p>Confirm HPCI MAN INITIATION SWITCH ARMED annunciator ALARMS.</p>	<p>Applicant Confirms HPCI MAN INITIATION SWITCH ARMED annunciator alarm. AR-114-001 (A05)</p>			
<p>11. Step 5.3.9</p> <p>Instruct STA to Start Transient Monitoring System TRA.</p>	<p>Applicant requests STA to start Transient Monitoring System TRA.</p> <p>Booth Operator Cue: Notify Applicant that Transient Monitoring system has been started.</p>			
<p>*12. Step 5.3.10 & 5.3.11</p> <p>Simultaneously Start stopwatch</p> <p>AND</p> <p>Depress AND Hold HPCI MAN INIT HS-E41-1S33 pushbutton until TURBINE STEAM SUPPLY HV-155-F001 Starts to OPEN.</p>	<p>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.</p> <p>Evaluator Cue: Notify applicant that you will be performing the timing function and will let you know the final time value for recording purpose.</p>			
<p>*13. Step 5.3.12</p> <p>WHEN HPCI pump discharge pressure indicates 100 psig increasing on PI-E41-1R601, Promptly Open HPCI TEST LINE TO CST ISO HV-155-F011.</p>	<p>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.</p>			

NRC SSES INITIAL EXAMINATION

JPM B

<p>14. Step 5.3.13</p> <p>WHEN flow reaches 5000 gpm as indicated on FI-E41-1R600-1:</p> <p>a. Stop stopwatch</p> <p>b. Record time on Attachment A.</p> <p>c. Confirm HPCI successfully actuated by observing flow as indicated on FI-E41-1R600-1, ≥ 5000 gpm AND Record on Attachment A.</p> <p>d. IF PICSY is available, Record time of HPCI startup.</p> <p style="margin-left: 20px;">HPCI START TIME _____</p>	<p>WHEN flow reaches 5000 gpm as indicated on FI-E41-1R600-1 Applicant:</p> <p>e. Stops stopwatch</p> <p>f. Records time on Attachment A.</p> <p>g. Confirms HPCI successfully actuated by observing flow as indicated on FI-E41-1R600-1, ≥ 5000 gpm AND Record on Attachment A.</p> <p>h. IF PICSY is available, Records time of HPCI startup.</p> <p style="margin-left: 20px;">HPCI START TIME _____</p> <p>Evaluator Cue: If Flow indicator does not exactly read 5000 gpm (due to applicant not stroking HPCI test line to CST OPEN for more than 13.6 sec), inform the applicant that for this exam's purpose flow is reading > 5000 gpm.</p>			
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NRC SSES INITIAL EXAMINATION

JPM B

<p>15. Step 5.3.15</p> <p>Confirm following events occur:</p> <ul style="list-style-type: none"> a. HPCI INIT SIG RESET HS-E41-1S17 indicating light ILLUMINATES b. HPCI BARO CDSR VACUUM PP 1P216 STARTS c. HPCI L-O CLG WTR HV-156-F059 OPENS d. HPCI TURBINE STEAM SUPPLY HV-155-F001 OPENS e. HPCI STM LINE DRN TO CDSR IB ISO HV-155-F028 CLOSES f. HPCI STM LINE DRN TO CDSR OB ISO HV-155-F029 CLOSES g. HPCI BARO CDSR COND PP DSCH DRN HV-156-F026 CLOSES h. HPCI BARO CDSR COND PP DSCH DRN HV-156-F025 Closes if OPEN i. HPCI Rm Unit Clr 1V209A(B) STARTS at Panel 1C681 	<p>Confirms following events occur:</p> <ul style="list-style-type: none"> a. HPCI INIT SIG RESET HS-E41-1S17 indicating light ILLUMINATES b. HPCI BARO CDSR VACUUM PP 1P216 STARTS c. HPCI L-O CLG WTR HV-156-F059 OPENS d. HPCI TURBINE STEAM SUPPLY HV-155-F001 OPENS e. HPCI STM LINE DRN TO CDSR IB ISO HV-155-F028 CLOSES f. HPCI STM LINE DRN TO CDSR OB ISO HV-155-F029 CLOSES g. HPCI BARO CDSR COND PP DSCH DRN HV-156-F026 CLOSES h. HPCI BARO CDSR COND PP DSCH DRN HV-156-F025 Closes if OPEN i. HPCI Rm Unit Clr 1V209A(B) STARTS at Panel 1C681 		
<p>16. Step 5.3.16</p> <p>IF loud banging noise occurred during system initiation, Notify system engineer to evaluate effect on system components.</p>	<p>Evaluator Cue: No loud banging noise was heard.</p>		
<p>17. Step 5.3.18</p> <p>Confirm FULL OPEN indication of HPCI TURB STOP FV-15612 AND Record on Attachment A</p>	<p>Confirms FULL OPEN indication of HPCI TURB STOP FV-15612 AND Record on Attachment A</p>		

<p>18. Step 5.3.19</p> <p>Reset HPCI initiation as follows:</p> <ol style="list-style-type: none"> a. Return HPCI MAN INIT HS-E41-1S33 pushbutton collar to DISARM position b. Confirm HPCI MAN INITIATION SWITCH ARMED annunciator CLEARS c. Depress HPCI INIT SIG RESET HS-E41-1S17 pushbutton d. Confirm HPCI INIT SIG RESET HS-E41-1S17 initiating light CLEARS e. Close BREAKER 1D274081, HPCI Test LINE TO CST ISO VLV HV-155F008 BKR (25-683') 	<p>Resets HPCI initiation as follows:</p> <ol style="list-style-type: none"> a. Return HPCI MAN INIT HS-E41-1S33 pushbutton collar to DISARM position b. Confirm HPCI MAN INITIATION SWITCH ARMED annunciator CLEARS c. Depress HPCI INIT SIG RESET HS-E41-1S17 pushbutton d. Confirm HPCI INIT SIG RESET HS-E41-1S17 initiating light CLEARS e. Close BREAKER 1D274081, HPCI Test LINE TO CST ISO VLV HV-155F008 BKR (25-683') <p><u>Booth Operator Cue:</u> When contacted to Close 1D274-081, depress Soft Key #2 {Key[2]} MRF rDC188135 f:CLOSE</p> <p><u>Booth Operator Cue:</u> Notify Applicant that Bkr 1D274081 has been CLOSED.</p>			
<p>19. <u>Simulator Booth Instruction:</u></p> <p>Click Soft Key #3 to insert malfunctions to cause high temperature indication and associated alarm. Inform NRC Examiner malfunction inserted</p>	<p>NRC Examiner Note: Ensure Simulator Booth Operator has inserted malfunction Soft Key #3 (After HPCI initiation RESET) to cause high temperature indications and associated alarm.</p> <p>NRC Examiner Note: It takes 3.5 minutes from the malfunction for the alarm AR-114-001 (D03) to come in.</p>			

NRC SSES INITIAL EXAMINATION

JPM B

<p>20. Step 5.4.1</p> <p>Establish following conditions:</p> <p>Adjust HPCI flow to at least 5000 gpm (FI-E41-1R600-1) at a Discharge Pressure of at least 1140 psig (PI-E41-1R601) by performing BOTH of the following steps as necessary (Technical Specification Criteria):</p> <ol style="list-style-type: none"> a. Allow HPCI TURBINE FLOW CONTROL FC-E41-1R600 to control in AUTOMATIC AND b. Throttle HPCI TEST LINE TO CST HV-155-F008 	<p>Adjusts HPCI flow to at least 5000 gpm (FI-E41-1R600-1) at a Discharge Pressure of at least 1140 psig (PI-E41-1R601) by performing BOTH of the following steps as necessary (Technical Specification Criteria):</p> <ol style="list-style-type: none"> a. Allow HPCI TURBINE FLOW CONTROL FC-E41-1R600 to control in AUTOMATIC AND b. Throttle HPCI TEST LINE TO CST HV-155-F008 			
<p>21. Step 5.4.2</p> <p>Record following Data on Attachment A:</p> <ol style="list-style-type: none"> a. HPCI FLOW FI-E41-1R600-1 b. HPCI PP DSCH PRESS PI-E41-1R601 c. RX STM TO HPCI TURB PRESS PI-E41-1R602 	<p>Records following Data on Attachment A:</p> <ol style="list-style-type: none"> a. HPCI FLOW FI-E41-1R600-1 b. HPCI PP DSCH PRESS PI-E41-1R601 c. RX STM TO HPCI TURB PRESS PI-E41-1R602 			
<p>22. Step 5.4.4</p> <p>Establish Pump/Turbine speed at 4070-4130 rpm as indicated on local tachometer ST-15684 AND flow at 5000-5100 gpm as indicated on FI-E41-1R600-1, as follows:</p> <ol style="list-style-type: none"> a. Place HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL b. Adjust turbine speed using HPCI TURBINE FLOW CONTROL FC-E41-1R600 c. Adjust HPCI flow by throttling HPCI TEST LINE TO CST HV-155-F008 	<p>Establish Pump/Turbine speed at 4070-4130 rpm as indicated on local tachometer ST-15684 AND flow at 5000-5100 gpm as indicated on FI-E41-1R600-1, as follows:</p> <ol style="list-style-type: none"> a. Place HPCI TURBINE FLOW CONTROL FC-E41-1R600 in MANUAL b. Adjust turbine speed using HPCI TURBINE FLOW CONTROL FC-E41-1R600 c. Adjust HPCI flow by throttling HPCI TEST LINE TO CST HV-155-F008 			

NRC SSES INITIAL EXAMINATION

JPM B

<p>23. Step 5.4.5</p> <p>With system in operation at rated stable condition for at least 2 minutes, Record following parameters:</p> <ul style="list-style-type: none"> a. HPCI FLOW FI-E41-1R600-1 on Attachment A b. HPCI PP DSCH PRESS PI-E41-1R601 c. HPCI TURB SPEED SI-E41-1R604 d. REACTOR VESSEL PRESSURE at POST ACCIDENT MON RECORDER UR-14201B e. RX STM TO HPCI TURB PRESS PI-E41-1R602 f. HPCI PP SUCT PRESS PI-E41-1R606 g. HPCI Pump delta P (discharge-suction pressure) on Attachment A. h. HPCI TURB DSCH PRESS PI-E41-1R603 i. HPCI turbine speed from local tachometer ST-15684 <p align="center"><u>OR</u></p> <p>HPCI TURB SPEED SI-E41-1R604 (alternate) on Attachment A</p>	<p>With system in operation at rated stable condition for at least 2 minutes, Records following parameters:</p> <ul style="list-style-type: none"> a. HPCI FLOW FI-E41-1R600-1 on Attachment A b. HPCI PP DSCH PRESS PI-E41-1R601 c. HPCI TURB SPEED SI-E41-1R604 d. REACTOR VESSEL PRESSURE at POST ACCIDENT MON RECORDER UR-14201B e. RX STM TO HPCI TURB PRESS PI-E41-1R602 f. HPCI PP SUCT PRESS PI-E41-1R606 g. HPCI Pump delta P (discharge-suction pressure) on Attachment A. h. HPCI TURB DSCH PRESS PI-E41-1R603 i. HPCI turbine speed from local tachometer ST-15684 <p align="center"><u>OR</u></p> <p>HPCI TURB SPEED SI-E41-1R604 (alternate) on Attachment A</p>			
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NRC SSES INITIAL EXAMINATION

JPM B

<p>*24. Applicant recognizes increase trend in HPCI oil cooler discharge temperature. OR Recognizes HPCI Turbine Oil Cooler DSCH HI TEMP alarm AR-114-001 (D03).</p>	<p>NRC Examiner Note: It takes 3.5 minutes from the malfunction for the alarm AR-114-001 (D03) to come in.</p> <p>Applicant recognizes increase trend in HPCI oil cooler discharge temperature.</p> <p>OR Recognizes HPCI Turbine Oil Cooler DSCH HI TEMP alarm AR-114-001 (D03).</p>			
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NRC SSES INITIAL EXAMINATION

JPM B

<p>25. HPCI Turbine Oil Cooler DSCH HI TEMP alarm (D03)</p> <p><u>Operator Action:</u></p> <p>i. ENSURE HPCI L-O CLG WTR HV-156-F059 OPEN.</p> <p>ii. DISPATCH Operator to HPCI Pump Room to perform following:</p> <p>CHECK for cooling water leaks, low oil pressure or bearing overheating.</p> <p>CHECK cooling water alignment to lube oil cooler.</p> <p>MONITOR HPCI System for increasing bearing oil temperatures</p> <p>.....</p> <p>iii. TRIP HPCI Turbine if bearing temperatures exceed 180°F, unless required for adequate core cooling as determined by Shift Supervision.</p>	<p>Applicant performs Operator actions:</p> <p>Ensures HPCI L-O CLG WTR HV-156-F059 OPEN by verifying Red light illuminated and Amber light extinguished.</p> <p>Dispatches operator to HPCI pump room to perform following:</p> <p>CHECK for cooling water leaks, low oil pressure or bearing overheating.</p> <p>CHECK cooling water alignment to lube oil cooler.</p> <p><u>Booth Operator Cue:</u> Role play as field operator and acknowledge to check for cooling water degradation.</p> <p>.....</p> <p>MONITOR HPCI System for increasing bearing oil temperatures.</p> <p>TRIP HPCI Turbine if bearing temperatures exceed 180°F, unless required for adequate core cooling as determined by Shift Supervision.</p>			
<p>*26. Refers to alarm response AR-114-001 (D03), and notes turbine bearing temperatures exceeding 180°F or approaching TRIP criteria per AR procedure.</p>	<p>Applicant Refers to alarm response AR-114-001, (D03) and notes turbine bearing temperatures exceeding 180°F or approaching TRIP criteria per AR procedure.</p>			
<p>*27. Trips HPCI Turbine based on bearing temperatures exceeding 180°F or approaching 180°F rapidly.</p>	<p>Applicant Trips HPCI Turbine based on bearing temperatures exceeding 180°F or approaching 180°F rapidly.</p>			

NRC SSES INITIAL EXAMINATION

JPM B

<p>*28. Depress and release HPCI TURBINE TRIP HS-E41-1S19 pushbutton.</p>	<p>Depresses and releases HPCI TURBINE TRIP HS E41 1S19 pushbutton.</p>			
<p>*29. Ensure HPCI TURBINE STEAM SUPPLY HV-155-F001 closes.</p>	<p>Applicant Ensures HPCI TURBINE STEAM SUPPLY HV-155-F001.closes (Amber light illuminated red light extinguished),</p>			
<p>CUE: JPM is complete.</p>				

JPM Stop Time _____

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 unavailable.
4. 1B RHR Pp is in Suppression Pool Cooling, A & B ESW Pumps and A SGTS are in service to support the surveillance.

INITIATING CUE:

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

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 5.3 to conduct TS surveillance test.

Surveillance was last completed on October 13, 2011.

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 unavailable.
4. 1B RHR Pp is in Suppression Pool Cooling, A & B ESW Pumps and A SGTS are in service to support the surveillance.

INITIATING CUE:

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

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 5.3 to conduct TS surveillance test.

Surveillance was last completed on October 13, 2011.

Susquehanna Steam Electric Station

Job Performance Measure

Quarterly Turbine Valve Cycling

JPM Designation: C

Revision Number: 2

Date: 10 / 25 / 11

Developed By: Chris Lally 4/18/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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
3. Rev 2: Revised following licensee review

JPM Setup Instructions:

1. Build the following JPM support files:
 - A. Scenario file **JPMC.scn**
aet JPMC ET
{Key[1]} IRF rFTU193004 f:BYPASS
 - B. Trigger file
 - Trigger **JPMC ET.et**
;SWITCH:CV-1 TEST
diM2J115S504.CurrValue = #OR.diM2J115S504.TEST
 - Trigger SCN **JPMC ET.scn**
IMF mFTU193008F r:1 f:10.9
2. Reset the Simulator to **IC-393**. IC-17 can be used, if desired.
3. Load JPM scenario and trigger files, noted above
4. Ensure MAXIMUM COMBINED FLOW LIMIT vernier set at 12.5 turns (125%)
5. Ensure LOAD LIMIT SET vernier to 8.9 turns.
6. Key #1-37 provided
7. Provide marked up copy of SO-193-001, through 5.3.10 as completed

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: 2

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:

AR-105-001 (E05) TURB GEN BEARING HI VIBRATION
AR-105-001 (F05) MN TURB/RFPT VIB TRIP DISABLE
AR-103-001 (A01) RPS CHANNEL A1/A2 AUTO SCRAM
AR-103-001 (E01) TURB CV FAST CLOSURE TRIP
AR-104-001 (A01) RPS CHANNEL B1/B2 AUTO SCRAM
AR-104-001 (I06) MAIN TURBINE BYPASS VALVES OPEN
AR-106-001 (D17) HYD FLUID FILTER PANEL 1C122 TROUBLE

NRC SSES INITIAL EXAMINATION

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 1000 MW. c. Record value of LOAD LIMIT SET vernier at 8.9 turns.			

NRC SSES INITIAL EXAMINATION

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*5. (Step 5.4.4) Perform following:</p> <p>a. Ensure LOAD LIMIT SET vernier to 8.9 TURNS. NA if already performed in section 5.1.7.</p> <p>b. Increase LOAD SET to maximum value (1400 MW) to allow Control Valves to cycle open and limit BYPASS VALVE opening.</p>	<p>Applicant Performs following:</p> <p>a. Verifies LOAD LIMIT SET vernier to 8.9 TURNS. (Performed by previous operator, N/A in this case)</p> <p>b. Increase LOAD SET to maximum value (1400 MW) to allow Control Valves to cycle open and limit BYPASS VALVE opening.</p> <p>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.</p>			

NRC SSES INITIAL EXAMINATION

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>NOTE: The following step disables the Main Turbine vibration trips</p> <p>*6. (Step 5.4.5) Perform the following:</p> <div style="border: 1px solid black; padding: 2px; margin: 5px 0;"> <p>Note: The following step is a key lock switch and requires key #1-37</p> </div> <p>a. At Panel 1C6100A, Place HS-11982 to BYPASS.</p> <p>b. Confirm Annunciator AR105, F05 MN TURB/RFPT VIB TRIP DISABLE ALARMS</p>	<p>Note: Expected annunciator AR105 F05.</p> <p>Evaluator note: This switch is a remote switch. Roleplay as the operator designated to operate the switch. Communication with booth operator is necessary to perform this step.</p> <p>Booth operator note: When requested by applicant, to bypass turbine vibration trips, depress Soft Key #1 {Key[1]} IRF rTU193004 f:BYPASS</p> <p>Applicant Performs the following:</p> <p>a. Contacts plant operator at Panel 1C6100A to Place HS-11982 to BYPASS.</p> <p>b. Confirm Annunciator AR105, F05 MN TURB/RFPT VIB TRIP DISABLE ALARMS</p>			
<p>7. (Step 5.4.6) During the time vibration trips are disabled:</p> <p>a. IF any bearing on the Main Turbine exceeds 10 mils, Immediately Release the Test Pushbutton</p> <p>b. IF any bearing on the Main Turbine exceeds and sustains 10 mils, Perform a trip of the Main Turbine</p>	<p>Applicant reads procedure step</p>			

NRC SSES INITIAL EXAMINATION

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*8. (Step 5.4.7) Test CONTROL VLV-4 as follows:</p> <p>*a. Depress AND Hold CV-4 TEST pushbutton.</p> <p>b. Confirm CONTROL VLV-4 SLOWLY CLOSSES for approximately first 90% of travel AND THEN FAST CLOSSES remaining 10% as indicated on CONTROL VLV-4 POSITION indicator.</p> <p>c. Confirm annunciator AR104 E01 TURB CV FAST CLOSURE TRIP ALARMS. (Record on Attachment A.)</p> <p>* d. Release CV-4 TEST pushbutton.</p> <p>e. Confirm CV-4 returns to PRETEST POSITION as indicated at CONTROL VLV-4 POSITION indicator.</p> <p>f. IF half scram condition occurred, Reset half scram condition; else NA.</p> <p>g. Confirm annunciator AR104, E01 TURB CV FAST CLOSURE TRIP CLEARS.</p> <p>h. At 1C601, Confirm four (4) MSIV STATUS LOGIC A through D lights ILLUMINATED.</p>	<p>Applicant Tests CONTROL VLV-4 as follows:</p> <p>a. Depress AND Hold CV-4 TEST pushbutton.</p> <p>b. Confirm CONTROL VLV-4 SLOWLY CLOSSES for approximately first 90% of travel AND THEN FAST CLOSSES remaining 10% as indicated on CONTROL VLV-4 POSITION indicator.</p> <p>c. Confirm annunciator AR104 E01 TURB CV FAST CLOSURE TRIP ALARMS. (Record on Attachment A.)</p> <p>d. Release CV-4 TEST pushbutton.</p> <p>e. Confirm CV-4 returns to PRETEST POSITION as indicated at CONTROL VLV-4 POSITION indicator.</p> <p>f. Resets half scram by placing HS-C72A-1S05 to GRP 1/4, then GRP 2/3</p> <p>g. Confirm annunciator AR104, E01 TURB CV FAST CLOSURE TRIP CLEARS.</p> <p>h. At 1C601, Confirm four (4) MSIV STATUS LOGIC A through D lights ILLUMINATED.</p>			

NRC SSES INITIAL EXAMINATION

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p><u>ALTERNATE PATH BEGINS HERE</u></p> <p>*9. (Step 5.4.8) Test CONTROL VLV-1 as follows:</p> <p>* a. Depress AND Hold CV-1 TEST pushbutton.</p> <p>b. Confirm CONTROL VLV-1 SLOWLY CLOSSES for approximately first 90% of travel AND THEN FAST CLOSSES remaining 10% as indicated on CONTROL VLV-1 POSITION indicator.</p> <p>c. Confirm annunciator AR103 E01 TURB CV FAST CLOSURE TRIP ALARMS. (Record on Attachment A.)</p> <p>* d. Release CV-1 TEST pushbutton.</p>	<p><u>ALTERNATE PATH BEGINS</u></p> <p><i>Expected alarms: AR105 E05 TURB GEN BRG HI VIBRATION and AR105 D05 TURB GE BRG HI VIBRATION TRIP</i></p> <p>Applicant Tests CONTROL VLV-1 as follows:</p> <p>a. Depress AND Hold CV-1 TEST pushbutton.</p> <p>b. Confirm CONTROL VLV-1 SLOWLY CLOSSES for approximately first 90% of travel AND THEN FAST CLOSSES remaining 10% as indicated on CONTROL VLV-1 POSITION indicator.</p> <p>c. Confirm annunciator AR103 E01 TURB CV FAST CLOSURE TRIP ALARMS. (Record on Attachment A.)</p> <p>d. Release CV-1 TEST pushbutton.</p> <p><u>Evaluator note:</u> Expected action is for operator to release CV-1 TEST pushbutton when vibration alarms are received.</p>			

NRC SSES INITIAL EXAMINATION

JPM C

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*10. Main turbine vibration alarms AR105 E05 TURB GEN BRG HI VIBRATION and AR105 D05 TURB GEN BRG HI VIBRATION TRIP</p> <p>Per step 5.4.6: During the time vibration trips are disabled:</p> <p>* a. IF any bearing on the Main Turbine exceeds 10 mils, Immediately Release the Test Pushbutton</p> <p>* b. IF any bearing on the Main Turbine exceeds and sustains 10 mils, Perform a trip of the Main Turbine</p>	<p>Applicant:</p> <p>a. Notes Main Turbine vibration exceeds 10 mils, Immediately Releases the Test Pushbutton</p> <p>b. Notes Main Turbine exceeds and sustains 10 mils after release of CV-1 TEST pushbutton, Performs a trip of the Main Turbine by depressing Turbine Trip pushbutton</p> <p>Evaluator note: Roleplay as Unit Supervisor as necessary; applicant may recommend 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.</p>			
<p>CUE: JPM is complete.</p>				

JPM Stop Time _____

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

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

SURVEILLANCE AUTHORIZATION

PART I. GENERAL INFORMATION

PROCEDURE NUMBER: SO-193-001 RTSV Number: 123456
Activity Number: Z0203-1
PROCEDURE TITLE: Qtrly Turbine Valve Due Date: TO/DAY - 5 days
Cycling Violation Date: TO/DAY

UNIT

1

PART II. REASON FOR PERFORMANCE

- Routine Event or Condition Initiated (Described in Remarks) Post Maint/Mod Test (Described in Remarks)
 LCO Action Statements TRO Action Statements Other (Described in Remarks)

PART III. EXTENT OF TESTING

- Complete Partial Delete

PART IV. AUTHORIZATION TO COMMENCE

Shift Supervision Signature: M. Jacopetti Date: TO/DAY Time: - 1 hr

Surveillance was: Supervisor/Foreman Signature: _____ Date: _____
 Out of Service Out of Mode

PART V. REMARKS

None

PART VI. AS-FOUND OPERABILITY (Systems/Components were found:)

- OPERABLE and Acceptance Criteria passed INOPERABLE or Acceptance Criteria failed (Notify Shift Supervision)

PART VII. AS-LEFT OPERABILITY

- OPERABLE RETEST ATTACHED: YES N/A

PART VIII. COMPLETION

ACTUAL COMPLETION DATE: _____ TIME: _____

PART IX. CLOSURE

- Shift Supervision Notified

Responsible Individual: _____ A Complete Retest was Performed

Supervisor Signature: _____ Commencement Date: _____

PART X. FINAL CLOSURE

_____ Work Group closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to WCC Admin. Group)

_____ WCC Admin. Group final closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to DCS)

Susquehanna Steam Electric Station

Job Performance Measure

Core Spray System Shutdown

JPM Designation: D

Revision Number: 2

Date: 10/28/11

**Note: This JPM is paired with JPM A with a staggered start.
Start and complete JPM A with first applicant before beginning
this JPM**

Developed By: Chris Lally 4/19/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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):

Rev 0

Rev 1: Revised following licensee review

Rev 2: Revised following pre-validation to have applicant shutdown Core Spray system following spurious initiation

JPM Setup Instructions:

1. Reset Simulator to IC 394 (or **IC 391 when run with JPM A**), or reset simulator to any full power IC and initiate Core Spray loop B

TASK STANDARD:

Core Spray system shutdown IAW OP-151-001

TASK CONDITIONS:

1. The plant is operating at 100% power
2. Core Spray Loop B has spuriously initiated
3. The cause of the spurious initiation has been found and corrected
4. Misoperation in AUTOMATIC MODE has been confirmed by at least two (2) independent indications
5. Adequate core cooling is assured by at least two (2) independent indications

INITIATING CUE:

The Unit Supervisor has directed you to shutdown 'B' Core Spray Loop in accordance with OP-151-001

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: 2

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. OP-151-001 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 complete the Core Spray system shutdown following spurious initiation in accordance with OP-151-001 by closing the injection valve and securing the running pumps.

