



RO ADMIN JPM A1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	1290020301 Conduct of Shift Operations						
TASK STANDARD:	At the completion of this JPM the applicant will have determined that he IS current in training, he CAN assume RO duties on March 26, and he CANNOT assume RO duties on April 5 due to not being current (at that time) in training.						
K/A:	2.1.4	K/A RATING:	RO:	3.3	SRO:	3.8	
10 CFR 55:	45(b)(12)						
APPLICABLE POSITION(S):	RO	VALIDATION TIME:	15 minutes				
REFERENCES:	40OP-9OP02, Conduct of Shift Operations, Rev 65						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR		PLANT		OTHER	X	

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/14/2011

Revised By: Rusty Quick Date: 08/14/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

- N/A

2. SPECIAL TOOLS/EQUIPMENT:

- Copy of 40OP-9OP02 available

3. JPM PERFORMANCE:

- N/A



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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY**, **DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



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INITIAL CONDITIONS:

- You are currently licensed at PVNGS.
- You have been assigned to work control for last 4 months.
- Today is March 26th.
- You attended LOCT training February 10th -13th but did not take the written exam.
- The LOCT cycle completed Friday, February 21st.
- Attached (next page) is a breakdown of shifts you covered in this quarter.
- You met all license maintenance requirements for the 4th quarter of the previous year.
- You have been asked to take the dayshift for 12 hours on March 26th and April 5th.

INITIATING CUE:

- You are to determine if you:
 1. are current in Training
 2. meet requirements to assume RO duties on March 26th
 3. meet requirements to assume RO duties on April 5th (assuming you worked on March 26th)

Provide your answers on the attached sheet.



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

	STEP	CUE	STANDARD
1. *	4.2.1.1 of 40DP-9OP02 An Operator's training is current when all required material in an LOCT Training Cycle is completed. If any LOCT material is missed during a training cycle, make-up training shall be completed no later than 6 weeks from the end of the training cycle that the training was part of.		Examinee determines that for the March 26 th date, the training would be current. The training would not be current for the April 5 th date because it was past the 6 week period.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	4.2.2 of 40DP-9OP02 ACTIVE NRC Operators License exists when an operator has a valid license and has “actively performed” the functions of an operator or senior operator on a minimum of five 12-hour shifts per calendar quarter.		Examinee determines that he would have enough time to work both days if he worked the March 26 th date which would give him 5 12 hours days for the 1 st quarter.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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ANSWER KEY

January 15th	12 hour day shift
January 16th	6 hour shift 1030 to 1630
February 24th	12 hour day shift
February 25th	12 hour day shift
March 11th	6.5 hours 1200 to 1830
March 21st	12 hour day shift

1. Are you current in Training? **YES** / NO Examinee may circle no and use the same explanation as in answer 3 or may add that it would be current only until the end of March. That would be SAT for this JPM.

If NO what must be done to become current?

2. Can you assume RO duties on March 26th? **YES** / NO

If NO why not?

3. Can you assume RO duties on April 5th (assuming you worked 12 hours on March 26th)?
YES / **NO**

If NO why not?

Training would expire before this date due to 6 weeks past the requal cycle (Also accept "Yes, if training requirements are met prior to the 6-week period ending")

ANSWER KEY



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APPLICANT

INITIAL CONDITIONS:

- You are currently licensed at PVNGS.
- You have been assigned to work control for last 4 months.
- Today is March 26th.
- You attended LOCT training February 10th -13th but did not take the written exam.
- The LOCT cycle completed Friday, February 21st.
- Attached (next page) is a breakdown of shifts you covered in this quarter.
- You met all license maintenance requirements for the 4th quarter of the previous year.
- You have been asked to take the dayshift on March 26th and April 5th.

INITIATING CUE:

- You are to determine if you:
 1. are current in Training
 2. meet requirements to assume RO duties on March 26th
 3. meet requirements to assume RO duties on April 5th (assuming you worked on March 26th)

Provide your answers on the attached sheet.

APPLICANT



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APPLICANT

January 15th	12 hour day shift
January 16th	6 hour shift 1030 to 1630
February 24th	12 hour day shift
February 25th	12 hour day shift
March 11th	6.5 hours 1200 to 1830
March 21st	12 hour day shift

1. Are you current in Training? **YES / NO**

If **NO** what must be done to become current?

2. Can you assume RO duties on March 26th? **YES / NO**

If **NO** why not?

3. Can you assume RO duties on April 5th (assuming you worked 12 hours on March 26th)? **YES / NO**

If **NO** why not?

APPLICANT



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JPM BASIS INFORMATION

TASK:	1230050101 Perform a shutdown margin calculation						
TASK STANDARD:	Required boron concentration post trip determined and Shutdown margin acceptance criteria are determined for two CEAs not fully inserted into the core.						
K/A:	2.1.37	K/A RATING:	RO:	4.3	SRO:	4.6	
10 CFR 55:	45(b)(5)						
APPLICABLE POSITION(S):	RO		VALIDATION TIME:	40 minutes			
REFERENCES:	72ST-9RX14, Shutdown Margin – Modes 3, 4, and 5, Revision 17, Core Data Book Unit 1 Cycle 19						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR		PLANT		OTHER	X	

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 10/08/2004

Revised By: Rusty Quick Date: 09/15/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
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1. SIMULATOR SETUP:

A. N/A

2. SPECIAL TOOLS/EQUIPMENT:

- Copy of 73ST-9RX14, Shutdown Margin - Modes 3, 4, and 5, Rev 17
- U1 Cycle 19 Core Data Book Revision 0

3. JPM PERFORMANCE:

- N/A



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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

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INITIAL CONDITIONS:

- You are a Reactor Operator in Unit 1
- Unit 1 was manually tripped at 0100 today due to an RCP problem.
- ALL Reactor Trip breakers opened on the trip.
- Full Strength CEAs #12 and #13 did not insert on the trip.
- The crew is borating at 40 gpm.
- The plant has been stabilized at 565°F Tcold.
- A cooldown to 500°F Tcold is planned for this shift.
- Current boron concentration is 100 ppm from the latest chemistry sample taken 30 minutes ago (assume from present time).
- The Unit is at 500 EFPD.
- The crew is preparing to perform 72ST-9RX14, Shutdown Margin – Modes 3, 4, and 5.
 - This is not the first verification per 72ST-9RX14 after the trip.
 - This ST is to be completed for the next 12 hours.
 - Reactor Engineering has determined that the minimum (least negative) expected Xenon is from the XeRho V2 Code and is -2471 pcm.
 - The Refueling Boron Concentration per the COLR is 3000 ppm.

INITIATING CUE:

- The CRS has directed you to perform Shutdown Margin Calculation per 72ST-9RX14.
- Another operator will complete either Section 7.0 (Restoration) **OR** Section 8.0 (Contingencies) as applicable when you get to a step that directs that action.



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- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 6.2.1: IF this is the initial SDM verification following a reactor trip and any FSCEA is NOT Fully Inserted, THEN GO TO Section 8.0, Contingencies.		Examinee N/As this step since the Initial Conditions stated this was not the first performance after the trip.

SAT / UNSAT

Comments (required for UNSAT):

Note before Step 6.2.2

Line numbers (in parentheses) within action steps are in reference to individual line items in Appendix D.



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	STEP	CUE	STANDARD
2. *	<p>Step 6.2.2 and Step 6.2.2.1:</p> <p>Select the most conservative T_{Cold} for the surveillance period as follows:</p> <p>IF Reactor Coolant Pumps (RCP's) are in service or RCS natural circulation conditions exist, THEN select the most conservative T_{Cold} from ONE of the following:</p> <ul style="list-style-type: none"> • RCT115, RC COLD LEG 1B TEMP points from PMS or ERFDADS • RCT125, RC COLD LEG 2A TEMP points from PMS or ERFDADS • As directed by the SM/CRS. 		Examinee determines the most conservative T_{Cold} is the target temperature for the planned cooldown and enters "500°F."
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
3.	<p>Step 6.2.2.2 :</p> <p>IF RCP's are secured and Shutdown Cooling is in service,</p> <p>THEN select the most conservative T_{Cold} from ONE of the following:.....</p>		Examinee marks this step as "N/A" and proceeds with the procedure.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
4. *	Step 6.2.3: Record ALL of the following initial calculation data: Most Conservative T _{Cold} for Surveillance Period (Line D.1).		On Appendix D – Any FSCEA Not Fully Inserted with RTCBs Open - Data Collection, Examinee enters the following in the Value column: “ 500°F ” for the “Most Conservative T _{Cold} ” on Line D.1.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
5. *	Step 6.2.3 (cont): RCS Boron concentration from latest chemistry sample (Line D.2)		“ 100 ” ppm for “RCS Boron concentration from latest chemistry sample” on Line D.2.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
6.	Step 6.2.3 (cont): Date and Time of RCS Boron Sample (Line D.3).		Enters “ (today’s date) and time one half hour ago ” for “Date and Time of RCS Boron Sample” on Line D.3. EXAMINER NOTE: The Date/Time of the latest Chemistry sample is NOT critical because this calculation is unaffected by the time of the sample.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
7. *	Step 6.2.3 (cont): Current Core Burnup (Line D.4).		Examinee enters “ 500 ” for the “Current Core Burnup” on Line D.4.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
8. *	Step 6.2.4 and Step 6.2.4.1: Determine Untrippable CEA Required RCS Boron Concentration as follows: Determine the Xenon Free Required RCS Boron Concentration from Core Data Book(CDB) Curves 3.1.X, using ALL the following data: <ul style="list-style-type: none"> • Most conservative TCold (Line D.1). • Current core burnup (Line D.4). 		Examinee determines that Curve 3.1.21 should be used since given time in core life is 500 EFPD. From Curve 3.1.21, examinee reads the graph and determines that the Minimum RCS Boron Concentration vs T-COLD is between “ 362 and 368 ” ppm. EXAMINER NOTE: “Exact” value for Minimum RCS Boron Concentration vs T-COLD is 365 ppm. The smallest increment on this graph is 5 ppm. Applying an industry standard tolerance of +/- ½ the smallest increment would yield a tolerance of +/- 2.5 ppm, for an overall range for this step of 362.5 to 367.5 ppm. To allow for rounding, 362.5 was rounded to 362 and 367.5 was rounded to 368.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
9. *	Step 6.2.4.2: Record the Xenon Free Required RCS Boron Concentration (Line D.5).		Examinee records between “ 362 and 368 ” ppm for the Minimum RCS Boron Concentration vs T-COLD in Line D.5.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10. *	Step 6.2.4.3: Determine the Worst Stuck CEA Pair Worth from the CDB Curve 2.16.X using ALL of the following: <ul style="list-style-type: none"> • Most conservative T_{Cold} (Line D.1) • CS Boron Concentration (Line D.2) • Current Core Burnup (Line D.4) 		Examinee determines that Curve 2.16.3 should be used since given time in core life is 500 EFPD. From Curve 2.16.3 or Table 2.16.3, examinee determines that the Worst Stuck CEA Pair Worth is between -6200 and -6233 pcm. EXAMINER NOTE: “Interpolated” value (from Table 2.16.3) for Worst Stuck CEA Pair Worth is -6212.5 pcm. From Curve 2.16.3, the “approximate” value is -6220. The smallest increment on the curve is 25 pcm. Applying an industry standard tolerance of $\pm \frac{1}{2}$ the smallest increment would yield a tolerance of ± 12.5 pcm from the lowest and highest number above, $(6212.5 - 12.5 = 6200)$ and $(6220 + 12.5 = 6232.5)$ for an overall range for this step of 6200 to 6232.5 pcm. To allow for rounding 6232.5 was rounded to 6233.

SAT / UNSAT Comments (required for UNSAT):			
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	STEP	CUE	STANDARD
11. *	Step 6.2.4.4: Record the Worst Stuck CEA Pair Worth (Line D.6).		Examinee records between “ -6200 and -6233 ” pcm for Worst Stuck CEA Pair Worth in Line D.6.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12. *	Step 6.2.4.5: Determine the Worst Stuck CEA Worth from the CDB Curve 2.15.X using ALL of the following: <ul style="list-style-type: none"> • Most conservative TCold (Line D.1) • RCS Boron Concentration (Line D.2) • Current Core Burnup (Line D.4) 		Examinee determines that Curve 2.15.3 should be used since given time in core life is 500 EFPD. From Curve 2.15.3 or Table 2.15.3, examinee reads the graph or table and determines that the Worst Stuck CEA Worth is between -3780 and -3800 pcm. EXAMINER NOTE: “Interpolated” value (from Table 2.15.3) for Worst Stuck CEA Worth is -3779.4 pcm. From Curve 2.15.3, the “exact” value is -3790. The smallest increment on the curve is 20 pcm. Applying an industry standard tolerance of +/- ½ the smallest increment would yield a tolerance of +/- 10 ppm, for an overall range for this step of -3780 to -3800 pcm.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
13. *	Step 6.2.4.6: Record Worst Stuck CEA Worth (Line D.7).		Examinee records between “ -3780 to -3800 ” pcm for Worst Stuck CEA Pair Worth in Line D.7.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
14. *	Step 6.2.4.7: Subtract the Worst Stuck CEA Worth (Line D.7) from the Worst Stuck CEA Pair Worth (Line D.6) to determine the Worth Penalty for One Untrippable CEA (Line D.8).		Examinee subtracts the Worst Stuck CEA Worth from the Worst Stuck CEA Pair Worth and enter a value of “ -2400 to -2455 ” pcm. Examiner Note: These values were determined by subtracting the lowest value in Step 13 (-3780) from the highest value in Step 11 (-6235 pcm) and by subtracting the highest value in Step 13 (-3800) from the lowest value in Step 11 (-6200).
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
15. *	<p>Step 6.2.4.8:</p> <p>Determine the SDM Boron Worth from the CDB Curve 4.3.X using ALL of the following:</p> <ul style="list-style-type: none"> • Most conservative T_{Cold} (Line D.1) • RCS Boron Concentration (Line D.2) • Current Core Burnup (Line D.4) 		<p>Examinee determines that Curve 4.3.3 applies since 500 EFP is closest to the given core life of 501 EFPD.</p> <p>Reading the 600 ppm curves between 490 degrees F and 515 degrees F, Examinee determines the Boron Worth is between “-9.5 to -9.8” pcm/ppm.</p> <p>EXAMINER NOTE:</p> <p>From Table 4.3.3, the “Interpolated” value for SDM Boron Worth is -9.69 pcm/ppm. From Curve 4.3.3, the “interpolated” value is -9.6 pcm/ppm. The smallest increment on the curve is 0.1 pcm/ppm. Applying an industry standard tolerance of +/- ½ the smallest increment would yield a tolerance of +/- 0.05 ppm, for an overall range for this step of -9.55 to -9.74 pcm.</p> <p>Procedure calls for 1/10 increments so for rounding the band should be -9.5 to -9.8 pcm</p>
<p>SAT / UNSAT Comments (required for UNSAT):</p>			



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	STEP	CUE	STANDARD
16. *	Step 6.2.4.9: Record the SDM Boron Worth (Line D.9).		Examinee enters Boron Worth of between “-9.5 to -9.8” pcm/ ppm on Line D.9.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
17. *	Step 6.2.4.10: Divide Worth Penalty for one Untrippable CEA (Line D.8) by the SDM Boron Worth (Line D.9) to calculate the Boron Concentration Penalty for one Untrippable CEA (Line D.10).		Examinee divides “-2400 to -2455” pcm (Line D.7) by -9.5 to -9.8” pcm/ppm (Line D.9) for a Xenon Reactivity Adjustment Term of “245-259” ppm. EXAMINER NOTE: These values were determined by dividing the lowest value in Step 14 (-2400) by the highest value in Step 15 (-9.8 pcm/ppm) and by dividing the highest value in Step 14 (-2455) by the lowest value in Step 15 (-9.5 pcm/ppm). To allow for rounding errors, 244.9 is rounded to 245 and 258.4 is rounded to 259, for a total range of 245-259 .
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
18. *	Step 6.2.4.11: Record the Boron Concentration Penalty for one Untrippable CEA (Line D.10).		Examinee enters between “ 245 and 259 ” on Line D.10.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
19. *	Step 6.2.4.12: Record the total number of Untrippable CEAs (Line D.11).		Examinee enters “2” on line D.11 because the Initial Conditions stated two CEAs were not inserted.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
20. *	Step 6.2.4.13: Determine the Total Untrippable CEA Boron Concentration Penalty (Line D.12) by multiplying the CEA Boron Concentration Penalty for one Untrippable CEA (Line D.10) by the number of Untrippable CEAs (Line D.11).		Examinee determines Total Untrippable CEA Boron Concentration Penalty by multiplying the value from D.10 between “ 245 and 259 ” by 2 and enters it in on Line D.12
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
21. *	Step 6.2.4.14: Record the Total Untrippable CEA Boron Concentration Penalty (Line D.12).		Examinee enters between “ 490 and 518 ” ppm on Line D.12.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
22. *	Step 6.2.4.15: Add the Xenon Free Required RCS Boron Concentration (Line D.5) to Total Untrippable CEA Boron Concentration Penalty (Line D.12) to determine the Untrippable CEA Xenon Free Required RCS Boron Concentration (Line D.13).		Examinee adds the number from Line D.5 (between “ 362 and 368 ” ppm) to the number from Line D.12 (between “ 490 and 519 ” ppm) and enters it on Line D.13. Adding the two lowest numbers (362 + 490) and the two highest numbers (368 + 519) results in a range between “ 852 and 887 ” ppm
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
23. *	Step 6.2.4.16: Record the Untrippable CEA Required RCS Boron Concentration (Line D.13).		The examinee enters a value between “ 852 and 887 ” ppm on Line D.13.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
24.	Step 6.2.5: Sign for performing the SDM calculation.		Examinee signs for calculations.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
25.	Step 6.2.6: Perform an Independent Verification the SDM calculation is correct.	IF REQUESTED CUE: Another Operator has Independently Verified the calculations.	
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
26. *	Step 6.2.7: Record the COLR Refueling Boron Concentration (Line D.17).		Examinee records 3000 ppm from the Initial Conditions.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
27.	Step 6.2.8: IF the value of the Untrippable CEA Required RCS Boron Concentration (Line D.13) is greater than or equal to the COLR Refueling Boron Concentration (Line D.17), THEN GO TO Section 6.5, RCS Borated to COLR Refueling Boron Concentration.		Examinee "N/As" this step since the Value in Line D.13 is < 3000 ppm.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
28. *	<p>Step 6.2.9 and 6.2.9.1:</p> <p>IF the current RCS Boron Concentration (Line D.2) is greater than or equal to the calculated Untrippable CEA Required RCS Boron Concentration (Line D.13), THEN perform the following:</p> <p>Evaluate the following SDM Technical Specification Acceptance Criteria: Current RCS Boron concentration (Line D2) is greater than or equal to the Untrippable CEA required RCS Boron Concentration (Line D.13)</p> <p>Acceptance Criteria Met? (Circle Result) YES/NO</p>		<p>Examinee determines current RCS Boron Concentration (Line D.2) is less than or equal to the Untrippable CEA Required RCS Boron Concentration (Line D.13) and “N/As” this step and goes to Step 6.2.10.</p>
<p>SAT / UNSAT Comments (required for UNSAT):</p>			



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	STEP	CUE	STANDARD
29.	Step 6.2.10 and 6.2.10.1: Determine the Xenon Adjusted Required Boron Concentration as follows: Determine the minimum (most conservative) expected Xenon reactivity from ONE of the following sources: <ul style="list-style-type: none"> • XeRho V2 Code considering the time period for which the SDM calculation will be valid. • Provided by Reactor Engineering using the SIMULATE-3 Code. • Other Reactor Engineering source as documented in the Surveillance Test Log. 		Examinee determines from Initial Conditions that Reactor Engineering has provided a Xenon reactivity of -2471 pcm.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
30. *	Step 6.2.10.2: Record Xenon reactivity (Line D.14). .		Examinee enters “-2471” on Line D.14.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
31. *	Step 6.2.10.3: Divide Xenon Reactivity (Line D.14) by the Boron Worth (Line D.9) to obtain a Xenon Reactivity Adjustment Term (Line D.15).		Examinee divides -2471 by (-9.5 to -9.8) to obtain a value between 252.1 and 260.1. To allow for rounding errors, 252.1 is rounded to 252 and 260.17 is rounded to 260, for a total range of 252-260.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
32. *	Step 6.2.10.4: Record Xenon Reactivity Adjustment Term (Line D.15).		Examinee enters between 252 and 260 ppm on Line D.15.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
33. *	Step 6.2.10.5: Subtract the Xenon Reactivity Adjustment Term (Line D.15) from the Untrippable CEA Xenon Free Required RCS Boron Concentration (Line D.13) to obtain a Xenon Adjusted Required Boron Concentration (Line D.16).		Examinee enters between 592 and 635 ppm on Line D.16. To obtain a range for this value, the highest value from Line D.15 (260) was subtracted from the lowest value from Line D.13 (852). $[852 - 260 = 592]$. Also, the lowest value from Line D.15 (252) was subtracted from the highest value from Line D.13 (887). $[887 - 2520 = 635]$ This results in a total range between 592 and 635 .

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
34. *	Step 6.2.11: Record Xenon Adjusted Required Boron Concentration (Line D.16).		Examinee enters between 592 and 635 ppm on Line D.16.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
35.	Step 6.2.12: Sign for performing the SDM calculation.		Examinee signs for calculations.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
36.	Step 6.2.13: Perform an Independent Verification the SDM calculation is correct.	IF REQUESTED CUE: Another Operator has Independently Verified the calculations.	

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
37. *	Step 6.2.14: Evaluate the following SDM Technical Specification Acceptance Criteria: Current RCS Boron concentration (Line D2) is greater than or equal to the Xenon Adjusted Required Boron Concentration (Line D.16) Acceptance Criteria Met? (Circle Result) YES/NO .		Examinee determines current RCS Boron Concentration (Line D.2) is less than or equal to the Xenon Adjusted Required Boron Concentration (Line D.16) and circles "NO."
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
38. *	Step 6.2.15: IF the SDM Technical Specification Acceptance Criteria is NOT met, THEN GO TO Section 8.0, Contingencies.	INFORM CUE: Per the Initial Conditions - Another operator will complete either Section 7.0 (Restoration) OR Section 8.0 (Contingencies) as applicable when you get to a step that directs that action.	Examinee goes to Section 8.0, Contingencies.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- You are a Reactor Operator in Unit 1
- Unit 1 was manually tripped at 0100 today due to an RCP problem.
- ALL Reactor Trip breakers opened on the trip.
- Full Strength CEAs #12 and #13 did not insert on the trip.
- The crew is borating at 40 gpm.
- The plant has been stabilized at 565°F Tcold.
- A cooldown to 500°F Tcold is planned for this shift.
- Current boron concentration is 100 ppm from the latest chemistry sample taken 30 minutes ago (assume from present time).
- The Unit is at 500 EFPD.
- The crew is preparing to perform 72ST-9RX14, Shutdown Margin – Modes 3, 4, and 5.
 - This is not the first verification per 72ST-9RX14 after the trip.
 - This ST is to be completed for the next 12 hours.
 - Reactor Engineering has determined that the minimum (least negative) expected Xenon is from the XeRho V2 Code and is -2471 pcm.
 - The Refueling Boron Concentration per the COLR is 3000 ppm.

INITIATING CUE:

- The CRS has directed you to perform Shutdown Margin Calculation per 72ST-9RX14.
- Another operator will complete either Section 7.0 (Restoration) **OR** Section 8.0 (Contingencies) as applicable when you get to a step that directs that action.

APPLICANT



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JPM BASIS INFORMATION

TASK:	1290310301 Perform a Tech Review of a Permit						
TASK STANDARD:	Tech Review a Tag Assignment Sheet and identify four (4) errors						
K/A:	2.2.13		K/A RATING:	RO:	4.1	SRO:	4.3
10 CFR 55:	45(12)						
APPLICABLE POSITION(S):	RO		VALIDATION TIME:	20 minutes			
REFERENCES:	40DP-9OP29, Power Block Clearance and Tagging, Revision 54 Drawing 01-E-DWF-0001 , Drawing 01-E-DWB-0001 Drawing 01-M-DWP-0002						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR			PLANT		OTHER	X

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Tom Stahler Date: 5/03/2003

Revised By: Rusty Quick Date: 09/17/14

Technical Review Operations Approval

Training Approval

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: Date:

Evaluator Name:

Time to complete: Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR #

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Planning organization for resolution.



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1. SIMULATOR SETUP:

- A. IC#: N/A (May be performed in the simulator or classroom, NO setup required)
- B. MALFUNCTIONS, OVERRIDES & REMOTE FUNCTIONS

EVENT	COMMAND	DESCRIPTION
1.	N/A	
2.		
3.		
4.		

- C. SPECIAL INSTRUCTIONS:
 - None
- D. REQUIRED CONDITIONS:
 - None
- E. SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.
 - ☐ NA if Simulator setup not required

Verified by: _____ Date: _____

2. SPECIAL TOOLS/EQUIPMENT:

- 40DP-9OP29, Power Block Clearance and Tagging, Revision **54**,
- Drawing 01-E-DWF-0001
- Drawing 01-E-DWB-0001
- Drawing 01-M-DWP-0002



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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

ALL JPMs

- You may use any source of information normally available.

INITIAL CONDITIONS:

- Unit 1 is 100% power.
- The 'A' Demineralized Water Pump (DWN-P05A) has a severe seal leak on the pump. The CRS has directed that the pump be isolated and a clearance hung to prevent spilling water.
- Clearance **X-XXXX-X** was generated manually due to the Site Work Management System (SWMS) being down.

INITIATING CUE:

- The CRS has directed you to perform a Technical Review of the Tag Assignment Sheet for Clearance **X-XXXX-X**.
- Identify errors on the permit.

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) following a JPM Step number denotes a Critical Step.
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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JPM START TIME:

	STEP	CUE	STANDARD
1. *	Identifies one (1) error on the Tag Assignment Sheet. Tag 1 has the wrong handswitch number.		Examinee determines the following discrepancy: Tag 1 has the wrong handswitch number (for “B” pump). (should be 1J-DWN-HS29A)
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Identifies one (1) error on the Tag Assignment Sheet. Tag 2 has the wrong circuit breaker identified.	EXAMINER NOTE: The order of identification of the errors in steps 1, 2, 3, and 4 of this JPM is not critical.	Examinee determines the following discrepancy: Tag 2 is the wrong circuit breaker (breaker is for the “B” pump) (should be 1E-NHN-M1318).
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
3. *	Identifies one (1) error on the Tag Assignment Sheet. Tag 3 has the wrong position (OPEN) for the suction valve.		Examinee determines the following discrepancy: Tag 3 has wrong position (OPEN) for the suction valve (should be CLOSED).
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4. *	Identifies one (1) error on the Tag Assignment Sheet. Tag 5 has the wrong Tag Color (YELLOW).		Examinee determines the following discrepancy: Tag 5 has the wrong Tag Color (YELLOW) (should be RED).
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- Unit 1 is 100% power.
- The 'A' Demineralized Water Pump (DWN-P05A) has a severe seal leak on the pump. The CRS has directed that the pump be isolated and a clearance hung to prevent spilling water.
- Clearance **X-XXXX-X** was generated manually due to the Site Work Management System (SWMS) being down.

INITIATING CUE:

- The CRS has directed you to perform a Technical Review of Clearance **X-XXXX-X**.
- Identify errors on the permit.

APPLICANT



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JPM BASIS INFORMATION

TASK:	1290020301 Conduct of Shift Operations							
TASK STANDARD:	Determined which Reactor Operator(s) is(are) available to take the shift without exceeding Fatigue Rule requirements AND determined which Reactor Operator(s) have exceeded Fatigue Rule requirements.							
K/A:	2.1.5			K/A RATING:	RO:	2.9	SRO:	3.9
10 CFR 55:	45(b)(12)							
APPLICABLE POSITION(S):	SRO		VALIDATION TIME:	20 minutes				
REFERENCES:	01DP-0AP17, Managing Personnel Fatigue 10 CFR Part 26 Subpart I							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR		PLANT		OTHER	X		

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Adam Rasmussen Date: 10/10/2013

Revised By: N/A Date: N/A

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

N/A

2. SPECIAL TOOLS/EQUIPMENT:

- 01DP-0AP17, Managing Personnel Fatigue, available
- JPM was written using Revision 8 of 01DP-0AP17, Managing Personnel Fatigue. This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.
- PVNGS Standards and Expectations, Rev 6 available
- Calculator
- Pen and Paper

3. JPM PERFORMANCE:

N/A



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TASK CONDITIONS**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.



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INITIAL CONDITIONS:

- You are the CRS on Unit 1 on night shift.
- A Reactor Operator just called in on short notice PTO for tomorrow (Tuesday dayshift).
- This will put the manning at below minimum allowed.
- EmCenter Fatigue Management software is not available while a software patch is being installed.
- You have accumulated the previous week's work hours of four Reactor Operators (located on following page).
- All four Reactor Operators have averaged 3 days off per week in the previous 5 week period.
- Assume all hours are day shift non-outage hours.

INITIATING CUE:

You have been directed to:

- Determine which of the following Reactor Operators (if any) can be called in to fill the vacant position for 12 hours.
- Determine if any of the operators have exceeded the Fatigue Rule requirements during the past week.

Provide your answers in the spaces below.

Operator #1 CAN / CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)
Operator #2 CAN / CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)
Operator #3 CAN / CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)
Operator #4 CAN / CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)
Have any of the operators exceeded the Fatigue Rule requirements during the past week? If yes, which operator(s)? <div style="display: flex; justify-content: space-between; margin-top: 10px;"><div>YES / NO (CIRCLE ONE)</div><div>If YES: Reactor Operator(s) (CIRCLE) <div style="display: flex; justify-content: space-around; width: 100%;">#1#2#3#4</div></div></div>

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	Reactor Operator #1 Schedule	Reactor Operator #2 Schedule	Reactor Operator #3 Schedule	Reactor Operator #4 Schedule
Saturday 10/24/2010	Off	Off	Off	On Shift – 12 hours
Sunday 10/25/2010	Off	On Shift – 12 hours	Off	Off
Monday 10/26/2010	On Shift – 12 hours	Off	On Shift – 12 hours	Off
Tuesday 10/27/2010	Off	Off	On Shift – 12 hours	On Shift – 12 hours
Wednesday 10/28/2010	Tagging Office – 10 hours	On Shift – 12 hours	On Shift – 12 hours	On Shift – 12 hours
Thursday 10/29/2010	Tagging Office – 10 hours	On Shift – 12 hours	On Shift – 12 hours	On Shift – 12 hours
Friday 10/30/2010	Tagging Office – 10 hours (Called out for emergent work)	On Shift – 12 hours	Participated in Unannounced E-Plan Drill – 8 hours	On Shift – 12 hours
Saturday 10/31/2010	On Shift – 12 hours	On Shift – 12 hours	Off	On Shift – 12 hours
Sunday 11/01/2010	Tagging Office – 10 hours (Called out for emergent work)	Off	On Shift – 12 hours	On Shift – 14 hours (Called in early for pre- shift briefing for special evolution)
Monday 11/02/2010	Just In Time Training (JITT) for upcoming plant shutdown – 10 hours	On Shift – 14.5 hours (held over 2.5 hours due to his relief being late)	Off	Off
Tuesday 11/03/2010	Operator needed to work this day 12 hours			



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INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) following a JPM Step number denotes a Critical Step
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



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ANSWER KEY

Operator #1 CAN CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)	
Operator #2 CAN CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)	
Operator #3 CAN CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)	
Operator #4 CAN CANNOT fill the position on Tuesday for 12 hours. (CIRCLE ONE)	
Have any of the operators exceeded the Fatigue Rule requirements during the past week? If yes, which operator(s)?	
YES NO (CIRCLE ONE)	If YES: Reactor Operator(s) (CIRCLE)
	#1 #2 #3 #4

ANSWER KEY



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JPM START TIME:

	STEP	CUE	STANDARD
1. *	Examinee reviews the work schedule for Reactor Operator #1 to determine if that operator can be called in to fill the position on Tuesday.	EVALUATOR NOTE: Operator #1 cannot because he would exceed 72 hours in a 7 day period.	Examinee determined that Operator #1 CANNOT be called in to fill the position for Tuesday.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Examinee reviews the work schedule for Reactor Operator #2 to determine if that operator can be called in to fill the position on Tuesday.	EVALUATOR NOTE: Operator #2 cannot because he would exceed the following: 72 hours in a 7 day period 26 hours in a 48 hour period	Examinee determined that Operator #2 CANNOT be called in to fill the position for Tuesday.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
3. *	Examinee reviews the work schedule for Reactor Operator #3 to determine if that operator can be called in to fill the position on Tuesday.		Examinee determined that Operator #3 CAN be called in to fill the position for Tuesday.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
4. *	Examinee reviews the work schedule for Reactor Operator #4 to determine if that operator can be called in to fill the position on Tuesday.	EVALUATOR NOTE: Operator #4 cannot because he would exceed 72 hours in a 7 day period.	Examinee determined that Operator #4 CANNOT be called in to fill the position for Tuesday.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
5. *	Examinee reviews the work schedule for Reactor Operators to determine if any operator has exceeded the Fatigue Rule requirements.		Examinee determined that Operator #4 HAS exceeded the requirements for Fatigue Rule due to working 74 hours in a 7 day period.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- You are the CRS on Unit 1 on night shift
- A Reactor Operator just called in on short notice PTO for tomorrow (Tuesday dayshift)
- This will put the manning at below minimum allowed
- EmpCenter Fatigue Management software is not available while a software patch is being installed
- You have accumulated the previous week's work hours of four Reactor Operators (located on following page)
- All four Reactor Operators have averaged 3 days off per week in the previous 5 week period
- Assume all hours are day shift non-outage hours

INITIATING CUE:

You have been directed to:

1. Determine which of the following Reactor Operators (if any) can be called in to fill the vacant position for 12 hours.
2. Determine if any of the operators have exceeded the Fatigue Rule requirements during the past week.

Provide your answers in the spaces below:

Operator #1 CAN / CANNOT fill the position on Tuesday for 12 hours.	(CIRCLE ONE)
---	--------------

Operator #2 CAN / CANNOT fill the position on Tuesday for 12 hours.	(CIRCLE ONE)
---	--------------

Operator #3 CAN / CANNOT fill the position on Tuesday for 12 hours.	(CIRCLE ONE)
---	--------------

Operator #4 CAN / CANNOT fill the position on Tuesday for 12 hours.	(CIRCLE ONE)
---	--------------

Have any of the operators exceeded the Fatigue Rule requirements during the past week?

If yes, which operator(s)?

YES / NO (CIRCLE ONE)

If YES: Reactor Operator(s) (CIRCLE)

#1 #2 #3 #4

APPLICANT

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APPLICANT

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	Reactor Operator #1 Schedule	Reactor Operator #2 Schedule	Reactor Operator #3 Schedule	Reactor Operator #4 Schedule
Saturday 10/24/2010	Off	Off	Off	On Shift – 12 hours
Sunday 10/25/2010	Off	On Shift – 12 hours	Off	Off
Monday 10/26/2010	On Shift – 12 hours	Off	On Shift – 12 hours	Off
Tuesday 10/27/2010	Off	Off	On Shift – 12 hours	On Shift – 12 hours
Wednesday 10/28/2010	Tagging Office – 10 hours	On Shift – 12 hours	On Shift – 12 hours	On Shift – 12 hours
Thursday 10/29/2010	Tagging Office – 10 hours	On Shift – 12 hours	On Shift – 12 hours	On Shift – 12 hours
Friday 10/30/2010	Tagging Office – 10 hours (Called out for emergent work)	On Shift – 12 hours	Participated in Unannounced E-Plan Drill – 8 hours	On Shift – 12 hours
Saturday 10/31/2010	On Shift – 12 hours	On Shift – 12 hours	Off	On Shift – 12 hours
Sunday 11/01/2010	Tagging Office – 10 hours (Called out for emergent work)	Off	On Shift – 12 hours	On Shift – 14 hours (Called in early for pre- shift briefing for special evolution)
Monday 11/02/2010	Just In Time Training (JITT) for upcoming plant shutdown – 10 hours	On Shift – 14.5 hours (held over 2.5 hours due to his relief being late)	Off	Off
Tuesday 11/03/2010	Operator needed to work this day 12 hours			

APPLICANT



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JPM BASIS INFORMATION

TASK:	1290020301 Conduct On Shift Operations IAW Conduct of Shift Operations						
TASK STANDARD:	Determine total dose, authorization needed to receive dose, and area posting level						
K/A:	2.3.13		K/A RATING:	RO:	3.4	SRO:	3.8
10 CFR 55:	43.4, 45.9, 45.10						
APPLICABLE POSITION(S):	RO		VALIDATION TIME:	20 minutes			
REFERENCES:	75DP-9RP01, Radiation Exposure and Access Control, Revision 20 and 75RP-0RP01, Radiological Posting and Labeling, Revision 30						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR		PLANT		OTHER	X	

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 05/18/2010
Revised By: Rusty Quick Date: 09/17/2014

Technical Review _____ Operations Approval _____
Training Approval _____
(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Planning organization for resolution.



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1. SIMULATOR SETUP:

N/A

2. SPECIAL TOOLS/EQUIPMENT:

- Calculator
- 75DP-9RP01, Radiation Exposure and Access Control
- 75RP-0RP01, Radiological Posting and Labeling



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam
TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- When applicable comply with the REP. **IF** it is not possible to enter an area **THEN** it may be permissible to discuss the equipment to be operated. **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

INITIAL CONDITIONS:

- The CRS directs you to enter the Radiation Control Area (RCA) to perform a task which you are the only qualified person on site to perform this task.
- You are **51** years old.
- Your **5** year cumulative exposure is **5205** mrem.
- Your total dose exposure this year has been **1809** mrem.
- The radiation dose rate in the work (including transit path) area is **950** mrem/hr.
- The highest dose rate in the room is **975** mrem/hr.
- The task will take **40** minutes.

INITIATING CUE:

- Based on the information in the Initial Conditions, determine the following:
 1. What is your total dose for the year upon completion of this task?
 2. Whose permission is required to receive this amount of dose?
 3. Should this area be posted as a Radiation area, High Radiation area, Locked High Radiation area, or Very High Radiation area?

Record your answers in the area provided below:

- Total dose for the year upon completion of this task
- Whose permission is required to receive this dose
- This area should be posted as a _____ area



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) following a JPM Step number denotes a Critical Step.
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- **IF** this is the first JPM of the set, **THEN** ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify unit Shift Manager of in-plant JPM performance.
- Performance of this JPM will require entry into areas with alarmed doors. Security requirements must be observed.
- Locked components (breakers, valves, etc.) may be involved. No attempt will be made to actually operate any components.



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM START TIME:

	STEP	CUE	STANDARD
1. *	Examinee determines total dose after completion of this task.	EXAMINER NOTE: $1809 + (950 \text{ mr/hr} \times 1\text{hr}/60 \text{ minutes} \times 40 \text{ minutes}) = 2442.65$ To account for rounding if the examinee first divides 57 minutes by 60 minutes, the range is determined by the following. $40/60 = 0.666666....$ $0.6666... \text{ rounded to } 0.60 \text{ yields a total dose of } 1809 + (950 \times 0.60) = 2379$ $0.6666... \text{ rounded to } 0.7 \text{ yields a total dose of } 1809 + (950 \times 0.7) = 2474$	Examinee determines total dose is between “ 2379 and 2474 ” mrem.
SAT / UNSAT Comments (required for UNSAT):			



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

	STEP	CUE	STANDARD
2. *	Examinee determines whose permission is required to exceed receive this dose.	<p>EXAMINER NOTE:</p> <p>75DP-9RP01, Step 4.11.2.2 (and Appendix F):</p> <p>In addition to the following approvals, any request for a higher administrative exposure hold point which would allow a worker's cumulative lifetime exposure (in rem) to exceed the worker's age (in years) are reviewed and approved by the ALARA Committee Chairman.</p> <p>(a) For a Hold Point higher than 1500 mrem/year, RP Department Leader approval required.</p> <p>(b) For a Hold point higher than 2000 mrem/year Radiation Protection Manager approval required.</p> <p>(c) For a Hold Point higher than 2500 mrem/year up to 4000 mrem/year, the ALARA Committee review and approval is required (as signified by the signature of an ALARA Committee Chairman).</p>	Examinee determines that a Radiation Protection Manager approval is required to receive this dose since the total dose would exceed the 2000 mrem/yr administrative exposure limit.
<p>SAT / UNSAT Comments (required for UNSAT):</p>			



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
3. *	Examinee determines the posting for the area.	EXAMINER NOTE: Per 75RP-0RP01, Step 3.9: High Radiation Area Posting Areas in which the intensity of radiation is ≥ 100 mrem/hr but < 1000 mrem/hr shall be barricaded and conspicuously posted as a high radiation area with radiation warning sign(s) bearing the following words:	Examinee should determine that this area should be posted as a High Radiation Area since it is ≥ 100 mrem/hr and < 1000 mrem/hr.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using EP-0800, ERO Comment form, and forwarded to Emergency Planning organization for resolution.

NORMAL TERMINATION POINT



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

ANSWER KEY

1. Total dose for the year upon completion of this task - between 2379 and 2474
2. Whose permission is required to receive this dose - Radiation Protection Manager
3. This area should be posted as a: High Radiation Area (HRA)

ANSWER KEY



RO ADMIN JPM A4
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

APPLICANT

INITIAL CONDITIONS:

- The CRS directs you to enter the Radiation Control Area (RCA) to perform a task which you are the only qualified person on site to perform this task.
- You are **51** years old.
- Your **5** year cumulative exposure is **5205** mrem.
- Your total dose exposure this year has been **1809** mrem.
- The radiation dose rate in the work (including transit path) area is **950** mrem/hr.
- The highest dose rate in the room is **975** mrem/hr.
- The task will take **40** minutes.

INITIATING CUE:

Based on the information in the Initial Conditions, determine the following:

1. What is your total dose for the year upon completion of this task?
2. Whose permission is required to receive this amount of dose?
3. Should this area be posted as a Radiation area, High Radiation area, Locked High Radiation area, or Very High Radiation area?

Record your answers in the area provided below:

Total dose *for the year* upon completion of this task is _____.

Whose permission is required to receive this dose? _____

This area should be posted as a _____ area.

APPLICANT



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	1230050101 Perform a Shutdown Margin Calculation							
TASK STANDARD:	Review a Shutdown Margin Calculation, identify 4 errors, annotate corrections							
K/A:	2.1.37			K/A RATING:	RO:	4.3	SRO:	4.6
10CFR55:	45(b)(12)							
APPLICABLE POSITION(S):	SRO		VALIDATION TIME:	20 minutes				
REFERENCES:	72ST-9RX14, Shutdown Margin – Modes 3, 4, and 5; Revision 17 Core Data Book Unit 1 Cycle 19							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR			PLANT		OTHER	X	

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Phil Capehart Date: 06/08/2005

Revised By: Rusty Quick Date: 09/20/2014

Technical Review _____ Operations Approval _____

Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

A grade of UNSAT for E-Plan JPMs requires a PVAR to be written, remediation, and re-evaluation. PVAR #

Issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form EP-0800 and forwarded to the Emergency Preparedness organization for resolution.



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

1. SPECIAL TOOLS/EQUIPMENT:

- Copy of completed Shutdown Margin Calculation, 72ST-9RX14, with induced errors.
- Copy available of Unit 1 Cycle 19 Core Data Book
- Calculator



**SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- When applicable comply with the REP. **IF** it is not possible to enter an area **THEN** it may be permissible to discuss the equipment to be operated. **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

INITIAL CONDITIONS:

- You are the CRS in Unit 1.
- Unit 1 was manually tripped at **0700** today due to a feedwater problem.
- ALL Reactor Trip breakers opened on the trip.
- ALL Full Strength CEA inserted on the trip.
- The plant has been stabilized at **565°F**.
- Current boron concentration is **900 ppm** from the latest chemistry sample taken at **0815** today.
- The Unit is at **180** EFPD.
- No cool down is planned.
- 72ST-9RX14, Shutdown Margin – Modes 3, 4, and 5 is complete.
 - This ST was completed for the next **24** hours.
 - The Shift Manager directed the crew to use **565°F** as the Most Conservative Tcold for the surveillance period.
 - Reactor Engineering has provided the following data for Xenon Worth:
 - From the XeRho V2 Code: **-2332** pcm.
 - From SIMULATE-3: **-2375** pcm

INITIATING CUE:

Your tasks are to:

1. Review the given shutdown margin calculation.
2. Identify any errors (non-clerical, non-typos)
3. Provide the correct information for the errors on the following page (the number of lines on the answer sheet is not indicative of the number of errors).

Interpolation between different graphs of the Core Data book is not required. Choose the graph(s) that is/are closest to the given conditions.



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) following a JPM Step number denotes a Critical Step.
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- **IF** this is the first JPM of the set, **THEN** ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify unit Shift Manager of in-plant JPM performance.
- Performance of this JPM will require entry into areas with alarmed doors. Security requirements must be observed.
- Locked components (breakers, valves, etc.) may be involved. No attempt will be made to actually operate any components.



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

ANSWER KEY

Step Number*:	Error:
Step 6.1.4.2 or Appendix C Line C.5	The value entered on Line C.5 of Appendix C is not correct. Value should be between “ 1132 and 1158 ”, versus 1335.
Steps 6.1.6 and 6.1.7 or Appendix C Line C.6	Examinee determines that for Line C.7, the most (-2375 pcm), versus the least (-2332 pcm), negative value for Xenon Reactivity is used.
Step 6.1.10 or Appendix C Line C.9	Examinee determines that for Line C.9, a math error occurred. The quotient should be “ 313 ” versus 31.3.
Step 6.1.16 or Appendix C Line C.10	Examinee determines that the result incorrectly shows that Current RCS Boron Concentration (line C.2) is less than the Xenon Adjusted Required Boron Concentration (Line C.10) and that the crew is required to GO TO Section 8.0, Contingencies. Correct result is that Line C.2 is greater than Line C.10 and Step 6.17 applies with Acceptance Criteria Met.
* Identification of the step numbers is not critical	

ANSWER KEY



**SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

JPM START TIME:

	STEP	CUE	STANDARD
1. *	Step 6.1.4.2 Examinee reviews Shutdown Margin Calculation.	EXAMINER NOTE: The value entered on Line C.5 is from Curve 3.1.4 (75.00 – 99.99 EFPD) versus Curve 3.1.8 (175.00-199.99 EFPD). Examinee does NOT need to identify which graph was actually used. EXAMINER NOTE: “Exact” value for Minimum RCS Boron Concentration vs T-COLD is 1145 ppm. The smallest increment on this graph is 25 ppm. Applying an industry standard tolerance of +/- ½ the smallest increment would yield a tolerance of +/- 12.5 ppm, for an overall range for this step of 1132.5 to 1157.5 ppm. To allow for rounding, 1132.5 was rounded to 1132 and 1157.5 was rounded to 1158.	Examinee determines that the value entered on Line C.5 of Appendix C is not correct. Value should be between “ 1132 and 1158 ”, versus 1335. (Error #1)
SAT / UNSAT Comments (required for UNSAT):			



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
2. *	Steps 6.1.6 and 6.1.7 Examinee reviews Shutdown Margin Calculation.		Examinee determines that for Line C.7, the most (-2375 pcm), versus the least (-2332 pcm), negative value for Xenon Reactivity is used. (Error #2)
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
3. *	Step 6.1.10 Examinee reviews Shutdown Margin Calculation.		Examinee determines that for Line C.9, a math error occurred. The quotient should be “305” versus 30.5. (Error #3)
SAT / UNSAT Comments (required for UNSAT):			



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
4. *	Step 6.1.16 Examinee reviews Shutdown Margin Calculation.	EVALUATOR NOTE: Examinee may point out that, since the operator used the XeRho V2 Code instead of the Simulate-3 Code for Xenon reactivity, then the second bullet in Step 6.1.6 should have been initialed and the first bullet should have been "N/A'd." This is NOT critical and not required for this evaluation.	Examinee determines that the result incorrectly shows that Current RCS Boron Concentration (line C.2) is less than the Xenon Adjusted Required Boron Concentration (Line C.10) and that the crew is required to GO TO Section 8.0, Contingencies. Correct result is that Line C.2 is greater than Line C.10 and Step 6.17 applies with Acceptance Criteria Met. (Error #4)
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NOTE:

Issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form EP-0800 and forwarded to the Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

APPLICANT

INITIAL CONDITIONS:

- You are the CRS in Unit 1.
- Unit 1 was manually tripped at **0700** today due to a feedwater problem.
- ALL Reactor Trip breakers opened on the trip.
- ALL Full Strength CEA inserted on the trip.
- The plant has been stabilized at **565°F**.
- Current boron concentration is **900 ppm** from the latest chemistry sample taken at **0815** today.
- The Unit is at **180 EFPD**.
- No cool down is planned.
- 72ST-9RX14, Shutdown Margin – Modes 3, 4, and 5 is complete.
 - This ST was completed for the next **24** hours.
 - The Shift Manager directed the crew to use **565°F** as the Most Conservative Tcold for the surveillance period.
 - Reactor Engineering has provided the following data for Xenon Worth:
 - From the XeRho V2 Code: **-2332 pcm**.
 - From SIMULATE-3: **-2375 pcm**

INITIATING CUE:

Your tasks are to:

1. Review the given shutdown margin calculation.
2. Identify any errors (non-clerical, non-typos)
3. Provide the correct information for the errors on the following page (the number of lines on the answer sheet is not indicative of the number of errors).

Interpolation between different graphs of the Core Data book is not required. Choose the graph(s) that is/are closest to the given conditions.

APPLICANT



SRO ADMIN JPM A6
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

Step Number*:	Error:
* Identification of the step numbers is not critical	



SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	1280010202 Review Surveillance Tests						
TASK STANDARD:	41ST-1ZZ02 reviewed, 4 errors found.						
K/A:	2.2.12		K/A RATING:	RO:	3.7	SRO:	4.1
10 CFR 55:	45(b)(12)						
APPLICABLE POSITION(S):	SRO		VALIDATION TIME:	15 minutes			
REFERENCES:	41ST-1ZZ02, Inoperable Sources Action Statement, Revision 46						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR			PLANT		OTHER	X

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **No**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 05/25/2005

Revised By: Rusty Quick Date: 09/23/2014

Technical Review Operations Approval

Training Approval

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: Date:

Evaluator Name:

Time to complete: Minutes GRADE (Circle One) SAT / UNSAT *

** For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation.*
PVAR #

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Planning organization for resolution.



**SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

1. SIMULATOR SETUP:

NA

2. SPECIAL TOOLS/EQUIPMENT:

- Completed copy of 41ST-1ZZ02 with three (3) errors.



**SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN PLANT JPMs ONLY

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do not enter contaminated, airborne, or high radiation areas.

ALL JPMs

- You may use any source of information normally available.



SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

INITIAL CONDITIONS:

- Unit 1 is in mode 1 with Emergency Diesel Generator ‘A’ inoperable due to a broken fuel line.
- 41ST-1ZZ02, Inoperable Power Sources Action Statement, Appendix B, has been completed.
- The Refueling Group is moving fuel in the fuel building.
- The rest of the electric plant is in a normal 100% full power lineup.
- No switchyard maintenance is in progress.

INITIATING CUE:

- As the CRS, your task is to review a completed 41ST-1ZZ02, “Inoperable Power Sources Action Statement: Appendix B, One Diesel Generator Inoperable.”
- Document all technical errors.
- Markup procedure as needed to assist in correcting mistakes.
- Page 1 of Appendix B has been verified to be correct by a second RO. This page accurately reflects the current electric plant lineup.



**SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) following a JPM Step number denotes a Critical Step.
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

	STEP	CUE	STANDARD
1.	Evaluate Appendix B, Step 1.2.		Examinee evaluates Page 2 of 5 of Appendix B (Steps 1.2): Examinee notes that Step 1.2 is correct.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Evaluate Appendix B, Step 1.3.		Examinee evaluates Page 2 of 5 of Appendix B (Steps 1.3): Examinee notes that Step 1.3 should be “6” vs “7.” (ERROR #1)
SAT / UNSAT Comments (required for UNSAT):			



**SRO ADMIN JPM A7
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	STEP	CUE	STANDARD
3. *	Evaluate Appendix B, step 1.4.		<p>Examinee evaluates page 3 of 5 of Appendix B (Step 1.4):</p> <p>Examinee notes that the Alternate supply breakers PBA-S03K and PBB-S04L are NOT both open according to Page 1 of 5.</p> <p>(ERROR #2)</p>
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4.	Evaluate Appendix B, step 1.4.	<p>EVALUATOR NOTE:</p> <p>This is NOT critical because it is administrative, not technical, and could be considered “error carried forward.”</p>	<p>Examinee evaluates page 3 of 5 of Appendix B (Step 1.4):</p> <p>Examinee notes that All Acceptance Criteria Satisfied should have been annotated as “NO” and not initialed.</p> <p>(ERROR #3)</p>
SAT / UNSAT Comments (required for UNSAT):			



SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
5. *	Evaluate Appendix B, Steps 2.0 and 2.1.		Examinee evaluates page 4 of 5 of Appendix B (Step 2.1): Examinee notes that the Radiation Monitors RU-31 (Train A) or RU-145 (Train B) - TLCO T3.3.108 and ODCM 2.1 should be marked "YES" vs "NA." (ERROR #4)
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



**SRO ADMIN JPM A7
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

APPLICANT

INITIAL CONDITIONS:

- Unit 1 is in mode 1 with Emergency Diesel Generator ‘A’ inoperable due to a broken fuel line.
- 41ST-1ZZ02, Inoperable Power Sources Action Statement, Appendix B, has been completed.
- The Refueling Group is moving fuel in the fuel building.
- The rest of the electric plant is in a normal 100% full power lineup.
- No switchyard maintenance is in progress.

INITIATING CUE:

- As the CRS, your task is to review a completed 41ST-1ZZ02, “Inoperable Power Sources Action Statement: Appendix B, One Diesel Generator Inoperable.”
- Document all technical errors.
- Markup procedure as needed to assist in correcting mistakes.
- Page 1 of Appendix B has been verified to be correct by a second RO. This page accurately reflects the current electric plant lineup.

APPLICANT



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

JPM INFORMATION

TASK:	1240100202 Classify events requiring emergency plan implementation						
TASK STANDARD:	Emergency Action Level (EAL) is identified as a General Emergency, PAR and Emergency Exposure Limit are determined.						
K/A:	2.4.41	RATING:	RO:	2.9	SRO:	4.6	
10 CFR 55:	45(a)(11)						
POSITION(S):	SRO	VALIDATION TIME:	15 minutes				
REFERENCES:	EPIP-0901, Classifications ; EPIP-0905, Protective Actions ; Hot EAL Chart						
LOCATION:	SIMULATOR			PLANT		OTHER	X

JPM TYPE

TIME CRITICAL: NO ALTERNATE PATH: NO
PRA/SRA RELATED: NO

APPROVALS

DEVELOPED BY: Larry Burton DATE: 10/11/2011

REVISED BY: Rusty Quick DATE: 09/23/2014

Tech Review: _____ Operations Approval: _____

Training Approval: _____

EVALUATION

EXAMINEE: _____ DATE: _____

EVALUATOR: _____

TIME TO COMPLETE: _____ minutes GRADE (circle): SAT / UNSAT*



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

1. SIMULATOR SETUP:

N/A

2. PROCEDURES/MATERIALS:

- The following must be available:
 - EPIP-0901, Classifications, Revision 9
 - EPIP-0905, Protective Actions, Revision 6
 - Hot EAL Chart, Revision D
- This JPM may be used with later revisions if it is verified that the later revision does not affect the Steps/Standards of the JPM.
- Pen/pencil and paper
- Marker

3. DRIVER INSTRUCTIONS DURING JPM:

N/A



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION PRESENTED TO EXAMINEE:

IN-PLANT JPMS ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY**. **DO NOT** operate any equipment.
- Inform the Control Room staff of any discovered deficiencies
- Comply with the REP. If it is not possible to enter an area it may be permissible to discuss the equipment and operation with evaluator. **DO NOT** enter Contaminated Areas or High Radiation Areas.

ALL JPMS:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- An earthquake near Palo Verde occurred 1 hour ago.
- All three units have tripped.
- All units have lost offsite power.
- All units DGs have started and are supplying their respective buses.
- Unit 1 has experienced a leak in their Spent Fuel Pool Liner and all attempts to makeup to the Spent Fuel Pool have failed.
- RU-33 has a high alarm.
- RU-145 was in high alarm and has shutdown due to being over range.
- RU-146 Channel 2 is reading $3.63 \text{ E}+01 \text{ } \mu\text{Ci/cc}$ (for > 15 minutes).
- Dose projections are not available.
- Met Tower data is shown on the attached sheet.
- Roads around the station are clear.

INITIATING CUE:

- Your task is to determine the following:
 1. Classification Level and applicable EAL (inform the proctor when classification is completed)
 2. Protective Action Recommendations (if applicable, include Potentially Affected Sectors)
 3. Emergency Exposure Limit (TEDE) for Life-Saving (non-volunteer)
- Provide your answers below.
- **THIS IS A TIME CRITICAL JPM.**



SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

JPM START TIME:

	PROCEDURE STEP	CUE	STANDARD
1. *	Examinee reviews EAL chart and basis in Appendix A of EP-0901 to determine classification level.		<p>Examinee determines the classification is a General Emergency based on EAL RG1.1</p> <p>Time starts when examinee is given Initiating Cue: _____</p> <p>Time stops when examinee determines classification: _____</p> <p>Time start to classification < 15 minutes.</p>
SAT / UNSAT Comments (required for UNSAT):			

	PROCEDURE STEP	CUE	STANDARD
2. *	Examinee determines PARS per Section 5.1.4, Protective Action Recommendation Flow Chart, of EP-0905.		Examinee determines PAR is to “EVACUATE 2 Mile Radius and 5 Miles in Potentially Affected Sectors (E, F, and G)”.
SAT / UNSAT Comments (required for UNSAT):			

	PROCEDURE STEP	CUE	STANDARD
3. *	Examinee determines Emergency Exposure Limit for Life-Saving (non-volunteer) per Section 5.7 of EP-0905.		Examinee determines Emergency Exposure Limit for protecting valuable property is LESS THAN OR EQUAL TO 25 REM per event.
SAT / UNSAT Comments (required for UNSAT):			



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
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JPM STOP TIME:

NOTE:

*Issues identified on **E-Plan JPMs** during performance will be documented with a formal post-critique using Form EP-0800 and forwarded to the Emergency Preparedness organization for resolution.*

NORMAL TERMINATION POINT



SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
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ANSWER KEY

Classification and EAL:	<u>General Emergency (RG1.1)</u>
Protective Action Recommendations (PARs):	<u>Evacuate 2-mile radius & 5 Miles in Potentially Affected Sectors</u>
Emergency Exposure Limit:	<u>≤ 25 REM</u>

ANSWER KEY



**SRO ADMIN JPM A9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

APPLICANT

INITIAL CONDITIONS:

- An earthquake near Palo Verde occurred 1 hour ago.
- All three units have tripped.
- All units have lost offsite power.
- All units DGs have started and are supplying their respective buses.
- Unit 1 has experienced a leak in their Spent Fuel Pool Liner and all attempts to makeup to the Spent Fuel Pool have failed.
- RU-33 has a high alarm.
- RU-145 was in high alarm and has shutdown due to being over range.
- RU-146 Channel 2 is reading 3.63 E+01 $\mu\text{Ci/cc}$ (for >15 minutes).
- Dose projections are not available.
- Met Tower data is shown on the attached sheet.
- Roads around the station are clear.

INITIATING CUE:

- Your task is to determine the following:
 1. Classification Level and applicable EAL (inform the proctor when the classification is completed)
 2. Protective Action Recommendations
 3. Emergency Exposure Limit (TEDE) for Life-Saving (non-volunteer)
- Provide your answers below.

THIS IS A TIME CRITICAL JPM.

Classification and EAL: _____

Protective Action
Recommendations (PARs): _____

Emergency Exposure Limit: _____

APPLICANT



SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	1290020301, Conduct On Shift Operations IAW Conduct of Shift Operations						
TASK STANDARD:	Upon completion of the JPM, the examinee will have determined the required hold points that will be exceeded, the required approval needed to exceed the hold points, and which AO will perform the task.						
K/A:	2.3.4		K/A RATING:	RO:	3.2	SRO:	3.7
10 CFR 55:	45(a)(12)						
APPLICABLE POSITION(S):	SRO		VALIDATION TIME:	20 minutes			
REFERENCES:	75DP-9RP01, Radiation Exposure and Access Control						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR			PLANT		OTHER	X

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10-11-2011

Revised By: Rusty Quick Date: 09-20-2014

Technical Review _____ Operations Approval _____

Training Approval _____

(Only required for Emergency Plan JPMs)

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE *(Circle One)* SAT / UNSAT *



SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

1. SPECIAL TOOLS/EQUIPMENT:

1. 75DP-9RP01 This JPM was written using Revision 20 of 75DP-9RP01. This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.
2. Calculator
3. Pen and Paper



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated. Do **NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available.



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- You are the Outage SRO. You will be assigning a job to one AO from a work pool of three (listed below).
- The job is to depressurize and drain piping in Containment.
- RP surveys show the AO will be in a 275 mr/hr field. The job will take 40 minutes.
- Evaluate the information about each AO below and answer the questions below.
- This is the 4th quarter of the year.

Exposure (in mrem)	O. Robertson Shift AO	B. Russell FIN Operator	B. Walton RW Operator
Previous 4 years dose (2010-2014)	5750	7655	8111
1st Quarter (2015)	143	622	1516 Most exposure was from Spent resin operations
2nd Quarter (2015)	24	207	99
3rd Quarter (2015)	62	88	143
4th Quarter (to date)	1217 Most exposure was from RCP lineups at outage beginning	1072 Most exposure was from EDT sludge lancing support.	65

INITIATING CUE:

- Use the worksheet on the following page to document answers.
- List any hold point that may occur during this job (assuming each one performed the evolution).
- List whose approval would be necessary for any hold points that would be exceeded. (Assume authorization for current dose levels have already been obtained.)
- Determine which one of the above AOs will perform the task; provide justification for your selection.



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR'S USE:

- An asterisk (*) following a JPM Step number denotes a Critical Step.
- At the discretion of the Examiner/Evaluator, this JPM may be terminated when the Task Standard is met or adequate time has been allowed to complete the JPM. It shall be terminated when the Examinee has verbalized completion of the JPM.
- Any step marked UNSAT requires comments.
- If this is the first JPM of the set then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent achieving the task standard.
- Notify the unit Shift Manager of in-plant JPM performance.
- Performance of this JPM may require entry into areas with alarmed doors. Security requirements must be observed.
- Locked valves may be involved. No attempt will be made to actually operate any valves.



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

JPM START TIME:

	STEP	CUE	STANDARD
1. *	Examinee determines total dose received for the job.		Examinee calculates that 183.3 mrem will be accumulated on this job.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Examinee determines the hold points that will be exceeded for each operator.		Examinee determines hold points exceeded are: O. Robertson – would exceed 1500 mrem for the calendar year. B. Russell – would exceed 2000 mrem for the calendar year. B. Walton – would exceed 10 rem cumulative exposure in 5 years.
SAT / UNSAT Comments (required for UNSAT):			



SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

	STEP	CUE	STANDARD
3. *	Examinee determines whose approval required		Examinee determines the approval need for each operator is as follows: O. Robertson – RP Dept. Leader B. Russell – RP Manager B. Walton – Senior Vice President, Site Operations
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4. *	Examinee ascertains which Auxiliary Operator will perform the job based on ALARA criteria.		Examinee determines O. Robertson , Shift AO has the lowest year to date exposure based on ALARA, lowest dose.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

ANSWER KEY

List any hold point that may occur during this job (assuming each one performed the evolution):

Robertson	<u>1500 mrem for the calendar year (Step 4.11.2.2(a))</u>
Russell	<u>2000 mrem for the calendar year (Step 4.11.2.2(b))</u>
Walton	<u>10 rem in 5 years (Step 4.11.2.2(d))</u>

List whose approval would be necessary for any hold points that would be exceeded:

Robertson	<u>RP Department Leader (Step 4.11.2.2(a))</u>
Russell	<u>RP Manager (Step 4.11.2.2(b))</u>
Walton	<u>Senior V.P., Site Operations (Step 4.11.2.2(d))</u>

- **Determine which one of the above AOs will perform the task; provide justification for your selection.**

AO to perform work **O. Robertson** - ALARA due to lowest dose year to date

ANSWER KEY



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

APPLICANT

INITIAL CONDITIONS:

- You are the Outage SRO. You will be assigning a job to one AO from a work pool of three (listed below).
- The job is to depressurize and drain piping in Containment.
- RP surveys show the AO will be in a 275 mr/hr field. The job will take 40 minutes.
- Evaluate the information about each AO below and answer the questions below.
- This is the 4th quarter of the year.

Exposure (in mrem)	O. Robertson Shift AO	B. Russell FIN Operator	B. Walton RW Operator
Previous 4 years dose (2010-2014)	5750	7655	8111
1 st Quarter (2015)	143	622	1516 Most exposure was from Spent resin operations
2 nd Quarter (2015)	24	207	99
3 rd Quarter (2015)	62	88	143
4 th Quarter (to date)	1217 Most exposure was from RCP lineups at outage beginning	1072 Most exposure was from EDT sludge lancing support.	65

INITIATING CUE:

- Use the worksheet on the following page to document answers.
- List any hold point that may occur during this job (assuming each one performed the evolution).
- List whose approval would be necessary for any hold points that would be exceeded. (Assume authorization for current dose levels have already been obtained.)
- Determine which one of the above AOs will perform the task; provide justification for your selection.

APPLICANT



**SRO ADMIN JPM A8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

Applicant Worksheet

Exposure (in mrem)	O. Robertson Shift AO	B. Russell FIN Operator	B. Walton RW Operator
Previous 4 years dose (2010-2014)	5750	7655	8111
1 st Quarter (2015)	143	622	1516 Most exposure was from Spent resin operations
2 nd Quarter (2015)	24	207	99
3 rd Quarter (2015)	62	88	143
4 th Quarter (to date)	1217 Most exposure was from RCP lineups at outage beginning	1072 Most exposure was from EDT sludge lancing support.	65

List any hold point that may occur during this job (assuming each one performed the evolution):

O. Robertson

B. Russell

B. Walton

List whose approval would be necessary for any hold points that would be exceeded:

O. Robertson

B. Russell

B. Walton

Determine which one of the above AOs will perform the task; provide justification for your selection.

AO to perform work



RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	1240040201 Implement LOCA instructions and contingencies							
TASK STANDARD:	CIAS has been actuated. At least one valve in each penetration has been closed.							
K/A:	3.5103 A3.01			K/A RATING:	RO:	3.9	SRO:	4.2
10 CFR 55:	45(a)(5)							
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	7 minutes				
REFERENCES:	40EP-9EO03, Loss of Coolant Accident							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER			

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **Yes**

PRA/SRA related? (Yes/No) **Yes**

APPROVAL

Developed By: Alan Malley Date: 08/05/2014

Revised By: N/A Date: N/A

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

1. SIMULATOR SETUP:

- IC#: 600
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
None	

- SPECIAL INSTRUCTIONS:
 1. **IF** IC600 is used, reset to **IC 600**, GO TO RUN, acknowledge alarms, **THEN** Go To Step 11
 2. **IF** IC 600 is **NOT** used, reset to IC 20, GO TO RUN
 3. Run scenario file **2015 NRC S-1 and S-2.scn** from exam flash drive
 4. Trip the reactor
 5. Perform SPTAs
 6. Wait until LOG Power is $< 2 \times 10^{-6}\%$
 7. Insert malfunction mfTH01A f:2
 8. Perform 40EP-9EO03, LOCA Procedure, up through **Step 12**
 9. **DO NOT** manually insert a CIAS or MSIS (SIAS will be initiated per the LOCA procedure)
 10. Ensure containment pressure is > 3 psig
 11. GO TO FREEZE
 12. Provide **INITIATING CUE**
 13. GO TO RUN
- REQUIRED CONDITIONS:
 - LOCA in progress
 - Containment Pressure > 3 psig
 - No CIAS actuated
 - Log Power $< 2 \times 10^{-6}\%$
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40EP-9EO03, Loss of Coolant Accident, Revision 32 available.



**RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

NOTE: This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. during JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
NONE	NONE	NONE



**RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- A Loss of Coolant Accident has occurred. The Reactor has been tripped
- SPTAs have been performed
- 40EP-9EO03, Loss of Coolant Accident, has been entered and Steps 1-12 have been or are in the process of being completed

INITIATING CUE:

- The CRS directs you to perform Steps 13-14 of 40EP-9EO03, Loss of Coolant Accident



**RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



**RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 13: IF containment pressure is 3 psig or more, THEN check CIAS is actuated.		Examinee reads containment pressure on B04 instrumentation and determines containment pressure is > 3 psig but CIAS is not actuated
SAT / UNSAT Comments (required for UNSAT):			

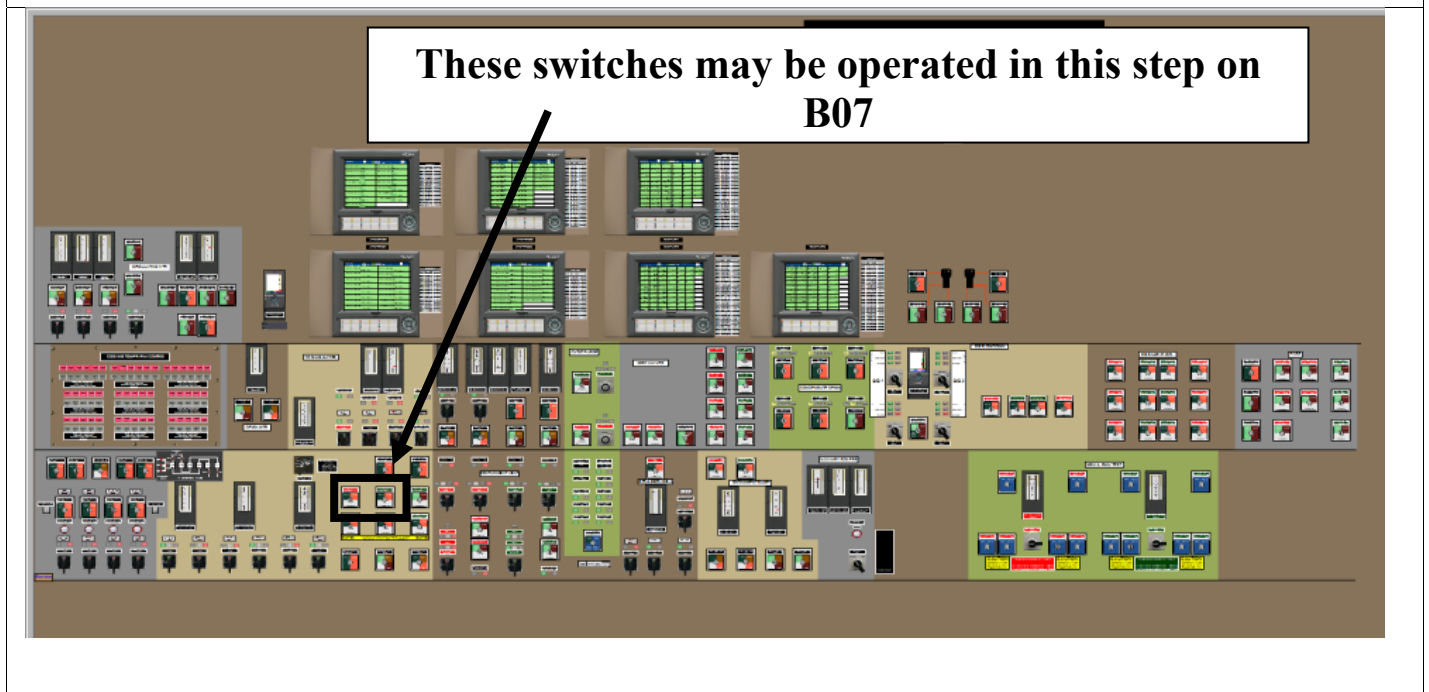
	STEP	CUE	STANDARD
2. *	Step 13.1: Manually actuate CIAS.	<div style="border: 1px solid black; padding: 10px; text-align: center;"> ALTERNATE PATH </div>	Examinee initiates a CIAS by turning at least two of the following handswitches on B04: <ul style="list-style-type: none"> CIAS ACTUATION SIA-HS-5 CIAS ACTUATION SIB-HS-6 CIAS ACTUATION SIC-HS-7 CIAS ACTUATION SID-HS-8 Examiner Note: After the examinee turns at least two of the handswitches the CIAS annunciator window on B04 will illuminate.
SAT / UNSAT Comments (required for UNSAT):			



RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
4. *	Step 14.a.1: Ensure that an isolation valve is closed for each containment penetration required to be closed.	<div style="text-align: center; font-size: 2em; font-weight: bold;">ALTERNATE PATH</div>	Examinee isolates the Normal Chilled Water Return penetration by closing WCA-UV-62 or WCB-UV-61 using one or both of the following handswitches on B07: <ul style="list-style-type: none"> WCA-HS-62 WCB-HS-61 <p>Examiner Note:</p> <p>Only one of the valves must be closed to meet the critical task.</p>

SAT / UNSAT
 Comments (required for UNSAT):



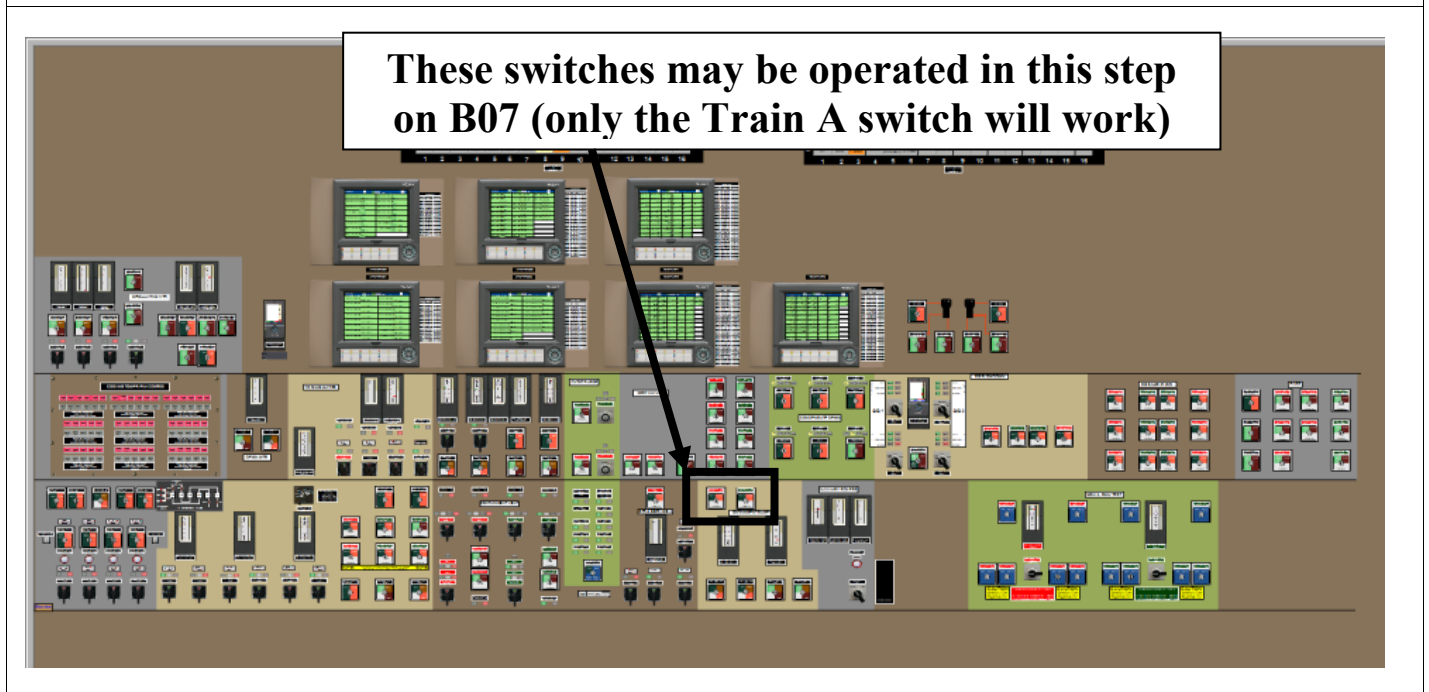


RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

	STEP	CUE	STANDARD
5. *	Step 14.a.1: Ensure that an isolation valve is closed for each containment penetration required to be closed.	<div style="border: 1px solid black; padding: 10px; display: inline-block;"> ALTERNATE PATH </div>	Examinee isolates the Radioactive Drain containment penetration by closing RDA-UV-23 using the following handswitch on B07: <ul style="list-style-type: none"> RDA-HS-23 Examiner Note: If the examinee attempts to close RDB-UV-24 it will not close.

SAT / UNSAT

Comments (required for UNSAT):



JPM STOP TIME:

NORMAL TERMINATION POINT



RO/SROI/SROU SIMULATOR JPM S1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

APPLICANT

INITIAL CONDITIONS:

- A Loss of Coolant Accident has occurred
- The Reactor has been tripped
- SPTAs have been performed
- 40EP-9EO03, Loss of Coolant Accident, has been entered and Steps 1-12 have been or are in the process of being completed

INITIATING CUE:

- The CRS directs you to perform Steps 13-14 of 40EP-9EO03, Loss of Coolant Accident

APPLICANT



RO/SROI/SROU SIMULATOR JPM S2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	0150030801 Perform a BDAS Alarm check (Appendix 8)						
TASK STANDARD:	BDAS Alarm Check (Appendix 8) completed to determine SU Channels and BDAS are operable within 1 hour of entering the Start-up Range.						
K/A:	3.7015A3.03		K/A RATING:	RO:	3.9	SRO:	3.9
10 CFR 55:	45(a)(5)						
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	15 minutes			
REFERENCES:	40EP-9EO10, Standard Appendices, Appendix 8						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER		

JPM TYPE

Time Critical? (Yes/No) **Yes**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Jim Shannon Date: 06/06/2005

Revised By: Alan Malley Date: 08/05/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



RO/SROI/SROU SIMULATOR JPM S2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

1. SIMULATOR SETUP:

- IC#: 600
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
None	

- SPECIAL INSTRUCTIONS:
 1. **IF** IC 600 is used, reset to **IC 600** , GO TO RUN, acknowledge alarms, **THEN GO TO Step 11**
 2. **IF** IC 600 is **NOT** used, reset to IC 20, GO TO RUN
 3. Run scenario file **2015 NRC S-1 and S-2.scn** from exam flash drive
 4. Trip the reactor
 5. Perform SPTAs
 6. Wait until LOG Power is $< 2 \times 10^{-6}\%$
 7. Insert malfunction mfTH01A f:2
 8. Perform 40EP-9EO03, LOCA Procedure, up through **Step 12**
 9. **DO NOT** manually insert a CIAS or MSIS (SIAS will be initiated per the LOCA procedure)
 10. Ensure containment pressure is > 3 psig
 11. GO TO FREEZE
 12. Provide **INITIATING CUE**
 13. GO TO RUN
- REQUIRED CONDITIONS:
 - Log Power $< 2 \times 10^{-6}\%$
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40EP-9EO10, Standard Appendices, Appendix 8, Revision 85 available. **NOTE:** This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.
- CALCULATOR Available



**RO/SROI/SROU SIMULATOR JPM S2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

3. JPM PERFORMANCE:

- MALFUNCTIONS, OVERRIDES, etc. during JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
None		



**RO/SROI/SROU SIMULATOR JPM S2
PVNGS JOB PERFORMANCE MEASURE
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INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO/SROI/SROU SIMULATOR JPM S2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- **A Loss of Coolant Accident has occurred**
- **The Reactor has been tripped**
- **SPTAs have been performed**
- **40EP-9EO03, Steam Loss of Coolant Accident, has been entered**

INITIATING CUE:

- **The CRS directs you to perform Standard Appendix 8 of 40EP-9EO10, Standard Appendices to place the Boron Dilution Alarm System (BDAS) in service.**
- ***THIS IS A TIME CRITICAL JPM.***



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

NOTE

Boron Dilution Alarms must be confirmed operable within one hour after neutron flux is within the start-up range following a reactor shutdown.

Examiner Note:

The one hour time limit is the Time Critical aspect of this JPM. One hour is based on the regulatory commitment implied via the PVNGS Technical Specifications. TS Bases for LCO 3.3.12, Boron Dilution Alarm System (BDAS) states: "The Applicability is modified by a Note that the BDAS is required in MODE 3 within 1 hour after the neutron flux is within the startup range following a reactor shutdown. This allows the neutron flux level to decay to a level within the range of the excore startup channels and for the operator to initialize the BDAS. Neutron flux is defined to be within the startup range following a reactor shutdown when reactor power is 2E-6% NRTP or less."

	STEP	CUE	STANDARD
1. *	Appendix 8, Step 1 Place the Control/Startup Channel 1 switch to the "S-U CHAN 1" position.		Examinee places the CONTROL/STARTUP CHANNEL 1SELECTOR SEN-HS-5A switch to the "S-U CHAN 1" position (At panel B04).
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Appendix 8, Step 2 Place the Control/Startup Channel 2 switch to the "S-U CHAN 2" position.		Examinee places the CONTROL/STARTUP CHANNEL 2SELECTOR SEN-HS-6A switch to the "S-U CHAN 2" position (At panel B04).
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
3. *	<p>Appendix 8, Step 3</p> <p><u>Press</u> the “METER SELECT” pushbutton for Startup Channel 1 and <u>check</u>BOTH of the following:</p> <ul style="list-style-type: none"> • The green “CONTROL” light is extinguished. • The red “START UP” light is lit. 		<p>Examinee proceeds to the NIS cabinet(1JSFNUY0003) in back panel area of Control Room, to Startup Channel 1:</p> <p>On 1J-SEN-RY0005 CH1, examinee momentarily depresses the “METER SELECT” pushbutton for Startup Channel 1 and <u>checks</u>BOTH of the following:</p> <ul style="list-style-type: none"> • The green “CONTROL” light is extinguished. • The red “START UP” light is lit.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4. *	<p>Appendix 8, Step 4</p> <p><u>Press</u> the “HV PERMIT/HV ON” pushbutton for Startup Channel 1 and <u>check</u> that the amber light is lit.</p>		<p>Examinee momentarily depresses the “HV PERMIT/HV ON” pushbutton for Startup Channel 1 and observes that Startup Channel 1 amber light is LIT.</p>
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
5.	Appendix 8, Step 5 IF Startup Channel 1 is the only available channel, THEN <u>perform</u> a qualitative assessment of Channel 1 behavior.	INFORMATION CUE: Both Startup channels are available.	Examinee marks this Step as “N/A.” Continues on in procedure.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
6.	Appendix 8, Step 6 <u>Check</u> that the “START UP HV LOW” alarm for Startup Channel 1 is NOT lit.		Examinee observes that the “START UP HV LOW” alarm for Startup Channel 1 <u>is</u> lit. Contingency Action 6.1: Examinee momentarily depresses the “STARTUP HV LOW” pushbutton for Startup Channel 1. Observes that the light goes out.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
7.	Appendix 8, Step 7 <u>Check</u> that the “TROUBLE” alarm for Startup Channel 1 is NOT lit.		Examinee observes that the “TROUBLE” alarm for Startup Channel 1 is NOT lit.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
8.	Appendix 8, Step 8 <u>Check</u> that the “HIGH CPS” alarm for Startup Channel 1 is NOT lit.		Examinee observes that the “HIGH CPS” alarm for Startup Channel 2 is NOT lit.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
9. *	Appendix 8, Step 9 <u>Press</u> the “METER SELECT” pushbutton for Startup Channel 2 and <u>check</u> BOTH of the following <ul style="list-style-type: none"> • The green “CONTROL” light is extinguished. • The red “START UP” light is lit 		On 1J-SEN-RY0006 CH2, examinee momentarily depresses the “METER SELECT” pushbutton for Startup Channel 2 and <u>checks</u> BOTH of the following: <ul style="list-style-type: none"> • The green “CONTROL” light is extinguished. • The red “START UP” light is LIT.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10. *	Appendix 8, Step 10 <u>Press</u> the “HV PERMIT/HV ON” pushbutton for Startup Channel 2 and <u>check</u> that the amber light is lit.		Examinee momentarily depresses the “HV PERMIT/HV ON” pushbutton for Startup Channel 1 and observes that Startup Channel 2 amber light is LIT.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
11.	Appendix 8, Step 11 IF Startup Channel 2 is the only available channel, THEN perform a qualitative assessment Channel 2 behavior.	IF REQUESTED CUE: Both Startup channels are available.	Examinee marks this Step as “N/A.” Continues on in procedure.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12.	Appendix 8, Step 12 <u>Check</u> that the “START UP HV LOW” alarm for Startup Channel 2 is NOT lit.		Examinee observes that the “START UP HV LOW” alarm for Startup Channel 2 <u>is</u> lit. Contingency Action 12.1: Examinee momentarily depresses the “STARTUP HV LOW” pushbutton for Startup Channel 1. Observes that the light goes out.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
13.	Appendix 8, Step 13 <u>Check</u> that the “TROUBLE” alarm for Startup Channel 2 is NOT lit.		Examinee observes that the “TROUBLE” alarm for Startup Channel 2 is NOT LIT.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
14.	Appendix 8, Step 14 <u>Check</u> that the “HIGH CPS” alarm for Startup Channel 2 is NOT lit.		Examinee observes that the “HIGH CPS” alarm for Startup Channel 2 is NOT lit.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
15. *	Appendix 8, Step 15 and Step 15.a <u>Perform</u> the following for the Boron Dilution Alarm Channel SEN-IN-005: <u>Press</u> the “RESET” pushbutton.		Examinee proceeds to the Miscellaneous Equipment Cabinet Panel 1-J-ZJN-C06 in the Control Room back panel area. Examinee momentarily depresses the “RESET” pushbutton for channel SEN-NI-005.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
16.	Appendix 8, Step 15.b <u>Ensure</u> the “FLUX/SET POINT” pushbutton is selected to the “FLUX” position.		Examinee notes that the “FLUX/SET POINT” pushbutton is backlit on FLUX.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
17.	Appendix 8, Step 15.c <u>Check</u> that the digital display is NOT flashing. YES/NO (YES meets the acceptance criteria).		Examinee notes that the digital display is NOT flashing. Examinee circles YES.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
18.	Appendix 8, Step 15.d <u>Check</u> that the decimal indicator is flashing at approximately one flash per second. YES/NO (YES meets the acceptance criteria).		Examinee notes that the decimal indicator is flashing at approximately one flash per second. Examinee circles YES.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
19. *	Appendix 8, Step 15.e <u>Record</u> flux reading.		Examinee records flux reading of approximately 3.2 Vdc. EXAMINER NOTE: Typical to find readings in the range of 2.0 - 3.0 Vdc
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
20.	Appendix 8, Step 15.f IF Boron Dilution Alarm Channel SEN-NI-005 is the only available channel, THEN <u>Perform</u> a qualitative assessment of Boron Dilution Alarm Channel SEN-NI-005 behavior.	INFORMATIONCUE: Both Boron Dilution Alarm Channels are available.	No action necessary. Examinee continues in procedure.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
21. *	Appendix 8, Step 16 and Step 16.a <u>Perform</u> the following for the Boron Dilution Alarm Channel SEN-NI-006: <u>Press</u> the “RESET” pushbutton.		Examinee momentarily depresses the “RESET” pushbutton for channel SEN-NI-006.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
22.	Appendix 8, Step 16.b <u>Ensure</u> the “FLUX/SET POINT” pushbutton is selected to the “FLUX” position.		Examinee notes that the “FLUX/SET POINT” pushbutton is backlit on FLUX.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
23.	Appendix 8, Step 16.c <u>Check</u> that the digital display is NOT flashing. YES/NO (YES meets the acceptance criteria).		Examinee notes that the digital display is NOT flashing. Examinee circles YES.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
24.	Appendix 8, Step 16.d <u>Check</u> that the decimal indicator is flashing at approximately one flash per second. YES/NO (YES meets the acceptance criteria).		Examinee notes that the decimal indicator is flashing at approximately one flash per second. Examinee circles YES.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
25. *	Appendix 8, Step 16.e <u>Record</u> flux reading.		Examinee records flux reading of approximately 3.2 Vdc. EXAMINER NOTE: Typical to find readings in the range of 2.0 - 3.0 Vdc)
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
26.	Appendix 8, Step 16.f IF Boron Dilution Alarm Channel SEN-NI-006 is the only available channel, THEN <u>perform</u> a qualitative assessment of Boron Dilution Alarm Channel SEN-NI-006 behavior.	IF REQUESTED CUE: Both Boron Dilution Alarm Channels are available.	No action necessary. Examinee continues in procedure.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
27. *	<p>Appendix 8, Step 17 and Step 17.a</p> <p>Perform the following to determine Boron Dilution Alarm Channel acceptance criteria:</p> <p>Calculate the voltage difference between the Boron Dilution Alarm Channels:</p> <p>Highest Vdc _____ minus (-) Lowest Vdc _____ = _____ ΔVdc</p>		<p>Examinee records approximately 3.2 Vdc (value from Step 15.e) in the space for Highest Vdc.</p> <p>Records approximately 3.2 Vdc (value from Step 16.e) in the space for Lowest Vdc. Subtracts the Lowest Vdc from the Highest Vdc and records the difference (<.8 Vdc) in the space for ΔVdc</p>
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
28. *	<p>Appendix 8, Step 17.b</p> <p>Check that ΔV_{dc} is less than or equal to 0.8 Vdc between channels.</p> <p>Acceptance Criteria - ΔV_{dc} is less than or equal to 0.8 Vdc between channels.</p> <p>YES / NO (circle one) _____ (Initial)</p>		<p>Examinee determines that ΔV_{dc} is LESS THAN 0.8 Vdc between channels.</p> <p>Examinee circles "YES"</p>
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
29. *	<p>Appendix 8, Step 18 and Step 18.a</p> <p>Perform the following to determine Startup Channel acceptance criteria:</p> <p>Record Startup Channel 1.</p>		<p>Examinee enters approximately 20 CPS for Startup Channel 1.</p>
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
30. *	Appendix 8, Step 18.b RecordStartup Channel 2.		Examinee enters approximately 20 CPS for Startup Channel 2.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
31. *	Appendix 8, Step 18.c Calculate Highest Channel Max CPS: Lowest Channel CPS _____ X 2.5 = _____, which is the calculated Highest Channel Max CPS.		Examinee calculates the Highest ChannelMax CPS by multiplying the Lowest Channel CPS by 2.5. Examinee enters approximately 20 (value in Step 18.b) in the space for Lowest Channel CPS. Multiplies the value entered by 2.5 and records the result in the space provided. Should enter approximately 50 (20 x 2.5 = 50)
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
32. *	<p>Appendix 8, Step 18.d</p> <p>Check that Startup Channel acceptance criteria has been met.</p> <p>Acceptance Criteria - calculated Highest Channel Max CPS is more than actual Highest Channel CPS.</p> <p>YES / NO (circle one)</p> <p>_____ (Initial)</p>		<p>Examinee determines that the calculated Highest Channel Max CPS (50) is GREATER THAN the actual Highest Channel CPS (~22).</p> <p>Examinee circles “YES” and enters initials.</p>
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
33.	<p>Appendix 8, Step 19</p> <p>Select the desired audio range and volume for the Startup Channels.</p>	<p>IF REQUESTED CUE: Direct examinee to select the highest reading channel.</p>	<p>Examinee may change the selector and volume to hear the clicks in the control room.</p>
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
34.	Appendix 8, Step 20 <u>Check</u> that proper overlap exists between the LOG Power Channel and the Startup Channel.		Examinee checks for proper overlap between the LOG Power Channel and the Startup Channel. EXAMINER NOTE: There is no established value for overlap. The examinee should take reasonable action to determine that the Log channels are responding.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
35. *	Appendix 8, Step 21 IF ALL of the acceptance criteria are met, THEN <u>inform</u> the CRS that the Boron Dilution Alarms are operable.		Examinee determines that that the acceptance criteria for Steps 17.b and 18.d were met.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
36.	Appendix 8, Step 22 <u>Ensure</u> the required signatures are obtained.	INFORMATION CUE: The CRS will obtain the required signatures.	Time JPM Started: _____ Time SR Operability Determined: _____ Elapsed Time: _____ EXAMINER NOTE: The Bases for TS 3.3.12, states: “The Applicability is modified by a Note that the BDAS is required in MODE 3 within 1 hour after the neutron flux is within the startup range following a reactor shutdown. This allows the neutron flux level to decay to a level within the range of the excore startup channels and for the operator to initialize the BDAS. Neutron flux is defined to be within the startup range following a reactor shutdown when reactor power is 2E-6% NRTP or less.”
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NOTE:

Problems/issues identified on E-Plan JPMs during performance will be documented with a formal post-critique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to Emergency Preparedness organization for resolution.

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- A Loss of Coolant Accident has occurred
- The Reactor has been tripped
- SPTAs have been performed
- 40EP-9EO03, Loss of Coolant Accident, has been entered

INITIATING CUE:

- The CRS directs you to perform Standard Appendix 8 of 40EP-9EO10, Standard Appendices to place the Boron Dilution Alarm System (BDAS) in service.

THIS IS A TIME CRITICAL JPM.

APPLICANT



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JPM BASIS INFORMATION

TASK:	0500010601 Place Containment Refueling Purge Subsystem in Service							
TASK STANDARD:	Containment Power Access Purge Subsystem placed in service.							
K/A:	3.8 029 A2.03			K/A RATING:	RO:	2.7	SRO:	3.1
10 CFR 55:	45(a)(3), 45(a)(13)							
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes				
REFERENCES:	40OP-9CP01, Containment Purge System, Revision 23							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER			

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 08/06/2014

Revised By: N/A Date: N/A

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



**RO/SROI SIMULATOR JPM S4
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1. SIMULATOR SETUP:

- IC#: 601
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
None	

- SPECIAL INSTRUCTIONS:
 1. IF IC601 is used, reset to IC 601, GO TO RUN
 2. Run scenario file **2015 NRC S-3 and S-4.scn** from exam flash drive.
 3. Acknowledge alarms
 4. Hang an Equipment Status Tag on CPN-HS-1 stating “T-Mod has been installed per 40OP-9CP01 (HVAC)”.
 5. Go To Freeze, **THEN** Go To Step 7
 6. IF IC 601 is **NOT** used, reset to IC 4, GO TO RUN
 - Ensure Containment Purge is secured per 40OP-9CP01
 - Open breakers for CPA(B)-UV-2A, 2B, 3A and 3B using the commands from the JPM PERFORMANCE step below.
 - Run scenario file **2015 NRC S-3 and S-4.scn** from exam flash drive.
 7. Provide **INITIATING CUE**
 8. GO TO RUN
- REQUIRED CONDITIONS:
 - Simulator in Mode 5 or 6
 - Containment Purge is secured
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40OP-9CP01, (Containment Purge System), Revision 23 available.

NOTE: This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.

3. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. **during** JPM



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STEP	COMMAND/COMMUNICATION	DESCRIPTION
2.	Key 3 IRF crB4CH01CPAUV2A_1 k:3 f:CLOSE	Closes breaker PHA-M3516 for Refueling Purge Isol Valve CPA-UV-2A
4.	Key 4 IRF crB4CH01CPAUV2B_1 k:4 f:CLOSE	Closes breaker PHA-M3517 for Refueling Purge Isol Valve CPA-UV-2B
6.	Key 5 IRF crB4CH01CPBUV3A_1 k:5 f:CLOSE	Closes breaker PHB-M3622 for Refueling Purge Isol Valve CPB-UV-3A
8.	Key 6 IRF crB4CH01CPBUV3B_1 k:6 f:CLOSE	Closes breaker PHB-M3623 for Refueling Purge Isol Valve CPB-UV-3B



**RO/SROI SIMULATOR JPM S4
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INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



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INITIAL CONDITIONS:

- Unit 1 is in Mode 5.
- The Containment has been vented.
- A Radioactive Gas Release Permit has been approved for using both supply and exhaust fans.
- HVAC has greased the fan motor bearings.
- HVAC has installed a T-Mod per step 6.4.2.6 and an equipment status tag has been hung on CPN-HS-1.
- The Security Operations Section leader has been notified and compensatory measures are in place for opening the Refueling Purge Valves. The Security Operations Section Leader's name has been recorded in the Control Room Log.
- 74ST-9SQ07, Radiation Monitoring System Shiftly Surveillance Test, is current for BOTH of the following:
 - ❖ RU-37
 - ❖ RU-38

INITIATING CUE:

- The CRS directs you to place the Containment Refueling Purge system in service per Section 6.4 of 40OP-9CP01.
- All Prerequisites have been completed.
- Section 6.4 has been completed through Step 6.4.4.



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



**RO/SROI SIMULATOR JPM S4
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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 6.4.5: Unlock MCC Breaker PHA-M3516, Cmtt Refuel Purge Isol Valve CPA-UV-2A.	INFORM CUE: Breaker PHA-M3516, Cmtt Refuel Purge Isol Valve CPA-UV-2A is unlocked.	Examinee directs an area operator to unlock Breaker PHA-M3516, Cmtt Refuel Purge Isol Valve CPA-UV-2A.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
2. *	Step 6.4.6: Close MCC Breaker PHA-M3516, Cmtt Refuel Purge Isol Valve CPA-UV-2A.	<u>SIMULATOR DRIVER</u> <u>ACTION REQUIRED-Key 3</u> After Key 3 Initiated: INFORM CUE: Breaker PHA-M3516, Cmtt Refuel Purge Isol Valve CPA-UV-2A is closed.	Examinee directs an area operator to close Breaker PHA-M3516, Cmtt Refuel Purge Isol Valve CPA-UV-2A. Examiner Note: The green light above handswitch CPA-HS-2 will illuminate when this breaker is closed. Examiner Note: The examinee may perform Steps 1 and 2 together.

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
3.	Step 6.4.7: Unlock MCC Breaker PHA-M3517, Cmtt Refuel Purge Isol Valve CPA-UV-2B.	INFORMATION CUE: Breaker PHA-M3517, Cmtt Refuel Purge Isol Valve CPA-UV-2B is unlocked.	Examinee directs an area operator to unlock Breaker PHA-M3517, Cmtt Refuel Purge Isol Valve CPA-UV-2B.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
4. *	Step 6.4.8: Close MCC Breaker PHA-M3517, Cmtt Refuel Purge Isol Valve CPA-UV-2B.	<u>SIMULATOR DRIVER</u> <u>ACTION REQUIRED-Key 4</u> After Key 4 Initiated: INFORM CUE: Breaker PHA-M3517, Cmtt Refuel Purge Isol Valve CPA-UV-2B is closed.	Examinee directs an area operator to close Breaker PHA-M3517, Cmtt Refuel Purge Isol Valve CPA-UV-2B. Examiner Note: The examinee may perform Steps 3 and 4 together.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
5.	Step 6.4.9: Unlock MCC Breaker PHB-M3622, Cmtt Refuel Purge Isol Valve CPB-UV-3A.	INFORMATION CUE: Breaker PHB-M3622, Cmtt Refuel Purge Isol Valve CPB-UV-3A is unlocked.	Examinee directs an area operator to unlock Breaker PHA-M3622, Cmtt Refuel Purge Isol Valve CPB-UV-3A.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
6. *	Step 6.4.10: Close MCC Breaker PHB-M3622, Cmtt Refuel Purge Isol Valve CPB-UV-3A.	<u>SIMULATOR DRIVER</u> <u>ACTION REQUIRED-Key 5</u> After Key 5 Initiated: INFORM CUE: Breaker PHB-M3622, Cmtt Refuel Purge Isol Valve CPB-UV-3A is closed.	Examinee directs an area operator to close Breaker PHA-M3622, Cmtt Refuel Purge Isol Valve CPB-UV-3A. Examiner Note: The green light above handswitch CPB-HS-3 will NOT illuminate when this breaker is closed. Examiner Note: The examinee may perform Steps 5 and 6 together.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
7.	Step 6.4.11: Unlock MCC Breaker PHB-M3623, Cmtt Refuel Purge Isol Valve CPB-UV-3B.	INFORM CUE: Breaker PHB-M3623, Cmtt Refuel Purge Isol Valve CPB-UV-3B is unlocked.	Examinee directs an area operator to unlock Breaker PHA-M3623, Cmtt Refuel Purge Isol Valve CPB-UV-3B.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
8. *	Step 6.4.12: Close MCC Breaker PHB-M3623, Cmtt Refuel Purge Isol Valve CPB-UV-3B.	<u>SIMULATOR DRIVER</u> <u>ACTION REQUIRED-Key 6</u> After Key 6 Initiated: INFORM CUE: Breaker PHB-M3623, Cmtt Refuel Purge Isol Valve CPB-UV-3B is closed.	Examinee directs an area operator to close Breaker PHA-M3623, Cmtt Refuel Purge Isol Valve CPB-UV-3B. Examiner Note: The green light above handswitch CPB-HS-3 will illuminate when this breaker is closed. Examiner Note: The examinee may perform Steps 7 and 8 together.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
9. *	Step 6.4.13: Ensure the Instrument Air supply valve to BOTH of the following are open: (Inside panel CPN-LAP-01) <ul style="list-style-type: none"> • CPN-HY-006A, Solenoid For Pneun Damper CPN-M02A • CPN-HY-006B, Solenoid For Pneun Damper CPN-M02B 	INFORM CUE: Both of the following supply valves are open: <ul style="list-style-type: none"> • CPN-HY-006A, Solenoid For Pneun Damper CPN-M02A • CPN-HY-006B, Solenoid For Pneun Damper CPN-M02B 	The examinee directs an area operator to open both of the following air supply valves: <ul style="list-style-type: none"> • CPN-HY-006A, Solenoid For Pneun Damper CPN-M02A • CPN-HY-006B, Solenoid For Pneun Damper CPN-M02B
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10.	Step 6.4.14: IF Containment integrity is set for core alterations or irradiated fuel movement in the Containment, THEN direct the Radiation Monitoring Technician to ensure 74ST-9SQ07, Radiation Monitoring System Shiftly Surveillance Test, is current for BOTH of the following: <ul style="list-style-type: none"> • RU-37 • RU-38 	IF Requested Cue: Containment Integrity is set for core alterations	Examinee determines from the Initial Conditions that 74ST-9SQ07 is current for both RU-37 and RU-38.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
11.	Step 6.4.15: WHEN the security compensatory measures are in place for opening the Refueling Purge Valves, THEN record the name of the Security Operations Section Leader in the Control Room Log.		Examinee determines from INITIAL CONDITIONS that security compensatory measures are in place and the Security Operations Section Leader's name was logged in the Control Room Log.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
12.	Step 6.4.16 (including sub-steps 6.4.16.1, 6.4.16.2, and 6.4.16.3) : IF the Radioactive Gaseous Release Permit specifies the use of only one supply and one exhaust fan, THEN perform the following:.....		The examinee marks these steps N/A.

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
13.	Step 6.4.17: When HVAC has installed ONE of T-Mods listed in step 6.4.2.6, then continue with step 6.4.18.	If Requested Cue: HVAC has informed the control room that one of the T-Mods listed in step 6.4.2.6 has been installed.	Examinee may ask CRS about status of T-Mod.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
14.	Step 6.4.18: <u>Install</u> an Equipment Status tag on CPN-HS-1, Containment Purge Mode Selector per 40DP-9OP09, System Status Control, to document the T-Mod installation.		Examinee initials this note since the Equipment Status Tag has already been installed.
SAT / UNSAT Comments (required for UNSAT):			

NOTE prior to Step 6.4.19:
 Starting the Containment Purge System when PCN-V118, Fuel Transfer Tube Canal Isolation, is open will affect the water level in both the Refueling Pool and the Spent Fuel Pool due to changes in Containment pressure.



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	STEP	CUE	STANDARD
15. *	Step 6.4.19: Place CPN-HS-1, Containment Purge Mode Selector, in the REFUEL PURGE position.		Examinee places CPN-HS-1, Containment Purge Mode Selector, in the REFUEL PURGE position.
			Examiner Note: The blue light for REFUEL PURGE will illuminate on CPN-HS-1.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
16. *	Step 6.4.20: Take CPA-HS-2, Contmt Refuel Prg Upstr Isol Vlvs UV-2A/2B, to OPEN.		Examinee takes CPA-HS-2, Contmt Refuel Prg Upstr Isol Vlvs UV-2A/2B, to OPEN.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
17.	Step 6.4.21: Check the open (red) indicating light for CPA-UV-2A and CPA-UV-2B is on.		Examinee checks the open (red) indicating light for CPA-UV-2A and CPA-UV-2B is on.

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
18. *	Step 6.4.22: Take CPB-HS-3, Cntmt Refuel Prg Dwnstr Isol Vlvs UV-3A/3B, to OPEN.		Examinee takes CPB-HS-3, Cntmt Refuel Prg Dwnstr Isol Vlvs UV- 3A/3B, to OPEN.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
19.	Step 6.4.23: Check the open (red) indicating light for CPB-UV-3A and CPB- UV-3B is on.	INFORM CUE after step is completed: Another operator will complete the remainder of this procedure.	Examinee checks the open (red) indicating light for CPB-UV-3A and CPB-UV-3B is on. Examiner Note: The following lights will also change from red to green after CPB-UV-3A and CPB-UV-3B are open: <ul style="list-style-type: none">• REFUEL PURGE AHU IN/OUT DMPRS M02A&B/M05A&B• REFUEL PURGE AHU SUPPLY FAN A A01A• REFUEL PURGE AHU SUPPLY FAN B A01B• REFUEL PURGE EXHAUST FAN A J01A• REFUEL PURGE EXHAUST FAN A J01A

SAT / UNSAT

Comments (required for UNSAT):

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- Unit 1 is in Mode 5.
- The Containment has been vented.
- A Radioactive Gas Release Permit has been approved for using both supply and exhaust fans.
- HVAC has greased the fan motor bearings.
- HVAC has installed a T-Mod per step 6.4.2.6 and an equipment status tag has been hung on CPN-HS-1.
- The Security Operations Section leader has been notified and compensatory measures are in place for opening the Refueling Purge Valves. The Security Operations Section Leader's name has been recorded in the Control Room Log.
- 74ST-9SQ07, Radiation Monitoring System Shiftly Surveillance Test, is current for BOTH of the following:
 - ❖ RU-37
 - ❖ RU-38

INITIATING CUE:

- The CRS directs you to place the Containment Refueling Purge system in service per Section 6.4 of 40OP-9CP01.
- All Prerequisites have been completed.
- Section 6.4 has been completed through Step 6.4.4.

APPLICANT



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JPM BASIS INFORMATION

TASK:	0790010401 Energize normal service transformer NBN-X01(X02) 0790010801 Energize 4.16kv bus NBN-S01(S02)						
TASK STANDARD:	Normal Service Transformer NBN-X02 and 4.16kv bus NBN-S02 are energized						
K/A:	3.6 062 A4.07		K/A RATING:	RO:	3.1	SRO:	3.1
10 CFR 55:	45(a)(5), 45(a)(8)						
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes			
REFERENCES:	40OP-9NB01, 4.16 kV Non-Class 1E Power (NB)						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER		

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 08/06/2014

Revised By: N/A Date: N/A

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

- IC#: 601
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
None	

- SPECIAL INSTRUCTIONS:
 1. **SIMULATOR DRIVER WILL NEED TO FOLLOW ALONG WITH THIS JPM TO PROVIDE CUES AS NEEDED. SIMULATOR DRIVER ACTION WILL BE REQUIRED FOR STEPS 12 and 13.**
 2. **IF IC601 is used, reset to IC 601**
 - Run scenario file **2015 NRC S-3 and S-4.scn** from exam flash drive.
 3. **GO TO RUN, acknowledge alarms, **THEN Go To Step 5****
 4. **IF IC 601 is NOT used, reset to IC 4, GO TO RUN**
 - Ensure Normal Chillers WCN-E01C and WCN-E02 are not running
 - Ensure NCN-P01B, TCN-P01B, and PWN-P01B are **NOT** running (shift pumps if necessary)
 - If running with 2015 NRC scenario S-4 **THEN** ensure Containment Purge is secured per 40OP-9CP01
 - Run scenario file **2015 NRC S-3 and S-4.scn** from exam flash drive.
 - Ensure handswitch NBN-HK-S01C, S02-S02 Transfer Switch is in MANUAL
 - Ensure NBN-X02 and NBN-S02 are de-energized per 40OP-9BN01.
 5. **Provide INITIATING CUE**
 6. **GO TO RUN**
- REQUIRED CONDITIONS:
 - NBN-X02, Normal Service Transformer, is de-energized
 - NBN-S02, 4.16kV non-class bus, is de-energized
 - NBN-HK-S01C, S02-S02 Transfer Switch is in MANUAL
 - Containment Purge is secured (if running with 2015 NRC scenario S-4)
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

5. SPECIAL TOOLS/EQUIPMENT:

- 40OP-9NB01, 4.16 kV, Non-Class 1E Power (NB), Revision 25 available.



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NOTE: This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.

6. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. **during** JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
13.	KEY 1 (IRF crB2SW02WCNE01C_5 f:OUT k:1)	Opens Control Power Breaker to NBN-S02F
14.	KEY 2 (IRF crB2SW02WCNE02_5 f:OUT k:2)	Opens Control Power Breaker to NBN-S02G



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TASK CONDITIONS**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



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INITIAL CONDITIONS:

- Normal Service Transformer NBN-X02 and 4.16Kv Non-Class Bus NBN-S02 were de-energized to repair the stabs for the normal supply breaker for NBN-S02.
- All repairs are complete.

INITIATING CUE:

- The CRS directs you to energize NBN-X02 and NBN-S02 per 40OP-9NB01 Sections 6.2 and 6.6.
- All prerequisites for Section 6.2 and steps 6.2.2.1 through 6.2.2.10 have been completed.
- All prerequisites except Step 6.6.1.3 for Section 6.6 have been completed.
- The Area 4 operator has been briefed and is standing by to perform actions in the field.
- **TIME COMPRESSION MAY BE USED FOR OPERATOR ACTIONS IN THE FIELD.**



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

	STEP	CUE	STANDARD
1. *	Step 6.2.2.11: <u>Close</u> NAN-S02N, 13.8 kV Supply Breaker To Normal Service Transformer NBN-X02, 13.8-4.16 kV Normal Svce Xfmr, using NBN-HS-S02N, Normal Serv Xfmr X02.		Examinee closes NAN-S02 using handswitch NBN-HS-S02N on panel B01
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2.	Step 6.2.2.12: <u>Check</u> NBN-EI-S02A voltmeter for normal voltage of 3.74 kV to 4.37 kV.		Examinee checks for normal voltage on voltmeter NBN-EI-S02A
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
3.	Step 6.6.2.1: <u>Ensure</u> D-panel Breaker NKN-D42 72-08, DC Control Power For NBN-S02, is closed.	IF REQUESTED CUE: Breaker NKN-D42 72-08, DC Control Power for NBN-S02 is closed.	Examinee directs area operator to ensure NKN-D42 72-08 is closed OR determines control power to NBN-S02 is closed due to green lights on NBN-S02 handswitches on B01.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4.	Step 6.6.2.2: <u>Direct</u> a nuclear operator to check inside NBN-S02 breaker cubicles for ALL of the following: <ul style="list-style-type: none"> • Tags • Foreign matter • DC control power fuses properly installed • 125V DC control power (RRC) to breaker closed 	INFORMATION Cue: The area operator reports no tags or foreign matter in NBN-S02. All DC control power fuses are properly installed and all 125V DC control power (RRC) breakers are closed.	Examinee directs an area operator to check inside NBN-S02 cubicles for tags, foreign matter, DC control power fuses installed, 125V DC to breakers closed.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
5.	Step 6.6.2.3: Notify the SM/CRS of the results of the NBN-S02 breaker cubicle inspection performed in Step 6.6.2.2.	INFORMATION CUE: The CRS acknowledges the results of the cubicle inspection.	Examinee informs SM/CRS of results of cubicle inspection.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
6.	<p>Step 6.6.2.4:</p> <p><u>Check</u> ALL of the following NBN-S02 breakers are open or racked out as directed by the SM/CRS:</p> <ul style="list-style-type: none"> • NBN-S02A, Normal Supply Breaker On NBN-S02 • NBN-S02D, CDNP01C “C” Condensate Pump • NBN-S02E, EDN-P01A “A” Htr Drain Tank Pump • NBN-S02F, WCNE02 Small Normal Chiller • NBN-S02G, WCNE01C “C” Normal Chiller • NBN-S02H, PWNP01B “B” Plant Cooling Water Pump • NBN-S02J, TCNP01B “B” TC Pump • NBN-S02K, NCNP01B “B” NC Pump 	<p>IF REQUESTED CUE:</p> <p>The area operator reports all of the following breakers are racked in and open:</p> <ul style="list-style-type: none"> • NBN-S02A, Normal Supply Breaker On NBN-S02 • NBN-S02D, CDNP01C “C” Condensate Pump • NBN-S02E, EDN-P01A “A” Htr Drain Tank Pump • NBN-S02F, WCNE02 Small Normal Chiller • NBN-S02G, WCNE01C “C” Normal Chiller • NBN-S02H, PWNP01B “B” Plant Cooling Water Pump • NBN-S02J, TCNP01B “B” TC Pump • NBN-S02K, NCNP01B “B” NC Pump 	<p>The examinee directs an area operator to ensure all of the following breakers are open OR may use the handswitch indications in the control room to ensure the breakers are open.</p> <ul style="list-style-type: none"> • NBN-S02A –NBN Normal Supply Breaker (handswitch NBN-HS-S02A on B01) • NBN-S02D - Condensate Pump C (handswitch CDN-HS-13 on B05) • NBN-S02E – Htr Drain Pump A (handswitch EDN-HS-506 on B06) • NBN-S02F – Normal Chiller E02 (handswitch WCN-HS-4A on B07) • NBN-S02G – Normal Chiller E01C (handswitch WCN-HS-3A on B07) • NBN-S02H – PW Pump B (handswitch PWN-HS-6 on B07) • NBN-S02J – TC Pump B (handswitch TCN-HS-22 on B07) • NBN-S02K – NC Pump B (handswitch NCN-HS-2 on B07)

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
7.	Step 6.6.2.5: <u>Reset</u> NBN-S02 relay targets per 40DP-00P02, Relay Resetting.	INFORMATION CUE: All targets are reset on NBN-S02 except for the undervoltage relays.	Examinee directs area operator to reset NBN-S02 relay targets per 40DP-90P02.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
8.	Step 6.6.2.6: <u>Ensure</u> NBN-S02A, Normal Supply Breaker, on NBN-S02, is racked in per Appendix A - Breaker Racking Instructions.	IF REQUESTED CUE: NBN-S02A, Normal Supply Breaker is racked in.	Examinee directs an area operator to ensure NBN-S02A is racked in OR may remember from STEP 6 cue that this breaker is racked in.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
9.	Step 6.6.2.7: <u>Ensure</u> BOTH of the following breakers for NBN-S02, are closed: <ul style="list-style-type: none"> • D-panel Breaker NHN-D06 52-22, Space Heater • D-panel Breaker NHN-D06 52-20, Blower Cooling Fans 	INFORMATION CUE: Both of the following breakers are closed: <ul style="list-style-type: none"> • D-panel Breaker NHN-D06 52-22, Space Heater • D-panel Breaker NHN-D06 52-20, Blower Cooling Fans 	Examinee directs an area operator to ensure both of the following breakers are open: <ul style="list-style-type: none"> • D-panel Breaker NHN-D06 52-22, Space Heater • D-panel Breaker NHN-D06 52-20, Blower Cooling Fans
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10.	Step 6.6.2.8: <u>Check</u> NBN-S02A, Normal Supply Breaker, on NBN-S02, is open.		Examinee checks NBN-S02A normal supply breaker is open using handswitch NBN-HS-S02A on B01.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
11.	Step 6.6.2.9: IF NBN-S01C, S01-S02 Tie breaker, is available for operation, THEN <u>perform</u> the following: a. <u>Check</u> NBN-HK-S01C, S01-S02 Transfer Switch, is in MANUAL. b. <u>Check</u> NBN-S01C, S01-S02 Tie Breaker, is open.		Examinee checks NBN-HK-S01C in MANUAL and ensures NBN-S01C is open using handswitch NBN-HS-S01C on B01.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12.	Step 6.6.2.9: IF NBN-S01C, S01-S02 Tie breaker, is available for operation, THEN <u>perform</u> the following: c. <u>Ensure</u> breaker NBN-S01C, S01-S02 Tie Breaker, is racked in per Appendix A - Breaker Racking Instructions.	IF REQUESTED CUE: NBN-S01C, S01-S02 Tie Breaker, is racked in	Examinee directs an operator to ensure breaker NBN-S01C is racked in <u>OR</u> may use lights on B01.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
13.	Step 6.6.2.10: IF NBN-S02F is racked in, THEN <u>ensure</u> the 125 VDC breaker (RRC) for NBN-S02F, is open.	<u>SIMULATOR DRIVER ACTION REQUIRED.</u> After DC control power breaker is open, THEN INFORMATION CUE: The 125 VDC breaker (RRC) for NBN-S02F is open.	Examinee determines NBN-S02F is racked in from Step 6 of the JPM <u>OR</u> by using indicating lights and directs an operator to ensure the 125 VDC breaker for NBN-S02F is open.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
14.	Step 6.6.2.11: IF NBN-S02G is racked in, THEN <u>ensure</u> the 125 VDC breaker (RRC) for NBN-S02G, is open.	<u>SIMULATOR DRIVER ACTION REQUIRED.</u> After DC control power breaker is open, THEN INFORMATION CUE: The 125 VDC breaker (RRC) for NBN-S02G is open.	Examinee determines NBN-S02F is racked in from Step 6 of the JPM <u>OR</u> by using indicating lights and directs an operator to ensure the 125 VDC breaker for NBN-S02G is open.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
15. *	Step 6.6.2.12: <u>Place</u> Synchronizing Switch, NBN-SS-S02A, 4.16 kV S02 Supply, for the Normal Supply Breaker on NBN-S02, to ON.		Examinee placing Synchronizing Switch NBN-SS-S02A to ON
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
16. *	Step 6.6.2.13: <u>Close</u> NBN-S02A, Normal Supply Breaker, on NBN-S02, using NBN-HS-S02A, 4.16 kV S02 Supply.		Examinee closes NBN-S02A using handswitch NBN-HS-S02A on B01 to energize NBN-S02
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
17.	Step 6.6.2.14: <u>Check</u> ANY of the following for proper voltage of 3.74 kV to 4.37 kV: <ul style="list-style-type: none"> • NBN-EI-S02 voltmeter • ERFDADS 		Examinee checks the voltmeter on S02 or ERFDADS to check for proper voltage of 3.74 kV to 4.37 kV.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
18.	Step 6.6.2.15: Place Synchronizing Switch, NBN-SS-S02A, 4.16 kV S02 Supply, to OFF.	INFORMATION CUE after step complete: Another Operator will complete the rest of this procedure.	Examinee takes Synchronizing Switch NBN-SS-S02A to OFF
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- Normal Service Transformer NBN-X02 and 4.16Kv Non-Class Bus NBN-S02 were de-energized to repair the stabs for the normal supply breaker for NBN-S02.
- All repairs are complete.

INITIATING CUE:

- The CRS directs you to energize NBN-X02 and NBN-S02 per 40OP-9NB01 Sections 6.2 and 6.6.
- All prerequisites for Section 6.2 **and** steps 6.2.2.1 through 6.2.2.10 have been completed.
- All prerequisites **except** Step 6.6.1.3 for Section 6.6 have been completed.
- The Area 4 operator has been briefed and is standing by to perform actions in the field.
- **TIME COMPRESSION MAY BE USED FOR OPERATOR ACTIONS IN THE FIELD.**

APPLICANT



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JPM BASIS INFORMATION

TASK:	0100010401 Operate the Pressurizer Pressure Control System						
TASK STANDARD:	Pressurizer pressure is reduced using Auxiliary Sprays to 2250 ± 10 psia with pressurizer backup heaters turned off and proportional heaters re-energized						
K/A:	4.2027AA1.01		K/A RATING:	RO:	4.0	SRO:	3.9
10 CFR 55:	45(a)(5), 45(a)(6)						
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes			
REFERENCES:	40AL-9RK4A, Panel B04A Alarm Responses, Rev. 40						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER		

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **Yes**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Wilhelm Date: 6/18/2002

Revised By: Alan Malley Date: 8/7/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



**RO/SROI SIMULATOR JPM S5
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1. SIMULATOR SETUP:

- IC#: 602
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
-----------------------	-------------

- SPECIAL INSTRUCTIONS:
 1. IF IC-602 is used, reset to IC 602, THEN Go To Step 5 and lower RCS pressure to ~2262 psia.
 2. IF IC-602 is NOT used, reset to IC 10 (2% Power IC), GO TO RUN
 3. Run scenario file **2015 NRC S-5 and S-6.scn** from exam flash drive
 4. When Pressurizer Pressure is rising, **THEN FREEZE** the simulator.
 5. Provide INITIATING CUE

(Important to give the INITIATING CUE before going to run)

6. GO TO RUN
- REQUIRED CONDITIONS:
 - RCS Pressure rising slowly.
 - SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40AL-9RK4A, Panel B04A Alarm Responses, Rev. 40

3. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. **during** JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
N/A		



**RO/SROI SIMULATOR JPM S5
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TASK CONDITIONS**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO/SROI SIMULATOR JPM S5
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- Pressurizer Pressure is increasing.
- Alarm Window 4A01B has annunciated due to a failed Pressurizer Pressure Instrument.

INITIATING CUE:

- The CRS directs you to perform the first and second priority actions per 40AL-9RK4A Window 4A01B and restore Pressurizer pressure to 2250 ± 10 psia.



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

	STEP	CUE	STANDARD
1.	AUTOMATIC ACTION Step 1: Backup heaters turn on at 2200 psia.		Examinee determines backup heaters are on.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
2. *	OPERATOR ACTION Step 1: Check BOTH of the following pressure instruments: <ul style="list-style-type: none">• RCN-PR-100, L) Pressure PT-100X• RCN-PR-100, R) Pressure PT-100Y		Examinee checks both 100X and 100Y. Examinee determines 100X has failed low.

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
3.	OPERATOR ACTION Step 2: IF ONE of the following controlling channels is failed: <ul style="list-style-type: none"> • RCN-PR-100, L) Pressure • PT-100X RCN-PR-100, R) Pressure PT-100Y THEN place RCN-HS-100, Pressure Control Channel X/Y Selector, to the unaffected channel.		<p>Examinee determines 100X has failed low.</p> <p>Examinee selects 100Y on the Pressure Control channel X/Y Selector (RCN-HS-100)</p> <p>Examiner Note: Although the controlling channel has failed, another malfunction prevents the operator action from being effective.</p>

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
4.	OPERATOR ACTION Step 3: IF actual Pressurizer pressure is rising due to a failed channel, THEN GO TO alarm window 4A01B, PZR PRESS HI-LO, for Pressurizer Pressure Hi, on page 261.	ALTERNATE PATH	<p>Examinee determines goes to page 261 due to pressure rising.</p>

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
5.	AUTO ACTION Step 1: Deenergizes all heaters, only if controlling channel fails.		<p>Examinee determines Pressurizer Pressure < 2383 psia. Examinee may deenergize all heaters at this point.</p> <p>Examiner Note: If the examinee deenergizes all heaters this will satisfy the critical step for step 8 of this JPM.</p>

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
6. *	OPERATOR ACTION Step 1: IF the SM/CRS determines a high pressure trip is impending at 2382 psia, THEN perform the following at the direction of the SM/CRS: <ul style="list-style-type: none"> • Trip the Reactor • GO TO 40EP-9EO01, Standard Post Trip Actions 		Examinee determines Pressurizer Pressure < 2383 psia. Examiner Note: TERMINATE JPM, IF REACTOR IS TRIPPED. JPM would be UNSAT. (Only critical is Reactor is tripped)
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
7.	OPERATOR ACTION Step 2: Check BOTH of the following <ul style="list-style-type: none"> • RCN-PR-100, L) Pressure PT-100X • RCN-PR-100, R) Pressure PT-100Y 		Examinee determines actual high pressure condition exists.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
8.	OPERATOR ACTION Step 3: IF ONE of the following controlling channels is failed: <ul style="list-style-type: none"> RCN-PR-100, L) Pressure PT-100X RCN-PR-100, R) Pressure PT-100Y THEN place RCN-HS-100, Pressure Control Channel X/Y Selector, to the unaffected channel.		<p>Examinee determines CH "X" has failed and selects channel 'Y' using handswitch RCN-HS-100 on B04.</p> <p>This was probably done in the previous section of the procedure</p> <p>Examiner Note: This action was likely completed in the previous section of the procedure.</p> <p>Although the controlling channel has failed, another malfunction prevents the operator action from being effective.</p>

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
9.	OPERATOR ACTION Step 4: IF actual Pressurizer pressure is lowering due to a failed channel, THEN GO TO alarm window 4A01B, PZR PRESS HI-LO, for Pressurizer Pressure Ch X /Y Lo, on page 255.		<p>Examinee N/As this step as actual pressure is rising.</p>

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
10.	OPERATOR ACTION Step 5.1 AND 5.2: <ul style="list-style-type: none">Place RCN-PIC-100, Pressure Spray Control, in MANUALAdjust RCN-PIC-100, Pressure Spray Control, output between 33.5% and 50% to open the Pressurizer main spray valves.		Examinee attempts to open Main Spray valves using RCN-PIC-100.
			Examiner Note: Controller PIC-100 has failed, and the Main Spray valves will not open.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
11.	OPERATOR ACTION Step 5.1 AND 5.2: <ul style="list-style-type: none">Place RCN-PIC-100, Pressure Spray Control, in MANUALAdjust RCN-PIC-100, Pressure Spray Control, output between 33.5% and 50% to open the Pressurizer main spray valves.		Examinee attempts to open Main Spray valves using RCN-PIC-100.
			Examiner Note: Controller PIC-100 is failed and the Main Spray valves will not open.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
12.	OPERATOR ACTION Step 5.3: IF BOTH of the following conditions exist <ul style="list-style-type: none"> Manual operation of RCN-PIC-100, Pressure Spray Control, does NOT reduce the high pressure condition The SM/CRS directs manual selection of a Pressurizer Spray Control valve THEN place RCN-HS-100-10, Spray Valve Selector, to ONE of the following positions: <ul style="list-style-type: none"> RC-100E RC-100F Both 	INFORM CUE: The CRS does <u>NOT</u> direct you to change the spray valve selection.	Examinee N/As this step
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
13.	OPERATOR ACTION Step 5.4: IF BOTH of the following conditions exist: <ul style="list-style-type: none"> Manual operation of RCN-PIC-100, Pressure Spray Control, does NOT reduce the high pressure condition The SM/CRS directs manual control of a Pressurizer Spray Control valve using RCN-PIK-100, Pressure Spray Control THEN perform the following: <ul style="list-style-type: none"> Place RCN-PIK-100, Pressure Spray Control, in Manual. Adjust RCN-PIK-100, Pressure Spray Control, to control Pressurizer pressure. 		The examinee places RCN-PIK-100 in MANUAL, adjusts the output up and determines spray valves did not open.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
14. *	OPERATOR ACTION Step 5.5: IF manual operation of the Pressurizer main spray valves does NOT lower Pressurizer pressure, THEN open ONE of the following Pressurizer auxiliary spray valves: <ul style="list-style-type: none"> CHA-HS-205, Pressurizer Aux Spray Vlv CHB-HS-203, Pressurizer Aux Spray Vlv. 		Examinee using CHA-HS-05 and/or CHB-HS-203 on B03 to reduce RCS pressure to 2250 ± 25 psia
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
15.	OPERATOR ACTION Step 5.6: IF Pressurizer auxiliary spray valves are operated, THEN REFER TO 40ST-9RC01, RCS and Pressurizer Heatup and Cooldown Rates.	INFORM CUE: Another operator will address 40ST-9RC01.	Examinee initials step and continues into procedures.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
16.	OPERATOR ACTION Step 6: REFER TO LCO 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits.	INFORM CUE: The CRS will address the LCO.	Examinee initials step and continues into procedures.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
17.	OPERATOR ACTION Step 7: IF the SM/CRS determines a Reactor trip is NOT required, THEN minimize rate of Unit load changes to facilitate pressure control until the cause is determined and corrected.	IF REQUESTED CUE: The CRS has determined a Reactor Trip is NOT required and will minimize load changes.	Examinee informs CRS to minimize rate of load changes to facilitate pressure control, until the cause is determined and corrected

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
18. *	OPERATOR ACTION Step 8: IF Pressurizer backup heaters are energized, THEN take ALL of the following heaters to OFF: <ul style="list-style-type: none"> • RCN-HS-100-6, Backup Heaters Bank • RCN-HS-100-7, Backup Heaters Bank • RCN-HS-100-8, Backup Heaters Bank • RCN-HS-100-9, Backup Heaters Bank • RCA-HS-100-4, Backup Heaters Bank • RCB-HS-100-5, Backup Heaters Bank 		Examinee deenergizes all backup heater by taking the following handswitches to OFF: <ul style="list-style-type: none"> • RCN-HS-100-6, Backup Heaters Bank • RCN-HS-100-7, Backup Heaters Bank • RCN-HS-100-8, Backup Heaters Bank • RCN-HS-100-9, Backup Heaters Bank • RCA-HS-100-4, Backup Heaters Bank • RCB-HS-100-5, Backup Heaters Bank

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
19. *	OPERATOR ACTION Step 9: IF ANY of the following Pressurizer proportional heater handswitches indicate a tripped condition: <ul style="list-style-type: none">• RCN-HS-100-1, Proportional Heaters Bank• RCN-HS-100-2, Proportional Heaters Bank THEN take BOTH of the following Pressurizer proportional heater handswitches to ON: <ul style="list-style-type: none">• RCN-HS-100-1, Proportional Heaters Bank• RCN-HS-100-2, Proportional Heaters Bank		Examinee energizes the proportional heater by taking the following switches to ON: <ul style="list-style-type: none">• RCN-HS-100-1, Proportional Heaters Bank• RCN-HS-100-2, Proportional Heaters Bank.
			Examiner Note: This step is only critical if the examinee deenergized the proportional heaters from the AUTO Action step (Step 1 of this JPM).
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- Pressurizer Pressure is increasing.
- Alarm Window 4A01B has annunciated due to a failed Pressurizer Pressure Instrument.

INITIATING CUE:

- The CRS directs you to perform the first and second priority actions per 40AL-9RK4A Window 4A01B and restore Pressurizer pressure to 2250 ± 10 psia.

APPLICANT



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JPM BASIS INFORMATION

TASK:	1250310201 Respond to an Inadvertent MSIS							
TASK STANDARD:	MSIS Actuation has been reset							
K/A:	3.2 013 A4.02			K/A RATING:	RO:	4.3	SRO:	4.4
10 CFR 55:	45(a)(5), 45(a)(8)							
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes				
REFERENCES:	40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Rev 17							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER			

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Larry Burton Date: 10/27/2011

Revised By: Alan Malley Date: 8/8/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



RO/SROI SIMULATOR JPM S6
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2015 NRC Exam

1. SIMULATOR SETUP:

1. IC#: 602

2. SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION

• SPECIAL INSTRUCTIONS:

1. **IF** IC 602 is used, reset to **IC 602** , GO TO RUN, acknowledge alarms, **THEN** Go To Step 4
2. **IF** IC 602 is **NOT** used, reset to IC 10 (2% power IC), GO TO RUN
3. Bypass Channel C SG#1 HI LEVEL TRIP at the PPS Cabinets
4. Run scenario file **2015 NRC S-5 and S-6.scn** from exam flash drive.
5. Override the MSIVs and open all 4 MSIVs.
6. Override the Downcomer Isolation Valves and open all 4 Downcomer Isolation Valves.
7. Provide **INITIATING CUE**
8. GO TO RUN

• REQUIRED CONDITIONS:

1. MISIS Actuated
2. MSIVs overridden and open
3. Downcomer Isolation Valves overridden and open
4. Channel C Hi SG 1 level in bypass
5. Channel A Hi SG 1 level tripped

• SIMULATOR EVALUATION PRE-CHECK

- ☐ Correct IC
- ☐ Alarm Silence Off
- ☐ Procedures available, page checked, and clean
- ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Rev 17

NOTE: This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.

3. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. during JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
None		



**RO/SROI SIMULATOR JPM S6
PVNGS JOB PERFORMANCE MEASURE
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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DO NOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



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INITIAL CONDITIONS:

- Unit 1 is at approximately 2% power.
- An inadvertent MSIS has occurred due to a power supply failure.
- Channel C Hi SG level is in bypass.
- The CRS has implemented 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.
- The faulted power supply has been replaced.

INITIATING CUE:

- The CRS directs you to reset MSIS, in accordance with appendix B of 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.



**RO/SROI SIMULATOR JPM S6
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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 1 of Appendix B: Enter Appendix Entry Time and Date		Examinee enters appendix entry time and date.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2.	Step 2 of Appendix B: Enter actuation(s) to be reset:		Examinee enters MSIS in the space provided.
SAT / UNSAT Comments (required for UNSAT):			

Notes before step 3:

- Overriding equipment disables automatic ESFAS operation of the equipment. Depending on plant conditions, this action may make the equipment inoperable.
- The HPSI, LPSI and CS pump minimum recirculation flow provides sufficient heat removal for only one hour of pump operation.