NRC SSES INITIAL EXAMINATION

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 copy of OP-151-001 and reviews			
2. (Step 2.4.2) ECCS actuation may be inhibited or overridden under the cognizance of a Shift Manager or Unit Supervisor per ANY of following: a. Directed by Emergency Operating Procedure OR b. Misoperation in AUTOMATIC MODE Confirmed by at least two (2) independent indications OR c. Adequate core cooling is assured by at least two (2) independent indications	Applicant verifies precautions are met via conditions given in cue sheet. Determines that Core Spray system can be shutdown			
3. (Step 2.4.3) IF switch collar was placed in ARMED, Place Division (2) CORE SPRAY LOOP B MAN INIT HS-E211S16(B) switch collar in NOT ARMED position, AND Observe CORE SPRAY LOOP B MAN INITIATION SWITCH ARMED alarm Clears	Applicant verifies Division (2) CORE SPRAY LOOP B MAN INIT HS-E211S16(B) switch collar in NOT ARMED position, as the system was spuriously initiated.			
*4. (Step 2.4.4) To Reset Initiation B signal: a. Depress CORE SPRAY LOOP B INIT SIG RESET HS-E211S17B b. Observe CORE SPRAY LOOP B INIT SIG RESET HS-E211S17B Green initiation light EXTINGUISHES	Applicant: a. Depresses CORE SPRAY LOOP B INIT SIG RESET HS-E211S17B b. Verifies CORE SPRAY LOOP B INIT SIG RESET HS-E211S17B Green initiation light EXTINGUISHES			

NRC SSES INITIAL EXAMINATION

JPM D

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
5. Enter TRO 3.8.2.1	<p><u>Evaluator Note:</u> Roleplay as Unit Supervisor and acknowledge applicant request to enter TRO 3.8.2.1</p> <p>Applicant notifies Unit Supervisor of need to enter TRO 3.8.2.1</p>			
*6. (Step 2.4.6) Place CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to TEST position	<p>Applicant acquires key from below benchboard, inserts key and turns CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to TEST position</p> <p><u>Evaluator Note:</u> CORE SPRAY LOOP B OUT OF SERVICE (AR-113-001 B02) and CORE SPRAY LOOP B MOV'S IN TEST (BIS) are expected alarms</p>			
7. (Step 2.4.7) Close CORE SPRAY LOOP B IB INJ SHUTOFF HV-152-F005B	<p><u>Evaluator Note:</u> Inboard injection valve will be closed due to spurious initiation and low pressure valve permissive signal not active due to reactor at NOP</p> <p>Applicant verifies CORE SPRAY LOOP B IB INJ SHUTOFF HV-152-F005B CLOSED (Red light out, Amber light lit)</p>			
8. (Step 2.4.8) When flow <635gpm, Observe CORE SPRAY LOOP B MIN FLOW HV-152F031B OPENS	<p>Applicant verifies CORE SPRAY LOOP B MIN FLOW HV-152F031B OPEN</p> <p><u>Evaluator Note:</u> Min flow valve will already be open due to spurious initiation and reactor at NOP</p>			

NRC SSES INITIAL EXAMINATION

JPM D

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. (Step 2.4.9) As conditions permit, Place LO RX PRESS PERM Switch HS-15249B to NORM <u>OR</u> Check in NORM position	Applicant verifies LO RX PRESS PERM Switch HS-15249B in NORM position			
*10. (Step 2.4.10) Stop CORE SPRAY PUMP 1P206B	Applicant turns CORE SPRAY PUMP 1P206B control switch to STOP and returns to AUTO. Verifies pump stopped by checking lights (Red out, Amber lit), and checking pump amps go to zero.			
*11. (Step 2.4.11) Stop CORE SPRAY PUMP 1P206D	Applicant turns CORE SPRAY PUMP 1P206D control switch to STOP and returns to AUTO. Verifies pump stopped by checking lights (Red out, Amber lit), and checking pump amps go to zero.			
12. (Step 2.4.12) Observe following indications as applicable: a. CORE SPRAY LOOP B IB INJ SHUTOFF HV-152F005B indicates CLOSED <u>AND</u> White light EXTINGUISHED b. CORE SPRAY LOOP B ACTUATED alarm CLEARED c. Core Spray Room Unit Coolers 1V211B and D STOP indicated on Heating and Ventilation Panel 1C681	Applicant: a. Verifies CORE SPRAY LOOP B IB INJ SHUTOFF HV-152F005B indicates CLOSED <u>AND</u> White light EXTINGUISHED b. Verifies CORE SPRAY LOOP B ACTUATED alarm CLEARED c. Verifies Core Spray Room Unit Coolers 1V211B and D have stopped at panel 1C681 (back panel) Evaluator Note: Steps 2.4.13 and 2.4.14 are N/A			
*13. (Step 2.4.15) AFTER 2 minutes, Place CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to NORM position	After waiting at least 2 minutes from HV-152F005B closed indication, applicant places CORE SPRAY LOOP B MOV OL BYPS HS-E211S12B to NORM position			
14. (Step 2.4.16) Clear TRO 3.8.2.1	Evaluator Note: Roleplay as Unit Supervisor and acknowledge applicant request to clear TRO 3.8.2.1			

NRC SSES INITIAL EXAMINATION

JPM D

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
15. (Step 2.4.17) Observe following indications: a. CORE SPRAY LOOP B OUT OF SERVICE alarm CLEARS b. CORE SPRAY LOOP B MOV'S IN TEST status light EXTINGUISHED c. No CORE SPRAY STATUS DIV 2 status indication lights ILLUMINATED	Applicant: a. Verifies CORE SPRAY LOOP B OUT OF SERVICE alarm CLEARS b. Verifies CORE SPRAY LOOP B MOV'S IN TEST status light EXTINGUISHED c. Verifies No CORE SPRAY STATUS DIV 2 status indication lights ILLUMINATED			
CUE: JPM is complete.				

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is operating at 100% power
2. Core Spray Loop B has spuriously initiated
3. The cause of the spurious initiation has been found and corrected
4. Misoperation in AUTOMATIC MODE has been confirmed by at least two (2) independent indications
5. Adequate core cooling is assured by at least two (2) independent indications

INITIATING CUE:

The Unit Supervisor has directed you to shutdown 'B' Core Spray Loop in accordance with OP-151-001

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is operating at 100% power
2. Core Spray Loop B has spuriously initiated
3. The cause of the spurious initiation has been found and corrected
4. Misoperation in AUTOMATIC MODE has been confirmed by at least two (2) independent indications
5. Adequate core cooling is assured by at least two (2) independent indications

INITIATING CUE:

The Unit Supervisor has directed you to shutdown 'B' Core Spray Loop in accordance with OP-151-001

Susquehanna Steam Electric Station

Job Performance Measure

PCIS/SDC restoration

JPM Designation: E

Revision Number: 3

Date: 11/02/2011

Note: This JPM is paired with Admin JPM A4(RO).

Developed By:	<u>Patel</u>	<u>05/25/11</u>
	Author	Date
Review By:	<u>Hedigan</u>	<u>01/05/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>01/05/12</u>
	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 395.
2. Run scenario file **JPME.scn**:
 - scnBATCH1\RHB-RHRBOOS (removes 'B' RHR Loop from service)
 - {Key[1]} IMF cmfMV05_HV151F015A (closes F015A)
 - {Key[1]} IMF cmfMV09_HV151F015A f:0 d:45 (simulates tripping F015A breaker)
3. Mark up GO-100-010 Att A to match "JPM E Support Doc 1" and hang above U-1 US Computer Desk

TASK STANDARD:

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

TASK CONDITIONS:

1. Unit 1 is in MODE 4 with reactor coolant temperature of 150°F. (2nd day into the outage)
2. Time to 200° F. is ~ 45 mins.
3. Div 2 RHR is out of service for maintenance. Estimated completion time 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.

NRC SSES INITIAL EXAMINATION

JPM E

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>Evaluator Note: Ensure that the applicant DOES NOT have the marked up copy of the Attachment B. Examiner will provide the marked up Attachment B during Element 17.</p> <p>1. Obtains procedure and reviews procedure, prerequisites, and precautions</p>	<p>Evaluator Note: Ensure that the applicant DOES NOT have the marked up copy of the Attachment B. Examiner will provide the marked up Attachment B during Element 17.</p> <p>Obtains OP-149-002, attachment F.</p>			
<p>2. Step 6.1</p> <p>Ensure TRO 3.8.2.1 ENTERED.</p>	<p>Applicant recognizes that TRO entry has been entered appropriately per initial conditions.</p> <p>Evaluator Note: TRO entry has been identified in initial condition as appropriately entered,.</p>			
<p>3. Step 6.1</p> <p>Place HS-E11-1S62A RHR LOOP A MOV OL BYPS Keyswitch to TEST</p>	<p>Applicant places HS-E11-1S62A RHR LOOP A MOV OL BYPS Keyswitch to TEST.</p>			

NRC SSES INITIAL EXAMINATION

JPM E

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

NRC SSES INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
	<p><u>Evaluator Note:</u> While the applicant is performing any of the above steps to reduce reactor temperature, direct the booth operator to insert HV-151-F015A auto closure malfunction.</p> <p><u>Simulator Booth Operator Instructions:</u> When directed, to close HV-151-F015A, depress Soft Key #1</p>			
5. Applicant may request field action to identify the cause of the isolation.	<p><u>Evaluator Cue:</u> Role play as NPO sent to check breaker 1B219011, report that for Bkr 1B219011 thermal tripped and valve motor is extremely hot. Actuator is damaged.</p> <p><u>Evaluator Cue:</u> Role play as the Work Week Manager and report that maintenance believes it will take at least three hours to investigate and determine the extent of damage.</p>			
6. Applicant should recognize the HV-151-F006A/C AND HV-151-F007A OPEN DRAIN RX VESSEL (C09) alarm.	<p><u>Evaluator Note:</u> After 30 second time delay following 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.</p>			

NRC SSES INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*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 <u>operator actions</u>:</p> <p>2.1 Increase RHR System flow above minimum flow of 3000 gpm.</p> <p>*2.2 IF RHR Pump A/C MIN FLOW HV-151-F007A 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.</p>	<p>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.</p> <p>Applicant recognizes that HV-151-F007A will not remain closed if closed, and Trips RHR Pump 1P202A and closes SHUTDOWN CLG SUCT OB ISO HV-151-F008 and SHUTDOWN CLG SUCT IB ISO HV-151-F009 to stop pumping Reactor Coolant into Suppression Pool.</p>			
<p>8. Applicant will enter ON-149-001, Loss of RHR SHUTDOWN COOLING MODE.</p>	<p>Enter ON-149-001 based on Isolation signals to SDC F0015A isolation.</p> <p>Evaluator Note: If the applicant does not recognize to enter ON-149-001, then ask what procedure will the SRO direct you to enter in this condition, then direct Entry for ON-149-001.</p>			

NRC SSES INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
9. Step 3.2 Determine cause of loss of RHR Shutdown Cooling , <u>AND</u> <u>IF loss occurred in Mode 3 or Mode 4</u> , Perform Section 3.3 of this procedure	Applicant determines that the closing of HV-151-F015A and 'B' RHR out of service prevents recovery of SDC, therefore section 3.3 of ON-149-001 is applicable.			
10. Step 3.3.2 <u>IF</u> RHR Shutdown Cooling lost in Mode 3 or Mode 4: <u>IF</u> in Mode 4, Comply with TS 3.4.9	The applicant informs Unit Supervisor of need to comply with TS 3.4.9. <u>Evaluator Cue:</u> Role play as the Unit Supervisor and state that you will address the TS actions.			
11. Step 3.3.3 <u>IF</u> 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 ~ 45 min.			
12. Step 3.3.4 <u>IF</u> 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.			
13. Step 3.3.6 <u>IF</u> all RHR Shutdown Cooling lost: a. Promptly Establish reactor coolant circulation using <u>ONE</u> of following alternate methods: 1. Maintain water level \geq 45 inches. 2. Ensure Reactor Recirculation System in service.	Applicant utilizes Shutdown Range RPV level instrument and determines that water level is \geq 45 inches to ensure alternate reactor coolant circulation is established,			

NRC SSES INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>14. Step 3.3.6b</p> <p>Determine heatup rate from SO-100-011, Reactor Vessel Temperature and Pressure Recording using:</p> <p>1. Notify the STA to Perform OI-TA-009 using Historical Computer Data.</p> <p>OR</p> <p>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.</p> <p>OR</p> <p>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.</p> <p>OR</p> <p>4. Bottom Head Drain Temperature, if RWCU in service, and there is forced core flow (A) NLT01, (B) TR-B21-1R006 at Panel 1C007.</p> <p>OR</p> <p>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.</p>	<p>Evaluator Cue: When Applicant acknowledges the need to determine the heatup rate, state that the STA will perform OI-TA-009.</p>			

NRC SSES INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*15. Step 3.3.6c</p> <p>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.</p>	<p>Applicant will determine, using Attachment A, that in Mode 4 with neither loop of RHR available to inject the only two alternate methods available and capable of decay heat removal are Div 1 and 2 Core Spray injection from suppression pool and return path through 2 SRV's (PSV-141-F013C,E,F,L,M or R preferred).</p> <p>Evaluator Cue: Unit Supervisor will log these system in the eSOMS log.</p>			
<p>16. Step 3.3.6d</p> <p>Classify plant status in accordance with EP-PS-100, Emergency Director, Control Room.</p>	<p>Evaluator Cue: Shift manager will classify plant status in accordance with EP-PS-100.</p>			
<p>17. Step 3.3.7</p> <p>Determine status of systems/equipment on Attachment B.</p>	<p>Evaluator Cue: Hand out the marked up copy of the Attachment B to the applicant.</p>			
<p>18. Step 3.3.8</p> <p>Place any available alternate Decay Heat Removal System in service using Attachment D, E, or F.</p>	<p>Applicant will select Attachment D based on preferred method identified to be available from initial condition and other marked up attachment B system status.</p>			
<p>19. Step 1</p> <p>Close/Ensure CLOSED all MSIV's and Drains</p>	<p>Close/Ensure CLOSED all MSIV's and Drains</p>			
<p>*20. Step 2</p> <p>Using preferred SRV's PSV-141-F013C, E, F, L, M, or R, IF POSSIBLE, Open 2 Safety Relief Valves.</p>	<p>Applicant opens 2 of the preferred SRVs. (C,E,F,L, M or R)</p>			

NRC SSES INITIAL EXAMINATION

JPM E

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
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-E21-1S12A(B) Core Spray Loop A Motor OL Bypass Switch to TEST .	Place HS-E21-1S12A(B) Core Spray Loop A Motor OL Bypass Switch to TEST .			
*23. Step 5 Start Core Spray Pumps 1P206A and C.	Start Core Spray Pumps 1P206A and C.			
*24. Step 6 Open OR Check Open CORE SPRAY LOOP A OB INJ SHUTOFF HV-152-F004A.	Verify Open CORE SPRAY LOOP A OB INJ SHUTOFF HV-152-F004A.			
*25. Step 7 Place LO RX PRESS PERM switch HS-15249A to BYPASS .	Places LO RX PRESS PERM switch HS-15249A to BYPASS .			
*26. Step 8 Throttle Open CORE SPRAY LOOP A IB INJ SHUTOFF HV-152-F005A, 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 CORE SPRAY LOOP A IB INJ SHUTOFF HV-152-F005A, VERY Slowly Raise reactor water level to ~ 131" to flood main steam lines and establish flow through open SRV's to suppression pool			
*27. Step 9 WHEN flow to reactor vessel ≥ 635 gpm, Ensure CORE SPRAY LOOP A MIN FLOW HV-152-F031A CLOSES .	WHEN flow to reactor vessel ≥ 635 gpm, Ensures CORE SPRAY LOOP A MIN FLOW HV-152-F031A CLOSES .			
*28. Step 10 Check Core Spray Room Unit Coolers 1V211A and C AUTO START on Heating and Ventilation Panel 1C681.	Check Core Spray Room Unit Coolers 1V211A and C AUTO START on Heating and Ventilation Panel 1C681			
*29. Step 11 AFTER 2 minutes, Place HS-E21-1S12A Core Spray Loop A Motor OL Bypass Switch to NORM .	AFTER 2 minutes, Places HS-E21-1S12A Core Spray Loop A Motor OL Bypass Switch to NORM .			
CUE: JPM is complete.				

JPM Stop Time _____

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 is in MODE 4 with reactor coolant temperature of 150°F. (2nd day into the outage)
2. Time to 200° F. is ~ 45 mins.
3. Div 2 RHR is out of service for maintenance. Estimated completion time 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.

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 is in MODE 4 with reactor coolant temperature of 150°F. (2nd day into the outage)
2. Time to 200° F. is ~ 45 mins.
3. Div 2 RHR is out of service for maintenance. Estimated completion time 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.

OUTAGE PLANT STATUS LOG

PLANT MODE 4 UNIT 1

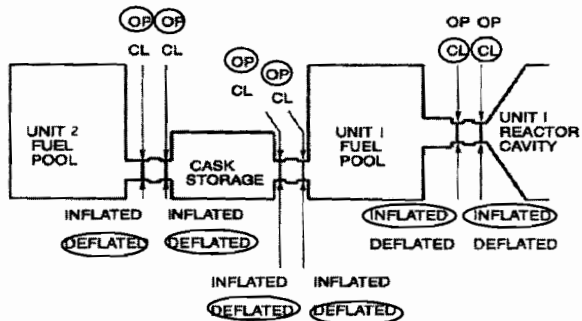
INSTRUCTIONS:
A. CIRCLE ITEMS OPERABLE / OPERATING
B. "X" ITEMS INOP

CAUTION: INDIVIDUAL NOTES ARE PROVIDED AS A GUIDE FOR OPERABILITY DETERMINATION.

1. REQUIREMENTS FOR COMPLETING THIS ATTACHMENT:
(CIRCLE PRESENT UNIT STATUS BELOW)

- SHIFTLY
- EQUIPMENT OPERABILITY STATUS CHANGE
- CONFIGURATION CHANGE BETWEEN THE FOLLOWING:

4, ←→	5, REFUELING GATES CLOSED	GO-100-006
5, REFUELING GATES CLOSED ←→	5, REFUELING GATES OPEN	GO-100-006
5, REFUELING GATES OPEN ←→	5, CORE ALTERATIONS	GO-100-006
5, REFUELING GATES OPEN ←→	5, OPDRV/C	NDAP-QA-0326
5, CORE ALTERATION ←→	5, DEFUELED, REFUELING GATES OPEN	GO-100-006
5, DEFUELED, REFUELING GATES OPEN ←→	5, DEFUELED, REFUELING GATES CLOSED	GO-100-006



CIRCLE APPROPRIATE GATE STATUS

2. ECCS REQUIREMENTS:

- ECCS NOT REQUIRED IF NO FUEL IN VESSEL AND REFUELING GATES ARE CLOSED.
- ONE ECCS CAPABLE ON INJECTION, IF VESSEL HEAD REMOVED, REACTOR CAVITY FLOODED TO 22 FEET, AND REFUELING GATES OPEN. THIS IS AN ADMINISTRATIVE REQUIREMENT.
- TWO OPERABLE ECCS, AS DEFINED IN TS 3.5.2, ALL OTHER TIMES

3. OPDRV/OPDRIC IN PROGRESS N/A NDAP-QA-0326

4. FUEL POOL COOLING LETDOWN ALIGNMENT N/A OP-135-001

5. ECCS/DECAY HEAT REMOVAL SUPPORT SYSTEMS:

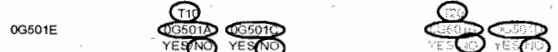
EMERGENCY SERVICE WATER



RESIDUAL HEAT REMOVAL SERVICE WATER



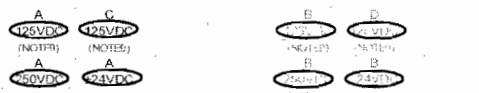
OFFSITE A.C. SOURCE
DIESEL GENERATORS
DIESEL GENERATORS SUBSTITUTED



A.C. BUSES



D.C. SOURCES



6. INVENTORY CONTROL:

CORE SPRAY



RESIDUAL HEAT REMOVAL (LPCI)



7. DECAY HEAT REMOVAL/FORCED CIRCULATION METHODS:

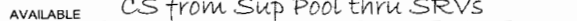
NORMAL



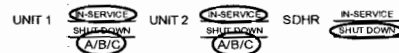
RESIDUAL HEAT REMOVAL (SHUTDOWN COOLING)

TS	OPERATIONAL MODE	LOOPS REQUIRED
3.4.9	4	3
3.9.8	5, CAVITY DRAINED	2
3.9.7	5, CAVITY FLOODED 22'	1

ALTERNATES (S)



FUEL POOL COOLING STATUS



HEAT EXCHANGERS IN-SERVICE

TIME TO 200° F 45 min

RECORD ONCE/DAY IF GATES ARE CLOSED.
IF GATES ARE OPEN, TIME TO REACH 200° IS >24HRS

8. REACTIVITY CONTROL:

REACTIVITY CONTROL: ALL RODS IN YES/NO ONE ROD OUT INTERLOCK: OP/INOP

9. SECONDARY CONTAINMENT:



10. PCO Jim Beam US Johanie Walker SM Jose Cuevas TIME T-20 min DATE TO DAY

SYSTEM/EQUIPMENT AVAILABILITY DETERMINATION

<u>SYSTEMS</u>		<u>STATUS</u> (Circle One)	
<input type="checkbox"/>	1. Primary Containment (Mode 3 or 4 only)	avail	unavail
<input type="checkbox"/>	2. Secondary Containment	avail	unavail
<input type="checkbox"/>	3. Flowpath from reactor to Condenser w/vacuum maintained by SJAE	avail	unavail
<input type="checkbox"/>	4. RPS Channel A1/A2	avail	unavail
<input type="checkbox"/>	5. RPS Channel B1/B2	avail	unavail
	6. Methods to M/U to RX		
<input type="checkbox"/>	a. CRD	avail	unavail
<input type="checkbox"/>	b. Condensate	avail	unavail
	c. Condensate Transfer		
<input type="checkbox"/>	(1) Keepfill	avail	unavail
<input type="checkbox"/>	(2) SDC Flush	avail	unavail
<input type="checkbox"/>	(3) *Skimmer Surge Tank	avail	unavail
<input type="checkbox"/>	d. RHR	avail	unavail
<input type="checkbox"/>	e. Core Spray	avail	unavail
	7. Methods of Letdown from RX		
	a. RWCU		
<input type="checkbox"/>	(1) Main Condenser	avail	unavail
<input type="checkbox"/>	(2) Radwaste	avail	unavail
<input type="checkbox"/>	b. RHR	avail	unavail
<input type="checkbox"/>	c. SRV's to Supp Pool	avail	unavail

<input type="checkbox"/>	8.	*Fuel Pool Gates	installed	not installed
<input type="checkbox"/>	9.	*Cask Storage Pit Gates	installed	not installed
	10.	*Method of Cooling		
<input type="checkbox"/>	a.	U-1 FPC and Cleanup	avail	unavail
<input type="checkbox"/>	b.	RWCU Recirculation	avail	unavail
<input type="checkbox"/>	c.	U-1 RHR in FPC Assist	avail	unavail
<input type="checkbox"/>	d.	U-2 FPC and Cleanup	avail	unavail
<input type="checkbox"/>	e.	U-2 RHR in FPC Assist	avail	unavail

* Applicable in Mode 5 and level >22 feet above flange.

Susquehanna Steam Electric Station

Job Performance Measure

Manually Synchronize Diesel Generator B

JPM Designation: F

Revision Number: 2

Date: 12/17/2011

Note: This JPM is paired with JPM H.

Developed By:	<u>Patel</u>	<u>05/25/11</u>
	Author	Date
Review By:	<u>Hedigan</u>	<u>01/05/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>01/05/12</u>
	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 2

JPM Setup Instructions:

1. Reset Simulator to **IC-396**, which has ESW Pps A and B running and EDG B started from the Control Room and its output breaker open.
2. Run scenario file **JPMF**.which is:
 - IMF cmfRL02_86S1B
 - IMF cmfRL02_86S2B
 - {Key[1]} IMF mfDG024010B f:0.0 (Jacket Water TCV fails to full bypass position)
 - {Key[2]} DMF cmfRL02_86S1B
 - {Key[2]} DMF cmfRL02_86S2B
 - {Key[2]} set di5ESB_Q.iivPanel=1
 - {Key[2]} set di5ESB_Q.iivPanel=0 d:1
3. Provide marked up copy of SO-024-001B as if completed through Step 5.1.17

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. EDG B was started for SO-024-001B and has been running unloaded for 5 minutes now.

INITIATING CUE:

You are directed by Shift Supervision to continue the surveillance testing beginning with Step 5.1.18 to synchronize the 1B ESS Bus and proceed to full load IAW SO-024-001B.

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. SO-024-001B Rev 8
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 SO-024-001B 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.

NRC SSES INITIAL EXAMINATION

JPM F

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>1. Obtains procedure and reviews procedure, prerequisites, and precautions.</p> <p>Simulator Booth Instruction: Once applicant is ready to begin the JPM, insert malfunction to fail TCV 03412A open to full bypass jacket water HX continuously by depressing Soft Key #1.</p>	<p>Obtains SO-024-001B, and proceeds to section 5.1.18.</p> <p>Evaluator Note: Inform the applicant that the NPO is stationed at DG 'B' and can be reached via the page.</p>			
<p>2. Step 5.1.18a</p> <p>Ensure all synchroscope switches OFF.</p>	<p>Applicant verifies all synchroscope switches are in off.</p> <p>Evaluator Note: There is only one Synch Key for the 0C653 panel and it is normally kept in the Tie Breaker Key Switch. Applicant may check to see that it is there..</p>			
<p>*3. Step 5.1.18b.</p> <p>Place DG B to Bus 1B Sync Sel HS-00040A switch to ON.</p>	<p>Applicant places DG B to Bus 1B Sync Sel HS-00040A switch to ON.</p> <p>Evaluator Note: The Applicant will obtain the Synch Key from TIE BREAKER SYNC SEL HS-00018</p>			
<p>4. Step 5.1.18c.</p> <p>Check for excessive sparking of generator brushes</p>	<p>Applicant directs NPO to check for excessive sparking of EDG B generator brushes.</p> <p>Booth Operator Cue: When directed as NPO to check generator brushes, report they appear normal.</p>			

NRC SSES INITIAL EXAMINATION

JPM F

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
5. Step 3.1.18d. 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.			
6. Step 3.1.18e. 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. <u>Evaluator Note:</u> Alternate Path Begins Here:			
*7. Step 3.1.18 f. (1) Close DG B to Bus 1B Bkr 1A20204 when synchroscope at or slightly before "12 o'clock" position.	Applicant closes DG B to Bus 1B Bkr 1A20204 when synchroscope at or slightly before "12 o'clock" position.			

NRC SSES INITIAL EXAMINATION

JPM F

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*8. Step 5.1.18 f. (2)</p> <p>Promptly go to RAISE and Slowly increase load to 1000 KW over 30-45 second period using DG B Speed Governor HS-00054B switch.</p>	<p>Applicant promptly raises and slowly increases load to 1000 KW over 30-45 second period using DG B speed governor HS-00054B switch.</p> <p>Evaluator Note: DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm will come in at any time. When alarm comes in go to element 14.</p>			
<p>9. Step 3.1.18 f. (3)</p> <p>Promptly Adjust 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.</p>	<p>Applicant promptly adjusts 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.</p> <p>Evaluator Note: DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm will come in at any time. When alarm comes in go to element 14.</p>			
<p>10. Step 5.1.18 g</p> <p>Commence timing 5 minute run at 1000 KW.</p>	<p>Applicant notes time 1000 KW is reached and starts timing 5 minutes.</p>			
<p>11. Step 5.1.18 h</p> <p>Place appropriate DG TO BUS SYNC SEL keyswitch to OFF.</p>	<p>Applicant places 1B Bkr 1A20204 Synch Key to Off</p>			
<p>12. Step 5.1.18 i</p> <p>Remove key and Return to the TIE BREAKER SYNC SEL HS-00018 in OFF position.</p>	<p>Applicant places Synch Key in TIE BREAKER SYNC SEL HS-00018 handswitch</p>			

NRC SSES INITIAL EXAMINATION

JPM F

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
13. Step 3.1.18 j AT Diesel Engine Control Panel 0C521B, Observe Running Loaded light ILLUMINATED .	Applicant directs NPO to check running loaded light ILLUMINATED on Panel 0C521B. Booth Operator Cue: Roleplay as NPO and report that Running Loaded light is lit.			
*14. AR-015-001, Operator Actions: 2.1 Ensure Automatic Actions. 2.2 Dispatch Operator to perform LA-0521-002 Diesel Generator B 0C521B. 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. Booth Operator 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.			

NRC SSES INITIAL EXAMINATION

JPM F

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*15. DG B Panel 0C521B HI PRIORITY TROUBLE (B13) alarm response.	<p>Applicant directs field operator to emergency trip the B EDG to ensure automatic actions.</p> <p><u>Booth Operator Note:</u> Once Applicant request NPO to trip EDG, click Soft Key #2.</p> <p><u>Evaluator Note:</u> Ensure that once applicant contacts NPO to secure EDG, Booth Operator Secures EDG by inserting Soft Key #2.</p> <p>High priority trouble alarm should have tripped the EDG, but the malfunction prevents automatic EDG trip.</p> <p>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.</p>			
16. Perform ON-024-001 Diesel Generator Trip.	<p><u>Evaluator Note:</u> The applicant will start to perform ON-024-001 Diesel Generator Trip.</p>			
17. CUE: JPM is complete.				

JPM Stop Time _____

NRC SSES INITIAL EXAMINATION

JPM F

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 is at 100% power.
2. The Electric Plant is in a normal line-up.
3. EDG B was started for SO-024-001B and has been running unloaded for 5 minutes now.

INITIATING CUE:

You are directed by Shift Supervision to continue the surveillance testing beginning with Step 5.1.18 to synchronize the 1B ESS Bus and proceed to full load IAW SO-024-001B.

HANDOUT PAGE

TASK CONDITIONS:

1. Unit 1 is at 100% power.
2. The Electric Plant is in a normal line-up.
3. EDG B was started for SO-024-001B and has been running unloaded for 5 minutes now.

INITIATING CUE:

You are directed by Shift Supervision to continue the surveillance testing beginning with Step 5.1.18 to synchronize the 1B ESS Bus and proceed to full load IAW SO-024-001B.

SURVEILLANCE AUTHORIZATION

PART I. GENERAL INFORMATION

PROCEDURE NUMBER: SO-152-002 RTSV Number: 123456
Activity Number: Z0203-1
PROCEDURE TITLE: Monthly Diesel Generator 'B' Test Due Date: TO/DAY
Violation Date: + 7 days

UNIT
1

PART II. REASON FOR PERFORMANCE

- Routine Event or Condition Initiated (Described in Remarks) Post Maint/Mod Test (Described in Remarks)
 LCO Action Statements TRO Action Statements Other (Described in Remarks)

PART III. EXTENT OF TESTING

- Complete Partial Delete

PART IV. AUTHORIZATION TO COMMENCE

Shift Supervision Signature: M. Jacopetti Date: TO/DAY Time: - 1 hr

Surveillance was: Supervisor/Foreman Signature: _____ Date: _____
 Out of Service Out of Mode

PART V. REMARKS

1. Synchronize to 1A202 (1B ESS Bus)

PART VI. AS-FOUND OPERABILITY (Systems/Components were found:)

- OPERABLE and Acceptance Criteria passed INOPERABLE or Acceptance Criteria failed (Notify Shift Supervision)

PART VII. AS-LEFT OPERABILITY

- OPERABLE RETEST ATTACHED: YES N/A

PART VIII. COMPLETION

ACTUAL COMPLETION DATE: _____ TIME: _____

PART IX. CLOSURE

- Shift Supervision Notified

Responsible Individual: _____ A Complete Retest was Performed

Supervisor Signature: _____ Commencement Date: _____

PART X. FINAL CLOSURE

_____ Work Group closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to WCC Admin. Group)

_____ WCC Admin. Group final closure in computer schedule complete. "N/A" when extent of testing is not "COMPLETE." (Forward to DCS)

Susquehanna Steam Electric Station

Job Performance Measure

Standby Gas Treatment System Startup

JPM Designation: G

Revision Number: 1

Date: 10/25/11

Note: This JPM is paired with JPM B with a staggered start.

Developed By: Chris Lally 4/20/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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):

Rev 0

Rev 1: minor edits for addition of IC and plant power

JPM Setup Instructions:

1. Set Simulator to **IC 392**
2. Provide 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 99% power, preparing for Quarterly HPCI Flow Verification
2. The Electric Plant is in a normal at-power line-up.
3. All precautions and prerequisites in OP-070-001 are met

INITIATING CUE:

Manually start the 'A' Standby Gas Treatment System in accordance with OP-070-001 in preparation for the 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: 1

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 the Quarterly HPCI Flow Verification

NRC SSES INITIAL EXAMINATION

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 (<i>yellow light out, red light lit</i>).			
*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 , <i>observes yellow light out, red light lit</i> .			
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			

NRC SSES INITIAL EXAMINATION

JPM G

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
6. (Step 2.2.7) Check following positioned as indicated: a. SGTS Makeup 0A Dmp FD07551A2 MODULATED/OPEN approximately 120 seconds after SGTS Fan 0V109A started. b. SGTS Fan Inlet Dmp HD07552A FULL OPEN. c. SGTS A Inlet Dmp HD07553A FULL OPEN.	Checks following positioned as indicated: a. SGTS Makeup 0A Dmp FD07551A2 MODULATED/OPEN approximately 120 seconds after SGTS Fan 0V109A started <i>(yellow and red lights lit or only red light lit).</i> b. SGTS Fan Inlet Dmp HD07552A FULL OPEN <i>(yellow light out, red light lit).</i> c. SGTS A Inlet Dmp HD07553A FULL OPEN <i>(yellow light out, red light lit).</i>			
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 _____

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at 99% power
2. The Electric Plant is in a normal at-power line-up.
3. All precautions and prerequisites in OP-070-001 are met

INITIATING CUE:

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

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is at 99% power
2. The Electric Plant is in a normal at-power line-up.
3. All precautions and prerequisites in OP-070-001 are met

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: 3

Date: 12/17/2011

Note: This JPM is paired with JPM F.

Developed By: Patel 05/25/11

Author Date

Review By: Hedigan 01/05/12

Examiner Date

Approved By: Caruso 01/05/12

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.

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- _____ 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 3

JPM Setup Instructions:

1. Set Simulator to **IC-396** if run with JPM F, or IC-397 if run alone.
 - Actual power at 100%
 - APRM 3 adjusted to indicate $\approx 97\%$
2. Bypass APRM 3.

TASK STANDARD:

Successfully perform manual APRM GAF adjustments for APRM 3.

TASK CONDITIONS:

1. The plant is at 100% 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.

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.

NRC SSES INITIAL EXAMINATION

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, determines section 2.2 applies and reviews Prerequisites, Precautions, and procedure section.			
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: If the Applicant attempts to contact PCOM using the PA, tell the applicant <u>not</u> to use the page and that you will roll play as the PCO and SRO. (This is so another Applicant performing a JPM in the Simulator is not previe to the JPM being performed)			

NRC SSES INITIAL EXAMINATION

JPM H

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>4. IF desired, Request PCO bypass APRM to be adjusted.</p> <p>AND</p> <p>Confirm at ALL four 2/4 Voters, Bypassed LEDs for bypassed APRM ILLUMINATED.</p>	<p>Applicant recognizes from initial conditions that APRM 3 is already bypassed.</p> <p>Applicant confirms ALL four 2/4 Voters, Bypassed LEDs for APRM 3 are ILLUMINATED.</p> <p>Evaluator Cue: APRM 3 indicates bypassed on ALL FOUR voters.</p> <p>Evaluator Note: Only one voter is present at the APRM cabinet, so if the candidate inquires about the other voter, ABOVE evaluator cue maybe necessary.</p> <p>Applicant recognizes from initial conditions that APRM 3 is bypassed</p>			
<p>*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.</p>	<p>On APRM 3 module, presses ETC soft key as required until ENTER SET MODE is displayed above a soft key pushbutton across bottom of display.</p>			
<p>*6. Press ENTER SET MODE soft key.</p>	<p>Presses ENTER SET MODE soft key.</p>			
<p>*7. Enter password "1234" AND Press ENT.</p>	<p>Enters password "1234" AND Presses ENT.</p>			
<p>*8. Confirm OPER-SET mode indicated on APRM or ODA.</p>	<p>Confirms OPER-SET mode indicated on APRM or ODA.</p>			
<p>*9. Select APRM GAIN using (↑↓) CURSOR keys to scroll.</p>	<p>Selects APRM GAIN using (↑↓) CURSOR keys to scroll.</p>			
<p>*10. Press SET PARAMETERS soft key.</p>	<p>Presses SET PARAMETERS soft key.</p>			
<p>*11. Ensure APRM indicates SET PARAMETERS: APRM GAIN display.</p>	<p>Ensures APRM indicates SET PARAMETERS: APRM GAIN display.</p>			

NRC SSES INITIAL EXAMINATION

JPM H

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*12. Adjust the APRM GAIN DESIRED <u>UNTIL</u> PROJECTED FLUX (%) is \pm 2% of calculated CTP.	<p>Adjust the APRM GAIN DESIRED <u>UNTIL</u> PROJECTED FLUX (%) is \pm 2% of calculated CTP (98-100% CTP).</p> <p><u>Evaluator Note:</u> The left and right cursor keys are used to select the DESIRED GAIN digit to be modified. The up and down cursor keys will change the value of the selected digit. The PROJECTED FLUX (%) and PROJECTED AGAF are recalculated each time the DESIRED GAIN value is changed</p>			
*13. Press ACCEPT soft key.	Presses ACCEPT soft key.			
14. Confirm the APRM GAIN PRESENT changes to equal the APRM GAIN DESIRED.	Confirms the APRM GAIN PRESENT changes to equal the APRM GAIN DESIRED.			
15. Confirm ACTUAL FLUX (%) is \pm 2% of calculated CTP.	Confirms ACTUAL FLUX (%) is \pm 2% of calculated CTP.			
16. Press EXIT soft key.	Presses EXIT soft key.			
17. Press EXIT SET MODE soft key.	Presses EXIT SET MODE soft key.			
18. Press YES soft key.	Presses YES soft key.			
19. Confirm APRM upper display section indicates OPERATE on top right corner of display.	Confirms APRM upper display section indicates OPERATE on top right corner of display.			

NRC SSES INITIAL EXAMINATION

JPM H

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>20. Ensure reading on NMSB display and APRM ODA reading within 2% of desired APRM reading.</p>	<p>Ensures reading on NMSB display and APRM ODA reading within 2% of desired APRM reading.</p> <p>Evaluator Note: Applicant may contact control room to verify NMBS (PICY) displays APRM 3 within 2% of desired APRM reading. Below Evaluator Cue may be necessary.</p> <p>Evaluator Cue: APRM 3 is reading within 2% of desired APRM readings.</p>			
<p>21. IF required, Notify PCO APRM adjustment is complete APRM 3 may be removed from BYPASS position</p> <p>AND</p> <p>Confirm at ALL four 2/4 Voters BYPASSED LEDs NOT ILLUMINATED.</p>	<p>Applicant Notifies PCOM to remove APRM 3 from BYPASS condition</p> <p>Evaluator Note: When Applicant requests un-bypassing APRM 3, end the JPM.</p>			
<p>22. CUE: JPM is complete.</p>				

JPM Stop Time _____

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.

HANDOUT PAGE

TASK CONDITIONS:

4. The plant is at 97% CTP and power level is stable.
5. The Electric Plant is in a normal line-up.
6. 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.

Susquehanna Steam Electric Station

Job Performance Measure

Venting Unit 2 Scram Air Header during ATWS

JPM Designation: I (In-Plant)

Revision Number: 3

Date: 10/24/2011

Developed By: Patel 5/25/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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 copy of Local posted instructions upon applicant's request.

TASK STANDARD:

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

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 ~100 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. Notify Control Room just prior to venting scram air header.

Information for Evaluator's Use:

UNSAT requires written comments on respective step.

* Denotes CRITICAL steps.

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

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

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

Operator's Name: _____

Job Title: NLO RO SRO STA SRO Cert

JPM Title: Venting Unit 2 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: 15min. Actual Time Used: _____ minutes

References:

1. NUREG 1123, 295037, EA1.05, RO/SRO 3.9/4.0
2. EO-200-113, 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 local posted instructions.

NRC SSES INITIAL EXAMINATION

JPM I

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

PERFORMANCE CHECKLIST:

JPM Start Time _____

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Review local posted instructions.	<p><u>EVALUATOR NOTE</u> Applicant will use the local posted instructions to vent the Unit 2 Scram Air Header.</p> <p><u>EVALUATOR CUE</u> Provide the applicant local posted instructions upon request. Applicant should identify that local posted instructions should be used.</p>			
*2. Bypass the scram header block valves.	<p>Open ARI Solenoid Valve Bypass Valve 247021.</p> <ul style="list-style-type: none"> - Undoes the locking mechanism - Turns handle to the left 90° 			
*3. Isolate the Scram Air Header.	<p>Close SCRAM AIR SUPPLY Valves 247002A and 247002B.</p> <ul style="list-style-type: none"> - Turns SCRAM AIR SUPPLY Valves 2470002A and 247002B CLOCKWISE to CLOSE. <p><u>EVALUATOR NOTE</u> Since only one valve is normally open, the other valve should be checked closed.</p> <p>When applicant request or takes action to report back to CR prior to venting then role play as RO to give permission to vent the scram air header.</p>			

NRC SSES INITIAL EXAMINATION

JPM I

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*4. Vent off the Scram Air Header.	Uncap and open SCRAM AIR HDR VENT Valve 247007. - Turns cap Counter Clockwise (Looking Up from floor to ceiling view)			
*5. Verify air is being vented.	Check for air at discharge vent. <u>EVALUATOR CUE</u> Inform applicant that the sound of air venting can be heard.			
6. Notify Control Room that Air Header is vented.	Contact Control Room by Radio or Page that air is venting from the 247007 Valve. <u>EVALUATOR CUE</u> Inform applicant Control Room has been notified and all control rods have inserted.			
	<u>EVALUATOR CUE</u> 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 ~100 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. Notify Control Room just prior to venting scram air header.

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 ~100 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. Notify Control Room just prior to venting scram air header.

TO VENT SCRAM AIR HEADER:

1. OPEN ARI SYS SOLENOID VALVES BYPASS 247021.
2. CLOSE SCRAM AIR SUPPLY 247002A AND 247002B.
3. UNCAP AND OPEN SCRAM AIR HEADER VENT 247007.

TO RESTORE SCRAM AIR HEADER:

1. CLOSE AND CAP SCRAM AIR HEADER VENT 247007.
2. OPEN SCRAM AIR SUPPLY 247002A OR 247002B.
3. CLOSE ARI SYS SOLENOID VALVES BYPASS
247021.

Susquehanna Steam Electric Station

Job Performance Measure

Maintaining RCIC Suction Supply With Loss of AC and DC Power

JPM Designation: J

Revision Number: 2

Date: 10/24/11

Developed By:	<u>Chris Lally</u>	<u>4/29/11</u>
	Author	Date
Review By:	<u>Hedigan</u>	<u>01/05/12</u>
	Examiner	Date
Approved By:	<u>Caruso</u>	<u>01/05/12</u>
	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
3. Rev 2: Revised following licensee review

JPM Setup Instructions:

1. Provide copy of ES-150-003, marked up to step 4.5.1
2. Provide copy of EO-100-030, marked up to step 2.15

TASK STANDARD:

RCIC suction aligned to Suppression Pool per ES-150-003, step 4.5.1.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; RWST level is 60%.

INITIATING CUE:

Maintain RCIC suction supply by cross-tying the refuel water storage tank to Unit 1 and 2 CST's in accordance with ES-150-003 step 4.5.1.a

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: 2

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 7
- 3. EO-100-030 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 perform actions of section 4.5.1.a 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 4.5.1.b of ES-150-003.

NRC SSES INITIAL EXAMINATION

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 4.5.1 and reviews	Applicant discusses where they would retrieve procedures			
2. (ES-150-003 Step 4.5.1) 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 2.15 → Attachment G)	References partially completed EO-100-030 at step 2.15. 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 closed.			
<u>ALTERNATE PATH BEGINS HERE</u> *4. (EO-100-030 Attachment G Step 2) CLOSE valve 105003 Cdsr Hotwell Level 12" Makeup Inlet Iso	<u>ALTERNATE PATH STARTS</u> Applicant will find Valve 105003 Cdsr Hotwell Level 12" 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.			

NRC SSES INITIAL EXAMINATION

JPM J

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
<p>*6. (ES-150-003 Step 4.5.1.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 realignment):</p> <ul style="list-style-type: none"> (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 	<p><u>Evaluator Note:</u> If prompted by applicant Att C is being performed by a separate operator.</p> <p>Applicant:</p> <ul style="list-style-type: none"> (1) Simulates Opening 1D254041 RCIC PUMP SUCTION CST SUPPLY VLV HV-149F010 BKR (27-670') <p><u>Evaluator Cue:</u> The breaker is open</p> <ul style="list-style-type: none"> (2) Simulates Opening 1D254042 RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-149F031 BKR (27-670') <p><u>Evaluator Cue:</u> The breaker is open</p> <ul style="list-style-type: none"> (3) Simulates engaging MOV clutch and Opening RCIC PUMP SUCTION SUPP POOL SUPPLY VLV HV-149F031 (28-645') <p><u>Evaluator Cue:</u> The valve is open</p> <ul style="list-style-type: none"> (4) Simulates engaging MOV clutch and Closes RCIC PUMP SUCTION CST SUPPLY VLV HV-149F010 (28-645') <p><u>Evaluator Cue:</u> The valve is closed</p>			
<p><u>CUE:</u> JPM is complete.</p>				

JPM Stop Time _____

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, RWST level is 60%.

INITIATING CUE:

Maintain RCIC suction supply by cross-tying the refuel water storage tank to Unit 1 and 2 CST's in accordance with ES-150-003 step 4.5.1.a

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, RWST level is 60%.

INITIATING CUE:

Maintain RCIC suction supply by cross-tying the refuel water storage tank to Unit 1 and 2 CST's in accordance with ES-150-003 step 4.5.1.a

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: 3

Date: 10/24/2011

Developed By: Patel 5/25/11
Author Date

Review By: Hedigan 01/05/12
Examiner Date

Approved By: Caruso 01/05/12
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.

RO INITIATING CUE:

This is a time critical JPM.

It has been 30 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 step 2.12.

SRO INITIATING CUE:

This is a time critical JPM.

It has been 30 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.

NRC SSES INITIAL EXAMINATION

JPM K

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

PERFORMANCE CHECKLIST:

JPM Start Time _____ (Record Start of JPM Time when applicant acknowledges the initiating cue) Official start time for Time Critical JPM

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
1. Review EO-100-030, Step 2.12. Secure Non-Class 1E 250 volt DC loads, by marking 30 minutes from start of SBO and performing Attachment F.	Applicant reviews Step 2.12 and 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. Evaluators cue: Lube oil pumps have been running since the start of the station blackout condition.			
*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' - Pushes Trip/reset button for Bkr 1D662 Evaluators cue: Loud noise is heard and Bkr indication changes to Green "Open"			
*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' - Pushes Trip/reset button for Bkr 1D652 Evaluators cue: Loud noise is heard and Bkr indication changes to Green "Open"			

NRC SSES INITIAL EXAMINATION

JPM K

ELEMENT	STANDARD	SAT	UNSAT	Comment Number
*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' - Pushes Trip/reset button for Bkr 1D652 <u>Evaluator cue:</u> Loud noise is heard and Bkr indication changes to Green "Open"			
<u>EVALUATOR CUE</u> This completes the JPM.				

JPM Stop Time _____

NOTE: Verify applicant completed JPM within 15 minutes.

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is currently in a station blackout condition following an earthquake and small break LOCA.

RO INITIATING CUE:

This is a time critical JPM.

It has been 30 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 step 2.12.

HANDOUT PAGE

TASK CONDITIONS:

1. The plant is currently in a station blackout condition following an earthquake and small break LOCA.

SRO INITIATING CUE:

This is a time critical JPM.

It has been 30 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 68% 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 SW pump to 1C SW pump to allow vibration readings to be taken on 1C SW pump and maintain power with Recirc to compensate for Xenon.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N	Swap running SW pumps from 1A to 1C
2	mfNM178007B f:125	I-ATC, TS-SRO	APRM 2 Fails High
3	mfHP152004	C-BOP, TS-SRO	Inadvertent start of HPCI
4	RD1550043027 RD1550063027	TS-SRO C-ATC C-BOP	Rod drifts in to position 10
5	mfFW144003D mfFW144005D	R-ATC	'D' Condensate Pump trip with failed runback
6	cmfAV01_XV147F01 1	C-ATC, TS-SRO	Loose SDV Inboard Drain Air Fitting
7	mfRD155017 SL153002 PM02_1P208A Additional rods stuck out, see malf page	M-ALL C-ATC C-BOP	Hydraulic ATWS / stuck rods, 'A' SLC pump relief valve lift, Failure of 'B' SLC pump on thermal overloads
8	cmfPM03_1P113A cmfPM07_1P113B cmfBR04_1A10101	C-ATC,	EHC pump failure causes turbine trip and loss of bypass valves, failure of 11A Aux Bus to fast transfer
9	cmfNB01_LISB211N 031A2B, cmfRL01_e111K79B	C-BOP	RCIC Auto Initiation Failure
10	cmfPM03_1P132A	C-ATC	Running CRD Pump Trips

11	mfHP152015 IMF mfRC150011 IOR diHSC121S12 d:120 f:OFF IOR diHSC121S10 d:120 f:OFF	C-BOP	HPCI Turbine Trips requiring performance of ED RCIC trips on injection Prevent further rod insertion
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario Summary and Administration Instructions

Scenario Summary

Event 1: The crew begins with the plant at 68% power. As part of turnover, the crew is directed to swap running Service Water pumps from 1A to 1C to allow maintenance to take vibration readings on 1C Service Water pump.

Event 2: Once the Service Water pump swap is complete, APRM 2 fails Upscale. The crew will take action per alarm response to bypass the APRM and the SRO will reference Tech Specs. Priority is to declare APRM 2 inoperable and bypass APRM 2.

Event 3: 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. The SRO will declare HPCI inoperable and ensure RCIC operability. Priority is to override HPCI, declare HPCI inoperable, and ensure RCIC operability.

Event 4: Once the crew overrides HPCI injection, the scram outlet valve for control rod 30-27 leaks by, causing control rod 30-27 to slowly drift in. However, due to high channel friction, the control rod stops at position 10 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 and Tech Specs direct insertion of the rod to 00 and disarming of the HCU. This will be accomplished by sequentially raising drive header D/P until the control rod inserts. CRS will address Tech Specs for the inoperable control rod. Priority is to declare rod inoperable, fully insert, and disarm it.

Event 5: Once the control rod 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. Additional actions require monitoring for position on power/flow map and for indications of power oscillations. Priority is to initiate manual recirc runback and monitor power/flow map and APRM for indications of power/flow instabilities.

Event 6: During the manual recirc runback, 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 normal HCU valve leak-by and the leaking outlet scram valve for control rod 30-27. The disconnected air fitting cannot be quickly remedied, and the scram discharge volume level quickly fills to the rod block and eventually the scram setpoints. The crew will respond proactively to the SDV filling by scrambling the reactor. Due to a partially plugged SDV, when the mode switch is taken to SHUTDOWN, control rods only partially insert, resulting in a hydraulic ATWS. Priority is to take decisive action to scram the reactor before the automatic scram from high scram discharge volume level.

Events 7-11: The crew will enter EO-100-113 for power/level control. During power reduction actions, the recirc pumps will be tripped. When the B recirc pump is tripped, the 1B CRD pump trips, requiring operators to later start the 1A CRD pump to enable control rod insertion. The CRS will then 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. When ATC has stabilized reactor water level with feedwater, the 1A EHC pump will trip and the 1B 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

Scenario Summary and Administration Instructions

direction to place suppression pool cooling in service. Additionally, 11A Aux Bus auto transfer will fail during the turbine trip, resulting in the loss of the two remaining condensate pumps and transition of level control to HPCI/RCIC.

EO-100-113 will direct insertion of control rods by multiple means. A malfunction of the CRD flow control valve will prevent raising cooling water D/P; preventing drifting in of control rods using the cooling header. Manual control rod insertion per EO-100-113 will be performed to insert control rods. Once approximately four control rods have been inserted, HPCI will trip, requiring the crew to use RCIC for level control. RCIC was overridden per procedure for level reduction, but will also fail to auto initiate. RCIC will start via manual operator actions and trip once the turbine comes up to speed and begins injecting. Further rod insertion will also no longer be possible due to malfunction of the rod insertion pushbuttons. RPV will lower to -161" (TAF) forcing the crew to enter EO-100-112 Rapid Depressurization due to inability to restore and maintain level >-161".

Actions will be directed in the field to bypass ARI and RPS. Once the rapid depressurization is performed and level control is being established using low pressure ECCS, the ATC will be able to reset the Scram to begin venting and draining the SDV, and then re-SCRAM the reactor to insert all control rods. The scenario may be terminated when the ATWS has been terminated with low pressure ECCS injection being used for level control.

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)	2
3. Abnormal events (2–4)	3
4. Major transients (1–2)	1
5. EOPs entered/requiring substantive actions (1–2) EO-100-102/EO-100-103	2
6. EOP contingencies requiring substantive actions (0–2) EO-100-113/EO-100-112	2
7. Critical tasks (2–3)	3

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.

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.

SSSES 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.

Scenario Summary and Administration Instructions

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 ft² to 88 ft² 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 not, 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, and,*
- present level trend*

This decision must not be made prematurely since depressurization of a critical core results in destabilizing effects 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.

Scenario Summary and Administration Instructions

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

Scenario Summary and Administration Instructions

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.

Scenario Summary and Administration Instructions

The scenario may be terminated once the ATWS has been terminated with level control using low pressure ECCS and upon direction of the Chief Examiner

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> ■ Ensure NRC1 IC, scenario files, and trigger files are loaded on the server <ul style="list-style-type: none"> -387.ic and relap_snap_387 copied in applicable IC folder -NRC1.scn file is copied in applicable SCN folder -NRC1 ET1.et thru NRC1 ET6.et and NRC1 ET1.scn thru NRC1 ET6.scn files copied in applicable ET folder ■ Reset simulator to Scenario IC-387 ■ Take out of FREEZE and run scenario file NRC1, then ensure the following: <ul style="list-style-type: none"> - Reactor Power is 68% with stable reactor water level - 'B' Condensate Pump indication out, all other equipment is OPERABLE - 'B' CRD Pump in service
	<ul style="list-style-type: none"> ■ Apply Information Tags on the following components: <ul style="list-style-type: none"> - 'B' Condensate Pump
	<ul style="list-style-type: none"> ■ Ensure materials for applicants: <ul style="list-style-type: none"> - Markup of GO-100-012 (complete through step 5.3.16) - Turnover sheet: <ul style="list-style-type: none"> ○ 68% power. 910 MWe ○ GO-100-012 complete through step 5.3.16 ○ Inserted control rods per CRC steps 185 – 177, then reduced flow. ○ 'B' Condensate Pump is out of service for repairs ○ 'D' Circ Water Pump was shutdown as part of GO-100-012 actions ○ Swap SW Pumps so maintenance can take vibration readings on 1C SW Pump.

Scenario Summary and Administration Instructions

✓

ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION

- Ensure the following triggers are built:
 1. **NRC1 ET1**, deletes 30-27 stuck rod and reduces its scram outlet valve leakage when Drive Water DP is raised to 375 psig:
 - NRC1 ET1.et (aoPDIC121R602.CurrValue >= 375)
 - NRC1 ET1.scn (DMF mfRD1550063027 and MMF mfRD1550133027 f:0.5)
 2. **NRC1 ET 2**, fails CRD Flow Control Valve when Mode Switch is taken to Shutdown to prevent drifting rods later with CRD:
 - NRC1 ET2.et (diHSC72A1S01.CurrValue = #OR.diHSC72A1S01.SHUTDN)
 - NRC1 ET2.scn IMF cmfAV04_FV146F002A d:60 f:1
 3. **NRC1 ET 3**, trips 'B' SLC Pp 30 sec after initiation switch taken to 'B':
 - NRC1 ET3.et (diHSS14804.CurrValue = #OR.diHSS14804.START_B)
 - NRC1 ET3.scn (IMF cmfPM02_1P208B d:30)
 4. **NRC1 ET 4**, trips 'B' CRD Pp when 'B' Recirc Pp 'STOP' button is depressed
 - NRC1 ET4.et (diHS14001B.CurrValue = #OR.diHS14001B.STOP)
 - NRC1 ET4.scn (IMF cmfPM03_1P132B)
 5. **NRC1 ET 5**, deletes the loss of air to SDV I/B Drain Vlv when RPV level reaches -60":
 - NRC1 ET5.et (aoLIB211R604.CurrValue <= -60)
 - NRC1 ET5.scn (DMF cmfAV02_XV147F011)
 6. **NRC1 ET 6**, trips RCIC when flow exceeds 300 gpm
 - NRC1 ET6.et (aoFIE511R6001.CurrValue > 300)
 - NRC1 ET6.scn (IMF mfRC150011)

Scenario Summary and Administration Instructions

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION																																																								
	<p>■ Ensure the following Soft Keys are built:</p> <table border="0"> <tr> <td>{Key[1]} scn NRC1A</td> <td>Swap SW Trip Enable Switches</td> </tr> <tr> <td>{Key[2]} IMF mfNM178007B f:125</td> <td>APRM 2 Fails High</td> </tr> <tr> <td>{Key[3]} IMF mfHP152004</td> <td>Inadvertent Start of HPCI</td> </tr> <tr> <td>{Key[4]} IMF mfRD1550133027 f:8</td> <td>Rod 30-27 Scram Outlet Vlv Leakage</td> </tr> <tr> <td>{Key[5]} IRF rfRD1550073027 f:DISARM</td> <td>Hydraulically disarm Rod 30-27</td> </tr> <tr> <td>{Key[6]} IMF mfFW144003D</td> <td>D Cond Pump Trip</td> </tr> <tr> <td>{Key[7]} IMF cmfAV02_XV147F011</td> <td>Loose SDV I/B Drain Air Fitting</td> </tr> <tr> <td>{Key[7]} MMF mfRD1550133027 f:100</td> <td>Rod 30-27 Scram Outlet Vlv Leak rises</td> </tr> <tr> <td>{Key[7]} IMFmfRD1550103027 d:300 f:50</td> <td>Rod 30-27 Scram Inlet Vlv Leakage</td> </tr> <tr> <td>{Key[8]} IMF cmfPMO3_1P113A</td> <td>A EHC Pump Motor Short Circuit</td> </tr> <tr> <td>{Key[8]} IMF mfTC193025 d:120</td> <td>Fails BPVs closed</td> </tr> <tr> <td>{Key[9]} IRF rfRD155017 f:0</td> <td>146F034 Charging Water Iso Closed</td> </tr> <tr> <td>{Key[10]} IRF rfRD155017 f:100</td> <td>146F034 Charging Water Iso Open</td> </tr> <tr> <td>{Key[11]} scn batch1\ RPB.DISABLARI</td> <td>Opens ARI Bkrs IAW ES-158-002</td> </tr> <tr> <td>{Key[12]} IMF mfHP152015</td> <td>HPCI Turbine Trip</td> </tr> <tr> <td>{Key[12]} IOR diHSC121S12 d:120 f:OFF</td> <td>Override Cont Insert Push Button Off</td> </tr> <tr> <td>{Key[12]} IOR diHSC121S10 d:120 f:OFF</td> <td>Override Insert Push Button Off</td> </tr> <tr> <td>{Key[13]} scn batch1\ RPB.ES158002</td> <td>Bypasses RPS IAW ES-158-002</td> </tr> <tr> <td>{Key[14]} DMF mfRD155017</td> <td>Delete Brown's Ferry ATWS</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063423</td> <td>Deletes stuck rod 34-23</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063427</td> <td>Deletes stuck rod 34-27</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063431</td> <td>Deletes stuck rod 34-31</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063435</td> <td>Deletes stuck rod 34-35</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063439</td> <td>Deletes stuck rod 34-39</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063827</td> <td>Deletes stuck rod 38-27</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550063835</td> <td>Deletes stuck rod 38-35</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550064223</td> <td>Deletes stuck rod 42-23</td> </tr> <tr> <td>{Key[14]} DMF mfRD1550064239</td> <td>Deletes stuck rod 42-39</td> </tr> </table> <p>■ Ensure NRC1A loads:</p> <p>IRF rfSW111044 f:ENABLED +10 IRF rfSW111046 f:OFF +20 IRF rfSW111051 f:ENABLE</p>	{Key[1]} scn NRC1A	Swap SW Trip Enable Switches	{Key[2]} IMF mfNM178007B f:125	APRM 2 Fails High	{Key[3]} IMF mfHP152004	Inadvertent Start of HPCI	{Key[4]} IMF mfRD1550133027 f:8	Rod 30-27 Scram Outlet Vlv Leakage	{Key[5]} IRF rfRD1550073027 f:DISARM	Hydraulically disarm Rod 30-27	{Key[6]} IMF mfFW144003D	D Cond Pump Trip	{Key[7]} IMF cmfAV02_XV147F011	Loose SDV I/B Drain Air Fitting	{Key[7]} MMF mfRD1550133027 f:100	Rod 30-27 Scram Outlet Vlv Leak rises	{Key[7]} IMFmfRD1550103027 d:300 f:50	Rod 30-27 Scram Inlet Vlv Leakage	{Key[8]} IMF cmfPMO3_1P113A	A EHC Pump Motor Short Circuit	{Key[8]} IMF mfTC193025 d:120	Fails BPVs closed	{Key[9]} IRF rfRD155017 f:0	146F034 Charging Water Iso Closed	{Key[10]} IRF rfRD155017 f:100	146F034 Charging Water Iso Open	{Key[11]} scn batch1\ RPB.DISABLARI	Opens ARI Bkrs IAW ES-158-002	{Key[12]} IMF mfHP152015	HPCI Turbine Trip	{Key[12]} IOR diHSC121S12 d:120 f:OFF	Override Cont Insert Push Button Off	{Key[12]} IOR diHSC121S10 d:120 f:OFF	Override Insert Push Button Off	{Key[13]} scn batch1\ RPB.ES158002	Bypasses RPS IAW ES-158-002	{Key[14]} DMF mfRD155017	Delete Brown's Ferry ATWS	{Key[14]} DMF mfRD1550063423	Deletes stuck rod 34-23	{Key[14]} DMF mfRD1550063427	Deletes stuck rod 34-27	{Key[14]} DMF mfRD1550063431	Deletes stuck rod 34-31	{Key[14]} DMF mfRD1550063435	Deletes stuck rod 34-35	{Key[14]} DMF mfRD1550063439	Deletes stuck rod 34-39	{Key[14]} DMF mfRD1550063827	Deletes stuck rod 38-27	{Key[14]} DMF mfRD1550063835	Deletes stuck rod 38-35	{Key[14]} DMF mfRD1550064223	Deletes stuck rod 42-23	{Key[14]} DMF mfRD1550064239	Deletes stuck rod 42-39
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{Key[5]} IRF rfRD1550073027 f:DISARM	Hydraulically disarm Rod 30-27																																																								
{Key[6]} IMF mfFW144003D	D Cond Pump Trip																																																								
{Key[7]} IMF cmfAV02_XV147F011	Loose SDV I/B Drain Air Fitting																																																								
{Key[7]} MMF mfRD1550133027 f:100	Rod 30-27 Scram Outlet Vlv Leak rises																																																								
{Key[7]} IMFmfRD1550103027 d:300 f:50	Rod 30-27 Scram Inlet Vlv Leakage																																																								
{Key[8]} IMF cmfPMO3_1P113A	A EHC Pump Motor Short Circuit																																																								
{Key[8]} IMF mfTC193025 d:120	Fails BPVs closed																																																								
{Key[9]} IRF rfRD155017 f:0	146F034 Charging Water Iso Closed																																																								
{Key[10]} IRF rfRD155017 f:100	146F034 Charging Water Iso Open																																																								
{Key[11]} scn batch1\ RPB.DISABLARI	Opens ARI Bkrs IAW ES-158-002																																																								
{Key[12]} IMF mfHP152015	HPCI Turbine Trip																																																								
{Key[12]} IOR diHSC121S12 d:120 f:OFF	Override Cont Insert Push Button Off																																																								
{Key[12]} IOR diHSC121S10 d:120 f:OFF	Override Insert Push Button Off																																																								
{Key[13]} scn batch1\ RPB.ES158002	Bypasses RPS IAW ES-158-002																																																								
{Key[14]} DMF mfRD155017	Delete Brown's Ferry ATWS																																																								
{Key[14]} DMF mfRD1550063423	Deletes stuck rod 34-23																																																								
{Key[14]} DMF mfRD1550063427	Deletes stuck rod 34-27																																																								
{Key[14]} DMF mfRD1550063431	Deletes stuck rod 34-31																																																								
{Key[14]} DMF mfRD1550063435	Deletes stuck rod 34-35																																																								
{Key[14]} DMF mfRD1550063439	Deletes stuck rod 34-39																																																								
{Key[14]} DMF mfRD1550063827	Deletes stuck rod 38-27																																																								
{Key[14]} DMF mfRD1550063835	Deletes stuck rod 38-35																																																								
{Key[14]} DMF mfRD1550064223	Deletes stuck rod 42-23																																																								
{Key[14]} DMF mfRD1550064239	Deletes stuck rod 42-39																																																								
	<p>■ Reset any annunciators that should not be present</p>																																																								