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	STEP	CUE	STANDARD
3.	Step 3 of Appendix B: IF the PPS-ESFAS actuation was caused by failure to reset the SG or PZR Pressure variable setpoints during a controlled cooldown, THEN perform the following:		Examinee NAs step based on cue provided.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4.	Step 4 of Appendix B: Check the Bistable Trip Lamps at the PPS Remote Operators Module (B05) for the affected PPS-ESFAS actuation input parameters on all PPS Channels satisfy ONE of the following <ul style="list-style-type: none"> • NOT lit • Bypassed 		Examinee determines that the “A” train SG 1 level HI Bistable trip lamp is lit.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
5. *	Contingency Step 4.1: a. Reset the affected Bistable Trip Lamps at the PPS Remote Operators Module (B05).		Examinee resets the “A” channel Bistable Trip Lamp on B05.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
6.	Step 5 of appendix B: Check the affected PPS-ESFAS actuation Initiation Relay lamps are illuminated at the PPS remote Operators Module (B05) on all PPS Channels.		Examinee determines that the “A” train MSIS initiation relay lamp is not lit.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
7. *	Contingency Step 5.2.a Obtain the PPS Initiation Reset key for the affected Train.		Examinee obtains the key for channel “A”.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
8. *	Contingency Step 5.2.b: Unlock the affected Initiation Path Reset Train (PPS Cabinets).		Examinee unlocks the Initiation Path Reset Train on channel "A".
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
9. *	Contingency Step 5.2.c: Reset the affected Initiation Path by depressing the appropriate Initiation Path Reset pushbutton (PPS Cabinets).		Examinee resets the affected Initiation Path by depressing the appropriate (MSIS) Initiation Path Reset pushbutton (PPS Cabinets).
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10.	Contingency Step 5.2.d: Lock the Initiation Path Reset Train (PPS Cabinets).		Examinee locks the Initiation Path Reset Train (PPS Cabinets).
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
11.	Contingency Step 5.2.e: Remove the PPS Initiation Reset key.		Examinee removes the PPS Initiation Reset key.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12.	Contingency Step 5.2.f: Check the affected Initiation Signal lamps are illuminated for the affected PPS channels (On status panels above PPS Cabinets).		Examinee checks the affected Initiation Signal lamps are illuminated for the affected PPS channels (On status panels above PPS Cabinets).
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
13.	Step 6 of appendix B: Check the actuated PPS-ESFAS leg 1-3 and leg 2-4 Actuation Signal lamps are illuminated for PPS Train A and Train B Actuation Signals (On status panels above PPS Cabinet A, SBAC01 and PPS Cabinet B, SBBC01).		Examinee determines that the “A” train MSIS signal lamps are not illuminated.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
14. *	Contingency Step 6.1: Perform the following for the affected Train(s): <ul style="list-style-type: none"> a. Press the LOCKOUT RESET pushbutton(s) for the affected PPS-ESFAS actuation(s) (Aux Relay Cabinets Bay 6 & 7). b. Check both red “ON” lamps are illuminated for the affected PPS-ESFAS actuation (Aux Relay Cabinets Bay 6 & 7). 	After this step is complete: Information Cue: Another operator will complete this appendix.	Examinee performs the following: <ul style="list-style-type: none"> a. Presses the LOCKOUT RESET pushbutton(s) for the affected PPS-ESFAS actuation(s) (Aux Relay Cabinets Bay 6 & 7). b. Checks both red “ON” lamps are illuminated for the affected PPS-ESFAS actuation (Aux Relay Cabinets Bay 6 & 7). Examiner Note: Pressing either pushbutton S64A or S74A will reset the MSIS LOCKOUT.
SAT / UNSAT Comments (required for UNSAT):			



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JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- Unit 1 is at approximately 2% power.
- An inadvertent MSIS has occurred due to a power supply failure.
- Channel C Hi SG level is in bypass.
- The CRS has implemented 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.
- The faulted power supply has been replaced.

INITIATING CUE:

- The CRS directs you to reset MSIS, in accordance with Appendix B of 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.

APPLICANT

Operation of the Steam Bypass Control System

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Appendix C - Connecting and Resetting Steam Bypass Control System

C.1 CONNECTING SBCS

___ C.1.1 ANY of the following Prerequisites are met:

- ___ • SFN-C03N, NSSS Control Systems Cabinet, System Mode Selector switch is not in OPERATE.
- ___ • At least one SFN-C03N, NSSS Control Systems Cabinet, NOT IN OPERATE light is ON.

NOTE

___ The following alarms are expected:

- SBCS ABNORMAL (6A16A)
- SBCS COND INTLK (6A16B)
- BOP/NSSS ANALOG INST CAB TRBL (7C15A)

CAUTION

___ Failure to press the EMERGENCY OFF pushbutton at SFN-C03N, NSSS Control Systems Cabinet, may result in a Quick Open signal when the System Mode Selection switch is placed to DISCONNECT.

___ C.1.2 Press the EMERGENCY OFF pushbutton at SFN-C03N, NSSS Control Systems Cabinet.

___ C.1.3 Check ALL of the following:

- ___ • The EMERG OFF light at SFN-C03N, NSSS Control Systems Cabinet, is ON
- ___ • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 4 is OFF
- ___ • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 5 is OFF
- ___ • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 7 is OFF

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NOTE

___ Performance of Step C.1.4 may cause the following alarm(s):

- SBCS ABNORMAL (6A16A)
- SBCS COND INTLK (6A16B)
- BOP/NSSS ANALOG INST CAB TRBL (7C15A)

___ C.1.4 Place the System Mode Selection switch at SFN-C03N, NSSS Control Systems Cabinet, to DISCONNECT.

___ C.1.5 Press the LIGHT AND TIMER TEST pushbutton on SFN-C03N, NSSS Control Systems Cabinet.

___ C.1.6 Check BOTH of the following lights are OFF:

- ___ • NOT IN OPERATE (1)
- ___ • NOT IN OPERATE (2)

___ C.1.7 **WHEN** 30 seconds has elapsed since pressing the LIGHT AND TIMER TEST pushbutton,
THEN check BOTH of the following lights are ON:

- ___ • NOT IN OPERATE (1)
- ___ • NOT IN OPERATE (2)

___ C.1.8 Place the System Mode Selector switch at SFN-C03N, NSSS Control Systems Cabinet, to OPERATE.

___ C.1.9 **WHEN** 30 seconds has elapsed since placing the System Mode Selector switch to OPERATE,
THEN check BOTH of the following lights are OFF.

- ___ • NOT IN OPERATE (1)
- ___ • NOT IN OPERATE (2)

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C.2 RESETTING SBSCS

___ C.2.1 ALL of the following Prerequisites are met:

- ___ • SFN-C03N, NSSS Control Systems Cabinet, System Mode Selector switch is in OPERATE
- ___ • The NOT IN OPERATE (1) light at SFN-C03N, NSSS Control Systems Cabinet, is OFF
- ___ • The NOT IN OPERATE (2) light at SFN-C03N, NSSS Control Systems Cabinet, is OFF

___ C.2.2 Ensure SGN-PIC-1010, Master Steam Bypass Control, is in the Manual mode.

___ C.2.3 Ensure SGN-PIC-1010, Master Steam Bypass Control, output is set to 0% demand.

NOTE

___ Performance of Step C.2.4 may cause the following alarm(s):

- SBSCS ABNORMAL (6A16A)
- SBSCS COND INTLK (6A16B)
- BOP/NSSS ANALOG INST CAB TRBL (7C15A)

___ C.2.4 Take SGN-PIC-1010, Master Steam Bypass Control, to RESET.

Operation of the Steam Bypass Control System

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NOTE

___ The red output indicator of SGN-PIC-1010, Master Control, may jump from 0% demand upon reset. This may result in TURB BYP DEMAND (4A12B) alarm.

- ___ C.2.5 **IF** the TURB BYP DEMAND (4A12B) alarm is received,
THEN ensure output of SGN-PIC-1010, Master Steam Bypass Control, is set to 0% demand.
- ___ C.2.6 Verify SBCS ABNORMAL (6A16A) is clear.
- ___ C.2.7 **IF** Condenser pressure is less than 5 inches HgA,
THEN verify SBCS COND INTLK (6A16B) is clear.
- ___ C.2.8 GO TO ONE of the following:
 - ___ • Section 6.1, Aligning the Steam Bypass Control System for Normal Operation
 - ___ • Section 6.2, Shifting the Master Steam Bypass Controller Modes

End of Appendix C



**RO SIMULATOR JPM S7
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JPM BASIS INFORMATION

TASK:	1140010401, Lineup the Steam Bypass Control System for Normal Operation						
TASK STANDARD:	THE SBCS is reconnected. The "NOT IN OPERATE" lights are extinguished; SBCS ABNORMAL (window 6A16A) and SBCS COND INTLK (window 6A16B) alarms are reset.						
K/A:	3.4 041 A4.08		K/A RATING:	RO:	3.0	SRO:	3.1
10 CFR 55:	45(a)(5), 45(a)(8)						
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes			
REFERENCES:	40OP-9SF05, Operation of Steam Bypass Control System, Revision 24						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER		

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: John Dedon Date: 11/18/2003

Revised By: Alan Malley Date: 8/8/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



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1. SIMULATOR SETUP:

- IC#: 603
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
None	

- SPECIAL INSTRUCTIONS:
 1. IF IC603 is used, reset to **IC 603**, GO TO RUN, and acknowledge alarms
 2. Provide **INITIATING CUE**
 3. GO TO RUN
 4. To run this as a stand-alone JPM or in the event that the scenario file/IC is unavailable:
 - a. Reset to IC#: 20
 - b. GO TO RUN
 - c. Remove the Reactor Power Cutback System from service per 40OP-9SF04.
 - d. Remove SBCS from service for Maintenance per 40OP-9SF05, Section 6.13.
 - e. Place the System Mode Switch in "TEST" on the SBCS Panel.

NOTE: The following RED LEDs will be lit: "Emergency OFF", both "Condenser Interlock" lights, both "Not in Operate" lights, and AMI.

- f. Silence/Acknowledge Alarms.
 - g. GO TO FREEZE
 - h. Give examinee INITIATING CUE
 - i. When examinee is ready, GO TO RUN
- REQUIRED CONDITIONS:
 1. SBCS not in service
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40OP-9SF05, Operation of Steam Bypass Control System, Revision 24. **NOTE:** This JPM may be used with later revisions if it is verified that the later revision does not affect this JPM.

3. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. during JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
None		



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TASK CONDITIONS**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY,DO NOT OPERATE**any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DONOT**enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



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INITIAL CONDITIONS:

- The Steam Bypass Control System has been disconnected at the SBCS Test Panel due to troubleshooting.
- The SBCS is now ready to be returned to service.

INITIATING CUE:

- The CRS directs you to perform Sections C.1 and C.2 of Appendix C of 40OP-9SF05, Operation of Steam Bypass Control System, to Reconnect and Reset the Steam Bypass Control System.



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

	STEP	CUE	STANDARD
1.	STEP C.1.1: ANY of the following Prerequisites are met: <ul style="list-style-type: none">SFN-C03N, NSSS Control Systems Cabinet, System Mode Selector switch is not in OPERATE.At least one SFN-C03N, NSSS Control Systems Cabinet, NOT IN OPERATE light is ON.		Examinee determines both 'NOT IN OPERATE' lights are ON.
SAT / UNSAT Comments (required for UNSAT):			

Notes before step C.1.2:

NOTE

The following alarms are expected:

- SBCS ABNORMAL (6A16A)
- SBCS COND INTLK (6A16B)
- BOP/NSSS ANALOG INST CAB TRBL (7C15A)

CAUTION

Failure to press the EMERGENCY OFF pushbutton at SFN-C03N, NSSS Control Systems Cabinet, may result in a Quick Open signal when the System Mode Selection switch is placed to DISCONNECT.



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	STEP	CUE	STANDARD
2.	STEP C.1.2: <u>Press</u> the EMERGENCY OFF pushbutton at SFN-C03N, NSSS Control Systems Cabinet.		Examinee depresses the "EMERGENCY OFF" pushbutton. The red EMERGENCY OFF light was already illuminated.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
3.	STEP C.1.3: <u>Check</u> ALL of the following: <ul style="list-style-type: none"> • The EMERG OFF light at SFN-C03N, NSSS Control Systems Cabinet, is ON • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 4 is OFF • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 5 is OFF • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 7 is OFF 	INFORMATION CUE (after examinee checks EMERG OFF light ON): <ul style="list-style-type: none"> • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 4 is OFF • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 5 is OFF • SFN-C03Y, NSSS Control Systems Cabinet, Power Supply light (-15, +15) nest 7 is OFF 	Examinee checks EMERG OFF light lit at panel SFN-C03N. Examiner Note: The lights in panel SFN-C03Y are not modeled in the simulator.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
4. *	STEP C.1.4: <u>Place</u> the System Mode Selection switch at SFN-C03N, NSSS Control Systems Cabinet, to DISCONNECT.		Examinee places the System Mode Select switch in "DISCONNECT".

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
5. *	STEP C.1.5: <u>Press</u> the LIGHT AND TIMER TEST pushbutton on SFN-C03N, NSSS Control Systems Cabinet.		Examinee depresses and releases the LIGHT AND TIMER TEST pushbutton.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
6.	STEP C.1.6: <u>Check</u> BOTH of the following lights are OFF: <ul style="list-style-type: none"> • NOT IN OPERATE (1) • NOT IN OPERATE (2) 		The examinee observes that the NOT IN OPERATE lights 1 and 2 extinguish.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
7.	STEP C.1.7: WHEN 30 seconds has elapsed since pressing the LIGHT AND TIMER TEST pushbutton, THEN <u>check</u> BOTH of the following lights are ON: <ul style="list-style-type: none"> • NOT IN OPERATE (1) • NOT IN OPERATE (2) 		The examinee observes that the NOT IN OPERATE lights 1 and 2 come back "ON" in 30 seconds.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
8. *	STEP C.1.8: <u>Place</u> the System Mode Selector switch at SFN-C03N, NSSS Control Systems Cabinet, to OPERATE.		Examinee places the System Mode Selection Switch in "OPERATE".
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
9.	STEP C.1.9: WHEN 30 seconds has elapsed since placing the System Mode Selector switch to OPERATE, THEN <u>check</u> BOTH of the following lights are OFF. <ul style="list-style-type: none"> • NOT IN OPERATE (1) • NOT IN OPERATE (2) 		Examinee observes that the NOT IN OPERATE lights 1 and 2 extinguish after 30 seconds.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10.	STEP C.2.1: ALL of the following Prerequisites are met: <ul style="list-style-type: none"> • SFN-C03N, NSSS Control Systems Cabinet, System Mode Selector switch is in OPERATE • The NOT IN OPERATE (1) light at SFN-C03N, NSSS Control Systems Cabinet, is OFF • The NOT IN OPERATE (2) light at SFN-C03N, NSSS Control Systems Cabinet, is OFF 		Examinee determines prerequisites are met.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
11. *	STEP C.2.2: <u>Ensure</u> SGN-PIC-1010, Master Steam Bypass Control, is in the Manual mode.		Examinee places the SBCS Master Controller (SGN-PIC-1010) in "MANUAL".
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12.	STEP C.2.3: <u>Ensure</u> SGN-PIC-1010, Master Steam Bypass Control, output is set to 0% demand.		Examinee ensures zero output on SBCS controller by pushing the slider to the left until the meter points to "0."
SAT / UNSAT Comments (required for UNSAT):			

NOTE before Step C.2.4

Performance of Step C.2.4 may cause the following alarm(s):

- SBCS ABNORMAL (6A16A)
- SBCS COND INTLK (6A16B)
- BOP/NSSS ANALOG INST CAB TRBL (7C15A)



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	STEP	CUE	STANDARD
13. *	STEP C.2.4: <u>Take</u> SGN-HS-1010, EMERGENCY OFF/RESET, to RESET.		Examinee places switch SGN-HS-1010 to "RESET" (spring return to neutral).

SAT / UNSAT
Comments (required for UNSAT):

Note before Step C.2.5

The red output indicator of SGN-PIC-1010, Master Control, may jump from 0% demand upon reset. This may result in TURB BYP DEMAND (4A12B) alarm.

	STEP	CUE	STANDARD
14.	STEP C.2.5: IF the TURB BYP DEMAND (4A12B) alarm is received, THEN <u>ensure</u> output of SGN- PIC-1010, Master Steam Bypass Control, is set to 0% demand.		Examinee marks this Step as "N/A."

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
15.	STEP C.2.6: <u>Verify</u> SBCS ABNORMAL (6A16A) is clear.		Examinee verifies "SBCS ABNORMAL" alarm is clear.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
16.	STEP C.2.7: IF Condenser pressure is less than 5 inches HgA, THEN <u>verify</u> SBCS COND INTLK (6A16B) is clear.		Examinee verifies that the "SBCS COND INTLK" alarm is clear.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
17.	STEP C.2.8: <u>GO TO ONE</u> of the following: <ul style="list-style-type: none">• Section 6.1, Aligning the Steam Bypass Control System for Normal Operation• Section 6.2, Shifting the Master Steam Bypass Controller Modes	INFORMATION CUE: Another operator will perform Section 6.2.	
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- The Steam Bypass Control System has been disconnected at the SBCS Test Panel due to troubleshooting.
- The SBCS is now ready to be returned to service.

INITIATING CUE:

- The CRS directs you to perform Sections C.1 and C.2 of Appendix C of 40OP-9SF05, Operation of Steam Bypass Control System, to Reconnect and Reset the Steam Bypass Control System.

APPLICANT



RO SIMULATOR JPM S8
PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

TASK:	0150030801, Perform a Boration of the RCS							
TASK STANDARD:	A boration of 100 (± 5) gallons completed, boric acid filter bypassed, and makeup system returned to auto.							
K/A:	3.1 004 A4.07			K/A RATING:	RO:	3.8	SRO:	3.9
10 CFR 55:	45(a)(5), 45(a)(8)							
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:					
REFERENCES:	40OP-9CH01, CVCS Normal Operations, Rev. 74 and 40AL-9RK3A, Panel B03A Alarm Response, Rev. 31							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER			

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **Yes**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 2/25/2003

Revised By: Alan Malley Date: 08/08/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



RO SIMULATOR JPM S8
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

1. SIMULATOR SETUP:

- IC#: 603
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
None	

- SPECIAL INSTRUCTIONS:
 1. **IF** IC 603 is used, reset to **IC 603**, GO TO RUN, acknowledge alarms
 2. Set the boric acid totalizer to 1000 gpm
 3. **ENSURE** an alarm screen is displayed on B04.
 4. **Run Scenario File 2015 NRC S-7 and S-8 (you must run this scenario for every JPM – DO NOT SNAP THIS SCENARIO FILE INTO THE IC)**
 5. Provide INITIATING CUE
 6. GO TO RUN
 7. To run this as a stand-alone JPM or in the event that the scenario file/IC is unavailable:
 - a. Reset to IC#: 20
 - b. GO TO RUN
 - c. Set the boric acid totalizer to 1000 gpm
 - d. Set CHN-FIC-210Y to 40 gpm.
 - e. Run Scenario File 2015 NRC S-7 and S-8
 - f. Silence/Acknowledge Alarms.
 - g. GO TO FREEZE
 - h. Give examinee INITIATING CUE
 - i. When examinee is ready, GO TO RUN
- REQUIRED CONDITIONS:
 1. None
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40OP-9CH01, CVCS Normal Operations, Rev 74
- 40AL-9RK3A, B03A Alarm Responses, Rev 31

3. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. **during** JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
21	None	When the examinee directs the area operator to check the boric acid filter D/P report the following: If a BAMP is running report the filter D/P



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		is pegged high. If a BAMP is NOT running report the filter D/P is 0 psid.
22	Wait for a minimum of 5 minutes then INSERT KEY 1: Mrf rfCV43 OPEN and report CHN-V164 is open	When directed to bypass the boric acid filter by opening CHN-V164 Waiting 5 minutes guarantees the Timer Lockout will actuate which ensures the candidate will have to take actions after the filter is bypassed.



**RO SIMULATOR JPM S8
PVNGS JOB PERFORMANCE MEASURE
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TASK CONDITIONS**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DONOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO SIMULATOR JPM S8
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INITIAL CONDITIONS:

- The Unit is at 100% power.
- There is NO active BAC release permit in effect for the HUT.
- Reactivity Brief has been completed.
- The quantity to be added has been determined to be 100 gallons from the RWT at a rate of 30 gpm.
- Chemistry has been notified of the intended boration.

INITIATING CUE:

- The CRS directs you to borate 100 gallons at a rate of 30 gpm to the RCS by using 40OP-9CH01 Sections 6.33 and 6.34.
- Use CHN-FIC-210Y in automatic to the charging pump suction.
- All Prerequisites are complete.



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INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 6.33.3 of 40OP-9CH01: IF the Reactor is critical, THEN perform the following: a. Determine the gallons of boric acid to be added using ANY of the following: <ul style="list-style-type: none"> • Shift Technical Advisor (STA) Reactivity Worksheet • Reactor Engineering Game Plan • Power Change Worksheet • Boron Operator Assistance Program (OAP) • Core Data Book b. Record the required gallons of boric acid. _____ (gallons)		The examinee determines from the initiating cue that the required amount of boric acid is 100 gallons.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
2.	Step 6.33.4 of 40OP-9CH01: IF the Reactor is NOT critical, THEN perform the following:		Examinee N/As this step since the reactor is critical.

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
3.	Step 6.33.5 of 40OP-9CH01: IF at any time, letdown is diverted to the HUT, THEN notify Radiation Protection to evaluate the impact on current radiation levels near the HUT.		Examinee N/As this step since it should not be applicable due to only adding 100 gallons to the RCS.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4.	Step 6.33.6 of 40OP-9CH01: WHEN diverting CVCS letdown, THEN perform the following:		Examinee N/As this step since it should not be applicable due to only adding 100 gallons to the RCS.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
5.	Step 6.33.7 of 40OP-9CH01: IF automatic makeup to the VCT was disabled in Step 6.6.2, AND directed by the SM/CRS, THEN perform the following:		The examinee N/As this step since automatic makeup is not disabled.
SAT / UNSAT Comments (required for UNSAT):			



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Notes and Cautions above Step 6.33.8:

NOTE - CHN-FQIS-210Y, Borate Mode Control, will operate with flow rates as low as 2 gpm.

NOTE - Digital makeup will operate satisfactorily at flow rates less than 2 gpm. The threshold for actuation of alarm window 3A04B, CVCS Makeup Flow is 3 gpm. The alarm will not activate until flow is equal to or greater than 3 gpm.

NOTE - The function of 3A04B, CVCS MAKEUP FLOW, is to alert the ControlRoom Operator that flow exists through CHN-FQIS-210X, Dilute Mode Control, and/or CHN-FQIS-210Y, Borate Mode Control, and is an indication that reactivity management may be in jeopardy.

NOTE - CHN-FIC-210Y, BAMP to VCT Flow Control, is tuned to provide optimal system response for flows in the 5 gpm to 40 gpm range.

CAUTION - Failure to maintain flow greater than or equal to 3 gpm will prevent 3A04B, CVCS MAKEUP FLOW, from alerting the Control Room Operator that reactivity management is in jeopardy.

CAUTION - Operation of CHN-FIC-210Y, BAMP to VCT Flow Control, in AUTO with an initial controller setpoint of greater than 40 gpm will cause controller instability.

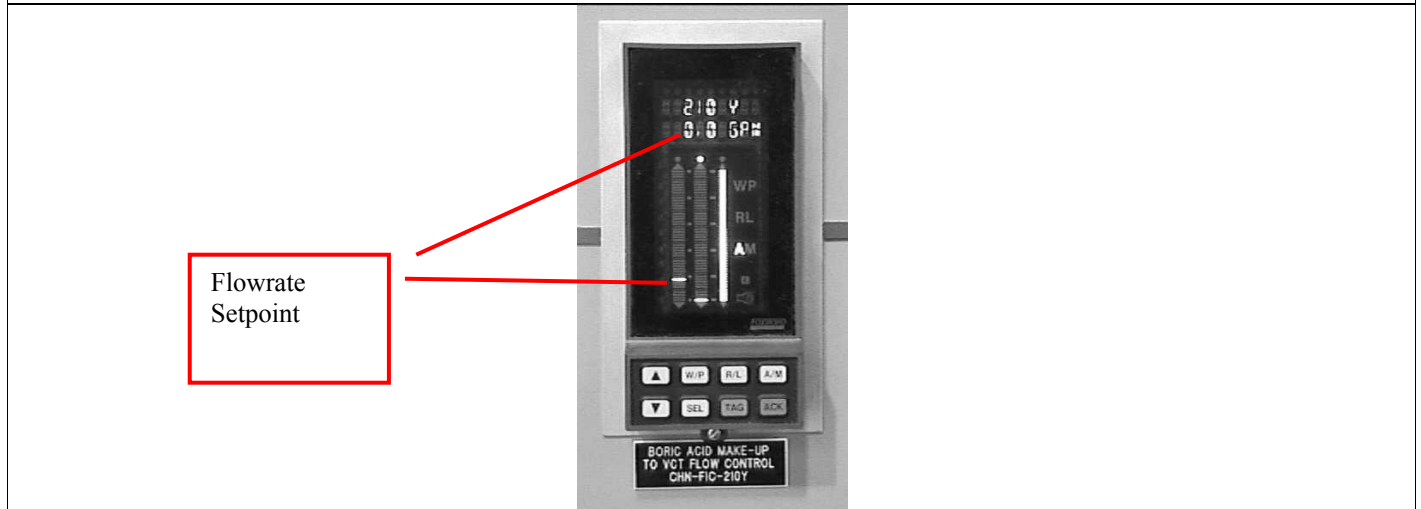


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	STEP	CUE	STANDARD
6. *	Step 6.33.8 of 40OP-9CH01: Perform the following: a. IF the boric acid makeup flow rate is less than 40 gpm, THEN set CHN-FIC-210Y, BAMP to VCT Flow Control, to the boric acid makeup flow rate. b. IF the boric acid makeup flow rate is greater than or equal to 40 gpm, THEN set CHN-FIC-210Y, BAMP to VCT Flow Control, to no more than 40 gpm.		Examinee The examinee sets CHN-FIC-210Y to 30 gpm (this is the left number on the controller) and N/As step b.

SAT / UNSAT

Comments (required for UNSAT):





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Note above step 6.33.9

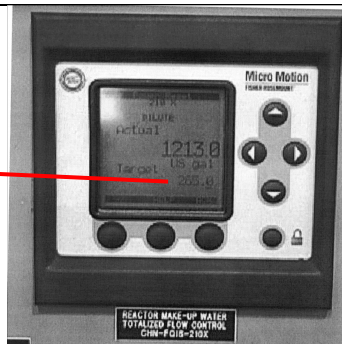
A 299 second timer exists. If flow is not achieved within 299 seconds, CHN-FQIS-210Y, Borate Mode Control, will receive a Timer Alarm.

	STEP	CUE	STANDARD
7. *	Step 6.33.9 of 40OP-9CH01: Set CHN-FQIS-210Y, Borate Mode Control, to the required gallons of boric acid as determined in Step 6.33.3 or Step 6.33.4.		The examinee sets the “Target” makeup on CHN-FQIS-210Y to 100.

SAT / UNSAT

Comments (required for UNSAT):

“Target”





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	STEP	CUE	STANDARD
8.	Step 6.33.10 of 40OP-9CH01: IF the Reactor is critical, THEN ensure CEDMCS is in the mode of operation per SM/CRS direction.	If REQUESTED CUE: The CRS desires CEDMCS to be left in Auto Sequential.	The examinee may ask the CRS what mode of operation is desired for CEDMCS OR may assume that Auto Sequential is the desired mode.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
9.	Step 6.33.11 of 40OP-9CH01: IF borating directly to the VCT, THEN place CHN-HS-512, Makeup Inlet to VCT VLV UV-512, in OPEN.		The examinee NAs this step since the Initiating Cue said to borate to the suction of the Charging pumps.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
10. *	Step 6.33.12.a of 40OP-9CH01: Perform the following: a. Place CHN-HS-210, Makeup Mode Selector, in BORATE.		The examinee places CHN-HS-210 in "BORATE."
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
11.	Step 6.33.12.b of 40OP-9CH01: Perform the following: b. Check One BAMP is running.		Examinee checks one BAMP is running.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12.	Step 6.33.12.c of 40OP-9CH01: c. IF borating directly to the suction of the Charging Pumps, THEN ensure CHN-UV-527, Makeup to CHRG PMPS (VCT BYP), is open.		Examinee ensures CHN-UV-527 is open.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
13. *	Step 6.33.12.d of 40OP-9CH01: d. Press the END pushbutton on CHN-FQIS-210Y, BAMP to VCT Flow Control.		Examinee presses the 'END' button on CHN-FQIS-210Y, BAMP to VCT Flow Control.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
14. *	Step 6.33.12.e of 40OP-9CH01: e. Press the RESET pushbutton on CHN-FQIS-210Y, Borate Mode Control, Totalizer/Counter module.		Examinee presses the 'RESET' pushbutton on CHN-FQIS-210Y, Borate Mode Control, Totalizer/Counter module.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
15. *	Step 6.33.12.f of 40OP-9CH01: f. Press the START pushbutton on CHN-FQIS-210Y, Borate Mode Control, Totalizer/Counter module.		Examinee presses the START pushbutton on CHN-FQIS-210Y, Borate Mode Control, Totalizer/Counter module.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
16.	Step 6.33.13 of 40OP-9CH01: Check CHN-FIC-210X, Reactor Makeup Water Pump to VCT, indicates no reactor makeup water flow.		Examinee checks that no reactor makeup water flow is indicated on CHN-FIC-210X.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
17.	Step 6.33.14 of 40OP-9CH01: Check the following occurs on CHN-FIC-210Y, BAMP to VCT Flow Control, Process Flow bar graph: <ol style="list-style-type: none"> Flow rises toward the auto setpoint. Flow overshoots the auto setpoint. Flow stabilizes at the auto setpoint. 		Examinee checks flow on CHN-FIC-201Y for correct flow indication.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
18.	Step 6.33.15 of 40OP-9CH01: IF the required reactor makeup water flow is greater than or equal to 40 gpm, THEN perform the following: a. Ensure CHN-FIC-210Y, BAMP to VCT Flow Control, is selected to AUTO SETPOINT. b. Press the up arrow to raise the setpoint to the required makeup flow value.		Examinee N/As this step.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
19.	Step 6.33.16 of 40OP-9CH01: Monitor ANY of the following for indication of a reactivity change: <ul style="list-style-type: none"> • Axial Shape Index (ASI) • Control Element Assembly (CEA) motion • RCS temperature (Plant Computer, ERFDADS, Core Protection Calculator(CPC)s) • Reactor power (Plant Computer, ERFDADS, CPCs) • Turbine first stage pressure 		Examinee monitors the plant during the boration for indications of a reactivity change. Examiner Note: No changes will be seen for approximately 5 minutes after boration is started.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
20.	Examinee receives a “BAM TRBL” alarm on B03 and Boration flow stops.	Alternate Path	Examinee addresses the B03 Alarm Response Procedure, 40AL-9RK3A for Window 6A for point CHPDS260 (Group D) NOTE to Examiner: Record the gallons of boron added _____ Gallons

SAT / UNSAT

Comments (required for UNSAT):

Gallons added so far



Note above Step 1 of Second Priority Operator Actions:

Response to this condition may affect Technical Specifications TRM T3.1.100 and/or TRM T3.1.101.



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	STEP	CUE	STANDARD
21.	Step 1 of Second Priority Operator Actions: <u>Direct</u> a Nuclear Operator to read the differential pressure locally on differential pressure instrument CHN-PDIS-260.		<p>Examinee directs Area Operator to check the differential pressure instrument on CHN-PDIS-260.</p> <p>Note to examiner: The examinee should use the simulator driver since action is required by the simulator driver for the next few steps.</p> <p>Note to examiner: The examinee may stop the boration by hitting the "Pause" or "End" button (same as "Start" pushbutton) on the totalizer or by taking the BORATE switch back to AUTO.</p> <p>If the BAMP is running the driver will report a D/P reading pegged high. If the BAMP is not running the driver will report a "0" D/P reading.</p>
SAT / UNSAT Comments (required for UNSAT):			

ENSURE 5 minutes has passed prior to the simulator driver opening V164 to ensure 299 sec timer has timed out.



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	STEP	CUE	STANDARD
22. *	Step 2 of Second Priority Operator Actions: Direct a Nuclear Operator to bypass flow around the filter by opening valve CHN-V164 and closing valve CHN-V161 if boric acid flow is still needed.	SIMULATOR DRIVER ACTION REQUIRED: ENSURE 5 minutes has passed prior to the simulator driver opening V164 to ensure 299 sec timer has timed out.	Examinee directs Area Operator to bypass the boric acid filter by opening CHN-V164.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
23.	Step 3 of Second Priority Operator Actions: Remove filter from service as directed by 40OP-9CH01, CVCS Normal Operations.	INFORMATION CUE: The CRS will assign another operator to remove the boric acid filter from service. Continue with the boration.	Examinee may start to address removing the filter from service.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
24. *	Examinee continues boration.		<p>Examinee continues boration.</p> <p>If the examinee did nothing with the boration and it has been less than 5 minutes, the boration will continue when the filter is bypassed.</p> <p>IF a “TIMER ALARM” is received on the totalizer, the examinee will have to restart the boration (starting at step 7 of this JPM) but will need to know how many gallons he/she added so far.</p> <p>If the examinee restarts the boration at 100 gallons, he/she will add too much borated water and this should constitute a failure.</p>

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
25.	<p>Step 6.34.3.a of 40OP-9CH01:</p> <p>WHEN the volume has been added to the RCS as directed by the SM/CRS, THEN perform the following:</p> <p>a. Check CHN-FIC-210Y, BAMP to VCT Flow Control, indicates the borate flow has stopped. (RM)</p>		Examinee checks that boration flow has stopped.

SAT / UNSAT

Comments (required for UNSAT):



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	STEP	CUE	STANDARD
26. *	Step 6.34.3.b of 40OP-9CH01: WHEN the volume has been added to the RCS as directed by the SM/CRS, THEN perform the following: b. Ensure CHN-HS-210, Makeup Mode Selector, is in AUTO.		The examinee places CHN-HS-210 to AUTO.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
27.	Step 6.34.3.c of 40OP-9CH01: WHEN the volume has been added to the RCS as directed by the SM/CRS, THEN perform the following: c. Ensure the Auto Setpoint is at the setpoint directed by the SM/CRS for auto makeup on CHN-FIC-210Y, BAMP to VCT Flow Control. (RM)	INFORMATION CUE: The CRS desires the AUTO SETPOINT set to 40 gpm.	Examinee adjusts the AUTO SETPOINT to 40 gpm.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
28.	<p>Step 6.34.3.d of 40OP-9CH01:</p> <p>WHEN the volume has been added to the RCS as directed by the SM/CRS, THEN perform the following:</p> <p>d. IF CHN-UV-527, Makeup to CHRG PMPS (VCT BYP), was used for makeup, THEN check CHN-UV-527, Makeup to CHRG PMPS (VCT BYP), has auto closed.</p>		Examinee checks CHN-UV-527 has auto closed.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
29.	<p>Step 6.34.3.e of 40OP-9CH01:</p> <p>WHEN the volume has been added to the RCS as directed by the SM/CRS, THEN perform the following:</p> <p>e. IF CHN-UV-512, VCT Makeup Inlet Isolation Valve, was used for makeup, THEN place CHN-HS-512, Makeup Inlet to VCT VLV UV-512, to AUTO to close CHN-UV-512.</p>	<p>INFORMATION CUE:</p> <p>Another operator will complete this procedure.</p>	Examinee N/As this step
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:



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NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- **The Unit is at 100% power.**
- **There is NO active BAC release permit in effect for the HUT.**
- **Reactivity Brief has been completed.**
- **The quantity to be added has been determined to be 100 gallons from the RWT at a rate of 30 gpm.**
- **Chemistry has been notified of the intended boration.**

INITIATING CUE:

- **The CRS directs you to borate 100 gallons at a rate of 30 gpm to the RCS by using 40OP-9CH01 Sections 6.33 and 6.34.**
- **Use CHN-FIC-210Y in automatic to the charging pump suction.**
- **All Prerequisites are complete.**

APPLICANT



**SROI/SROU SIMULATOR JPMS9
PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

TASK:	1240050201 Implement SGTR instructions and contingencies						
TASK STANDARD:	SG #2 is isolated per Standard Appendix 114.						
K/A:	3.4 035 A2.01		K/A RATING:	RO:	4.5	SRO:	4.6
10 CFR 55:	45(a)(3), 45(a)(5)						
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes			
REFERENCES:	40EP-9EO04, Steam Generator Tube Rupture, Rev 28, 40EP-9EO10 Standard Appendices, Standard Appendix 114, Rev 88						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR	X	PLANT		OTHER		

JPM TYPE

Time Critical? (Yes/No) **No** Alternative Path? (Yes/No) **Yes**
PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: John Dedon Date: 05/15/2007

Revised By: Alan Malley Date: 08/3/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



**SROI/SROU SIMULATOR JPMS9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

1. SIMULATOR SETUP:

- IC#: 604
- SCENARIOS, MALFUNCTIONS, OVERRIDES, etc. for Setup:

COMMAND/COMMUNICATION	DESCRIPTION
cmAVFW04SGAUV175_4 (in setup for IC 604)	Mechanical seizure of SG-175
cmAVFW04SGBUV135_4 (in setup for IC 604)	Mechanical seizure of SG-135

- SPECIAL INSTRUCTIONS:
 1. **IF** IC 604 is used, reset to IC 604, GO TO RUN, acknowledge alarms, **THEN** Go To Step 2
 2. Provide INITIATING CUE
 3. GO TO RUN
 4. To run this as a stand-alone JPM or in the event that the scenario file/IC is unavailable:
 - a. Reset to IC#: 20
 - b. GO TO RUN
 - c. Insert a SG #2 Tube Rupture (TH06B f.10)
 - d. Trip the Reactor and perform SPTAs
 - e. After SIAS initiates run scenario file MCCON
 - f. Cooldown the RCS to < 540°F using the SBCS.
 - g. Depressurize the RCS (maintain within PT limits)
 - h. Reset the MSIS setpoints
 - i. Run scenario file 2015 NRC S-9.scn from an exam jump drive.
 - j. GO TO FREEZE
 - k. Give examinee INITIATING CUE
 - l. When examinee is ready, GO TO RUN
- REQUIRED CONDITIONS:
 1. SGTR in Steam Generator #2 and RCS cooled down to < 540 degrees.
- SIMULATOR EVALUATION PRE-CHECK
 - ☐ Correct IC
 - ☐ Alarm Silence Off
 - ☐ Procedures available, page checked, and clean
 - ☐ For JPMs administered during transients, another instructor available to control plant parameters.

Verified by: _____ Date: _____

(NA if Simulator setup not required)

2. SPECIAL TOOLS/EQUIPMENT:

- 40EP-9EO10, Standard Appendices, Standard Appendix 114 Rev 88 available (although pages are marked pages Rev 82).

3. JPM PERFORMANCE:

- REMOTE FUNCTIONS, MALFUNCTIONS, OVERRIDES, etc. **during** JPM

STEP	COMMAND/COMMUNICATION	DESCRIPTION
None		



**SROI/SROU SIMULATOR JPMS9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANTJPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY,DO NOT OPERATE**any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DONOT**enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**SROI/SROU SIMULATOR JPMS9
PVNGS JOB PERFORMANCE MEASURE
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INITIAL CONDITIONS:

- A Steam Generator Tube Rupture has occurred in SG #2.
- The Unit has been tripped.
- The plant has been cooled down to <540°F T-hot.

INITIATING CUE:

- The CRS directs you to isolate SG #2 using 40EP-9EO10, Standard Appendices, Standard Appendix 114.



**SROI/SROU SIMULATOR JPMS9
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



**SROI/SROU SIMULATOR JPMS9
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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 1: Close BOTH ADVs on Steam Generator 2: <ul style="list-style-type: none"> • SGB-HV-185 • SGA-HV-179 		Examine ensures both ADVs on SG #2 are closed as seen on B06 using the lights below controllers SGA-HIC-179A and SGB-HV-185A.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Step 2: Close BOTH MSIVs on Steam Generator 2: <ul style="list-style-type: none"> • SGE-UV-171 • SGE-UV-181 		Examinee closes both MSIVs on SG #2 using either handswitch SGA-HS-250 OR SGB-HS-252. Examiner Note: Either handswitch closes both MSIVs.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
3.	Step 3: Ensure SGE-UV-183, SG 2 MSIVBypass Valve, is closed.		Examinee ensures SGE-UV-183 is closed using the indicating lights above SGB-HS-183A.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
4. *	Step 4: Close BOTH SG 2 Economizer FWIVs: <ul style="list-style-type: none"> • SGA-UV-177 • SGB-UV-137 		Examinee closes the Economizer Valves on SG #2 using handswitches SGA-HS-177C AND SGB-HS-137C. Examiner Note: Unlike the MSIVs, the examinee must use both handswitches to close both Economizer Valves.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
5.	Step 5: Close BOTH SG 2 Downcomer Isolation Valves: <ul style="list-style-type: none"> • SGA-UV-175 • SGB-UV-135 		Examinee attempts to close the Downcomer Isolation Valves using SGA-HS-175 and SGB-HS-135. Both valves will fail to close
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
6. *	Step 5.1: Close BOTH SG 2 Downcomer Isolation Block Valves: <ul style="list-style-type: none"> • SGN-HV-1144, SG 2 FW Isolation Block Valve • SGN-HV-1145, SG 2 FW Isolation Bypass Valve 	ALTERNATE PATH	Examinee closes SGN-HV-1144 using handswitches SGN-HS-1144. SGN-HV-1145 is already closed.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
7.	Step 6: Close BOTH SG 2 Blowdown Containment Isolation Valves: <ul style="list-style-type: none"> • SGA-UV-500S • SGB-UV-500R 		Examinee verifies closed SG #2 Blowdown Containment Isolation Valves on B07 using SGA-HS-500S and SGB-HS-500R.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
8. *	Step 7: Close BOTH of the following steam trap isolation valves: <ul style="list-style-type: none"> • SGA-UV-1134, Steam TrapM24 Isolation • SGB-UV-1136A/1136B, Steam Trap M03/M04Isolations 		Examinee attempts to close the steam trap isolation valves on B06 using SGA-HS-1134 and SGB-HS-1136. However, SGB-HS-1136 will have dual indication requiring the operator to perform the contingency action.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
9. *	Step 7.1: Locally isolate all of the following steam traps: <ul style="list-style-type: none"> • SGE-V092, “STEAM TRAP SGNM24 ISOLATION” • SGE-V139, “STEAM TRAP SGNM03 ISOLATION” • SGE-V145, “STEAM TRAP SGNM04 ISOLATION” 	INFORM CUE: As the area operator acknowledge the direction to manually isolate the steam traps. ALTERNATE PATH	Examinee directs an operator to locally isolate the following steam traps: <ul style="list-style-type: none"> • SGE-V092, “STEAM TRAP SGNM24 ISOLATION” • SGE-V139, “STEAM TRAP SGNM03 ISOLATION” • SGE-V145, “STEAM TRAP SGNM04 ISOLATION”
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
10.	Step 8: Check that the Steam Generator Safety Valves are closed.		Examinee checks SG#2 Safety Valves closed using the Sonic Safety Valve Position indication lights above the ADV controllers on B06.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
11.	Step 9: Ensure BOTH Aux Feed Pump A Steam Supply Valves are closed: <ul style="list-style-type: none"> • SGA-UV-138, SG 2 SteamSupply to Aux Feed Pump A • SGA-UV-138A, SG 2 SteamSupply to Aux Feed Pump A Bypass 		Examinee ensures both the steam supply valves for AF 'A' are closed on B06 using SGA-HS-138A and the lights above SGA-HS-138 for SGA-UV-138A.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
12.	Step 10: Ensure BOTH Auxiliary Feedwater Isolation Valves are closed: <ul style="list-style-type: none">• AFA-UV-37, Aux Feedwater to SG2 Downstream Valve• AFB-UV-35, Aux Feedwater to SG2 Downstream Valve		Examinee checks both Aux Feed Isolations to SG #2 are closed on B06 using handswitches SGA-HS-37A and SGB-HS-35.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



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APPLICANT

INITIAL CONDITIONS:

- A Steam Generator Tube Rupture has occurred in SG #2.
- The Unit has been tripped.
- The plant has been cooled down to <540°F-hot.

INITIATING CUE:

- The CRS directs you to isolate SG #2 using 40EP-9EO10, Standard Appendices, Standard Appendix 114.

APPLICANT



**RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

TASK:	125044201 Respond to a Control Room Fire						
TASK STANDARD:	PBB-S04 has been reenergized with DG 'B' and the SP pump started using Appendix E of 40AO-9ZZ19						
K/A:	4.2068AA1.10	K/A RATING:	RO:	3.7	SRO:	3.9	
10 CFR 55:	459(a)(5), 45(a)(6)						
APPLICABLE POSITION(S):	SRO/RO	VALIDATION TIME:	20 MINUTES				
REFERENCES:	40AO-9ZZ19, Control Room Fire, Rev 31						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR		PLANT	X	OTHER		

JPM TYPE

Time Critical? (Yes/No) **Yes**

Alternative Path? (Yes/No) **Yes**

PRA/SRA related? (Yes/No) **Yes**

APPROVAL

Developed By: Alan Malley Date: 08/31/2004

Revised By: Alan Malley Date: 08/12/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



**RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
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1. SIMULATOR SETUP:

N/A

2. SPECIAL TOOLS/EQUIPMENT:

- Copy of 40AO-9ZZ19, Control Room Fire, Appendix E, Rev 31

3. JPM PERFORMANCE:

N/A



**RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DONOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
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INITIAL CONDITIONS:

- The control room has been evacuated due to a fire.
- There has been a loss of offsite power. No automatic start and loading of the Emergency Diesel Generators, or load shed has occurred.
- The SM has waived the EPE requirements for this task per step 3.20.1 of 01DP-0IS13, PVNGS - ELECTRICAL SAFE WORK PRACTICES.
- Assume you have a portable lantern.

INITIATING CUE:

- The CRS directs you to complete Appendix E of 40AO-9ZZ19 to manually start and load the "B" Diesel Generator to reenergize PBB-S04 and start the Spray Pond Pump, SPB-P01.
- This is a TIME Critical JPM.



**RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.

This page redacted because it contained operations telephone numbers.



**RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
3. *	Step 3: On PHB-M32, place ALL of the following Control Room Circuits Disconnect Switches in "LOCAL": (Switchgear Room B) <ul style="list-style-type: none"> • PHB-M3209, Battery Charger D PKD-H14 • PHB-M3205, Control RoomCircuitsDisconnectSwitches (4 switches) 	INFORM CUE: As examinee simulates operating each switch report "the switch is in LOCAL."	Examinee simulates placing the switches on PHB-M32 from LOCAL/REMOTE to LOCAL.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4. *	Step 4: Place all of the disconnect switches on DGB-C01, DG Disconnect Cabinet in "LOCAL". (5 switches) (Switchgear Room B)	INFORM CUE: As examinee simulates operating each switch report "the switch is in LOCAL."	Examinee simulates placing all 5 switches on cabinet DGB-C01 to 'LOCAL'
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
5. *	Step 5: Ensure the disconnect switches for ALL of the following breakers on PBB-S04 are in "LOCAL": <ul style="list-style-type: none"> • PBB-S04S, Aux Feed Water Pump AFB-P01 • PBB-S04N, 4160 - 480 LC PGB-L36 • PBB-S04M, Essential Cooling Water Pump EWB-P01 • PBB-S04L, ESF Service Transformer NBN-X03 • PBB-S04K, ESF Service Transformer NBN-X04 • PBB-S04J, 4160 - 480 LC PGB-L32 • PBB-S04H, 4160 - 480 LC PGB-L34 • PBB-S04G, Essential Chiller ECB-E01 • PBB-S04F, LP Safety Injection Pump SIB-P01 • PBB-S04C, Essential Spray Pond Pump SPB-P01 • PBB-S04B, Diesel Generator PEB-G02 	INFORM CUE: As examinee simulates operating each switch report "the switch is in LOCAL."	Examinee simulates taking the LOCAL/REMOTE switches on each of the following breakers to 'LOCAL': <ul style="list-style-type: none"> • PBB-S04S, Aux Feed Water Pump AFB-P01 • PBB-S04N, 4160 - 480 LC PGB-L36 • PBB-S04M, Essential Cooling Water Pump EWB-P01 • PBB-S04L, ESF Service Transformer NBN-X03 • PBB-S04K, ESF Service Transformer NBN-X04 • PBB-S04J, 4160 - 480 LC PGB-L32 • PBB-S04H, 4160 - 480 LC PGB-L34 • PBB-S04G, Essential Chiller ECB-E01 • PBB-S04F, LP Safety Injection Pump SIB-P01 • PBB-S04C, Essential Spray Pond Pump SPB-P01 • PBB-S04B, Diesel Generator PEB-G02
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
6. *	Step 6: Ensure that ALL of the following breakers on PBB-S04 are open: <ul style="list-style-type: none"> • PBB-S04B, Diesel Generator PEB-G02 • PBB-S04C, Essential Spray Pond Pump SPB-P01 • PBB-S04F, LP Safety Injection Pump SIB-P01 • PBB-S04G, Essential Chiller ECB-E01 • PBB-S04K, ESF Service Transformer NBN-X04 • PBB-S04L, ESF Service Transformer NBN-X03 • PBB-S04M, Essential Cooling Water Pump EWB-P01 • PBB-S04S, Aux Feed Water Pump AFB-P01 	INFORM CUE: As examinee checks each breaker report “The green light is on and the red light is OFF.”	Examinee simulates checking or opening the following breakers on PBB-S04 by using the indicating lights on the front of each breaker: <ul style="list-style-type: none"> • PBB-S04B, Diesel Generator PEB-G02 • PBB-S04C, Essential Spray Pond Pump SPB-P01 • PBB-S04F, LP Safety Injection Pump SIB-P01 • PBB-S04G, Essential Chiller ECB-E01 • PBB-S04K, ESF Service Transformer NBN-X04 • PBB-S04L, ESF Service Transformer NBN-X03 • PBB-S04M, Essential Cooling Water Pump EWB-P01 • PBB-S04S, Aux Feed Water Pump AFB-P01
SAT / UNSAT Comments (required for UNSAT):			

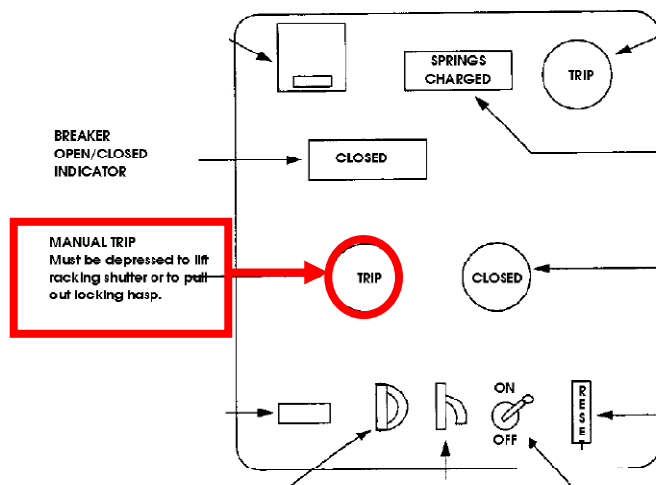


RO/SROI/SROU IN-PLANT JPM P1
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	STEP	CUE	STANDARD
7. *	Step 7: Perform the following at PGB-L32: a. Place disconnect switch CS-1/B2 on PGB-L32B1 in "LOCAL". b. Place disconnect switch CS-2/C4 on PGB-L32C1 in "LOCAL". c. Open PGB-L32C4, Charging Pump 2 CHB-P01.	INFORM CUE; As examinee simulates operating the LOCAL/REMOTE switches report "the switch is in LOCAL." As examinee simulates opening breaker PGB-L32C4 report green light is on, red light is off and breaker position indicator shows OPEN.	Examinee simulates placing the LOCAL/REMOTE switches CS-1/B2 and CS-2/C4 on the following breakers respectively to LOCAL: • PGB-L32B1. • PGB-L32C1 Examinee simulates opening Charging Pump 2 breaker PGB-L32C4 by pushing the switch highlighted below.
			Examiner Note: The TRIP button on the upper right of the breaker is for tripping the breaker when it is in the TEST Position only. IF the examinee uses this TRIP button report the red light is on, the green light is off and the breaker position indicator indicates CLOSED.

SAT / UNSAT

Comments (required for UNSAT):





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	STEP	CUE	STANDARD
8. *	Step 8: Place disconnect switch CS-1/B2 on PGB-L34B1 in "LOCAL".	INFORMATION CUE: As examinee simulates operating switch report "the switch is in LOCAL."	Examinee simulates placing disconnect switch CS-1/B2 to LOCAL.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
9. *	Step 9: Place disconnect switch CS-2/B2 on PGB-L36B1 in "LOCAL".	INFORMATION CUE: As examinee simulates operating switch report "the switch is in LOCAL."	Examinee simulates placing disconnect switch CS-2/B2 to LOCAL.
SAT / UNSAT Comments (required for UNSAT):			



**RO/SROI/SROU IN-PLANT JPM P1
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	STEP	CUE	STANDARD
10. *	Step 10: IF Diesel Generator B is NOT running, THEN start Diesel Generator B using DGB-HS-031, Emergency Start - Simulated LOP. (DG B Control Panel)	IF REQUESTED CUE: Use pen to indicate DG speed is zero on the DG Control Panel or report there is no noise from the DG running. INFORM CUE: DG B is starting.	Examinee determines DG is not running from the initiating cue. Examinee simulates starting DG B using DGB-HS-031.
			Examiner Note: Time critical portion starts here.
			START TIME _____
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
11.	Step 11: Check that BOTH of the following conditions for closing the DG Output Breaker are met: <ul style="list-style-type: none"> • Diesel Generator B voltage is 3740 - 4580 VAC. • Diesel Generator B engine speed is approximately 600 rpm. 	INFORMATION CUE: Using pen indicate voltage is ~4160 VAC and speed is 600 rpm.	Examinee checks voltage and speed of the DG using the meters on the DG control panel.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
12.	Step 12: Close breaker PBB-S04B, Diesel Generator PEB-G02, using the local control switch.	INFORM CUE (after examinee simulates attempting to close PBB-S04B): The green light is ON and the red light is OFF	Examinee simulates an attempt to close PBB-S04B using the local control switch.

SAT / UNSAT
Comments (required for UNSAT):

	STEP	CUE	STANDARD
13.	Step 12.1: IF PBB-S04B did NOT close, THEN GO TO Step 13 of this appendix to manually close the breaker.		Examinee goes to Step 13. Examiner Note: The examinee should determine it is not a control power issue due to having the lights on the front of the breaker.

SAT / UNSAT
Comments (required for UNSAT):



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	STEP	CUE	STANDARD
14.	Step 13: IF breaker PBB-S04B, Diesel Generator PEB-G02, will be closed manually, THEN perform the following: a. Check the closing spring indicates “CHGD”. b. Press the “MANUALCLOSE” plunger for the breaker.	INFORM CUE” Show the examinee Picture 1 and explain that this is how the breaker would look if he opened the door.	Examinee checks the closing spring indicator and it indicates not charged.
SAT / UNSAT Comments (required for UNSAT):			



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	STEP	CUE	STANDARD
15. *	Step 13.1: IF PBB-S04B will be closed manually, AND the closing spring indicator does NOT indicate “CHGD”, THEN perform the following to manually close the breaker: <div><div>a. Obtain ALL of the following equipment from FPN-C02, Emergency Equipment Cabinet:<ul style="list-style-type: none">• Ratchet• Extension• 5/8 inch socket</div><div>b. Open the 125Vdc control power breaker.</div><div>c. Place the ratchet on the charging spring’s motor eccentric, hex charging stud. (Right hand side between the charging springs)</div><div>d. Ratchet the hexed charging stud clockwise to obtain a “CHGD” indication.</div><div>e. Press the “MANUAL CLOSE” plunger for the breaker.</div></div>	INFORM CUE: Give the examinee Picture 2 and have the examinee show where the DC control power breaker is located. Then give the examinee Picture 3. Have the examinee show you where he would look for the charging stud on Picture 1, then give the examinee Picture 4. After the examinee explains how to charge the springs and simulates pushing the MANUAL CLOSE plunger, inform the examinee the breaker indicator show CLOSED.	Examinee simulates retrieving the Ratchet, Extension and 5/8 inch socket from the emergency cabinet in the ‘A’ Train SWGR room.Examinee explains how to charge the springs and simulates pushing the MANUAL CLOSE plunger for the breaker.
		ALTERNATE PATH	
SAT / UNSAT Comments (required for UNSAT):			



RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
16. *	Step 14: Close breaker PBB-S04C, Essential Spray Pond Pump SPB-P01.	INFORM CUE (after examinee simulates closing breaker PBB-S04C): The red light is ON and the green light is OFF. Another Operator will complete the remainder of this procedure	Examinee simulates closing breaker PBB-S04C using the local handswitch. Examiner Note: Time Critical Portion of this JPM ends here. Examiner Note: 40OP-9DG02, Emergency Diesel Generator B, Limitation 3.2.3, states: Safe operating time periods following a loss of Spray Pond water: <ul style="list-style-type: none">• Full load - 2.6 minutes• Zero load - 15 minutes FINISH TIME _____ * Time recorded in step 10 until finish time must be less than 15 minutes.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



RO/SROI/SROU IN-PLANT JPM P1
PVNGS JOB PERFORMANCE MEASURE
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APPLICANT

INITIAL CONDITIONS:

- The control room has been evacuated due to a fire.
- There has been a loss of offsite power. No automatic start and loading of the Emergency Diesel Generators, or load shed has occurred.
- The SM has waived the EPE requirements for this task per step 3.20.1 of 01DP-0IS13, PVNGS - ELECTRICAL SAFE WORK PRACTICES.
- Assume you have a portable lantern.

INITIATING CUE:

- The CRS directs you to complete Appendix E of 40AO-9ZZ19 to manually start and load the "B" Diesel Generator to reenergize PBB-S04 and start the Spray Pond Pump, SPB-P01.
- **THIS IS A TIME CRITICAL JPM.**

APPLICANT



RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
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JPM BASIS INFORMATION

TASK:	1240001401 Perform LM-charging pump hot leg injection Train A HPSI						
TASK STANDARD:	Charging Pump A aligned for Hot Leg Injection Train A HPSI						
K/A:	3.1004 A2.14		K/A RATING:	RO:	3.8	SRO:	3.9
10 CFR 55:	45(a)(5), 45(a)(6)						
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	10 minutes			
REFERENCES:	40EP-9EO10, Standard Appendices, Rev 85, Attachment 208-A						
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR			PLANT	X	OTHER	

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **No**

PRA/SRA related? (Yes/No) **No**

APPROVAL

Developed By: Alan Malley Date: 08/13/2014

Revised By: N/A Date: N/A

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
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1. SIMULATOR SETUP:

N/A

2. SPECIAL TOOLS/EQUIPMENT:

- Copy of 40EP-9EO10, Standard Appendices, Attachment 208-A, Rev 88 (although page is marked Rev 82)

3. JPM PERFORMANCE:

N/A



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DONOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- The plant is in Mode 5.
- A RCS leak has occurred.
- The CRS has entered 40EP-9EO11, Lower Mode Functional Recovery Procedure.
- The Reactor Operator is performing Appendix 208 Charging Pump Hot Leg Injection Train A HPSI

INITIATING CUE:

- The CRS directs you to complete Attachment 208-A Charging Pump A Hot Leg Injection Train A HPSI.



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

	STEP	CUE	STANDARD
1. *	Step 1: Close BOTH of the following valves: <ul style="list-style-type: none"> CHA-V339, “A” CHARGINGPUMP CHA-P01 DISCHARGE ISOL VALVE” (Charging Pmp A Vlv Gallery) CHA-V316, “A” CHARGING PUMP CHA-P01 SUCTION ISOL VALVE”(Charging Pmp A Vlv Gallery) 	INFORM CUE: CHA-V339 has been rotated clockwise and has stopped moving. CHA-V316 has been rotated clockwise and has stopped moving.	Examinee simulates closing the following valves: <ul style="list-style-type: none"> CHA-V339, “A” CHARGINGPUMP CHA-P01 DISCHARGE ISOL VALVE” (Charging Pmp A Vlv Gallery) CHA-V316, “A” CHARGING PUMP CHA-P01 SUCTION ISOL VALVE”(Charging Pmp A Vlv Gallery)
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
2. *	Step 2: Unlock and open SIE-V508, “CHARGING PUMP’S ALT DISCH TO “A” HPSI HEADER ISOL VALVE”. (Charging Pmp A Vlv Gallery)	INFORM CUE: SIE-V508 has been rotated counter-clockwise and has stopped moving.	Examinee simulates unlocking and opening SIE-V508.
SAT / UNSAT Comments (required for UNSAT):			



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
3. *	Step 3: Open ALL of the following valves: <ul style="list-style-type: none"> CHB-V327, “RWT TO CHARGING PUMPS SUCTION” (70 ft. East Mechanical Piping Penetration Room) 	INFORM CUE: CHB-V327 has been rotated counter-clockwise and has stopped moving.	Examinee simulates opening CHB-V327.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4. *	Step 3 (Continued): Open ALL of the following valves: <ul style="list-style-type: none"> CHE-V796, ““A” CHARGING PUMP DISCHARGE CROSSCONNECT TO HPSI VALVE” (Charging Pmp A Vlv Gallery) CHA-V755, ““A” CHARGING PUMP CHA-P01 ALTERNATE SUCTION ISOL VALVE” (Charging Pmp A Vlv Gallery) 	INFORM CUE: CHE-V796 has been rotated counter-clockwise and has stopped moving. CHA-V755 has been rotated counter-clockwise and has stopped moving.	Examinee simulates opening the following valves: <ul style="list-style-type: none"> CHE-V796, ““A” CHARGING PUMP DISCHARGE CROSSCONNECT TO HPSI VALVE” CHA-V755, ““A” CHARGING PUMP CHA-P01 ALTERNATE SUCTION ISOL VALVE”
SAT / UNSAT Comments (required for UNSAT):			



RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
5.	Step 4: Inform the responsible operator that Attachment 208-A is complete.	INFORM CUE: The CRS has been informed.	Examinee simulates informing the CRS that Attachment 208-A is complete.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



**RO/SROI/SROU IN-PLANT JPM P2
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

APPLICANT

INITIAL CONDITIONS:

- The plant is in Mode 5.
- A RCS leak has occurred.
- The CRS has entered 40EP-9EO11, Lower Mode Functional Recovery Procedure.
- The Reactor Operator is performing Appendix 208 Charging Pump Hot Leg Injection Train A HPSI

INITIATING CUE:

- The CRS directs you to complete Attachment 208-A Charging Pump A Hot Leg Injection Train A HPSI.

APPLICANT



RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam

JPM BASIS INFORMATION

TASK:	12502403041250240304Perform Actions per 40AO-9ZZ24, Deliberate Acts against PVNGS							
TASK STANDARD:	AFA-P01 overspeed trip has been reset and the pump is running at 3560 rpm.							
K/A:	3.4 061 A2.04			K/A RATING:	RO:	3.4	SRO:	3.8
10 CFR 55:	45(a)(3), 45(a)(13)							
APPLICABLE POSITION(S):	SRO/RO		VALIDATION TIME:	30 minutes				
REFERENCES:	40EP-9EO10, Standard Appendices, Appendix 112							
SUGGESTED TESTING ENVIRONMENT:	SIMULATOR			PLANT	X	OTHER		

JPM TYPE

Time Critical? (Yes/No) **No**

Alternative Path? (Yes/No) **Yes**

PRA/SRA related? (Yes/No) **Yes**

APPROVAL

Developed By: Alan Malley Date: 04/09/2010

Revised By: Alan Malley Date: 08/13/2014

Technical Review _____ Operations Approval _____

Training Approval _____

EVALUATION

Examinee Name: _____ Date: _____

Evaluator Name: _____

Time to complete: _____ Minutes GRADE (Circle One) SAT / UNSAT *

* For E-Plan JPMs, a grade of UNSAT requires a PVAR to be written, remediation, and re-evaluation. PVAR # _____
Problems/issues identified on E-Plan JPMs during performance will be documented with a formal postcritique using Form 0800 (Electronic Forms under Emergency Preparedness) and forwarded to the Emergency Preparedness organization for resolution.



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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1. SIMULATOR SETUP:

N/A

2. SPECIAL TOOLS/EQUIPMENT:

- Copy of 40EP-9EO10, Standard Appendices, Appendix 112, Rev 88 (although page is marked Rev 82)

3. JPM PERFORMANCE:

N/A



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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TASK CONDITIONS

INFORMATION PRESENTED TO EXAMINEE:

SPECIAL CONSIDERATIONS:

IN-PLANT JPMs ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY, DO NOT OPERATE** any equipment.
- Inform the control room staff of any discovered deficiencies.
- Comply with the REP, if it is not possible to enter an area it may be permissible to discuss the equipment to be operated.
- **DONOT** enter contaminated, airborne, or high radiation areas.

ALL JPMs:

- You may use any source of information normally available (procedures, prints, OAPs, etc.).
- Classroom instruction materials (Lesson Plans, System Training Manuals, PowerPoint presentations, classroom notes, etc.) are not permitted to be used.
- If there is a question regarding reference material desired to be used, ask evaluator prior to seeking reference.



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INITIAL CONDITIONS:

- A Delta 10 security event is in progress and the CRS has entered 40AO-9ZZ24, Security Events.
- The Reactor is tripped and the Control Room Supervisor (CRS) has also entered the Functional Recovery Procedure.

INITIATING CUE:

The CRS directs you to perform the following per 40AO-9ZZ24, Deliberate Acts Against PVNGS:

- Travel directly to the AFA-P01 (Auxiliary Feedpump A) pump room.
- Obtain 40EP-9EO10 Standard Appendix 112.
- Obtain a tachometer locally at AFA-P01.
- Standby for further direction from the Control Room.



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** following a JPM Step number denotes a Critical Step.
- At the discretion of the Evaluator, this JPM may be terminated when the **Task Standard** is met or adequate time has been allowed to complete the JPM.
- Any step marked **UNSAT** requires comments.
- If this is the first JPM of the set, then ensure the examinee has been briefed.
- Step sequence is not critical unless noted or will prevent the **Task Standard** from being met.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- **Information CUEs** reflect plant response and do not need to be requested by examinee. If examinee performs incorrect action, the evaluator may give any appropriate cue reflecting plant response as an **Information CUE**.
- **If Requested CUEs** are given when requested by examinee.



RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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JPM START TIME:

	STEP	CUE	STANDARD
1.	Step 1: Obtain a tachometer from the Delta-10 box located outside the Watertight Fire Door to Turbine Driven AF Pump Room at 80' (C-A-01).	INFORMATION CUE: Give the examinee a copy of Appendix 112.	Examinee locates Delta-10 box outside AFA pump room door.