Scenario Summary and Administration Instructions

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: Swapping SW pumps

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Per section 2.7 of OP-111-001, respond as operators during swap of Service Water pumps ■ Using P&ID SW1, when asked to: <ul style="list-style-type: none"> • Close 109006 for 1C SW Pp, click on the valve and use the remote function to close it. When valve indicates closed, report 109006 is closed • Open 109006 1C SW Pp, click on the valve and use the remote function to open it. When valve indicates open, report 109006 is open • Close 109004 1A SW Pp, click on the valve and use the remote function to close it. When valve indicates closed, report 109004 is closed • Open 109004 1A SW Pp, click on the valve and use the remote function to open it. When valve indicates open, report 109004 is open ■ Depress Soft Key #1 to activate scn NRC1A when directed to reposition the service water pump breaker trip enable switches per OP-111-001 2.7.12 and 2.7.13. When file is done running, report: <ul style="list-style-type: none"> • HSS-10901A1 on 1A10106 for 'A' SW Pp is in Trip Enable • HSS-10901C1 on 1A10113 for 'C' SW Pp is in Off • HSS-10901C2 on 1A10213 for 'C' SW Pp is in Trip Enable
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 2: APRM 2 Fails Upscale

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When SW pump swap complete and chief examiner ready to proceed, click Soft Key 2 to insert IMF mfNM178007B f:125 for APRM 2 high failure
	<ul style="list-style-type: none"> ■ As NPO sent to the relay room, report that all four voters have an APRM 2 vote and APRM 2 indicates it is upscale
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 3: Inadvertent Start of HPCI

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When APRM 2 bypassed, TS call complete, and chief examiner ready to proceed, click Soft Key 3 to insert IMF mfHP152004 for inadvertent HPCI start
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

Scenario Summary and Administration Instructions

EVENT 4: Rod 30-27 Drifts In to Position 10

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When HPCI overridden, TS call complete, and chief examiner ready to proceed, click Soft Key 4 to insert IMF mfRD1550133027 f:8 to drift control rod 30-27 in
	<ul style="list-style-type: none"> ■ As NPO dispatched to HCU 30-27, report that the Outlet scram valve line is hot
	<ul style="list-style-type: none"> ■ Acknowledge request to disarm HCU 30-27, wait 5 minutes then Click Soft Key 5 to insert IRF rfRD1550073027 f:DISARM, and report disarming Rod 30-27 is complete
	<ul style="list-style-type: none"> ■ As FIN Team sent to investigate, acknowledge the request, wait five minutes and report that the Scram Outlet Valve for 30-27 is leaking and you will discuss possible repairs with your supervision
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 5: 'D' Condensate Pump Trip with Failed Runback

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Once control rod 30-27 is disarmed, the Tech Spec call is complete, and when chief examiner ready to proceed, activate Soft Key 6 to insert IMF mfFW144003D to trip 'D' Condensate Pump
	<ul style="list-style-type: none"> ■ Respond to request for I&C/Work Week Manager support
	<ul style="list-style-type: none"> ■ If NPO dispatched, acknowledge direction to investigate; wait 2 minutes and report back that Condensate Pump 'D' tripped on ground instantaneous overcurrent, no other abnormalities
	<ul style="list-style-type: none"> ■ When contacted as the TB NPO to check FW Heater Panel alarms, use PNOVs and report actual alarms.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 6: Disconnected SDV Inboard Drain Air Fitting

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Once manual runback is completed and the chief examiner is ready to proceed, click Soft Key 7 to insert IMF cmfAV02_XV147F011, MMF mfRD1550103027 f:100, and IMF mfRD1550103027 d:300 f:50 to fail SDV drain valve closed and modify control rod 30-27 scram valve leakage.
	<ul style="list-style-type: none"> ■ When dispatched as NPO, wait 2 minutes and report a loose air fitting at the F011 valve and attempting to reconnect, but fitting appears cross-threaded
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

Scenario Summary and Administration Instructions

EVENTS 7, 8, 9, 10, 11: Hydraulic ATWS, Loss of SLC, CRD Pump Trip, HPCI Trip, Failure of rods to drive, Rapid Depressurization

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ 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
	<ul style="list-style-type: none"> ■ When reactor water level stable in band -60"→-110" and chief examiner ready to proceed, click Soft Key 8 to insert IMF cmfPM03_1P113A to trip 'A' EHC pump, causing main turbine trip and preventing bypass valve usage
	<ul style="list-style-type: none"> ■ As NPO sent to investigate 11A Bus status, acknowledge direction and do not report on status
	<ul style="list-style-type: none"> ■ As NPO, acknowledge direction to perform ES-150-002, get the initialed copy from the SRO but do not perform
	<ul style="list-style-type: none"> ■ As NPO, acknowledge direction to perform ES-158-002 then get the initialed copy from the SRO
	<ul style="list-style-type: none"> ■ (If requested) As NPO, acknowledge direction to CLOSE CRD Charging Water Isolation Valve 146F034. Wait 1 minute and click Soft Key 9 ■ (If requested) As NPO, acknowledge direction to OPEN CRD Charging Water Isolation Valve 146F034. Wait 1 minute and click Soft Key 10
	<ul style="list-style-type: none"> ■ Once the crew is controlling RPV level with HPCI, call the Unit Supervisor on the page and report you are ready to open ARI breakers 1D614006 and 1D624016 per ES-158-002. Wait 1 minute and activate Soft Key 11 to run scn batch1\RPB.DISABLARI. When the file is done running, report that ARI is disabled IAW ES-158-002
	<ul style="list-style-type: none"> ■ When PCO has inserted four rods and chief examiner ready to proceed, click Soft Key 12 to insert IMF mfHP152015 to trip HPCI and IOR diHSC121S12 d:120 f:OFF and IOR diHSC121S10 d:120 f:OFF to prevent further rod movement
	<ul style="list-style-type: none"> ■ Once Rapid Depressurization is in progress, call the Unit Supervisor on the page and report you are ready to bypass RPS trips IAW ES-158-002. When directed to continue, click Soft Key 13 to run scn batch1\RPB.ES158002. When the ES-158-002 scenario completes running report that the RPS trips are bypassed IAW ES-158-002
	<ul style="list-style-type: none"> ■ When the scram is reset and the ATC is ready to re-scram the reactor, click Soft Key 14 to delete Browns Ferry ATWS and additional stuck rods
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate
	<ul style="list-style-type: none"> ■ Once ATWS has been terminated with level control using low pressure ECCS and upon direction of the Chief Examiner, place the simulator in freeze

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 1 Page ___ of ___

Event Description: Swap running SW pumps from 1A to 1C

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to swap running SW pumps from 1A to 1C
	BOP	Obtains copy of OP-111-001 and proceeds to section 2.7, Service Water Pump Swap
	BOP	(Step 2.7.3) Contacts NPO to check standby Service Water Pump 1P502C seal water pressure >30 psig on local PI-10901C, will receive report back that pressure is satisfactory
	BOP	(Step 2.7.4) Ensures Serv WTR PP 1P502C in automatic standby by verifying 'C' SW Pump switches in automatic
	BOP	(Step 2.7.5) Ensures HSS-10901C SERV WTR PP C PREFERRED BUS switch in 1A10111A position at Panel 1C668
	BOP	(Step 2.7.10) IF swapping SERV WTR PP 1P502C in service and stopping SERV WTR PP 1P502A, perform the following: <ul style="list-style-type: none"> a. Start standby SERV WTR PP 1P502C as follows: <ol style="list-style-type: none"> (1) Dispatches NPO to Close 109006 SW Pp C Dsch Iso. Will receive report back that 109006 is closed. (2) Depress RUN pushbutton. (3) Directs NPO to slowly Open 109006 until 110-125 psig on local PI-10903C. Will receive report back that 109006 is partially open, pressure is 110-125 psig. (4) Directs NPO to check Service Water Pump 1P502C for cavitation indicating further venting required. Will receive report back that no cavitation in progress. (5) Directs NPO to fully Open 109006. Will receive report back that 109006 is fully open.

Scenario Summary and Administration Instructions

BOP	<p>(Step 2.7.10)</p> <p>b. <u>WHEN</u> system pressure stabilizes, Stop SERV WTR PP 1P502A as follows:</p> <p>(1) Directs NPO to close 109004 SW Pp A Dsch Iso. Will receive report back that valve is closed.</p> <p>(2) Depresses 1P502A 'A' SW Pump AUTO pushbutton, <u>THEN</u></p> <p>(3) Depresses 1P502A 'A' SW Pump STOP pushbutton.</p> <p>(4) Directs NPO to open 109004 SW Pp A Dsch Iso, will receive report back that 109004 is open.</p>
	<p>(Step 2.7.12) Perform following for service water pump being removed from service:</p> <p>a. <u>IF</u> SERV WTR PP 1P502A being removed from service, at 1A10106, Perform the following:</p> <p>(1) Directs NPO to place HSS-10901A1 Inst trip enable to TRIP ENABLE position. Will receive report back that HSS-10901A1 is in TRIP ENABLE</p> <p>(2) Ensure 861A10106 RESET. Will receive report back that 861A10106 is RESET.</p>
	<p>(Step 2.7.13) Perform following for service water pump being placed in service:</p> <p>b. <u>IF</u> SERV WTR PP 1P502C being placed in service AND HSS-10901C SERV WTR PP C PREFERRED BUS in 1A10111A position:</p> <p>(1) Directs NPO to place HSS-10901C1 Inst Trip Enable at 1A10113 to OFF position. Will receive report back that HSS-10901C1 is in OFF</p> <p>(2) Directs NPO to place HSS-10901C2 Inst Trip Enable at 1A10213 to TRIP ENABLE position. Will receive report back that HSS-10901C2 is in TRIP ENABLE</p>
	<p>(Step 2.7.14) Verifies Service Water System pressure > 80 psig and stable on PICSY Display SRWTR</p>
	<p>(Step 2.7.15) IF desired, Place service water pump stopped in automatic standby as follows:</p> <p>a. Depress SERV WTR Pp 1P502A AUTO pushbutton</p>

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 2 Page ___ of ___

Event Description: APRM 2 Fails High

Priority: Declare APRM 2 inoperable and bypass APRM 2

Time	Position	Applicant's Actions or Behavior
	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
	SRO	Declares APRM 2 Inoperable and recognizes the failed APRM should be bypassed.
	SRO	Briefs crew on plant status and directs bypassing APRM 2 Evaluator Note: <i>Once APRM 2 has been bypassed, proceed to next event, Key 3, inadvertent start of HPCI</i>
	SRO	Contacts WWM to have FIN investigate failure of Unit 1 APRM 2
	ATC	Reports AR-103-001 (A06) APRM UPSCALE/INOP TRIP alarm, AR-103-001 (B06) APRM UPSCALE alarm, and AR-104-001 (H03) ROD OUT BLOCK.
	ATC	Refers to the alarm response and verifies the indications on 1C651 and ODAs
	ATC	Based on control room indications, reports a Fault on APRM 2 with an INOP trip and rod block
	ATC	Places bypass joystick to the right to #2 position at Panel 1C651 and reports that APRM 2 is bypassed
	BOP	Directs an NPO (or may go himself/herself) to the Lower Relay Room, Panel 1C608 to perform OP-178-002, Section 2.7 for Self-Test Faults
	BOP	Refers to OP-178-002, PRNMS procedure and attachment

Scenario Summary and Administration Instructions

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

Priority: Override HPCI injection, declare HPCI inoperable, and ensure RCIC operability

Time	Position	Applicant's Actions or Behavior
	SRO	Verifies no valid initiation signal exists Directs HPCI overridden Directs ATC to enter ON-156-001 May direct ATC to reduce reactor power to pre-transient level by reducing recirc flow 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 <u>Evaluator Note:</u> <i>Once HPCI has been overridden, TS call complete, and RCIC verified operable, proceed to next event. Key 4, Rod 30-27 scram outlet valve leakage</i>
	ATC	Reports AR-101-001 (B17) RX WATER HI-LO LEVEL and AR-101-001 (D06) CONDENSATE FILTRATION 1C1103 SYSTEM TROUBLE (<i>These alarms are expected for the conditions if HPCI is allowed to inject. This causes a high water level until reactor feedwater can compensate, and also disturbs the flow balance in the condensate system. Both alarms will clear shortly after coming in</i>)
	ATC	Refers to ON-156-001 and determines no other reactivity control systems were responsible for the power increase
	ATC	Reduces reactor power to pre-transient levels by pushing DEC pushbuttons on Recirc flow controllers

Scenario Summary and Administration Instructions

	BOP	<p>Observes AR-114-001 (E02), HPCI Pump Dsch Lo Flow alarm and AR-101-001 (B05) RX BLDG AREA PANEL 1C605 HI RADIATION Reports HPCI start.</p> <p>Verifies adequate core cooling by two independent means and ensures Drywell pressure is < 1.72 psig</p> <p>Obtains SRO concurrence to Override HPCI</p>
	BOP	<p>Overrides HPCI (OP-152-001 Attachment C Hard Card):</p> <ol style="list-style-type: none"> a. Places HPCI AUXILIARY PUMP 1P213 switch to START. b. Depresses 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 <u>not</u> reset, stop injection/shut down using following sections (1) preferred, OR (2): <ol style="list-style-type: none"> (1) Reduce HPCI turbine speed to stop injection: <ol style="list-style-type: none"> (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. <p>Evaluator Note: HPCI may be overridden from memory by performance of steps (1)(a) and (1)(b), at which point operator should reference hard card to ensure all actions completed</p>
	BOP	<p>Inspects RCIC for any indications of inoperability, ensures it is lined up for automatic operation, reports RCIC operable</p>

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 4 Page ___ of ___

Event Description: Rod 30-27 Drifts In to Position 10

Priority: Priority is to declare rod 30-27 inoperable, fully insert, and disarm it

Time	Position	Applicant's Actions or Behavior
	SRO	Directs implementation of ON-155-001 Directs insertion and disarming of control rod 30-27
	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 Evaluator Note: <i>Once control rod 30-27 has been declared inoperable, inserted and disarmed, proceed to next event. Key 6, 'D' Condensate Pump trip with failed runback</i>
	ATC	Reports AR-104-001 (H05) Rod Drift alarm, depresses the DISPLAY RODS DFTING Pushbutton, determines 30-27 is drifting in by observing its position on the 4-Rod display.

Scenario Summary and Administration Instructions

	<p style="text-align: center;">ATC</p>	<p>Implements ON-155-001, section 4.4 for Rod Drift or Rod Scram:</p> <p>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 10.</p> <p>4.4.2 Check for any open scram valves by Depressing DISPLAY SCRAM VALVES OPEN pushbutton, notes no scram valves open for rod 30-27.</p> <p>4.4.3 Select rod 30-27 to determine position, reports position 10.</p> <p>4.4.4 Reset the Rod Drift Alarm as follows:</p> <ul style="list-style-type: none"> a. Depress the Rod Drift Reset pushbutton. b. Verify Rod Drift Alarm clears. <p>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.</p> <p>4.4.9 Perform the following for any drifted or partially scrambled rod(s)</p> <ul style="list-style-type: none"> a. Promptly Inserts rod to position 00. Selects control rod 30-27 and depresses insert pushbutton <p><u>Evaluator Note:</u> <i>Control rod will not move when this is performed. ATC Informs the SRO that 30-27 will not move and proceeds to section 4.3 for the stuck rod</i></p>
	<p style="text-align: center;">ATC</p>	<p>ON-155-001 Section 4.3</p> <p>(Step 4.3.1) IF rod position indication does not change when valid withdraw OR insert signal applied, Perform the following:</p> <ul style="list-style-type: none"> a. Confirm control rod position using any 3 of the available rod position indication as follows: <ul style="list-style-type: none"> (1) CRT and SIP 4 ROD DISPLAY (2) FULL-IN/FULL-OUT DISPLAY push button (3) OD-7 (4) Alarm logging printer, System Event Display Message (5) RWM Main Display when below Low Power Alarm Point

Scenario Summary and Administration Instructions

ATC	<p>c. IF rod failed to move, Attempt to move control rod as follows:</p> <p>(1) Complete rod data on Attachment A</p> <p>(2) In ~50 psid increments, Increase drive water pressure by operating Drive Wtr Press Thtlg PV-146-F003 AND</p> <p>(3) Perform following at each increment until ≤ 350 psid reached</p> <p>(a) Attempt to operate drive one notch insert, while observing drive water flows (4gpm for insert)</p> <p>(b) IF rod position does not change on 4-rod display, Confirm control rod position using available rod position indications</p> <p>(d) Repeat as necessary, until 350 psid reached.</p> <p>Evaluator Note: <i>Nominal drive D/P is initially 250 psid, so attempts will be made at 250, 300, and 350 psid to insert the control rod</i></p>
BOP	
ATC	
BOP	<p>d. (BOP notes max allowable D/P for this rod is 435 psid) IF rod failed to move, Increase drive water pressure >350 psid as follows:</p> <p>(1) In ~25 psid increments, Increase drive water pressure AND</p> <p>(2) Perform following at each increment Maximum Drive Pressure Allowed is reached</p> <p>(a) Attempt to operate drive one notch insert, while observing drive water flows (4 gpm insert).</p> <p>(b) If rod position does not change on 4-rod display, Confirm control rod position using available rod position indications.</p> <p>Evaluator Note: <i>Control rod will insert once 375 psid drive header D/P is achieved</i></p> <p>(f) If rod moves one notch in intended direction, go to Step 4.3.1.f</p> <p>(Step 4.3.1.f) Record drive water pressure required to move control rod on Attachment A.</p> <p>(Step 4.3.1.g) Record drive water flow that is indicated while attempting to move stuck control rod on Attachment A.</p> <p>(Step 4.3.1.h) Return drive water pressure to ~250 psid, for each subsequent rod notch. Document on Attachment A.</p> <p>ATC repeats actions to move control rod to 00</p> <p>(ON-155-001 Step 4.4.9.b) Directs NPO to Hydraulically Disarm HCU in accordance with OP-155-001 Control Rod Drive Hydraulic System section 2.6.</p>
ATC	
BOP	

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 5 Page ___ of ___

Event Description: Trip of Condensate Pump 'D' with failed recirc pump runback
Priority: Initiate manual recirc runback and monitor power/flow map and APRM for indications of power/flow instabilities

Time	Position	Applicant's Actions or Behavior
	SRO	Directs ATC to initiate #2 Limiter runback
	SRO	Directs ATC/BOP entry into ON-164-002 and performance of section 4.4 Evaluator Note: <i>Once action has been taken to complete manual recirc runback, proceed to next event. Key 7, Scram Discharge Volume drain valve F011 fails closed</i>
	ATC	Reports trip of 'D' Condensate Pump and responds to annunciators AR-101-001 (A09) CONDENSATE PUMP D TRIP, and reports that runback did not occur. Reports reactor power, RPV level and trend

Scenario Summary and Administration Instructions

ATC	<p>Performs OP-164-002 Attachment E for manual flow reduction (actions may be performed from memory)</p> <p>Evaluator Note: <i>Applicants may choose to manually reduce flow to 48% demand by using the DEC pushbuttons for each recirc pump or initiate a limiter #2 runback instead.</i></p> <p>(Step 2.14.4.a) Ensures SRO concurs or has provided direction to perform runback by manual reduction or initiating a Manual Rx Recirc Pump Speed reduction to Limiter #2.</p> <p>(Step 2.14.4.b) Touch <u>any one</u> of the following buttons on the vertical selection list.</p> <p style="text-align: center;">(1)RRP DUAL SCR N (Manual Mode Screen)</p> <p style="text-align: center;">(2)RRP_A</p> <p style="text-align: center;">(3)RRP_B</p> <p>(Step 2.14.4.c) <u>IF</u> on RRP DUAL SCR N, Touch <u>either</u> the 'A' or 'B' Screen Select <u>MANUAL</u> button.</p> <p>(Step 2.14.4.d) Touch <u>MANUAL FLOW REDUCTION INITIATION</u> button.</p> <p>(Step 2.14.4.e) Touch <u>LIMITER # 2 48%</u> button on the overlay screen.</p> <p>(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.</p> <p>(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).</p> <p>(Step 2.14.4.h) Perform the applicable section(s) of ON-164-002, Loss of Rx Recirculation Flow.</p>
ATC/BOP	<p>Performs ON-164-002 section 4.4</p> <p>Plot position on Power/Flow Map.</p> <p>Ensure a Non-Peripheral Control Rod selected.</p> <p>AND</p> <p>Monitor LPRM's for Limit Cycle Oscillations.</p>
BOP	<p>Dispatches NPO to investigate trip of 'D' Condensate Pump, will receive report back that it tripped on ground overcurrent, no other abnormalities noted</p>

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page ___ of ___

Event Description: Disconnected SDV Inboard Drain Air Fitting

Priority: Take decisive action to scram the reactor before the automatic scram from high scram discharge volume level

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Requests assistance from Work Week Manager/FIN</p> <p>Determines SDV drain valve has no air supply and SDV is filling up (as indicated by AR-103-001 (G02) SCRAM DISCHARGE VOLUME NOT DRAINED and AR-104-001 (H03) ROD OUT BLOCK) due to scrammed control rod 30-27</p> <p>Will direct entry into ON-100-101 SCRAM, SCRAM IMMINENT or placing mode switch directly to SHUTDOWN, skipping actions to notify GCC and verifying recirc flow has been reduced to Limiter #2</p> <p>Evaluator Note: <i>Once the mode switch is placed in SHUTDOWN, scenario will progress to next event, no cue is necessary</i></p>
	SRO	<p>Evaluator Note: <i>The ON-100-101 steps will be skipped and performed within EOP's if the mode switch is directed to be placed in SHUTDOWN vice performing ON-100-101 SCRAM, SCRAM IMMINENT</i></p> <p>(ON-100-101 Step 4.3.3) <u>IF</u> more than 1 control rod remains > 00, Enter EO-100-113 at step LQ/Q-2.</p> <p>Enters EO-100-102, RPV Control when RPV water level reaches +13" due to shrink caused by the partial scram</p> <p>(EO-100-002 Step RC-2) Notes more than one control rod remains >00, exits EO-100-102 and enters EO-100-113, Level/Power Control at LQ-1</p>

Scenario Summary and Administration Instructions

ATC	<p>Evaluator Note: SDV vent/drain valve indications are below the RWM. Normally both lights are red (all valves open). Once malfunction is inserted, bottom light will indicate amber, indicating a valve closure. ATC may also respond to computer alarm for SDV vent/drain valves closed. Approximate time from valve closure to NOT DRAINED alarm is 3 minutes.</p> <p>Responds to computer alarm for SDV Vent/Drain valves and AR-103-001 (G02) SCRAM DISCHARGE VOLUME NOT DRAINED (Step 2.2) Check Vent and Drain Valves indicate open. ATC reports that XV-147F011 is closed (Step 2.3) <u>IF</u> Scram Discharge Volume does not drain, Ensure Vent and Drain Valves physically open.</p> <p>Dispatches NPO to investigate locally, <i>will receive report back that the air fitting is disconnected from the valve and that the NPO is working on getting it re-connected.</i></p>
ATC	<p>(ON-100-101 Step 3.1.1) Verifies recirc flow has been reduced to Rx Recirc Limiter #2 (already performed due to condensate pump trip)</p>
ATC	<p>(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). ATC reports that multiple control rods did not insert <i>(The following are automatic operator actions)</i> (Step 4.3) <u>IF</u> more than 1 control rod > 00:</p> <p>(Step 4.3.1) Arm <u>AND</u> Depress manual scram pushbuttons.</p> <ul style="list-style-type: none"> 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	<p>Contact GCC to inform them that Unit 1 is coming offline</p>
BOP	<p><i>(The following are automatic operator actions)</i> (Step 4.3.2) Initiate ARI by arming and depressing:</p> <ul style="list-style-type: none"> a. ARI DIV 1 MAN TRIP HS-147103A1 TRIP b. ARI DIV 2 MAN TRIP HS-147103B1 TRIP

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 1 Event No.: 7, 8, 9, 10, 11 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
	SRO	Enters EO-100-102 RPV CONTROL due to existing SCRAM condition and power >5%, reaches step RC-2, exits EO-100-102 RPV CONTROL, and enters EO-100-113 LEVEL/POWER CONTROL
	●SRO	(EO-100-113 LQ/Q-3) Directs BOP to inject SBLC and inhibit ADS.
		(LQ/Q-4) Directs FUS to inject SBLC using RCIC via ES-150-002
		Contacts WWM to have FIN investigate problems with U-1 SBLC pumps
		(LQ/Q-6) Directs ATC to ensure SRM/IRM inserted
		(LQ/Q-7) Directs ATC to run both Recirc pumps back to minimum
		(LQ/Q-8) Directs ATC to trip both Recirc pumps, one at a time
	SRO	(LQ/Q-9) Directs BOP to maximize CRD/start 'A' CRD pump
	●SRO	(LQ/L-6) Directs ATC/BOP to throttle and prevent injection, reduce level to -60" → -110" Evaluator Note: <i>Once reactor water level is stable in band -60" → -110", proceed to next event. Key 8, trips 'A' EHC pump and 'B' fails to start, resulting in a turbine trip and loss of bypass valves. Also, aux bus 11A fails to auto transfer, resulting in a loss of the remaining condensate pumps, and tripping of all reactor feed pumps. Note: there is a time delay from EHC pump trip to turbine trip, due to system pressure bleed-down</i>
	SRO	(LQ/L-8) Directs BOP to bypass MSIV/CIG interlocks
	●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 800-1050# by using bypass valves/SRV Evaluator Note: SRO may proactively direct Core Spray system to be overridden as RPV pressure drops per guidance in LQ/P-2
	SRO	Directs BOP to place Suppression Pool Cooling in service