SAT / UNSAT

Comments (required for UNSAT):

	STEP	CUE	STANDARD
2.	Step 2: Notify CAS/SAS that you are on station at AFA-P01 using radio channel SEC-1.	INFORM CUE: Security has been notified.	Examinee simulates calling Security on the radio.

SAT / UNSAT

Comments (required for UNSAT):

Note and Caution before Step 3:

NOTE -At least one steam source valve (SGA-UV-134 or SGA-UV-138) will be open because of actions taken in 40AO-9ZZ24. The Trip Throttle valve AFA-HV-54 is expected to be tripped because of a loss of control power to the turbine controls.

CAUTION -Failure to wear leather welding sleeves while manually operating AFA-HV-54 may result in personal injury due to steam packing leakage and proximity to hot pipes.



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
3.	Step 3: Establish communication with the Control Room via radio or telephone.	INFORM CUE: Contact with the Control Room has been established.	Examinee attempts establishing communications with the Control Room.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
4.	Step 4: WHEN directed by the Control Room to perform this appendix, THEN ensure AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" is closed (REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position).	INFORM CUE: The CRS directs you to perform Appendix 112. As examinee inspects AFA-HV-54 inform the examinee that the valve is in the tripped position as in Attachment 112-B. The motor actuator is in the closed position.	Examinee inspects AFA-HV-54 to determine position.
SAT / UNSAT Comments (required for UNSAT):			



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
5. *	Step 5: Open BOTH of the following valves: <ul style="list-style-type: none"> AFA-V084, “AFN-PI-020 ROOT VALVE”. (AFA-P01 Rm South of Pump) The instrument Isolation for AFN-PI-20. (AFA-P01 Rm SW corner) 	INFORM CUE: As examinee simulates opening each valve. The valve has rotated counter-clockwise and stopped moving.	Examinee simulates opening both of the following valves: <ul style="list-style-type: none"> AFA-V084, “AFN-PI-020 ROOT VALVE”. (AFA-P01 Rm South of Pump) The instrument Isolation for AFN-PI-20. (AFA-P01 Rm SW corner)
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
6. *	Step 6: Open AFA-V131, AFN-PI-055 Root Valve. (AFA-P01 Rm Lower Level North of Turbine)	INFORM CUE: As examinee simulates opening the valve. The valve has rotated counter-clockwise and stopped moving.	Examinee simulates opening AFA-V131
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
7.	Step 7: Check that AFA-HV-54, “AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE” is in the Reset closed position, REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position	INFORM CUE: AFA-HV-54 is tripped as shown in Attachment 112-B.	Examinee inspects AFA-HV-54 OR goes from cue on Step 4 of this JPM.
SAT / UNSAT Comments (required for UNSAT):			



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
8.	<p>Step 7.1.a:</p> <p>Perform the following to reset AFA-HV-54:</p> <p>a. Manually close the actuator for AFA-HV-54 to align the Latch Lever and the Trip Hook. REFER TO Attachment 112-B, Trip/Throttle Valve in the Tripped Position.</p>	<p>IF REQUESTED CUE:</p> <p>The actuator for AFA-HV-54 is in the closed position. The Latch Lever and Trip Hook are aligned.</p>	<p>The examinee determines from Step 4 cue that the actuator for AFA-HV-54 is in the closed position.</p>
<p>SAT / UNSAT Comments (required for UNSAT):</p>			



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PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
9. *	<p>Step 7.1.b:</p> <p>Perform the following to reset AFA-HV-54:</p> <p>b. WHEN AFA-HV-54 has been closed, THEN pull the Reset Lever toward the Trip/Throttle Valve to completely engage the Latch Lever and the Trip Hook. REFER TO ALL of the following attachments:</p> <ul style="list-style-type: none">• Attachment 112-A, Trip/Throttle Valve in the Reset Position• Attachment 112-C, Resetting AFA-P01 Overspeed Trip Linkage• Attachment 112-D, Alignment of Trip Tappet Assembly	<p>INFORM CUE:</p> <p>The Reset Lever has been pulled and the Latch Lever and Trip Hook are completely engaged.</p>	<p>Examinee simulates pulling the Reset Lever toward the Trip/Throttle Valve to engage the Latch Lever and Trip Hook.</p>
<p>SAT / UNSAT</p> <p>Comments (required for UNSAT):</p>			



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
10. *	<p>Step 7.1.c:</p> <p>Perform the following to reset AFA-HV-54:</p> <p>c. Perform the following:</p> <ol style="list-style-type: none"> 1) Ensure the Trip Tappet Assy is correctly aligned, REFER TO Attachment 112-D, Alignment of Trip Tappet Assembly. 2) Ensure the Trip Tappet Assy is pushed down to hold the Reset Lever in position. REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position. 3) Ensure the Latch Lever and Trip Hook are completely engaged with no visible gaps between the faces of the jaws. 	<p>INFORM CUE:</p> <p>The Trip Tappet Assy is correctly aligned.</p> <p>The Trip Tappet Assy is push down to hold the Reset Lever in position.</p> <p>The Latch Lever and Trip Hook are completely engaged with no visible gaps between the faces of the jaws.</p>	<p>Examinee performs the following</p> <ol style="list-style-type: none"> 1) Assy is correctly aligned, REFER TO Attachment 112-D, Alignment of Trip Tappet Assembly. 2) Pushes down the Trip Tappet Assy to hold the Reset Lever in position. 3) Ensure the Latch Lever and Trip Hook are completely engaged with no visible gaps between the faces of the jaws
<p>SAT / UNSAT</p> <p>Comments (required for UNSAT):</p>			



**RO/SROI IN-PLANT JPM P3
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	STEP	CUE	STANDARD
11.	Step 7.1.d: Perform the following to reset AFA-HV-54: d. Ensure the Manual Trip Lever is in the reset position. REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position.	INFORM CUE: The Manual Trip Lever is in the reset position.	Examinee simulates ensuring the Manual Trip Lever is in the reset position.
SAT / UNSAT Comments (required for UNSAT):			

	STEP	CUE	STANDARD
12. *	Step 8: Ensure BOTH of the Aux Feed Pump A Feed Isolation Valves are open: <ul style="list-style-type: none"> AFC-UV-36, "AUX FEEDPUMP AFA-P01 FEED ISOLATION VLV TO SG #1". (90' AFA-P01 Pump Room) AFA-UV-37, "AUX FEEDPUMP AFA-P01 FEED ISOLATION VLV TO SG #2". (80' AFA-P01 Pump Room) 	INFORM CUE: Provide the following cue after the operator has simulated operating each valve: The clutch has been depressed and the handwheel rotated in the counter-clockwise position. The valve has stopped moving.	The examinee simulates manually opening AFC-UV-36 and AFA-UV-37.
SAT / UNSAT Comments (required for UNSAT):			



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
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	STEP	CUE	STANDARD
13. *	Step 9: Throttle open AFA-HV-54, “AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE” until ONE of the following parameters is met: <ul style="list-style-type: none">• Pump discharge pressure is 1800 psig on AFN-PI-20.• Turbine speed is 3560 rpm using a hand held tachometer.	INFORM CUE: Pump discharge is reading 1805 psig on the AFN-PI-20. Pump speed is 3560 on the hand held tachometer. Another operator will complete the remainder of this procedure.	Examinee simulates throttling open AFA-HV-54 manually.
SAT / UNSAT Comments (required for UNSAT):			

JPM STOP TIME:

NORMAL TERMINATION POINT



**RO/SROI IN-PLANT JPM P3
PVNGS JOB PERFORMANCE MEASURE
2015 NRC Exam**

APPLICANT

INITIAL CONDITIONS:

- A Delta 10 security event is in progress and the CRS has entered 40AO-9ZZ24, Security Events.
- The Reactor is tripped and the Control Room Supervisor (CRS) has also entered the Functional Recovery Procedure.

INITIATING CUE:

The CRS directs you to perform the following per 40AO-9ZZ24, Deliberate Acts Against PVNGS:

- Travel directly to the AFA-P01 (Auxiliary Feedpump A) pump room.
- Obtain 40EP-9EO10 Standard Appendix 112.
- Obtain a tachometer locally at AFA-P01.
- Standby for further direction from the Control Room.

APPLICANT

This page redacted because it contained operations telephone numbers.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

At least one steam source valve (SGA-UV-134 or SGA-UV-138) will be open because of actions taken in 40AO-9ZZ24. The Trip Throttle valve AFA-HV-54 is expected to be tripped because of a loss of control power to the turbine controls.

CAUTION

Failure to wear leather welding sleeves while manually operating AFA-HV-54 may result in personal injury due to steam packing leakage and proximity to hot pipes.

- ____ 3. Establish communication with the Control Room via radio or telephone.

- ____ 3.1 **IF** communication with the Control Room can **NOT** be established or maintained, **AND BOTH** of the following pumps are **NOT** running:

- AFA-P01
- AFB-P01

THEN perform the following:

- a. Ensure AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" is closed (REFER TO Attachment 112-A, Trip/ Throttle Valve in the Reset Position).
- b. GO TO step 5.

- ____ 4. **WHEN** directed by the Control Room to perform this appendix, **THEN** ensure AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" is closed (REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position).

STANDARD APPENDICES

INSTRUCTIONS

- _____ 5. Open **BOTH** of the following valves:
- AFA-V084, "AFN-PI-020 ROOT VALVE".
(AFA-P01 Rm South of Pump)
 - The instrument Isolation for AFN-PI-20.
(AFA-P01 Rm SW corner)
- _____ 6. Open AFA-V131, AFN-PI-055 Root Valve. (AFA-P01 Rm Lower Level North of Turbine)
- _____ 7. Check that AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" is in the Reset closed position, REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position

(continue)

CONTINGENCY ACTIONS

- _____ 7.1 Perform the following to reset AFA-HV-54:
- a. Manually close the actuator for AFA-HV-54 to align the Latch Lever and the Trip Hook. REFER TO Attachment 112-B, Trip/Throttle Valve in the Tripped Position.

(continue)

STANDARD APPENDICES

INSTRUCTIONS

____ 7. (continued)

(continue)

CONTINGENCY ACTIONS

7.1 (continued)

- b. **WHEN** AFA-HV-54 has been closed,
THEN pull the Reset Lever toward the Trip/Throttle Valve to completely engage the Latch Lever and the Trip Hook. REFER TO ALL of the following attachments:
- Attachment 112-A, Trip/Throttle Valve in the Reset Position
 - Attachment 112-C, Resetting AFA-P01 Overspeed Trip Linkage
 - Attachment 112-D, Alignment of Trip Tappet Assembly
- c. Perform the following:
- 1) Ensure the Trip Tappet Assy is correctly aligned, REFER TO Attachment 112-D, Alignment of Trip Tappet Assembly.
 - 2) Ensure the Trip Tappet Assy is pushed down to hold the Reset Lever in position. REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position.
 - 3) Ensure the Latch Lever and Trip Hook are completely engaged with no visible gaps between the faces of the jaws.

(continue)

STANDARD APPENDICES

INSTRUCTIONS

____ 7. (continued)

____ 8. Ensure **BOTH** of the Aux Feed Pump A Feed Isolation Valves are open:

- AFC-UV-36, "AUX FEEDPUMP AFA-P01 FEED ISOLATION VLV TO SG #1". (90' AFA-P01 Pump Room)
- AFA-UV-37, "AUX FEEDPUMP AFA-P01 FEED ISOLATION VLV TO SG #2". (80' AFA-P01 Pump Room)

____ 9. Throttle open AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" until **ONE** of the following parameters is met:

- Pump discharge pressure is 1800 psig on AFN-PI-20.
- Turbine speed is 3560 rpm using a hand held tachometer.

CONTINGENCY ACTIONS

7.1 (continued)

- d. Ensure the Manual Trip Lever is in the reset position.
REFER TO Attachment 112-A, Trip/Throttle Valve in the Reset Position.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

The intent is to establish both a turbine speed of 3560 rpm and pump discharge of 1400-1410 psig (for a 10 minute duration) to ensure the SGs receive adequate feedwater. This may require adjusting feed and steam valves more than once to achieve the target discharge pressure and turbine speed.

_____ 10. **WHEN** at least **ONE** of the following is established,

- Pump discharge pressure is 1800 psig on AFN-PI-20.
- Turbine speed is 3560 rpm.

THEN perform **BOTH** of the following:

- a. Throttle open **BOTH** of the following valves an equal amount until AFN-PI-20 indicates 1400-1410 psig:
 - AFA-HV-32, "AUX FEEDPUMP AFA-P01 FLOW CONTROL VLV TO SG #1" (90' AFA-P01 Pump Room)
 - AFC-HV-33, "AUX FEEDPUMP AFA-P01 FLOW CONTROL VLV TO SG #2" (80' AFA-P01 Pump Room)
- b. Adjust AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" to control turbine speed to 3560 rpm.

_____ 10.1 **IF** SG level instrumentation has been restored,
THEN control the SG feed rate at the direction of the Control Room.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

The intent is to establish both a turbine speed of 3560 rpm and pump discharge of 1680-1690 psig (for a 15 minute duration) to ensure the SGs receive adequate feedwater. This may require adjusting feed and steam valves more than once to achieve the target discharge pressure and turbine speed.

CAUTION

Throttling the flow control valves to reduce feed flow will cause the turbine speed to increase potentially challenging an overspeed trip at 4008-4108 rpm.

____ 11. **WHEN** discharge pressure has been established for 10 minutes at 1400-1410 psig on AFN-PI-20, **THEN** perform **BOTH** of the following:

a. Throttle **BOTH** of the following valves an equal amount until AFN-PI-20 indicates 1680-1690 psig:

- AFA-HV-32, "AUX FEEDPUMP AFA-P01 FLOW CONTROL VLV TO SG #1" (90' AFA-P01 Pump Room)
- AFC-HV-33, "AUX FEEDPUMP AFA-P01 FLOW CONTROL VLV TO SG #2" (80' AFA-P01 Pump Room).

b. Adjust AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" to control turbine speed to 3560 rpm.

____ 11.1 **IF** SG level instrumentation has been restored, **THEN** control the SG feed rate at the direction of the Control Room.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

The intent is to establish both a turbine speed of 3560 rpm and pump discharge of 1730-1740 psig (for the remaining duration) to ensure the SGs receive adequate feedwater. This may require adjusting feed and steam valves more than once to achieve the target discharge pressure and turbine speed.

CAUTION

Throttling the flow control valves to reduce feed flow will cause the terry turbine speed to increase potentially challenging an overspeed trip at 4008-4108 rpm.

_____ 12. **WHEN** pressure has been established for 15 minutes at 1680-1690 psig on AFN-PI-20, **THEN** perform **BOTH** of the following:

- a. Throttle **BOTH** of the following valves an equal amount until AFN-PI-20 indicates 1730-1740 psig:
- AFA-HV-32, "AUX FEEDPUMP AFA-P01 FLOW CONTROL VLV TO SG #1" (90' AFA-P01 Pump Room)
 - AFC-HV-33, "AUX FEEDPUMP AFA-P01 FLOW CONTROL VLV TO SG #2" (80' AFA-P01 Pump Room).
- b. Adjust AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" to control turbine speed to 3560 rpm.

_____ 12.1 **IF** SG level instrumentation has been restored, **THEN** control the SG feed rate at the direction of the Control Room.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

NOTE

If operating AFA-P01 from Main Steam and the Steam Generators are overfilled, AFA-P01 will trip due to water in the steam line. The parameters (controlling to pump discharge pressure, speed and duration) used in this appendix are expected to maintain SG level in the WR band (60-70% WR)

- ____ 13. **IF** the feedpump turbine trips on overspeed,
THEN perform the following:
- a. Reset AFA-HV-54 "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" per contingency step 7.1 in this Appendix.
 - b. **IF** the feedpump turbine tripped on overspeed due to water in the steam line,
AND 30 minutes has elapsed after the overspeed trip,
THEN restore feed flow.

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

____ 14. **IF ANY** of the following symptoms occur:

- Discharge pressure fluctuates widely (AFN-PI-20),
- Cavitation noises,
- Large variations in pump discharge pressure with a constant steam pressure,
- Large variations in turbine speed with a constant steam pressure,

THEN perform the following to realign the suction to the RMWT:

- a. Manually trip AFA-P01.
- b. Open AFA-V058, "AUX FEEDPUMP AFA-P01 RMWT SUCTION ISOLATION VALVE". (Above AFA-P01 88 ft. MSSS)
- c. Unlock and close AFA-V006, "AUX FEEDPUMP AFA-P01 CST SUCTION ISOLATION VALVE". (Above AFA-P01 88 ft. MSSS)
- d. Vent at AFA-V091 to remove non-condensable gasses from the AFA-P01 suction line.

(continue)

STANDARD APPENDICES

INSTRUCTIONSCONTINGENCY ACTIONS

____ 14. (continued)

- e. Reset AFA-HV-54 "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" per contingency step 7.1 in this Appendix.
- f. Throttle open AFA-HV-54, "AUX FEEDPUMP AFA-P01 TRIP & THROTTLE VALVE" to adjust turbine speed to 3560 rpm.

____ 15. **IF** SG level instrumentation has been restored,
THEN control the SG feed rate at the direction of the Control Room.

End of Appendix

STANDARD APPENDICES

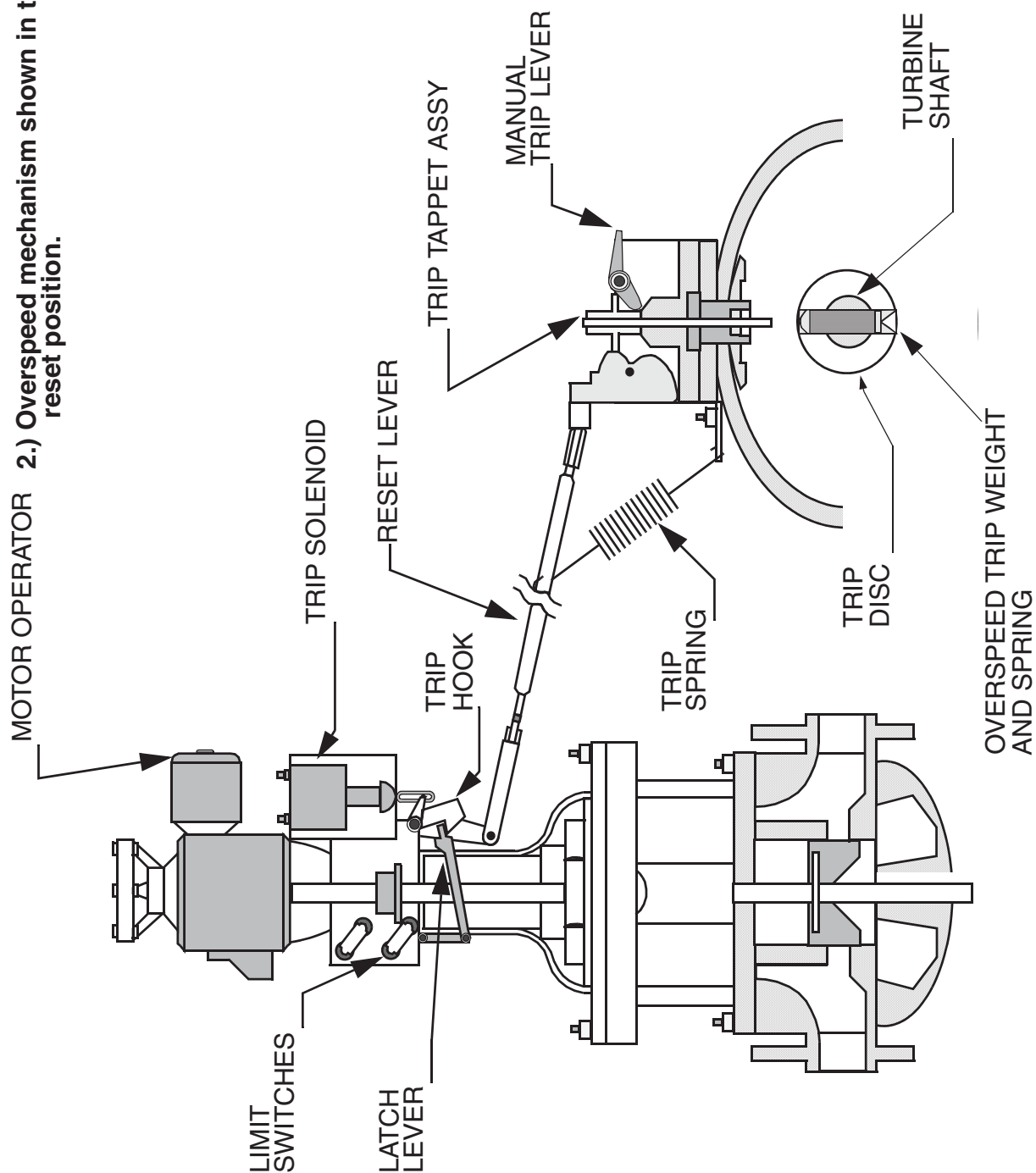
Attachment 112-A

Trip/Throttle Valve in the Reset Position

Page 1 of 1

1.) Trip/Throttle Valve shown in the reset position. Valve closed with Latch Lever engaged with Trip Hook.

2.) Overspeed mechanism shown in the reset position.



End of Attachment

STANDARD APPENDICES

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Appendix 112

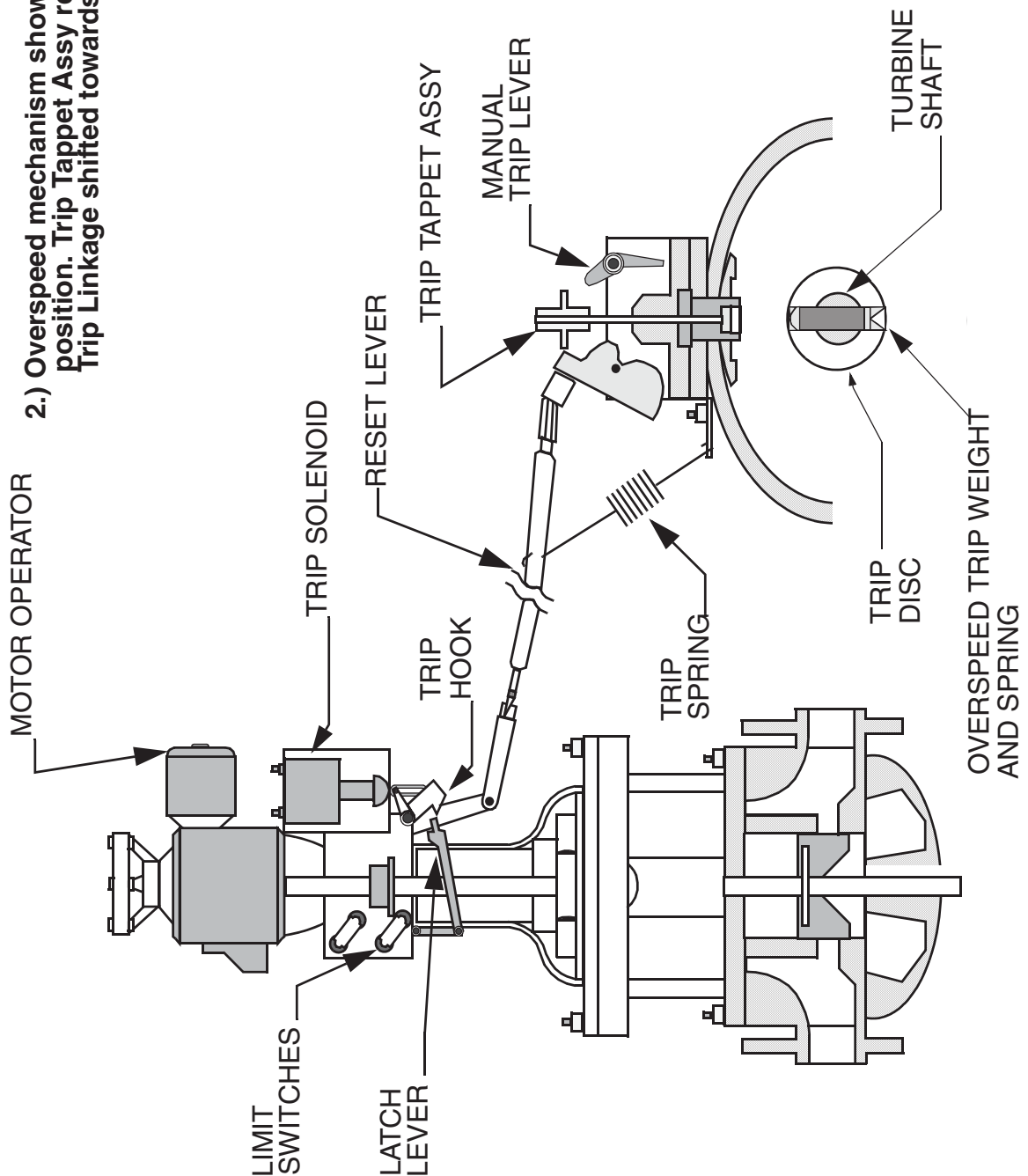
Page 13 of 15

Attachment 112-B

Trip/Throttle Valve in the Tripped Position

Page 1 of 1

- 1.) Trip/Throttle Valve shown in the after overspeed trip position. Valve closed with Latch lever up.
- 2.) Overspeed mechanism shown in the trip position. Trip Tappet Assy released and Trip Linkage shifted towards turbine.



End of Attachment

STANDARD APPENDICES

Attachment 112-C

Resetting AFA-P01 Overspeed Trip Linkage

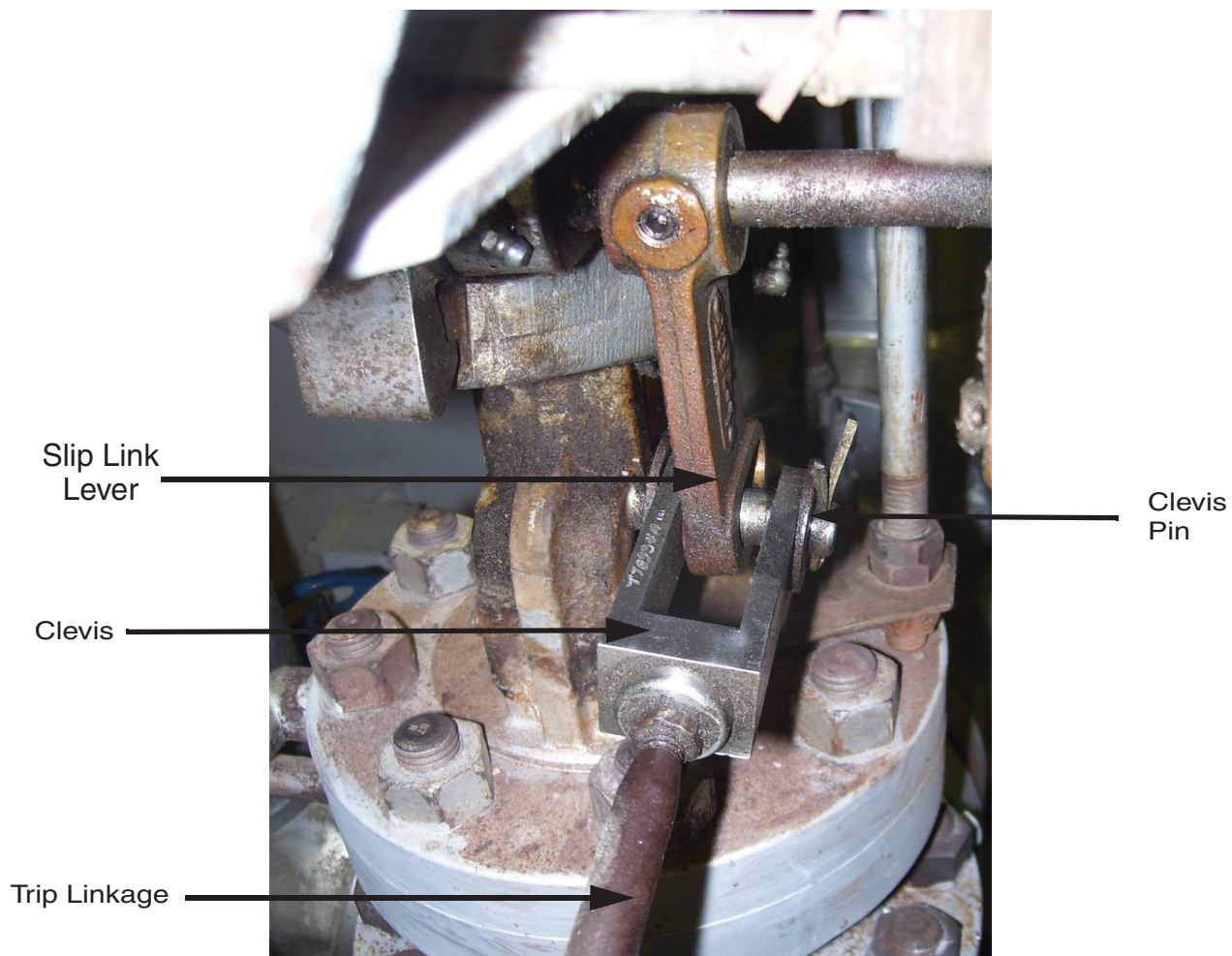
Page 1 of 1

NOTE

Care should be taken to **NOT** grab the Trip Spring Adjustment Plate on the Reset Lever when resetting the turbine.

NOTE

Care should be taken to **NOT** allow the Clevis Pin to impact the back edge of the Slip Link Lever when the Reset Lever is pushed/pulled toward the Trip/Throttle valve.

**End of Attachment**

STANDARD APPENDICES

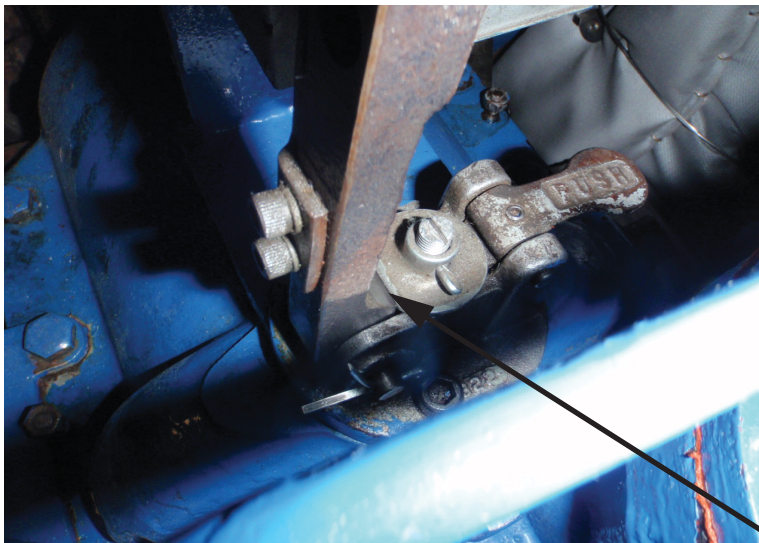
Attachment 112-D

Alignment of Trip Tappet Assembly

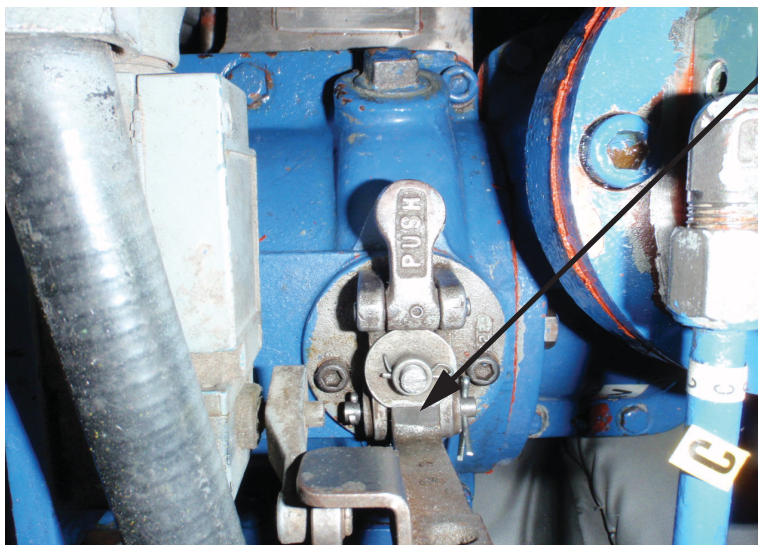
Page 1 of 1

NOTE

The Tappet is susceptible to bending if the Tappet Nut is impacted with enough force. The Reset Lever should be slowly returned to rest on the Tappet Nut after the Linkage is reset with the flat edge of the trip tappet assembly aligned closest to the reset lever.



Flat edge of
Trip Tappet
Assembly

**End of Attachment**

Facility: PVNGS Scenario No.: 1 (Rev. 1) Op-Test No: NRC - 2015

Examiners: _____ Operators: _____

Initial Conditions:(100% power, MOC).

Turnover:See attached.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N BOP/SRO	Secure and isolate SG Blowdown from SG #1
2	cmCNCV01CHEPDIC240_2	C RO/SRO	CHN-PDIC-240, Charging Line to RC Loop 2A DP Control, fails LOW in the AUTO Mode
3	mfAN_1B01A4	C RO/SRO	Auxiliary Transformer High Temperature
4	cmTRCV01CHBFT212_4	SRO (TS)	CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW [LCO 3.3.11 Condition A]
5	mfFW17B	C RO/BOP/ SRO (AOP)	'B' MFP trips, Reactor Power Cutback
6	mfRP06L1 mfRP06L2 cmCPFW07AFBP01_6	C BOP/SRO (AOP/TS)	Inadvertent AFAS-1 Train B & AFB-P01 86 Lockout [LCO 3.7.5, Condition C]
7	mfMC01A	M ALL	Loss of condenser vacuum (Trip Initiator)
8	cmCNRC03RCNPIC100_2	C RO/SRO	RCN-PIC-100, Pressurizer Master Controller, fails to 100% output in the AUTO mode (CRITICAL TASK: Close Pressurizer Spray Valves before a SIAS occurs at 1837 psig.)
9	cmCPFW07AFNP01_6	M ALL	Loss of Feedwater 86 Lockout of AFN-P01.
End point			The scenario may be ended once the selected Steam Generator is being fed to at a rate that raises SG level, and/or lowers/stabilizes RCS temperature, OR when deemed appropriate by the Lead Examiner. (CRITICAL TASK: Establish feedwater to at least one SG from the Condensate Pumps prior to dryout of the selected/depressurized SG.

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	8
2. Malfunctions after EOP entry (1-2)	2
3. Abnormal events (2-4)	2
4. Major transients (1-2)	2
5. EOPs entered/requiring substantive actions (1-2)	1
6. EOP contingencies requiring substantive actions (0-2)	1
7. Critical tasks (2-3)	2

CRITICAL TASK	JUSTIFICATION	REFERENCES
Close the Pressurizer Spray Valves before a SIAS occurs at 1837 psig.	<p>Failure to close the Pressurizer Spray Valves prior to RCS pressure lowering to less than 1837 psig will result in a loss of subcooling, which could require securing all RCPs, unnecessarily complicating recovery strategies. 40DP-9AP06, SPTAs Technical Guidelines, Instruction Step: 5 RCS Pressure Control, Contingency Action 5.3, states: "Maintaining RCPs in operation supports the use of main PZR spray to depressurize to the point of HPSI injection if needed, provided there is adequate subcooling and RCP operating limits are maintained. It will also prevent needlessly stopping forced circulation cooling when significant leakage does not exist."</p> <p>Additionally, allowing a SIAS to unnecessarily actuate will also complicate mitigation strategies, as the crew will be required to shutdown unneeded equipment while implementing the FRP.</p>	<ul style="list-style-type: none"> PVNGS Critical Task RXTP-2, With a failure of PPCS to operate automatically, operate Pressurizer Heaters and Spray and maintain RCS pressure control within limitations as specified by the RCS Pressure-Temperature Curves. CE SPTA-05 (CT-06), Establish RCS Pressure Control. 40DP-9AP06, SPTAs Technical Guidelines, Instruction Step: 5 RCS Pressure Control, Contingency Action 5.3
Establish feedwater to at least one SG from the Condensate Pumps prior to dryout of the selected/depressurized SG.	<p>Failure to prevent dry-out in a SG leads to unnecessary complications in recovery strategy. When SG mass is reduced below 5000 lbm (see FSAR Section 15.2.8.2.3, part of Decrease in Heat Removal By the Secondary System), feedwater flow to that SG must be limited to prevent thermal shock, slowing recovery efforts. Standard Appendix 44, Feeding with the Condensate Pumps, Step 14.d (and 15.d), limits feed flow rate to 1000 gpm if a SG is dry. Excessive feedwater flow to a hot, dry SG can lead to structural damage to SG components (degradation of a fission product barrier), limiting the ability of the SG to remove heat from the RCS. According to 40OP-9SG02, Operating the SGs, Precaution and Limitation 3.7, there are about 16,000 gallons of water in the SG at 0%WR level.</p>	<ul style="list-style-type: none"> PVNGS Critical Task HR-4, Establish a feed source to at least one steam generator to ensure restoration of level toward the normal band prior to completing the HR success path. CE HR-01 (CT-08), Establish RCS Heat Removal FSAR Section 15.2.8.2.3, part of Decrease in Heat Removal By the Secondary System) 40DP-9AP17, Standard Appendices Technical Guideline, Appendix 44.

2015 NRC Scenario 1 Overview

<u>Event 1</u>	<p>Secure and isolate SG Blowdown from SG #1 in accordance with 40OP-9SG03, Operating the Steam Generator Blowdown System, Section 5.3. This normal evolution involves entering new Blowdown Constants into the new Core Monitoring Computer per Appendix O. The BOP places SCN-HS-1, Steam Generator 1 Blowdown Path Selector, to the OFF position to stop flow. The BOP then verifies system response using Appendix G, Blowdown Verifications (per the “Stopping B/D” column). An AO is dispatched to perform a local lineup per Appendix I, Securing Steam Generator 1 Blowdown. The BOP will then close the SG 1 Blowdown Containment Isolation Valves (UV-500P/Q) and the 3 SG 1 Isolation Valves (HV-43, 41, 47). Cooling water to the Blowdown Heat Exchanger will remain in service.</p> <p>When SGE-HV-47 is closed, the next event may be initiated.</p>
<u>Event 2</u>	<p>CHN-PDIC-240, Charging Line to RC Loop 2A DP Control, fails LOW in the AUTO Mode. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ 3A08A (CHG HDR SYS TRBL) ○ 3A11B (RCP SEAL INJ FLOW HI-HI OR LO) • This is a reverse-acting controller in that the actual DP goes low when the controller fails to 100% output. • As the DP in the charging header drops, RCP seal injection flow will lower to less than 6 gpm. <p>Crew responds in accordance with 40AL-9RK3A for 3A08A and 3A11B. Window 8A, Group C (PT ID CHPDS240) directs the RO to take manual control of CHN-PDIC-240 and raise the DP to between 90 and 135 psid. The actions for window 11B require the RO to adjust affected RCP seal injection controllers and/or CHN-PDIC-240 to achieve charging header pressure between 2430 and 2500 psig and RCP seal injection flow between 6.0 and 7.5 gpm. The CRS may refer to 40AO-9ZZ04, Reactor Coolant Pump Emergencies.</p> <p>When seal injection flow and charging header pressure are adjusted, or at the discretion of the Lead Examiner, the next event can be initiated.</p>
<u>Event 3</u>	<p>Unit Auxiliary Transformer High Temperature. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 1B01A (UNIT AUX XFMR X02 PROT TRIP/TRBL) • Computer Point ID MAY557, Unit Aux Xfmr MAN-X02 Trouble <p>Crew responds in accordance with 40AL-9RK1B, window 1B01A (Point ID MAY557, Unit Aux Xfmr MAN-X02 Trouble). The RO directs an Area Operator to locally investigate the trouble alarm. The AO uses 40AL-9MA01, UNIT AUX TRANSFORMER MAN-X02, Group H, High Winding Temp. The AO reports that winding temperature is 125°C and rising slowly. The AO also reports that all fans and oil pumps are operating. In accordance with Operator Action 4, the AO recommends a reduction in Unit Aux Xfmr load or a transfer to the alternate power source. 40AL-9RK1B, Point ID MAY557, Unit Aux Xfmr MAN-X02 Trouble, Operator Action 4 prompts the crew to transfer bus NAN-S01 to NAN-S03 and bus NAN-S02 to NAN-S04, then refer to 40OP-9NA03, 13.8 kV Electrical System (NA), Section 7.0 and 11.0. Transfer actions involve placing the Synchronizing Switch to ON, closing the associated tie breaker, ensuring the supply breaker opens, checking for proper voltage, and turning off the</p>

2015 NRC Scenario 1 Overview

	<p>Synchronizing Switch. When loads have been transferred, the AO reports that winding temperature on the Auxiliary Transformer is lowering slowly.</p> <p>After the report from the AO, or at the discretion of the Lead Examiner, the next event can be initiated.</p>
Event 4	<p>CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW. This is a TS call for the CRS.</p> <p>The crew is alerted by the following:</p> <ul style="list-style-type: none"> Annunciator 3A08A (CHG HDR SYS TRBL) 0 flow indicated on CHB-FI-212, CHARGING PUMPS DSCH HEADER FLOW on B03 Computer alarm point CHFS212 (Charging Pumps to Regenerative Heat Exchanger Flow Lo) <p>Crew responds in accordance with 40AL-9RK3A for window 08A (CHG HDR SYS TRBL), Group A, CHFS212 (Charging Pumps to Regenerative Heat Exchanger Flow Lo).</p> <p>First Priority Operator Actions involve verifying the alarm and ensuring a flowpath is available from the VCT, through the charging pumps, and to the Regenerative Heat Exchanger. Second Priority Operator Actions prompt the crew to check if low suction pressure is the cause of the low flow condition and to determine the actual cause.</p> <p>The CRS evaluates the following Technical Specifications:</p> <ul style="list-style-type: none"> TRM T3.1.100, Flow Paths - Shutdown TRM T3.1.101, Flow Paths - Operating TRM T3.1.102, Charging Pumps - Shutdown TRM T3.1.103, Charging Pumps – Operating TRM 3.4.100, Auxiliary Spray System TS 3.3.11, Remote Shutdown System <p>The LCOs for 3.1.100 and 3.1.102 are N/A since the Unit is not shut down. LCOs 3.1.101 and 3.1.103 are met because charging pumps and flowpaths are available. LCO 3.4.100 is met because both Auxiliary Spray Valves are OPERABLE.</p> <p>Since Charging Line Flow is required by Table 3.3.11-1, Remote Shutdown System Instrumentation and Controls, the CRS enters LCO 3.3.11, Condition A, for “One or more required Functions in Table 3.3.11.1 inoperable.”</p> <p>After the CRS briefs the crew on the entry into LCO 3.3.11, Condition A, or at the discretion of the Lead Examiner, the next event may be initiated.</p>
Event 5	<p>‘B’ MFP trips. Operators are alerted to the trip by the following:</p> <ul style="list-style-type: none"> Annunciator 6A09A (FWPT B TRIP) Annunciator 4A11B (REAC PWR CUTBACK) <p>The CRS implements 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump), Section 3.0, Loss of Feedpump. On the cutback, CEA Groups 4 and 5 fully insert into the core, the Main Turbine sets back to approximately 60%, the runback circuit lowers load to match the secondary plant to the primary, and the Reactor Regulating System inserts CEAs to respond to the initial increase in Tave. Section 3.0 requires the crew to verify that subgroups 4, 5, and 22 have inserted and that Main Turbine load is less than 65%. The STA (or a designated Operator) performs Appendix D, Status Check RPCB Loss of Feedwater</p>

2015 NRC Scenario 1 Overview

	<p>Pump. The BOP raises the Speed Bias on the operating MFP to zero or more and the BOP or RO checks that the RRS is adjusting CEAs to restore Tave/Tref to within 3°F. The Steam Bypass Control System (SBCS) is checked to ensure that main steam pressure is being controlled at setpoint. (SBCVs are not expected to be open at this point). The RO or BOP takes the RPCS out of service and the BOP reduces the load limit potentiometer until the potentiometer has control of the Main Turbine control valves. The BOP/RO places CEDMCs in Manual Sequential. The RO starts boron equalization.</p> <p>After the RO has started the boron equalization, or at the discretion of the Lead Examiner, the next event may be initiated.</p>
Event 6	<p>An inadvertent AFAS-1 Train B occurs and AFB-P01 fails due to an 86 lockout. Since AFA-P01 is out of service, it will not auto-start as designed. Crew responds in accordance with 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 3.0, AFAS. This section directs the crew to override and operate AFW valves as necessary to control SG levels. 2 minutes after the AFW valves are closed, AFB will trip on an 86 Lockout. Chemistry is informed that Blowdown lights 1 and 2 are isolated and Blowdown constants are updated. Once Blowdown constants have been updated in the CMC and PC, the next event may be initiated.</p> <p>With the failure of AFB-P01, the CRS enters Condition C of TS 3.7.5, since two trains of AFW (AFA tagged out, AFB failed) are now inoperable.</p> <p>After the CRS briefs the crew on entry into Condition C of LCO 3.7.5, or at the discretion of the Lead Examiner, the next event may be initiated.</p>
Event 7	<p>A loss of condenser vacuum occurs. This is a significant loss of vacuum; hence, no substantial action will be taken in Loss of Vacuum AOP prior to initiation of a Reactor trip. Crew should initiate a manual Reactor trip and enter 40EP-9EO01, Standard Post Trip Actions. This is the entry procedure for the Emergency Operating (EOP) System. This procedure is used for any event which actuates or requires a reactor trip. The crew checks each Safety Function and performs the Contingency Actions as required. Once the SPTAs are complete, the CRS selects the appropriate recovery procedure using the Diagnostic flowchart in 40EP-9EO01. The most likely initial diagnosis results in a transition to 40EP-9EO02, Reactor Trip.</p>
Event 8	<p>RCN-PIC-100, Pressurizer Master Controller, fails to 100% output in the AUTO mode, which causes both Pressurizer Spray Valves to open 100%. RO responds in accordance with ARP for B04 window B401B (PZR PRESS HI-LO), Group A, Pressurizer Pressure Ch X(Y) Lo. If the main spray valves are <u>not</u> closed, First Priority Operator Action 5 requires the operator to take manual control of RCN-PIK-100, Pressure Spray Control, and close the main spray valves. Recovery actions are also addressed in general terms in the SPTAs (Contingency Action 5.1) if the RCS Pressure Control acceptance criteria are not met.</p> <p>CRITICAL TASK: Close the Pressurizer Spray Valves before a SIAS occurs at 1837 psig.</p> <p>When the main spray valves are closed, or at the discretion of the Lead Examiner, the next event may be initiated.</p>

2015 NRC Scenario 1 Overview

Event9	<p>The CRS progresses through 40EP-9EO02, Reactor Trip, until Step 9, when AFN-P01 trips on an 86 lockout. With the loss of vacuum disabling the MFPs, malfunctions of AFB and AFN, and AFA out of service; this results in a Loss of All Feedwater and the CRS rediagnoses the event. The CRS may initially transition to 40EP-9EO06, Loss of All Feedwater, and progress until Step 6. Since Step 6 cannot be accomplished, Contingency Action 6.1 directs a transition to 40EP-9EO09, Functional Recovery. If the CRS recognizes that the FRP is the only procedure with guidance for establishing feedwater flow from the Condensate Pumps, he/she may transition directly to 40EP-9EO09. The CRS then implements 40EP-9EO09, Functional Recovery, to establish feedwater from the Condensate Pumps using Standard Appendix 44, Feeding with the Condensate Pumps. This Appendix involves selecting a SG to depressurize, lining up that SG's downcomer to accept flow, isolating that SG's economizer, tripping the FWPs, lining up feedwater heaters, ensuring adequate RCS makeup flow, and depressurizing the selected SG using atmospheric dump valves (ADVs). The CRS may elect to conserve inventory in the unselected SG by isolating it.</p> <p>CRITICAL TASK: Establish feedwater to at least one SG from the Condensate Pumps prior to dryout of the selected/depressurized SG.</p> <p>EXAMINER NOTE:</p> <p>Appendix 44 directly relates to Key Operator Action #7 (1.5%) of the PRA: Depressurize Steam Generators and Supply Alternate Feedwater.</p>
End Point	<p>The scenario may be ended once the selected Steam Generator is being fed to at a rate that raises SG level, and/or lowers/stabilizes RCS temperature, OR at the discretion of the Lead Examiner.</p>

TURNOVER

Plant Conditions:

- Unit 1 is at 100% power
- The core is presently at 250 EFPD
- Risk Management Action Level is ORANGE
- AFA-P01 is out of service for unscheduled maintenance
- Train B is protected
- PC is NOT recircing the RWT
- Unit 2 is supplying the Aux Steam cross-tie header

Equipment Out of Service:

- AFA-P01 is under clearance for maintenance. LCO 3.7.5, Condition A and Condition B, have been entered. The pump is expected to return to service in 8 hours.

Planned Shift Activities:

- To support maintenance on SCN-HV-1A, SG #1 Normal Rate Blowdown Flow Control Valve, secure and isolate Steam Generator Blowdown from SG #1 in accordance with 40OP-9SG03, Operating the Steam Generator Blowdown System, Section 5.0. Cooling water to the Blowdown Heat Exchanger will remain in service. The clearance also will require the Containment Isolation Valves to be closed due to known leaking manual isolation valves. Chemistry has been briefed and has concurred with this approach.

Op-Test No.: _2015 NRC Scenario No.: __1 (Rev. 0)__ Event No.: __1__

Event Description: Secure and isolate SG Blowdown from SG #1

Time	Position	Applicant's Actions or Behavior
	CRS	Directs BOP to secure and isolate SG #1 blowdown.

40OP-9SG03, Operating the Steam Generator Blowdown System, Section 5.3.

	BOP	<p style="text-align: center;">NOTE</p> <p>Instructions for changing blowdown constants with the new CMC are contain in Appendix O - Inserting Blowdown Constants with the New CMC. The instructions for changing blowdown constants with the new PC are contained in Appendix P – Inserting Blowdown Constants with the New PC.</p>
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Event Description: Secure and isolate SG Blowdown from SG #1

2

Op-Test No.: _2015 NRC Scenario No.: __1 (Rev. 0)__ Event No.: __1__

Event Description: Secure and isolate SG Blowdown from SG #1

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 5.3.1.4</p> <p>PERFORM Appendix G - Blowdown Verifications to ensure normal system response.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 5.3.2</p> <p>Direct a Nuclear Operator to perform Appendix I - Securing Steam Generator 1 Blowdown. (N/A at CRS/Shift Managers discretion if blowdown stopped for short duration)</p> <p>Expected Action: As directed.</p>
	BOP	<p style="text-align: center;">NOTE</p> <p>When the BFT cools down, water could flow from the feedwater heaters through SCNLV3A into the BFT causing water hammers.</p>
	BOP	<p>Instruction 5.3.3</p> <p>IF ALL of the following conditions exists:</p> <ul style="list-style-type: none"> • Blowdown flow to the BFT has been secured, • The BFT will be secured over shift change, • CRS/Shift Manager directs, <p>THEN close SCN-V057, BFT Drain to Feedwater Heaters.</p> <p>Expected Action: N/A. With SG #2 blowdown still going to the BFT, SCN-V057 will not be closed.</p>

Op-Test No.: _2015 NRC Scenario No.: __1 (Rev. 0)__ Event No.: __1__

Event Description: Secure and isolate SG Blowdown from SG #1

Time	Position	Applicant's Actions or Behavior
	BOP	<p>CAUTION</p> <p>Initiating blowdown flow when the containment isolation valves have been closed and the downstream lines are drained or have become voided due to system leakage, may result in severe water hammer to the downstream piping.</p>
	BOP	<p>Instruction 5.3.4</p> <p>At the discretion of the CRS/Shift Manager, close the following valves:</p> <ul style="list-style-type: none"> • SGA-UV-500P, Steam Generator 1 Common Upstream Isolation using SGA-HS-500P. • SGB-UV-500Q, Steam Generator 1 Common Downstream Isolation using SGB-HS-500Q. • SGE-HV-43, Steam Generator 1 Hot Leg Isolation Valve using SGN-HS-43. • SGE-HV-41, Steam Generator 1 Cold Leg Isolation Valve using SGN-HS-41. • SGE-HV-47, Steam Generator 1 Downcomer Isolation Valve using SGN-HS-47. <p>Expected Action: RO closes UV-500P and UV-500Q based on Turnover. May also close HV-47. HV-41 and HV-43 are already closed.</p>
	BOP	<p>CAUTION</p> <p>If the Blowdown Heat Exchanger is not allowed to cool down prior to isolation of the cooling water flow, isolating cooling water flow to the Blowdown Heat Exchanger may result in severe water hammer to the downstream piping.</p>

Op-Test No.: _2015 NRC Scenario No.: __1 (Rev. 0)__ Event No.: __1__

Event Description: Secure and isolate SG Blowdown from SG #1

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 5.3.5</p> <p>IF cooling water flow is required to be isolated, THEN close ALL of the following:</p> <ol style="list-style-type: none">1. SCN-V199, Blowdown Heat Exchanger SCN-E02 Inlet (Outside at Blowdown Demin Unit).2. SCN-VA59, Blowdown Heat Exchanger Cooling Water Flow Control Valve to Heater Drain Pump A Discharge (110 ft Turbine Building Under Heater Drain Tank A).3. SCN-VA60, Blowdown Heat Exchanger Cooling Water Flow Control Valve to Heater Drain Pump B Discharge (110 ft Turbine Building Under Heater Drain Tank B). <p>Expected Action: N/A. Per Turnover, cooling water will not be isolated.</p>
Examiner Note: When the operator closes SGE-HV-47, OR at the discretion of the Lead Examiner, may proceed to next event.		

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 2

Event Description: **CHN-PDIC-240, Charging Line to RC Loop 2A DP Control, fails LOW in the AUTO Mode**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged.</p> <p>The crew is alerted by the following:</p> <ul style="list-style-type: none">• Annunciators:<ul style="list-style-type: none">○ 3A08A (CHG HDR SYS TRBL)○ 3A11B (RCP SEAL INJ FLOW HI-HI OR LO)• This is a reverse-acting controller in that the actual DP goes low when the controller fails to 100% output.• As the DP in the charging header drops, RCP seal injection flow will lower to less than 6 gpm. <p>Alarm response procedure 40AL-9RK3A is referenced for operator response.</p> <p>Examiner Note: ARP for RCP NCW flow low is on Page 8.</p>

40AL-9RK3A, 3A08A (CHG HDR SYS TRBL, GROUP C, LO ALARM)

	RO	<p>First Priority Operator Action 1, LO ALARM</p> <p>Check the regen hx to reactor coolant loop 2A differential pressure Lo Alarm by reading CHN-PDIC-240 on B03.</p> <p>Expected Action: RO observes CHN-PDIC-240 red arrow is reading 0. Diagnoses that CHN-PDIC-240 has failed as indicated by observing pressure on CHN-PDIC-240 on Board B03. (NOTE: Back pressure fails LOW and controller output fails HIGH)</p>
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Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>2</u>		
Event Description: CHN-PDIC-240, Charging Line to RC Loop 2A DP Control, fails LOW in the AUTO Mode		
Time	Position	Applicant's Actions or Behavior
	RO	<p>First Priority Operator Action 2</p> <p>Ensure CHN-PDIC-240 on B03 is set between 90 and 135 psid.</p> <p>Expected Action: RO observes CHN-PDIC-240 black & white arrow is reading approximately 130 psid.</p>
	RO	<p>First Priority Operator Action 3</p> <p>If directed by the CRS/Shift Manager, take manual control of the regenerative heat exchanger to charging line differential pressure controller, CHN-PDIC-240, at B03 and raise the differential pressure to a normal value of 90 to 135 psid.</p> <p>Expected Action: RO depresses MAN button on CHN-PDIC-240. Moves slider to the left to lower controller output until red arrow indicates between 90 and 135 psid.</p> <p>Examiner Note: The alarms 3A08A (CHG HDR SYS TRBL) and 3A11B (RCP SEAL INJ FLOW HI-HI OR LO) will clear when CHN-PDIC-240 is adjusted to 90-135 psid.</p>
	RO	<p>First Priority Operator Action 4</p> <p>IF a condition exists that requires the use of auxiliary spray, THEN close CH-HV-239 to provide the necessary DP.</p> <p>Expected Action: N/A. Aux Spray not required. Main spray is available.</p>

40AL-9RK3A, window 3A11B, GROUP B, Seal Injection to RCPs Flow Lo.

	RO	<p>First Priority Operator Action 1</p> <p>Determine which of the four seal injection legs has the Lo flow, by reading the alarm CRT.</p> <p>Expected Action: RO observes low flow on the following indicators:</p> <ul style="list-style-type: none"> • CHN-FIC-241, CHN-FIC-242, CHN-FIC-243, CHN-FIC-244
	RO	<p>First Priority Operator Action 2</p> <p>IF all seal injection flow is lost to an RCP and the affected RCP is in standby, THEN Isolate bleedoff prior to exceeding 250°F Seal 2 Outlet Temperature.</p> <p>Expected Action: N/A. No RCPs are in standby.</p>
	RO	<p>Second Priority Operator Action 1</p> <p>Take manual control of the affected RCP's flow indicator controller(s) and adjust seal injection flow to the normal value of 6.0 to 7.5 gpm. (6.6 gpm nominal)</p> <p>Expected Action: RO may take manual control of the following, although it would be ineffective since seal injection flow is at maximum:</p> <ul style="list-style-type: none"> • CHN-FIC-241 • CHN-FIC-242 • CHN-FIC-243 • CHN-FIC-244

	RO	<p>Second Priority Operator Action 2</p> <p>IF the CRS/Shift Manager directs, THEN increase the pressure in the charging header by using the regenerative heat exchanger to charging line differential pressure indicator controller CHN-PDIC-240 on B03. Adjust to achieve 2430 to 2500 psig as read at the charging pumps to regenerative heat exchanger pressure indicator CHA-PI-212 on B03.</p> <p>Expected Action: RO depresses MAN button on CHN-PDIC-240. Moves slider to the left to lower controller output until CHA-PI-212 reads between 2430 and 2500 psig.</p>
	RO	<p>Second Priority Operator Action 3</p> <p>Direct a Nuclear Operator to check the seal injection filters differential pressure on local indicator CHN-PDIS-241.</p> <p>Expected Action: RO directs an AO to report seal injection filters DP.</p> <p>AO Report: CHN-PDIS-241 reads 4 psid.</p>
	RO	<p>Second Priority Operator Action 4</p> <p>IF the CRS/SM directs, THEN place a new filter in service.</p> <p>Expected Action: N/A. 4 psig is a normal reading.</p>
	RO	<p>Second Priority Operator Action 5</p> <p>Refer to 40AO-9ZZ04, Reactor Coolant Pump Emergencies, for further information.</p> <p>Expected Action: RO prompts CRS to refer to 40AO-9ZZ04.</p>
<p>Examiner Note: Once manual control is taken and pressure is restored to between 90 and 135 psig, OR at the discretion of the Lead Examiner, may proceed to the next event.</p>		

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>3</u>		
Event Description: Auxiliary Transformer High Temperature.		
Time	Position	Applicant's Actions or Behavior
	CREW	<p>Receives and acknowledges alarm.</p> <p>The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 1B01A (UNIT AUX XFMR X02 PROT TRIP/TRBL) • Computer Point ID MAYS57, AUX XFMR STATUS (on computer), Unit Aux Xfmr MAN-X02 Trouble (in ARP). <p>Alarm response procedure 40AL-9RK1B is referenced for alarm response.</p>
40AL-9RK1B, 1B01A, Point ID MAYS57 (Unit Aux Xfmr MAN-X02 Trouble)		
	RO	<p>Operator Action 1</p> <p>IF ANY of the following conditions exist:</p> <ul style="list-style-type: none"> • NAN-S01 is de-energized • NAN-S02 is de-energized <p>THEN REFER TO 40AO-9ZZ12, Degraded Electrical Power.</p> <p>Expected Action: N/A. Both NAN-S01 & NAN-S02 remain energized.</p>
<p>Examiner Note: If the crew looks at Unit Aux Transformer Temperatures on ERFDADS, they will not be trending up. If called as OCS the driver will report it appears to be a problem with those points on ERFDADS</p>		

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>3</u>		
Event Description: Auxiliary Transformer High Temperature.		
Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Actions 2, 2.1, & 2.2</p> <p>Direct an Auxiliary Operator to perform the following:</p> <p>Determine cause of the alarm locally at Unit Aux Xfmr annunciator panel.</p> <p>REFER TO 40AL-9MA01, Transformer Trouble Alarm Responses for actions.</p> <p>Expected Action: RO directs AO to investigate locally.</p> <p>AO Report: Wait 3 minutes and report that winding temperature is 125°C and rising slowly. All fans and oil pumps are operating. If requested, oil temperature is 78°C and rising slowly. AO recommends crew to transfer loads per local ARP, Action 4.</p>
	RO	<p>Operator Action 3</p> <p>IF Unit Auxiliary OR Main transformer fire exists, THEN direct an Auxiliary Operator to stop both isophase bus cooling fans:</p> <ul style="list-style-type: none"> • MCENA01A, Isophase Bus Cool Airblower A (NGN-L15D3). • MCENA01B, Isophase Bus Cool Airblower B (NGN-L14D3). <p>Expected Action: N/A. No fire exists.</p>
	RO	<p>Operator Action 4</p> <p>IF directed by 40AL-9MA01, Transformer Trouble Alarm Responses, to transfer bus NAN-S01 to NAN-S03 AND bus NAN-S02 to NAN-S04, THEN REFER TO 40OP-9NA03, 13.8 KV Electrical System (NA) to transfer the buses.</p> <p>Expected Action: RO refers to 40OP-9NA03. See Page 14 of this scenario..</p>

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>3</u>		
Event Description: Auxiliary Transformer High Temperature.		
Time	Position	Applicant's Actions or Behavior
	RO	Operator Action 5 Initiate PVAR. Expected Action: As directed.
	RO	NOTE This alarm will not reflash when a second alarm input is generated until the initial alarm input is cleared.
	RO	Operator Action 6 IF the alarm remains locked in, THEN monitor local Alarm Panel at increased frequency as directed by SM/CRS. Expected Action: CREW may discuss increasing the frequency of monitoring.
	RO	Operator Actions 7, 7.1, & 7.2 WHEN the cause of alarm has been corrected, THEN perform the following: Restore normal 13.8KV bus alignment per 40OP-9NA03, 13.8 KV Electrical System (NA). Restore Isophase Bus Cooling system to normal operation per 40OP-9CE02, Isophase Bus Cooling. Expected Action: N/A. Alarm cause not yet corrected.

40AL-9MA01, UNIT AUX TRANSFORMER MAN-X02, Group H, High Winding Temp.

	AO	<p>Operator Action 1.</p> <p>Confirm the high winding temperature condition by reading the Winding Temperature indicators mounted next to the control cabinet.</p> <p>Expected Action: N/A. Local action.</p>
	AO	<p>Operator Action 2.</p> <p>Check for a high oil temperature condition by reading the liquid temperature indicator.</p> <p>Expected Action: N/A. Local action.</p>
	AO	<p>Operator Action 3.</p> <p>IF oil temperature is high, THEN perform the response section for High Oil Temp, Group I.</p> <p>Expected Action: N/A. Local action.</p>
	AO	<p>Operator Action 4.</p> <p>Notify Control Room and recommend a reduction in Unit Aux Xfmr load or a transfer to the alternate power source if winding temperature is not being reduced.</p> <p>Expected Action: AO prompts CR to transfer loads on Unit Aux Transformer.</p>
	AO	<p>NOTE</p> <p>If the transformer alarm is locked in, then no further alarms will annunciate in the Control Room.</p>
	AO	<p>Operator Action 5.</p> <p>IF the alarm remains locked in, THEN increase monitoring of the transformer annunciator cabinet as recommended by the CRS/SM.</p> <p>Expected Action: CREW may discuss increasing the frequency of monitoring.</p>

40OP-9NA03, 13.8 KV Electrical System (NA)

	RO	<p>Instruction 7.3.1.</p> <p>Perform the appropriate section of Appendix D - S/U Xfmr Winding Loading Guidance if a related Startup Xfmr winding is supplying more than one unit:</p> <p>Unit 1 only - IF X03Z or X01Y are supplying more than one unit, THEN perform section 6.0 of Appendix D - S/U Xfmr Winding Loading Guidance.</p> <p>Expected Action: N/A. S/U transformer is <i>not</i> supplying more than 1 Unit.</p>
	RO	<p>Instruction 7.3.2.</p> <p>In the Control Room on B01, turn the Synchronizing Switch for NAN-S03-NAN-S01 Tie breaker, NAN-SS-S03B, to ON and check for proper synchronization.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 7.3.3.</p> <p>Close the NAN-S03-NAN-S01 Tie breaker NAN-S03B by turning handswitch NAN-HS-S03B to CLOSE.</p> <p>Expected Action: As directed.</p> <p>Examiner Note: The following are expected alarms for these actions:</p> <ul style="list-style-type: none"> • 1A04B (120VAC 1E PNL D25 INVERTER A TRBL) • 1A05B (120VAC 1E PNL D27 INVERTER C TRBL) • 1B10A (13.8 4.16 KV BUS XFR NOT-IN AUTO) • 1B18C (GENERATING UNIT 1 OSCG OPERATED/TRBL) (clears immediately) <p>AO is directed to investigate inverter trouble alarms.</p> <p>AO Report: Wait 3 minutes and report that both inverters have a red, "inverter out of sync" light.</p>

	RO	<p>Instruction 7.3.4.</p> <p>Check NAN-S01 Supply breaker, NAN-S01A, automatically opens when handswitch NAN-HS-S03B is released.</p> <p>Expected Action: As directed. RO may call an AO and ask for a report on winding temperature after some loads have been transferred.</p> <p>AO Report: Wait 3 minutes and report that winding temperature is still rising, but at a slower rate.</p>
	RO	<p>Instruction 7.3.5.</p> <p>Check NAN-S01 voltage is between 12.42 kV - 14.49 kV.</p> <p>Expected Action: RO checks voltmeter below NAN-HS-S01A.</p>
	RO	<p>Instruction 7.3.6.</p> <p>Turn the Synchronizing Switch for NAN-S03-NAN-S01 Tie breaker, NAN-SS-S03B, to OFF.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 11.3.1.</p> <p>Perform the appropriate section of Appendix D - S/U Xfmr Winding Loading Guidance if a related Startup Xfmr winding is supplying more than one unit:</p> <p>Unit 1 only - IF X02Y or X01Z are supplying more than one unit, THEN perform section 8.0 of Appendix D - S/U Xfmr Winding Loading Guidance.</p> <p>Expected Action: N/A. S/U transformer is <i>not</i> supplying more than 1 Unit.</p>
	RO	<p>Instruction 11.3.2.</p> <p>In the Control Room on B01, turn the Synchronizing Switch for NAN-S04-NAN-S02 Tie breaker, NAN-SS-S04B, to ON and check for proper synchronization.</p> <p>Expected Action: As directed.</p>

	RO	<p>Instruction 11.3.3.</p> <p>Close the NAN-S04-NAN-S02 Tie breaker NAN-S04B by turning handswitch NAN-HS-S04B to CLOSE.</p> <p>Expected Action: As directed.</p> <p>Examiner Note: The following are expected alarms for these actions:</p> <ul style="list-style-type: none"> • 1A04D (120VAC 1E PNL D26 INVERTER B TRBL) • 1A05D (120VAC 1E PNL D28 INVERTER D TRBL) • 1B10A (13.8 4.16 KV BUS XFR NOT-IN AUTO) • 1B18C (GENERATING UNIT 1 OSCG OPERATED/TRBL) (clears immediately) <p>AO is directed to investigate inverter trouble alarms.</p> <p>AO Report: Wait 3 minutes and report that both inverters have a red, “inverter out of sync” light.</p>
	RO	<p>Instruction 11.3.4.</p> <p>Check NAN-S02 Supply breaker, NAN-S02A, automatically opens when handswitch NAN-HS-S04B is released.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 11.3.5.</p> <p>Check NAN-S02 voltage is between 12.42 kV - 14.49 kV.</p> <p>Expected Action: RO checks voltmeter below NAN-HS-S02A.</p>
	RO	<p>Instruction 11.3.6.</p> <p>Turn the Synchronizing Switch for NAN-S04-NAN-S02 Tie breaker, NAN-SS-S04B, to OFF.</p> <p>Expected Action: As directed.</p> <p>AO Report: Winding temperature is 119°C and slowly lowering.</p>
<p>Examiner Note: Once the AO reports that winding temperature is lowering, OR at the discretion of the Lead Examiner, may proceed to the next event.</p>		

Op-Test No.: _____ Scenario No.: 1 Event No.: 4

Event Description: **CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW. This is a TS call for the CRS.</p> <p>The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 3A08A (CHG HDR SYS TRBL) • Zero (0) flow indicated on CHB-FI-212, CHARGING PUMPS DSCH HEADER FLOW on B03 • Computer alarm point CHFS212 (Charging Pumps to Regenerative Heat Exchanger Flow Lo) <p>Crew responds in accordance with 40AL-9RK3A for window 08A (CHG HDR SYS TRBL), Group A, CHFS212 (Charging Pumps to Regenerative Heat Exchanger Flow Lo).</p>

40AL-9RK3A, 3A08A (CHG HDR SYS TRBL)

	RO	<p>AUTO ACTION</p> <p>None.</p>
	RO	<p>First Priority Operator Action 1</p> <p>Check the charging pumps to regenerative heat exchanger flow Lo Alarm by reading CHB-FI-212 on B03.</p> <p>Expected Action: RO observes that CHB-FI-212 reads zero (0).</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 4

Event Description: **CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW**

Time	Position	Applicant's Actions or Behavior
	RO	<p>First Priority Operator Actions 2 and 2.1</p> <ul style="list-style-type: none"> • Ensure flow from ONE of the following: <p>VCT</p> <ul style="list-style-type: none"> • Ensure adequate level in the VCT. [CRAI 3229455, SOER 97-1] • Ensure the CHN-UV-501, VCT outlet valve, is open. <p>RWT (N/A)</p> <p>Expected Action: RO verifies proper VCT level on CHN-LI-226, Volume Control Tank Level, and checks UV-501 open (bottom red light) on CHN-HS-501.</p>
	RO	<p>First Priority Operator Action 3</p> <p>Ensure that a flowpath is available from the charging pumps to the RCS through CHN-HV-524, Charging Pumps Discharge Header to Regenerative Heat Exchanger Isolation.</p> <p>Expected Action: RO checks for red light on CHA-HS-524, Charging Pumps Dsch Hdr To Regen Hx Vlv HV-524.</p>
	RO	<p>First Priority Operator Action 4</p> <p>Check that at least one charging pump is running.</p> <p>Expected Action: RO verifies red light on CHA-HS-216, Charging Pump 1 P01.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 4

Event Description: **CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW**

Time	Position	Applicant's Actions or Behavior
	RO	<p>NOTE</p> <p>Charging pump trips without an associated electrical protection alarm may be due to a low suction pressure trip at 13 psia.</p>
	RO	<p>Second Priority Operator Action 1</p> <p>IF a low suction pressure trip was caused by ANY of the following:...</p> <p>Expected Action: N/A. Low flow NOT due to low suction pressure.</p>
	RO	<p>Second Priority Operator Action 2</p> <p>IF the pump restarted in step 1 above fails to develop discharge pressure or flow,...</p> <p>Expected Action: N/A. Pump wasn't restarted...</p>
	RO	<p>Second Priority Operator Action 3</p> <p>IF the CRS/Shift Manager directs, THEN start an additional charging pump.</p> <p>Expected Action: N/A. No need for additional Charging Pump.</p>
	RO	<p>Second Priority Operator Action 4</p> <p>Investigate and correct the cause of the low flow alarm. Possible causes include, but are not limited to:</p> <ul style="list-style-type: none"> • Improper valve lineup. • Leaks in piping. • Charging pump malfunction. • Instrument malfunction. • Charging pump gas binding. <p>Expected Action: Crew determines cause is an instrument malfunction.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 4

Event Description: **CHB-FI-212, Charging Pump Discharge Header Flow Transmitter, Fails LOW**

Time	Position	Applicant's Actions or Behavior
		<p>Second Priority Operator Action 5</p> <p><u>Review</u> response to the condition(s) based on Technical Specifications TRM T3.1.100, TRM T3.1.101, TRM T3.1.102, TRM T3.1.103 and TRM 3.4.100 and TS 3.3.11 (RSP).</p> <p>Expected Action:</p> <p>The CRS evaluates the following Technical Specifications:</p> <ul style="list-style-type: none"> • TRM T3.1.100, Flow Paths - Shutdown • TRM T3.1.101, Flow Paths - Operating • TRM T3.1.102, Charging Pumps - Shutdown • TRM T3.1.103, Charging Pumps – Operating • TRM 3.4.100, Auxiliary Spray System • TS 3.3.11, Remote Shutdown System <p>The LCOs for 3.1.100 and 3.1.102 are N/A since the Unit is not shut down. LCOs 3.1.101 and 3.1.103 are met because charging pumps and flowpaths are available. LCO 3.4.100 is met because both Auxiliary Spray Valves are OPERABLE.</p> <p>Since Charging Line Flow is required by Table 3.3.11-1, Remote Shutdown System Instrumentation and Controls, the CRS enters LCO 3.3.11, Condition A, for “One or more required Functions in Table 3.3.11.1 inoperable.”</p>
	RO	<p>Second Priority Operator Action 6</p> <p>IF letdown isolates due to low charging flow, THEN consider performing 40AO-9ZZ05, Loss of Letdown.</p> <p>Expected Action: N/A. Letdown should remain in service during this event.</p>

Examiner Note: After the CRS briefs the crew on the entry into LCO 3.3.11, Condition A, or at the discretion of the Lead Examiner, the next event may be initiated.

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 5

Event Description: **'B' Main Feedwater Pump Trips, Reactor Power Cutback**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged.</p> <p>Operators are alerted to the trip by the following:</p> <ul style="list-style-type: none"> • Annunciator 6A09A (FWPT B TRIP) • Annunciator 4A11B (REAC PWR CUTBACK) <p>Various other alarms on B04 are received and acknowledged. Alarm response procedure 40AL-9RK4A is referenced for operator response.</p> <p>Examiner Note: Based on these annunciators, the CRS may elect to directly enter 40AO-9ZZ09, Reactor Power Cutback (Loss of FeedPump). Board operators may still reference ARPs. Alarm response for 4A11B is provided, beginning on Page 27.</p>

40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump), Section 3.0, Loss of Feedpump.

	CRS	<p>Instruction 1.</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 2</p> <p>IF reactor power was 74% or more, THEN perform the following:</p> <ol style="list-style-type: none"> Check that a Reactor Power Cutback Loss of Feedpump (RPCB LFP) has actuated. Check that CEA subgroups 4, 5, and 22 have inserted. <p>Expected Action: BOP observes the LOSS OF FEEDPUMP light on SFN-UIC-3, REACTOR POWER CUTBACK CONTROL PANEL. Also observes that rod bottom lights on the Core Mimic Panel are lit for subgroups 4, 5, and 22.</p>

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>5</u>		
Event Description: 'B' Main Feedwater Pump Trips, Reactor Power Cutback		
Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 3</p> <p>IF reactor power was less than 74%, THEN check that CEAs are inserting as needed to match reactor and turbine power.</p> <p>Expected Action: N/A. Reactor power was greater than 74%.</p>
	BOP	<p>Instruction 4</p> <p>Check Main Turbine Setback - Runback has lowered Main Turbine load to 65% or less. (~890 MW)</p> <p>Expected Action: BOP observes MEGAWATTS meter on MTN-A-001, EHC CONTROL PANEL.</p>
	CRS	<p>Instruction 5</p> <p>IF any CEA deviates from its subgroup by greater than 6.6 inches, AND ANY CEA Reg Groups are below the Transient Insertion Limits, THEN perform the following:</p> <ul style="list-style-type: none"> a. Trip the reactor. b. GO TO 40EP-9EO01, Standard Post Trip Actions. <p>Expected Action: N/A. No CEAs are below the Transient Insertion Limits.</p>
	CRS	<p>Instruction 6</p> <p>Direct the STA to PERFORM Appendix D, Status Check RPCB Loss of Feedwater Pump.</p> <p>Expected Action: This is normally an STA function. CRS may direct a board operator to perform this check.</p>
	CRS	<p>Instruction 7</p> <p>IF BOTH Feed Pumps trip, THEN perform the following:</p> <ul style="list-style-type: none"> a. Trip the reactor. b. GO TO 40EP-9EO01, Standard Post Trip Actions. <p>Expected Action: N/A. MFP A still running.</p>

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>5</u>		
Event Description: 'B' Main Feedwater Pump Trips, Reactor Power Cutback		
Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 8</p> <p>Raise the Speed Bias on the operating Main Feedwater Pump(s) to zero or more.</p> <p>Expected Action: If necessary, BOP depresses up arrow on SGN-FIC-1107, SG 1 FW TURBINE 'A' SPEED CONTROL.</p>
	BOP	<p>Instruction 9</p> <p>Restore and maintain S/G levels 45 - 60% NR.</p> <p>Expected Action: BOP observes that MFP A is controlling SG levels in automatic.</p>
	CRS	<p style="text-align: center;">CAUTION</p> <p>Manually withdrawing CEAs during a reactor power transient may result in a Variable Over Power Trip (VOPT).</p>
	BOP	<p>Instruction 10</p> <p>Check that BOTH of the following are being maintained in automatic:</p> <ul style="list-style-type: none"> • RRS is adjusting CEAs to restore Tave/Tref + 3°F • SBCS opens if required to control main steam pressure at setpoint <p>Expected Action: BOP observes that Reg Groups are withdrawing to restore Tavg. Monitors IJ-RCN-TR-100 on B04.</p>
	CRS	<p>Instruction 11</p> <p>IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.</p> <p>Expected Action: N/A. Not steaming to atmosphere.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>Condensate Pumps trip at 30 inches hotwell level.</p>

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>5</u>		
Event Description: 'B' Main Feedwater Pump Trips, Reactor Power Cutback		
Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 12</p> <p>IF condenser hotwell level is less than 41 inches, THEN direct an operator to maintain the condenser hotwell level 41 inches or more using ANY of the following:</p> <ul style="list-style-type: none"> • Hotwell makeup and reject controllers • CDN-HCV-154, "1A" HOTWELL HALF MANUAL MAKE-UP ISOLATION VALVE" • CDN-HCV-155, "2A" HOTWELL HALF MANUAL MAKE-UP ISOLATION VALVE" <p>Expected Action: N/A. Hotwell level is greater than 41 inches.</p>
	BOP	<p>Instruction 13</p> <p>IF reactor power is 70% or less and stable, THEN perform the following:</p> <ol style="list-style-type: none"> IF the RPCB "AUTO ACTUATE OUT OF SERVICE" pushbutton is NOT lit, THEN press the "AUTO ACTUATE OUT OF SERVICE" pushbutton. IF the RPCB "TEST RESET" pushbutton is NOT lit, THEN press the "TEST RESET" pushbutton. <p>Expected Action: As directed.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>The LOAD LIMIT LIMITING light may be on if a load setback has been initiated and the setback is controlling. If the Load Set motor is controlling, then the light will be out.</p>
	BOP	<p>Instruction 14</p> <p>Perform a lamp test to ensure the "LOAD LIMIT LIMITING" light illuminates.</p> <p>Expected Action: BOP depresses the "LAMP TEST" button on the bottom of the EHC CONTROL PANEL.</p>

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u> 1 </u> Event No.: <u> 5 </u>		
Event Description: 'B' Main Feedwater Pump Trips, Reactor Power Cutback		
Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 15</p> <p>Reduce the load limit potentiometer until the potentiometer has positive control of the Main Turbine control valves.</p> <p>Expected Action: BOP rotates the LOAD LIMIT SET potentiometer CCW until the LOAD LIMIT LIMITING light illuminates.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>When the CEAs are placed in Manual Sequential, the RCS temperature will begin to slowly drop due to the build up of xenon. If a power reduction is NOT required due to equipment issues or core age, the CRS should move without delay through the procedure to step 31. This is where the Reg Group CEA overlap is restored which will help to restore the RCS temperature.</p>
	BOP	<p>Instruction 16</p> <p>IF a RPCB has dropped CEA subgroups, AND BOTH of the following conditions are met:</p> <ul style="list-style-type: none"> • CEA motion is only required to compensate for Xenon buildup • Main Turbine load limiting light is on <p>THEN place CEDMCS in Manual Sequential "MS".</p> <p>Expected Action: BOP places CEDMCS in Manual Sequential "MS."</p>
	BOP	<p>Instruction 17</p> <p>Monitor CPC Point ID 0187 CPC ASI - Aux Trip.</p> <p>Expected Action: BOP scrolls screens on at least one of the DNBR/LPD CALCULATOR PANELS until Point ID 0187 is displayed.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 5

Event Description: **'B' Main Feedwater Pump Trips, Reactor Power Cutback**

Time	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: center;">NOTE</p> <p>CPC Group Display "LOW POWER MONITORING" can be used to monitor ASI and the summed value of excores, Pt ID 0125, DKSUM.</p> <p style="text-align: center;">NOTE</p> <p>During a power reduction, the CPC Aux Trip on ASI is "armed" when the summed value of the upper, middle and lower excores is greater than 45%.</p>
	CRS	<p>Instruction 18</p> <p>IF ALL of the following conditions are met:</p> <ul style="list-style-type: none"> • CPC Pt ID 0187 indicates greater than + 0.45 • CPC Pt ID 0187 is trending to + 0.5 • CPC Aux Trip on ASI is still possible (above the Rule of 45), using Pt ID 0125) <p>THEN perform the following:</p> <ol style="list-style-type: none"> a. Trip the Reactor. b. GO TO 40EP-9EO01, Standard Post Trip Actions. <p>Expected Action: N/A. None of the given conditions exist.</p>
	RO	<p>Instruction 19</p> <p>Start boron equalization of the pressurizer by performing the following:</p> <ol style="list-style-type: none"> a. Energize pressurizer backup heaters as necessary. b. Lower the setpoint on RCN-PIC-100, Pressurizer Pressure Controller to 2220 psia. <p>Expected Action: RO energizes all backup heaters. Uses manual thumbwheel on RCN-PIC-100 to lower the setpoint.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 5

Event Description: **'B' Main Feedwater Pump Trips, Reactor Power Cutback**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>CRS evaluates Technical Specifications.</p> <p>Enters LCO 3.2.4, Condition A for "COLSS calculated core power not within limit."</p> <p>Based on the following:</p> <ul style="list-style-type: none"> • Annunciator 5B01C (COLSS CMC ALARM) • Annunciator 5B01D (COLSS PC ALARM) • Step 21.a of 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump), Section 3.0

40AL-9RK4A, 4A11B (REAC PWR CUTBACK, LOSS OF FEED PUMP)

		<p>First Priority Operator Actions 1, 1.1, & 1.2</p> <p>IF reactor power was 74% or more, THEN perform the following:</p> <p>Check that a Reactor Power Cutback Loss of Feedpump (RPCB LFP) has actuated.</p> <p>Check that CEA subgroups 4, 5, and 22 have inserted.</p> <p>Expected Action: BOP observes the LOSS OF FEEDPUMP light on SFN-UIC-3, REACTOR POWER CUTBACK CONTROL PANEL. Also observes that rod bottom lights on the Core Mimic Panel are lit for subgroups 4, 5, and 22.</p>
	CRS	<p>First Priority Operator Action 2</p> <p>IF a RPCB LFP failed to actuate, AND the CRS directs, THEN press BOTH of the following pushbuttons to manually drop CEA subgroups 4, 5 and 22:</p> <ul style="list-style-type: none"> • "DROP SUB GRPS" • "LOSS OF FEED PUMP" <p>Expected Action: N/A. RPCB LFP actuated as designed.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 5

Event Description: **'B' Main Feedwater Pump Trips, Reactor Power Cutback**

Time	Position	Applicant's Actions or Behavior
	CRS	First Priority Operator Action 3. IF manual actuation of RPCB LFP failed, THEN perform the following: a. Trip the reactor. b. GO TO 40EP-9EO01, Standard Post Trip Actions. Expected Action: N/A. RPCB LFP actuated as designed.
	CRS	First Priority Operator Action 4. IF reactor power was less than 74%, AND greater than the AMI setpoint, THEN ensure CEAs are inserting to match reactor and turbine power. Expected Action: N/A. Reactor power was greater than 74%.
	BOP	First Priority Operator Action 5. GO TO 40AO-9ZZ09, Reactor Power Cutback (Loss of FeedPump). Expected Action: BOP prompts CRS to implement 40AO-9ZZ09.
Examiner Note: After the RO has started boron equalization, OR as deemed appropriate by the Lead Examiner, may proceed to the next event.		

Op-Test No.: _____ Scenario No.: 1 Event No.: 6

Event Description: **Inadvertent AFAS-1 Train B (AFB 86 Lockout)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 5B07B (LEG 1-3 AFAS-1 B LEG 2-4) • Annunciator 2B06A (AFAS-1) <p>Alarm response procedure 40AL-9RK5B is referenced for operator response.</p> <p>Examiner Note: Based on indications, the CRS may elect to directly enter 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations. Board operators may still reference ARPs. Alarm response for 5B07B is provided, beginning on Page 31.</p>

40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 3.0, AFAS

	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>Overriding equipment disables automatic operation of the equipment on a valid PPS-ESFAS actuation. Depending on plant conditions, this action may make the equipment inoperable.</p>
	BOP	<p>Instruction 2</p> <p>Override and operate Auxiliary Feedwater Valves as needed to control steam generator level.</p> <p>Expected Action: BOP overrides and closes the following valves:</p> <ul style="list-style-type: none"> • UV-30, AUX FW to SG 1 UPSTREAM VLV, using AFB-HS-30A • UV-34, AUX FW to SG 1 DOWNSTREAM VLV, using AFB-HS-34A

Op-Test No.: _____ Scenario No.: 1 Event No.: 6

Event Description: **Inadvertent AFAS-1 Train B (AFB 86 Lockout)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>2 minutes after UV-30 & UV-34 are closed, AFB trips on an 86 Lockout. Operators are alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 6A14D (AFW PMP B DSCH PRESS LO) • White and blue alarms, AFW PMP B P01, on ESB-UA-2B, SAFETY EQPT STATUS TRAIN B SYSTEMS <p>Expected Action: Alarm response procedures 40AL-9RK6A and 40AL-9ES2B are referenced for operator response. Since running AFW is not required for current plant conditions, the crew will likely limit actions to directing an AO to investigate and informing the SM.</p> <p>AO Report: 3 minutes after being directed to investigate, AO reports an acrid smell around breaker cubicle at PBB-S04 and an 86 lockout relay flag is showing.</p>
	CRS	<p>Instruction 3</p> <p>IF AFA-P01 is running, THEN perform the following:</p> <p>Inform Radiation Protection and the RMS Technician of steaming to atmosphere.</p> <p>IF AFA-P01 speed is less than 1000 rpm for greater than five minutes, THEN trip AFA-P01.</p> <p>Expected Action: N/A. AFA is out of service.</p>
	BOP	<p>Instruction 4</p> <p>IF SG Blowdown is isolated, THEN perform the following:</p> <ol style="list-style-type: none"> a. Inform Chemistry that Blowdown is isolated. b. IF COLSS is operable, THEN PERFORM 40OP-9SG03, Operating the Steam Generator Blowdown System, to insert zero for BOTH of the following constants in the CMC and PC: <ul style="list-style-type: none"> • NKBMF1 • NKBMF2 <p>Expected Action: Crew discusses resetting blowdown constants. CRS may defer this action. If not, BOP inserts zero in CMC and PC.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 6

Event Description: **Inadvertent AFAS-1 Train B (AFB 86 Lockout)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Based on the AFAS failure, the CRS may evaluate LCOs 3.3.5, Engineered Safety Features Actuation System (ESFAS) Instrumentation, and 3.3.6, Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip. Without assistance from the SM and I&C, the CRS will not initially be able to determine which LCO applies. Discussion with the SM is sufficient.</p> <p>Based on the failure of AFB, the CRS enters LCO 3.7.5, Auxiliary Feedwater (AFW) System, Condition C, for "Two AFW trains inoperable in MODE 1, 2, or 3."</p>

40AL-9RK5B, 5B7B (LEG 1-3 AFAS-1 B LEG 2-4)

	CRS	<p>First Priority Operator Actions 1, 1.1, & 1.2</p> <p>IF the AFAS is valid, THEN perform the following:</p> <p>Ensure that the reactor is tripped.</p> <p>GO TO 40EP-9EO01, Standard Post Trip Actions.</p> <p>Expected Action: N/A. AFAS is <i>not</i> valid.</p>
	BOP	<p>First Priority Operator Action 2</p> <p>IF the AFAS is NOT valid, THEN GO TO 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations.</p> <p>Expected Action: BOP prompts CRS to implement 40AO-9ZZ17.</p>

Examiner Note: After blow down constants have been updated, **OR** as deemed appropriate by the Lead Examiner, may proceed to the next event.

Op-Test No.: **2015 NRC** Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. Operators are alerted by the following:</p> <p>Annunciators</p> <ul style="list-style-type: none"> • 7B04A (COND SHELL VAC LO) • 7A01A (AIR REM SYS TRBL) • 6A16D (COND VAC LO) <p>Alarm response procedure 40AL-9RK6A and 40AL-9RK7B may be referenced for operator response.</p> <p>Examiner Note: The severity of loss of vacuum does not allow the crew to take many substantive actions from the ARPs or AOPs. The CRS/BOP will likely direct an AO to check the expansion joints and vacuum breakers. By the time an AO would normally report back, the Crew will likely be discussing inserting a manual Reactor trip. See Page 38 for Standard Post Trip Actions.</p>

40AO-9ZZ07, Loss of Condenser Vacuum

	CRS	Evaluates Diagnostic flowchart. Expected flowpath is Main Gen Sync'd to grid? → YES → Cond press >7" HgA & rising? → NO → Mn Turb load > 410 MW? → YES → GO TO Section 4.0, Event Strategy/Power Reduction
	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 2</p> <p>Check for ANY of the following possible causes of the loss of vacuum:</p> <ul style="list-style-type: none"> • Loss of Cooling Tower Fans • Circ Water Pump trip <p>Expected Action: On B07, BOP observes that all lights are red on the COOLING TOWER FAN CONTROL panel and also observes that all 4 Circ Water Pumps are running.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>All Unit 1 condenser expansion joints are normally kept dry.</p> <p style="text-align: center;">NOTE</p> <p>Unit 2 condenser A and B expansion joints are normally kept dry.</p> <p style="text-align: center;">NOTE</p> <p>Unit 3 condenser C expansion joint is normally kept dry</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 3</p> <p>Direct an operator to perform the following:</p> <ol style="list-style-type: none">Ensure water seal on ALL of the following: (REFER TO 40OP-9AR01, Condenser Air Removal, for Condenser Expansion Joints or Vacuum Breakers and 40OP-9GS01, Turbine Steam Seal and Drain (GS), for Gland Exhaust Packing Exhauster.)<ul style="list-style-type: none">Unit 2: Condenser C Expansion JointUnit 3: Condenser A and B Expansion JointsVacuum BreakersSteam Packing Exhauster Condenser drainCheck for ANY of the following possible causes of the loss of vacuum:<ul style="list-style-type: none">Air in leakage at Condenser Expansion JointsAir in leakage at Condenser ShellsImproper operation of the Air Removal PumpsImproper operation of the Gland Seal RegulatorsCondensate Demin valve misalignment to TDS sumpClogged Circ Water Pump intake screens <p>Expected Action: BOP directs an AO to check these items.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 3 (continued)</p> <p>c. Unit 1 only:</p> <p>IF leakage is suspected at any Condenser Expansion Joint(s), THEN establish water seal on affected expansion joint(s) using ANY of the following:</p> <ul style="list-style-type: none"> • CDN-V207, A Condenser Expansion Joint Seal Water Supply Isol Valve • CDN-V208, B Condenser Expansion Joint Seal Water Supply Isol Valve • CDN-V081, C Condenser Expansion Joint Seal Water Supply Isol Valve <p>Expected Action: BOP directs an AO to establish a water seal as necessary.</p>
	BOP	<p>Instruction 4</p> <p>Ensure that all available Air Removal Pumps are in operation.</p> <p>Expected Action: BOP observes that all 4 Condenser Air Removal Pumps are running and that UV-14, UV-15, and UV-16 are open.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>The suction valves for the "D" Air Removal Pump may be opened even if the "D" pump is not running.</p>
	BOP	<p>Instruction 5</p> <p>IF vacuum is degrading in one condenser shell, THEN place ALL of the Air Removal Pump D Condenser Suction Valves, in the "OPEN" position:</p> <ul style="list-style-type: none"> • ARN-UV-14 (Condenser A) • ARN-UV-15 (Condenser B) • ARN-UV-16 (Condenser C) <p>Expected Action: BOP observes that all 3 valves are already open.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>IF the Condenser vacuum continues to degrade, THEN REFER TO ANY of the following to determine if further action is required: [Ref: 5.5]</p> <ul style="list-style-type: none">• Section 3.0, Diagnostic• Appendix F, Reactor Trip Criteria <p>Expected Action: CRS directs the crew to initiate a Reactor trip. CRS implements 40EP-9EO01, Standard Post Trip Actions</p>

40EP-9EO01, Standard Post Trip Actions

	CRS	<p>Instruction 1</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>Determine that Reactivity Control acceptance criteria are met by the following:</p> <ul style="list-style-type: none">a. Check that reactor power is droppingb. Check that start-up rate is negativec. Check that ALL full strength CEAs are inserted <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 3</p> <p>Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that the Main Turbine is tripped Check that the Main Generator output breakers are open Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> All vital and non-vital AC buses are powered All vital and non vital DC buses are powered <p>Expected Action: RO reports all vital and non-vital AC & DC buses are powered from off-site. RO also reports that DGs are running, with spray pond support. BOP reports Main Turbine has tripped and Main Generator output breakers are open.</p>
	CRS	<p>Instruction 4</p> <p>Determine that RCS Inventory Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> 10-65% Trending as expected to 33-53% Check that the RCS is 24°F or more subcooled Check that BOTH of the following are in service to all RCPs <ul style="list-style-type: none"> Seal injection Nuclear Cooling Water <p>Expected Action: RO observes PZR level is trending to 33-53% and subcooling is greater than 24°F. Reports that 2 charging pumps are running, letdown is in service, and components are in AUTO. RO observes seal injection and NCW is in service to all RCPs.</p>

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>7 & 8</u>		
Event Description: Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure		
Time	Position	Applicant's Actions or Behavior
	CRS/RO EVENT 8	<p>Instruction 5</p> <p>Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> • Pressurizer pressure is 1837-2285 psia • Pressurizer pressure is trending as expected to 2225-2275 psia <p>Expected Action: RO observes that Pressurizer pressure is <i>not</i> trending to 2225-2275 psia.</p>
	RO EVENT 8	<p>Contingency Action 5.1</p> <p>Restore and maintain pressurizer pressure to the normal control band by ANY of the following:</p> <ul style="list-style-type: none"> • Operation of PPCS • Manual operation of pressurizer heaters and spray valves <p>Expected Action: RO takes manual control of RCN-PIC-100, Pressurizer Master Control by depressing the MAN button and moving the slider to the left to lower the controller output and close the main spray valves.</p>
CRITICAL TASK – Close the Pressurizer Spray Valves before a SIAS occurs at 1837 psig.		SAT / UNSAT

Op-Test No.: <u>2015 NRC</u> Scenario No.: <u>1</u> Event No.: <u>7 & 8</u>		
Event Description: Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure		
Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 6</p> <p>Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>Expected Action: RO reports that all RCPs are operating, ΔT is less than 10°F, and that subcooling is greater than 24°F.</p>
	CRS/BOP	<p>Instruction 7</p> <p>Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> a. Check that at least one Steam Generator meets BOTH of the following conditions: <ul style="list-style-type: none"> • Level is 35% WR or more • Feedwater is restoring or maintaining level 45-60% NR b. Check that T_c is 560-570°F c. Check that steam generator pressure is 1140-1200 psia <p>Expected Action: BOP reports that both SGs WR level is greater than 35%, AFN is restoring levels to 45-60% NR, and that the SBCS is controlling in AUTO, T_c is 560-570°F and SG pressures are 1140-1200 psia.</p> <p>Approximately 5 minutes after the trip, vacuum will degrade enough to cause the 'A' MFP to trip. The BOP will have to start AFN-P01 by opening both suction valves using CTA-HS-1 and CTA-HS-4. After these valves are open AFN-P01 can be started using AFN-HS-11. The BOP operator can then use either the Downcomer flow control valves or the Downcomer bypass valves to feed the SGs.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 8</p> <p>Determine that Containment Isolation acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that Containment pressure is <2.5 psig REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> No valid containment area radiation monitor alarms or unexplained rise in activity No valid steam plant activity monitor alarms or unexplained rise in activity <p>Expected Action: RO/BOP observes that Containment pressure is less than 2.5 psig. BOP reports no unexplained rise in activity on containment or steam plant monitors.</p>
	RO	<p>Instruction 9</p> <p>Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that containment temperature is <117°F Check that containment pressure is <2.5 psig <p>Expected Action: RO reports that Containment temperature is less than 117 °F and that Containment pressure is less than 2.5 psig.</p>
	CRS	<p>Instruction 10</p> <p>IF all acceptance criteria are met, AND no contingency actions were performed, THEN GO TO 40EP-9EO02, Reactor Trip.</p> <p>Expected Action: CRS determines that some contingency actions were taken.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 11</p> <p>IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event.</p> <p>Expected Action: CRS determines that there is a Reactor trip in progress and then transitions to 40EP-9EO02, Reactor Trip.</p>

40EP-9EO02, Reactor Trip

	CRS	<p>Instruction 1</p> <p>Confirm the diagnosis of an uncomplicated Reactor Trip by performing the following:</p> <ol style="list-style-type: none"> Check that the Safety Function Status Check acceptance criteria are satisfied. Ensure that the Steam Generator Sample Valves are open. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. <p>Expected Action: CRS prompts STA to perform the Safety Function Status Check. BOP opens the 12 sample valves on B07 (SG SAMPLE ISOL area). Chemistry is notified.</p>
	CRS	<p>Instruction 2</p> <p>Ensure the event is being classified.</p> <p>Expected Action: CRS prompts the SM to classify the event.</p>
	CRS	<p>Instruction 3</p> <p>Open the placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 4</p> <p>Check that pressurizer level meets BOTH of the following conditions:</p> <ul style="list-style-type: none"> • 10 - 65% • Trending to 33 - 53% <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 5</p> <p>IF Main Spray is being used with fewer than four RCPs running, OR Auxiliary Spray is being used, THEN PERFORM Appendix 6, Spray Valve Actuation Data Sheet.</p> <p>Expected Action: N/A. All 4 RCPs are running.</p>
	RO	<p>Instruction 6</p> <p>Check that pressurizer pressure meets BOTH of the following conditions:</p> <ul style="list-style-type: none"> • Pressurizer pressure is 1837 - 2285 psia • Pressurizer pressure is trending as expected to 2225 - 2275 psia <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 7</p> <p>Check that SBCS is maintaining Tc 560 - 570°F.</p> <p>Expected Action: BOP uses ADVs due to loss of vacuum.</p>
	CRS	<p>Instruction 8</p> <p>IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.</p> <p>Expected Action: As directed. BOP is using ADVs due to loss of vacuum.</p>

Op-Test No.: **2015 NRC** Scenario No.: 1 Event No.: 7 & 8

Event Description: **Loss of Condenser Vacuum (Trip Initiator) & RCN-PIC-100, Pressurizer Master Controller Failure**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 9.</p> <p>Check that at least one Steam Generator has level being maintained or restored to 45 - 60% NR.</p> <p>Expected Action: BOP reports that AFN is restoring levels to 45-60% NR.</p>

Examiner Note: After BOP reports than AFN is controlling SG levels, **OR** as deemed appropriate by the Lead Examiner, may proceed to the next event.

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. Operators are alerted by the following:</p> <p>Annunciators</p> <ul style="list-style-type: none">• 6A07C, NON-SAFETY AFW PUMP OVLD/TRIP• 6A07D, NON-SAFETY AFW PMP DSCH PRESS LO <p>Alarm response procedure 40AL-9RK6A is referenced for operator response.</p>

40AL-9RK6A, 6A07C (NON-SAFETY AFW PUMP OVLD/TRIP)

	BOP	<p>NOTE</p> <p>The Non-Safety Aux Feedwater pump will trip at 240 amps.</p>
	BOP	<p>First Priority Operator Action 1</p> <p>IF an emergency situation exists, AND the following conditions are satisfied per 40DP-0OP02 (RELAY RESETTING)</p> <ul style="list-style-type: none">• PBA-S03 is being supplied by the Diesel Generator• Continued operation of AFN-P01 is required.• The Control Room Supervisor/Shift Manager has authorized the 786 Lockout Relay to be reset from the Control Room. <p>THEN attempt a restart of AFN-P01 by placing switch AFN-HS-11 in the STOP position to reset the 786 Lockout Relay and then go to START.</p> <p>Expected Action: If CRS authorizes, BOP takes AFN-HS-11 to STOP, then START.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	First Priority Operator Action 2 IF the pump fails to start or trips again on overload, THEN maintain Steam Generator level by using AFA-P01 or AFB-P01 Aux Feedwater Pump in accordance with 40OP-9AF01.

40EP-9EO06, Loss of All Feedwater

	CRS	Determines that there is a Loss of All Feedwater in progress and MAY use Section 4.0, Diagnostic Actions to diagnose. CRS ENTERS 40EP-9EO06, Loss of All Feedwater. Examiner Note: Based on existing conditions, the CRS may elect to directly enter 40EP-9EO09, Functional Recovery, if he/she recognizes that the only option for restoring feedwater is to depressurize an SG and establish feedwater from the Condensate Pumps. In this case, see Page 47.
		Instruction 1 Confirm the diagnosis of a Loss of All Feedwater by performing the following: <ul style="list-style-type: none">a. Check that the Safety Function Status Check acceptance criteria are satisfied.b. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. Expected Action: CRS prompts STA to perform the Safety Function Status Check. Chemistry is notified.
		Instruction 2 Ensure the event is being classified. Expected Action: CRS prompts SM to classify the event.

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 9 </u>		
Event Description: 86 Lockout of AFN-P01, Loss of All Feedwater		
Time	Position	Applicant's Actions or Behavior
		Instruction 3 Open the Placekeeper and enter the EOP Entry Time. Expected Action: As directed.
		Instruction 4 Stop all RCPs. Expected Action: RO trips all 4 RCPs.
		Instruction 5 Conserve Steam Generator inventory by performing the following: <ul style="list-style-type: none"> a. Close the Blowdown Containment Isolation Valves. b. Close the Steam Generator Sample Valves. Expected Action: BOP closes the following valves on B07: <ul style="list-style-type: none"> • UV-500P, SG 1 COMM DNSTR ISOL VLV (SGA-HS-500P) • UV-500Q, SG 1 COMM DNSTR ISOL VLV (SGB-HS-500Q) • UV-500R, SG 2 COMM DNSTR ISOL VLV (SGB-HS-500R) • UV-500S, SG 2 COMM DNSTR ISOL VLV (SGA-HS-500P) BOP closes the 12 sample valves on B07 (SG SAMPLE ISOL area).

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 6</p> <p>Restore feed to at least one Steam Generator using ANY of the following:</p> <p>AUXILARY FEEDWATER</p> <ul style="list-style-type: none"> • Appendix 38, Resetting AFA-P01 • Appendix 39, Local Operation of AFB-P01 • Appendix 40, Local Operation of AFA-P01 Using Main Steam • Appendix 41, Local Operation of AFN-P01 • Appendix 42, Aligning Aux Feedwater Pumps Suction to RMWT <p>MAIN FEEDWATER</p> <ul style="list-style-type: none"> • Appendix 43, Restarting MFPs <p>Expected Action: N/A. None of these appendices will work since all 3 AFW pumps are OOS or have failed and MFPs A & B have tripped on low vacuum.</p>
		<p>Contingency Action 6.1</p> <p>IF Auxiliary or Main Feedwater can NOT be restored, THEN GO TO 40EP-9EO09, Functional Recovery to perform ANY of the following:</p> <ul style="list-style-type: none"> • Cross tie electrical buses to restore an Auxiliary Feedwater Pump • Align a Condensate Pump to feed the Steam Generator(s) <p>Expected Action: CRS transitions to 40EP-9EO09.</p>

40EP-9EO09, Functional Recovery Procedure

		<p>NOTE</p> <p>Harsh conditions are containment temperature >170°F or containment radiation level greater than 10⁸ mR/hr. Harsh containment values are placed in brackets next to the normal setpoint or band.</p> <p>(Harsh conditions will not exist for this scenario)</p>
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Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 9 </u>		
Event Description: 86 Lockout of AFN-P01, Loss of All Feedwater		
Time	Position	Applicant's Actions or Behavior
		Instruction 1 Ensure the event is being classified. Expected Action: CRS prompts SM to classify the event.
	CRS	Instruction 2 Enter the EOP Entry Time. Expected Action: As directed.
		Instruction 3 IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following: a. Ensure ONE RCP is stopped in each loop. b. IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped. Expected Action: N/A. RCPs already secured.
	CRS	Instruction 4 IF any RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied. Expected Action: N/A. RCPs already secured.
	CRS	Instruction 5 Perform the following: a. Ensure that the Steam Generator Sample Valves are open. b. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. Expected Action: BOP overrides and opens Steam Generator Sample Valves (located at B07, two-handed operation may be utilized) (SG SAMPLE ISOL area). Chemistry informed.

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>Place the Hydrogen Analyzers in service.</p> <p>Expected Action: RO places Hydrogen Analyzers in service At B02:</p> <p>Opens isolation valves using:</p> <ul style="list-style-type: none"> • HPA-HS-1, HPA-HS-7 (Train A) • HPB-HS-2, HPB-HS-8 (Train B) <p>Places the following to ANALYZE:</p> <ul style="list-style-type: none"> • HPA-HS-9A • HPB-HS-10A
	CRS	<p>Instruction 7</p> <p>Identify the success path(s) to be used to satisfy each safety function. REFER TO BOTH of the following:</p> <ul style="list-style-type: none"> • Section 4.0, Safety Function Tracking • Section 6.0, Resource Assessment Trees <p>Expected Action: CRS determines Success Path for this scenario is HR-1; SG with no SI.</p> <p>Examiner Note: Step 7 and Step 8 are annotated with an asterisk (*) meaning these steps may be brought forward and performed at any time</p>
	CRS	<p>Instruction 8</p> <p>PERFORM Section 5.0, Safety Function Status Check for those success paths in use.</p> <p>Expected Action: CRS directs STA to perform Safety Function Status Check for HR-1; SG with no SI.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 9</p> <p>Perform ALL of the following in the order listed:</p> <ul style="list-style-type: none"> • Success path instructions for those safety functions that are in jeopardy • Success path instructions for those safety functions that are challenged • Success path instructions for all other non-shaded success paths in use <p>Expected Action: CRS transitions to HR-1; SG with no SI.</p>

Success Path: HR-1; SG with no SI

	CRS	<p>Instruction 1</p> <p>Open the placekeeper.</p> <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 2</p> <p>IF ALL of the following conditions exist:</p> <ul style="list-style-type: none"> • A Security Delta-10 has been declared • A blackout has occurred • A loss of PKA-M41 <p>THEN direct the operator at AFA-P01 to perform Appendix 112, Manual Operation of AFA-P01 During a Security Event.</p> <p>Expected Action: N/A. A Security Event is <i>not</i> in progress.</p>

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 9 </u>		
Event Description: 86 Lockout of AFN-P01, Loss of All Feedwater		
Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 3</p> <p>IF ALL of the following conditions exist:</p> <ul style="list-style-type: none"> • A Blackout has occurred • At least one vital 4.16 kV bus has NOT been restored • Subcooling is less than 50°F [50°F] <p>THEN perform the following:...</p> <p>Expected Action: N/A. A Blackout has <i>not</i> occurred.</p>
	CREW	<p>Instruction 4</p> <p>IF at least one vital 4.16 kV bus is energized, THEN perform the following:</p> <ol style="list-style-type: none"> a. PERFORM Appendix 5, RCS and PZR Cooldown Log. b. Cooldown to SDC entry conditions using the SBCS. c. Ensure all RCS inventory makeup is from a borated source throughout the cooldown. <p>Expected Action: BOP initiates Appendix 5. Instruction 4.b is N/A because of loss of vacuum. RO prepares to borate.</p>
	BOP	<p>Contingency Action 4.b.1</p> <p>IF SBCS to the condenser is NOT available, THEN cooldown using ANY of the following:</p> <ul style="list-style-type: none"> • ADV operation from the Control Room • Appendix 116, Operation of SBCS Valves 1007 and 1008 • Appendix 18, Local ADV Operation <p>Expected Action: BOP uses ADVs by manipulating the manual thumbwheel to control the cooldown</p>
	CRS	<p>Instruction 5</p> <p>IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.</p> <p>Expected Action: As directed.</p>

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 9 </u>		
Event Description: 86 Lockout of AFN-P01, Loss of All Feedwater		
Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 6</p> <p>IF RCPs are NOT operating, THEN check natural circulation flow in at least one loop by ALL of the following:</p> <ul style="list-style-type: none"> • Loop ΔT is less than 65°F [65°F] • Hot and cold leg temperatures are constant or lowering • RCS is 24°F [44°F] or more subcooled using CET Subcooling • Less than a 30°F [30°F] ΔT between Th RTDs and the maximum quadrant CET temperature (QSPDS, pages 211 and 213) <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 7</p> <p>IF a MSIS or SIAS has NOT actuated, AND a controlled cooldown is in progress, THEN lower or bypass the automatic initiation setpoint(s) as the cooldown and depressurization proceed for ANY of the following:</p> <ul style="list-style-type: none"> • MSIS • SIAS <p>Expected Action: BOP periodically lowers the setpoints by depressing all 4 of the following pushbuttons:</p> <ul style="list-style-type: none"> • LO PZR PRESS SETPOINT RESET • LO SG PRESS SETPOINT RESET
	BOP	<p>Instruction 8</p> <p>IF CW flow to the Main Condenser is lost, THEN actuate MSIS.</p> <p>Expected Action: N/A CW is <i>not</i> lost.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 9</p> <p>IF a SGTR has occurred as indicated by ANY of the following:</p> <ul style="list-style-type: none"> • Steam generator activities • Main steam line activities • Steam Generator level change without feed • Steam Generator blow down activities • One Steam Generator level rising faster than the other with feed and steaming rates similar in both Steam Generators • Radiation and contamination surveys of SG release points indicate abnormal activity • Feed flow mismatch between Steam Generators • Steam flow-feed flow mismatch in a Steam Generator prior to the trip • Safety Injection flow is needed to maintain pressurizer level after throttle criteria are met <p>THEN determine the most affected Steam Generator.</p> <p>Expected Action: N/A. SGTR has not occurred.</p>
	CRS	<p>Instruction 10</p> <p>IF a SGTR has NOT occurred, THEN GO TO step 26.</p> <p>Expected Action: CRS goes to Step 26.</p>
	CRS	<p>Instruction 26</p> <p>IF an ESD has occurred as indicated by ANY of the following:</p> <ul style="list-style-type: none"> • High steam flow from Steam Generator • Lowering steam generator pressure • Lowering steam generator level • Lowering RCS cold leg temperature • Lowering Pressurizer pressure • Lowering Pressurizer level <p>THEN determine the most affected Steam Generator.</p> <p>Expected Action: N/A. ESD has not occurred.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 27</p> <p>IF there are no indications of an ESD, THEN GO TO step 32.</p> <p>Expected Action: CRS goes to Step 32.</p>
	CRS	<p>Instruction 32</p> <p>Determine whether a LOAF has occurred by ANY of the following:</p> <ul style="list-style-type: none"> • Lowering Steam Generator levels • "LO SG 1 LVL CH TRIP" (5A09C) / "LO SG 2 LVL CH TRIP (5A10C) • "FWPT A TRIP CKT ENERGIZED" (6A03B) / FWPT B TRIP CKT ENERGIZED" (6A09B) • Low main feedwater pump flow (possible high flow for a feedwater line break) • Low main feedwater pump suction pressure • No auxiliary feedwater to both Steam Generators <p>Expected Action: CRS determines a LOAF is in progress.</p>
	CRS	<p>Instruction 33</p> <p>IF there are no indications of a LOAF, THEN GO TO step 38.</p> <p>Expected Action: N/A. CRS determines a LOAF <i>is</i> in progress.</p>
	CRS	<p>Instruction 34</p> <p>Stop all RCPs.</p> <p>Expected Action: N/A. RCPs already secured.</p> <p>Examiner Note: If the CRS previously entered 40EP-9EO06, Loss of All Feedwater, then RCPs would already be secured at this Step. Otherwise, RO secures RCP here.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 35</p> <p>Conserve steam generator inventory by performing the following:</p> <ul style="list-style-type: none"> a. Close the Blowdown Containment Isolation Valves. b. Close the Steam Generator Sample Valves. <p>Expected Action: Blowdown Containment Isolation Valves are already closed. BOP closes the 12 sample valves on B07 (SG SAMPLE ISOL area).</p>
	CRS	<p>Instruction 36</p> <p>Restore feed to at least one Steam Generator by performing ANY of the following:</p> <p>Auxiliary Feedwater</p> <ul style="list-style-type: none"> • Appendix 38, Resetting AFA-P01 • Appendix 39, Local Operation of AFB-P01 • Appendix 40, Local Operation of AFA-P01 Using Main Steam • Appendix 41, Local Operation of AFN-P01 • Appendix 42, Aligning Essential Aux Feedwater Pumps Suction to RMWT • Appendix 108, Local Operation of AFA-P01 Using Auxiliary Steam <p>Main Feedwater</p> <ul style="list-style-type: none"> • Appendix 43, Restarting MFPs <p>Expected Action: N/A. None of these appendices will work since all 3 AFW pumps are OOS or have failed and MFPs A & B have tripped on low vacuum.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Contingency Action 36.1</p> <p>IF Auxiliary or Main Feedwater can NOT be restored, THEN PERFORM ANY of the following:</p> <ul style="list-style-type: none"> • Appendix 44, Feeding with the Condensate Pumps • Appendix 45, Feeding Unit 1 SGs with Unit 2 Condensate Pumps • Appendix 46, Feeding Unit 1 SGs with Unit 3 Condensate Pumps • Appendix 47, Feeding Unit 2 SGs with Unit 1 Condensate Pumps • Appendix 48, Feeding Unit 2 SGs with Unit 3 Condensate Pumps • Appendix 49, Feeding Unit 3 SGs with Unit 2 Condensate Pumps • Appendix 50, Feeding Unit 3 SGs with Unit 1 Condensate Pumps <p>Expected Action: CRS directs BOP to perform Appendix 44.</p>

40EP-9EO10, Standard Appendices, Standard Appendix 44, Feeding with the Condensate Pumps

	CRS	<p style="text-align: center;">NOTE</p> <p>KEY OPERATOR ACTION - Perfect performance of this Appendix will significantly reduce plant risk.</p> <p>Examiner Note:</p> <p>This Appendix directly relates to Key Operator Action #7 (1.5%) of the PRA: Depressurize Steam Generators and Supply Alternate Feedwater.</p>
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Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 1</p> <p>Determine which Steam Generator will be fed by the Condensate System by considering ALL of the following:</p> <ul style="list-style-type: none">• Steam Generator pressure (lowest pressure)• Steam Generator wide range level (lowest level)• Ability to be fed from the Condensate System <p>Expected Action: CRS selects one SG to feed.</p>
	BOP	<p>Instruction 2.a</p> <p>IF Steam Generator #1 was selected, THEN perform the following:</p> <p>Ensure BOTH SG 1 Downcomer Isolation Valves, are open:</p> <ul style="list-style-type: none">• SGA-UV-172• SGB-UV-130 <p>Expected Action: If SG #1 selected, BOP closes:</p> <ul style="list-style-type: none">• SGA-UV-172 using SGA-HS-172• SGB-UV-130 using SGB-HS-130 <p>Examiner Note: If SG #2 is selected, see Page 59.</p>
	BOP	<p>Instruction 2.b</p> <p>Place SG 1 Downcomer Control Valve in "MANUAL" and close SGN-FV-1113.</p> <p>Expected Action: If SG #1 selected, BOP closes SGN-FV-1113 using SGN-FIK-1113. Depresses the SEL button twice to advance the white indicating light to above the 3rd column (Output) on the controller. Then depresses the "DOWN" arrow to close the valve.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instructions 2.c & 2.d</p> <p>Ensure SGN-HV-1142, SG 1 Downcomer Block Valve, is open.</p> <p>Ensure SGN-HV-1143, SG 1 Downcomer Bypass Valve, is closed</p> <p>Expected Action: BOP checks valve positions on SGN-HS-1142 and SGN-HS-1143. Observes that HV-1142 is open and HV-1143 is closed.</p>
	BOP	<p>Instruction 2.e</p> <p>IF a MSIS has NOT occurred, THEN fast close ALL of the Economizer FWIVs:</p> <p>SG 1</p> <ul style="list-style-type: none"> • SGA-UV-174 • SGB-UV-132 <p>SG 2</p> <ul style="list-style-type: none"> • SGA-UV-177 • SGB-UV-137 <p>Expected Action: BOP depresses the following:</p> <p>SG 1</p> <ul style="list-style-type: none"> • SGA-HS-174C, ECONO FWIV FAST CLOSE UV-174 • SGB-HS-132C, ECONO FWIV FAST CLOSE UV-132 <p>SG 2</p> <ul style="list-style-type: none"> • SGA-HS-177, ECONO FWIV FAST CLOSE UV-177 • SGB-HS-137, ECONO FWIV FAST CLOSE UV-137
	CRS	<p>Instruction 2.f</p> <p>IF using the Downcomer Bypass Valve to feed Steam Generator 1, THEN ensure SGN-HV-1142, SG 1 Downcomer Block Valve, is closed</p> <p>Expected Action: N/A. Bypass valve is not used.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 2.g</p> <p>Ensure BOTH Steam Generator 2 Downcomer valves are closed:</p> <ul style="list-style-type: none"> • SGN-HV-1144, SG 2 Downcomer Block Valve • SGN-HV-1145, SG 2 Downcomer Bypass Valve <p>Expected Action: BOP checks valve positions on SGN-HS-1144 and SGN-HS-1145. Observes that both valves are closed.</p>
	CRS	<p>Instruction 2.h</p> <p>GO TO step 4</p> <p>Expected Action: If SG #1 was selected, CRS goes to Step 4.</p>
	BOP	<p>Instruction 3.a</p> <p>IF Steam Generator #2 was selected, THEN perform the following:</p> <p>Ensure BOTH SG 2 Downcomer Isolation Valves, are open:</p> <ul style="list-style-type: none"> • SGA-UV-175 • SGB-UV-135 <p>Expected Action: If SG #2selected, BOP closes:</p> <ul style="list-style-type: none"> • SGA-UV-175 using SGA-HS-175 • SGB-UV-135 using SGB-HS-135
	BOP	<p>Instruction 3.b</p> <p>Place SG 2 Downcomer Control Valve in "MANUAL" and close SGN-FV-1123.</p> <p>Expected Action: If SG #2 selected, BOP closes SGN-FV-1123 using SGN-FIK-1123. Depresses the SEL button twice to advance the white indicating light to above the 3rd column (Output) on the controller. Then depresses the "DOWN" arrow to close the valve.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instructions 3.c & 3.d</p> <p>Ensure SGN-HV-1144, SG 2 Downcomer Block Valve, is open.</p> <p>Ensure SGN-HV-1145, SG 2 Downcomer Bypass Valve, is closed</p> <p>Expected Action: BOP checks valve positions on SGN-HS-1144 and SGN-HS-1145. Observes that HV-1144 is open and HV-1145 is closed.</p>
	BOP	<p>Instruction 3.e</p> <p>IF a MSIS has NOT occurred, THEN fast close ALL of the Economizer FWIVs:</p> <p>SG 1</p> <ul style="list-style-type: none"> • SGA-UV-174 • SGB-UV-132 <p>SG 2</p> <ul style="list-style-type: none"> • SGA-UV-177 • SGB-UV-137 <p>Expected Action: BOP depresses the following:</p> <p>SG 1</p> <ul style="list-style-type: none"> • SGA-HS-174C, ECONO FWIV FAST CLOSE UV-174 • SGB-HS-132C, ECONO FWIV FAST CLOSE UV-132 <p>SG 2</p> <ul style="list-style-type: none"> • SGA-HS-177, ECONO FWIV FAST CLOSE UV-177 • SGB-HS-137, ECONO FWIV FAST CLOSE UV-137
	CRS	<p>Instruction 3.f</p> <p>IF using the Downcomer Bypass Valve to feed Steam Generator 2, THEN ensure SGN-HV-1144, SG 2 Downcomer Block Valve, is closed</p> <p>Expected Action: N/A. Bypass valve is not used.</p>

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 9 </u>		
Event Description: 86 Lockout of AFN-P01, Loss of All Feedwater		
Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 3.g</p> <p>Ensure BOTH Steam Generator 1 Downcomer valves are closed:</p> <ul style="list-style-type: none"> • SGN-HV-1142, SG 1 Downcomer Block Valve • SGN-HV-1143, SG 1 Downcomer Bypass Valve <p>Expected Action: BOP checks valve positions on SGN-HS-1142 and SGN-HS-1143. Observes that both valves are closed.</p>
	BOP	<p>Instruction 4</p> <p>Ensure at least ONE set of the following High Pressure Feedwater Heater isolation valves are open:</p> <p>HP Heater train A</p> <ul style="list-style-type: none"> • FWN-HV-73 • FWN-HV-101 <p>HP Heater train B</p> <ul style="list-style-type: none"> • FWN-HV-74 • FWN-HV-102 <p>Expected Action: BOP checks for red lights on at least 1 set of the following handswitches:</p> <p>HP Heater train A</p> <ul style="list-style-type: none"> • FWN-HS-73, TRAIN A INLET VLV • FWN-HS-101, TRAIN A OUTLET VLV <p>HP Heater train B</p> <ul style="list-style-type: none"> • FWN-HS-74, TRAIN B INLET VLV • FWN-HS-102, TRAIN B OUTLET VLV
	CRS	<p>Instruction 5</p> <p>Ensure BOTH of the FWPTs are tripped by using the following:</p> <ul style="list-style-type: none"> • FTN-HS-51 for FWPT A • FTN-HS-52 for FWPT B <p>Expected Action: N/A. Both MFPs already tripped.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6</p> <p>Check BOTH FWPT Miniflow Valves are closed from the Control Room:</p> <ul style="list-style-type: none">• FWN-FV-1• FWN-FV-2 <p>Expected Action: BOP checks for a green light on the following:</p> <ul style="list-style-type: none">• FWN-ZSH-ZSL-1, FW PUMP MINI-FLOW VLV POSITION FV-1• FWN-ZSH-ZSL-2, FW PUMP MINI-FLOW VLV POSITION FV-2
	BOP	<p>Instruction 7</p> <p>Ensure at least ONE of the FWPT Discharge Valves are open from the Control Room:</p> <ul style="list-style-type: none">• FWN-HV-31• FWN-HV-32 <p>Expected Action: BOP checks for red lights on at least 1 of the following handswitches:</p> <ul style="list-style-type: none">• FWN-HS-31, FWPT A DISCHARGE VLV• FWN-HS-32, FWPT B DISCHARGE VLV

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 8</p> <p>Ensure at least ONE set of the following Low Pressure Feedwater Heater isolation valves are open:</p> <p>LP Heater train A</p> <ul style="list-style-type: none"> • CDN-UV-214A • CDN-UV-214B <p>LP Heater train B</p> <ul style="list-style-type: none"> • CDN-UV-215A • CDN-UV-215B <p>LP Heater train C</p> <ul style="list-style-type: none"> • CDN-UV-216A • CDN-UV-216B <p>Expected Action: BOP checks for red lights on at least 1 of the following handswitches:</p> <ul style="list-style-type: none"> • CDN-HS-214A/214B, LP HEATER TRAIN A ISOL VLVS • CDN- HS-215A/215B, LP HEATER TRAIN B ISOL VLVS • CDN- HS-216A/216B, LP HEATER TRAIN C ISOL VLVS
	CRS	<p>Instruction 9</p> <p>IF ANY Condensate Pumps are running, THEN GO TO step 11.</p> <p>Expected Action: Since Condensate Pumps <i>are</i> running, CRS goes to Step 11.</p>
	RO	<p>Instruction 11</p> <p>IF RCS makeup is required, THEN perform the following:</p> <ol style="list-style-type: none"> a. Start all available charging pumps. b. Minimize letdown flow. c. Start one HPSI Pump. d. Open at least one HPSI Injection Valve. <p>Expected Action: CRS/BOP briefs RO on these conditions.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 12</p> <p>IF a MSIS or SIAS has NOT initiated, THEN lower or bypass the automatic initiation setpoint(s) for MSIS or SIAS as the cooldown and depressurization continues.</p> <p>Expected Action: BOP periodically lowers the setpoints by depressing all 4 of the following pushbuttons:</p> <ul style="list-style-type: none"> • LO PZR PRESS SETPOINT RESET • LO SG PRESS SETPOINT RESET
	BOP	<p>Instruction 13</p> <p>PERFORM Appendix 5, RCS and Pressurizer Cooldown Log.</p> <p>Expected Action: This Appendix was already initiated.</p>
	BOP	<p>Instruction 14.a</p> <p>IF Steam Generator #1 was selected, THEN perform the following:</p> <p>Fast close Steam Generator #1 MSIVs by using the following pushbuttons:</p> <ul style="list-style-type: none"> • SGA-HS-251 • SGB-HS-253 <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 14.b</p> <p>Lower Steam Generator #1 pressure below the condensate pump discharge pressure using SG 1 ADVs</p> <p>Expected Action: BOP uses the manual thumbwheel on the following controllers to open one or both of the SG 1 ADVs:</p> <ul style="list-style-type: none"> • SGA-HIC-184A, SG 1 LINE 1 VALVE CONTROL • SGB-HIC-178A, SG 1 LINE 2 VALVE CONTROL

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	Instruction 14.c Maintain Steam Generator #2 pressure less than 1200 psia. Expected Action: BOP uses the manual thumbwheel on the controllers to open one or both of the SG 2 ADVs as necessary.
	CRS	Instruction 14.d IF Steam Generator #1 is dry, THEN maintain feed flow rate of less than or equal to 1000 gpm (0.5x10 ⁶ lbm/hr). Expected Action: N/A. SG #1 is <i>not</i> dry.
	BOP	Instruction 14.e IF using SG 1 Downcomer Control valve, THEN throttle open SGN-FV-1113. Expected Action: BOP opens SGN-FV-1113 using SGN-FIK-1113. Depresses the SEL button twice to advance the white indicating light to above the 3 rd column (Output) on the controller. Then depresses the "UP" arrow to open the valve.
	CRS	Instruction 14.f IF using SG 1 Downcomer Bypass valve, THEN throttle open SGN-HV-1143. Expected Action: N/A. Bypass valve is <i>not</i> used.
	CRS	Instruction 14.g GO TO step 16 Expected Action: CRS goes to Step 16.

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 15.a</p> <p>IF Steam Generator #2 was selected, THEN perform the following:</p> <p>Fast close Steam Generator #2 MSIVs by using the following pushbuttons:</p> <ul style="list-style-type: none"> • SGA-HS-250 • SGB-HS-252 <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 15.b</p> <p>Lower Steam Generator #2 pressure below the condensate pump discharge pressure using the ADVs</p> <p>Expected Action: BOP uses the manual thumbwheel on the following controllers to open one or both of the SG 2 ADVs:</p> <ul style="list-style-type: none"> • SGB-HIC-185A, SG 2 LINE 1 VALVE CONTROL • SGA-HIC-179A, SG 2 LINE 2 VALVE CONTROL
	BOP	<p>Instruction 15.c</p> <p>Maintain Steam Generator #1 pressure less than 1200 psia.</p> <p>Expected Action: BOP uses the manual thumbwheel on the controllers to open one or both of the SG 1 ADVs as necessary.</p>
	CRS	<p>Instruction 15.d</p> <p>IF Steam Generator #2 is dry, THEN maintain feed flow rate of less than or equal to 1000 gpm (0.5x10⁶ lbm/hr).</p> <p>Expected Action: N/A. SG #2 is <i>not</i> dry.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 15.e</p> <p>IF using Downcomer Control valve, THEN throttle open SGN-FV-1123.</p> <p>Expected Action: BOP opens SGN-FV-1123 using SGN-FIK-1123. Depresses the SEL button twice to advance the white indicating light to above the 3rd column (Output) on the controller. Then depresses the "UP" arrow to open the valve.</p>
	CRS	<p>Instruction 15.f</p> <p>IF using Downcomer Bypass valve, THEN throttle open SGN-HV-1145.</p> <p>Expected Action: N/A. Bypass valve is <i>not</i> used.</p>
	CREW	<p>Instruction 16</p> <p>Determine adequate feed flow by the following:</p> <ul style="list-style-type: none">• Indicated feed flow• Steam Generator level increasing• RCS temperature dropping or stable <p>Expected Action: Crew uses various indications to observe that feed flow is indicated, the selected SG levels are increasing, and RCS temperature is dropping.</p>
		<p>Instruction 17</p> <p>Restore selected Steam Generator level to between 45 - 60% NR.</p> <p>Expected Action: BOP observes that the selected SG NR level indicators are rising.</p>
		<p>Instruction 18</p> <p>Maintain selected Steam Generator pressure stable using the ADVs.</p> <p>Expected Action: BOP uses the manual thumbwheel on the controllers to manipulate one or both of the selected SG ADVs as necessary.</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 9

Event Description: **86 Lockout of AFN-P01, Loss of All Feedwater**

Time	Position	Applicant's Actions or Behavior	
		<p>Instruction 19</p> <p>IF a MSIS or SIAS has NOT been initiated, THEN lower or bypass the automatic initiation setpoint(s) for the unselected Steam Generator as the cooldown continues.</p> <p>Expected Action: BOP periodically lowers the setpoints by depressing all 4 of the following pushbuttons:</p> <ul style="list-style-type: none">• LO PZR PRESS SETPOINT RESET• LO SG PRESS SETPOINT RESET	
CRITICAL TASK – Establish feedwater to at least one SG from the Condensate Pumps prior to dryout of the selected/depressurized SG.			SAT / UNSAT
<p>Examiner Note: The scenario may be ended once the selected Steam Generator is being fed to at a rate that raises SG level, and/or lowers/stabilizes RCS temperature.</p>			

Facility: PVNGS Scenario No.: 2 (Rev. 1) Op-Test No.: NRC - 2015

Examiners: _____ Operators: _____

Initial Conditions:(100% power, MOC).

Turnover:See attached

Event No.	Malf. No.	Event Type*	Event Description
1	None	N RO/SRO	Remove Pressurizer from boron equalization
2	mfSI03C	C RO/SRO (TS)	SIT-1A gas leak [LCO 3.5.1 Condition B]
3	cmTRRX05RCNTT111Y_1	I BOP/SRO (AOP)	RCN-TT-111Y, Tcold Channel 1, fails LOW
4	mfCC02A	C RO/BOP/ SRO (AOP/TS)	Loss of Nuclear Cooling Water due to leak in discharge header [LCO 3.4.9, Condition A] [LCO 3.7.7, Condition A]
5	mfFW12A	M ALL	Feedwater Line Break Inside Containment (Economizer) (Trip Initiator)
6	mfRP07A mfRH01B	C RO/BOP/ SRO	Train "A" BOP ESFAS Sequencer fails on trip SIB-P03, CS Pump "B," trips after start (CRITICAL TASK: Start CS Pump "A" prior to exiting the SPTAs.)
7	cmCPFW07AFBP01_5	C BOP/SRO	AFB-P01, AF Pump "B," fails to automatically start (CRITICAL TASK:Start Auxiliary Feedwater Pump "B" or "N" and establish feed to the unaffected SG while notexceeding limits in Standard Appendix 2, Figures, or filling the Pressurizer to solid conditions.)
End point	N/A	ALL	Scenario may be terminated when SG #2 level is being maintained 45-60% NR, at the discretion of the Lead Examiner.