Scenario Summary and Administration Instructions

★SRO	<p>(LQ/Q-4) Directs ATC to insert control rods by driving control rods <u>AND</u></p> <p>Upon receiving communication from NPO that SDV drain valve function has been restored, directs ATC to call out for ES-158-002 to also insert rods by resetting and scrambling again</p> <p>Evaluator Note: <i>Once 4 control rods have been inserted, initiate the next event. Key 12, HPCI turbine trip and malfunction of rod insertion pushbuttons</i></p>
★SRO	<p>Directs FUS/NPO to disable ARI and bypass RPS logic trips as necessary IAW ES-158-002</p>
■SRO	<p>(LQ/L-14) If level cannot be restored and maintained >-161”</p> <ol style="list-style-type: none"> 1. Go to LQ/L-18 2. Go to Rapid Depress <p>(LQ/L-18) Directs BOP to stop and prevent injection from FW/Cond/LPCI/Core Spray</p> <p>Announces entry into EO-100-112 Rapid Depressurization</p>
■SRO	<p>(RD-8) Directs BOP to open all ADS valves</p>
●SRO	<p>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</p> <p>Directs ATC to monitor NI’s while restoring Rx water level due to injection of cold, unborated water</p>
SRO	<p>Evaluator Note: <i>Scenario may be terminated once the ATWS has been terminated and low pressure ECCS is being used for level control</i></p> <p>Once ATWS has been terminated, exits EO-100-113 LEVEL/POWER CONTROL and re-enters EO-100-102 RPV CONTROL</p> <p>Directs ATC/BOP to coordinate and restore reactor water level to +20” → +45” using low pressure ECCS</p>
ATC	<p>Reports failure to SCRAM, completes ON-100-101 actions listed in event 7</p>

Scenario Summary and Administration Instructions

ATC	<p>(OP-145-001 Hard Card Step 2) WHEN directed by Shift Supervision, Lower Rx Recirc Pump Speeds to <u>Minimum</u> on any Rx Recirc (Manual) HMI screen.</p> <p>Touches the <u>MANUAL FLOW REDUCTION INITIATION</u> button.</p> <p>Touches the <u>RRP SPEED TO MINIMUM</u> button on the Manual Flow Reduction Initiation overlay.</p> <p>Touches the <u>INITIATE RRP FLOW REDUCTION</u> button on the confirmation overlay screen and Observe both Rx Recirc Pump Gen Speeds lowering.</p> <p>Reports completion to SRO</p>
ATC	<p>(OP-145-001 Hard Card Step 3) WHEN directed by Shift Supervision, Ensure Rx Recirc Pump Speeds are approximately 20% and TRIP the 'A' and 'B' Rx Recirc Pumps one at a time, and reports completion to SRO.</p>
●ATC	<p>(OP-145-001 Attachment C Hard Card)</p> <p>5) Ensure the HPCI and RCIC Systems have been overridden prior to lowering RPV Water Level to < -30".</p> <p>7) IF RFP A(B)(C) is operating in FCM: (2.19.9)</p> <p>a) Place the FW LO LOAD DEMAND SIGNAL TO LV-10641, controller LIC-C32-1R602 in MANUAL with a controller output of 0%. (2.19.9a)</p> <p>b) Place the FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 in MANUAL. (2.19.9b)</p> <p>c) Perform the following for the RFP A(B)(C) which will <u>continue feeding</u>: (2.19.9c)</p> <p>(1) Touch the A(B)(C) <u>RFPT MAN VLV CTL</u> button. (2.19.9c(1))</p> <p>(2) Place the <u>feeding</u> RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C) in MANUAL. (2.19.9c(2))</p> <p>d) Lower FW LEVEL CTL/DEMAND SIGNAL controller LIC-C32-1R600 output by ~ 12%. (2.19.9d)</p> <p>e) Place the remaining in-service RFP B(C)(A) in the IDLE MODE (2.19.9e)</p> <p>f) Adjust the <u>INC/DEC</u> buttons on the <u>feeding</u> RFP A(B)(C) SPD CTL/DEMAND SIGNAL controller SIC-C32-1R601A(B)(C) to establish and maintain the assigned level band. (2.19.9f)</p>

Scenario Summary and Administration Instructions

★ATC	<p>Using EO-113-001 "To Drive Control Rods" hard card</p> <ol style="list-style-type: none"> 1. (CR-6) Bypasses RWM by: <ol style="list-style-type: none"> a. Insert key into RWM Normal/Bypass keylock AND b. Turn fully clockwise to BYPASS position 2. (CR-7) Establish approximately (if obtainable): <ol style="list-style-type: none"> a. 63 GPM cooling water flow AND 350 PSID drive water pressure (applicant attempts to adjust drive pressure MOV and flow control valve to achieve parameters, but will have minimal success) <p>Evaluator Note: <i>Due to insertion of flow control valve failure earlier (to prevent drifting control rods in with cooling water pressure), these parameters will not be adjustable but will still enable insertion of control rods by selecting and depressing the insert pushbutton</i></p> <ol style="list-style-type: none"> b. Selects rods in rotating quadrants AND depresses continuous insert pushbutton until Full-In or rod will not move for: <ol style="list-style-type: none"> (1) Intermediate position rods (2) Full out rods <p>Evaluator Note: <i>Due to addition of several rods stuck out to raise initial ATWS power, some control rods will not insert when attempted. ATC will then move on to insert other rods and report this to the SRO.</i></p>
★ATC	<p>Once notified by FUS/NPO that ES-158-002 has been performed:</p> <p>(OP-158-001) Resets SCRAM by:</p> <p>(Step 2.6.7) Reset RPS Trip System by Momentarily Positioning RPS SCRAM RESET Control Switch HS-C72A-1S05 as follows:</p> <p>(Step 2.6.7.a) To GRP 1/4 position.</p> <p>(Step 2.6.7.b) To GRP 2/3 position</p> <p>(Step 2.6.11) Ensure Open Charging Wtr Hdr Iso 146F034 (Also CR-20)</p>
★ATC	<p>(Step CR-20) When SDV partially drains {RPS CHAN A1/A2 OR (B1/B2) SCRAM DSCH VOL HI WTR LEVEL TRIP alarm AR-103-001 (F02) / AR-104-001 (F02) is clear}, insert manual scram by arming and depressing one manual scram pushbutton per RPS subsystem (A1 or A2 AND B1 or B2)</p>
★ATC	<p>Communicates with BOP while monitoring NI's for level restoration, and continues to reset and SCRAM as necessary until all control rods are fully inserted.</p> <p>Reports all control rods fully inserted to SRO</p>

Scenario Summary and Administration Instructions

	BOP	Initiates ARI per ON-100-101 required actions listed in event 7
	BOP	<p>(OP-153-001 Attachment A)</p> <ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> a. HV-144-F004 RWCU INLET OB ISO CLOSSES 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 (<i>discharge pressure will indicate ZERO due to shaft shear</i>) f. SBLC FLOW Indicates ~ ≥ 40 GPM (<i>flow will indicate ZERO due to shaft shear on A SBLC pump</i>) g. SBLC Storage Tank level decreasing (<i>will not be occurring due to no SBLC injection</i>) h. Reactor power level decreasing (<i>will not be occurring due to no SBLC injection</i>)
	BOP	Reports to SRO that A SBLC injection failed, proceeding to inject with B SBLC
	BOP	<ol style="list-style-type: none"> 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 <ol style="list-style-type: none"> 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	Reports to SRO that B SBLC pump tripped after ~30 seconds Directs NPO to check Unit 1 SBLC Pumps and 1B217-06 for 1B SLC Pump
	●BOP	<p>(OP-183-001 Step 2.6.4) Places following keylock switches to INHIBIT:</p> <p>ADS A Logic Control</p> <p>ADS B Logic Control</p>

Scenario Summary and Administration Instructions

BOP	<p>(OP-184-001 Attachment A Hard Card) Bypasses MSIV/CIG interlocks:</p> <ol style="list-style-type: none"> 1. Bypass MSIV Low Water Level 1 Isolation at 1C645 by Placing the following to BYPASS: <ol style="list-style-type: none"> a. HS-B21-S38A Rx Wtr Lvl 1 MSIV Bypass Logic A. b. HS-B21-S38C Rx Wtr Lvl 1 MSIV Bypass Logic C. 2. Bypass CIG Low Water Level 1 and High Drywell Pressure Isolation by Placing the following to BYPASS: <ol style="list-style-type: none"> a. At 1C645, HS-12694 Low Lvl 1/Hi Drywell Press CIG Bypass (HV-12603) b. At 1C645, HS-12695 Low Lvl 1/Hi Drywell Press CIG Bypass (SV-12651) c. At 1C644, HS-12696 Low Lvl 1/Hi Drywell Press CIG Bypass (SV-12605)
BOP	Reports trip of 'B' CRD pump
BOP	<p>(ON-155-007) <i>(May be performed from memory)</i></p> <p>(Step 3.4) IF CRD Pump 1P132A(B) trip occurred AND cause not due to loss of pump suction:</p> <p>(Step 3.4.1) Close CRD Flow Control Valve FV-146-F002A(B) as follows:</p> <p>(Step 3.4.1.a) Place CRD Flow Controller FC-C12-1R600 in MANUAL.</p> <p>(Step 3.4.1.b) Set CRD Flow Controller FC-C12-1R600 to 0% DEMAND SIGNAL.</p> <p>(Step 3.4.1.c) Verify CRD Flow Control Valve FV-146-F002A(B) CLOSED.</p> <p>(Step 3.4.2) Start standby CRD Pump 1P132B(A) by placing control switch to RUN position.</p>
BOP	Operates SRV control switches as necessary to stabilize Rx Pressure 800-1050#

Scenario Summary and Administration Instructions

BOP		<p>Places Suppression Pool Cooling in service: (OP-149-004 Attachment A) Places system in service: (Step 1) Places ESW in service by depressing ESW Pump 0P504A(B)(C)(D) RUN pushbutton (Step 2) Opens HV-151-F028A(B) SUPP CHMBR SPR TEST SHUTOFF (Step 3) Closes HV-151-F017A(B) RHR INJ FLOW CTL (Step 4) Starts 1P202A(B)(C)(D) RHR PUMP</p> <p>Establishes cooling lineup: (Step 1a) Throttles open HV-151-F024A(B) TEST LINE CTL to establish total loop flowrate 9,500 to 10,000 gpm as indicated on FI-E11-1R603A(B) RHR A/C (B/D) Flow (Step 1b) Places RHRSW in service to heat exchanger: (1) Verifies Unit 2 HV-21210A(B) RHRSW Hx A(B) INLET CLOSED (2) Opens HV-11210A(B) Unit 1 RHRSW Hx A(B) INLET to 10% Open (3) Opens HV-11215A(B) Unit 1 RHRSW Hx A(B) OUTLET (4) If required, places HS-11202A3(B3) RHRSW PUMP A(B) LOCA-TRIP switch to RESET (5) Starts 1P506A(B) RHRSW Pump A(B) (6) Throttles HV-11210A(B) Unit 1 RHRSW Hx A(B) INLET to establish 8000 to 9000 gpm on FI-E11-1R602A(B) RHRSW HX A(B) INLET FLOW (7) Places HV-151-F048A(B) HX A(B) SHELL SIDE BYPS Control Switch to OFF/LOCA RESET position (8) Verifies White Indicating Light Illuminated above HV-151-F048A(B) Control Switch (9) Closes HV-151-F048A(B) HX A(B) SHELL SIDE BYPS (Step 1c) Monitors Suppression Pool Temperature</p>
BOP/ATC		<p>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</p>
●BOP		<p>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</p> <p><u>Evaluator Note:</u> RCIC will not be required until after HPCI trips. RCIC has been overridden during initial actions to stop and prevent injection. RCIC has failed to start automatically and requires manual operator action to startup</p>
BOP		<p>Recognizes HPCI turbine trip and cause unknown. Reports trip and RPV water level/trend to SRO</p>

Scenario Summary and Administration Instructions

BOP	<p>Evaluator Note: <i>RCIC requires manual component by component startup, which will be performed after HPCI trips. RCIC will be manually started up and will trip shortly after RCIC injection is established, requiring the crew to enter EO-100-112 Rapid Depressurization due to loss of all high pressure feed and inability to restore and maintain >-161".</i></p> <p>RCIC –</p> <ol style="list-style-type: none"> 1. Open RCIC L-O COOLER WTR SUPPLY HV-150-F046. 2. Start RCIC BARO CDSR VACUUM PP 1P219. 3. Open STEAM TO RCIC TURBINE HV-150-F045. 4. Throttle Open TURBINE TRIP AND THROTTLING HV-15012 until turbine speed > 2200 rpm. 5. <u>WHEN</u> RCIC Pump discharge pressure > 190 psig with flow < 75 gpm, Ensure RCIC MIN FLOW TO SUPP POOL FV-149-F019 OPENS. 6. Using TURBINE TRIP AND THROTTLE HV-15012, Raise RCIC pump discharge pressure within 50 psig of reactor pressure. 7. Open RCIC INJECTION HV-149-F013. 8. Using TURBINE TRIP AND THROTTLING HV-15012, Establish desired flow. 10. Ensure MIN FLOW TO SUPP POOL FV-149-F019 CLOSES
BOP	<p>Reports trip of RCIC and current RPV level and trend</p> <p>Evaluator Note: Level indication transition from Wide Range to Fuel Zone is at -145" on Wide Range indication, at which point will result in corrected Fuel Zone level being declared <-161" (TAF)</p>

Scenario Summary and Administration Instructions

■BOP	<p>Stops and prevents RHR injection by performing one of the following from OP-149-001 Attachment A:</p> <p>2. IF RHR initiated and RPV pressure >420 psig, Prevent injection per following:</p> <ol style="list-style-type: none"> a. Place pump control switches to STOP and then Release. b. Observe white pump override lights ILLUMINATED, and NO RHR Pumps running. <p>3. IF RHR not initiated, Prevent injection per following:</p> <ol style="list-style-type: none"> b. Arm AND Depress initiation buttons HS-E11-1S20A and HS-E11-1S20B. c. Place RHR pump control switches to STOP, then Release d. Observe white pump override lights ILLUMINATED, and NO RHR Pumps running.
■BOP	<p>Stops and prevents Core Spray injection by performing the following from OP-151-001 Attachment C:</p> <p>2. IF Core Spray NOT initiated, or initiated but NOT injecting, (> 420 psig Rx Press) Prevent injection:</p> <ol style="list-style-type: none"> a. IF Core Spray NOT initiated, Arm AND Depress initiation button HS-E21-1S16A(B). b. Shutdown pumps: <ol style="list-style-type: none"> (1) Place pump control switches to STOP AND Release. (2) Observe white pump override lights ILLUMINATED. (3) Observe no Core Spray pump running.
■BOP	<p>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</p>
●BOP	<p>Restores RPV level to between -60" and -161" using OP-149-001 Att A Section 4:</p> <ol style="list-style-type: none"> 1. Closes RHR Inj Flow Ctl HV-151-F017A(B) 2. Start RHR Pump 1P202A(B)(C)(D) 3. Slowly throttles open RHR Inj Flow Ctl HV-151-F017A(B) <p>Communicates with ATC, who is monitoring NI's</p> <p>Evaluator Note: <i>RHR injection flow control valves HV-151-F017A(B) cannot be closed until the 45 second initiation time delay has elapsed. Must wait until RPV pressure <420 psig and time delay have elapsed.</i></p>
BOP	<p>When directed by SRO, continues to raise reactor water level to +20"→+45" using low pressure ECCS while coordinating with ATC to ensure no re-criticality occurs</p>

Scenario Summary and Administration Instructions

		Evaluator Note: Scenario may be terminated once the ATWS has been terminated and low pressure ECCS is being used for level control
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POST SCENARIO: Have the applicant in the CRS position identify the highest EAL classification for the combination of events experienced during the scenario.

Evaluator Note: If RPV level during the scenario was ever <-205 ", highest classification will be General Emergency under **MG3**; if RPV level did not ever go below -205 ", highest classification will be Site Area Emergency under **MS3** and **FS1**.

Applicable classifications: **MG3/MS3** based upon Table M, and **FS1** based upon Table F of EP-TP-001.

<p>FS1: Loss OR Potential Loss of ANY Two Barriers Loss of RCS barrier based upon criteria 2.b: RPV Level <-161" AND Loss or Potential Loss of Fuel Clad Barrier based upon criteria 1.b: Potential Loss: RPV Level <-161" Loss: RPV Level <-205"</p>

<p>MS3: (s) exist that indicate that Reactor Protection System setpoint was exceeded AND RPS, ARI, and Manual Scram/ARI fail to initiate and complete a scram that reduces reactor power to $<5\%$.</p>

<p>MG3: Indication(s) exist that indicate that Reactor Protection System setpoint was exceeded AND RPS, ARI, and Manual Scram/ARI fail to initiate and complete a scram that reduces reactor power to $<5\%$. AND A. Reactor water level cannot be maintained >-205"</p>

UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 TO/DA/Y _____
Date

SHIFT 1900 to 0700
Start End

SHIFT 0700 to 1900
Start End

MODE 1

MODE _____

POWER LEVEL 68 %

POWER LEVEL _____ %

GENERATOR OUTPUT 910 MWe

GENERATOR OUTPUT _____ MWe

CASK STORAGE GATE INSTALLED: YES/NO NO

CASK STORAGE GATE INSTALLED: YES/NO _____

NRC CODE PRIOR TO 0800 Tango Golf Indigo Foxtrot

NRC CODE AFTER 0800 Oscar November Indigo Mike

REMARKS:

- 1) Power reduced per GO-100-012, complete through Step 5.3.16.
- 2) Inserted control rods per CRC steps 185 thru 177, then reduced flow
- 3) Condensate Pump 1B is out of service for repairs – motor replacement
- 4) 'D' Circ Water Pump was s/d as part of GO-100-012 actions
- 5) 'B' CRD Pump is in service
- 6) Voltage Regulator is in Manual
- 7) Shift activities are to:
 - Swap SW Pumps so maintenance can take vibration readings on 1C SW Pump.
 - Maintain ≈68% power with Recirc
- 8) _____
- 9) _____
- 10) (Unit 2 is at 60% for water box cleaning and rod pattern exchange)
- 11) _____
- 12) _____

COMMON:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) (NRC SCN 1)

OFFGOING UNIT SUPERVISOR CHECKLIST:

1900-0700	0700-1900
MJ	
MJ	
MJ	
MJ	

1. Evolutions in progress and items to be completed during next shift, as noted in remarks, have been discussed with oncoming Unit Supervisor.
2. Problems encountered during past shift and abnormal plant conditions, as noted in remarks, have been discussed with oncoming Unit Supervisor.
3. Information in SOMS Log is complete and discussed with oncoming Unit Supervisor.
4. As applicable turnover plastic Security Badge cover and CRS Monitor function to oncoming Unit Supervisor.

1900 - 0700 M. Jacobetti
 0700 - 1900 _____
 Offgoing Unit Supervisor

ONCOMING UNIT SUPERVISOR CHECKLIST:

0700-1900	1900-0700

(14)

1. LCO/TRO Log reviewed.
2. SOMS Log reviewed for entries made in past 24 hours.

0700 - 1900 _____
 1900 - 0700 _____
 Oncoming Qualified Unit Supervisor

POST RELIEF

0700-1900	1900-0700

1. Walk down Control Room panels with Unit Responsible PCO.
2. CRC Book reviewed and Reactivity Brief performed with PCO.
3. Completed System Status Operable audit for open PMT this shift.

0700 - 1900 _____
 1900 - 0700 _____
 Oncoming Unit Supervisor

Facility: Susquehanna

Scenario No.: 2

Op-Test No.: _____

Examiners: _____

Operators: _____

Initial Conditions:

Unit at 11% power with Drywell N2 Purge In Progress

Turnover: Unit 1 is at 950 psig and ~ 11% power A2SU Step 256, continuing plant startup with containment purge in progress. 'A' RFP is in Discharge Pressure Mode and 'B' RFP is in Standby. The main turbine has been on turning gear for 5.5 hours. The crew is expected to resume startup actions IAW GO-100-002 step 5.64.1 to ensure 3 element control is ready, place the first RFP in flow control mode in accordance with OP-145-001, 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	mfRM179011A f:100, cmfAV03_HV1571 3	I-BOP TS - SRO	SGTS A Rad Monitor instrument fails high with failure of the one of the inboard purge and make-up valve to isolate.
4	rfDB105101_f:open	C-BOP TS- SRO	Failure of MCC 1B217, which causes loss of 'A' loop of DW spray and ½ Scram which requires a transfer of the RPS Bus power supply and reset of the ½ Scram.
5	N/A	C-BOP SRO	RBCCW pump swap due to excessive seal leakage on running pump.
6	+8.1 set fx1RRPB_B21.SET PT=45 +9.11 set fx1RRPA_B21.SET PT=90	C-ATC SRO	'A' Recirc pump speed oscillation/Lock up the 'A' Recirc pump.
7	mfMS183011B mfMS183010B d:1 f:45	C - BOP TS- SRO	SRV 'B' inadvertently opens (TS)/ initiate Suppression Pool cooling (ON-183-001, Stuck Open Safety Relief Valve)
8	mfMS183013B d:2:00 i:40 f:100 r:720	M -- ALL	SRV 'B' SUPP Chamber Tailpipe Break.

9	cmfPM06_1P202B(D) r:4:00_f:100	C- BOP/AT C	Running RHR pump trips on pre-overload (shaft seizure).
10		ALL	Initiate SC and 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

Event 1: The scenario begins with Unit 1 at ~950 psig and ~11% power during reactor startup with containment (DW) purge in progress. Following turnover the crew is expected to resume startup actions IAW GO-100-002 by ensuring 3 element control is ready and placing the first RFP in flow control mode.

Event 2: 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%.

Event 3: 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 valves will fail to isolate, crew should recognize and take actions to close the valve and reference TS.

Event 4: 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, reset the half-scram, and restore cooling to the Reactor Recirc Pumps. TS will be referenced.

Event 5: 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.

Event 6: After swapping the 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 the 'A' Recirc pump scoop tube to prevent further speed changes.

Event 7-8: Following the Recirc pump speed oscillation, the 'B' SRV will inadvertently open, requiring the crew to take actions to close the valve in accordance with ON-183-001 and place suppression pool cooling in service. The crew will not be successful in closing the SRV (per ON requiring manual scram), and a rupture of its tail pipe in the suppression pool chamber will occur. The crew will initiate a manual scram and execute PC control E0-100-103 due to DW pressure increase.

Event 9: The running Div 2 RHR pump will trip on pre-overload due to shaft seizure the crew should recognize that the loop has drained down and 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 perform a slow fill of the loop, start the other RHR pump, initiate Suppression chamber spray and when suppression chamber pressure exceeds 13 psig, the crew will initiate drywell sprays. The scenario will be terminated after DW spray has been initiated.

INSTRUCTIONS FOR SIMULATOR OPERATOR

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION																								
	<ul style="list-style-type: none"> ■ Ensure NRC2 IC and scenario files are loaded on the server: <ul style="list-style-type: none"> - 388.ic and relap_snap_388 copied in applicable IC folder - NRC2.scn and NRC2A files copied in applicable SCN folder ■ Reset simulator to Scenario IC-388 <ul style="list-style-type: none"> - Take out of FREEZE and run scenario file NRC2, then ensure thermal power is approximately 11% 																								
	<ul style="list-style-type: none"> ■ Ensure materials for applicants: <ul style="list-style-type: none"> - Markup of simulator copy of GO-100-002 to step 5.64.1. - A2SU Sequence at Step 256 {NEED TO PROVIDE TWO MARKED UP COPIES} - Prepare a turnover sheet: <ul style="list-style-type: none"> ○ 11% power EOL startup i/p, 950 psig ○ A2SU sequence step 256 ○ 'A' RFP is in DPM and 'B' is in Standby ○ Main Turbine has been on the Turning Gear for 5 ½ hours ○ Drywell N2 purge is in progress. Outside NPO stationed at the N2 truck ○ Shift activities are for: <ul style="list-style-type: none"> • PCOM to place 'A' RFP in Flow Control Mode iaw OP-145-001 • Crew to continue to raise power to 15% in preparation for generator synchronization ○ (Unit 2 is at 100%) 																								
	<ul style="list-style-type: none"> ■ Ensure the following malfunction is loaded: <ul style="list-style-type: none"> - IMF cmfAV03_HV15713 ■ Ensure the following Soft Keys are assigned for SCN2: <table style="width: 100%; border: none;"> <tbody> <tr> <td style="padding: 2px;">{Key[1]} IMF mFRM179011A f:100</td> <td style="padding: 2px;">SGTS A Rad Monitor instrument fails high</td> </tr> <tr> <td style="padding: 2px;">{Key[2]} IRF rPC159014 f:0</td> <td style="padding: 2px;">Close N2 Purge</td> </tr> <tr> <td style="padding: 2px;">{Key[3]} IRF rfdB105101_f:OPEN</td> <td style="padding: 2px;">Failure of MCC 1B217</td> </tr> <tr> <td style="padding: 2px;">{Key[4]} IRF rRW114001 f:0</td> <td style="padding: 2px;">Closes A RBCCW Pump Discharge Valve</td> </tr> <tr> <td style="padding: 2px;">{Key[5]} IRF rRW114001 f:100</td> <td style="padding: 2px;">Opens A RBCCW Pump Discharge Valve</td> </tr> <tr> <td style="padding: 2px;">{Key[6]} IRF rFDB106275 f:OPEN</td> <td style="padding: 2px;">Opens 1A RBCCW Pp Breaker</td> </tr> <tr> <td style="padding: 2px;">{Key[7]} scn NRC2A</td> <td style="padding: 2px;">Recirc pump Speed Oscillation</td> </tr> <tr> <td style="padding: 2px;">{Key[8]} IMF mfMS183011B</td> <td style="padding: 2px;">SRV 'B' stuck open</td> </tr> <tr> <td style="padding: 2px;">{Key[8]} IMF mfMS183010B d:1 f:100</td> <td style="padding: 2px;">SRV 'B' stuck open</td> </tr> <tr> <td style="padding: 2px;">{Key[9]} IMF cmfRV06_PSV141F13B</td> <td style="padding: 2px;">Simulates pulling Fuses B21C-F021 & B21C-F022</td> </tr> <tr> <td style="padding: 2px;">{Key[10]} DMF cmfRV06_PSV141F13B</td> <td style="padding: 2px;">Simulates inserting Fuses B21C-F021 & B21C-F022</td> </tr> <tr> <td style="padding: 2px;">{Key[11]} IMF mfMS183013B i:40 f:100 r:720</td> <td style="padding: 2px;">SRV 'B' Suppression Chamber</td> </tr> </tbody> </table> 	{Key[1]} IMF mFRM179011A f:100	SGTS A Rad Monitor instrument fails high	{Key[2]} IRF rPC159014 f:0	Close N2 Purge	{Key[3]} IRF rfdB105101_f:OPEN	Failure of MCC 1B217	{Key[4]} IRF rRW114001 f:0	Closes A RBCCW Pump Discharge Valve	{Key[5]} IRF rRW114001 f:100	Opens A RBCCW Pump Discharge Valve	{Key[6]} IRF rFDB106275 f:OPEN	Opens 1A RBCCW Pp Breaker	{Key[7]} scn NRC2A	Recirc pump Speed Oscillation	{Key[8]} IMF mfMS183011B	SRV 'B' stuck open	{Key[8]} IMF mfMS183010B d:1 f:100	SRV 'B' stuck open	{Key[9]} IMF cmfRV06_PSV141F13B	Simulates pulling Fuses B21C-F021 & B21C-F022	{Key[10]} DMF cmfRV06_PSV141F13B	Simulates inserting Fuses B21C-F021 & B21C-F022	{Key[11]} IMF mfMS183013B i:40 f:100 r:720	SRV 'B' Suppression Chamber
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{Key[11]} IMF mfMS183013B i:40 f:100 r:720	SRV 'B' Suppression Chamber																								

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<p style="text-align: right;">Tailpipe Break</p> <p>{Key[12]} IMF cmfPM06_1P202B r:4:00 f:100 RHR pump B trips on pre-overload (shaft seizure)</p> <p>{Key[13]} IMF cmfPM06_1P202D r:4:00 f:100 RHR pump D trips on pre-overload (shaft seizure)</p> <p>■ Ensure NRC2A loads: +8.1 set fx1RRPB_B21.SETPT=45 +9.11 set fx1RRPA_B21.SETPT=90</p>
	<p>■ Reset any annunciators that should not be present</p>

EVENT 1: Place first RFP in flow control mode

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<p>■ Respond to request for assistance as appropriate.</p>

EVENT 2: Raise power until reactor power is close to but less than ~ 16%

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<p>■ Remind NRC Lead Examiner of need to wait until close to 16% prior to moving on to ensure RPV level drops below 13" for level setpoint setdown so FW does not overfeed the RPV.</p>
	<p>■ Respond to request for assistance as appropriate</p>

EVENT 3: SGTS A Rad Monitor instrument fails high.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<p>■ Click Soft Key 1 (SGTS A Rad Monitor instrument High failure) after reactivity manipulation has been satisfied and chief examiner is ready to proceed</p>
	<p>■ When contacted as the NPO to close the nitrogen purge valve, click Soft Key 2 (Close N2 Purge) and report that the valve is closed.</p>
	<p>■ When contacted as the WWM for support to deactivate DW Vent OB Isol HV-15714, acknowledge the request and inform the caller you will contact FIN. Take no further action.</p> <p>■ Respond to request for assistance as appropriate.</p>

EVENT 4 : Failure of MCC 1B217

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Click Soft Key 3 (Failure of MCC 1B217) after manual closure of purge and make-up valve, TS call, shutdown of SGTS, restoration of SGTS to standby alignment, and when chief examiner is ready to proceed.
	<ul style="list-style-type: none"> ■ As RB NPO directed to investigate loss of 1B217, wait two minutes and report that there is a burnt smell at 1B217, but no fire. When directed to check 1B210-013, feed to 1B217, report that the breaker is tripped. ■ When contacted as WWM to dispatch FIN, acknowledge request. Wait five minutes and report back as EM that 1B217 has internal damage and estimated repair time is unknown.
	<ul style="list-style-type: none"> ■ As NPO directed to check 1L650, wait one minute and report that 1D653A is de-energized, 1D652 voltage is normal, and 1D653B is in service.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate.

EVENT 5 : RBCCW pump swap due to excessive seal leakage.

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ After ½ scram reset, cooling is restored to RRP's, and chief examiner is ready to proceed, notify the control room as the RB NPO that there is excessive seal leakage on running RBCCW pump.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate (Use P&ID RW1 when requested to provide local pressures. Provide actual values) ■ Click Soft Key 4 (Closes A RBCCW Pump Dis Valve) when directed to close 1A RBCCW Pp Disch valve 113062 ■ Click Soft Key 5 (Opens A RBCCW Pump Dis Valve) if directed to open 1A RBCCW Pp Disch valve 113062 ■ Click Soft Key 6 (Opens 1A RBCCW Pump Bkr) when directed to open breaker 1B216-103 for 1A RBCCW Pump ■ When directed to close 1A RBCCW Pump suction valve 113057 report the valve is closed and the leak is slowing down. ■ If directed to reclose 1A RBCCW Pp Disch valve 113062 click Soft Key 5, again

EVENT 6: 'A' Recirc pump speed oscillation

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Click Soft Key 7 (Recirc pump Speed Oscillations) upon RBCCW pump swap completion and chief examiner is ready to proceed.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 7: SRV 'B' inadvertently opens

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Click Soft Key 8 (SRV stuck open) after 'A' Recirc pump scoop tube lockup and chief examiner is ready to proceed.
	<ul style="list-style-type: none"> ■ When contacted as the NPO to pull fuses B21C-F021 and B21C-F022 in 1C628 URR, wait two minutes and click Soft Key 9 (Simulates pulling fuses). Call the RO and inform him both fuses are removed. ■ If directed to reinstall the fuses, wait one minute and click Soft Key 10 (Simulates inserting fuses), then inform the RO both fuses are installed.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate.

EVENT 8: SRV 'B' SUPP Chamber Tailpipe Break

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Click Soft Key 11 (SRV 'B' Suppression Chamber Tailpipe Break) after Suppression Pool Cooling is placed in service and chief examiner is ready to proceed.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate.

EVENT 9: RHR pump trips on pre-overload

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Monitor PNOV 1C601B insert for RHR F024B and F027B, when candidate opens the respective valve to initiate Suppression Pool Cooling or Suppression Chamber sprays, and the lead examiner is ready to proceed trip the running RHR Pump, by: <ul style="list-style-type: none"> • clicking Soft Key 12 (RHR pump B trip on pre-overload), if 1B RHR Pump is in service. • clicking Soft Key 13 (RHR pump D trip on pre-overload), if 1D RHR Pump is in service.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate.

Post Scenario.

	SIMULATOR OPERATOR ACTION
	Once the scenario is run on the last crew, ensure that input to OD3 is restored to LEFM, from Venturis

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
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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
	ATC	Obtains OP-145-001 and determines Section 2.10 is applicable.
	ATC	Step 2.10.3 Ensure the A RFP VLV CONTROL is selected to AUTO , by observing the A RFPT AUTO VLV CTL button is backlit yellow and Auto text appears next to the 603A and 651A valve icons.
	ATC	Step 2.10.4 Ensure the LIC-C32-1R602 FW LO LOAD DEMAND SIGNAL to LV-10641 is in AUTO .
	ATC	Step 2.10.5 Ensure the Level Setpoint on the FW LEVEL CTL/DEMAND SIGNAL controller, LIC-C32-1R600 is set for 35 inches
	ATC	Step 2.10.6 Place Rx FEED PUMP A RECIRC FLOW controller FIC-10604A in MANUAL and Adjust output to 10%.
	ATC	Step 2.10.7 Ensure FWLC-3E Control is Enabled, by Observing/Performing the following as applicable: <ul style="list-style-type: none"> 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.
	ATC	Step 2.10.8 Touch the <u>A RFPT FLOW CTL MODE</u> 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
	ATC	<p>Step 2.10.9</p> <p>Touch the <u>ENTER FLOW CONTROL MODE</u> button on the confirmation overlay screen.</p>
	ATC	<p>Step 2.10.10</p> <p>Observe the following sequence of events:</p> <ol style="list-style-type: none"> 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. <u>AFTER</u> 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. <ol style="list-style-type: none"> 1. WHEN RFP Discharge Flow is ~ 1.50 Mlbm/hr, the Rx FEED PUMP A RECIRC VLV FV-10604A FULLY CLOSES, if in AUTO.
	ATC	<p>Step 2.10.11</p> <p><u>IF not</u> aligned in a RFP Warming Alignment, Align the FW LO LOAD DEMAND SIGNAL TO LV-10641 controller in Auto Standby as follows:</p> <ol style="list-style-type: none"> a. Touch the <u>INC/DEC LEVEL SETPT</u> 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
	ATC	<p>Step 2.10.12</p> <p>Perform the following on the RFP_A HMI screen to ENABLE the RFP Suction Pressure Feature:</p> <ul style="list-style-type: none">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 <u>A RFPT SUCT PRESS FEATURE</u> button.d. Touch the <u>ENABLE RFP SUCT PRSS</u> 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
		<p>PROCEED TO THE NEXT EVENT.</p>

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 5.65.
		NRC Lead Examiner Note: Need to wait until close to 16% prior to moving on to ensure RPV level drops below 13" for level setpoint setback so FW does not overfeed the RPV.
	ATC	Raise power until reactor thermal power is CLOSE TO BUT LESS than 16% (approximately 3 Bypass Valves full open). Beginning at Step 256 of the A2SU Sequence, single notch withdraws the following rods, as need, to positions noted until power is just below 16%: <ul style="list-style-type: none">- 26-27 from 00 to 04- 18-43, 42-43, 18-19, 42-19, 10-35, 50-35, 50-27 from 04 to 08.
	BOP	Provides peercheck for Rod withdraws.
PROCEED TO THE NEXT EVENT.		

Op-Test No.: ____ Scenario No.: 2 Event No.: 3

Event Description: SGTS A Rad Monitor instrument fails high with failure of one of the inboard purge and make-up valves to isolate.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none">• Acknowledges and reports SGTS Exhaust Vent Hi-Hi Radiation alarm, AR-015-001(H01) and SGTS Exhaust Vent Hi Radiation alarm, AR-015-001 (H02), on panel 0C653 to SRO.• Implements AR-015-001(H01) Section 2 Operator Actions:<ol style="list-style-type: none">1. Ensures automatic action in section 3.1 occurred2. Determines HV-15713 failed to close, reports it to the SRO, depresses its Close pushbutton, and ensures damper closes. Reviews alarm response procedure and determines3. Note: Applicant may determine that HV-15714 and HV-15721 failed to close from alarm response, however, only HV-15713 failed to Close. Checks SGTS Rad recorder RR-D12-0R609 on 1C600 panel and determines problem is only with the "A" Rad Monitor.<ul style="list-style-type: none">• CH A indicates ~ 100 mr/hr• CH B indicates ~ 0.0603 mr/hr

Op-Test No.: ____ Scenario No.: 2 Event No.: 3

Event Description: SGTS A Rad Monitor instrument fails high with failure of one of the inboard purge and make-up valves to isolate.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Secures containment venting/purging operations in accordance with OP-173-001, Containment Atmosphere Control, beginning at step 2.2.8 n. <ul style="list-style-type: none"> ▪ At Panel 0C681, Depress SGTS CLG OA DMP HD07555A(B) OPEN pushbutton ▪ Observe SGTS CLG OA DMP HD07555A(B) OPENS for 120 seconds to allow suction flow path when purge lineup isolated. ▪ Close following: <ul style="list-style-type: none"> • CONTN N₂ PURGE OB ISO HV-15721 • DRWL PURGE IB ISO HV-15722 • DRWL VENT IB ISO HV-15713. • DRWL VENT OB ISO HV-15714 • DRWL VENT BYPS OB ISO HV-15711. • DRWL/WETWELL BURP DMP HD-17508A. • DRWL/WETWELL BURP DMP HD-17508B. • Depress N2 PURGE FLOW CTL FIC-05719 CLOSE pushbutton until indication at 0% OPEN.Shuts down 'A' SGTS Fan in accordance with OP-070-001, section 2.3: <ul style="list-style-type: none"> ▪ Opens SGTS Clg Outside Air Damper HD-07555A by depressing pushbutton ▪ Closes purge dampers HD-175008A & B ▪ Places 'A' SGTS Fan to Stop then back to Auto Lead. • Upon securing 'A' SGTS Fan, Alarm F-16 "HVAC DIV 1 System" may come in on panel AR016 (OC 653).Informs SRO that purge alignment is restored and 'A" SGTS Fan is returned to standby alignment.
	SRO	<ul style="list-style-type: none"> • References TS 3.6.1.3. Determines Condition A, Required Actions A.1 (isolate by deactivating closed valve within 4 hrs) applies. • Contacts WWM to inform him of the Rad Monitor failure and requests de-activation of HV-15714 in the closed position.

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	<p>NRC Lead Examiner Note: After manual closure of purge and make-up valve, TS Call, shutdown of SGTS, and restoration of SGTS to standby alignment, proceed to the next event.</p> <p>Respond to the following alarms:</p> <ul style="list-style-type: none"> ▪ ESS 480V LC 1B210 Trouble (A04) on panel 0C653 AR016 ▪ RPS Channel A1/A2 Auto Scram (A01) on panel 1C651 AR103 <p>Informs SRO power, pressure, and level are stable and loss of RPS A normal power supply.</p>
	SRO	<p>Refers to ON-104-201 Loss of 4KV ESS Bus 1A (1A201) Attachment E for MCC 1B217 load list and impact</p> <ul style="list-style-type: none"> ▪ Recognizes loss of 'A' train of Containment spray. ▪ Recognizes loss of RPS channel A. <p>Enters and directs BOP to perform ON-158-001</p> <p>Refers to TS3.8.7, determines Condition A. Required Action A.1 applies (restore 1B217 to operable within 8 hrs)</p> <p>Contacts WWM to request FIN to investigate loss of 1B217.</p> <p>Enters TR 3.4.1 due to loss of sampling</p>
	ATC	<ul style="list-style-type: none"> ▪ Resets RPS Trip System by Momentarily Positioning RPS SCRM RESET control Switch HS-C72A-1S05 as follows: <ul style="list-style-type: none"> ○ To GRP 1/4 position ○ To GRP 2/3 position ▪ Observes following alarm CLEAR: <ul style="list-style-type: none"> ○ RPS Channel A1/A2 AUTO SCRAM ○ RPS Channel B1/B2 AUTO SCRAM ○ SCRAM PILOT VALVE AIR HEADER LO PRESS.
	BOP	<ul style="list-style-type: none"> ▪ Dispatches Operator to MCC 1B217 and 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
	BOP	<ul style="list-style-type: none"> ▪ Aligns RPS M-G Set to Alternate Power IAW ON-158-001 step 1.2 ▪ At Reactor Control Rod Test Instrument Panel 1C610: <ul style="list-style-type: none"> 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. 1.2.3 Place RPS M-G SET TRANSFER SWITCH HS-C72B-S1 in ALT A position. <ul style="list-style-type: none"> ○ Informs ATC of requirement to reset RPS Trip System by. ▪ Step 2, Reset NSSSS isolation logic as follows: <ul style="list-style-type: none"> 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.
	BOP	<ul style="list-style-type: none"> ▪ Step 3, Recover from RBCW isolation as follows: <ul style="list-style-type: none"> 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	<p>NRC Lead Examiner Note: Once RPS power supply transferred to alternate, ½ Scram reset, and RBCW isolation is recovered, proceed to the next event.</p> <ul style="list-style-type: none"> ▪ Directs the BOP to swap RBCCW pump IAW OP-114-001, Reactor Building Close Loop Cooling Water System (RBCCW).
	BOP	<p>Step 2.2 of OP-114-001</p> <p>2.2.3 At Panel 1C668, Start standby RBCCW PUMP 1P210B by Depressing START push button.</p> <p>2.2.4 Observe RBCCW Pump B discharge pressure between 90-110 psig on local pressure gage PI-11306B.</p> <p>2.2.5 Slowly Close running RBCCW Pump A Dsch 113062.</p> <p>2.2.6 Stop running RBCCW PUMP 1P210A by Depressing STOP push button.</p> <p>2.2.7 Check RBCCW Pump B discharge pressure between 80-95 psig on local gauge PI-11306B.</p> <p>2.2.8 Check RBCCW HX discharge pressure on PI-11308, Panel 1C668 stabilizes between 72-82 psig.</p> <p>2.2.9 Open RBCCW Pump A Dsch 113062.</p> <ul style="list-style-type: none"> • Open breaker 1B216-103 for 1A RBCCW pump • Close 1A RBCCW Pump Suction 113057 • Close 1A RBCCW Pump discharge 113062
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	<ul style="list-style-type: none"> ▪ Recognizes and reports changing Reactor power. ▪ Recognizes and reports the 'A' Recirc pump oscillations. <ul style="list-style-type: none"> ○ Oscillations of ~ 2-3% power. ▪ Recognizes and reports the oscillation as an entry into ON-156-001, Unanticipated Reactivity Change. ▪ May reduce power (to power level prior to start of oscillations) AND lock the affected scoop tube OR trip the affected pump. <p><u>Immediate Operator Actions</u></p> <ul style="list-style-type: none"> ▪ 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. <ul style="list-style-type: none"> ○ ○ Examiner Note: If applicant decides to trip the pump then SRO should enter ON-164-002 for loss of recirc flow. Also, Due to the power being low in the IC and the RRP's are near the #1 limiter, power may not change much, therefore, crew may not need to reduce power. ▪ 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 scrambled rods. ▪ Step 4.3, IF time permits, Initiate TRA. ▪ Step 4.4, IF applicable, Perform ON-178-002 Core Flux Oscillations.
	SRO	<ul style="list-style-type: none"> ▪ Ensure ATC reduced power AND locked the affected scoop tube OR tripped the affected pump. ▪ Enters ON-156-001, Unanticipated Reactivity Change ▪ NRC Lead Examiner Note: Because pump speeds are low, flow mismatch between the loops will not be large enough for TS 3.4.1 Condition B to apply, however, if the crew trips the pump, then the SRO will have to address single loop TS 3.4.1 Condition C which requires establishing single loop setpoints within 12 hours.
	BOP	<ul style="list-style-type: none"> ▪ Perform ON-156-001, Unanticipated Reactivity Change

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

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
	BOP	Respond to the following alarms: <ul style="list-style-type: none"> ▪ Main Steam SRV Leaking (E1) on panel AR110 ▪ Main Steam Div 1 SRV Open (E2) on panel AR110 ▪ Recognizes and reports SRV 'B' open
	BOP	<ul style="list-style-type: none"> ▪ Takes action IAW AR-110-001, Main Steam Div 1 SRV open (E02) <ul style="list-style-type: none"> ○ Check for any Division 1 Safety Relief Valve open (1C601 acoustic monitor red light on). ○ Check relief valve discharge line temperatures on SRV/ADS Temperature TR-B21-1R614 at Panel 1C614. ○ <u>IF</u> safety relief valve open, Perform ON-183-001 Stuck Open Safety-Relief Valve. ○ Inform SRO that due to steam discharged to Suppression Pool, TS 3.6.1.6 applies. ON-183-001, <ul style="list-style-type: none"> ▪ 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 <u>did not</u> CLOSE, Perform the following: <ul style="list-style-type: none"> ○ Obtain concurrence from Shift Supervision, THEN Place the 'B' SRV control switch to OPEN. ○ Return SRV control switch to OFF. ○ Check for SRV closure IAW Section 3.4 of this procedure. ○ 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
		<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ Determines from Attachment A that Fuses B21C-F021 and B21C-F022 are for "B" SRV and contacts the TB NPO to pull the fuses in 1C628 (12/754'. ▪ Check for SRV CLOSURE IAW Section 3.4 of this procedure. ▪ 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. ▪ OR ▪ May enter EO-100-003 for high Suppression Pool temperature > 90°F and maximize suppression pool cooling by placing both trains of suppression pool cooling in service. <ol style="list-style-type: none"> 1. Places ESW in service, buy starting one pump in each division. 2. Places RHRSW in service to RHR heat exchanger B. 3. Opens Suppression Chamber test shutoff valve HV-151-F028B. 4. Starts RHR pump 1P202B (D). 5. Throttles open test line control valve HV-F024B to achieve ≤ 10,000 gpm on FI-E11-1R603B. 6. Observes minimum flow valve HV-151-F007B closes at ~ 3000 gpm. 7. Closes heat exchanger bypass HV-151-F048B. 8. Checks RHR pump room coolers 1V210B (D) started.
	BOP	Utilizes ON-100-101 Att B 1C601 PCO Actions Following A Scram to assess plant status.

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	<ul style="list-style-type: none"> ▪ Enters ON-183-001 Stuck Open Safety-Relief Valve. ▪ Directs BOP to perform ON-183-001 actions for "B" SRV. ▪ Concurs with placing the 'B' SRV control switch to OPEN and returning SRV control switch to OFF. ▪ Refers to NDAP-QA-0720 for required ENS notification
	SRO	<ul style="list-style-type: none"> ▪ Directs Reactor Scram iaw ON-183-001: <p style="margin-left: 20px;">Immediately Scram Reactor for ANY of the following:</p> <ul style="list-style-type: none"> ○ It is evident SRV WILL NOT close. ○ SRV is open AND BEFORE suppression pool temperature reaches 110°F. (TS 3.6.2.1) ○ Reactor Pressure approaching OR exceeds 1087 psig. <p>Examiner Note: If power was raised closer to 16% then they may drop below 13", if so, then the crew should enter RPV Control. If RPV level does not drop below 13", RFPs will trip on high RPV level following scram.</p> ▪ Enters RPV Control, EO-100-102 on report of RPV level < 13".
	ATC	<p>ON-100-101, SCRAM, SCRAM IMMINENT</p> <p><u>Immediate Operator Actions:</u></p> <p><u>Steps:</u></p> <p>4.1 Place Mode Switch HS-C72A-1S01 to SHUTDOWN</p> <p>4.2 Observe all Control Rods indicate fully inserted (using two indications, OD-7 completed as soon as possible)</p> <p>4.4 Insert IRMs and SRMs.</p> <p>4.5 Performs ON-100-101 Attachment A 1C651 PCO Actions Following a Scram</p>
		<p>Examiner Note: If RPV level does not drop below 13", causing FW to align for Startup Level Control, that the RFPs trip on high RPV level following scram due to "A" Remaining in FCM.</p>
<p>PROCEED TO THE NEXT EVENT.</p>		

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/AT C	<p>Examiner Note: After Suppression Pool Cooling is placed in service, notify booth operator to proceed Event 8 (SRV 'B' Suppression Chamber Tailpipe Break)</p> <ul style="list-style-type: none"> • Recognizes and reports drywell pressure going up fast. • Responds to ECCS LOOP A & B HI DRWL PRESS (A03) alarm • Responds to HI DRYWELL PRESS SIGNAL B SEALED-IN (B04) alarm. • Recognizes that Suppression Chamber pressure is leading Drywell pressure and informs crew that it appears there is a broken tailpipe in the Suppression Chamber.
	SRO	<ul style="list-style-type: none"> • Enters EO-000-102, RPV CONTROL, and enters EO-000-103, PRIMARY CONTAINMENT CONTROL, when drywell pressure exceeds 1.72 psig: <p style="margin-left: 40px;">Directs PCOs to perform panel walkdown for:</p> <ul style="list-style-type: none"> • Isolations • Initiations • D/G starts <ul style="list-style-type: none"> • Directs RPV level band +13 to +54 inches with RCIC and HPCI • Directs prevention of injection from LPCI and CS pumps. • Directs Suppression Chamber Spray Loop 'B' to be placed in-service. • Directs 'A' Loop of Suppression Pool Cooling to be in placed in-service.

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	<p>OP-149-004, Step 2.8.2 or Att. 'A' Hard Card</p> <ul style="list-style-type: none"><li>• IF directed to spray Suppression Chamber:<ul style="list-style-type: none"><li>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 $\leq 10,000$ gpm.<li>b) Monitor Suppression Chamber pressure<li>c) IF required, Place RHRSW in service to RHR HX per section 2.9 or Att. 'A' Hard Card. <p><u>Caution</u></p> <p>Before Supp. Chamber pressure drops to 0 psig stop Supp. Chamber Spray</p> <p>Place 'A' Loop of RHR in Suppression Pool Cooling:</p> <ol style="list-style-type: none"><li>1. Opens Suppression Chamber test shutoff valve HV-151-F028A.<li>2. Starts RHR pump 1P202A (C).<li>3. Throttles open test line control valve HV-F024A to achieve $\leq 10,000$ gpm on FI-E11-1R603B.<li>4. Observes minimum flow valve HV-151-F007A closes at ~ 3000 gpm.<li>5. Closes heat exchanger bypass HV-151-F048A.<li>6. Checks RHR pump room coolers 1V210A (C) started.

PROCEED TO THE NEXT EVENT.

Op-Test No.: ____ Scenario No.: 2 Event No.: 9

Event Description: Running RHR pump B (D) trips on pre-overload causing loss of suppression pool cooling.

Time	Position	Applicant's Actions or Behavior
	* SRO	<p>Examiner Note: As soon as the applicant opens F024B and F027B to initiate Suppression pool cooling or suppression chamber sprays, notify booth operator to proceed Event 9 (Running RHR pump B (D) trips on pre-overload causing loss of suppression pool cooling)</p> <ul style="list-style-type: none"> ▪ 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).
	SRO	<ul style="list-style-type: none"> ▪ Directs RO to use the other RHR pump and align RHR D for DW spray.
	BOP	<ul style="list-style-type: none"> ▪ Recognizes and reports that running RHR pump B (D) tripped. ▪ Acknowledges the following alarm: <ul style="list-style-type: none"> ○ RHR Pump B (D) pre-overload (A07/08).

Op-Test No.: ____ Scenario No.: 2 Event No.: 9

Event Description: Running RHR pump B (D) trips on pre-overload causing loss of suppression pool cooling.

Time	Position	Applicant's Actions or Behavior
	* BOP	<p>OP-149-004, Step 5.b Att A Hard Card.</p> <p>IF potential RHR loop voiding has occurred, Start RHR as follows:</p> <ol style="list-style-type: none"> (1) Close HV-151-F047B HX B SHELL SIDE INLET. (2) Place HV-151-F048B Control Switch to OFF/LOCA RESET. (3) WHEN White Indicating Light above Control Switch ILLUMINATED, Close HV-151-F048B HX B SHELL SIDE BYPS. (4) Open HV-151-F024B.TEST LINE CTL (6) Start 1P202D (B) RHR PUMP. (7) Observe HV-151-F007B RHR PP B/D MIN FLOW REMAINS OPEN IF loop flow remains BELOW 3000 GPM. (8) Throttle Open HV-151-F048B HX B SHELL SIDE BYPS to establish a system flow rate between 3,000 and 3,500 gpm as indicated on FI-E11-1R603B RHR B/D FLOW . (9) Slowly Throttle Open HV-151-F048B HX B SHELL SIDE BYPS in 500 gpm increments followed by a 20 second pause to establish a system flow of 6,000 gpm as indicated on FI-E11-1R603B.RHR B/D FLOW (10) Throttle Open HV-151-F048B HX B SHELL SIDE BYPS to establish a system flow rate between 11,000 and 12,000 gpm as indicated on RHR B/D FLOW (11) Throttle Closed HV-151-F024A(B) TEST LINE CTL until $\leq 10,000$ gpm observed at FI-E11-1R603A(B).RHR FI-E11-1R603A(B) A/C(B/D) FLOW. (12) Fully Open HV-151-F048A(B) RHR HX A(B) SHELL SIDE BYPS . (13) Open HV-151-F047A(B) RHR HX A(B) SHELL SIDE INLET . (14) IF required, Close HV-151-F024A(B) TEST LINE CTL

Op-Test No.: ____ Scenario No.: 2 Event No.: 9

Event Description: Running RHR pump B (D) trips on pre-overload causing loss of suppression pool cooling.

Time	Position	Applicant's Actions or Behavior
	* BOP	<p>(12) Fully Open HV-151-F048B HX B SHELL SIDE BYPS</p> <p>(13) OPEN HV-151-F047B HX B SHELL SIDE INLET</p> <p>(14) Close HV-151-F024A(B) TEST LINE</p> <ul style="list-style-type: none"> ▪ Aligns RHR pump D for DW sprays when suppression chamber pressure exceeds 13 psig (CT-1). <p>OP-149-004, Step 2.8.3 or Att. A Hard Card</p> <ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Limits DW spray flow to between 1000 and 2800 gpm for first 30 seconds (CT-2).

POST-SCENARIO:

HAVE THE APPLICANT IN THE SRO POSITION IDENTIFY THE HIGHEST EAL CLASSIFICATION FOR THE COMBINATION OF EVENTS EXPERIENCED DURING THE SCENARIO.

Alert (FA1) Table F on pg 45 of EP-TP-001. EAL 2.d. DW pressure > 1.72 psig and Indication of a RCS leak inside containment (SRV stuck open w/ tailpipe break inside containment)

UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 TO/DA/Y _____
Date

SHIFT 1900 to 0700
Start End

SHIFT 0700 to 1900
Start End

MODE 1

MODE _____

POWER LEVEL 11 %

POWER LEVEL _____ %

GENERATOR OUTPUT 0 MWe

GENERATOR OUTPUT _____ MWe

CASK STORAGE GATE INSTALLED: YES/NO NO

CASK STORAGE GATE INSTALLED: YES/NO _____

NRC CODE PRIOR TO 0800 Tango Golf Indigo Foxtrot

NRC CODE AFTER 0800 Oscar November Indigo Mike

REMARKS:

- 1) Plant startup in progress per GO-100-002, complete through Step 5.64.
- 2) EOL A2SU step 256
- 3) 'A' RFP is in DPM and 'B' is in Standby
- 4) Main Turbine has been on the Turning Gear for 5 1/2 hours
- 5) Drywell N2 purge is in progress. Outside NPO stationed at the N2 truck
- 6) Shift activities are for:
 - PCOM to place 'A' RFP in Flow Control Mode iaw OP-145-001
 - Crew to continue to raise power to 15% in preparation for generator synchronization.
- 7) _____
- 8) _____
- 9) _____
- 10) (Unit 2 is at 100%)
- 11) _____
- 12) _____

COMMON:

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____
- 6) _____
- 8) _____
- 9) _____
- 10) _____
- 11) _____
- 12) (NRC SCN 2)

OFFGOING UNIT SUPERVISOR CHECKLIST:

1900-0700	0700-1900
Mj	
Mj	
Mj	
Mj	

1. Evolutions in progress and items to be completed during next shift, as noted in remarks, have been discussed with oncoming Unit Supervisor.
2. Problems encountered during past shift and abnormal plant conditions, as noted in remarks, have been discussed with oncoming Unit Supervisor.
3. Information in SOMS Log is complete and discussed with oncoming Unit Supervisor.
4. As applicable turnover plastic Security Badge cover and CRS Monitor function to oncoming Unit Supervisor.

1900 - 0700 M. Jacopetti

0700 - 1900 _____
Offgoing Unit Supervisor

ONCOMING UNIT SUPERVISOR CHECKLIST:

(14)

0700-1900	1900-0700

1. LCO/TRO Log reviewed.
2. SOMS Log reviewed for entries made in past 24 hours.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Qualified
Unit Supervisor

POST RELIEF

0700-1900	1900-0700

1. Walk down Control Room panels with Unit Responsible PCO.
2. CRC Book reviewed and Reactivity Brief performed with PCO.
3. Completed System Status Operable audit for open PMT this shift.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Unit Supervisor

Scenario Summary and Administration Instructions

Appendix D

Scenario Outline

Form ES-D-1

Facility: Susquehanna Scenario No.: 3 Op-Test No.:

Examiners: _____ Operators: _____

Initial Conditions: Unit 1 100% power, EOL, Div II Core Spray Pumps out of service

Turnover: Maintain power / generator capability curve limits in accordance with the CRC Book

Event No.	Malf. No.	Event Type*	Event Description
1	mfFW145012	I-ATC	Leading Edge Flow Meter Computer Failure
2	mfMS1460013A	C-BOP TS- SRO, R-ATC	3A Feedwater Heater Extraction Steam Isolation, Power Reduction
3	cmf CN02_TIC11028 f:0	C-BOP	RBCCW Temperature Controller Fails in Auto
4	annAR103B01 f:ALARM_ON	I-ATC, TS-SRO	Drywell Pressure Instrument Failure Without ½ Scram
5	mfDB157001	C-BOP	Loss of 1Y218
6	mfHP152009 f:.7	M-All	HPCI Equipment Room Steam Leak, HPCI Isolation Failure
7	mfRP158007B	C-BOP	Failure of 'B' RPS, ARI Completion of Scram
8	IMF cmfBR04_1A10204 IMF cmfPM04_1P113A IMF cmfTR02_PT10101A f:0 IMF cmfTR02_PT10101B f:0	C-ALL	11B Aux Bus fails to auto transfer Loss of EHC Bypass valves fail to auto operate
9	See Malfunction Page	C-BOP	Failure of all but one SRV, Depress Using BPV

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

Scenario Summary

Event 1: After the crew takes the shift, 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, reduce core flow using recirc by 0.5 Mlbm/hr, and swap feedwater flow input to the core thermal power calculation from LEFM to venturis. Priority for this event is to restore heat balance by changing feedwater flow instruments from LEFM to venturi.