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

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)	2
4. Major transients (1-2)	1
5. EOPs entered/requiring substantive actions (1-2)	1
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical tasks (2-3)	2

CRITICAL TASK	JUSTIFICATION	REFERENCES
Start CS Pump “A” prior to exiting the SPTAs.	<p>Failure to initiate Containment Spray when the Containment Spray Actuation Setpoint is reached could unnecessarily complicate mitigation strategies. Without spray on a FWLB, Containment pressure and temperature will be higher than expected and could unnecessarily result in harsh conditions in Containment and could result in degradation of a fission product barrier.</p> <p>Step 9.d of 40EP-9EO01, Standard Post Trip Actions, requires the crew to ensure Containment Spray Actuation Signal (CSAS) is actuated if containment pressure exceeds 8.5 psig. 40DP-9AP06, SPTAs Technical Guidelines, Instruction Step: 9 Containment Temperature, Pressure and Combustible Gas Control, states: “Ensure that at least one containment spray header is providing greater than the minimum required flow to maintain containment pressure below design pressure.”</p>	<ul style="list-style-type: none"> PVNGS CT SPTA-4, When the Containment Spray Actuation setpoint is exceeded, ensure adequate Containment Spray to meet Safety Function prior to the completion of the SPTAs. CE SPTA-10 (CT-15), Establish Containment Temperature and Pressure Control. 40DP-9AP06, SPTAs Technical Guidelines, Instruction Step: 9
Start Auxiliary Feedwater Pump “B” or “N” and establish feed to the unaffected SG while not exceeding limits in Standard Appendix 2, Figures, or filling the Pressurizer to solid conditions.	<p>40DP-9AP10, Excess Steam Demand Technical Guideline, 3.2, Procedure Strategy, states: “The second action is to stabilize RCS temperature and pressure. It is important to establish heat removal capability via the unaffected SG prior to the affected SG boiling dry.” Failure to stabilize RCS temperature could lead to a solid Pressurizer, Pressurized Thermal Shock (PTS) of the RCS, or result in exceeding post accident Pressure/Temperature (P/T) limits. Either of these events will unnecessarily alter mitigation strategies. If Auxiliary Feedwater Pump “B” is not started, it will not be possible to stabilize RCS temperature.</p> <p>40DP-9AP17, Standard Appendices Technical Guideline, Appendix 2, Figures, states: “The upper</p>	<ul style="list-style-type: none"> PVNGS CT ESD-2 CE ESDE-08 (CT-08), Establish a RCS Heat Removal 40DP-9AP10, Excess Steam Demand Technical Guideline, 3.2, Procedure Strategy 40DP-9AP10, Excess Steam Demand Technical Guideline, Step Number: 14 40DP-9AP17, Standard Appendices Technical Guideline, Appendix 2, Figures

	<p>subcooling limit curve is used to establish the maximum post-accident limit on subcooling to significantly reduce the possibility of pressurized thermal shock following a pressurized thermal shock transient.”</p> <p>40DP-9AP10, Excess Steam Demand Technical Guideline, Step Number: 21. Maintain RCS pressure within the P/T limits, states: “Basis: Maintaining the RCS within the acceptable limits of the post accident P/T curve ensures that:</p> <ul style="list-style-type: none">• the cooldown rate is not exceeded• the core is covered by subcooled fluid• the concern for pressurized thermal shock is minimized by staying within the upper subcooled limit” <p>40DP-9AP10, Excess Steam Demand Technical Guideline, Step Number: 14. Stabilize RCS temperature, states: “The main objective following an overcooling event is to minimize the stresses on the reactor vessel, return RCS temperature to within the Post Accident P/T limits and establish stable RCS pressure and temperature until a cooldown to SDC entry conditions can be started.”</p>	<ul style="list-style-type: none">• 40DP-9AP10, Excess Steam Demand Technical Guideline, Step Number: 21
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2015 NRC Scenario 2 Overview

Event 1	<p>The RO removes the Pressurizer from boron equalization in accordance with 40OP-9ZZ05, Power Operations, Appendix H.6. This RO, normal evolution involves deenergizing backup heaters, adjusting the Pressurizer Master Control, and placing the Spray Valve Selector in BOTH. After the Spray Valve Selector is placed in BOTH, the next event can be initiated.</p>
Event 2	<p>SIT-1A gas leak. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator SIT 1A-1B PRESS LOW (PZR INTLK) • Lowering pressure indications for SIT-1A on B03 and ERFDADS <p>The crew initially responds in accordance with the alarm procedure for 40AL-9RK2C, SIT 1A-1B PRESS LOW (PZR INTLK). The ARP directs the crew to check SIT vent valves, potential drain lineups, and RDT level. If pressure is low, the ARP directs the crew to raise pressure using 40OP-9SI03, Safety Injection Tank Operations. 40OP-9SI03 directs the operator to lineup nitrogen to the affected accumulator and raise pressure. Once pressure has been raised per the CRS direction, the nitrogen lineup is secured. Since pressure in SIT 1A drops below 600 psig, the CRS enters LCO 3.5.1, Safety Injection Tanks (SITs) – Operating, Condition A. The crew has 72 hours to restore the SIT to OPERABLE status.</p>
Event 3	<p>RCN-TT-111Y, Tcold Channel 1, fails LOW. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 4A10B (AMI (AUTOMATIC MOTION INHIBIT)) • Annunciator 4A08B (TAVG-TREF HI-LO) • Lowered setpoint indication on RCN-LIC-110, Level Setpoint Control <p>Refer to Operator Information Manual, Page 60 of 88, RRS Functional. When TTY-111Y fails LOW, the input to the averaging circuit for Loop 1 Tave fails LOW. This causes the Loop 1 Tave input into the averaging circuit of both loop's Tave to be low. Since the selector switch at the RRS panel is selected to AVERAGE, the Tave output the PLCS will be low, reducing the Pressurizer level setpoint to near minimum. This causes letdown flow to increase. The AMI (AUTOMATIC MOTION INHIBIT) alarm actuates because the Loop 1 and Loop 2 Tave signals deviate by more than 5°F. In the SBCS, the Quick Open function of the bypass valves is blocked. A turbine runback demand signal will be sent to the RPCS, but no automatic action will occur until an actual runback actuation signal is generated (TLI or MFP Trip). In the DFWCS, the low Tave signal results in no feedwater flow, as the Reactor Trip Override Refill Demand senses that Tave is always below 564°F.</p> <p>B04A windows 8B (TAVG-TREF HI-LO) and 10B (AMI (AUTOMATIC MOTION INHIBIT)) are received and acknowledged. Alarm response procedure 40AL-9RK4A is referenced for operator response. 40AL-9RK4A directs the crew to determine if an instrument failure has occurred. If so, the ARP directs the crew to transition to 40AO-9ZZ16, RRS Malfunctions. The crew implements Section 3.0, Temperature Instrument Failures. The BOP first ensures that CEDMCS is NOT in Auto sequential. The RO takes control of the Pressurizer Level Controller to maintain level between 33 and 53% (may refer to Appendix A, Pressurizer Level Setpoint Program). The AOP also directs the crew to select the unaffected instrument Tave 2 (Loop 2) at the RRS Test Panel. Once the unaffected instrument has been selected, CEDMCS is placed in the desired mode, and the PLCS is returned to Remote Auto, the next event may be initiated.</p>

2015 NRC Scenario 2 Overview

Event 4	<p>Nuclear Cooling Water is lost due to a leak in the discharge header. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 7A07A (NUC CLG WTR SYS TRBL) • Annunciator 7A07B (NCWS PMPS DSCH HDR PRESS HI-LO) • Reduced current on running NC Pump • Automatic start of standby NC Pump, with amber light. <p>The crew implements 40AO-9ZZ03, Loss of Cooling Water, Section 4.0. Since seal injection is in service, the crew has 10 minutes to restore cooling water to the RCPs. The AOP initially directs the crew to ensure an NC Pump is running. Since the leak is on the common discharge header, a running pump will still not deliver cooling flow to the RCPs. When the standby pump is started and discharge pressure is still low, the operators are directed to investigate for leaks. The Area 2 AO reports a significant leak on the common discharge header. The CRS should direct the BOP to secure any running pumps. The CRS refers to 40AO-9ZZ04, Reactor Coolant Pump Emergencies. The CRS should then direct the BOP perform Appendix A, Cross-connect EW to NC. Appendix A involves startup of a Spray Pond Pump and an Essential Cooling Water Pump. Nuclear cooling water is isolated from Containment and EW is aligned to NC. To limit heat load on EW and to ensure adequate cooling flow to the RCPs, flow to Normal Chilled Water is limited to 1 chiller. An Area Operator unlocks and throttles EWA-HCV-53, SDCHX A OUTLET ISOLATION, until all of the RCP low NC flow alarms are clear. Once the low flow alarms are clear, the BOP starts a Normal Chiller. When EW has been cross connected, the CRS enters LCO 3.7.7, Condition A, due to the inoperability of the cross-connected EW train.</p> <p>During the event, letdown isolates and the RO performs 40AO-9ZZ05, Loss of Letdown. If Pressurizer level exceeds 56%, the RO secures all charging pumps and the CRS enters LCO 3.4.9, Condition A.</p> <p>When the Normal Chiller is started, the next event can be initiated.</p>
Event 5	<p>Feedwater Line Break Inside Containment (Economizer) (Trip Initiator). The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ 6A06A (FWCS PROCESS TRBL) ○ 7B03A (CNTMT SUMPS TRBL) ○ 7B03B (CNTMT SUMPS EXCESS LEAKAGE) • Containment pressure and temperature rising • Automatic initiation of SIAS, CIAS and CSAS <p>Various other alarms on B04, B05, and B06 are received and acknowledged. Alarm response procedures 40AL-9RK6A and 40AL-9RK7B may be referenced for operator response. Operators will have little time between receipt of the first alarm and an automatic Reactor trip to implement the alarm response.</p> <p>Crew may initiate a manual Reactor Trip and enter 40EP-9EO01, Standard Post Trip Actions.</p>

2015 NRC Scenario 2 Overview

Event 6	<p>While implementing the SPTAs, the RO observes that the Train ‘A’ BOP ESFAS Sequencer failed and manually starts Train ‘A’ equipment. Since CS Pump ‘B’ trips on an 86 lockout, the RO must manually start CS Pump ‘A’ to ensure that containment spray flow is actuated following a CSAS.</p> <p>(Critical Task: Start CS Pump “A” prior to exiting the SPTAs.)</p> <p>While implementing the SPTAs, the BOP observes that AFB-P01, AF Pump “B,” failed to start and manually starts the pump. Since CSAS has actuated, either the RO or the BOP secures all RCPs and the RO uses auxiliary spray and heaters to control RCS pressure.</p> <p>The CRS uses Section 4.0, Diagnostic Actions, to determine that an ESD is in progress and transitions to 40EP-9EO05, Excess Steam Demand.</p> <p>In 40EP-9EO05, the RO ensures that all Train “A” BOP ESFAS equipment is running as required. MSIS is actuated and SG #1 is identified as the most affected SG. Standard Appendix 113 is used to isolate SG #1. The SG is isolated by closing ADVs, MSIVs, MSIV Bypass, Economizer FWIVs, Downcomer Isolation Valves, Blowdown Containment Isolation Valves, steam trap isolation valves, AFA Steam Supply Valves, and AFW Isolation Valves. RCS temperature is stabilized by steaming the <i>least</i> affected SG.</p> <p>(Critical Task: Start Auxiliary Feedwater Pump “B” or “N” and establish feed to the unaffected SG while not exceeding limits in Standard Appendix 2, Figures, or filling the Pressurizer to solid conditions.)</p>
End Point	<p>Scenario may be terminated when SG #2 level is trending toward 45-60% NR, at the discretion of the Lead Examiner.</p>

TURNOVER

Plant Conditions:

- Unit 1 is at 100% power.
- The core is presently at 250 EFPD
- Risk Management Action Level is ORANGE
- AFA-P01 is out of service for unscheduled maintenance
- Train B is protected
- PC is NOT recircing the RWT
- Unit 2 is supplying the Aux Steam cross-tie header
- At the request of Chemistry, the pressurizer is in boron equalization in accordance with 40OP-9ZZ05, Power Operations

Equipment Out of Service:

- AFA-P01 is under clearance for maintenance. LCO 3.7.5, Condition A and Condition B, have been entered. The pump is expected to return to service in 8 hours.

Planned Shift Activities:

- Chemistry has reported that the Pressurizer and RCS boron concentrations are within 10 ppm. The SM therefore directs you to remove the Pressurizer from boron equalization in accordance with 40OP-9ZZ05, Power Operations, Appendix H.6

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 1 Event Description: **Remove the Pressurizer from boron equalization**

Time	Position	Applicant's Actions or Behavior
T=0	CRS	Directs the RO to remove the Pressurizer from boron equalization in accordance with 40OP-9ZZ05, Power Operations, Appendix H.6

40OP-9ZZ05, Power Operations, Appendix H.6

	RO	<p>Instructions H.6 & H.6.1</p> <p>WHEN the SM/CRS directs stopping boron equalization of the pressurizer, THEN perform the following:</p> <p>IF boron equalization is in service because of a difference in boron concentration between the pressurizer and the reactor coolant loops, THEN direct Chemistry to perform boron samples on BOTH of the following:</p> <ul style="list-style-type: none">• Pressurizer• RCS <p>Expected Action: Per Turnover, Chemistry reported that Pressurizer and RCS boron concentrations are within 10 ppm.</p>
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Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 1 Event Description: **Remove the Pressurizer from boron equalization**

Time	Position	Applicant's Actions or Behavior
		<p>Instructions H.6.2 through H.6.2.1.3</p> <p>WHEN Chemistry confirms Pressurizer and RCS boron concentration are within 10 ppm, THEN perform the following at the direction of the SM/CRS:</p> <p>IF the SM/CRS directs de-energizing RCN-HS-100-6, Backup Heaters Bank, THEN perform the following:</p> <p>Take RCN-HS-100-6, Backup Heaters Bank, to OFF.</p> <p>Check white setpoint override light is off at RCN-HS-100-6, Backup Heaters Bank.</p> <p>Check green open light is on at RCN-HS-100-6, Backup Heaters Bank.</p> <p>Expected Action: As directed.</p>
		<p>Instructions H.6.2.2 through H.6.2.2.3</p> <p>IF the SM/CRS directs de-energizing RCN-HS-100-7, Backup Heaters Bank, THEN perform the following:</p> <p>Take RCN-HS-100-7, Backup Heaters Bank, to OFF.</p> <p>Check white setpoint override light is off at RCN-HS-100-7, Backup Heaters Bank.</p> <p>Check green open light is on at RCN-HS-100-7, Backup Heaters Bank.</p> <p>Expected Action: As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 1 Event Description: **Remove the Pressurizer from boron equalization**

Time	Position	Applicant's Actions or Behavior
		<p>Instructions H.6.2.3 through H.6.2.3.3</p> <p>IF the SM/CRS directs de-energizing RCN-HS-100-8, Backup HeatersBank, THEN perform the following:</p> <p>Take RCN-HS-100-8, Backup Heaters Bank, to OFF.</p> <p>Check white setpoint override light is off at RCN-HS-100-8, BackupHeaters Bank.</p> <p>Check green open light is on at RCN-HS-100-8, Backup HeatersBank.</p> <p>Expected Action:As directed.</p>
		<p>Instructions H.6.2.4 through H.6.2.4.3</p> <p>IF the SM/CRS directs de-energizing RCN-HS-100-9, Backup HeatersBank, THEN perform the following:</p> <p>Take RCN-HS-100-9, Backup Heaters Bank, to OFF.</p> <p>Check white setpoint override light is off at RCN-HS-100-9, BackupHeaters Bank.</p> <p>Check green open light is on at RCN-HS-100-9, Backup HeatersBank.</p> <p>Expected Action:As directed.</p>
		<p>Instructions H.6.2.5 through H.6.2.5.3</p> <p>IF the SM/CRS directs de-energizing RCA-HS-100-4, Backup HeatersBank, THEN perform the following:</p> <p>Take RCA-HS-100-4, Backup Heaters Bank, to OFF.</p> <p>Check white setpoint override light is off at RCA-HS-100-4, BackupHeaters Bank.</p> <p>Check green open light is on at RCA-HS-100-4, Backup HeatersBank.</p> <p>Expected Action:As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 1

Event Description: **Remove the Pressurizer from boron equalization**

Time	Position	Applicant's Actions or Behavior
		<p>Instructions H.6.2.6 through H.6.2.6.3</p> <p>IF the SM/CRS directs de-energizing RCB-HS-100-5, Backup HeatersBank, THEN perform the following:</p> <p>Take RCB-HS-100-5, Backup Heaters Bank, to OFF.</p> <p>Check white setpoint override light is off at RCB-HS-100-5, BackupHeaters Bank.</p> <p>Check green open light is on at RCB-HS-100-5, Backup HeatersBank.</p> <p>Expected Action:As directed.</p>
		<p>Instruction H.6.3</p> <p>Raise RCN-PIC-100, Pressure Master Control, setpoint to ONE of the following:</p> <ul style="list-style-type: none"> • 2250 psia • At the direction of the SM/CRS <p>Expected Action:RO uses black thumbwheel on RCN-PIC-100 to raise setpoint to 2250 psia.</p>
		<p>Instruction H.6.4</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • RCN-HS-100-10, Spray Valve Selector, is selected to one valve • Plant conditions will support returning RCN-HS-100-10, Spray ValveSelector, to BOTH <p>THEN place RCN-HS-100-10, Spray Valve Selector, to BOTH.</p> <p>Expected Action:As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 1

Event Description: **Remove the Pressurizer from boron equalization**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction H.6.5</p> <p>IF plant conditions will NOT support operating with RCN-HS-100-10, SprayValve Selector, to BOTH, THEN place RCN-HS-100-10, Spray Valve Selector, at the direction of the SM/CRS.</p> <p>Expected Action: N/A. Plant supports use of "BOTH."</p>

Examiner NOTE: When the operator places the Spray Valve Selector in BOTH, **OR** at the discretion of the Lead Examiner, may proceed to next event.

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Receives and acknowledges alarms. Operators are alerted by the following:</p> <ul style="list-style-type: none"> Annunciators: <ul style="list-style-type: none"> 2B12A (SIT PRESS HI/LO), 2B12B (SIT PRESS HI-HI/LO-LO) Annunciator RKA-UA-2C (SIT 1A-1B PRESS LOW (PZR INTLK)) Lowering pressure indications for SIT-1A on B03 and ERFDADS Computer alarms: <ul style="list-style-type: none"> SIP332 (SIT 1A NAR RANGE PRESS) SIP333 (SIT 1A PRESS) <p>Alarm response procedures 40AL-9RK2B and 40AL-9RK2C are referenced for alarm response.</p>

40AL-9RK2C, SIT 1A-1B PRESS LOW (PZR INTLK)

	RO	<p>Operator Action 1 and 1.1</p> <p>Confirm the alarm by performing the following:</p> <p>Determine if pressurizer pressure is greater than 690 psia as indicated on ANY of the following:</p> <ul style="list-style-type: none"> L) PRZR Pressure PT-102A on pressure indicator RCA-PI-102A (B05) L) PRZR Pressure PT-102B on pressure indicator RCB-PI-102B (B05) L) PRZR Pressure PT-102C on pressure indicator RCC-PI-102C (B05) L) PRZR Pressure PT-102D on pressure indicator RCD-PI-102D (B05) R) PRZR Pressure PT-102A, on pressure recorder RCA-PR-102A ERFDADS RCP102A, Pressurizer Press (WR) CH A ERFDADS RCP102B, Pressurizer Press (WR) CH B <p>Expected Action: RO observes that all indications show that PZR pressure is greater than 690 psig.</p>
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Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 1.2</p> <p>Determine if SIT 1A pressure is less than 610 psig as indicated on ANY of the following:</p> <ul style="list-style-type: none"> • L) SIT-1A Press PT-331, on pressure indicator SIA-PI-331 • L) SIT 1A Press PT-333, on pressure indicator SIA-PI-333 • ERFDADS SIP331, SI TK 1A PRESS (WR) <p>Expected Action: RO observes that SIT 1A pressure is less than 610 psig.</p>
	RO	<p>Operator Action 1.3</p> <p>Determine if SIT 1B pressure is less than 610 psig as indicated on ANY of the following:</p> <ul style="list-style-type: none"> • R) SIT 1B Press PT-341, on pressure indicator SIA-PI-331 • R) SIT 1B Press PT-343, on pressure indicator SIA-PI-333 • ERFDADS SIP341, SI TK 1B PRESS (WR) <p>Expected Action: N/A. Leak is on SIT 1A.</p>
	RO	<p>Operator Action 2</p> <p>IF power is supplied to the SIT vent valves, THEN take BOTH of the following keylock switches to OFF:</p> <ul style="list-style-type: none"> • SIT Vent Valves Power Supply, SIB-HS-18A • SIT Vent Valves Power Supply, SIA-HS-17A <p>Expected Action: N/A. Power is <i>not</i> supplied.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action3</p> <p>Check SIT vent valve position as indicated by ALL of the following handswitches:</p> <ul style="list-style-type: none"> • SIA-HS-607A, Safety Injection Tank 1A Vent Valve • SIB-HS-633A, Safety Injection Tank 1A Vent Valve • SIA-HS-608A, Safety Injection Tank 1B Vent Valve • SIB-HS-643A, Safety Injection Tank 1B Vent Valve <p>Expected Action:RO observes that all 4 vent valves are closed.</p>
	RO	<p>Operator Action4</p> <p>IF any SIT vent valve is NOT closed, THEN notify the SM/CRS.</p> <p>Expected Action:N/A.All 4 vent valves are closed.</p>
	RO	<p>Operator Action5</p> <p>Check SIT vent valve position as indicated by ALL the following ERFDADS valve position points:</p> <ul style="list-style-type: none"> • ERFDADS SIZS607, SI Tk 1A Vent • ERFDADS SIZS608, SI Tk 1B Vent • ERFDADS SIZS633, SI Tk 1A Vent • ERFDADS SIZS643, SI Tk 1B Vent <p>Expected Action:RO observes that all 4 vent valves are closed.</p>
	RO	<p>Operator Action6</p> <p>IF any SIT vent valve is NOT closed, THEN notify the SM/CRS.</p> <p>Expected Action: N/A.All 4 vent valves are closed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action7</p> <p>Monitor ALL of the following level instruments for indications of leakage:</p> <ul style="list-style-type: none"> • SIA-LI-331 L) SIT 1A Level LT-331 • SIA-LI-331 R) SIT 1B Level LT-341 • SIN-LI-332 L) SIT 1A Level LT-332 • SIN-LI-332 R) SIT 1B Level LT-342 • SIN-LI-333 L) SIT 1A Level LT-333 • SIN-LI-333 R) SIT 1B Level LT-343 • RDN-LI-410 L) Cntmt Sump East LT-410 • RDN-LI-410 R) Cntmt Sump West LT-411 • CHN-LI-268 Reactor Drain Tank Level <p>Expected Action:As directed.</p>
	RO	<p>Operator Action8</p> <p>IF RDT level is rising, THEN close SIE-HV-661 using handswitch SIN-HS-661, Combined Sit & Misc Drn Hdr To RDT Vlv.</p> <p>Expected Action:N/A. RDT level is <i>not</i> rising.</p>
	RO	<p>Operator Action9</p> <p>IF any fill or drain lineup could result in an unexpected SIT 1A pressure or level lowering, THEN secure those lineups per the governing procedure.</p> <p>Expected Action:N/A. No fill or drain lineup could affect SIT 1A.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action10</p> <p>IF any fill or drain lineup could result in an unexpected SIT 1B pressure or level lowering, THEN secure those lineups per the governing procedure.</p> <p>Expected Action:N/A. Leak is on SIT 1A.</p>
	RO	<p>Operator Action11</p> <p>IF SIT 1A pressure OR level is affected, THEN restore SIT 1A pressure and level per 40OP-9SI03, Safety Injection Tank Operations.</p> <p>Expected Action:RO goes to40OP-9SI03. See next Page.</p>
	RO	<p>Operator Action12</p> <p>IF SIT 1B pressure OR level is affected, THEN restore SIT 1B pressure and level per 40OP-9SI03, Safety Injection Tank Operations.</p> <p>Expected Action:N/A. Leak is on SIT 1A.</p>
	RO	<p>Operator Action13</p> <p>Notify Chemistry of any changes in SIT level.</p> <p>Expected Action: N/A. Level was <i>not</i> changed.</p>
	RO/CRS	<p>Operator Action14</p> <p>Ensure compliance with ANY of the following:</p> <ul style="list-style-type: none"> • TS 3.5.1 Safety Injection Tanks (SITs) – Operating • TS 3.5.2 Safety Injection Tanks (SITs) – Shutdown <p>Expected Action:RO prompts CRS to evaluateTS 3.5.1&TS 3.5.2. Since pressure in SIT 1A drops below 600 psig, the CRS enters LCO 3.5.1, Safety Injection Tanks (SITs) – Operating, Condition B.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	Operator Action15 IF a lineup was secured on SIT 1A, THEN perform independent verification on valves that were repositioned per 02DP-0ZZ01, Verification of Plant Activities. Expected Action: N/A. No fill or drain lineup secured.
	RO	Operator Action16 IF a lineup was secured on SIT 1B, THEN perform independent verification on valves that were repositioned per 02DP-0ZZ01, Verification of Plant Activities. Expected Action: N/A. Leak is on SIT 1A.

40OP-9SI03, Safety Injection Tank Operations, Section 6.1, Pressurizing the Safety Injection Tanks to Establish or Maintain Normal Pressure.

	RO	Instruction 6.1.1, Prerequisites Safety Injection Tanks (SIT) and Reactor Coolant System (RCS) configuration support pressurization of the SIT. High pressure nitrogen is in service per 40OP-9GA01, Service Gases. Expected Action: Prerequisites are met.
	RO	Instruction 6.1.2, Initial Condition 6.1.2.1 Section 5.0, Prerequisites and Initial Conditions, is complete. Expected Action: Initial Conditions are met.

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2

Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instructions, Instruction 6.1.3.1.</p> <p>IF the SIT is currently filled and pressurized AND requires pressurization to maintain operability, THEN GO TO Step 6.1.3.4.</p> <p>Expected Action: RO goes to Step 6.1.3.4.</p>
	RO	<p style="text-align: center;">NOTE</p> <p>The ADV accumulator low pressure alarm may come in while pressurizing a SIT from a depressurized state. Adjusting the High Pressure Nitrogen Regulator may cause an overpressure condition in the ADV accumulator when the SIT pressurization is complete</p>
	RO	<p>Instruction 6.1.3.4.</p> <p>Open GAA-UV-1 using GAA-HS-1, HP N2 TO SI TANKS.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 6.1.3.5.</p> <p>Open the nitrogen supply valve for the SIT to be pressurized:</p> <ul style="list-style-type: none"> • SIB-HV-612 using SIB-HS-612, NITROGEN TO SIT 2A VLV • SIB-HV-622 using SIB-HS-622, NITROGEN TO SIT 2B VLV • <i>SIB-HV-632 using SIB-HS-632, NITROGEN TO SIT 1A VLV</i> • SIB-HV-642 using SIB-HS-642, NITROGEN TO SIT 1B VLV <p>Expected Action: RO opens SIB-HV-632.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 2Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 6.1.3.6.</p> <p>Open the nitrogen supply valve for the SIT to be pressurized to commence pressurization:</p> <ul style="list-style-type: none"> • SIA-HV-619 using SIA-HS-619, NITROGEN TO SIT 2A VLV • SIA-HV-629 using SIA-HS-629, NITROGEN TO SIT 2B VLV • <i>SIA-HV-639 using SIA-HS-639, NITROGEN TO SIT 1A VLV</i> • SIA-HV-649 using SIA-HS-649, NITROGEN TO SIT 1B VLV <p>Expected Action: RO opens SIA-HV-639.</p>
	RO	<p>Instruction 6.1.3.7.</p> <p>WHEN SIT pressure is at the desired pressure, THEN close the nitrogen supply valve opened in Step 6.1.3.6 to stop pressurization:</p> <ul style="list-style-type: none"> • SIA-HV-619 using SIA-HS-619, NITROGEN TO SIT 2A VLV • SIA-HV-629 using SIA-HS-629, NITROGEN TO SIT 2B VLV • <i>SIA-HV-639 using SIA-HS-639, NITROGEN TO SIT 1A VLV</i> • SIA-HV-649 using SIA-HS-649, NITROGEN TO SIT 1B VLV <p>Expected Action: RO closes SIA-HV-639.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 2

Event Description: **Safety Injection Tank 1A Gas Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 6.1.3.8.</p> <p>Close the nitrogen supply valve opened in Step 6.1.3.5:</p> <ul style="list-style-type: none"> • SIB-HV-612 using SIB-HS-612, NITROGEN TO SIT 2A VLV • SIB-HV-622 using SIB-HS-622, NITROGEN TO SIT 2B VLV • <i>SIB-HV-632 using SIB-HS-632, NITROGEN TO SIT 1A VLV</i> • SIB-HV-642 using SIB-HS-642, NITROGEN TO SIT 1B VLV <p>Expected Action: RO closes SIB-HV-632.</p>
	RO	<p>Instruction 6.1.3.9.</p> <p>Repeat Steps 6.1.3.1 through 6.1.3.8 until desired SIT pressure is reached.</p> <p>Expected Action: N/A. Repeats <i>not</i> necessary.</p>
	RO	<p>Instruction 6.1.3.10.</p> <p>WHEN pressurization of SITs is complete, THEN close GAA-UV-1 using GAA-HS-1, HP N2 TO SI TANKS.</p> <p>Expected Action: As directed.</p>
<p>ExaminerNOTE: Once GAA-UV-1 is closed, OR at the discretion of the Lead Examiner, may proceed to the next event.</p>		

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 4A10B (AMI (AUTOMATIC MOTION INHIBIT)) • Annunciator 4A08B (TAVG-TREF HI-LO) • Lowered setpoint indication on RCN-LIC-110, Level Setpoint Control <p>Alarm response procedure 40AL-9RK4Ais referenced for operator response.</p> <p>Examiner Note: CRS may elect to enter 40AO-9ZZ16, RRS Malfunction, directly. BOP may still reference ARP. See Page 22??? for ARP actions.</p>

40AO-9ZZ16, RRS Malfunction, Section 3.0, Temperature Instrument Failures

	CRS	<p>Instruction 1.</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 2.</p> <p>Ensure that CEDMCS is NOT in Auto Sequential.</p> <p>Expected Action: BOP places CEDMCS Mode Switch in any position other than "AS."</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 3.</p> <p>Check that pressurizer level is trending to the proper setpoint for reactor power:</p> <ul style="list-style-type: none">• REFER TO Appendix A, Pressurizer Level Setpoint Program. <p>Expected Action: CRS/RO refers to Appendix A. Notes that setpoint is not at proper level for current reactor power.</p>
	CRS	<p>CONTINGENCY ACTIONS</p> <p style="text-align: center;">NOTE</p> <p>Charging Pumps may cycle and letdown perturbations may occur when pressurizer level setpoint deviates from actual level or when the setpoint is restored to match actual level.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3

Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	RO	<p>CONTINGENCY ACTION 3.1.</p> <p>Perform ALL of the following:</p> <ol style="list-style-type: none"> IF RCN-LIC-110, Pressurizer Level Control, is in Remote Automatic, THEN transfer RCN-LIC-110 to "MANUAL". Ensure RCN-LIC-110, Pressurizer Level Control, is in ONE of the following: <ul style="list-style-type: none"> Local Automatic Manual Maintain pressurizer level 33 to 53%. REFER TO Appendix A, Pressurizer Level Setpoint Program. Ensure adequate charging flow for present plant conditions. IF letdown isolates, THEN PERFORM 40AO-9ZZ05, Loss of Letdown. <p>Expected Action: RO places RCN-LIC-110, LEVEL SETPOINT CONTROL, in either of the following:</p> <ul style="list-style-type: none"> Local Automatic, by sliding the lever to the left down to the "L" position and using the black thumbwheel to change setpoint. Manual, by depressing the "MAN" pushbutton and using the slider below to change setpoint. <p>Examiner Note: RO may depress the MAN pushbutton, slide the lever to the left to the "L" position, then depress the AUTO pushbutton to place the controller in Local Automatic. Either method is acceptable.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 4.</p> <p>Determine the failed instrument by observing ALL of the following:</p> <ul style="list-style-type: none"> • RCN-TT-111Y, Tcold • RCN-TT-121Y, Tcold • RCN-TT-111X, Thot • RCN-TT-121X, Thot • RCN-TR-100 (sum / avg circuit) <p>Expected Action: BOP observes that RCN-TT-111Y, Tcold Channel 1, has failed LOW.</p>
	CRS	<p>Instruction 5.</p> <p>IF RCN-TR-100 indicates a failed instrument in the TAVG circuit, THEN perform Attachment C-2, Determining the Failed TAVG Instrument, to determine the failed instrument.</p> <p>Expected Action: CRS N/As this step since failure is not in the Tavg circuit.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>Failure of a temperature instrument could affect COLSS if the failed instrument is still reading within its normal range.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior																					
	CRS	<p>Instruction 6.</p> <p>Determine the impact of the failure. REFER TO Appendix B, Control System Response to Instrument Failures.</p> <p>Expected Action: CRS refers to Appendix B.</p> <p>Examiner Note: The applicable portion of Appendix B is excerpted below.</p> <table border="1"> <thead> <tr> <th colspan="5">Control System Response</th></tr> <tr> <th colspan="2">Failed Instrument</th><th>Selected To</th><th>RRS</th><th>SBCS</th><th>DFWCS</th></tr> </thead> <tbody> <tr> <td rowspan="2">Tc, RCN-TT-111Y/121Y Th, RCN-TT-111X/121X</td><td rowspan="2">Lo</td><td>Average</td><td> <ul style="list-style-type: none"> • AMI on 5°F deviation between Loop 1 and Loop 2 Tavg • Low Tavg signal sent to PLCS resulting in minimum level setpoint </td><td> <ul style="list-style-type: none"> • Low Tavg from RRS blocks Quick Open on reactor trip • Low Tavg sends turbine runback demand to RPCS on a cutback </td><td> <ul style="list-style-type: none"> • Low Tavg signal from RRS to Reactor Trip Override Refill Demand resulting in no feed flow after reactor trip </td></tr> <tr> <td>Affected Instrument</td><td> <ul style="list-style-type: none"> • Low Tavg signal sent to PLCS resulting in minimum level setpoint • CEA withdrawal if in Auto Sequential </td><td> <ul style="list-style-type: none"> • Low Tavg from RRS blocks Quick Open on reactor trip • Low Tavg sends turbine runback demand to RPCS on a cutback </td><td> <ul style="list-style-type: none"> • Low Tavg signal from RRS to Reactor Trip Override Refill Demand resulting in no feed flow after reactor trip </td></tr> </tbody> </table>	Control System Response					Failed Instrument		Selected To	RRS	SBCS	DFWCS	Tc, RCN-TT-111Y/121Y Th, RCN-TT-111X/121X	Lo	Average	<ul style="list-style-type: none"> • AMI on 5°F deviation between Loop 1 and Loop 2 Tavg • Low Tavg signal sent to PLCS resulting in minimum level setpoint 	<ul style="list-style-type: none"> • Low Tavg from RRS blocks Quick Open on reactor trip • Low Tavg sends turbine runback demand to RPCS on a cutback 	<ul style="list-style-type: none"> • Low Tavg signal from RRS to Reactor Trip Override Refill Demand resulting in no feed flow after reactor trip 	Affected Instrument	<ul style="list-style-type: none"> • Low Tavg signal sent to PLCS resulting in minimum level setpoint • CEA withdrawal if in Auto Sequential 	<ul style="list-style-type: none"> • Low Tavg from RRS blocks Quick Open on reactor trip • Low Tavg sends turbine runback demand to RPCS on a cutback 	<ul style="list-style-type: none"> • Low Tavg signal from RRS to Reactor Trip Override Refill Demand resulting in no feed flow after reactor trip
Control System Response																							
Failed Instrument		Selected To	RRS	SBCS	DFWCS																		
Tc, RCN-TT-111Y/121Y Th, RCN-TT-111X/121X	Lo	Average	<ul style="list-style-type: none"> • AMI on 5°F deviation between Loop 1 and Loop 2 Tavg • Low Tavg signal sent to PLCS resulting in minimum level setpoint 	<ul style="list-style-type: none"> • Low Tavg from RRS blocks Quick Open on reactor trip • Low Tavg sends turbine runback demand to RPCS on a cutback 	<ul style="list-style-type: none"> • Low Tavg signal from RRS to Reactor Trip Override Refill Demand resulting in no feed flow after reactor trip 																		
		Affected Instrument	<ul style="list-style-type: none"> • Low Tavg signal sent to PLCS resulting in minimum level setpoint • CEA withdrawal if in Auto Sequential 	<ul style="list-style-type: none"> • Low Tavg from RRS blocks Quick Open on reactor trip • Low Tavg sends turbine runback demand to RPCS on a cutback 	<ul style="list-style-type: none"> • Low Tavg signal from RRS to Reactor Trip Override Refill Demand resulting in no feed flow after reactor trip 																		

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<p>Instruction 7.</p> <p>IF RRS is selected to ONE of the following:</p> <ul style="list-style-type: none"> • Average • The affected instrument <p>THEN perform BOTH of the following:</p> <ol style="list-style-type: none"> IF RCN-LIC-110, Pressurizer Level Control, is in Remote Automatic, THEN transfer RCN-LIC-110 to "MANUAL". Ensure RCN-LIC-110, Pressurizer Level Control, is in ONE of the following: <ul style="list-style-type: none"> • Local Automatic • Manual Perform Appendix C, Operation of the Reactor Regulation System, to select the unaffected instrument at the RRS Test Panel. <p>Expected Action: RO places RCN-LIC-110, LEVEL SETPOINT CONTROL, in either of the following:</p> <ul style="list-style-type: none"> • Local Automatic, by sliding the lever to the left down to the "L" position and using the black thumbwheel to change setpoint. • Manual, by depressing the "MAN" pushbutton and using the slider below to change setpoint. <p>BOP places the TAVG INPUT SELECTOR switch in the "TAVG 2 (LOOP 2)" position at the Reactor Regulating System Cabinet.</p> <p>Examiner Note: BOP uses Appendix C to accomplish this Step. See Page 22.</p>
	BOP	<p>Instruction 7 (there are currently two step 7s in this procedure, fed back to the procedure group).</p> <p>Check that Tavg/Tref mismatch is 3°F or less.</p> <p>Expected Action: BOP observes mismatch is less than 3°F on 1J-RCN-TR-100 on B04.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 8.</p> <p>Place CEDMCS in the desired mode of operation.</p> <p>Expected Action: BOP places Mode Switch in position directed by CRS. (Most likely Auto Sequential [AS])</p>
	RO	<p>Instruction 9.</p> <p>IF Remote Automatic operation of the PLCS is desired, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure RCN-LIC-110, Pressurizer Level Control, is in "MANUAL". Transfer RCN-LIC-110, Pressurizer Level Control, to Remote Automatic. <p>Expected Action: RO places RCN-LIC-110, LEVEL SETPOINT CONTROL, in Remote Auto by depressing the "AUTO" button.</p>
	CRS	<p>Instruction 10.</p> <p>GO TO the appropriate procedure for the current plant conditions.</p> <p>Expected Action: As directed.</p>

40AL-9RK4A, window 4A08B, TAVG-TREF HI-LO, Group B, Temperature Average – Temperature Reference Lo

	BOP	<p>First Priority Operator Action 1.</p> <p>IF there are no plant transients in progress, THEN determine if the alarm is caused by an instrument failure (RCN-TI-111X/111Y/121X/121Y or TLI).</p> <p>Expected Action: Crew notes that no plant transients are in progress. BOP observes that RCN-TT-111Y, Tcold Channel 1, has failed LOW.</p>
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Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3

Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	BOP/CRS	<p>First Priority Operator Action 2.</p> <p>IF an instrument failure is indicated, THEN GO TO 40AO-9ZZ16, RRS Malfunction.</p> <p>Expected Action: BOP prompts CRS to implement 40AO-9ZZ16</p>

40AO-9ZZ16, Appendix C, Operation of the Reactor Regulation System

	BOP	<p>Instruction 1.a through 1.c</p> <p>IF a temperature instrument has failed, THEN perform the following:</p> <ol style="list-style-type: none"> REFER TO Attachment C-3, Reactor Regulation System Test Drawer Pushbutton Description, for descriptions of the Reactor Regulation System Test Drawer pushbuttons. <hr/> <p style="text-align: center;">NOTE</p> <p>DVM voltage going to zero when the TEST PROBE pushbutton is depressed indicates that all the other pushbutton inputs are disconnected.</p> <hr/> <ol style="list-style-type: none"> Press the TEST PROBE pushbutton. Check that DVM voltage indicates zero volts. <p>Expected Action: BOP pushes TEST PROBE pushbutton and verifies DVM voltage indicates zero.</p>
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Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior								
	BOP	<p>Instruction 1.d and 1.e:</p> <p>d. Press the DVM pushbutton that corresponds to the TAVG to be selected:</p> <ul style="list-style-type: none">• TAVG1 (RCS Average Temperature Loop 1)• TAVG2 (RCS Average Temperature Loop 2)• TAVG (RCS Average Temperature) <p>e. Record voltage indicated on the DVM for the selected TAVG in the table below:</p> <table><tr><th>Pushbutton</th><th>DVM Voltage</th></tr><tr><td>TAVG1</td><td>Volts</td></tr><tr><td>TAVG2</td><td>Volts</td></tr><tr><td>TAVG</td><td>Volts</td></tr></table> <p>Expected Action: BOP presses the DVM button for TAVG 2 and records the value in the table above.</p>	Pushbutton	DVM Voltage	TAVG1	Volts	TAVG2	Volts	TAVG	Volts
Pushbutton	DVM Voltage									
TAVG1	Volts									
TAVG2	Volts									
TAVG	Volts									
	BOP	<p>Instruction 1.f and 1.g:</p> <p>f. Check that DVM voltage recorded in step 1.e. represents the normal TAVG for the current power per Attachment C-4, DVM Voltage and Associated Approximate Input Value.</p> <p>g. WHEN evaluation of DVM voltage is complete, THENpress the TEST PROBE pushbutton to disconnect the DVM from the input.</p> <p>Expected Action: BOP checks that voltage represents the normal TAVG for 100 percent power. The value should be between 5.5 and 5.8. BOP pushes the TEST PROBE pushbutton.</p>								

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 3 Event Description: **RCN-TT-111Y, Tcold Channel 1, fails LOW**

Time	Position	Applicant's Actions or Behavior
	BOP	CAUTION Selecting AVG while the "TAVG DEVIATION" light is lit will generate an AMI.
	BOP	Instruction 1.h and 1.i: h. Place the TAVG INPUT selector switch to the selected input: <ul style="list-style-type: none">• TAVG1 (RCS Average Temperature Loop 1)• TAVG2 (RCS Average Temperature Loop 2)• TAVG (RCS Average Temperature) i. Inform the CRS of the status of the RRS panel. Expected Action: BOP selects TAVG2 and informs the CRS.
Examiner NOTE: Once CEDMCS has been placed in Auto Sequential, OR when Lead Examiner deems appropriate, the next event may be initiated. (It may take some time before the PLCS is returned to Remote Automatic.)		

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged.</p> <p>The crew is alerted by the following:</p> <ul style="list-style-type: none"> Annunciators: <ul style="list-style-type: none"> 7A07A (NUC CLG WTR SYS TRBL) 7A07B (NCWS PMPS DSCH HDR PRESS HI-LO) 4D(E) (RCP 1A [1B, 2A, 2B] LO NCW FLOW) Reduced current on running NC Pump Automatic start of standby NC Pump, with amber light Computer alarms: <ul style="list-style-type: none"> NCPS108 (NCW SURGE TK PRESS) NCLS77 (NCW SURGE TK LEVEL) <p>Alarm response procedures 40AL-9RK4D and 4E and 40AL-9RK7A are referenced for operator response.</p>
40AL-9RK4D, window 4D01A, RCP 1A LO NCW FLOW (<i>all other windows similar</i>)		
	RO	<p>Operator Action 1.</p> <p>Check ALL of the following RCP Nuclear Cooling Water (NCW) return flows: (Panel B04)</p> <ul style="list-style-type: none"> NCN-FI-475, NCW FROM RCP 1A FLOW NCN-FI-474, NCW FROM RCP 1B FLOW NCN-FI-477, NCW FROM RCP 2A FLOW NCN-FI-476, NCW FROM RCP 2B FLOW <p>Expected Action: RO observes that RCP NCW flow on B04 is LOW.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 2.</p> <p>Check ALL of the following RCP Nuclear Cooling Water (NCW) return temperatures: (Panel B04)</p> <ul style="list-style-type: none"> • NCN-TI-471, NCW FROM RCP 1A TEMPERATURE • NCN-TI-470, NCW FROM RCP 1B TEMPERATURE • NCN-TI-473, NCW FROM RCP 2A TEMPERATURE • NCN-TI-472, NCW FROM RCP 2B TEMPERATURE <p>Expected Action: RO observes that RCP NCW return temperatures on B04 are approximately 100°F and stable.</p>
	BOP	<p>Operator Action 3.</p> <p>Check the following RCP motor temperatures for ALL four RCPs on recorder RMN-TJR-2: (Panel B07)</p> <ul style="list-style-type: none"> • Motor Stator • Motor Journal Bearings, upper and lower • Motor Lower Thrust Bearing • Motor Anti-rotation Bearing <p>Expected Action: BOP observes RCP motor stator temperatures are slowly increasing on RMN-TJR-2.</p>
	BOP	<p>Operator Action 4.</p> <p>Ensure at least one Nuclear Cooling (NC) Pump is running by observing BOTH of the following for each pump: (Panel B07)</p> <ul style="list-style-type: none"> • NC pump handswitch red running light on • Pump AMP meter <p>Expected Action: BOP observes that NC Pump A is running and may observe that NC Pump B has auto-started (amber light).</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Operator Action 5.</p> <p>IF alarm window 7A07B, NCWS PMPS DSCH HDR PRESS HI-LO, is in alarm due to low system pressure AND the standby NC pump has not started, THEN start the standby NC pump using ONE of the following:</p> <ul style="list-style-type: none"> • NCN-HS-1 for NC Pump A • NCN-HS-2 for NC Pump B <p>Expected Action: If not already auto-started, BOP starts NC Pump B.</p>
	BOP	<p>Operator Action 6.</p> <p>IF the standby NC pump cannot be started OR alarm window 7A07B, NCWS PMPS DSCH HDR PRESS HI-LO, remains in alarm after starting the standby NC pump, THEN perform BOTH of the following:</p> <ul style="list-style-type: none"> • 40AO-9ZZ03, Loss of Cooling Water • 40AO-9ZZ04, Reactor Coolant Pump Emergencies <p>Expected Action: BOP prompts CRS to implement 40AO-9ZZ03 and 40AO-9ZZ04.</p>
	CREW	<p>Operator Action 7.</p> <p>Direct the Auxiliary Operators to inspect ALL of the following to determine cause(s) of alarm:</p> <ul style="list-style-type: none"> • NC pumps • NC heat exchangers • NC surge tank • NC pump breakers <p>Expected Action: As directed.</p> <p>AO Report: Area 1 or 2: Wait 3 minutes, and then report that there is a significant leak on the common discharge header. Area 3: Surge tank level is lowering steadily. The makeup valve is open.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>CAUTION</p> <p>Opening NCB-UV-401 before NCA-UV-402 and NCB-UV-403 are opened will result in lifting the NC relief valve(s) in Containment.</p>
	BOP	<p>Operator Action 8.</p> <p>IF an inadvertent Containment Spray Actuation Signal (CSAS) has occurred, THEN perform ALL of the following:...</p> <p>Expected Action: N/A. CSAS has not occurred.</p>
	BOP	<p>NOTE</p> <p>A rising level in the Containment Radwaste Sumps may indicate lifting NC system relief valve(s) in the Containment.</p>
	BOP	<p>Operator Action 9.</p> <p>IF any NC System Containment Isolation Valve was opened in Step 8 above, THEN evaluate the level trends in the Containment Radwaste Sumps.</p> <p>Expected Action: N/A. No valves manipulated in Step 8.</p>
	BOP	<p>CAUTION</p> <p>Throttling flow through the shutdown cooling heat exchanger may cause EW pump discharge pressure to rise to the EW pump high discharge pressure alarm setpoint and could cause the heat exchanger thermal relief valve to lift.</p>

Op-Test No.: **2015 NRC** Scenario No.: **2** Event No.: **4**Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Operator Action 10.</p> <p>IF Essential Cooling Water (EW) is cross connected to NC, THEN consider raising cooling water flow to the RCPs by throttling closed the shutdown heat exchanger outlet valve until ONE of the following conditions exists:</p> <ul style="list-style-type: none"> • RCP Low Nuclear Cooling Water Flow Alarm(s) is (are) clear. • EW System total flow is equal to but not less than 8,500 gpm. <p>Expected Action: N/A. EW not yet cross-connected to NC.</p>
	BOP	<p>Operator Action 11.</p> <p>IF ANY of the following conditions is observed:</p> <ul style="list-style-type: none"> • Rising level in the NC Surge Tank • Activity in the NC System as indicated on SQN-RU-6, NUCLEAR COOLING WATER SYSTEM RADIATION MONITOR, <p>THEN perform 40AO-9ZZ02, Excessive RCS Leakrate.</p> <p>Expected Action: N/A. Neither condition exists.</p>
40AL-9RK7A, Window 7A07B, NCWS PMPS DSCH HDRPRESS HI-LO		
	BOP	<p>Auto Action 1</p> <p>Standby pump will start if header pressure drops below 79 psig.</p>
	BOP	<p>NOTE</p> <p>Normal NCW header pressure is 90 psig.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>First Priority Operator Action 2 - LOW</p> <p>IF the stand-by Nuclear Cooling Water pump has NOT started, THEN start the stand-by pump.</p> <ul style="list-style-type: none"> • NCN-P01A, NCN-HS-0001 • NCN-P01B, NCN-HS-0002 <p>Expected Action:As directed.</p>
	BOP	<p>Second Priority Operator Action 1 - LOW</p> <p>Ensure NCW Expansion Tank pressure is greater than 2 psig.</p> <p>Expected Action: BOP directs AO to investigate.</p> <p>AO Report: NCW Surge Tank pressure is 5" H₂O and lowering.</p>
	BOP	<p>Second Priority Operator Action 2.</p> <p>IF NC pump discharge pressure cannot be returned to normal, THEN GO TO 40AO-9ZZ03, Loss of Cooling Water.</p> <p>Expected Action: BOP prompts CRS to implement 40AO-9ZZ03.</p>
40AO-9ZZ03, Loss of Cooling Water, Section 4.0, Nuclear Cooling Water		
	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 2</p> <p>IF seal injection is NOT in service, AND cooling water is NOT restored to ANY operating RCP within three minutes of the initial loss, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure the reactor is tripped. Stop all of the RCPs. Isolate controlled bleedoff. <p>Expected Action: N/A. Seal injection <i>is</i> in service.</p>
	CRS	<p>Instruction 3</p> <p>IF seal injection is in service, AND cooling water is NOT restored to ANY operating RCP within 10 minutes of the initial loss, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure the reactor is tripped. Stop all of the RCPs. Isolate controlled bleedoff. <p>Expected Action: If low NCW flow alarms are not cleared within 10 minutes, CRS directs a Reactor trip. RO stops all 4 RCPs, and then isolates controlled bleedoff by closing the 4 individual bleedoff valves.</p> <p>Time cooling water lost: _____</p> <p>Time cooling restored: _____</p> <p>Total elapsed time: _____</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 4</p> <p>IF no Nuclear Cooling Water pumps are running, THEN perform the following:</p> <ol style="list-style-type: none"> IF at least one Nuclear Cooling Water pump is available, THEN start the Nuclear Cooling Water Pump. IF electrical power must be restored to start a Nuclear Cooling Water Pump, THEN perform the following: <ol style="list-style-type: none"> Place both NC Pump handswitches in "PULL TO LOCK". PERFORM 40AO-9ZZ12, Degraded Electrical Power. <p>Expected Action: N/A. Standby pump is already started and both pumps have electrical power.</p>
	BOP	<p>Instruction 5</p> <p>IF at least one Nuclear Cooling Water pump is running, AND "NCWS PMPS DSCH HDR PRESS HI-LO" (7A07B) is in alarm due to low pressure, THEN perform the following:</p> <ol style="list-style-type: none"> Start the standby NC Pump. Check that no NC system leaks exist by performing the following: <ol style="list-style-type: none"> Direct an operator(s) to walkdown NC system piping. Evaluate indications and alarms on the control boards. <p>Expected Action: If not already auto-started, BOP starts NC Pump B using NCN-HS-0002.</p> <p>AO Report: Wait 3 minutes, and then report that there is a significant leak on the common discharge header. Surge tank level is lowering steadily. The makeup valve is open.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>CONTINGENCY ACTIONS 5.b.1& 5.b.2</p> <p>IF a leak exists outside containment, THEN isolate the leak.</p> <p>IF a leak outside containment can not be isolated, AND the CRS determines that NC should be shutdown, THEN ensure that both NC Pumps are stopped.</p> <p>Expected Action: CRS determines that the leak cannot be isolated. CRS directs BOP to stop BOTH NC Pumps.</p> <p>BOP stops NCN-P01A using NCN-HS-0001 and NCN-P01B using NCN-HS-0002</p>
	CRS	<p>Instruction 6</p> <p>IF ANY of the NC Containment Isolation Valves have failed closed, AND there is NOT a valid CSAS signal present, THEN perform the following:</p> <ol style="list-style-type: none"> Open ANY closed isolation valves. Evaluate Tech Spec 3.6.3, Containment Isolation Valves. <p>Expected Action: N/A. No CIVs have failed.</p>
	CRS	<p>Instruction 7</p> <p>IF the NC system has been restored, THEN GO TO the appropriate procedure for current plant conditions.</p> <p>Expected Action: N/A. NC not restored.</p>
	CRS	<p>Instruction 8</p> <p>IF ANY RCPs are operating, THEN PERFORM 40AO-9ZZ04, Reactor Coolant Pump Emergencies.</p> <p>Expected Action: CRS implements 40AO-9ZZ04 or may direct an operator to perform 40AO-9ZZ04.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 9</p> <p>IF the CRS directs cross-connecting EW to NC, AND ANY of the following conditions exist:</p> <ul style="list-style-type: none"> Any leak in the NC system piping will be isolated when cross-connected No NC system leakage exists THEN PERFORM Appendix A, Cross-connect EW to NC. <p>Expected Action: CRS directs BOP to perform Appendix A. See Page 36.</p>
	CRS	<p>Instruction 10</p> <p>IF a leak in the Nuclear Cooling Water System piping can NOT be isolated when cross-connecting EW and NC, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure that the Reactor is tripped. Stop all of the RCPs. Isolate controlled bleedoff. GO TO the appropriate procedure for the current plant conditions. <p>Expected Action: N/A. Leak will be isolated.</p>
	CRS	<p>Instruction 11</p> <p>IF letdown is isolated, THEN PERFORM 40AO-9ZZ05, Loss of Letdown.</p> <p>Expected Action: CRS directs RO to perform 40AO-9ZZ05. See Page 40.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CRS/BOP	<p>Instruction 12</p> <p>Direct an operator to ensure that ALL of the following valves are closed to isolate steam to the Aux and Rad Waste Buildings:</p> <ul style="list-style-type: none"> • ASN-V016, "ASN-PCV-010 INLET ISOL VALVE" • ASN-V017, "ASN-PCV-010 BYPASS VALVE" • ASN-VY20, "ASN-PCV-010 BYPASS VALVE" <p>Expected Action:As directed.</p>
	CRS	<p>Instruction 13</p> <p>IF a NC Pump becomes available for operation, AND Essential Cooling Water is NOT cross-connected with Nuclear Cooling Water, THEN perform the following to start a NC Pump:...</p> <p>Expected Action: N/A. NC is <i>not</i> available.</p>
	CRS	<p>CAUTION</p> <p>Stopping cooling water flow to operating RCPs may cause damage if not restored within three minutes without seal injection or 10 minutes with seal injection.</p>
	CRS	<p>Instruction 14</p> <p>IF a NC Pump becomes available for operation, AND Essential Cooling Water is cross-connected with Nuclear Cooling Water, THEN PERFORM ONE of the following to remove EW from service on the Nuclear Cooling Water System:...</p> <p>Expected Action: N/A. NC is <i>not</i> available</p>
	CRS	<p>Instruction 15</p> <p>IF Nuclear Cooling Water is restored, AND EW is supplying SFP cooling, THEN PERFORM ONE of the following to restore NC to SFP Cooling:...</p> <p>Expected Action: N/A. NC is <i>not</i> available</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 16</p> <p>WHEN Nuclear Cooling Water is restored, OR BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • The Reactor is shutdown, • All appropriate steps of this procedure have been completed, THEN GO TO the appropriate procedure for current plant conditions. <p>Expected Action: N/A. NC is <i>not</i> available</p>

40AO-9ZZ03, Loss of Cooling Water, Appendix A, Cross-connect EW to NC

	BOP	<p>Instruction 1</p> <p>Enter Appendix Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	BOP	<p>NOTE</p> <p>Cross-connecting EW and NC renders the EW Train inoperable per LCO 3.7.7, Essential Cooling Water (EW) System. Refer to 40ST-9EC03 and 40DP-9OP37 for impacts on supported system operability.</p> <p>Examiner Note: Evaluation of 40ST-9EC03 and 40DP-9OP37 is normally an STA/SM function.</p>
	BOP	<p>NOTE</p> <p>The cross-connect of Essential Cooling Water Train A with Nuclear Cooling Water will be lost on a SIAS or Essential Cooling Water surge tank A low level.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 2</p> <p>IF cross-connecting Train A EW to NC, THEN ensure BOTH of the following pumps are operating:</p> <ul style="list-style-type: none"> • Spray Pond Pump A • Essential Cooling Water Pump A <p>Expected Action: On B02, BOP starts SP Pump A using HPA-HS-1 and starts EW Pump A using EWA-HS-1.</p>
	BOP	<p>Instruction 3</p> <p>IF cross-connecting Train B EW to NC, THEN ensure BOTH of the following pumps are operating:</p> <ul style="list-style-type: none"> • Spray Pond Pump B • Essential Cooling Water Pump B <p>Expected Action: N/A. Cross-connecting Train A EW to NC.</p>
	BOP	<p>Instruction 4</p> <p>Ensure that both Nuclear Cooling Water pump handswitches are in "PULL TO LOCK".</p> <p>Expected Action: On B07, BOP places the following in PTL:</p> <ul style="list-style-type: none"> • NCN-P01A, NCN-HS-0001 • NCN-P01B, NCN-HS-0002
	BOP	<p>Instruction 5</p> <p>Close NCN-UV-99, Nuclear Cooling Water Containment Header Return Valve.</p> <p>Expected Action: On B07, BOP closes NCN-UV-99 using NCN-HS-99.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6</p> <p>IF cross-connecting Train A EW to NC, THEN open BOTH of the following valves:</p> <ul style="list-style-type: none"> EWA-UV-145, Cross-Tie Valve to Nuclear Cooling Water EWA-UV-65, Cross-Tie Valve from Nuclear Cooling Water <p>Expected Action: On B02, BOP opens the following:</p> <ul style="list-style-type: none"> EWA-UV-145 using EWA-HS-145 EWA-UV-65 using EWA-HS-65
	BOP	<p>Instruction 7</p> <p>IF cross-connecting Train B EW to NC, THEN direct an operator to unlock and open BOTH of the following valves:</p> <ul style="list-style-type: none"> EWB-HCV-146, "EW CROSS-TIE VLV TO NC" EWB-HCV-66, "EW CROSS-TIE VLV TO NC" <p>Expected Action: N/A. Cross-connecting Train A EW to NC</p>
	BOP	<p>Instruction 8</p> <p>Ensure that no more than one Normal Chiller NC outlet valve is open.</p> <p>Expected Action: BOP observes that Normal Chiller B and C NC outlet valves are open. Secures either chiller then observes that its NC outlet valve closes.</p>
	BOP	<p style="text-align: center;">CAUTION</p> <p>When EWA-HCV-53, SDCHX A Outlet Isolation Valve, is throttled closed, EW pump discharge pressure may exceed the alarm setpoint and possibly lift the thermal relief valve PSV-0047 on the Shutdown Cooling Heat Exchanger.</p>

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Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 9</p> <p>IF cross-connecting Train A EW to NC, THEN direct an operator to unlock and throttle EWA-HCV-53, SDCHX A OUTLET ISOLATION, until ONE of the following conditions exists:</p> <ul style="list-style-type: none"> • All of the RCP low NC flow alarms are clear. • EW system flow lowers to 8500 gpm on EWN-FI-13. <p>Expected Action: BOP directs AO to slowly throttle EWA-HCV-53 until directed to stop (when RCP low NCW flow alarms clear).</p>
	BOP	<p style="text-align: center;">CAUTION</p> <p>When EWB-HCV-54, SDCHX B Outlet Isolation Valve, is throttled closed, EW pump discharge pressure may exceed the alarm setpoint and possibly lift the thermal relief valve PSV-0048 on the Shutdown Cooling Heat Exchanger.</p>
	BOP	<p>Instruction 10</p> <p>IF cross-connecting Train B EW to NC, THEN direct an operator to unlock and throttle EWB-HCV-54, SDCHX B OUTLET ISOLATION, until ONE of the following conditions exists:</p> <ul style="list-style-type: none"> • All of the RCP low NC flow alarms are clear. • EW system flow lowers to 8500 gpm on EWN-FI-14. <p>Expected Action: N/A. Cross-connecting Train A EW to NC</p>
	BOP	<p>Instruction 11</p> <p>Perform the following:</p> <ol style="list-style-type: none"> Ensure that all Normal Chiller NC outlet valves are closed. Start a Normal Chiller. <p>Expected Action: BOP secures the remaining chiller then observes that its NC outlet valve closes. BOP then starts one Normal Chiller and observes that its NC outlet valve opens.</p>

Op-Test No.: 2015 NRC Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
40AO-9ZZ05, Loss of Letdown		
	RO	Instruction 1 Enter AOP Entry Time and Date: Expected Action: As directed.
	RO	Instruction 2 IF the Pressurizer is solid, THEN perform the following:... Expected Action: N/A. PZR is not solid.
	RO	Instruction 3 Place RCN-LIC-110, PLCS Master Controller, in "MAN" and close the selected Letdown Control Valve(s). Expected Action: On B04, RO depresses the MAN pushbutton and lowers the setpoint to cause the Letdown Control Valves to close.
	RO	Instruction 4 Check that letdown backpressure is less than setpoint. Expected Action: On B03, RO checks that the red pointer on CHN-PIC-201, LETDOWN BACKPRESSURE CONTROL, is below the black pointer.
	RO	Instruction 5 IF pressurizer level is 33% or more AND rising, THEN ensure no more than one Charging Pump is running. Expected Action: RO ensures no more than one Charging Pumps is running.

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • The unit is in Mode 1, 2 or 3 • Pressurizer level is 56% or more and rising <p>THEN perform the following:</p> <ol style="list-style-type: none"> a. Enter LCO 3.4.9, Pressurizer, Condition A. b. Initiate actions in preparation for a Unit shutdown within 6 hours. <p>Expected Action: PZR level <i>may</i> be > 56% (depends on timing of actions). If so, CRS enters LCO 3.4.9, Pressurizer, Condition A.</p>
	RO	<p>Instruction 7</p> <p>Determine the cause of the loss of letdown (REFER TO Appendix E, Supplementary Information) by evaluating ANY of the following:</p> <ul style="list-style-type: none"> • PLCS failures • NC flow to Letdown Heat • Exchanger • SIAS/CIAS • CVCS component failures • Loss of IA • Loss of power <p>Expected Action: RO determines that a loss of NC flow is the cause.</p>
	RO	<p>Instruction 8</p> <p>IF RCS pressure is less than 1000 psia, AND it is desired to place the standby valve in service, THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves.</p> <p>Expected Action: N/A. RCS pressure is > 1000 psia.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 9</p> <p>IF the selected Letdown Control or Backpressure Control Valve(s) has failed, AND it is desired to place the standby valve in service, THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves.</p> <p>Expected Action: N/A. Standby valve will <i>not</i> be placed in service.</p>
	RO	<p>Instruction 10</p> <p>IF ALL of the following conditions exist:</p> <ul style="list-style-type: none"> • CHB-UV-515, Regen Hx Inlet Isolation, closed due to an invalid high temperature interlock • CHN-TI-221, Regenerative Heat Exchanger Letdown Temperature, indication is available • Letdown is desired... <p>Expected Action: N/A. Letdown will not be restored.</p>
	RO	<p>Instruction 11</p> <p>IF CHB-UV-523, Regen Hx Outlet Isolation is closed due to an invalid high temperature alarm, AND letdown is desired, THEN place CHB-HS-523, LETDOWN CTMT ISOL, to "OPEN".</p> <p>Expected Action: N/A. Letdown will not be restored.</p>
	RO	<p>Instruction 12</p> <p>IF the Pressurizer is solid, AND RCS pressure is less than 500 psia, THEN perform the following to restore letdown:...</p> <p>Expected Action: N/A. PZR is <i>not</i> solid.</p>
	RO	<p>Instruction 13</p> <p>IF letdown can be restored, THEN perform the following:...</p> <p>Expected Action: N/A. Letdown will not be restored.</p>

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Time	Position	Applicant's Actions or Behavior
	RO	Instruction 14 IF a plant shutdown or cooldown is needed, THEN perform the following: Expected Action: N/A. Plant shutdown or cooldown is not required at this time.
	RO	Instruction 15 IF a plant shutdown or cooldown is NOT needed, THEN PERFORM Appendix C, Extended Operations Without Letdown. Expected Action: RO implements Appendix C. See below.

40AO-9ZZ05, Appendix C, Extended Operations Without Letdown

	RO	Instruction 1 Enter Appendix Entry Time and Date: Expected Action: As directed.
	RO	Instruction 2 WHEN letdown can be restored, THEN GO TO Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble. Expected Action: N/A. Letdown will not be restored.
	RO	<p style="text-align: center;">NOTE</p> Boron equalization should be minimized since it depletes RCS hydrogen. The reduction in RCS hydrogen concentration may require entry into chemistry actions levels that may cause the unit to be shutdown.

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Time	Position	Applicant's Actions or Behavior
	RO	Instruction 3 IF boron equalization is in progress, THEN stop boron equalization. Expected Action: N/A. Boron equalization is not in progress.
	RO	Instruction 4 Notify Chemistry that the plant will be operated with letdown flowisolated. Expected Action: Chemistry is notified.
	RO	NOTE RCP HP seal cooler inlet temperature is expected to rise to between 200°F and 220°F when seal injection is stopped. All other seal temperatures are expected to remain normal
	RO	NOTE Intentional entry into L.C.O. 3.4.9, Pressurizer, Condition A is prohibited.
	RO	Instruction 5 WHEN the CRS determines seal injection and charging are to be stopped, OR pressurizer level is 56% or more and rising, THEN perform the following: <ol style="list-style-type: none"> IF the unit is in Mode 1, 2 or 3, THEN ensure compliance with LCO 3.4.9, Pressurizer. Ensure controlled bleedoff is isolated on all standby RCP's prior to Seal 2 Outlet Temperature exceeding 250°F. Close the Seal Injection Flow Control Valves. Place all Charging Pumps in "PULL TO LOCK". Expected Action: RO closes Seal Injection FCVs and places all Charging Pumps in PTL.

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	RO	<p>NOTE</p> <p>RCP controlled bleedoff will lower pressurizer level approximately 10% in 55 minutes. This assumes three gpm bleedoff flow from each RCP.</p>
	RO	<p>Instruction 6</p> <p>IF ALL of the following conditions are met:</p> <ul style="list-style-type: none"> • Charging has been stopped • Pressurizer level is less than 53% • Raising Pressurizer level is desired <p>THEN perform the following:</p> <ol style="list-style-type: none"> a. Open CHN-PDV-240, Charging Line to Reactor Coolant Loop 2A Differential Pressure Control Valve. b. Start at least one Charging Pump. c. Adjust CHN-PDIC-240 to 90-135 psid and place in "AUTO". d. Operate charging as needed to maintain pressurizer level between 33 and 53%. <p>Expected Action: May be performed later.</p>
	RO	<p>Instruction 7</p> <p>IF BOTH of the following conditions are met:</p> <ul style="list-style-type: none"> • Charging has been stopped • Seal injection is needed... <p>Expected Action: N/A. Seal injection is <i>not</i> needed at this time.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 4Event Description: **Loss of Nuclear Cooling – Leak in Common Discharge Header**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 8</p> <p>IF VCT level needs to be lowered, THEN direct an operator to perform the following:</p> <ul style="list-style-type: none">a. Open CHN-V117, VCT drain to the EDT (Blending Room, 120' of the Auxiliary Bldg.).b. WHEN the desired level is reached, THEN close CHN-V117. <p>Expected Action: N/A. VCT level does not need to be lowered.</p>
Examiner Note: Once a Normal Chiller has been started, OR at the discretion of the Lead Examiner, may proceed to the next event.		

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
T=55	CREW	<p>Alarms are received and acknowledged. Operators are alerted by the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ 6A06A (FWCS PROCESS TRBL) ○ 7B03A (CNTMT SUMPS TRBL) ○ 7B03B (CNTMT SUMPS EXCESS LEAKAGE) • Containment pressure and temperature rising • Automatic initiation of SIAS, CIAS and CSAS <p>Shortly thereafter, various other alarms on B04, B05, and B06 are received and acknowledged. Alarm response procedures 40AL-9RK6A and 40AL-9RK7B may be referenced for operator response. Operators will have little time to implement the alarm response between receipt of the first alarm and an automatic Reactor trip.</p>

40EP-9EO01, Standard Post Trip Actions

	CRS	<p>Instruction 1</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>Determine that Reactivity Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> a. Check that reactor power is dropping b. Check that start-up rate is negative c. Check that ALL full strength CEAs are inserted <p>Expected Action:As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 3</p> <p>Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that the Main Turbine is tripped Check that the Main Generator output breakers are open Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> All vital and non-vital AC buses are powered All vital and non vital DC buses are powered <p>Expected Action: RO reports all vital and non-vital AC & DC buses are powered from off-site. RO also reports that the DGs are running unloaded with Spray pond support. BOP reports Main Turbine has tripped and Main Generator output breakers are open.</p>
	CRS	<p>Instruction 4</p> <p>Determine that RCS Inventory Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> 10-65% Trending as expected to 33-53% Check that the RCS is 24°F or more subcooled Check that BOTH of the following are in service to all RCPs <ul style="list-style-type: none"> Seal injection Nuclear Cooling Water <p>Expected Action: RO reports PZR level is trending to 33-53% and subcooling is greater than 24 °F. RO secures all RCPs (due to loss of NC, when EW cross-connect valve shuts on SIAS; and loss of seal injection, when all Charging Pumps are secured for extended loss of letdown.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS/RO	<p>Instruction 5</p> <p>Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> • Pressurizer pressure is 1837-2285 psia • Pressurizer pressure is trending as expected to 2225-2275 psia <p>Expected Action: RO observes that Pressurizer pressure is trending to 2225-2275 psia. RO may start a Charging Pump and initiate Auxiliary Spray, if required to reduce RCS pressure.</p>
	RO	<p>Instruction 6</p> <p>Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>Expected Action: RCPs may, or not be, operating at this time. If operating, RO secures all RCPs. RO reports ΔT is greater than 10°F, and that subcooling is less than 24°F.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS/BOP	<p>Instruction 7</p> <p>Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that at least one Steam Generator meets BOTH of the following conditions: <ul style="list-style-type: none"> Level is 35% WR or more Feedwater is restoring or maintaining level 45-60% NR Check that T_C is 560-570°F Check that steam generator pressure is 1140-1200 psia <p>Expected Action:BOP reports that SG #2 is being fed by AFB or AFN.SG #1 level and pressure are lowering due to the break. ADVs on SG #2 are being used to control SG pressure.</p>
	CREW	<p>Instruction 8</p> <p>Determine that Containment Isolation acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that Containment pressure is <2.5 psig REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> No valid containment area radiation monitor alarms or unexplained rise in activity No valid steam plant activity monitor alarms or unexplained rise in activity <p>Expected Action:RO/BOP reports that Containment pressure is <i>greater than</i> 2.5 psig. BOP reports no indication of activity in Containment or the secondary plant.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Contingency Action 8.a.1</p> <p>IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated.</p> <p>Expected Action: RO ensures that CIAS has been initiated by observing red annunciator RKN-UA-2A 02A (CIAS).</p>
	CREW	<p>Instruction 9</p> <p>Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that containment temperature is <117°F Check that containment pressure is <2.5 psig <p>Expected Action: RO reports that Containment temperature is greater than 117 °F and that Containment pressure is greater than 2.5 psig.</p>
	CRS	<p>Contingency Action 9.a.1</p> <p>IF containment temperature is 117°F or more, AND a SIAS has NOT actuated, THEN ensure that ALL of the available systems are in operation:</p> <ul style="list-style-type: none"> Containment Normal ACUs CEDM ACUs Reactor Cavity Fans PZR Cooling Fans <p>Expected Action: N/A. SIAS <i>has</i> actuated.</p>
	CRS/RO	<p>Contingency Action 9.b.1</p> <p>IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated.</p> <p>Expected Action: RO ensures that CIAS has been initiated by observing red annunciator RKN-UA-2A 02A (CIAS).</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Contingency Action 9.b.2</p> <p>IF containment pressure is 8.5 psig or more, THEN perform the following:</p> <ol style="list-style-type: none"> 1) Ensure CSAS is actuated. 2) Ensure at least one Containment Spray header flow is greater than 4350 gpm. 3) Stop all of the operating RCPs. 4) Ensure RCP controlled bleedoff flow is isolated. <p>Expected Action: RO ensures CSAS is actuated by observing the red annunciator RKN-UA-2A 04A, CSAS. RO verifies CS header flow on SIA-FI-338 and SIB-FI-348. RO isolates RCP controlled bleedoff flow by shutting individual RCP bleedoff valves or by closing the either of the common bleedoff isolation valves (UV-505 or UV-506). RO also closes HV-507, RCP CONT BLEED-OFF HDR RELIEF VLV ISOL.</p> <p>Train "A" BOP ESFAS Sequencer fails to actuate and CSB-P01, CS Pump "B," trips after start.</p> <p>RO observes that the Train "A" BOP ESFAS Sequencer has failed and that CS Pump "B" has tripped. Manually starts CS Pump "A."</p>
Critical Task: Start CS Pump "A" prior to exiting the SPTAs.		SAT / UNSAT
	CRS	<p>Instruction 10</p> <p>IF all acceptance criteria are met, AND no contingency actions were performed, THEN GO TO 40EP-9EO02, Reactor Trip.</p> <p>Expected Action: CRS determines that several contingency actions were taken.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 11.</p> <p>IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event.</p> <p>Expected Action: CRS Determines that that there is anESD in progress and then transitions to40EP-9EO05, Excess Steam Demand.</p>

40EP-9EO05, Excess Steam Demand

	CRS	<p>NOTE</p> <p>Harsh conditions are containment temperature greater than 170°F or containment radiation level greater than 108 mR/hr. Harsh containment values are placed in brackets next to the normal setpoint or band.</p>
	CRS	<p>Instruction 1</p> <p>Confirm the diagnosis of anExcess Steam Demand by performing the following:</p> <ol style="list-style-type: none"> Check that the Safety Function Status Check acceptance criteria are satisfied. Ensure that the Steam Generator Sample Valves are open. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. <p>Expected Action:CRS directs STA to performSafety Function Status Check. BOP opens 12 sample valves on B07. Chemistry informed.</p>
	CRS	<p>Instruction 2</p> <p>Ensure the event is being classified.</p> <p>Expected Action:As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train “A” BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump “B” Fails to Start

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 3</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action:As directed.</p>
	BOP	<p>Instruction 4</p> <p>IF pressurizer pressure drops to the SIAS setpoint, THEN check that SIAS is actuated.</p> <p>Expected Action:BOP ensures that SIAS has been initiated by observing red annunciator RKN-UA-2A 01A (SIAS).</p>
	<p>RO</p> <p>Event 6</p>	<p>Instruction 5</p> <p>IF SIAS has actuated, THENperform the following:</p> <ol style="list-style-type: none"> Check that the HPSI and LPSI Pumps have started. Check that safety injection flow is adequate. REFER TO Appendix 2, Figures. <p>Expected Action:RO observes that the Train "A" BOP ESFAS Sequencer has failed. Notes the following equipment is affected:</p> <ul style="list-style-type: none"> HPSI Pump "A" LPSI Pump "A" Essential Cooling Water Pump "A" Spray Pond Pump "A" Control Room Essential AHU Fuel Building Essential AHU Battery Chargers and Voltage Regulators DG Building Essential Exhaust Fan "A" Essential Chiller "A" CEDM Normal AHUs Charging Pumps Permissive Actuation Relay Containment Spray Pump "A" <p>Starts equipment manually at the direction of the CRS. RO checks that SI flow meets minimum requirements for two pumps on Appendix 2.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>IF SIAS has actuated, THEN perform the following</p> <ol style="list-style-type: none"> IF RWT level is above 73%, AND it is desired to align ChargingPump suction through CHE-HV-536 or CHN-UV-514, THEN PERFORM Appendix 103, RCS Makeup / Emergency Boration. IF it is determined that RWT level may lower to less than 73% during the event, OR it is desired to align Charging Pump suction through an alternate suction path, THEN PERFORM ONE of thefollowing: <ul style="list-style-type: none"> Appendix 10, Charging Pump Alternate Suction to the RWT / Restoration Appendix 11, Charging Pump Alternate Suction to the SFP / Restoration <p>Expected Action:CRS may defer this action.</p>
	BOP	<p>Instruction 7</p> <p>Ensure that MSIS is actuated.</p> <p>Expected Action:BOP ensures that MSIS has been initiated by observing red annunciator RKN-UA-2A 03A (MSIS).</p>
	CRS	<p>Instruction 8</p> <p>IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure ONE RCP is stopped in each loop. IF RCS subcooling is less than 24°F, THEN ensure all RCPs are stopped. <p>Expected Action:N/A. Pressurizer pressure remains above 1837 psia.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 9</p> <p>IF ANY RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied.</p> <p>Expected Action:N/A. RCPs are secured.</p>
	CREW	<p>Instruction 10</p> <p>Determine the most affected Steam Generator by considering ALL of the following:</p> <ul style="list-style-type: none"> • High steam flow from Steam Generator • Steam generator pressures • Steam generator levels • RCS cold leg temperatures <p>Expected Action:CREW determines SG #1 is the most affected SG.</p>
	CRS	<p>Instruction 11</p> <p>IF the break is NOT isolated, THEN isolate the most affected Steam Generator by performing ONE of the following:</p> <ul style="list-style-type: none"> • Appendix 113, Steam Generator 1 Isolation • Appendix 114, Steam Generator 2 Isolation <p>Expected Action:CRS directs BOP to perform Appendix 113. See Page 61.</p>
	BOP	<p>Instruction 12</p> <p>Check that the most affected Steam Generator is isolated using ALL of the following:</p> <ul style="list-style-type: none"> • Steam generator pressures • Steam generator levels • RCS cold leg temperatures <p>Expected Action:After Appendix 113 is performed, BOP checks parameters and determines SG #1 is isolated.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 13</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none">• MSIS has actuated• Condenser Reheat Tray level is in the indicating range locally (CDN-LG-88 & 89) THEN override and open the Steam Trap Isolation Valve on the unaffected Steam Generator:<ul style="list-style-type: none">• SGA-HS-1133, Steam Trap SGNM23 Inlet Isolation Valve UV-1133• SGA-HS-1134, Steam Trap SGNM24 Inlet Isolation Valve UV-1134 <p>Expected Action:BOP closesUV-1133&UV-1134.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6 Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 14</p> <p>Stabilize RCS temperature using the lowest Tc by performing the following:</p> <ol style="list-style-type: none"> Maintain Tc within the P/T limits. REFER TO Appendix 2, Figures Steam the least affected Steam Generator using ANY of the following: <ul style="list-style-type: none"> SBCS to the condenser ADV from the Control Room Appendix 116, Operation of SBCS Valves 1007 and 1008 Appendix 18, Local ADV Operation Control feedwater to the least affected steam generator. WHEN control is regained, THEN record the following: <p>Time: _____</p> <p>RCS Tc: _____</p> <p>PZR Pressure: _____</p> IF the P/T limits were exceeded, REFER TO Appendix 2, Figures AND no RCPs are running, THEN maintain current temperature and pressure for at least 2 hours. <p>AFB-P01, AF Pump "B," fails to automatically start.</p> <p>Event 6</p> <p>Expected Action: BOP should observe that AFB is not running and manually start the pump. BOP may also start Auxiliary Feedwater Pump "N."</p>
<p>Critical Task: Start Auxiliary Feedwater Pump "B" or "N" establish feed to the unaffected SG while not exceeding limits in Standard Appendix 2, Figures, or filling the Pressurizer to solid conditions.</p>		<p>SAT / UNSAT</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 15</p> <p>IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.</p> <p>Expected Action:As directed.</p>
	CRS	<p style="text-align: center;">CAUTION</p> <p>Throttling HPSI injection valves will cause erosion damage to downstream piping.</p>
	RO	<p>Instruction 16</p> <p>IF at least one HPSI Pump is operating, AND ALL of the following conditions exist:</p> <ul style="list-style-type: none"> • RCS is 24°F [44°F] or more subcooled • Pressurizer level is greater than 10% [15%] and NOT lowering • The unisolated Steam Generator is available for RCS heat removal with level being maintained within or being restored to 45 - 60% [45 - 60%] NR • RVLMS indicates RVUH level is 16% or more THEN throttle HPSI flow or stop the HPSI Pumps one pump at a time. <p>THEN throttle HPSI flow or stop the HPSI Pumps one pump at a time.</p> <p>Expected Action:RO may throttle HPSI flow from HPSI Pump A.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 17</p> <p>IF any of the Safety Injection throttle criteria can NOT be maintained, THEN perform the following:</p> <ul style="list-style-type: none"> a. Raise HPSI flow. b. Start HPSI pumps as needed. <p>Expected Action:N/A. Flow from HPSI Pump A is sufficient to maintain throttle criteria.</p>
	RO	<p>Instruction 18</p> <p>IF pressurizer pressure is greater than 220 psia [220 psia], AND is being controlled, THEN perform the following:</p> <ul style="list-style-type: none"> a. Stop the LPSI Pumps. b. Close the LPSI Injection Valves. <p>Expected Action:RO stops LPSI pumps.</p>
	CRS	<p>Instruction 19</p> <p>IF pressurizer pressure can NOT be maintained above 220 psia [220 psia], AND the LPSI Pump(s) have been stopped, THEN perform the following:</p> <ul style="list-style-type: none"> a. Start available LPSI Pumps. b. Open LPSI Injection Valves. <p>Expected Action:N/A. Pressurizer pressure can be maintained above 220 psia.</p>
	BOP	<p>Instruction 20</p> <p>Maintain the unaffected steam generator level 45 - 60% [45 - 60%] NR.</p> <p>Expected Action:BOP uses AFB or AFN to maintain SG levels.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
Appendix 113, Steam Generator 1 Isolation		
	BOP	Instruction 1 Close BOTH ADVs on Steam Generator 1: <ul style="list-style-type: none"> • SGA-HV-184 • SGB-HV-178 Expected Action: BOP closes SGA-HV-184 & SGB-HV-178.
	BOP	Instruction 2 Close BOTH MSIVs on Steam Generator 1: <ul style="list-style-type: none"> • SGE-UV-170 • SGE-UV-180 Expected Action: BOP closes SGE-UV-170 & SGE-UV-180.
	BOP	Instruction 3 Ensure SGE-UV-169, SG 1 MSIV Bypass Valve, is closed. Expected Action: BOP checks SGE-UV-169 closed.
	BOP	Instruction 4 Close BOTH SG 1 Economizer FWIVs: <ul style="list-style-type: none"> • SGA-UV-174 • SGB-UV-132 Expected Action: BOP closes SGA-UV-174 & SGB-UV-132.
	BOP	Instruction 5 Close BOTH SG 1 Downcomer Isolation Valves: <ul style="list-style-type: none"> • SGA-UV-172 • SGB-UV-130 Expected Action: BOP closes SGA-UV-172 & SGB-UV-130.

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator), Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6</p> <p>Close BOTH SG 1 Blowdown Containment Isolation Valves:</p> <ul style="list-style-type: none"> • SGA-UV-500P • SGB-UV-500Q <p>Expected Action: N/A. Valves already closed in Event 1.</p>
	BOP	<p>Instruction 7</p> <p>Close BOTH of the following steam trap isolation valves:</p> <ul style="list-style-type: none"> • SGA-UV-1133, Steam Trap M23 Isolation • SGB-UV-1135A/1135B, Steam Trap M01/M02 Isolations <p>Expected Action: BOP closes SGA-UV-1133&SGB-UV-1135A/1135B.</p>
	BOP	<p>Instruction 8</p> <p>Check that the Steam Generator Safety Valves are closed.</p> <p>Expected Action: BOP observes no red lights on the 4 sets of indicators on the MAIN STEAM RELIF VLVS section of B06.</p>
	BOP	<p>Instruction 9</p> <p>Ensure BOTH Aux Feed Pump A Steam Supply Valves are closed:</p> <ul style="list-style-type: none"> • SGA-UV-134 SG 1 Steam Supply to Aux Feed Pump A • SGA-UV-134A SG1 Steam Supply to Aux Feed Pump A Bypass <p>Expected Action:BOP checks SGA-UV-134&SGA-UV-134A closed.</p>
	BOP	<p>Instruction 10</p> <p>Ensure BOTH Auxiliary Feedwater Isolation Valves are closed:</p> <ul style="list-style-type: none"> • AFB-UV-34 Aux Feedwater to SG1 Downstream Valve • AFC-UV-36 Aux Feedwater to SG1 Downstream Valve <p>Expected Action:BOP checks AFB-UV-34&AFC-UV-36 closed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 2 Event No.: 5& 6

Event Description: **Feedwater Line Break Inside Containment (Economizer)(Trip Initiator),
Train "A" BOP ESFAS Sequencer Fails, and Auxiliary Feedwater Pump "B" Fails to Start**

Time	Position	Applicant's Actions or Behavior
Examiner NOTE: Scenario may be terminated when SG #2 level is trending toward 45-60% NR, at the discretion of the Lead Examiner.		

Facility: PVNGS Scenario No.: 3 (Rev. 1) Op-Test No.: NRC - 2015

Examiners: _____ Operators: _____

Initial Conditions:(100% power, MOC).

Turnover:See attached.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N BOP/SRO	Place Reactor Power Cutback System in service
2	mfTH07	C RO/SRO (AOP/TS)	A small RCS Leak (approximately 4 gpm) develops [LCO 3.4.14, Condition A]
3	mfCH01A mfCH01C cmCPCH03HCNA02B_5 cmCPCH03HCNA02D_5	C BOP/SRO (AOP)	CEDM Fans “A” and “C” Trip, standby fans (HCN-A02B and A02D) fail to automatically start
4	mfRC03A	C RO/SRO	RCP 1A Thrust Bearing oil leak
5	doED_ZLS037271DS_W1 doRP_ZLSAAC02ALOP1_W1 mfAN_1A03D1	C BOP/SRO (TS)	The UV-1 LOV relay for PBA-S03 fails [LCO 3.3.7, Condition A]
6	mfED13A	C RO/BOP/ SRO (AOP)	Loss of NNN-D11
7	mfTH08 See scenario file	M ALL C BOP/SRO	A Pressurizer Steam Space LOCA occurs ATWS occurs requiring pressing Rx Trip pushbuttons. (CRITICAL TASK: Trip the Reactor prior to exiting Step 2 of SPTAs.)
8	cmCPSI01SIAP02_6 cmCPSI01SIBP02_5	C RO/SRO	HPSI Pump “A” trips and HPSI Pump “B” fails to automatically start. (CRITICAL TASK: Manually start HPSI Pump “B” prior to exiting SPTAs.)
End point	N/A	ALL	The scenario may be terminated once the RCS cooldown has been initiated, at the discretion of the Chief Examiner.

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

Target Quantitative Attributes (Per Scenario; See Section D.5.d)	Actual Attributes
1. Total malfunctions (5-8)	8
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)	1
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical tasks (2-3)	2

CRITICAL TASK	JUSTIFICATION	REFERENCES
Trip the Reactor prior to exiting Step 2 of SPTAs.	Failure to ensure that the Reactivity Control Safety Function is met will result in excess heat input into the RCS and overheating of the nuclear fuel (degradation of a fission product barrier). 40DP-9AP06, Standard Post Trip Actions Technical Guidelines, explain that, to ensure the Reactor is shutdown, operators must take Contingency Actions if the Reactor is not automatically shut down by the Plant Protection System.	<ul style="list-style-type: none"> PVNGS SPTA-2, When a reactor trip setpoint is exceeded, ensure the SPTA Reactivity Control contingency actions are taken prior to the completion of the SPTAs. CE SPTA-01, Establish Reactivity Control.
Manually start HPSI Pump “B” prior to exiting SPTAs.	<p>Inadequate Safety Injection flow may result in loss of subcooled margin and/or core uncover. Additionally, failure to establish SI flow may lead to an inappropriate transition to the Functional Recovery Procedure, which would complicate mitigation strategies. Failure to start HPSI will delay the point where SI throttle criteria are met, and could result in extended operation of the LPSI pumps without adequate flow through the pump, which could, in turn, result in LPSI pump damage (degraded ECCS).</p> <p>40DP-9AP06, Standard Post Trip Actions Technical Guidelines, Instruction Step: 5 RCS Pressure Control, Contingency Action 5.2, states: “Pressurizer pressure dropping to the SIAS setpoint may be an indication of a primary system break. If SIAS does not initiate automatically, the operator should manually initiate SIAS. If SIAS has actuated, or is required to be actuated, then the operator is required to ensure that the proper equipment is in operation. In doing so, the operator should ensure that the SI pumps are running and that the injection valves are open.”</p> <p>40DP-9AP08, Loss of Coolant Accident Technical Guideline, Instruction Step:32 LPSI stop criteria,</p>	<ul style="list-style-type: none"> PVNGS SPTA-1, When the Safety Injection Actuation setpoint is exceeded; ensure adequate Safety Injection to meet Safety Function prior to the completion of the SPTAs. CE SPTA-05, Establish RCS Pressure Control. 40DP-9AP06, Standard Post Trip Actions Technical Guidelines, Instruction Step: 5 40DP-9AP08, Loss of Coolant Accident Technical Guideline, Instruction Step: 5 40DP-9AP08, Loss of Coolant Accident Technical Guideline, Instruction Step:32

CRITICAL TASK	JUSTIFICATION	REFERENCES
	<p>states: "The intent of this step is to prevent damaging the LPSI Pumps as a result of extended operation without adequate flow through the pump." To secure the LPSI pumps, RCS pressure must be under control of the operator. Without HPSI pumps, coolant loss out of the break will exceed makeup capacity and RCS pressure will drop, delaying the point where LPSI pumps can be secured.</p> <p>40DP-9AP08, Loss of Coolant Accident Technical Guideline, Instruction Step: 5 Ensure adequate SI flow, states: "This step ensures that Safety Injection flow is within the limits of the design basis."</p>	

2015 NRC Scenario 3 Overview

Event 1	<p>The BOP operator places the Reactor Power Cutback System (RPCS) in service in accordance with 40OP-9SF04, Operation of the Reactor Power Cutback System, Sections 6.1.1 and 6.1.2. This BOP, normal evolution involves testing the cutback circuits at the RPCS module and selecting the appropriate subgroups. After the subgroups have been selected for LOSS OF FEED PUMP, or at the discretion of the Lead Examiner, the next event can be initiated.</p>
Event 2	<p>A small RCS Leak (approximately 4 gpm) develops. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Alarm on RU-1, Containment Atmosphere • Rising Containment Sump levels on BO7, RDN LI-410, RDN LI-10 • Rising Containment Sump levels on BO7, Yokogawa recorder RMN-TRJ-1, Points 17, 18, 18, and 20 <p>The crew initially responds using 74RM-9EF41, Radiation Monitoring System Alarm Response, for the RU-1 alarm. RP and the Radiological Monitoring Technician are informed. Operator Response 4 directs the crew to perform an RCS water inventory balance per 40ST-9RC02, ERFDADS (Preferred) Calculation of RCS Water Inventory.</p> <p>When rising Containment sump levels and/or temperatures are observed, the CRS implements 40AO-9ZZ02, Excessive RCS Leakrate, Section 3.0, RCS Leakage. For this small leakage, Pressurizer level is relatively stable and letdown remains in service with the existing Charging Pump configuration. LCO 3.4.14, RCS Operational Leakage, is evaluated. Chemistry and RP are informed. The leakrate is quantified, most likely using Appendix B, ERFDADS Leak Rate Determination. This appendix directs the RO to secure Reactor Makeup and setup ERFDADS to run the calculation by selecting "RCS LEAK RATE" on the SPDS Overview screen and selecting "TREND-1" on the Analog Point Attributes screen. The trend is run for at least 15 minutes or until VCT level lowers to 15%. Once the leak rate has been determined, VCT makeup is restored.</p>

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	<p>Since the leak is UNIDENTIFIED leakage and the calculated leak rate is approximately 4 gpm, the CRS enters LCO 3.4.14, Condition A. Once the CRS has determined that LCO 3.4.14, Condition A, must be entered, OR at the discretion of the Lead Examiner, the next event may be initiated.</p>
<p>Event 3</p>	<p>CEDM Fans “A” and “C” trip and the standby fans (HCN-A02B and A02D) fail to automatically start. The standby fans normally start on a low DP after a 120 second time delay. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Brighter than green lights on the previously-running fans • Annunciator 7A09B (CEDM ACU COOL SYS TRBL), Group E • Computer alarm point HCYS49 (CEDM ACU A Fan A(C) Elect Prot) • SEAS/SEIS alarms (21B, CEDM NORM; 6D1, Non-ESF Load Shed) <p>The BOP refers to 40AL-9RK7A for window 7A09B. CRS implements 40AO-9ZZ20, Loss of HVAC, Section 10.0, Loss of Containment Building HVAC – CEDM. Since RCS temperature is greater than 300°F, the crew has 40 minutes to restore CEDM cooling or trip the Reactor. The BOP waits for approximately two minutes, then start fans “B” and “D.” If they do not start the standby fans within 10 minutes; they must perform 40OP-9ZZ05, Power Operations, Section 8.0, Rapid Shutdown, to ensure the Unit is shut down within 40 minutes of the loss of CEDM HVAC. NOTE: Both 40AL-9RK7A and 40AO-9ZZ20 provide direction to start the standby fans.</p> <p>When the standby CEDM fans are started, on Board 1, alarm 1A5D (120 VAC 1E PNL 28 INVERTER D TRBL) actuates. This is accompanied by an alarm on Computer Point ID PNYS4, 120 VAC INV D AC/DC STATUS. 40AL-9RK1A directs the RO to dispatch an AO to check indications on the inverter control panel. When dispatched, the AO reports that there is a red “LOSS OF SYNC” light on PND-N14 Inverter D. In accordance with the table under Operator Action 9, the ARP directs the AO to check the availability of the alternate supply, then depress the “SYNCHRONIZATION” button to clear the alarm</p> <p>When the standby fans have been started, or at the discretion of the Lead Examiner, the next event may be initiated.</p>

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Event 4

RCP 1A Thrust Bearing oil leak, resulting in low level. RO refers to the Alarm Response Procedure 40AL-9RJ01 for point RCL107 (Low), RCP 1A BRG OIL RESVR LEV. The alarm actuates at 64%. The ARP directs the crew to validate the alarm by calling up the PMS or ERFDADS point. It then directs filling the RCP thrust bearing reservoir per 40OP-9RC01, Reactor Coolant Pump Operation. The operator uses Section 6.14 of 40OP-9RC01 to raise reservoir level. Instruction 6.14.5 directs the operator to start (and hold) RCN-P02A, RCP Lift Oil Pump P02A, to begin filling the reservoir. When ERFDADS point RCL107 indicates level is between 64% and 85% (determined by CRS), the lift pump switch is allowed to spring-return to AUTO. Operator Action 2.5 of the ARP prompts evaluation of 40AO-9ZZ04, Reactor Coolant Pump Emergencies, and the CRS may implement Section 3.0, Abnormal RCP Motor or Bearing Parameters. Section 3.0 directs the crew to monitor Upper Thrust Bearing temperature (may use lift pump to slow the rate) and restore the reservoir level per Appendix C, Restoring RCP Oil Reservoir Levels.

Once the RCP oil lift pump is returned to AUTO and the reservoir is filled per the CRS' direction, or at the discretion of the Lead Examiner, the next event may be initiated.

Examiner NOTE: To prevent repetitive alarms and fill operations, the malfunction will be deleted when the first alarm actuates.

Event 5

The UV-1 LOV relay for PBA-S03 fails. The crew is alerted by the following:

- Annunciator 1A3D (UNDV A CH TRIP)
- On Panel B01, the white light "PHASE AB 727-1" (for the 4.16KV BUS POTENTIAL INDICATION) is extinguished)
- Computer alarm point SAYS19 (ESF BUS UNDV CH A-1)

The RO refers to 41AL-1RK1A for window 1A03D. There are NO automatic actions for one channel UV trip. The ARP directs the operator to check the 4.16KV BUS POTENTIAL INDICATION lights and the RO observes that the "PHASE AB 727-1" light is off. Operator Action 3 of the ARP provides direction for only 1UV relay failure. Once alarm validity has been checked and the relay identified, the ARP directs the operator to bypass the malfunctioned relay in accordance with 40OP-9SA01, BOP ESFAS Modules Operation. The BOP uses Section 6.8, Placing BOP ESFAS Modules in Bypass. After obtaining a key and verifying Prerequisites and Initial Conditions are met, the BOP performs a lamp test (6.8.4), selects the proper relay channel (6.8.7), and checks that the opposite Train is NOT in Bypass (6.8.10). To complete the bypass, the BOP inserts the key, turns it clockwise ¼ turn, and verifies that the Bypass light is ON (6.8.11).

When the BOP opens the BOP ESFAS Panel door, the CR will receive alarm 5A2D (BOP ESFAS IN TEST) and the alarm will clear when the door is closed. When the BOP turns the key to Bypass, the CR will receive alarm 5A3D (BOP ESFAS CH BYP), which is an expected alarm.

The CRS evaluates TSs 3.3.7, 3.8.1, and 3.8.2. LCO 3.3.7, Diesel Generator (DG) – Loss of Voltage Start (LOVS), Condition A is entered because only one LOVS channel is inoperable. Condition A requires the failed channel to be placed in bypass or trip within 1 hour. LCO 3.8.1, AC Sources – Operating, is still met because the failed relay channel does not make offsite sources, the associated DG, nor the load sequencer inoperable. LCO 3.8.1, AC Sources – Shutdown, is not applicable because the Unit is NOT in Mode 5 or 6.

Once the BOP ESFAS door keys are returned, the next event may be initiated.

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Event 6

Loss of NNN-D11. The crew is alerted by the following:

- Annunciator 1C12B (120 VCA PNL D11/D12/15/16 TRBL)
- Numerous annunciators on B03, B04, and other panels
- Loss of power to recorders for Pressurizer level and VCT level/pressure
- Numerous Computer alarm points

The RO refers to 40AL-9RK1C, point NNYS3 (Bkr Ovld Trip), which prompts the RO to direct an AO to investigate the alarm. The AO reports that there is a ground detection indicating light on the center panel of the switchgear and that the bus feeder breaker 52-D11 has tripped. Operator Action 2 of the ARP then directs performance of 40AO-9ZZ14, Loss of Non-Class Instrument or Control Power. The crew walks down the control boards to evaluate affected equipment. FIN/electrical maintenance is informed and PR&C is notified to locate the ground. 40AO-9ZZ14 directs the crew to operate ADVs to control SG pressures. The RO places the following handswitches in Channel "X:"

- RCN-HS-110, Level Control Selector Switch
- RCN-HS-100-3, Heater Control Selector Switch
- RCN-HS-100, Pressure Control Selector Switch

The BOP ensures CEDMCS is NOT selected to Auto Sequential "AS." The RO ensures that no more than one Charging Pump is running and implements 40AO-9ZZ05, Loss of Letdown. The RO initially ensures no more than 1 Charging Pumps is running. At the direction of the CRS, the RO performs Appendix C, Extended Operations Without Letdown. The RO closes the Seal Injection Flow Control Valves and places all Charging Pumps in "PULL TO LOCK."

The CRS/SM/STA evaluates the following TSs:

- LCO 3.2.1, Linear Heat Rate (LHR)
- LCO 3.2.2, Planer Radial Peaking Factors (Fxy)
- LCO 3.2.3, Azimuthal Power Tilt (Tq)
- LCO 3.2.4, Departure From Nucleate Boiling Ratio (DNBR)
- LCO 3.2.5, Axial Shape Index (ASI)

The CRS will perform 40DP-9OP05, Control Room Data Sheet Instructions, due to the loss of JSCALOR. Since JSCALOR is not available and COLSS is functioning, 40DP-9OP05, Instruction 3.3.11 directs the crew to record the current NKBDELTC values and establish that value as the current steady state maximum power.

When the RO has completed the actions in 40AO-9ZZ05, Loss of Letdown, or at the discretion of the Lead Examiner, the next event may be initiated.

Event 7

A Pressurizer Steam Space LOCA occurs. PPS fails to initiate a Reactor Trip and the BOP uses the MANUAL REACTOR TRIP pushbuttons to trip the Reactor. Crew implements 40EP-9EO01, Standard Post Trip Actions.

(CRITICAL TASK: Trip the Reactor prior to exiting Step 2 of SPTAs)

While implementing the SPTAs, the RO observes that Pressurizer level is NOT trending to 33-53% and that RCS subcooling is less than 24°F, and then secures all RCPs. The RO also observes that Pressurizer pressure is less than 1837 psia and is NOT trending to 2225-2275 psia. The RO then ensures that SIAS is actuated. At this point, the RO may note that HPSI Pump "A" has tripped and HPSI Pump "B" has failed to

2015 NRC Scenario 3 Overview

	<p>automatically start. The RO should start HPSI Pump “B” at this time.</p> <p>(CRITICAL TASK: Manually start HPSI Pump “B” prior to exiting SPTAs.)</p> <p>When the SPTAs are complete, the CRS uses the Diagnostics Actions to determine that there is a LOCA in progress and then transitions to 40EP-9EO03, Loss of Coolant Accident.</p>
<u>Event 8</u>	<p>HPSI Pump “A” trips and HPSI Pump “B” fails to automatically start. While implementing 40EP-9EO03, Loss of Coolant Accident, Instruction 5.a directs the crew to check the status of the HPSI and LPSI pumps. If not already noted in the SPTAs, the RO observes that HPSI Pump “A” has tripped and HPSI Pump “B” has failed to automatically start. If not already started, the RO shall start HPSI Pump “B” at this time.</p> <p>The crew then attempts to locate and isolate the leak, place the Hydrogen Analyzers in service, and ensure CIAS has properly actuated. The RO will ensure that at least one CS header flow is greater than 4350 gpm and isolate RCP control bleedoff flow. The Hydrogen Recombiners are placed in service. Since Containment pressure is less than 50 psig, and SI flow is within the SI delivery curves, one CS Pump is stopped. The crew directs an AO to reenergize SIAS Load Shed Panels in accordance with Appendix 21. The crew cools down the Steam generators (and RCS) using the ADVs (since SBCS is unavailable due to the loss of NNN-D11).</p>
<u>End Point</u>	<p>The scenario may be terminated once RCS cooldown has been initiated, OR at the discretion of the Lead Examiner.</p>

TURNOVER

Plant Conditions:

- Unit 1 is at 100% power.
- The core is presently at 250 EFPD
- Risk Management Action Level is ORANGE
- AFA-P01 is out of service for unscheduled maintenance
- Train B is protected
- PC is NOT recircing the RWT
- Unit 2 is supplying the Aux Steam cross-tie header
- At the request of Chemistry, the pressurizer is in boron equalization in accordance with 40OP-9ZZ05, Power Operations

Equipment Out of Service:

- The Reactor Power Cutback System is out of service to replace overheating components. The components have been replaced.
- AFA-P01 is under clearance for maintenance. LCO 3.7.5, Condition A and Condition B, have been entered. The pump is expected to return to service in 8 hours.

Planned Shift Activities:

- Restore the RPCB System to service in accordance with 40OP-9SF04, Operation of the Reactor Power Cutback System, Sections 6.1.1 and 6.1.2.

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
T=0	CRS	Directs the BOP to place the RPCS in service in accordance with 40OP-9SF04, Operation of the Reactor Power Cutback System, Sections 6.1.1 and 6.1.2.

40OP-9SF04, Operation of the Reactor Power Cutback System, Section 6.1.1, Placing the RPCS in Service at or above 70% Power with no Subgroups Selected

	BOP	Instruction 6.1.1 Placing the RPCS in Service at or above 70% Power with no Subgroups Selected
	BOP	NOTE Appendix A - Reactor Power Cutback System Module Diagram, and Appendix B - Reactor Power Cutback System Response Matrix, are provided for information only.
	BOP	Instruction 6.1.1.1 Perform a lamp test on the RPCS module by pressing LAMP TEST. Expected Action: As directed.
	BOP	Instruction 6.1.1.2 Ensure the RPCS module lights turn ON. Expected Action: As directed.

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.1.3</p> <p>Check the AUTO ACTUATE OUT OF SERVICE light is ON at the RPCS module.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.1.4</p> <p>IF the TEST/RESET light is ON, THEN perform the following:</p> <ol style="list-style-type: none">Press the TEST/RESET button.Check TEST/RESET light is OFF.IF the TEST/RESET light is ON, THEN perform an RPCS reset per Section 6.6, Troubleshooting the RPCS. <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.1.5</p> <p>Press BOTH of the following buttons:</p> <ul style="list-style-type: none">DISPLAY SUBGROUP SELECTLOSS OF FEED PUMP <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.1.6</p> <p>Ensure all SUBGROUP SELECT lights are OFF.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.1.7</p> <p>IF ANY SUBGROUP SELECT lights are ON, THEN reset the subgroup(s) as follows:</p> <ol style="list-style-type: none">Press the TEST/RESET button.Press the TEST/RESET button again.Press BOTH of the following buttons:<ul style="list-style-type: none">DISPLAY SUBGROUP SELECTLOSS OF FEED PUMPCheck all SUBGROUP SELECT lights are OFF.IF any SUBGROUP SELECT lights remain ON, THEN consult the SM/CRS for appropriate action. <p>Expected Action: N/A. No SUBGROUP SELECT lights are ON.</p>
	BOP	<p>Instruction 6.1.1.8</p> <p>Press BOTH of the following buttons:</p> <ul style="list-style-type: none">DISPLAY SUBGROUP SELECTLOSS OF FEED PUMP <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.1.9</p> <p>Check all SUBGROUP SELECT lights are OFF.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.1.10</p> <p>IF ANY SUBGROUP SELECT lights are ON, THEN perform the following:</p> <ol style="list-style-type: none"> Press the TEST/RESET button. Press the TEST/RESET button again. Press BOTH of the following buttons: <ul style="list-style-type: none"> DISPLAY SUBGROUP SELECT LARGE LOAD REJECT Check_all SUBGROUP SELECT lights are OFF. IF any SUBGROUP SELECT lights remain ON, THEN consult the SM/CRS for appropriate action. <p>Expected Action: N/A. No SUBGROUP SELECT lights are ON.</p>
	BOP	<p style="text-align: center;">NOTE</p> <p>There will be a slight delay before the AUTO ACTUATE OUT OF SERVICE light turns OFF.</p>
	BOP	<p>Instruction 6.1.1.11</p> <p>Press the AUTO ACTUATE OUT OF SERVICE button.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.1.12</p> <p>Check AUTO ACTUATE OUT OF SERVICE light is OFF.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	Instruction 6.1.1.13 Press BOTH of the following buttons: <ul style="list-style-type: none">• DISPLAY SUBGROUP SELECT• LOSS OF FEED PUMP Expected Action: As directed.
	BOP	Instruction 6.1.1.14 Check all SUBGROUP SELECT lights are OFF. Expected Action: As directed.
	BOP	Instruction 6.1.1.15 Press BOTH of the following buttons: <ul style="list-style-type: none">• DISPLAY SUBGROUP SELECT• LARGE LOAD REJECT Expected Action: As directed.
	BOP	Instruction 6.1.1.16 Check all SUBGROUP SELECT lights are OFF. Expected Action: As directed.

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
40OP-9SF04, Operation of the Reactor Power Cutback System, Section 6.1.2, Selecting Subgroups at or above 74% power		
	BOP	<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> Appendix A - Reactor Power Cutback System Module Diagram, and Appendix B - Reactor Power Cutback System Response Matrix, are provided for information only. This section is performed when the Reactor power is greater than or equal to 74% and the RPCS is in service per Section 6.1.1, Placing the RPCS in Service at or above 70% Power with no Subgroups Selected. The RPCS may be left in Manual Select or Auto Actuate Mode.
	BOP	<p>Instruction 6.1.2.1</p> <p>Perform a lamp test on the RPCS module by pressing LAMP TEST.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.2</p> <p>Ensure the RPCS module lights turn ON.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.3</p> <p>Enter Subgroups 4, 5 and 22 for Large Load Reject as follows:</p> <ol style="list-style-type: none"> Press the ENTER MANUAL SUBGROUP SELECT button. Check the ENTER MANUAL SUBGROUP SELECT button light is ON. <p>Expected Action: As directed.</p>
	BOP	<p style="text-align: center;">NOTE</p> <p>When subgroup 5 is pressed both Subgroups 5 and 22 lights should turn ON.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.2.3 (continued)</p> <p>c. Press ALL of the following SUBGROUP SELECT buttons:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22 <p>d. Check ALL of the following SUBGROUP SELECT lights are ON:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22 <p>Expected Action: As directed.</p>
Examiner Note: It is possible that an internal circuit may “time out” during this process and not allow the operator to select subgroups. If this occurs, the operator should simply start the process over.		
	BOP	<p>Instruction 6.1.2.3 (continued)</p> <p>e. Press the LARGE LOAD REJECT button.</p> <p>f. Check LARGE LOAD REJECT light is ON.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.3 (continued)</p> <p>f. Check that after 15 to 20 seconds ALL of the following lights are OFF:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22• LARGE LOAD REJECT <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.2.3 (continued)</p> <p>g. Press BOTH of the following buttons:</p> <ul style="list-style-type: none">• DISPLAY SUBGROUP SELECT• LARGE LOAD REJECT <p>h. Check ALL of the following SUBGROUP SELECT lights are ON:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22 <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.3 (continued)</p> <p>i. Check after 15 to 20 seconds ALL of the following lights are OFF:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22• LARGE LOAD REJECT <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.4</p> <p>Enter Subgroups 4, 5 and 22 for LOSS OF FEED PUMP as follows:</p> <p>a. Press the ENTER MANUAL SUBGROUP SELECT button.</p> <p>b. Check the ENTER MANUAL SUBGROUP SELECT light is ON.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.2.4 (continued)</p> <p style="text-align: center;">NOTE</p> <p>When subgroup 5 is pressed both Subgroups 5 and 22 lights should turn ON.</p> <p>c. Press ALL of the following SUBGROUP SELECT buttons:</p> <ul style="list-style-type: none"> • Subgroup 4 • Subgroup 5 • Subgroup 22 <p>d. Check ALL of the following SUBGROUP SELECT lights are ON:</p> <ul style="list-style-type: none"> • Subgroup 4 • Subgroup 5 • Subgroup 22 <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.4 (continued)</p> <p>e. Press the LOSS OF FEED PUMP button.</p> <p>f. Check LOSS OF FEED PUMP light is ON.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 6.1.2.4 (continued)</p> <p>g. Check that after 15 to 20 seconds ALL of the following lights are OFF:</p> <ul style="list-style-type: none"> • Subgroup 4 • Subgroup 5 • Subgroup 22 • LOSS OF FEED PUMP <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 (Rev. 0) Event No.: 1

Event Description: **Place the Reactor Power Cutback System in Service**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.1.2.4 (continued)</p> <p>h. Press BOTH of the following buttons:</p> <ul style="list-style-type: none">• DISPLAY SUBGROUP SELECT• LOSS OF FEED PUMP <p>i. Check ALL of the following SUBGROUP SELECT lights are ON:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22 <p>Expected Action: As directed</p>
	BOP	<p>Instruction 6.1.2.4 (continued)</p> <p>j. Check that after 15 to 20 seconds ALL of the following lights are OFF:</p> <ul style="list-style-type: none">• Subgroup 4• Subgroup 5• Subgroup 22• LOSS OF FEED PUMP <p>Expected Action: As directed</p>
Examiner NOTE: When the operator reports that the RPCS has been returned to service, OR at the discretion of the Lead Examiner, may proceed to next event.		

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CREW	Alarm for RU-1, Containment Atmosphere, is received and acknowledged on the RMS Computer Alarm response procedure 74RM-9EF41 is referenced for operator response.

74RM-9EF41, RU-1, Containment Atmosphere

	RO	<p style="text-align: center;">NOTE</p> <p>The noble gas and particulate channels are RCS leak detection channels required by Technical Specification 3.4.16. Alarm setpoints are set to alert personnel to a significant increase in RCS leakage. The iodine channel is used to only alert personnel to increased iodine levels for the purpose of keeping personnel exposure ALARA. It is not used for indication of increased RCS leak rate.</p>
	RO	<p>Operations Response 1</p> <p>If containment purge is in progress, secure the purge for an alarm on the particulate or gas channel.</p> <p>Expected Action: N/A. Purge <i>not</i> in progress.</p>
	CREW	<p>Operations Response 2</p> <p>Notify RP of the alarm and, if applicable, inform personnel in containment of a possible airborne hazard.</p> <p>Expected Action: RP notified. No one is in Containment.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Operations Response 3</p> <p>Notify the Radiological Monitoring Technician of the alarm.</p> <p>Expected Action: Radiological Monitoring Technician notified.</p>
	RO	<p>Operations Response 4</p> <p>Perform an RCS water inventory balance per 40ST-9RC02 if the particulate or gas channel indicates an increase in RCS leak rate (increasing radioactivity trend). (RCTS 037908.01)</p> <p>Expected Action: When rising Containment sump levels and/or temperatures are observed, the CRS implements 40AO-9ZZ02, Excessive RCS Leakrate, Section 3.0, RCS Leakage. Leakrate will be performed under the AOP.</p>

40AO-9ZZ02, Excessive RCS Leakrate, Section 3.0, RCS Leakage

	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 2</p> <p>IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running.</p> <p>Expected Action: N/A. Leak is within capabilities of existing charging pump configuration.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 3</p> <p>IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown.</p> <p>Expected Action: N/A. Leak is within capabilities of existing charging pump configuration.</p>
	CRS	<p>Instruction 4</p> <p>IF ALL of the following alarms have been received:</p> <ul style="list-style-type: none"> • Regenerative heat exchanger high temp (3A10A) • Letdown line low pressure (3A10A) • Letdown radiation monitor low flow (3A10B) <p>THEN ensure letdown is isolated.</p> <p>Expected Action: N/A. These alarms should not actuate.</p>
	CRS	<p>Instruction 5</p> <p>IF ALL of the following conditions exist:</p> <ul style="list-style-type: none"> • All available Charging Pumps are operating • Letdown is isolated • Pressurizer level is lowering <p>THEN perform the following:</p> <ol style="list-style-type: none"> a. Ensure that the Reactor is tripped. b. GO TO ONE of the following: <ul style="list-style-type: none"> • 40EP-9EO01, Standard Post Trip Actions • 40EP-9EO11, Lower Mode Functional Recovery <p>Expected Action: N/A. Trip not required. PZR is relatively stable.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>Ensure the event is being classified.</p> <p>Expected Action: CRS prompts SM to classify.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>Appendix I, LCO Required Action Tracker, is reference use, and may be performed by CRS, but should be provided to the SM or STA to be used as a guide to the LCO required actions.</p>
	CRS	<p>Instruction 7</p> <p>Initiate Appendix I, LCO Required Action Tracker.</p> <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 8</p> <p>IF the unit is in Mode 1 - 4, THEN ensure compliance with LCO 3.4.14, RCS Operational Leakage. (Refer to Appendix I, LCO Required Action Tracker)</p> <p>Expected Action: Since the leak is UNIDENTIFIED leakage and the calculated leak rate is approximately 4 gpm, the CRS enters LCO 3.4.14, Condition A.</p>
	CREW	<p>Instruction 9</p> <p>Direct Chemistry to perform 74DP-9ZZ05, Abnormal Occurrence Checklist.</p> <p>Expected Action: As directed.</p>
	CREW	<p>Instruction 10</p> <p>Notify Radiation Protection that an RCS leak exists.</p> <p>Expected Action: Radiation Protection notified.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	RO	<p style="text-align: center;">NOTE</p> <p>RCS leakage into the RDT is identified leakage by design (UFSAR 5.2.5.5).</p>
	RO/CRS	<p>Instruction 11</p> <p>Determine the leakrate using ANY of the following:</p> <ul style="list-style-type: none">• Appendix A, 15 Minute Leak Rate Calculation• Appendix B, ERFDADS Leak Rate Determination• 40ST-9RC02, ERFDADS (Preferred) Calculation of RCS Water Inventory• 40ST-9RC05, Manual Calculation of RCS Water Inventory• Inventory• 40ST-9RC08, OAP (Backup) Calculation of RCS Water Inventory <p>Expected Action: RO calculates RCS leakrate IAW Appendix B. Determines that the leakrate is approximately 4 gpm. See Page 18.</p> <p>CRS determines that this exceeds the limit of 1 gpm for UNIDENTIFIED LEAKAGE and enters LCO 3.4.14, Condition A.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 12</p> <p>Evaluate ALL of the following to attempt to identify the source of the leakage:</p> <ul style="list-style-type: none">• Auxiliary Building and Containment radiation monitor alarms and trends• RU-4, 5, 6, 139, 140, 141, and 142 trending and alarm status• RCP seal cooler temperature• Nuclear Cooling Water return temperature from RCP(s)• Nuclear Cooling Water Surge Tank level and pressure alarms• Auxiliary Building and Containment sump levels and alarms• Containment humidity• Charging temperature and pressure• Steam Generator levels• Steam Generator feed / steam mismatch• EDT / RDT levels• Regen Hx exit temperature• Letdown line pressure• Letdown Radiation Monitor flow <p>Expected Action: Crew determines that the leak is inside Containment.</p>
	CREW	<p>Instruction 13</p> <p>Direct an operator(s) to walkdown charging and letdown piping.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 14</p> <p>IF a Steam Generator tube leak is suspected, THEN GO TO Section 5.0, STEAM GENERATOR TUBE LEAK.</p> <p>Expected Action: N/A. No SGTR in progress</p>
	CRS	<p>Instruction 15</p> <p>IF RCS to Nuclear Cooling Water leakage is suspected, THEN GO TO Section 4.0, RCS TO NC LEAKAGE.</p> <p>Expected Action: N/A. No leak to NCW in progress.</p>
	CRS	<p>Instruction 16</p> <p>IF the leak is in the discharge of the Charging Pumps, THEN perform the following:...</p> <p>Expected Action: N/A. Leak is not in Charging Pump discharge.</p>
		<p style="text-align: center;">NOTE</p> <p>Cooling down letdown prior to isolation will prevent the leak from continuing to steam after isolation. Letdown flow of approximately 10 gpm will optimize the cooldown.</p>
	CRS	<p>Instruction 17</p> <p>IF a leak in Letdown is indicated, THEN perform the following: ...</p> <p>Expected Action: N/A. Leak is not in letdown.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CRS	Instruction 18 IF the leak is to any Safety Injection Tank, THEN perform the following: Expected Action: N/A. Leak is not to a SIT.
	CRS	Instruction 19 IF the leak is from any Pressurizer Relief Valve, THEN perform the following: Expected Action: N/A. Leak is not from a PZR Relief Valve.
	CRS	Instruction 20 Consider ALL of the following: <ul style="list-style-type: none">• Ability of LRS to keep up with the leak• Isolating Auxiliary Building Sumps discharge to LRS• De-energizing the Aux Building Sump Pumps• Isolating Containment Sumps discharge to LRS• De-energizing the Containment Sump Pumps Expected Action: As directed.
	CRS	Instruction 21 IF the leakage has NOT been isolated, THEN continue efforts to locate and isolate the leak. Expected Action: As directed.

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 22</p> <p>IF the appropriate exit conditions listed in Section 2.0 have been met, THEN GO TO the appropriate procedure(s) for the current plant condition.</p> <p>Expected Action: If CRS reaches this point in the procedure, determines that the plant needs to be placed in COLD SHUTDOWN.</p>

40AO-9ZZ02, Appendix B, ERFDADS Leak Rate Determination

	RO	<p>Instruction 1</p> <p>Enter Appendix Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>Ensure Tc is constant (+/-1°F).</p> <p>Expected Action: Operators check ERFDADS for constant Tc.</p>
	RO	<p>Instruction 3</p> <p>Check that pressurizer pressure is stable between 2235 psia and 2265 psia.</p> <p>Expected Action: RO observes pressurizer pressure on ERFDADS or RCN-PR-100.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	RO	Instruction 4 Ensure Chemistry is NOT drawing samples from the RCS or CVCS. Expected Action: As directed.
	RO	Instruction 5 Ensure that ONE of the following conditions exist: <ul style="list-style-type: none">• Letdown is aligned to the VCT• Letdown is isolated Expected Action: RO checks lineup on B03. Notes UV-500 (CHN-HS-500) red VCT/RESET light is lit.
	RO	Instruction 6 Ensure that ONE of the following conditions exist: <ul style="list-style-type: none">• Charging pump suction is aligned to the VCT• Charging pumps are stopped Expected Action: RO checks lineup on B03. Notes UV-501 (CHN-HS-501) red OPEN light is lit.
	RO	Instruction 7 Place CHN-FIC-210X, Reactor Makeup Water to VCT, in "MANUAL" with zero output. Expected Action: As directed.

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	RO	Instruction 8 Place CHN-FIC-210Y, Boric Acid Makeup to VCT, in "MANUAL" with zero output. Expected Action: As directed.
	RO	Instruction 9 Place CHN-HS-527, Make-up to Charging Pumps (VCT Bypass) Valve, in "CLOSED". Expected Action: As directed.
	RO	Instruction 10 WHEN CHN-UV-527 indicates closed, THEN place CHN-HS-210, Makeup Mode Select Switch, in "MANUAL". Expected Action: As directed.
	RO	Instruction 11 Select the "RCS LEAK RATE" box on the SPDS Overview screen. Expected Action: As directed.
	RO	Instruction 12 Select the "TREND-1" button on the Analog Point Attributes screen for point SPDS5047. Expected Action: As directed.

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 13</p> <p>Ensure BOTH of the following on the trend screen for SPDS5047:</p> <ul style="list-style-type: none">• Range; - 20 to 80 gpm• Trend length 30 mins <p>Expected Action: As directed.</p>
	RO	<p>Instruction 14</p> <p>IF conditions (such as leakrate getting worse) require restoration of VCT Makeup prior to completing data collection, THEN GO TO step 18.</p> <p>Expected Action: N/A. Leakrate is steady.</p>
	RO	<p>Instruction 15</p> <p>Allow the trend to run for at least 15 minutes, OR until VCT level has lowered to 15%.</p> <p>Expected Action: RO allows trend to run for 15 minutes.</p>
	RO	<p>Instruction 16</p> <p>Interpret the leakrate trend using ALL of the following:</p> <ul style="list-style-type: none">• Indicated leakrate will lag behind changes in actual leakrate for at least 7.5 minutes• A constant slope indicates a constant leakrate• An increasing slope indicates an increasing leakrate• Actual leakrate is indicated when the trend stabilizes <p>Expected Action: RO observes the trend stabilizes.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 2

Event Description: **Small RCS Leak (approximately 4 gpm)**

Time	Position	Applicant's Actions or Behavior
	RO	Instruction 17 Inform CRS of leakrate calculation results. Expected Action: RO informs CRS that leakrate is approximately 4 gpm.
		NOTE If an auto make-up demand occurs while the system is in manual, it may be necessary to reset CHN-HS-512 and/or CHN-HS-527.
	RO	Instruction 18 Restore VCT makeup by performing the following: <ul style="list-style-type: none">a. Place CHN-HS-210 in "AUTO".b. Place CHN-HS-527 in "OPEN/AUTO".c. Place CHN-FIC-210X in "AUTO".d. Place CHN-FIC-210Y in "AUTO". Expected Action: As directed.
Examiner NOTE: Once the CRS briefs the crew on entry into LCO 3.4.14, Condition A, OR at the discretion of the Lead Examiner, may proceed to the next event.		

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 3

Event Description: **CEDM Fans “A” and “C” Trip, standby fans (HCN-A02B and A02D) fail to automatically start**

Time	Position	Applicant's Actions or Behavior
T=23	CREW	<p>Receives and acknowledges:</p> <ul style="list-style-type: none"> Annunciator 7A09B (CEDM ACU COOL SYS TRBL), Group E Computer alarm point HCYS49 (CEDM ACU A Fan A(C) Elect Prot) <p>Alarm response procedure 40AL-9RK7A is referenced for alarm response.</p>

40AL-9RK7A, 7A09B (CEDM ACU COOL SYS TRBL)

	BOP	<p>Auto Action 1</p> <p>The breaker for the affected CEDM ACU will trip and the fan will stop.</p>
	BOP	<p>NOTE</p> <p>The Standby CEDM Air Cooling Fan starts after a Reset Time Delay. Backdraft dampers have been installed to allow any single CEDM Cooling Fan to provide sufficient cooling.</p>
	BOP	<p>Auto Action 2.</p> <p>IF the loss of one CEDM Fan in a CEDM ACU causes DP to fall below the auto start set point,</p> <p>OR the loss of two CEDM Fans in one CEDM ACU causes DP to fall below the auto start set point,</p> <p>THEN the standby CEDM Air Cooling Unit should auto start:</p> <ul style="list-style-type: none"> HCA-HS-49, CEDM ACU FANS A/C A02A/A02C amber light on. HCB-HS-50, CEDM ACU FANS B/D A02B/A02D amber light on.

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 3

Event Description: **CEDM Fans “A” and “C” Trip, standby fans (HCN-A02B and A02D) fail to automatically start**

Time	Position	Applicant’s Actions or Behavior
	BOP	<p>First Priority Operator Action 1 and 1.1 (NOT RUNNING)</p> <p>IF the in-service CEDM Air Cooling Unit is NOT running, AND the standby CEDM ACU did NOT auto start, THEN perform the following for the standby CEDM Air Cooling Unit:</p> <p>Place the applicable handswitch to the START position:</p> <ul style="list-style-type: none"> • HCA-HS-49, CEDM ACU FANS A/C A02A/A02C. • HCB-HS-50, CEDM ACU FANS B/D A02B/A02D. <p>Expected Action: BOP waits for 2 minutes. When standby fans do not auto start, manually starts fans B/D.</p> <p>Examiner Note: The CRS may not allow the operator to put the tripped ACUs handswitches in Pull to Lock because he may want to quarantine the equipment to help determine the cause of the fault.</p> <p>Examiner Note: Expected Alarms:</p> <ul style="list-style-type: none"> • 01A4D (120VAC 1E PNL D26 INVERTER B TRBL) • 01A5D (120VAC 1E PNL D28 INVERTER D TRBL) <p>AO Report: If dispatched to investigate inverter trouble alarms, wait 2 minutes and report that both inverters have a red “Inverter Loss of Sync” light.</p>
	BOP	<p>First Priority Operator Action 1.2</p> <p>Check for proper operation the running CEDM ACU using the indications on Panel B07.</p> <p>Expected Action: BOP checks HV-486, Nuclear Clg Wtr From CEDM ACU B Vlv, opens. Also checks CEDM fans B&D red lights are lit</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 3

Event Description: **CEDM Fans “A” and “C” Trip, standby fans (HCN-A02B and A02D) fail to automatically start**

Time	Position	Applicant’s Actions or Behavior
	CRS	First Priority Operator Action 2 IF BOTH CEDM fans fail to start, THEN GO TO 40AO-9ZZ20, Loss of HVAC, Section 10.0. Expected Action: CRS implements 40AO-9ZZ20.

40AO-9ZZ20, Loss of HVAC, Section 10.0 (possible alternate procedure for starting fans)

	CRS	Instruction 1 Enter AOP Entry Time and Date: Expected Action: As directed.
	CRS	CAUTION If RCS temperature is 300°F or more, CEDM coils may be damaged if CEDM Cooling is not restored or if the coils are not de-energized within 40 minutes of the initial loss.
	BOP	Instruction 2 IF any CEDM Fan is available, THEN start at least one CEDM Fan. Expected Action: BOP waits for 2 minutes. When standby fans do not auto start, manually starts fans B/D.

Examiner NOTE: Once the BOP starts the standby CEDM fans, **OR** at the discretion of the Lead Examiner, may proceed to the next event.

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. Operators are alerted by the following:</p> <ul style="list-style-type: none">• Annunciator 4A15A (RCP COMM TRBL)• Computer alarm point RCL107 (Low), RCP 1A BRG OIL RESVR LEVEL <p>Alarm response procedure 40AL-9RJ01 or 40AL-9RK4A is referenced for operator response.</p>

Examiner Note: The actions below are also now contained in 40AL-9RK4A Window 15A. These actions will remain in both procedures until the New PC is installed in all 3 units.

40AL-9RJ01, Point ID RCL107 (Low), RCP 1A BRG OIL RESVR LEV

	RO	<p>Operator Action 1</p> <p>Confirm the alarm using the PMS or ERFDADS point for the affected RCP Thrust Bearing Oil Reservoir level.</p> <p>Expected Action: RO calls up RCP 1A Group Display on the PMS or Point ID RCL107 on ERFDADS. Confirms level is below 64%.</p>
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Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Actions 2 and 2.1</p> <p>IF any RCP thrust bearing oil reservoir level is less than 64%, THEN perform the following:</p> <p>Fill the affected RCP thrust bearing oil reservoir per 40OP-9RC01, Reactor Coolant Pump Operation.</p> <p>Expected Action: RO uses 40OP-9RC01, Section 6.14 to raise reservoir level. See Page 43.</p>
	RO	<p>Operator Action 2.2</p> <p>Monitor the affected RCP thrust bearing oil reservoir level, for an increasing trend in oil leakage into the RCP Oil Collection System or back to the RCP Oil Lift Tank.</p> <p>Expected Action: RO monitors RCP 1A Group Display on the PMS or Point ID RCL107 on ERFDADS.</p>
	RO	<p>Operator Action 2.3</p> <p>IF the trend in oil leakage into the RCP Oil Collection System or back to the RCP Oil Lift Tank is increasing, THEN notify System Engineering to evaluate the need to remove the affected RCP from service.</p> <p>Expected Action: N/A. Trend is not increasing.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 2.4</p> <p>Monitor the affected RCP thrust bearing temperature using ANY of the following:</p> <ul style="list-style-type: none"> • Trend Recorder RMN-TJR-2 (B07) • Plant Monitoring System computer • ERFDADS computer <p>Expected Action: BOP/RO monitor RCP thrust bearing temperature as directed.</p>
	CRS	<p>Operator Action 2.5</p> <p>Evaluate affected RCP thrust bearing trends per 40AO-9ZZ04, Reactor Coolant Pump Emergencies, for required actions.</p> <p>Expected Action: CRS refers to 40AO-9ZZ04. <i>See Page 31.</i></p>

40OP-9RC01, Reactor Coolant Pump Operation. Section 6.14, Operation of RCP Lift Oil Pump P02A (RCP 1A)

	RO	<p>Instruction 6.14.1</p> <p>IF starting RCN-P02A, RCP Lift Oil Pump P02A, in preparation for starting RCP 1A, THEN GO TO Section 6.1, Starting RCP 1A.</p> <p>Expected Action: N/A. RCP 1A is already running.</p>
	RO	<p>Instruction 6.14.2</p> <p>Place RCN-HS-10, RCP 1A Oil Lift Pump P02A, in STOP.</p> <p>Expected Action: As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 6.14.3</p> <p>Ensure BOTH of the following are closed:</p> <ul style="list-style-type: none">• MCC Breaker NHN-M1517, RCP Oil Lift Pump P02A• MCC Breaker NHN-M1535, Backup Breaker for M1517 <p>Expected Action: RO knows breakers are closed because of indication on handswitch.</p>
	RO	<p>Instructions 6.14.4</p> <p>IF starting RCN-P02A, RCP Lift Oil Pump P02A, to warm the oil or fill the upper thrust bearing oil reservoir when RCP 1A is stopped, THEN perform the following:</p> <p>Expected Action: N/A. Not warming the oil and RCP 1A is running.</p>
	RO	<p>Instructions 6.14.5 and 6.14.5.1</p> <p>IF starting RCN-P02A, RCP Lift Oil Pump P02A, to fill the upper thrust bearing oil reservoir when RCP 1A is running, THEN perform the following:</p> <p>Check computer point RCL131, RCP 1A Oil Lift Tank Level, indicates greater than or equal to 1.0%.</p> <p>Expected Action: RO monitors RCP 1A Group Display on the PMS or Point ID RCL131 on ERFDADS.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	RO	Instruction 6.14.5.2 Take and hold RCN-HS-10, RCP 1A Oil Lift Pump P02A, in START. Expected Action: As directed.
	RO	Instruction 6.14.5.3 Monitor ERFDADS point RCL107P, RCP 1A BRG OIL RESVR Level. Expected Action: As directed.
	RO	NOTE Upper thrust bearing oil reservoir target level is 78%.
	RO	Instruction 6.14.5.4 WHEN RCP 1A upper thrust bearing oil reservoir level is between 64% and 85%, THEN release RCN-HS-10, RCP 1A Oil Lift Pump P02A, to AUTO. Expected Action: As directed.
	RO	Instruction 6.14.5.5 Notify the SM/CRS RCP 1A upper thrust bearing oil reservoir level is in the target band. Expected Action: As directed.