Event 2: Once the feedwater input to the heat balance calculation 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 $\leq 71\%$ power and isolate extraction steam and drain input to 4A and 5A heaters; SRO will address thermal limit Tech Specs. Priority for this event is reduce reactor power $\leq 71\%$ to prevent feedwater heater mechanical damage and isolation of extraction steam and the feedwater string if extraction steam cannot be restored within 2 hours (consistent with the 2 hours required to restore MCPR per Tech Specs).

Event 3: 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 and an isolation of RWCU. 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. Priority for this event is diagnosis of the problem, monitoring of affected components (most importantly Recirc Pump seal temperatures) and restoration of temperature control by taking manual control of the temperature controller or directing control of the TCV bypass valve.

Event 4: When RBCCW cooled component temperatures begin to recover, a drywell pressure transmitter will fail high without an accompanying $\frac{1}{2}$ scram. The crew will respond per alarm response, dispatch NPO and I&C to the field, diagnose a failed transmitter and failure to $\frac{1}{2}$ scram, and the SRO will consult Tech Specs. The crew will insert a $\frac{1}{2}$ scram on 'A' RPS and contact I&C to insert a trip on the failed instrument. Priority for this event is diagnosis of the failed components, determining that the A RPS subsystem will not generate a scram, declare it inoperable and insert a $\frac{1}{2}$ scram.

Event 5: Once $\frac{1}{2}$ scram insertion is complete, the main breaker for 1Y218 will trip, resulting in a loss of instrument bus 1Y218 and 1Y219, requiring the crew to enter ON-117-001. The crew will take action in accordance with ON-117-001 to restore power to 1Y218, place Refueling Water Pumps in service to supply Condensate Transfer System in accordance with OP-037-003, direct an NPO to take local manual control of the in-service CRD flow control valve, 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. Priority for this event is restoration of power to 1Y218 to restore vital plant instrumentation, restoration of condensate transfer to ensure ECCS keepfill, and controlling drywell cooling to ensure proper cooling to Recirc Pumps and drywell.

Event 6/7: When the crew has stabilized the plant and restored power to 1Y218, 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. Efforts to isolate the leak will be ineffective by automatic and manual means due to a loss of

Scenario Summary and Administration Instructions

control power for the inboard isolation valve and mechanically bound outboard isolation valve. When the decision is made that a primary system is discharging into a table 8 RB area, the SRO will direct a reactor scram prior to room temperatures exceeding Max Safe; however 'B' RPS will not generate a SCRAM signal, requiring the use of ARI to complete the SCRAM. Priority for this event is to scram the reactor once it is determined that a primary system is discharging into the reactor building and before temperatures have exceeded max safe.

Event 8: The SRO will enter EO-100-102 for RPV level and pressure control, both from EO-100-104 and also +13" RPV water level entry conditions. When the turbine trips, the 11B Aux Bus will fail to transfer resulting in loss of two Condensate Pumps, two Circ Water Pumps, two Service Water pumps, and the loss of power to the 1B & C RFP Discharge Valves. The crew will need to restore power to the 11B Aux Bus, crosstie load centers, or trip Condensate pumps to prevent uncontrolled Condensate injection during the cooldown. In addition, the 'A' EHC Pump fails to auto start and the bypass valves fail to auto open. The crew will start the 'A' EHC pump and use the bypass valve jack to open bypass valves as necessary to force a cooldown. Priority for this event is to restore EHC, prevent uncontrolled condensate injection, and begin cooldown to reduce reactor pressure.

Event 9: Once the cooldown is in progress, RCIC room temperatures will rise and the crew will receive a report that the door to RCIC was unable to be re-closed after entering HPCI room for attempted leak isolation. It will be reported that there is steam leaking into the RCIC Room. When reactor building temperatures exceed max safe values in two areas (HPCI & RCIC), the SRO will enter 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. Priority for this event is to direct rapid depressurization once two areas exceed max safe. Upon discovery of only one SRV operating, direct alternate depressurization using bypass valves.

The scenario can be terminated once emergency depressurization using bypass valves or alternate systems has commenced.

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)	2
3. Abnormal events (2-4)	4
4. Major transients (1-2)	1
5. EOPs entered/requiring substantive actions (1-2) EO-100-104/EO-100-102	2
6. EOP contingencies requiring substantive actions (0-2) EO-100-112	1
7. Critical tasks (2-3)	2

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)

Scenario Summary and Administration Instructions

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

Scenario Summary and Administration Instructions

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

Upon discovery of only one open SRV, perform alternate depressurization using alternate systems (bypass valves most effective)

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.

Scenario Summary and Administration Instructions

The scenario may be terminated once emergency depressurization using bypass valves or alternate systems has commenced

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> ■ Ensure NRC-3 scenario files and triggers are loaded on the server ■ Reset simulator to Scenario IC 389 and perform the following: <ul style="list-style-type: none"> - Run scenario NRC3 - Place the simulator in run - Ensure Core Spray Loop 'B' Out Of Service HS-B21-1S11B is in INOP - Ensure 'B' EHC pump running - Stage RPS prints M1-C72-22 in the simulator booth for applicant use
	<ul style="list-style-type: none"> ■ Apply Status Tags on the following components: <ul style="list-style-type: none"> - 'B' CS loop components
	<ul style="list-style-type: none"> ■ Take out of FREEZE and ensure the following: <ul style="list-style-type: none"> - Reactor Power is 100% with stable reactor water level
	<ul style="list-style-type: none"> ■ Ensure materials for applicants: <ul style="list-style-type: none"> - Turnover sheet <ul style="list-style-type: none"> o Div 2 Core Spray oos for SOW o 1B EHC Pump in service and 1A in stby o Shift activities: <ul style="list-style-type: none"> ▪ Maintain power / generator capability curve limits in accordance with the CRC Book
	<ul style="list-style-type: none"> ■ Ensure the following malfunctions are loaded: <ul style="list-style-type: none"> - IMF cmfHV06_HV155F002 HPCI Steam Isol. valve Auto Logic Fails - IMF cmfMV09_HV155F003 HPCI steam isol. valve binding during motion - IMF cmfMV08_HV149F008 f:100 RCIC Steam OB Isolation leak by - IMF cmfMV08_HV149F007 f:100 RCIC Steam IB Isolation leak by - IMF mfRP158007B B RPS failure - IMF mfAD183001 ADS Auto initiation failure - IMF cmfPM04_1P113A 'A' EHC Pump Failure to Auto Start - IOR diHSB211S30AA f:NORM ADS Div 1 Manual initiation failure - IOR diHSB211S30BA f:NORM ADS Div 2 Manual initiation failure - IMF cmfNB01_PSB211N022A(B,C,D,E,F,G,H,J,K,L,M,N,P,R,S) Fail to open - IMF cmfRV02_PSV141F13A(B,C,D,E,F,G,H,J,K,L,M,N,P,R,S) Fail to open - IOR diHS14113G3(J3,K3,L3,M3,N3) f:AUTO - IOR diHS14113A1(B1,C1) f:AUTO - IOR diHS14113D(E,H,P,R,S) f:AUTO (F SRV is allowed to work) - IMF cmfBR04_1A10204 Tie Bus to 11B Bkr Auto Logic fails

Scenario Summary and Administration Instructions

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION		
	<ul style="list-style-type: none"> ■ Ensure the following remote functions are loaded: <ul style="list-style-type: none"> - None ■ Ensure the following overrides are loaded: <ul style="list-style-type: none"> - None ■ Ensure the following triggers are built: <ol style="list-style-type: none"> 1. NRC3 ET1, trips HV155F002 breaker when keylock switch is taken to Close: <ul style="list-style-type: none"> - NRC3 ET1.et (diHS15502.CurrValue = #OR.diHS15502.CLS) - NRC3 ET1.scn (IMF cmfHV01_HV155F002) 2. NRC3 ET2, fails EHC regulators when Mode Switch is placed in shutdown so BPVs will not auto open : <ul style="list-style-type: none"> - NRC3 ET2.et (diHSC72A1S01.CurrValue != #OR.diHSC72A1S01.RUN) - NRC3 ET2.scn <ul style="list-style-type: none"> ○ (IMF cmfTR02_PT10101A f:0) ○ (IMF cmfTR02_PT10101B f:0) ■ Ensure the following Soft Keys are built: <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> {Key[1]} IMF mfFW145012 {Key[2]} IMF mfMS146001A {Key[3]} IMF cmfCN02_TIC11028 f:0 {Key[4]} IMF mfannAR103B01 f:ALARM_ON {Key[5]} IMF mfDB157001 {Key[6]} scn NRC3A {Key[7]} scn NRC3B {Key[8]} scn NRC3C {Key[9]} IRF rRM179004 f:RESET {Key[9]} IRF rRM179004 f:NORMAL d:2 {Key[10]} IMF mfHP152009 f:.7 {Key[11]} scn NRC3D {Key[12]} scn NRC3E {Key[13]} scn NRC3F {Key[14]} IMF mfRC150004 f:50 {Key[14]} MMF mfHP152009 f:10 </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> LEFM Computer Failure 3A FW Htr Extraction Stm Isolation RBCCW temp controller fails in AUTO Pri Cont High Press Trip Annunc. ON 1Y218 feeder breaker trip Refuel Wtr Xfer supplying Cond Xfer Strips 1Y218 breakers Recloses 1Y218 bkrs (not 1Y219) Resets Radiation Monitors Resets Radiation Monitors HPCI Equipment Room Steam Leak Closes Circ Water Pp valves Resets SW Pp Lockout Relays Restores Instrument & Service Air RCIC Equipment Room Steam Leak Modifies HPCI Equip Room Leak </td> </tr> </table> 	<ul style="list-style-type: none"> {Key[1]} IMF mfFW145012 {Key[2]} IMF mfMS146001A {Key[3]} IMF cmfCN02_TIC11028 f:0 {Key[4]} IMF mfannAR103B01 f:ALARM_ON {Key[5]} IMF mfDB157001 {Key[6]} scn NRC3A {Key[7]} scn NRC3B {Key[8]} scn NRC3C {Key[9]} IRF rRM179004 f:RESET {Key[9]} IRF rRM179004 f:NORMAL d:2 {Key[10]} IMF mfHP152009 f:.7 {Key[11]} scn NRC3D {Key[12]} scn NRC3E {Key[13]} scn NRC3F {Key[14]} IMF mfRC150004 f:50 {Key[14]} MMF mfHP152009 f:10 	<ul style="list-style-type: none"> LEFM Computer Failure 3A FW Htr Extraction Stm Isolation RBCCW temp controller fails in AUTO Pri Cont High Press Trip Annunc. ON 1Y218 feeder breaker trip Refuel Wtr Xfer supplying Cond Xfer Strips 1Y218 breakers Recloses 1Y218 bkrs (not 1Y219) Resets Radiation Monitors Resets Radiation Monitors HPCI Equipment Room Steam Leak Closes Circ Water Pp valves Resets SW Pp Lockout Relays Restores Instrument & Service Air RCIC Equipment Room Steam Leak Modifies HPCI Equip Room Leak
<ul style="list-style-type: none"> {Key[1]} IMF mfFW145012 {Key[2]} IMF mfMS146001A {Key[3]} IMF cmfCN02_TIC11028 f:0 {Key[4]} IMF mfannAR103B01 f:ALARM_ON {Key[5]} IMF mfDB157001 {Key[6]} scn NRC3A {Key[7]} scn NRC3B {Key[8]} scn NRC3C {Key[9]} IRF rRM179004 f:RESET {Key[9]} IRF rRM179004 f:NORMAL d:2 {Key[10]} IMF mfHP152009 f:.7 {Key[11]} scn NRC3D {Key[12]} scn NRC3E {Key[13]} scn NRC3F {Key[14]} IMF mfRC150004 f:50 {Key[14]} MMF mfHP152009 f:10 	<ul style="list-style-type: none"> LEFM Computer Failure 3A FW Htr Extraction Stm Isolation RBCCW temp controller fails in AUTO Pri Cont High Press Trip Annunc. ON 1Y218 feeder breaker trip Refuel Wtr Xfer supplying Cond Xfer Strips 1Y218 breakers Recloses 1Y218 bkrs (not 1Y219) Resets Radiation Monitors Resets Radiation Monitors HPCI Equipment Room Steam Leak Closes Circ Water Pp valves Resets SW Pp Lockout Relays Restores Instrument & Service Air RCIC Equipment Room Steam Leak Modifies HPCI Equip Room Leak 		
	<ul style="list-style-type: none"> ■ Reset any annunciators that should not be present 		

Scenario Summary and Administration Instructions

INSTRUCTIONS FOR SIMULATOR OPERATOR

EVENT 1: LEFM Failure

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When Chief Examiner ready to proceed, click Soft Key 1 to insert IMF mfFW145012 LEFM computer failure
	<ul style="list-style-type: none"> ■ When contacted as STA, state that you are currently unavailable, but will be there as soon as you can
	<ul style="list-style-type: none"> ■ When dispatched as NPO to check LEFM 1C1107, wait two minutes and report that the panel is de-energized. When asked about status of 1C1107 breaker positions, report both are closed
	<ul style="list-style-type: none"> ■ When sent to check 1Y128-38, wait one minute and report that breaker 1Y128-38 is tripped
	<ul style="list-style-type: none"> ■ As NPO, if directed to reset and re-close 1Y128-38, report that breaker will not stay closed
	<ul style="list-style-type: none"> ■ When contacted as the Work Week Manager state that you will contact FIN to investigate
	<ul style="list-style-type: none"> ■ As I&C, wait five minutes, then report that there appears to be an internal problem with LEFM and that you are unsure when it will be restored to service
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 2: 3A Feedwater Heater Extraction Steam Isolation & Power Reduction

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Once heat balance input is changed to venturi and Chief Examiner ready to proceed, click Soft Key 2 to insert IMF mfMS146001A 3A Feedwater heater extraction steam isolation
	<ul style="list-style-type: none"> ■ As NPO dispatched to 1C101: Wait 1 minute and report that I&C was at the panel and they accidentally arced across several contacts with their multimeter. It appears that the terminals are connected to HV-10240A. Report that I&C needs to check prints and verify that to be the case. It looks like the contacts are damaged and it could be several hours before we can finish assessment and repairs
	<ul style="list-style-type: none"> ■ As NPO directed to investigate FW Heater panel alarms, report that there are multiple level and dump valve alarms, valves are responding correctly, and you will continue to monitor
	<ul style="list-style-type: none"> ■ When directed to close 1251461 instrument air to HV-10244A at 1C-151B-A and open petcock 1A-PCV-10244A, wait one minute and report actions completed
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

Scenario Summary and Administration Instructions

EVENT 3: RBCCW Temperature Controller Fails in Auto

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Once crew begins isolation of the 'A' FW Heater string extraction steam or 'A' FW Heater string <i>at Chief Examiner discretion</i>, and Chief Examiner ready to proceed, click Soft Key 3 to insert IMF cmfCN02_TIC11028 f:0 RBCCW temperature controller failure
	<ul style="list-style-type: none"> ■ If dispatched as NPO, wait three minutes, and if : <ul style="list-style-type: none"> - The crew has not taken manual control and opened the TBCCW TCV report that TCV-11028 is closed. If directed to open 110062 (TCV Bypass), on P&ID SW2, use the Instructor Selected valve position for TCV-11028 and adjust valve position as necessary to restore / maintain temperature at $\approx 90^{\circ}$ F - If the valve is open, inform them the valve is open
	<ul style="list-style-type: none"> ■ When contacted as the Work Week Manager state that you will contact FIN to investigate ■ If contacted as chemistry, acknowledge report of conductivity trend, report that it is likely due to the disturbance of feedwater/condensate flow. Will monitor and take confirmatory samples
	<ul style="list-style-type: none"> ■ Four minutes after the WWM was contacted, call the control room as I&C and report that you are calibrating a replacement controller and should be ready to install it within an hour
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 4: Drywell Pressure Instrument Failure without ½ SCRAM

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Once RBCCW temperatures have begun to stabilize and Chief Examiner ready to proceed, click Soft Key 4 to insert IMF mfannAR103B01 f:ALARM_ON Pri Cont High Press Trip annunciator ON
	<ul style="list-style-type: none"> ■ When dispatched as NPO to investigate PSH-C72-1N002A and PSH-C72-1N002C, report no abnormalities locally
	<ul style="list-style-type: none"> ■ When contacted as the Work Week Manager state that you will contact FIN to investigate
	<ul style="list-style-type: none"> ■ As I&C, report that PSH-C72-1N002A appears to have failed and RPS Relay K4A on 1C609 is de-energized but two of the contacts are welded closed
	<ul style="list-style-type: none"> ■ If crew indicates they have 12 hours to place 'A' RPS in the trip condition, contact the Unit Supervisor as I & C and report that you do not have a replacement relay in stock and have Procurement trying to locate one. Projected delivery could be as much as one to two days.
	<ul style="list-style-type: none"> ■ If crew requests assistance with determining if the K4A relay inputs to the A1 RPS logic, inform the caller that you will come to the Control Room with prints. Wait one minute, ask the US for permission to enter the inner ring, then point to the K4A relay on M1-C72-22 Sheet 6 (coordinates E-5) and tell the US it is the failed relay.

Scenario Summary and Administration Instructions

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If requested as I&C to place the RPS subsystem in trip, report that you cannot support until sometime possibly during the next shift, but unsure
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 5: Loss of 1Y218

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Once Tech Spec call is complete, RPS ½ scram inserted (<i>at Chief Examiner discretion</i>), and Chief Examiner ready to proceed, click Soft Key 5 to insert IMF mfDB157001 1Y218 main breaker trip
	<ul style="list-style-type: none"> ■ When dispatched as NPO to investigate loss of instrumentation bus, report the main breaker in 1Y218 is tripped and the front of 1Y219 is deformed.
	<ul style="list-style-type: none"> ■ As the NPO, when directed to take local control of CRD flow control valve to restore CRD system flow, acknowledge the direction and take no further action (when 1Y218 loads are restored CRD flow will return to normal)
	<ul style="list-style-type: none"> ■ As NPO, acknowledge the request to place Refueling Water Pumps in service to supply Condensate Transfer System IAW OP-037-003, section 2.22, wait five minutes, click Soft Key 6 to run scn NRC3A to align refuel water transfer system, then call the Control Room and tell them to start the RWT pump
	<ul style="list-style-type: none"> ■ As NPO directed to report status of RBCCW to RBCW swap valves on 1CB216A and/or 1C279, wait two minutes and report the valve indication is out but you checked locally and RBCCW is supplying DW coolers
	<ul style="list-style-type: none"> ■ If crew chooses to restore 1Y218 without first stripping loads, manually restore 1Y218 by closing the main feed breaker. Otherwise: ■ When contacted as NPO to strip 1Y218 loads, click Soft Key 7 to run scn NRC3B to open all 1Y218 breakers
	<ul style="list-style-type: none"> ■ When contacted as NPO to reclose the Main breaker for 1Y218 and reclose all 1Y218 breakers except for 1Y219, click Soft Key 8 to run scn NRC3C to reclose all 1Y218 breakers except for 1Y219, monitor SCN NRC3C, and when the last breaker is closed, call the RO and report all breakers are closed except 38, 40, and 42.
	<ul style="list-style-type: none"> ■ As NPO directed to reset Rad Monitors, wait two minutes, click Soft Key 9 to activate IRF rFRM179004 f:RESET and IRF rFRM179004f:NORMAL d:2, and call the RO to inform them they are reset
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

Scenario Summary and Administration Instructions

EVENT 6: HPCI Equipment Room Steam Leak

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When power restored to 1Y218 and Chief Examiner ready to proceed, click Soft Key 10 to initiate IMF mfHP152009 f.7 HPCI equipment room steam leak
	<ul style="list-style-type: none"> ■ If dispatched as NPO to investigate possibility of steam leak, report the HPCI Room ARM is going up, there is a loud flow noise inside HPCI room and that the door is warm to the touch
	<ul style="list-style-type: none"> ■ When directed as U-2 to evacuate U-1 RB, have 2nd booth operator perform evacuation IAW Hard Card, to include sounding area evacuation alarm
	<ul style="list-style-type: none"> ■ When dispatched to investigate MOV failures, report 1B237-082 for F002 is tripped; if requested to re-close breaker report that it cannot be re-closed. Report no abnormalities at 1D264-081 for F003
	<ul style="list-style-type: none"> ■ When dispatched as NPO to close HPCI OB Steam Isol HV-155-F003, wait five minutes and report that you are unable to engage the clutch
	<ul style="list-style-type: none"> ■ When contacted as Security to monitor HPCI blowout panels, acknowledge request and inform caller that you checked with the camera and currently there is NO steam
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 7/8: Failure of 'B' RPS, ARI Completion of SCRAM, Failure of Aux Busses to Auto Transfer

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ As the NPO dispatched to investigate 11B Aux Bus for tripped lockouts and targets, wait two minutes and report that there are no tripped lockouts or relays and everything appears normal with the Aux and Tie busses
	<ul style="list-style-type: none"> ■ If directed to crosstie 1B140 to feed 1B150 use P&ID DB-5 and open breaker 1B150-12, then close tie breaker 42. ■ If directed to crosstie 1B100 to feed 1B110, use P&ID DB-1 and open breaker 1B110-12, then close tie breaker 42.
	<ul style="list-style-type: none"> ■ As the NPO, if directed to close the 'B' and 'D' Circ Water Pump valves; wait two minutes, depress Soft Key 11 to run scn NRC3D, and monitor the CW Pp Suction and Discharge valves. Once they are closed, contact the requesting person and report that valves are closed
	<ul style="list-style-type: none"> ■ As the NPO directed to reset the 'B' and 'D' Service Water Pump breaker lockouts on the 11B Bus, wait two minutes and depress Soft Key 12 to run scn NRC3E. Once all three Green lockout lights are out, contact the requesting person and report that the lockouts are reset
	<ul style="list-style-type: none"> ■ As the NPO directed to close the Service Water Pp discharge valve, role play that the requested valve is closed, and do the same when requested to reopen it
	<ul style="list-style-type: none"> ■ As the NPO directed to restore Instrument Air and Service Air, wait one minute and depress Soft Key 13 to run scn NRC3F. When the scenario (NRC3F) is

Scenario Summary and Administration Instructions

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	done running, report that both instrument air and service air are restored
	<ul style="list-style-type: none"> ■ If directed as the NPO to investigate RB Main Steam Tunnel fire detection, wait two minutes and report that there is no unusual noise and you opened the door and the air was hot
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate

EVENT 9: Failure of all SRV, Rapid Depressurization Using Bypass Valves

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Adjust leak rates as required by scenario/Chief Examiner to ensure leak rate will result in multiple areas above max safe temperature (Note: changing HPCI leak to 1% will cause temperature to exceed max safe quickly)
	<ul style="list-style-type: none"> ■ Once the crew has taken action to close the 'B' and 'C' RFP Discharge Valve or prevent uncontrolled condensate injection, begins a forced cooldown, and when Chief Examiner ready to proceed, click Soft Key 14 to insert IMF mfRC150004f:50 and MMF mfHP152009 f:10 to insert the RCIC steam leak and modify the HPCI steam leak, then: <ul style="list-style-type: none"> ▪ Monitor the PNOV for AR-108-001 (E05), RCIC High Temp/Delta Temp ▪ When it annunciates, contact the control room via the page as Maintenance. Report that you were sent into the HPCI room in steam suits to attempt to isolate the HPCI steam leak and that you were unable to do so. Explain that when you exited the room, you could not close the door into the RCIC room all the way
	<ul style="list-style-type: none"> ■ If directed open ADS valves from the Upper / Lower Relay rooms, wait two minutes and report that all keylocks are in the Open position.
	<ul style="list-style-type: none"> ■ Respond to request for assistance as appropriate
	<ul style="list-style-type: none"> ■ Once emergency depressurization using bypass valves or alternate systems has commenced and upon direction of the Chief Examiner, place the simulator in freeze
	<ul style="list-style-type: none"> ■ Once the scenario is finished and the crew has left the simulator, place the simulator in run and change the input to OD3 back to LEFM, prior to resetting.

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Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3 Event No.: 1 Page ___ of ___

Event Description: Leading Edge Flow Meter Computer Failure

Priority: Reduce core flow by 0.5Mlbm/hr and restore heat balance by swapping FW flow input from LEFM to venturi

Time	Position	Applicant's Actions or Behavior
	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 or may perform this action himself/herself
	SRO	Upon receiving communication from NPO that LEFM panel is de-energized and both panel breakers remain closed, will direct NPO to investigate 1Y128-38. Breaker will be found tripped. Directs NPO to re-close breaker 1Y128-38; breaker will not remain closed Requests I&C and Work Week Manager support to troubleshoot/repair LEFM Evaluator Note: Once heat balance input selected to venturis, proceed to next event, Key 2, 3A FW Htr extraction steam isolation
	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

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ATC	<p>Monitors APRMs for power indication</p> <p>Dispatches NPO to investigate loss of LEFM, check breakers per step 3.2.7 (<i>Report from field will indicate that the panel is de-energized and both 1C1107 breakers are still closed. Will dispatch NPO to investigate 1Y128-38, breaker will be found tripped and cannot be reclosed</i>)</p> <p><u>Evaluator Note:</u> The following actions will likely be performed from memory</p> <p>(OP-164-002 Step 2.1.6 at Rx Recirc HMI screens) Touch the <u>MANUAL MODE SELECT</u> button</p> <p>(Step 2.1.7) Touch the <u>MANUAL MODE SELECT</u> button on the confirmation overlay screen</p> <p>(Step 2.1.7.a) Ensure the MANUAL Screen Select button and MANUAL MODE SELECT buttons change color from blue to yellow</p> <p>(Step 2.1.7.b) Ensure the MANUAL MODE SELECT button_text now reads MANUAL MODE SELECTED</p>
ATC	<p>(Step 2.1.8) Slowly Adjust REACTOR RECIRC PUMP A(B) SPEED SY-B31-1R621A(B) Controller Demand with the applicable <u>DEC</u> pushbuttons until core flow has been reduced 0.5 Mlbm/hr</p>
ATC	<p><u>Evaluator Note:</u> SRO may perform these actions in lieu of ATC, as manipulations can also be performed at SRO desk.</p> <p>Performs OP-131-002 Section 2.5 to swap feedwater inputs into OD-3</p> <p>(Step 2.5.5) Press the ESC key on the PICSY keyboard</p> <p>(Step 2.5.6) Type LEFMP in the Turn-On Code (TOC) field and Press ENTER</p> <p>(Step 2.5.7) Ensure the desired feedwater source (venturi or LEFM) is providing data to the OD3 program</p> <p>(Step 2.5.8) <u>I</u>F the OD3 input is not correct, swap to the other input as follows:</p> <p>(Step 2.5.8.a) Type FWFETOGL in the TOC field and Press ENTER</p> <p>(Step 2.5.8.b) Type Y in response to the prompt "CHANGE FW FLOW INPUTS TO CTP (Y/N)?" and Press ENTER</p> <p>(Step 2.5.8.c) Ensure the message on the LEFMP screen changes and indicates the correct feedwater input</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>NOTE: It may take up to 4 minutes for indicated CTP to stabilize.</p> </div>

Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3 Event No.: 2 Page ___ of ___

Event Description: 3A Feedwater Heater Extraction Steam Isolation, power reduction
Priority: Reduce and maintain reactor power $\leq 71\%$ and isolate extraction steam to remainder of string. Isolate 'A' feedwater string when determined that restoration of extraction steam to 'A' feedwater header will take longer than 2 hours

Time	Position	Applicant's Actions or Behavior
	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
	SRO	(ON-156-001 Step 4.5) <u>IF</u> change resulted in power increase: (Step 4.5.1) <u>IF</u> > 3952 MWth as indicated on computer point NBA 100 (1 minute average), Perform ON-100-004, "Reactor Power greater than Authorized Limit," <u>OTHERWISE</u> (Step 4.5.2) Reduce reactor power to level at which it was prior to reactivity change (Step 4.7) <u>AS REQUIRED</u> , Take Action to correct any apparent change in any following variable which could affect reactivity: (Step 4.7.12) Feedwater temperature
	SRO	Per ON-100-004 step 3.2, directs ATC to reduce core thermal power <3952 MWth using recirc per CRC book (Step 3.3) Requests STA determine the maximum thermal power excursion by using PICSY (STA is unavailable) Notifies Reactor Engineering
	SRO	Announces entry into ON-147-001 Loss of Feedwater Heating Extraction Steam
	SRO	(ON-147-001 Step 3.2) Direct ATC to Immediately Reduce Reactor Power IAW RE Instructions in CRC Book to $\leq 71\%$ RTP by Performing step 3.2
	SRO	(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

Scenario Summary and Administration Instructions

	SRO	(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
	SRO	Contacts Reactor Engineering, I&C, Work Week Manager Evaluator Note: <i>Due to the transient on feedwater/condensate flow, crew may notice a conductivity swing. Crew may contact chemistry for verification, but the magnitude of the swing does not require entering any off-normal procedures, only monitoring of the transient</i>
	SRO	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% Evaluator Note: <i>At Chief Examiner discretion, once extraction steam isolation to the 'A' feedwater heaters has begun, may move on to next event or observe crew isolate the 'A' feedwater string (approximately 10 minutes). Next event is Key 3, RBCCW temperature controller failure</i>
	SRO	Once it is determined that extraction steam will not be restored to 'A' Feedwater string within 2 hours, directs BOP to continue with ON-147-001/OP-144-001 to isolate the 'A' Feedwater string
	SRO	Enters GO-100-012, Power Maneuvers Evaluator Note: <i>At Chief Examiner discretion, once extraction steam is isolated to the 'A' feedwater heaters, may move on to next event or observe crew isolate the 'A' feedwater string (approximately 10 minutes). Next event is Key 3, RBCCW temperature controller failure</i>
	ATC/BOP	Note and report rising reactor power, may or may not immediately know the cause Respond to AR-120-001 (D04) FW Htr String A Dump Vlv Open and AR-120-001 (H04) FW Loop A Panel 1C101 Trouble alarms, and monitor panels to determine cause
	ATC	Notes core thermal power >3952 MWth, reports to SRO
	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 <u>DEC</u> pushbuttons until core thermal power has been reduced below and remains below 3952 MWth

Scenario Summary and Administration Instructions

	ATC	<p>Reduces reactor power $\leq 71\%$:</p> <p>(Step 3.2.1) <u>IF</u> required, Insert Control Rods as necessary to obtain a Rod Line which is less than the value stated in the CRC Book</p> <p>(Step 3.2.2) Initiate the required flow/power reduction by performing <u>either</u> of the following:</p> <p>(Step 3.2.2.a) Initiate a Manual Rx Recirc Limiter #2 Runback in accordance with OP-164-001 <u>OR</u></p> <p>(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</p>
	ATC	<p>(ON-164-002 Step 4.4.1) Plots position on Power/Flow Map</p> <p>(Step 4.4.2) Selects a Non-Peripheral Control Rod</p> <p>(Step 4.4.3) Monitors LPRM for power oscillations</p>
	ATC	<p>While extraction steam valves are being closed to the A Feedwater string, monitors reactor power and reduces recirc flow or inserts control rods as necessary to maintain reactor power $< 71\%$</p> <p>Evaluator Note: <i>This transient takes approximately 30 minutes for all feedwater temperatures to reach equilibrium; periodic Recirc flow adjustments and control rod insertions will be required to maintain reactor power $< 71\%$</i></p>
	BOP	<p>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</p> <p>Dispatches NPO to local alarm/control panel 1C101 to investigate</p>
	BOP	<p>(ON-147-001 Step 3.6) <u>IF</u> 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:</p> <p>(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)</p>

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BOP	<p>(Step 3.6.1) Closes HTR 5A HP EXTR ISO HV-10242A (~90 seconds)</p> <p>(Step 3.6.2) Closes HTR 4A LP EXTR ISO HV-10241A (~90 seconds)</p> <p>(Step 3.6.3) Closes MSEP B DRN TO HTR 4A HV-10216A (~60 seconds)</p> <p>(Step 3.6.4) Closes MSEP A DRN TO HTR 4A HV-10213A (~60 seconds)</p> <p>(Step 3.6.5) Verifies HTR 3A HP EXTR ISO HV-10240A closed</p> <p>(Step 3.6.6) Directs NPO to perform step 3.6.6</p> <p>Reports completion to SRO</p>
	<p>Evaluator Note: <i>At Chief Examiner discretion, once extraction steam isolation to the 'A' feedwater heaters has begun, may move on to next event or observe crew isolate the 'A' feedwater string</i></p>
BOP	<p>(Step 3.7) IF any feedwater heating lost and cannot be restored within 2 hours, Isolate affected feedwater string in accordance with OP-144-001 Condensate and Feedwater System. Maximum power level with 2 feedwater strings is 71%</p>
BOP	<p>(OP-144-001 Step 2.7.3) Notifies SRO that if extraction steam is isolated to any feedwater heater with reactor power $\geq 23\%$ RTP AND the associated feedwater string is not isolated, Enter TS 3.2.2 for MCPR limit</p>
BOP	<p>(Step 2.7.4) Open Feedwater HTR STRING A(B)(C) INLET BYPS HV-10659A(B)(C) by depressing OPEN pushbutton. (~15 seconds)</p> <p>(Step 2.7.5) N/A</p> <p>(Step 2.7.6) Close Feedwater HTR STRING A INLET HV-10639A by depressing CLOSE pushbutton (~1 minute 45 seconds)</p> <p>(Step 2.7.7) Monitors feedwater heater shell pressure on PICSY until they are approximately atmospheric pressure</p> <p>(Step 2.7.8) Close Feedwater HTR STRING A DSCH ISO HV-10620A by depressing CLOSE pushbutton (~1 minute 45 seconds)</p> <p>(Step 2.7.9) There are no indications of a feedwater heater leak, candidate will maintain Feedwater HTR STRING A INLET BYPS HV-10659A OPEN</p>
	<p>Evaluator Note: <i>Once the feedwater string is reported as isolated to the SRO, proceed to the next event, Key 3, RBCCW temp. controller failure</i></p>

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Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3			Event No.: 3			Page ___ of ___		
<p>Event Description: RBCCW Temperature Controller Fails in Auto Priority: <i>Monitoring affected components (namely Recirc pumps), diagnosis of failed controller and restoration of cooling</i></p>								
Time	Position	Applicant's Actions or Behavior						
	SRO	May announce entry in ON-114-001 based upon AR direction, direct BOP to perform ON-114-001, or may direct BOP to take manual control of the temperature controller						
	SRO	<p>(Step 3.6.4) Directs BOP to take manual control of RBCCW temperature controller TIC-11028</p> <p>If TCV-11028 diagnosed as malfunctioning, SRO may instead direct throttling open RBCCW HX SW Dsch Temp CV BPV 110062 to maintain RBCCW Heat Exchanger outlet temperature 95 to 105° F instead of taking manual control of the TCV</p> <p>Evaluator Note: <i>Once RBCCW system and component temperatures have been lowered and stabilized, proceed to next event, Key 4, Primary containment pressure instrument failure</i></p>						
	BOP	Responds to AR-123-001 (E05) RBCCW Header HI Temp (<i>comes in approximately one minute following malfunction insertion</i>)						
	BOP	Verifies alarm by checking temperature on RBCCW HX DSCH TEMP TI-11305						
	BOP/ATC	(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	<p>Investigates probable causes as identified in AR-123-001 (E05) :</p> <p>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)</p>						
	BOP	During investigation, notices RBCCW temperature controller TIC-11028 has failed in automatic and its output is zero						
	BOP	Reports malfunctioning RBCCW temperature controller/TCV to SRO						

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	BOP	Dispatches NPO to inspect RBCCW temperature controller valve. May also direct NPO to throttle open the TCV bypass valve to maintain RBCCW temperatures instead of taking manual control of TCV controller
	BOP	Places RBCCW temperature controller TIC-11028 in manual and depresses the Open button, as necessary, to restore system temperature
	BOP/ATC	Continues to monitor Recirc Pump A&B motor bearing and seal cavity temperatures while restoring normal system temperature May also receive AR-102-001 (G03) RECIRC PUMP MOTOR HI TEMP alarm depending on operator response time to failed TCV, which also requires monitoring same components

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Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3 Event No.: 4 Page ___ of ___

Event Description: Drywell Pressure Instrument Failure Without ½ Scram
Priority: Determination that 'A' RPS should have provided a ½ scram and did not; declaring channel inoperable and placing ½ scram in on 'A' RPS

Time	Position	Applicant's Actions or Behavior
	SRO	Evaluator Note: Report from the field will tell crew that the drywell pressure switch has failed, and the RPS 1K4A relay contacts are welded closed Determines that an instrument failure has occurred, but the attendant ½ scram did not occur. Determines that there is also a fault in the RPS subsystem in addition to the failed instrument due to the lack of ½ scram
	SRO	Requests I&C, Work Week Manager support
	SRO	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 Evaluator Note: May also review TS 3.3.6.1 and 3.3.6.2, but the high drywell pressure signal comes from other instruments and requires a similar 12 hour action statement
	SRO	Upon finding I&C unavailable, directs ATC to insert an A1 RPS ½ scram Evaluator Note: Once TS call complete and ½ scram inserted, proceed to next event, Key 5, Loss of 1Y218
	ATC	Responds to AR-103-001 (B01) Primary Containment HI Press Trip
	ATC	Dispatches NPO to investigate locally
	ATC	May perform alarm check to check function of AR-103-001(A01) RPS CHANNEL A1/A2 AUTO SCRAM
	ATC	Arms and depresses RPS MAN SCRAM CHAN A1 HS-C72A-1S03A
	BOP	Checks drywell pressure to confirm alarm indication (drywell pressure is normal)
	BOP	Reports to SRO that drywell pressure is normal; suspect failed instrument

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Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3 Event No.: 5 Page ___ of ___

Event Description: Loss of 1Y218 (results in loss of condensate transfer pumps, reactor building chill water, full core display, several RPV level indications, loss of zone 1 and zone 3 ventilation)

Priority: Restore power to 1Y218, place Refueling Water Pumps in service to supply Condensate Transfer, maximize cooling to Recirc pumps and drywell coolers as necessary

Time	Position	Applicant's Actions or Behavior
	SRO	Announces entry into ON-117-001 Loss of Instrument Bus, and proceeds to section 3.4 for Instrument bus 1Y218/1Y219 trouble Directs ATC/BOP to perform their applicable actions of ON-117-001 Requests Work Week Manager and electrical maintenance/FIN support Evaluator note: If it appears that the crew is going to scam the plant based upon the electrical transient, proceed to the next event, Key 10, HPCI Equipment Room steam leak
	SRO	Briefs crew on lost instrumentation and further required actions May enter LCO 3.6.1.5 Condition A, if Average DW Temperature exceeds 135° F. and determines Required Action A.1, restore within 8 hrs. applies Evaluator note: Once power has been restored to 1Y218, scenario may proceed to next event, Key 10, HPCI Equipment Room steam leak. At Chief Examiner discretion, further ON actions may be observed.
	ATC	Reports AR-106-001 (F11) Instrument AC 1Y218/1Y219 Power Failure and loss of APRM hard wire indication
	ATC/BOP	(Step 3.4.1) Determine if 1Y218/1Y219 are energized by checking against list in Attachment E
	ATC	(Step 3.4.3) If 1Y218/1Y219 not energized: (Step 3.4.3.b) Refer to Attachment E for functions/instrumentation lost and recommended actions
	ATC	(Step 3.4.3.c) Dispatches NPO to 120V Instrument AC UPS 1D240 and Panel 1Y218/1Y219

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ATC	<p>Proceeds to process computer and calls up OD-7 to monitor control rod positions due to loss of full core display</p> <p>Dispatches NPO to take local manual/auto control of CRD flow control valves to restore system flow</p> <p>Directs NPO to perform step 3.4.3.f of ON-117-001 to restore power to 1Y218/1Y219</p> <p>Evaluator Note: <i>1Y218 loads will be stripped and sequentially restored, resulting in a restoration of 1Y218, but leaving 1Y219 secured.</i></p>
BOP	<p>(Attachment E function 5/6) Request Chemistry initiate alternate reactor coolant sampling and local turbine bldg, SBGT and reactor building sampling</p>
BOP	<p>Directs NPO to perform 2.22.3.a through 2.22.3.r of OP-037-003 to supply the condensate transfer header using the refuel water pumps (<i>restores keepfill to ECCS pumps</i>)</p> <p>Continues to monitor ECCS keepfill pressures on 1C601</p>
BOP	<p>Once report received from NPO that 2.22.3.a through 2.22.3.r, performs Step 2.23.s and depresses START pushbutton for Refueling Water Pump 0P157A(B)</p> <p>Directs NPO to continue with steps 2.22.3.t and u.</p>
BOP	<p>(ON-134-001 Step 3.2) Monitors recirc pump A(B) motor winding temperatures</p> <p>Evaluator Note: <i>These indications are unavailable until power is restored to 1Y218</i></p>
BOP	<p>(Step 3.3.2) Proceeds to section 3.5 due to loss of both chillers</p>

Scenario Summary and Administration Instructions

BOP	<p>Evaluator Note: RBCCW temperature will initially lower due to the loss of its largest head load, reactor water cleanup</p> <p>(Step 3.5.4.c) Perform the actions of Section 3.8, "IF Drywell Cooling Shifts from Reactor Building Chilled Water to RBCCW".</p> <p>(Step 3.8) <u>IF</u> Drywell Cooling Shifts from Reactor Building Chilled Water to RBCCW:</p> <p>Directs RB NPO to perform 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</p> <p>Directs RB NPO to perform Step 3.8.2 at 1C279, Check valves positioned as follows:</p> <ul style="list-style-type: none"> • (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 <p>(Step 3.8.3) Fully Open RBCCW COOLER TEMP TIC-11028 to maximize RBCCW cooling, by depressing the Open pushbutton until demand is at 100% (controller is already in manual due to earlier failure)</p>
BOP	<p>At 1C693, Monitor Drywell temperature on DRYWELL ATMOS TEMP TR-15790A(B)</p> <p><u>IF</u> average Drywell temperature exceeds 135 deg F, Comply with TS 3.6.1.5. Evaluator Note: Will occur in approximately 5 minutes. Back panel drywell temperature indications will read approximately 50F until 1Y218 restored. Temperature indication still available on ECCS panels</p> <p>Monitor Drywell pressure on Containment Atmosphere Parameters/Post Accident Monitor Recorder UR15701A(B) at Panel 1C601</p>

Scenario Summary and Administration Instructions

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Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3 Event No.: 6 Page ___ of ___

Event Description: HPCI Equipment Room Steam Leak, HPCI Isolation Failure

Priority: Enter EO-100-104, take action to attempt leak isolation

Time	Position	Applicant's Actions or Behavior
	SRO	Assigns BOP to check / monitor Secondary Containment Temperatures Monitors RB rad levels Directs U-2 to evacuate the U-1 Reactor Building
	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 monitor HPCI blow out panels in CST berm area and report if there is any steam (SC/T-4) Directs BOP to isolate HPCI Steam Supply
	SRO	Contacts Work Week Manager for assistance in closing HPCI F002 and F003 Evaluator Note: No cue needed to proceed to next event. Next event begins with SRO determining that a primary system is discharging into the reactor building
	BOP	Reports Fire Protection SIMPLEX alarm Fire Det X109_Z8 Reports HPCI Equipment Room is cause of alarm 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. Receives report back that HPCI room ARM is rising, there is a loud flow noise inside HPCI room and that the door is warm to the touch

Scenario Summary and Administration Instructions

	BOP	<p>When directed to report secondary containment temperatures:</p> <ul style="list-style-type: none"> • 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 <p>Requests U-2 to evacuate U-1 RB due to steam leak and rising rad levels</p>
	BOP	<p>(Step SC/T-2) Starts all ESW Pumps and all ECCS/RCIC/HPCI room coolers Evaluator Note: <i>May perform steps from memory</i></p> <p>(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 and verifies pump operation</p> <p>(Step 2.2.5) Ensure OPEN: N/A steps(s) not required</p> <p>HV-01222A(B) ESW Pond Spr Bpv A(B) <u>OR</u></p> <p>HV-01224A1(B1) ESW Pond Spr In A1(B1) <u>AND/OR</u></p> <p>HV-01224A2(B2) ESW Pond Spr In A2(B2)</p> <p>(Step 2.2.6) On Panel 0C681, Ensure ESW Pp Supply Fan 0V521A(C)(0V521B(D)) STARTS</p> <p>Repeats above steps until all 4 ESW pumps are in service</p>
	BOP	<p>(Step SC/2) At panel 1C681</p> <p>(OP-134-002 Step 2.7.5.a) Places RCIC RM UNIT CLR 1V208A and B control switches to START</p> <p>(Step 2.8.5.a) Places HPCI RM UNIT CLR 1V209A and B control switches to START</p> <p>(Step 2.9.6.a) Places CORE SPRAY RM UNIT COOLER 1V211A(B)(C), and (D) control switches to START</p> <p>(Step 2.10.6.a) Places RHR RM UNIT CLR 1V210A(B)(C), and D control switches to START</p>

Scenario Summary and Administration Instructions

	BOP	<p>(Step SC/T-4) Attempts to isolate HPCI:</p> <ul style="list-style-type: none">• 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
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Scenario Summary and Administration Instructions

Appendix D

Required Operator Actions

Form ES-D-2

Op-Test No.: _____ Scenario No.: 3 Event No.: 7/8 Page ___ of ___

Event Description: Failure of 'B' RPS, ARI Completion of Scram. Failure of 11B Aux Bus to Auto Transfer, 'A' EHC fails to auto start and bypass valves fail to auto open

Priorities: *Once it is determined that a primary system is discharging into the Reactor Building, SCRAM the reactor and enter EO-100-102, RPV control. Restore EHC and reduce reactor pressure to reduce driving head on the leak. Restore power to 'B' and 'C' RFP discharge valves to prevent uncontrolled condensate injection*

★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
	★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 <u>Evaluator Note:</u> <i>SRO may direct placing mode switch directly in SHUTDOWN without performing ON-100-101 actions</i>
	★SRO	(Step 4.3.2) May direct BOP to initiate ARI (This is immediate operator action if SCRAM fails)
	SRO	Enters EO-100-102 from SC/T and on SCRAM due to RPV level <13" (Step RC/L-1) Direct BOP to ensure isolations, ECCS initiations, and diesel starts (Step RC/L-4) Directs ATC to maintain RPV water level between +20" and +45" using Feedwater (Step RC/P-6/7) Directs BOP to initiate a cooldown at <100°F/hr using bypass valves/SRV to allow use of condensate for level control (SRO priority at this point is to reduce reactor pressure to reduce leak flow rate) <u>Evaluator Note:</u> <i>Bypass valves will initially fail to control pressure automatically from the time the mode switch is placed in SHUTDOWN until the turbine trips, at which point the 11B aux bus will be lost, causing a loss of EHC due to the running pump tripping and the standby pump failing to start. EHC pressure must be restored by starting the standby 'A' pump, to permit the use of bypass valves for depressurization</i>

Scenario Summary and Administration Instructions

	SRO	<p>Directs BOP restoration of EHC and restoration of Aux Bus 11B by performing ON-103-003 or cross-tying load centers to restore power to RFP discharge valves</p> <p>Conducts crew brief to explain the requirement to Rapidly Depressurize the RPV if two RB Area Temperatures reach Max Safe</p> <p>Directs BOP to continue monitoring Secondary Containment Area Temperatures</p> <p><u>Evaluator Note:</u> <i>Restoration priority should be given to EHC and restoration of power to RFP 'B' and 'C' discharge valves to prevent uncontrolled condensate injection</i></p> <p><i>Once the crew has taken action to close the 'B' and 'C' RFP Discharge Valve or prevent uncontrolled condensate injection, and begins a forced cooldown, proceed to the next event, Key 14, RCIC room steam leak</i></p>
	SRO	<p>Re-enters EO-100-104, Secondary Containment Control due to HPCI room flood alarm</p> <p>(Step RC/P-3) When approaching second area above max safe, will direct BOP to open all BPV irrespective of cooldown rate</p>

Scenario Summary and Administration Instructions

ATC	<p>Evaluator note: <i>Recirc may already be at 48% if limiter #2 initiated to reduce power for extraction steam isolation. SRO may direct placement of mode switch directly in SHUTDOWN without performing ON-100-101 actions)</i></p> <p>(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</p> <p>(Step 4.1) Place Mode Switch HS-C72A-1S01 to SHUTDOWN</p> <p>(Step 4.2) Observe all Control Rods indicate fully inserted (using two indications, OD-7 completed as soon as possible).</p> <p>Reports to SRO that control rods failed to move and inserts a manual SCRAM (<i>Immediate operator action</i>)</p> <p>(Step 4.3) <u>IF</u> more than 1 control rod > 00:</p> <p>(Step 4.3.1) Arm <u>AND</u> Depress manual scram pushbuttons</p> <p>(Step 4.3.1.a) RPS MAN SCRAM CHAN A1 HS-C72A-1S03A</p> <p>(Step 4.3.1.b) RPS MAN SCRAM CHAN B1 HS-C72A-1S03B</p> <p>(Step 4.3.1.c) RPS MAN SCRAM CHAN A2 HS-C72A-1S03C</p> <p>(Step 4.3.1.d) RPS MAN SCRAM CHAN B2 HS-C72A-1S03D</p>
ATC	<p>Utilizes OD-7 and RWM display to determine all rods full in References ON-100-101 Hard Card (Attachment A) to complete SCRAM actions:</p> <p>(Step 3) Insert SRMs and IRMs</p> <p>(Step 4) Stop Condensate Pumps 1P102A(B)(C)(D) as necessary to leave 2 pumps in operation (N/A due to impending loss of Aux Buses)</p> <p>(Step 5) Check SDV Vent and Drain valves closed</p> <p>(Step 6) Check RPV level between 13" and 54"</p> <p>(Step 7) Check RPV pressure <1087 psig</p> <p>(Step 8) Trip Turbine when <150MWe</p> <p>(Step 9) Check Turbine speed is decreasing</p> <p>(Step 10) Check status of MSIV</p> <p>(Step 11) Report anything abnormal to Unit Supervisor</p> <p>(Step 12) Ensure FW is aligned for Start Up Level Control</p> <p>Reports to SRO that 'B' and 'C' RFP discharge valves have no power</p>
ATC	<p>Once power restored to 'B' and 'C' RFP discharge valves, ensures they are closed and reports this to SRO</p>

Scenario Summary and Administration Instructions

	ATC	Monitors and adjusts feedwater level controller as necessary to maintain reactor water level in band Closes RFP discharge valves when power restored or trips condensate pumps to prevent uncontrolled condensate injection
	★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 (Immediate operator action upon SCRAM failure) Report ARI functioning correctly and scram air header is depressurizing
	BOP	Utilizes ON-100-101 1C601 Hard Card (Attachment B) to assess ECCS status and electric plant. Reports status to SRO
	BOP	Reports loss of 11B Aux Bus upon turbine trip, reports failure of 'A' EHC pump to auto start Start 1P113A(B) EHC HYD FLUID PUMP by Depressing AUTO pushbutton <u>AND</u> then the RUN pushbutton Operates EHC/Bypass valves or SRV to begin plant cooldown/depressurization <100°F/hr
	BOP	Evaluator note: Operator will either: (1) dispatch NPO to crosstie load centers to restore power to RFP discharge valves-1B140 supplying 1B150 and 1B100 supplying 1B110 OR (2) perform steps below to restore power to aux bus 11B (Attachment B Step 1.1/1.2) Dispatches NPO to check bus protective relays do not have any targets and bus lockout relays reset (Step 1.3) Proceeds to Attachment I to restore Aux Bus 11B

Scenario Summary and Administration Instructions

	BOP	<p>(Attachment I) Dispatches NPO to perform steps 1.1, 1.2 to check relays</p> <p>(Step 1.5) Energizing 11B from Tie Bus 0A106</p> <p>1.5.1 Ensure TIE BUS 0A106 ENERGIZED by Observing WHITE LIGHT ILLUMINATED on mimic bus on Panel 0C653 OR by Checking TIE BUS 0A106 voltage on voltmeter XI-00005 is nominally 14KV</p> <p>1.5.2 Ensure all synchroscope switches OFF on 0C653</p> <p>1.5.3 Insert key AND Place TIE BUS TO BUS 11B SYNC SEL HS-00021B keyswitch to ON</p> <p>1.5.4 Close TIE BUS TO BUS 11B BKR 1A10204 by Placing switch to CLOSE</p> <p>1.5.5 Observe TIE BUS TO BUS 11B BKR 1A10204 CLOSES</p> <p>1.5.6 Return TIE BUS TO BUS 11B SYNC SEL HS-00021B to OFF AND Remove key</p> <p>1.5.7 Observe UNIT AUX BUS 11B WHITE LIGHT ILLUMINATED on Panel 0C653</p> <p>1.5.8 Check AUX BUS 11B voltage on voltmeter XI-00009B is nominally 14KV</p>
	BOP	<p>Reports HPCI Room Flooded AR-114-001 (H03) due to Fire Suppression Continues to monitor and report secondary containment temperatures (<i>HPCI/RCIC Max Normal temperature is 120F and Max Safe is 167F</i>) When directed by SRO, depresses BPV jack open pushbutton until all BPV are open</p>

Scenario Summary and Administration Instructions

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 but one SRV, Depress Using BPV

Priority: *Once Max Safe temperature has been exceeded in two area, direct Rapid Depressurization*

★ 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
	★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
	★SRO	(Step RD-8) Directs BOP to open all ADS valves
	★SRO	(Step RD-10) Directs BOP to open SRVs until 6 are open
	★SRO	(Step RD-13) Directs BOP to depressurize RPV using bypass valves <u>Evaluator Note:</u> <i>Once emergency depressurization has commenced using bypass valves or alternate systems, and with Chief Examiner concurrence, scenario may be terminated</i>
	ATC	Reports to SRO from maintenance that during efforts to isolate HPCI steam leak, door to RCIC room could not be re-closed
	BOP	Responds to SIMPLEX fire alarm and reports RCIC Pump Room is cause of alarm and refers to AR-SP-002 for Fire Sup X108_Z3 ALM Reports RCIC Leak Detect Hi Temp alarms AR108-001 (E05) (AR-108-E05 Step 2.1) DETERMINE cause of alarm by observing URS-G33-1N605 on Panel 1C614 Monitors room temperatures on URS-G33-1N605 Dispatches NPO to investigate X227_Z7 RCIC Fire Suppression alarm
	BOP	Reports to SRO that Max Safe Temp has been exceeded in second area (<i>HPCI/RCIC Max Normal temperature is 120F and Max Safe is 167F</i>)

Scenario Summary and Administration Instructions

	★BOP	Turns control switches for all 6 ADS SRVs to OPEN. Recognizes that valves do not open. Reports that no ADS SRVs are open
	★BOP	Returns ADS SRV switches to AUTO, attempts placing all other SRV control switches in OPEN, notes that only 1 SRV opens.
	BOP	Directs NPO to open the six ADS valves from the Upper or Lower Relay room
	★BOP	Depresses and holds INCREASE pushbutton for bypass valve opening jack until bypass valves are fully open (<i>may have been completed earlier as part of RC/P-3 guidance to open all bypass valves irrespective of cooldown rate if rapid depress is anticipated</i>)
		<u>Evaluator Note:</u> <i>Once emergency depressurization has commenced using bypass valves or alternate systems, and with Chief Examiner concurrence, scenario may be terminated.</i>

POST SCENARIO: Have the applicant in the CRS position identify the highest EAL classification for the combination of events experienced during the scenario.

Applicable classification: **FS1** based upon Table F of EP-TP-001.

FS1: Loss OR Potential Loss of ANY Two Barriers

Potential Loss of RCS barrier based upon criteria 2.c.2a: Unisolable primary system leakage outside Primary Containment as indicated by: A. Any Reactor Building area exceeds Max Normal Reactor Building Temperature Limit per Table F-1

AND

Loss of Primary Containment Barrier based upon criteria 3.c.1 or 3.c.3

3.c.1: Failure of all automatic isolation valves in any one line penetrating Primary Containment to close AND a downstream pathway to the environment exists

3.c.3: Unisolable primary system leakage outside Primary Containment as indicated by: A. Any Reactor Building areas exceed Max Safe Reactor Building Temperature Limit per Table F-3.

UNIT SUPERVISOR TURNOVER SHEET

UNIT 1 TO/DA/Y _____
Date _____

SHIFT 1900 to 0700
Start End

SHIFT 0700 to 1900
Start End

MODE 1

MODE _____

POWER LEVEL 100 %

POWER LEVEL _____ %

GENERATOR OUTPUT 1335 MWe

GENERATOR OUTPUT _____ MWe

CASK STORAGE GATE INSTALLED: YES NO

CASK STORAGE GATE INSTALLED: YES/NO

NRC CODE PRIOR TO 0800 Tango Golf Indigo Foxtrot

NRC CODE AFTER 0800 Oscar November Indigo Mike

REMARKS:

- 1) Div 2 Core Spray oos for SOW
- 2) 1B EHC Pump i/s and 1A in stby
- 3) Shift activities:
Maintain power / generator capability curve limits in accordance with the CRC Book
- 4)
- 5)
- 6)
- 7)
- 8)
- 9)
- 10) (Unit 2 is preparing to enter Mode 2)
- 11)
- 12)

COMMON:

- 1)
- 2)
- 3)
- 4)
- 5)
- 6)
- 8)
- 9)
- 10)
- 11)
- 12) (NRC SCN 3)

OFFGOING UNIT SUPERVISOR CHECKLIST:

1900-0700	0700-1900
MJ	
MJ	
MJ	
MJ	

1. Evolutions in progress and items to be completed during next shift, as noted in remarks, have been discussed with oncoming Unit Supervisor.
2. Problems encountered during past shift and abnormal plant conditions, as noted in remarks, have been discussed with oncoming Unit Supervisor.
3. Information in SOMS Log is complete and discussed with oncoming Unit Supervisor.
4. As applicable turnover plastic Security Badge cover and CRS Monitor function to oncoming Unit Supervisor.

1900 - 0700 M. Jacobetti

0700 - 1900 _____
Offgoing Unit Supervisor

ONCOMING UNIT SUPERVISOR CHECKLIST:

0700-1900	1900-0700

(14)

1. LCO/TRO Log reviewed.
2. SOMS Log reviewed for entries made in past 24 hours.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Qualified
Unit Supervisor

POST RELIEF

0700-1900	1900-0700

1. Walk down Control Room panels with Unit Responsible PCO.
2. CRC Book reviewed and Reactivity Brief performed with PCO.
3. Completed System Status Operable audit for open PMT this shift.

0700 - 1900 _____

1900 - 0700 _____
Oncoming Unit Supervisor