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6.14.5.6</p> <p>IF ANY of the following conditions exist:</p> <ul style="list-style-type: none">• There is a four hour pump-up frequency of the thrust bearing• Kennett Unit low level occurs• A doubling of the net oil loss rate from the RCP oil system occurs over a 24 hour period <p>THEN notify the SM/CRS to assemble a Management Response Team (MRT).</p> <p>Expected Action: N/A. None of the conditions are met.</p>

40AO-9ZZ04, Reactor Coolant Pump Emergencies, Section 3.0, Abnormal RCP Motor or Bearing Parameters

	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 2</p> <p>IF ANY RCP NC low flow annunciators are in alarm, THEN PERFORM 40AO-9ZZ03, Loss of Cooling Water Section 4.0.</p> <p>Expected Action: N/A. No low flow alarms.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 3</p> <p>IF ANY RCP Upper Thrust Bearing temperature is 245°F or more, (RCN-TE-156/166/176/186) OR motor amps is 520 amps or more, THEN perform the following:</p> <ul style="list-style-type: none">a. Ensure the Reactor is tripped.b. Stop the affected RCP.c. GO TO the appropriate procedure for the current plant conditions. <p>Expected Action: N/A. Upper Thrust Bearing temperature is normal at this time. (Takes approximately 45 minutes to exceed 245°F)</p>
	CRS	<p>Instruction 4</p> <p>IF ANY RCP Upper Thrust Bearing (temperature is trending to 245°F, THEN consider starting the Hydraulic Oil Lift Pump to slow the rate of temperature rise.</p> <p>Expected Action: N/A. Upper Thrust Bearing temperature is normal at this time. Temp will begin to rise later with no operator action. (Takes approximately 45 minutes to exceed 245°F)</p>
	BOP	<p>Instruction 5</p> <p>IF the RCP parameters indicated on RMN-TJR-2 points 1-32 exceed ANY of the trip setpoints listed in Appendix A, RCP Motor Or Bearing Trip Setpoints, THEN perform the following:</p> <ul style="list-style-type: none">a. Ensure the Reactor is tripped.b. Stop the affected RCP.c. GO TO the appropriate procedure for current plant conditions. <p>Expected Action: N/A. No temperature limits exceeded.</p>

Op-Test No.: 2015 NRC Scenario No.: <u> 3 </u> Event No.: <u> 4 </u>		
Event Description: RCP 1A Thrust Bearing Oil Leak		
Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>IF ANY RCP motor or bearing parameter is trending to a trip setpoint (REFER TO Appendix D, Instrumentation and Setpoints), AND the CRS determines a plant shutdown or cooldown is needed,</p> <p>THEN perform BOTH of the following:</p> <ul style="list-style-type: none"> • The appropriate procedure to shutdown or cooldown the plant. • 40OP-9RC01, Reactor Coolant Pump Operation to stop the affected RCP. <p>Expected Action: N/A. No temperatures trending to a trip setpoint at this time.</p>
	RO	<p>Instruction 7</p> <p>IF ANY of the following conditions exist:</p> <ul style="list-style-type: none"> • Upper Thrust Bearing Oil Reservoir level, RCL107/ 117/127/137, is less than 64%. • Hydraulic Oil Lift Pump Reservoir level, RCL131/ 141/151/161, is less than 8%. • Motor Journal Bearing Oil Reservoir level, RCL108/ 109/118/119/128/129/138/ 139, is less than 28%. <p>THEN PERFORM Appendix C, Restoring RCP Oil Reservoir Levels.</p> <p>Expected Action: RO notes RCL107 less than 64%. Implements Appendix C. See below.</p>
	RO	<p>Instruction 8</p> <p>IF the appropriate exit conditions listed in Section 2.0 are met, THEN GO TO the appropriate procedure for the current plant conditions.</p> <p>Expected Action: When RO completes Appendix C and reports to CRS, CRS exits 40A)-9ZZ04.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 4

Event Description: **RCP 1A Thrust Bearing Oil Leak**

Time	Position	Applicant's Actions or Behavior
40AO-9ZZ04, Appendix C, Restoring RCP Oil Reservoir Levels		
	RO	Instruction 1 Enter Appendix Entry Time and Date: Expected Action: As directed.
	RO	Instruction 2 IF ANY RCP Upper Thrust Bearing Oil Reservoir level is 64% or less, AND the Hydraulic Oil Lift Pump Reservoir level is greater than 8%, THEN perform the following: a. Start the RCP's oil lift pump. b. WHEN level reaches the desired value between 64% and 85%, THEN stop the oil lift pump. Expected Action: RO starts RCP 1A Oil Lift Pump. Holds switch in START until reservoir reaches level directed by CRS.
	RO	Instruction 3 IF ANY RCP Upper Thrust Bearing Oil Reservoir level is 64% or less AND the Hydraulic Oil Lift Pump Reservoir level is 8% or less, THEN perform the following:... Expected Action: N/A. Hydraulic Oil Lift Pump Reservoir is greater than 8%.
Examiner NOTE: Once the RCP oil lift pump is returned to AUTO and the reservoir is filled per the CRS' direction, or at the discretion of the Lead Examiner, the next event may be initiated.		

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms for B01A are received and acknowledged:</p> <ul style="list-style-type: none"> Annunciator 1A03D (UNDV A CH TRIP) Computer alarm point SAYS19 (ESF BUS UNDV CH A-1) <p>Alarm response procedure 40AL-9RK1A is referenced for operator response.</p>
40AL-9RK1A, 1A03D (UNDV A CH TRIP)		
	RO	<p>Automatic Actions</p> <ul style="list-style-type: none"> One channel undervoltage relay trip - None Two or more channel undervoltage relays tripped - Train A Load Shed actuates
	RO	<p>Operator Action 1.</p> <p>Confirm the alarm by ONE of the following:</p> <ul style="list-style-type: none"> Bus PBA-S03 Load Sheds and Diesel Generator A starts <p>Expected Action: N/A. Only 1 relay failed. No load shed occurs.</p>
		<p>NOTE</p> <p>The actuating undervoltage relays are arranged in 4 sets of two relays each. Output from both relays in any set will generate this alarm.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 1 (continued)</p> <ul style="list-style-type: none"> 4.16KV BUS S03 Potential Indication undervoltage light(s) on panel B01 are off. (lights go off on under voltage - they will be on with normal power) <p>Expected Action: RO observes that the 727-1 light is OFF.</p>
	RO	<p style="text-align: center;">NOTE</p> <p>The actuating undervoltage relays are arranged in 4 sets of two relays each. This is a selective 2 out of 4 LOP/LS relay logic. Any 2 of 4 LOP//LS relays (UV1-UV4) will generate a loss of power load shed signal. Either of the undervoltage relays associate with a LOP/LS relay will actuate the LOP/LS relay. As an example you could have 727-1 and 727-8 relay to cause UV1 and UV4 to actuate and result in LOP/LS. Both UV relays for a LOP/LS relay DO NOT need to actuate to cause the LOP/LS UV relay to actuate, only 1 UV relay actuating will actuate its associated LOP/LS relay.</p>
	RO	<p>Operator Action 2</p> <p>IF greater than or equal to two BOP ESFAS LOP/LS undervoltage relays are actuated, THEN perform the following:...</p> <p>Expected Action: Since only 1 relay has failed, this action will <u>not</u> be performed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 3 and 3.1</p> <p>IF one under voltage relay is actuated, THEN perform the following:</p> <p>Determine alarm validity using ALL of the following voltage indicators:</p> <ul style="list-style-type: none">• PEN-EI-G01, Diesel Generator A (AC volts)• PBA-EI-S03, 4.16kV Bus S03• PBA-EI-S03L, 4.16kV Bus S03 Norm Sply• PBA-EI-S03K, 4.16kV Bus S03 Alt Sply <p>Expected Action: RO observes voltage on the bus and breakers in normal positions.</p>
	RO	<p>Operator Action 3.2</p> <p>Determine actuated undervoltage relay using PBA-S03 undervoltage white relay lights on B01.</p> <p>Expected Action: On Panel B01, RO observes the white light "PHASE AB 727-1" (for the 4.16KV BUS POTENTIAL INDICATION) is extinguished)</p>
	BOP	<p>Operator Action 3.3</p> <p>IF the undervoltage relay has malfunctioned, THEN bypass malfunctioned undervoltage relay using 40OP-9SA01, BOP ESFAS Modules Operation.</p> <p>Expected Action: BOP bypasses failed UV relay IAW 40OP-9SA01. See next page.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	CREW	Operator Action 4 Initiate PVAR. Expected Action: As directed.
	CRS	Operator Action 5 REFER TO ALL the following Technical Specifications: <ul style="list-style-type: none">• 3.3.7• 3.8.1• 3.8.2 Expected Action: LCO 3.3.7, Diesel Generator (DG) – Loss of Voltage Start (LOVS), Condition A, is entered because only one LOVS channel is inoperable. Condition A requires the failed channel to be placed in bypass or trip within 1 hour. LCO 3.8.1, AC Sources – Operating, is still met because the failed relay channel does not make offsite sources, the associated DG, or the load sequencer inoperable. LCO 3.8.2, AC Sources – Shutdown, is not applicable because the Unit is NOT in Mode 5 or 6.

40OP-9SA01, BOP ESFAS Modules Operation, Section 6.8, Placing BOP ESFAS Modules in Bypass

	BOP	NOTE Bypassing the BOP ESFAS modules only blocks the field inputs (radiation monitor, UV relay) and the test input trips. Manual initiation and cross-trips from an unbypassed module will still function.
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Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.8.1 and 6.8.1.1</p> <p>ALL of the following Prerequisites are met:</p> <ul style="list-style-type: none">• Both Trains of BOP ESFAS are energized• The redundant module in the opposite BOP ESFAS Train is NOT in Bypass• If the BOP ESFAS module(s) are required to be OPERABLE per LCO 3.3.7, Diesel Generator (DG) - Loss of Voltage Start (LOVS), the UV Relays in the opposite BOP ESFAS Train are NOT in Bypass• The Sequencer module to be placed in Bypass is NOT in Auto Test <p>Expected Action: BOP determines that Prerequisites are met.</p>
	CRS	<p>Instruction 6.8.2 and 6.8.2.1</p> <p>Initial Conditions</p> <p>All applicable LCOs, and the Offsite Dose Calculation Manual (for radiation monitor input), have been reviewed for compensatory action requirements.</p>
	BOP	<p>Instruction 6.8.2.2.</p> <p>The BOP ESFAS door keys have been obtained.</p> <p>Expected Action: BOP obtains key from in front, and to the right, of CRS.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.8.2.3.</p> <p>The BOP ESFAS Bypass keys have been obtained.</p> <p>Expected Action: BOP obtains key from in front, and to the right, of CRS.</p>
	CRS	<p>Instruction 6.8.24.</p> <p>Fuel Services has been notified that the Fuel Building Radiation Monitors will be INOPERABLE, if any Dry Cask or Fuel Handling operations are in progress.</p> <p>Expected Action: N/A. FB Rad Monitors are OPERABLE.</p>
	CRS	<p>Instruction 6.8.2.5.</p> <p>Permission has been obtained from the SM/CRS to place BOP ESFAS module(s) in Bypass.</p> <p>Expected Action: By directing the BOP to bypass, permission is granted.</p> <p>Examiner Note: The following are expected alarms during this evolution:</p> <ul style="list-style-type: none">• 5A02D (BOP ESFAS IN TEST) – clears when door closed• 5A03D (BOP ESFAS CH BYP)

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.8.3</p> <p>IF a radiation monitor is to be placed in Local or Bypass due to transfer of radioactive material in the area of the radiation monitor,</p> <p>THEN check BOTH of the following:</p> <ul style="list-style-type: none"> • Radiation Protection is available to monitor the transfer of radioactive material. • Communications are established between the monitored area and the Control Room. (This will ensure that the proper BOP ESFAS function can be manually actuated in the event predetermined radiation levels are exceeded.) <p>Expected Action: N/A. Not a radiation monitor.</p>
	BOP	<p>NOTE</p> <p>Performance of Step 6.8.4 may activate alarm window BOP ESFAS IN TEST (5A02D) when the BOP ESFAS cabinet door is opened.</p>
	BOP	<p>Instruction 6.8.4</p> <p>Perform a lamp test on the affected BOP ESFAS cabinet.</p> <p>Expected Action: BOP depresses and holds LAMP TEST pushbutton.</p>
	BOP	<p>NOTE</p> <p>The blank areas associated with ALL of the following will be OFF.</p> <ul style="list-style-type: none"> • DG RUN • DG BKR • FBEVAS

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	Instruction 6.8.5 Ensure all lamps of the affected BOP ESFAS cabinet are ON. Expected Action: BOP observes that all lights are lit.
	BOP	Instruction 6.8.6 IF any lamp(s) are OFF during the lamp test, THEN perform the following:
	BOP	CAUTION Pressing the backlighted pushbutton too far or inadvertently pressing an adjacent pushbutton while replacing a burned out lamp may result in an actuation.
	BOP	Instruction 6.8.6.1 Replace any bulb(s) for the lamp(s) that were OFF. Expected Action: BOP replaces bulbs, if necessary.
	BOP	Instruction 6.8.6.2 Perform a second lamp test on the affected BOP ESFAS cabinet. Expected Action: BOP depresses and performs a LAMP TEST.

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p style="text-align: center;">NOTE</p> <p>The blank areas associated with ALL of the following will be OFF.</p> <ul style="list-style-type: none">• DG RUN• DG BKR• FBEVAS
	BOP	<p>Instruction 6.8.6.3</p> <p>Ensure all lamps of the affected BOP ESFAS cabinet are ON.</p> <p>Expected Action: BOP observes that all lights are lit.</p>
	BOP	<p>Instruction 6.8.6.4</p> <p>IF replacing bulb(s) does NOT correct the problem, THEN perform the following:</p> <ul style="list-style-type: none">a. Notify the SM/CRS of the condition.b. Initiate a PVAR for I&C to repair the lamp(s). <p>Expected Action: If bulbs are replaced, problem is corrected.</p>
	BOP	<p>Instruction 6.8.7</p> <p>Select the module(s), trip circuit(s), or relay channel(s) to be placed in Bypass by placing a check mark next to the device:</p> <p>Expected Action: BOP checks block to left of 727-1.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p style="text-align: center;">NOTE</p> <p>A bypassed FBEVAS, CREFAS and CPIAS module will show a single Bypass light ON.</p> <p>Expected Action: N/A. UV relay is NOT one of these modules.</p>
	BOP	<p style="text-align: center;">CAUTION</p> <p>Placing a FBEVAS, CREFAS or CPIAS module in Bypass when the redundant module in the other train is already in Bypass will cause both modules to come out of Bypass.</p> <p>Expected Action: N/A. UV relay is NOT one of these modules.</p>
	BOP	<p>Instruction 6.8.8</p> <p>IF ANY of the following BOP ESFAS modules will be placed in Bypass:</p> <ul style="list-style-type: none"> • FBEVAS • CREFAS • CPIAS <p>THEN check the redundant Train BOP ESFAS module is NOT in Bypass.</p> <p>Expected Action: N/A. These modules will <i>not</i> be placed in bypass.</p>
	BOP	<p style="text-align: center;">CAUTION</p> <p>Placing a CRVIAS module in Bypass when the redundant CRVIAS module in the other Train is already in Bypass will cause both relays to come out of Bypass.</p> <p>Expected Action: N/A. UV relay is NOT one of these modules.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 6.8.9</p> <p>IF a CRVIAS module will be bypassed, THEN check the same trip circuit in the redundant CRVIAS module is NOT in Bypass.</p> <p>Expected Action: N/A. UV relay is NOT one of these modules.</p>
	BOP	<p>NOTE</p> <ul style="list-style-type: none">• A bypassed LOP/LS module will show one or more of the U/V-1 to U/V-4 Bypass lights ON.• All four relays on one LOP/LS module may be bypassed at the same time if the module is not required to be OPERABLE.
	BOP	<p>CAUTION</p> <p>Placing a LOP/LS relay in Bypass when the redundant relay in the other train is already in Bypass will cause both relays to come out of Bypass.</p> <p>Expected Action: N/A. Other Train is NOT in Bypass.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6.8.10 and 6.8.10.1</p> <p>IF a LOP/LS module will be bypassed, THEN perform the following:</p> <p>Ensure compliance with ALL of the following LCOs:</p> <ul style="list-style-type: none">• 3.3.7, Diesel Generator (DG) - Loss of Voltage Start (LOVS)• 3.8.1, AC Sources - Operating• 3.8.2, AC Sources - Shutdown <p>Expected Action: LCO 3.3.7, Diesel Generator (DG) – Loss of Voltage Start (LOVS), Condition A is entered because only one LOVS channel is inoperable. Condition A requires the failed channel to be placed in bypass or trip within 1 hour. LCO 3.8.1, AC Sources – Operating, is still met because the failed relay channel does not make offsite sources, the associated DG or the load sequencer inoperable. LCO 3.8.1, AC Sources – Shutdown, is not applicable because the Unit is NOT in Mode 5 or 6.</p>
	BOP	<p>Instruction 6.8.10.2</p> <p>Check the LOP/LS module in the opposite Train is NOT in Bypass.</p> <p>Expected Action: BOP checks the LOP/LS module on BOP ESFAS Cabinet “B” (to the right of “A”). Notes the “BYP” light for UV-1 is <i>not</i> lit.</p>
	BOP	<p>Instruction 6.8.11 and 6.8.11.1</p> <p>Perform the following to bypass the module/trip circuit/relay channel:</p> <p>Insert the Bypass key in the slot for the selected module.</p> <p>Expected Action: BOP inserts key in the LOP/LS UV-1 slot.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
	BOP	<p style="text-align: center;">NOTE</p> <ul style="list-style-type: none"> Alarm window BOP ESFAS CH BYP (5A03D) is expected when the module, trip circuit, or relay channel is placed in Bypass. The keylocks are captive and the keys are left in place while the modules are in Bypass.
	BOP	<p>Instruction 6.8.11.2</p> <p>Turn the Bypass Key clockwise 1/4 turn or until the Bypass light comes ON.</p> <p>Expected Action: BOP turns key ¼ turn.</p>
	BOP	<p>Instruction 6.8.12</p> <p>Repeat Step 6.8.11 for all module(s), trip circuit(s), or relay channel(s) selected in Step 6.8.7.</p> <p>Expected Action: N/A. No other modules or relays will be bypassed.</p>
	BOP	<p>Instruction 6.8.13</p> <p>Verify that all module(s), trip circuit(s), or relay channel(s) selected in Step 6.8.7 are placed in Bypass.</p> <p>Expected Action: BOP observes that the "BYP" light is lit for the LOP/LS module on BOP ESFAS Cabinet "A."</p>
	RO	<p>Instruction 6.8.14</p> <p>Ensure manipulation of components requiring Independent Verification are documented per 02DP-0ZZ01, Verification of Plant Activities.</p> <p>Expected Action: IV will be performed by other operator.</p>

Op-Test No.: **2015 NRC** Scenario No.: 3 Event No.: 5

Event Description: **UV-1 LOV Relay for PBA-S03 Fails**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 6.8.15</p> <p>Ensure BOP ESFAS door keys are returned to the proper storage location.</p> <p>Expected Action: BOP returns keys to in front, and to the right, of CRS.</p>
Examiner NOTE: Once the BOP ESFAS keys are returned, OR when Lead Examiner deems appropriate, the next event may be initiated.		

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Alarms are received and acknowledged. Operators are alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 1C12B (120 VCA PNL D11/D12/15/16 TRBL) • Numerous annunciators on B03, B04, and other panels • Loss of power to recorders for Pressurizer level and VCT level/pressure • Numerous Computer alarm points <p>Alarm response procedure 40AL-9RK1C may be referenced for operator response.</p>

40AL-9RK1C, 1C12B (120 VCA PNL D11/D12/15/16 TRBL), Point ID NNYS3 (Bkr Ovld Trip)

	RO	<p>Operator Action 1</p> <p>Direct an Auxiliary Operator to investigate the cause of the alarm: (NNN-D11, NNN-D12 Control Bldg 120')</p> <ul style="list-style-type: none"> • Ground detection indicating light on at the center panel of the switchgear Undervoltage relay 27-1 target indication on normal power supply at the switchgear transfer switch panel • Undervoltage relay 27-2 target indication on back-up power supply at the switchgear transfer switch panel • Tripped main supply breaker • Tripped 120V AC Non-Class 1E Distr Panel load breaker <p>Expected Action: RO sends AO to investigate.</p> <p>AO Report: There is a ground detection indicating light on the center panel of the switchgear and that the bus feeder breaker 52-D11 has tripped.</p>
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Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Operator Action 2</p> <p>IF NNN-D11, 120V AC Non-Class 1E Distr Pnl OR NNN-D12, 120V AC Non-Class 1E Distr Pnl is de-energized, THEN perform 40AO-9ZZ14, Loss of Non Class Instrument or Control Power.</p> <p>Expected Action: CRS implements 40AO-9ZZ14.</p>
	RO/BOP	<p>Operator Action 3</p> <p>Perform control board walkdown for ALL of the following:</p> <ul style="list-style-type: none"> • Off-normal dual light indications • Loss of normal light indications • Off-normal SEIS panel indications <p>Expected Action: BOP and RO walk down boards.</p>
	CREW	<p>Operator Action 4</p> <p>IF a tripped breaker is found on NNN-D11 or NNN-D12, 120V AC Non-Class 1E Distr Pnl, THEN notify FIN/electrical maintenance to assist in identifying the cause of the breaker trip.</p> <p>Expected Action: FIN/electrical maintenance notified.</p>
	CREW	<p>Operator Action 5</p> <p>Initiate PVAR.</p> <p>Expected Action: PVAR initiated.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 6</p> <p>IF bus undervoltage relay targets were actuated on NNN-D11 or NNN-D12 120V AC Non-Class 1E Distr Pnl, THEN initiate a PVAR to investigate the cause of the low voltage condition on the applicable power supply:</p> <ul style="list-style-type: none">• NNN-D11, normal power supply NHN-M1315• NNN-D11, backup power supply PHA-M3107• NNN-D12, normal power supply NHN-M1008• NNN-D12, backup power supply PHB-M3208 <p>Expected Action: N/A. No UV condition exists.</p>
	CREW	<p>Operator Actions 7, 7.1, and 7.2</p> <p>IF the Ground Detection indicating light on the center panel of NNN-D11 or NNN-D12 120V AC Non-Class 1E Distr Pnl is on, THEN perform the following:</p> <p>Notify PR&C to assist in locating the ground.</p> <p>Initiate a PVAR for corrective action.</p> <p>Expected Action: PR&C notified. PVAR initiated.</p>

40AO-9ZZ14, Loss of Non-Class Instrument or Control Power, Section 8.0, Loss of NNN-D11.

	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
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Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 2</p> <p>Operate ADVs as needed to maintain steam generator pressure.</p> <p>Expected Action: N/A since ADVs are not open</p>
	RO	<p>Instruction 3</p> <p>Ensure ALL of the following handswitches are selected to Channel "X":</p> <ul style="list-style-type: none"> • RCN-HS-110, Level Control Selector Switch • RCN-HS-100-3, Heater Control Selector Switch • RCN-HS-100, Pressure Control Selector Switch <p>Expected Action: RO places RCN-HS-110 and RCN-HS-100 in the "X" position.</p>
	BOP	<p>Instruction 4</p> <p>Ensure CEDMCS is NOT selected to Auto Sequential "AS".</p> <p>Expected Action: BOP places MODE SELECT switch to "MS" or "SB" (most likely positions)</p>
	RO	<p>Instruction 5</p> <p>IF pressurizer level is 33% or more and rising, THEN ensure no more than one Charging Pump is running.</p> <p>Expected Action: RO ensures only 1 Charging Pump is running.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>Ensure compliance with ALL of the following LCOs:</p> <ul style="list-style-type: none"> • LCO 3.2.1, Linear Heat Rate (LHR) • LCO 3.2.2, Planer Radial Peaking Factors (Fxy) • LCO 3.2.3, Azimuthal Power Tilt (Tq) • LCO 3.2.4, Departure From Nucleate Boiling Ratio (DNBR) • LCO 3.2.5, Axial Shape Index (ASI) <p>Expected Action: CRS evaluates given Tech Specs. What is the effect on these LCOs???</p>
	CRS	<p>Instruction 7</p> <p>PERFORM 40DP-9OP05, Control Room Data Sheet Instructions, for the loss of the JSCALOR.</p> <p>Expected Action: Since JSCALOR is not available and COLSS is functioning, 40DP-9OP05, Instruction 3.3.11 directs the crew to record the current NKBDELTC values and establish that value as the current steady state maximum power.</p>
	CRS	<p>Instruction 8</p> <p>IF letdown was in service, THEN PERFORM 40AO-9ZZ05, Loss of Letdown.</p> <p>Expected Action: CRS directs RO to perform 40AO-9ZZ05. See Page 47.</p>
	CRS	<p>Instruction 9</p> <p>IF the LRS Evaporator is in service, THEN direct an operator to shutdown the LRS Evaporator.</p> <p>Expected Action: N/A. LRS Evaporator not in service.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 10</p> <p>IF a ground is indicated on NNN-D11, THEN contact Electrical Maintenance for assistance in ground isolation.</p> <p>Expected Action: Electrical Maintenance contacted.</p>
	CRS	<p>Instruction 11</p> <p>PERFORM the applicable action in the Offsite Dose Calculation Manual for a loss of process flow to SQN-RU-143/144, Plant Vent Monitors.</p> <p>Expected Action: CRS informs SM of this direction.</p>
	RO	<p>Instruction 12</p> <p>IF VCT level reaches 5%, AND charging pump suction is aligned to the VCT, THEN perform the following:</p> <ul style="list-style-type: none"> a. Close CHB-HV-255, Seal Injection Supply Header Isolation Valve. b. Place all Charging Pumps in "PULL TO LOCK". <p>Expected Action: N/A. VCT level is > 5%.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>If the PC Cleanup Pumps are aligned to the RWT, there is inadequate suction pressure for all three Charging Pumps to operate.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 13</p> <p>IF RWT level is greater than 73%, AND is it is desired to align charging pump suction to the RWT, THEN perform the following:</p> <ul style="list-style-type: none">a. IF it is desired to use CHE-HV-536, RWT to Charging Pumps, THEN perform the following:<ul style="list-style-type: none">1) Ensure the BAMPs are stopped.2) Open CHE-HV-536, RWT to Charging Pumps.b. IF it is desired to use CHN-UV-514, Boric Acid Makeup to Charging Pumps Valve, THEN perform the following:<ul style="list-style-type: none">1) Ensure CHN-UV-514 is open.2) Ensure a BAMP is running.c. Ensure CHN-UV-501, VCT Outlet Valve is closed. <p>Expected Action: CRS N/As this step.</p>
	CRS	<p>Instruction 14</p> <p>IF RWT level is 73% or less, AND is it is desired to align charging pump suction to the RWT, THEN PERFORM Appendix D, Aligning the Charging Pump Alternate Suction to the RWT.</p> <p>Expected Action: N/A. RWT is > 73%.</p>
	CRS	<p>Instruction 15</p> <p>REFER TO Appendix B, Effects of the Loss of NNN-D11.</p> <p>Expected Action: CRS refers to Appendix B.</p>
	CRS	<p>Instruction 16</p> <p>REFER TO 40OP-9NN01, 120V AC Non-Class 1E Instrument Power (NN), for a complete list of indication and controls lost.</p> <p>Expected Action: CRS may refer to 40OP-9NN01.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 17</p> <p>Ensure at least one of the Letdown Isolation Valves is closed.</p> <p>Expected Action: RO ensures that either UV-515 (CHB-HS-515) or UV-516 (CHA-HS-516) indicate a green CLOSED light.</p>
	CRS	<p>Instruction 18</p> <p>IF NNN-D11 can NOT be energized, THEN GO TO the appropriate procedure for the current plant conditions.</p> <p>Expected Action: Normal operations at 100% are performed under 40OP-9ZZ05, Power Operations.</p>

40AO-9ZZ05, Loss of Letdown

	RO	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>IF the Pressurizer is solid, THEN perform the following:...</p> <p>Expected Action: N/A. PZR is not solid.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 3</p> <p>Place RCN-LIC-110, PLCS Master Controller, in "MAN" and close the selected Letdown Control Valve(s).</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 4</p> <p>Check that letdown backpressure is less than setpoint.</p> <p>Expected Action: On B03, RO checks that the red pointer on CHN-PIC-201, LETDOWN BACKPRESSURE CONTROL, is below the black pointer.</p>
	RO	<p>Instruction 5</p> <p>IF pressurizer level is 33% or more AND rising, THEN ensure no more than one Charging Pump is running.</p> <p>Expected Action: RO ensures no more than one Charging Pumps is running.</p>
	CRS	<p>Instruction 6</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • The unit is in Mode 1, 2 or 3 • Pressurizer level is 56% or more and rising <p>THEN perform the following:</p> <ol style="list-style-type: none"> a. Enter LCO 3.4.9, Pressurizer, Condition A. b. Initiate actions in preparation for a Unit shutdown within 6 hours. <p>Expected Action: PZR level <i>may</i> be > 56% (depends on timing of actions). If so, CRS enters LCO 3.4.9, Pressurizer, Condition A.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 7</p> <p>Determine the cause of the loss of letdown (REFER TO Appendix E, Supplementary Information) by evaluating ANY of the following:</p> <ul style="list-style-type: none"> • PLCS failures • NC flow to Letdown Heat • Exchanger • SIAS/CIAS • CVCS component failures • Loss of IA • Loss of power <p>Expected Action: RO determines that a loss of power (NNN-D11) caused the loss of letdown. (UV-515 and UV-516 failed closed)</p>
	RO	<p>Instruction 8</p> <p>IF RCS pressure is less than 1000 psia, AND it is desired to place the standby valve in service, THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves.</p> <p>Expected Action: N/A. RCS pressure is > 1000 psia.</p>
	RO	<p>Instruction 9</p> <p>IF the selected Letdown Control or Backpressure Control Valve(s) has failed, AND it is desired to place the standby valve in service, THEN PERFORM Appendix F, Aligning Letdown Control And Backpressure Valves.</p> <p>Expected Action: N/A. Standby valve will <i>not</i> be placed in service.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 10</p> <p>IF ALL of the following conditions exist:</p> <ul style="list-style-type: none"> CHB-UV-515, Regen Hx Inlet Isolation, closed due to an invalid high temperature interlock CHN-TI-221, Regenerative Heat Exchanger Letdown Temperature, indication is available Letdown is desired... <p>Expected Action: N/A. Letdown cannot be established with loss of NNN-D11.</p>
	RO	<p>Instruction 11</p> <p>IF CHB-UV-523, Regen Hx Outlet Isolation is closed due to an invalid high temperature alarm, AND letdown is desired, THEN place CHB-HS-523, LETDOWN CTMT ISOL, to "OPEN".</p> <p>Expected Action: N/A. Letdown cannot be established with loss of NNN-D11.</p>
	RO	<p>Instruction 12</p> <p>IF the Pressurizer is solid, AND RCS pressure is less than 500 psia, THEN perform the following to restore letdown:...</p> <p>Expected Action: N/A. PZR is <i>not</i> solid.</p>
	RO	<p>Instruction 13</p> <p>IF letdown can be restored, THEN perform the following:...</p> <p>Expected Action: N/A. Letdown cannot be established with loss of NNN-D11.</p>
	RO	<p>Instruction 14</p> <p>IF a plant shutdown or cooldown is needed, THEN perform the following:</p> <p>Expected Action: N/A. Plant shutdown or cooldown is not required at this time.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 15</p> <p>IF a plant shutdown or cooldown is NOT needed, THEN PERFORM Appendix C, Extended Operations Without Letdown.</p> <p>Expected Action: RO implements Appendix C. See below.</p>

40AO-9ZZ05, Appendix C, Extended Operations Without Letdown

	RO	<p>Instruction 1</p> <p>Enter Appendix Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>WHEN letdown can be restored, THEN GO TO Appendix A, Restoration of Letdown With A Pressurizer Steam Bubble.</p> <p>Expected Action: N/A. Letdown cannot be established with loss of NNN-D11.</p>
	RO	<p>NOTE</p> <p>Boron equalization should be minimized since it depletes RCS hydrogen. The reduction in RCS hydrogen concentration may require entry into chemistry actions levels that may cause the unit to be shutdown.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 3</p> <p>IF boron equalization is in progress, THEN stop boron equalization.</p> <p>Expected Action: N/A. Boron equalization is not in progress.</p>
	RO	<p>Instruction 4</p> <p>Notify Chemistry that the plant will be operated with letdown flow isolated.</p> <p>Expected Action: Chemistry is notified.</p>
	RO	<p>NOTE</p> <p>RCP HP seal cooler inlet temperature is expected to rise to between 200°F and 220°F when seal injection is stopped. All other seal temperatures are expected to remain normal.</p>
	RO	<p>NOTE</p> <p>Intentional entry into L.C.O. 3.4.9, Pressurizer, Condition A is prohibited.</p>
	RO	<p>Instruction 5</p> <p>WHEN the CRS determines seal injection and charging are to be stopped, OR pressurizer level is 56% or more and rising, THEN perform the following:</p> <ol style="list-style-type: none"> IF the unit is in Mode 1, 2 or 3, THEN ensure compliance with LCO 3.4.9, Pressurizer. Ensure controlled bleedoff is isolated on all standby RCP's prior to Seal 2 Outlet Temperature exceeding 250°F. Close the Seal Injection Flow Control Valves. Place all Charging Pumps in "PULL TO LOCK". <p>Expected Action: RO closes Seal Injection FCVs and places all Charging Pumps in PTL.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>NOTE</p> <p>RCP controlled bleedoff will lower pressurizer level approximately 10% in 55 minutes. This assumes three gpm bleedoff flow from each RCP</p>
	RO	<p>Instruction 6</p> <p>IF ALL of the following conditions are met:</p> <ul style="list-style-type: none"> • Charging has been stopped • Pressurizer level is less than 53% • Raising Pressurizer level is desired <p>THEN perform the following:</p> <ol style="list-style-type: none"> Open CHN-PDV-240, Charging Line to Reactor Coolant Loop 2A Differential Pressure Control Valve. Start at least one Charging Pump. Adjust CHN-PDIC-240 to 90-135 psid and place in "AUTO". Operate charging as needed to maintain pressurizer level between 33 and 53%. <p>Expected Action: May be performed later.</p>
	RO	<p>Instruction 7</p> <p>IF BOTH of the following conditions are met:</p> <ul style="list-style-type: none"> • Charging has been stopped • Seal injection is needed... <p>Expected Action: N/A. Seal injection is <i>not</i> needed at this time.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 6

Event Description: **Loss of NNN-D11/Loss of Letdown**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 8</p> <p>IF VCT level needs to be lowered, THEN direct an operator to perform the following:</p> <ul style="list-style-type: none">a. Open CHN-V117, VCT drain to the EDT (Blending Room, 120' of the Auxiliary Bldg.).b. WHEN the desired level is reached, THEN close CHN-V117. <p>Expected Action: N/A. VCT level does not need to be lowered.</p>
Examiner Note: When the RO has completed the actions in 40AO-9ZZ05, Loss of Letdown, or at the discretion of the Lead Examiner, the next event may be initiated.		

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Crew is alerted by the following:</p> <ul style="list-style-type: none">• Rising Containment temperature and pressure.• Lowering Pressurizer level. <p>Expected Action: CRS enters 40EP-9EO01, Standard Post Trip Actions.</p>
40EP-9EO01, Standard Post Trip Actions		
	CRS	<p>Instruction 1</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>Determine that Reactivity Control acceptance criteria are met by the following:</p> <ul style="list-style-type: none">a. Check that reactor power is droppingb. Check that start-up rate is negativec. Check that ALL full strength CEAs are inserted <p>Expected Action: Crew notes that Reactor did not trip.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Contingency Action 2.a.1</p> <p>Manually trip the Reactor.</p> <p>Expected Action: BOP manually initiates a Reactor trip by depressing 4 MANUAL REACTOR TRIP pushbuttons.</p>
CRITICAL TASK: Trip the Reactor prior to exiting Step 2 of SPTAs		SAT / UNSAT
	CREW	<p>Instruction 3</p> <p>Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that the Main Turbine is tripped Check that the Main Generator output breakers are open Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> All vital and non-vital AC buses are powered All vital and non vital DC buses are powered <p>Expected Action: RO reports all vital and non-vital AC & DC buses are powered from off-site, except for NNN-D11. RO reports both DGs running unloaded with Spray Pond support. BOP reports Main Turbine has tripped and Main Generator output breakers are open.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 4</p> <p>Determine that RCS Inventory Control acceptance criteria are met by the following:</p> <ul style="list-style-type: none"> a. Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> • 10-65% • Trending as expected to 33-53% b. Check that the RCS is 24°F or more subcooled c. Check that BOTH of the following are in service to all RCPs <ul style="list-style-type: none"> • Seal injection • Nuclear Cooling Water <p>Expected Action: RO reports PZR level is <i>not</i> trending to 33-53% and subcooling is <i>less than</i> 24°F. RO observes seal injection is not in service and NCW is in service to all RCPs.</p>
	RO	<p>Contingency Action 4.a.1</p> <p>Restore and maintain pressurizer level to 33 - 53% by ANY of the following:</p> <ul style="list-style-type: none"> • Operation of PLCS • Manual operation of Charging Pumps and Letdown Control Valves <p>Expected Action: RO manually operates Charging Pumps as required, based on Pressurizer level response.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	Contingency Action 4.b.1 IF the RCS is less than 24°F subcooled, THEN stop all RCPs. Expected Action: RO secures all RCPs.
	CRS/RO	Instruction 5 Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following: <ul style="list-style-type: none">• Pressurizer pressure is 1837-2285 psia• Pressurizer pressure is trending as expected to 2225-2275 psia Expected Action: RO observes that Pressurizer pressure is <i>not</i> trending to 2225-2275 psia.
	RO	Contingency Action 5.1 Restore and maintain pressurizer pressure to the normal control band by ANY of the following: <ul style="list-style-type: none">• Operation of PPCS• Manual operation of pressurizer heaters and spray valves Expected Action: RO may take manual control of RCN-PIC-100 and/or manually control heaters to attempt to raise PZR pressure.

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Contingency Action 5.2</p> <p>IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated.</p> <p>Expected Action: RO observes that HPSI Pump "A" has tripped and HPSI Pump "B" has failed to automatically start. The RO starts HPSI Pump "B."</p>
CRITICAL TASK: Manually start HPSI Pump "B" prior to exiting SPTAs.		SAT / UNSAT
	RO	<p>Instruction 6</p> <p>Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>Expected Action: RO reports that no RCPs are operating and that subcooling is less than 24 °F.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	CRS/BOP	<p>Instruction 7</p> <p>Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that at least one Steam Generator meets BOTH of the following conditions: <ul style="list-style-type: none"> Level is 35% WR or more Feedwater is restoring or maintaining level 45-60% NR Check that T_C is 560-570°F Check that steam generator pressure is 1140-1200 psia <p>Expected Action: RCS temperature will be low due to SI flow. BOP uses ADVs to control SG pressure. BOP allows DFWCS to feed with Main Feed until the MSIS, at which time the BOP transitions to AFB-P01 (or AFN-P01).</p>
	CREW	<p>Instruction 8</p> <p>Determine that Containment Isolation acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that Containment pressure is <2.5 psig REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> No valid containment area radiation monitor alarms or unexplained rise in activity No valid steam plant activity monitor alarms or unexplained rise in activity <p>Expected Action: RO/BOP observes that Containment pressure is <i>greater than</i> 2.5 psig. BOP reports activity in Containment.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Contingency Action 8.a.1</p> <p>IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated.</p> <p>Expected Action: RO ensures that CIAS has been initiated by observing red annunciator RKN-UA-2A 05C (CIAS) and observing that the initiation relay lights on B05 are NOT lit.</p>
	CREW	<p>Instruction 9</p> <p>Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following:</p> <ul style="list-style-type: none">a. Check that containment temperature is <117°Fb. Check that containment pressure is <2.5 psig <p>Expected Action: RO reports that Containment temperature is greater than 117°F and that Containment pressure is greater than 2.5 psig.</p>
	CRS/RO	<p>Contingency Action 9.b.1</p> <p>IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated.</p> <p>Expected Action: RO ensures that CIAS has been initiated by observing red annunciator RKN-UA-5C 02A (CIAS) and observing that the initiation relay lights on B05 are NOT lit.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Contingency Action 9.b.2</p> <p>IF containment pressure is 8.5 psig or more, THEN perform the following:</p> <ol style="list-style-type: none"> 1) Ensure CSAS is actuated. 2) Ensure at least one Containment Spray header flow is greater than 4350 gpm. 3) Stop all of the operating RCPs. 4) Ensure RCP controlled bleedoff flow is isolated. <p>Expected Action: Containment pressure may be less than 8.5 psig at this time. If containment pressure exceeds 8.5 psig, the RO ensures CSAS is actuated by observing the red annunciator RKN-UA-5C 04A, CSAS. RO verifies CS Header flow on SIA-FI-338 and SIB-FI-348. RO isolates RCP controlled bleedoff flow by shutting individual RCP bleedoff valves or by closing the either of the common bleedoff isolation valves (CHB-UV-505, CHA-UV-506, and CHA-UV-507).</p>
	CRS	<p>Instruction 10</p> <p>IF all acceptance criteria are met, AND no contingency actions were performed, THEN GO TO 40EP-9EO02, Reactor Trip.</p> <p>Expected Action: CRS determines that several contingency actions were taken.</p>
	CRS	<p>Instruction 11.</p> <p>IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event.</p> <p>Expected Action: CRS Determines that that there is a LOCA in progress and then transitions to 40EP-9EO03, Loss of Coolant Accident.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
40EP-9EO03, Loss of Coolant Accident		
		<p style="text-align: center;">NOTE</p> <p>Harsh conditions are containment temperature greater than 170°F or containment radiation level greater than 108 mR/hr. Harsh containment values are placed in brackets next to the normal setpoint or band</p> <p>Expected Action: CRS announces that harsh conditions apply.</p>
	CRS	<p>Instruction 1</p> <p>Confirm the diagnosis of a Loss of Coolant Accident by performing the following:</p> <ol style="list-style-type: none">Check that the Safety Function Status Check acceptance criteria are satisfied.Ensure that the Steam Generator Sample Valves are open.Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. <p>Expected Action: Normally an STA function.</p>
	CRS	<p>Instruction 2</p> <p>Ensure the event is being classified.</p> <p>Expected Action: CRS prompts SM to classify the event.</p>
	CRS	<p>Instruction 3</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 4</p> <p>IF pressurizer pressure drops to the SIAS setpoint, THEN check that SIAS is actuated.</p> <p>Expected Action: SIAS has already actuated.</p>
	RO	<p>Instruction 5</p> <p>IF SIAS has actuated, THEN perform the following:</p> <ul style="list-style-type: none"> • Check that the HPSI and LPSI Pumps have started. • Check that safety injection flow is adequate. REFER TO Appendix 2, Figures. <p>Expected Action: RO ensures both LPSI Pumps are running and ensures HPSI PUMP "B" has been started.</p>
	CRS	<p>Instruction 6</p> <p>IF SIAS has actuated, THEN perform the following:</p> <p>IF it is determined that RWT level may lower to less than 73% during the event, OR it is desired to align Charging Pump suction through an alternate suction path, THEN PERFORM ONE of the following:</p> <ul style="list-style-type: none"> • Appendix 10, Charging Pump Alternate Suction to the RWT / Restoration • Appendix 11, Charging Pump Alternate Suction to the SFP / Restoration <p>Expected Action: RO performs Appendix 10 or 11. (Likely Appendix 11 if CSAS actuates). RO directs AO to perform Attachment 10-A or 11-A.</p> <p>Examiner Note: CRS may delay this action.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 7</p> <p>IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure ONE RCP is stopped in each loop. IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped. <p>Expected Action: N/A. RCPs already secured.</p>
	CRS	<p>Instruction 8</p> <p>IF ANY RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied.</p> <p>Expected Action: N/A. RCPs already secured.</p>
	CRS/BOP	<p>Instruction 9</p> <p>Attempt to isolate the LOCA by performing the following:</p> <ol style="list-style-type: none"> Ensure that the letdown line is isolated. Ensure that the RCS sample lines are isolated. <p>Expected Action: Letdown is already isolated. BOP ensures RCS sample lines are isolated on B07.</p>
	CRS	<p>Instruction 10</p> <p>IF ANY of the following conditions exist:</p> <ul style="list-style-type: none"> RU-6, Nuclear Cooling Water Radiation Monitor alarming An abnormal rise in Nuclear Cooling Water surge tank level... <p>Expected Action: N/A. No leak into NCW.</p>
	CRS	<p>Instruction 11</p> <p>IF LOCA is outside of containment as indicated by ANY of the following:</p> <ul style="list-style-type: none"> Auxiliary building radiation monitor alarm Unexplained rise in auxiliary building sump levels... <p>Expected Action: N/A. Leak is <i>inside</i> containment.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
		<p style="text-align: center;">NOTE</p> <p>Hydrogen Analyzers are required to be placed in service within 30 minutes of the LOCA.</p>
	RO	<p>Instruction 12</p> <p>Place the Hydrogen Analyzers in service.</p> <p>Expected Action: RO may refer to 40OP-9HP01, Sections 6.3 and 6.4. RO places analyzers in service by:</p> <ul style="list-style-type: none">• Open HPA-UV-1, Containment Isolation Valve, using handswitch HPA-HS-1, Control System A Sply Isol Vlv UV-1.• Open HPA-HV-7A/7B Containment Isolation Valves, using handswitch HPA-HS-7, Control System A Anal Isol Vlv HV-7A/7B.• Place hand-switch HPA-HS-9A, Power/Control, in the ANALYZE position.• (repeats process for Analyzer "B")
	CRS	<p>Instruction 13</p> <p>IF containment pressure is 3 psig or more, THEN check CIAS is actuated.</p> <p>Expected Action: CIAS has already actuated.</p>
		<p style="text-align: center;">CAUTION</p> <p>High radiation levels may result in personnel exposure when attempting local manual valve operation.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 14</p> <p>IF CIAS has actuated, THEN perform the following:</p> <p>Check that an isolation valve is closed for each containment penetration required to be closed.</p> <p>Expected Action: RO checks SAFETY EQPT A(B) STATUS TRAIN A (B) SYSTEMS panels for blue lights which indicate CIAS components out of position. None found.</p>
	CRS	<p>Instruction 15</p> <p>IF the following conditions exist:</p> <ul style="list-style-type: none">• The Containment Spray Pump(s) are operating on the miniflow(s)• Containment pressure is not expected to exceed 8.5 psig within one hour of the CS Pump start <p>THEN stop the Containment Spray Pump(s).</p> <p>Expected Action: N/A. Containment pressure exceeds 8.5 psig.</p>
	RO	<p>Instruction 16</p> <p>IF containment pressure is 8.5 psig or more, THEN check CSAS is actuated.</p> <p>Expected Action: RO checks that the red CSAS light (RKN-UA-5C, 4A) is lit and observes that the initiation relay lights on B05 are NOT lit.</p> <p>Examiner Note: The CRS may direct manual CSAS initiation on trend.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 17</p> <p>IF CSAS has actuated, THEN perform the following:</p> <ol style="list-style-type: none">Ensure at least one Containment Spray header flow is greater than 4350 gpm.Ensure all RCPs are off.Ensure RCP controlled bleedoff flow is isolated.PERFORM Appendix 19, Containment Hydrogen Control to align the Hydrogen recombiners. <p>Expected Action: RO ensures both Containment Spray Pumps are running, and header flow is greater than 4350 gpm.</p>
	RO	<p>Instruction 18</p> <p>IF both CS pumps are operating AND BOTH of the following conditions are met:</p> <ul style="list-style-type: none">Containment pressure is less than 50 psig and not risingSafety injection is actuated and flow is within SI delivery curves. <p>THEN stop one of the Containment Spray Pumps.</p> <p>Expected Action: RO secures 1 CS Pump.</p>
	CRS	<p>Instruction 19</p> <p>IF a Containment Spray Pump was stopped AND the running Containment Spray Pump trips THEN start a Containment Spray Pump.</p> <p>Expected Action: N/A. A CS Pump has NOT tripped.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 20</p> <p>IF SIAS has actuated, THEN perform the following:</p> <ol style="list-style-type: none"> Energize the SIAS Load Shed Panels. REFER TO Appendix 21, List of SIAS Load Shed Panels. IF containment level is NOT indicated, THEN PERFORM Appendix 17, Restoration of Containment Cooling. <p>Expected Action: RO/CRS/BOP directs an AO to energize SIAS Load Shed Panels (perform Appendix 21). BOP performs Appendix 17</p>
	CRS	<p>Instruction 21</p> <p>IF ALL of the following conditions exist:</p> <ul style="list-style-type: none"> The Containment Spray Pump(s) are operating Containment pressure is less than 5 psig and stable or lowering The TSC has determined that Containment Spray is NOT required for iodine removal CS pumps are NOT required for long term cooling... <p>Expected Action: N/A. CS Pumps are still required for Iodine removal.</p>
	CRS	<p>Instruction 22</p> <p>IF a LOOP has occurred, THEN actuate MSIS.</p> <p>Expected Action: N/A. MSIS already actuated.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 23</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • MSIS has actuated • Condenser Reheat Tray level is in the indicating range locally (CDN-LG-88 & 89) <p>THEN override and open BOTH of the following:</p> <ul style="list-style-type: none"> • SGA-HS-1133, Steam Trap SGNM23 Inlet Isolation Valve UV-1133 • SGA-HS-1134, Steam Trap SGNM24 Inlet Isolation Valve UV-1134 <p>Expected Action: BOP directs AO to check Condenser Reheat Tray levels. BOP overrides and closes UV-1133 & UV-1134.</p> <p>AO Report: Condenser Reheat Tray levels are normal.</p>
	CRS	<p>Instruction 24</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • ANY SIT vent valve is known to be failed closed and can NOT be opened • The associated SIT Outlet Valve is powered from the opposite train AND ALL of the following conditions exist:... <p>Expected Action: N/A. No SIT valves are failed closed.</p>
	CRS	<p>Instruction 25</p> <p>IF the LOCA has been isolated, THEN GO TO step 77.</p> <p>Expected Action: N/A. LOCA is NOT isolated.</p>

Op-Test No.: 2015 NRC Scenario No.: 3 Event No.: 7

Event Description: **Pressurizer Steam Space LOCA**

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<p>Instruction 26</p> <p>Perform the following:</p> <ul style="list-style-type: none">a. PERFORM Appendix 5, RCS and PZR Cooldown Log.b. Cooldown the Steam Generators using the SBCS. <p>Expected Action: RO initiates Appendix 5. BOP determines SBCS cannot be used due to loss of NNN-D11.</p>
	BOP	<p>CONTINGENCY ACTION 26.b.1</p> <p>Cooldown the Steam Generators using the ADVs by ONE of the following:</p> <ul style="list-style-type: none">• Operation from the Control Room• Appendix 18, Local ADV Operation <p>Expected Action: BOP uses manual thumbwheel on ADVs to establish a cooldown.</p>
Examiner NOTE: Scenario may be terminated when ADVs are opened to establish cooldown, OR at the discretion of the Lead Examiner.		

Facility: PVNGS Scenario No.: 4 (Rev. 1) Op-Test No: NRC - 2015

Examiners: _____ Operators: _____

Initial Conditions: (50% power, MOC).

Turnover: See attached

Event No.	Malf. No.	Event Type*	Event Description
1	cmBSEG03DGBPSL4_2 cmBSEG03DGBPSL6_2 cmBSEG03DGBPSL8_2 cmBSEG03DGBPSL10_2	N RO/SRO (TS)	Crew unloads and shuts down DG "B." DG trips on low lube oil pressure. [LCO 3.8.1, Condition B]
2	cmTRFW04SGNFT1112Y_1	I BOP/SRO	FT-1112Y, Total Feedwater Flow Transmitter, Fails LOW.
3	mfRD02B	C ALL (AOP/TS)	CEA 15 (Reg Group 5) slips half way into the core. [LCO 3.1.5, CEA Alignment, Condition A.] (Critical Task: Begin power reduction within 10 minutes of slipped CEA.)
4	mfRP06H1 mfRP06H2 cmMVCC03NCBUV401_6	C RO/SRO (AOP/TS)	Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen. (Trip Initiator)
5	mfED02	M-All	During implementation of the SPTAs, a Loss of Offsite Power (LOOP) occurs.
6	mfEG06A	M - All	DG "A" trips due to a generator differential. This results in a loss of all AC power (Blackout) (Critical Task: Restore power to at least one vital AC bus within one hour of the Blackout.)
End point	N/A	ALL	After the crew has restored power to at least one vital AC bus, the scenario may be terminated at the discretion of the Lead Examiner.

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

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)	2
4. Major transients (1-2)	2
5. EOPs entered/requiring substantive actions (1-2)	2
6. EOP contingencies requiring substantive actions (0-2)	0
7. Critical tasks (2-3)	2

CRITICAL TASK	JUSTIFICATION	REFERENCES
Begin power reduction within 10 minutes of slipped CEA.	<p>Section 15.4.3.2 of the FSAR assumes the operators takes action within 900 seconds to reduce power. This assumption is used to ensure the core does not exceed DNBR or LPD limits. Although the FSAR states 900 seconds, Tech Specs requires a power reduction per the COLR, which requires a power reduction within 10 minutes (via Figure 3.1.5-1). Failure to reduce power could result in not meeting the Shutdown Margin (SDM) requirements of TS 3.1.2, SDM RTBs Closed. Inadequate SDM at power could lead to exceeding fuel design limits for normal shutdown and anticipated operational occurrences (degraded fission product barrier).</p> <p>The bases for TS 3.1.5 Control Element Assembly (CEA) Alignment, states: "Limits on CEA alignment and operability have been established, and all CEA positions are monitored and controlled during power operation to ensure that the power distribution and reactivity limits defined by the design power peaking and SDM limits are preserved."</p>	<ul style="list-style-type: none"> PVNGS Critical Task FSAR-1, When Reactor Power is > 35% and any CEA is misaligned by greater than 6.6 inches from its group, start a power reduction within 10 minutes. No equivalent CE Critical Task. Section 15.4.3.2 of the FSAR Bases for TS 3.1.5
Restore power to at least one vital AC bus within one hour of the Blackout.	<p>FSAR Section 9.5.9.1, Station Blackout Evaluation, General, explains that the SBO 16 hour coping evaluation (based on NUMARC 87-00, Revision 1 criteria) assumes that an alternate AC power source is started and loaded within the first hour. Failure to restore alternate AC power within 1 hour will result in RCP seal leakage beyond that assumed in the SBO coping evaluation. This will, in turn, have an adverse impact on containment temperature and pressure (along with the loss of containment ventilation).</p> <p>40DP-9AP13, Blackout Technical Guideline; Section 4.0, PROCEDURE STRATEGY</p>	<ul style="list-style-type: none"> PVNGS Critical Task SBO-1, Energize at least one class 4kv bus prior to exiting the Blackout Procedure. CE SB0-4 (CT-03), Energize at Least One Vital AC Bus. FSAR Section 9.5.9.1 40DP-9AP13, Blackout Technical Guideline; Instruction Step:13 40DP-9AP13, Blackout Technical Guideline;

CRITICAL TASK	JUSTIFICATION	REFERENCES
	<p>states: "The next action is to restore electrical power. In the event that electrical power is not expected to be restored from Offsite power or a Diesel Generator within one hour, the Blackout Coping Strategy uses a SBOG to energize PBA-S03 which provides enough electrical capacity to cope with the blackout for 16 hours, by which time either offsite power or a Diesel Generator should be restored."</p> <p>40DP-9AP13, Blackout Technical Guideline; Instruction Step:13Energize PBA-S03 from the SBOG(s), states:The Alternate AC (AAC) power source (SBOG) will be used to energize PBA-S03 within one hour of a Blackout.</p>	Section 4.0

2015 NRC Scenario 4 Overview

2015 NRC Scenario 4 Overview	
Event 1	<p>Crew unloads and shuts down DG "B" in accordance with 40OP-9DG02, Emergency Diesel Generator B.</p> <p>The Turnover indicates that the DG is being run for a surveillance. For the Turnover, the crew will be provided a marked-up copy of 40OP-9DG02 (up to Step 6.7.2).The surveillance is complete and Step 7.5 of the ST directs the crew to continue operation of the DGper 40OP-9DG02. The RO will use Section 6.7, Unloading Train B Diesel Generator and will follow the direction of Appendix G, Loading and Unloading Schedule. When PEB-SC-G02, Diesel Generator B Speed handswitch is placed in LOWER for the second time, the DG trips on low lube oil pressure.</p> <p>When DG B trips, the crew is alerted by the following annunciators on B01:</p> <ul style="list-style-type: none"> • 1C16A (DG B TRIP) • 1C16C (DG B LO LUBE OIL PRESS TRIP) • 1C16D (DG B HI PRIORITY TRBL) <p>A note at the beginning of Operator Actions for 40AL-9RK1C, window 1C16A, prompts the crew to evaluate LCOs 3.8.1, AC Sources – Operating, and 3.8.2, AC Sources – Shutdown. The RO confirms the trip and directs an AO to investigate locally (These responses are common to all three annunciator windows). The AO will report the following indications:</p> <ul style="list-style-type: none"> • Low oil pressure annunciators • Significant oil leak on the lube oil expansion joint at the discharge of the Lube Oil Strainers.

2015 NRC Scenario 4 Overview

	<p>If asked for additional details, AO reports the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ DGB01A (LUBE OIL LOW PRESSURE ENGINE) ○ DGB02A (LUBE OIL LOW PRESSURE TURBO) ○ DGB01D (LUBE OIL LOW PRESSURE ENGINE) ○ DGB02D (LUBE OIL LOW PRESSURE TURBO) • DGN-PI-2, Engine Lube Oil Pressure (DGB-B01), reads 22 psig • DGN-PI-80, Lube Oil Pressure at Engine (Panel NW side of diesel), reads 18 psig. <p>The CR may direct the AO to locally secure the lube oil pumps and turn off lube oil heaters.</p> <p>Since the Unit is in Mode 1, LCO 3.8.2 is not applicable. The CRS declares DG “B” inoperable and enters LCO 3.8.1, Condition B, since only 1 DG is inoperable. The crew has one hour to perform Surveillance Requirement 3.8.1.1 for the OPERABLE required offsite circuits. This SR verifies the breaker alignment and indicated power availability for each required offsite circuit.</p>
Event 2	<p>FT-1112Y, Total Feedwater Flow Transmitter, Fails LOW. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 6A06A (FWCS PROCESS TRBL) • 0 FEED indicated on SG1 OVERVIEW screen on DFCS1 <p>BOP implements 40AL-9RK6A for annunciator 6A06A, Group A due to a SG 1 Feedwater Flow 8% Deviation (FWCSA:B12).The DFWCS will automatically select Single Element Control. The BOP determines that FT-1112Y has failed low. The faulty transmitter is placed in the maintenance mode, the affected SG level setpoint is matched to actual level, the Three Element Lockout is removed and the alarm is cleared.</p> <p>When the alarm has cleared, or at the discretion of the Lead Examiner, the next event may be initiated.</p>
Event 3	<p>CEA 15 (Reg Group 5) slips half way into the core. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ 4A08A (CEDMCS TRBL) ○ 4A09B (CWP (CEA WITHDRAWAL PROHIBIT)) ○ 5A13B (CPC/CEAC TRBL) ○ 5B01D (COLSS PC ALARM) ○ 5B01C (COLSS CMC ALARM) • CEA CRT indicates a Group 5 rod partially inserted, along with a CEA DEVIATION alarm • CEA DEV alarms on the DNBR/LPD Calculator Panels • No indicating lights for CEA 15 on the CEA AUTO/CONTROL STATUS panel on B04 • Computer alarm points: <ul style="list-style-type: none"> ○ SBYS76 (CEAC 1A DEVIATION (HI)) (several other similar alarms) ○ SBYS20 (CROSS CH COMPARISON FAIL) ○ RJALM2 (COLSS CPC AZTILT ALM)

2015 NRC Scenario 4 Overview

	<p>Crew implements 40AO-9ZZ11, CEA Malfunctions, Section 3.0, Dropped or Slipped CEA Mode 1 or 2. Section 3.0 directs the BOP to place CEDMCS in “STANDBY” and perform Appendix E, Initial Actions. In Appendix E, an AO is dispatched to investigate at alarm panel J-SFN-C01D. AO reports that there is a “CWP” alarm and no breakers are open. I&C and Reactor Engineering are informed. The RO initiates Pressurizer boron equalization. Within 10 minutes, the crew begins a power reduction.</p> <p>(CRITICAL TASK: Crew begins power reduction within 10 minutes of slipped CEA.)</p> <p>The BOP initially lowers turbine load to raise Tave 3°F greater than Tref. The CRS determines that the initial power reduction is 15% (as directed by Instruction 14, Bullet 2) and calculates the amount of boron required. The BOP lowers turbine load to maintain Tave 3°F above Tref and the RO begins a boration at a minimum of 35 gpm. The power reduction follows the requirements of Appendix B, Core Power Reduction After a CEA Deviation. This Appendix establishes the minimum times allowed to complete the required downpower, based on the pre-event power level.</p> <p>The CRS may initiate Appendix J, LCO Required Action Tracker (normally SM or STA duty). During the downpower, the CRS refers to Appendix H, Required Power Ramp with a CEA Misalignment Greater than 6.6” Notes in the upper right corner explain that these curves reflect the initial power reduction required by LCO 3.1.5, CEA Alignment, Condition A.</p> <p>The CRS enters LCO 3.1.5 Condition A due to one CEA trippable and misaligned from its group by > 9.9 inches. The Required Action is to reduce THERMAL POWER in accordance with the limits in the COLR within 1 hour AND restore CEA alignment within 2 hours.</p> <p>Once the power reduction has started, or at the discretion of the Lead Examiner, the next event may be initiated.</p>
Event 4	<p>Inadvertent Train B CSAS occurs. (Trip Initiator) The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ 2A04A (CSAS) ○ 5B05B (LEG 1-3 CSAS B LEG 2-4) • All RCP XX LO NCW FLOW annunciators on RKN-UA-4D&E • All RCP XX TRBL annunciators on RKN-UA-4A <p>Crew implements 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 5.0, CSAS. In 40AO-9ZZ17, Containment Spray Pump B is secured and the Containment Spray Header is isolated. When the RO attempts to open NCB-UV-401, NCW</p> <p>Containment Upstream Supply Isolation Valve, it will fail to open. Step 8 of the AOP directs the crew to trip the Reactor, stop all RCPs and isolate controlled bleedoff; if cooling water cannot be restored within 10 minutes. Crew implements 40EP-9EO01, Standard Post Trip Actions.</p>
Event 5	<p>During implementation of the SPTAs, a Loss of Offsite Power (LOOP) occurs. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Observation that PBB-S04 is deenergized (DG “B” previously tripped). • Observation that only DG “A” is carrying PBA-S03. • Observation that non-class buses are deenergized.

2015 NRC Scenario 4 Overview

- Observation that no RCPs are running.

The CRS may elect to start over with the SPTAs. The RO observes that no Charging Pumps are running and manually starts Charging Pump “A.”

When SPTAs are complete, the CRS refers to Section 4.0, Diagnostic Actions, to diagnose the event and determine the appropriate recovery procedure. The CRS transitions to 40EP-9EO07, Loss of Offsite Power/Loss of Forced Circulation. 40EP-9EO07 directs the crew to check that Safety Function Status Check acceptance criteria are met, inform Chemistry, and classify the event. Since a LOOP has occurred, the crew verifies that loads have sequenced onto PBA-S03. No charging pumps are running (Charging Pump “A” trips on the LOOP and is not automatically restarted), so the RO isolates seal injection and seal bleedoff and then resets the anti-pump condition on the always running Charging Pump (“A”/”1”) by placing the handswitch in “STOP.” Since CW flow to the Main Condenser is lost, so the BOP actuates MSIS. After the MSIS has actuated, an AO is dispatched to check Condenser Reheat Tray levels. When the AO reports levels are normal, the BOP overrides and opens trap isolation valves SGA-HS-1133 and 1134. The BOP controls Tc less than 570°F using the ADVs.

Once the BOP establishes control of Tc with the ADVs and has established feed with AFA, or at the discretion of the Lead Examiner, the next event may be initiated.

Event 6

DG “A” trips due to a generator differential. The crew is alerted by the following:

- Annunciator 1A01A (DG A TRIP)
- PBA-S03 deenergized
- Running class equipment on PBA-S03 no longer running

This results in a loss of all AC power, requiring the CRS to transition to 40EP-9EO08, Blackout. In 40EP-9EO08, the crew actuates MSIS, informs the Energy Control Center of the Blackout. Security is dispatched to allow an AO access to the SBOGs and an AO is dispatched to start an SBOG using 40EP-9EO10, Appendix 111, Station Blackout Generator Operation. When the SBOG is running, the AO energizes NAN-S07.

NOTE: Directing the AO to start an SBOG is directly related to a PRA cutset. Refer to Event ID AGT-FAILSTRT-2HR, CR Operators Fail to Direct WRF Operator to Start GTGs.

The RO places all Charging Pumps in “PULL TO LOCK” and minimizes RCS leakage by isolating letdown, RCP controlled bleedoff, and RCS sample flowpaths. The BOP uses ADVs to control RCS Tc less than 570°F and maintains SG levels between 45-60% NR.

An AO is dispatched to perform Attachment 80-A, Disable PBA-S03 Breakers. This Appendix disables breakers on PBA-S03 and ensures the bus feeder breakers are open. The RO performs Appendix 80, Align SBOG to PBA-S03 (BO). When the AO has completed Attachment 80-A and the RO has opened feeders to PBA-S03, the RO directs an AO to close NAN-S03AB, 13.8KV Supply from GTG. An AO is then directed to close NAN-S07D. When NAN-S07D is closed, the RO energizes PBA-S03 through the normal supply breaker. The RO also performs Appendix 53, Align Deenergized Buses. This Appendix is similar to Appendix 80 in that it ensures all feeder breakers are open and all breakers to major loads (RCPs, Circ Water Pumps) are open. When the AO reports that Attachment 80-A (81-A) is complete, essential equipment is then started in a controlled manner to ensure SBOG limitations are not exceeded.

2015 NRC Scenario 4 Overview

(CRITICAL TASK: Restore power to at least one vital AC bus within one hour of the Blackout.)

End Point

After the crew has restored power to at least one vital AC bus, the scenario may be terminated at the discretion of the Lead Examiner.

TURNOVER

Plant Conditions:

- Unit 1 is at 50% power, steady state conditions. Power was reduced by direction of the ECC due to grid instabilities.
- The core is presently at 250 EFPD
- Risk Management Action Level is GREEN
- PC is NOT recircing the RWT
- Unit 2 is supplying the Aux Steam cross-tie header
- DG 'B' is running in accordance with 40ST-9DG02, Diesel Generator B Test, and 40OP-9DG02, Emergency Diesel Generator B. The surveillance has been closed out and the DG has been running for 3.5 hours.
- At the request of Chemistry, the pressurizer is in boron equalization in accordance with 40OP-9ZZ05, Power Operations

Equipment Out of Service:

- None

Planned Shift Activities:

- Unload and Shutdown DG "B" in accordance with 40OP-9DG02, Emergency Diesel Generator B.
- Hold power at the current level until further direction is received from the ECC.

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 1

Event Description: **Unload and Shutdown Diesel Generator "B"**

Time	Position	Applicant's Actions or Behavior
T=0	CRS	Directs RO to unload and shut down DG "B" in accordance with 40OP-9DG02, Emergency Diesel Generator B.

40OP-9DG02, Emergency Diesel Generator B, Section 6.7, Unloading Train B Diesel Generator

	RO	<p>Instruction 6.7.2</p> <p>Reduce Train B Diesel Generator load per Appendix G - Loading and Unloading Schedule.</p> <p>Expected Action: RO refers to Appendix G.</p>
	RO	<p>Appendix G - Loading and Unloading Schedule</p> <p>Instructions G.2 and G.2.1</p> <p>UNLOADING</p> <p>It is beneficial to control thermal distribution during shutdown.</p> <p>Expected Action: RO acknowledges Instruction.</p>
	RO	<p>Instruction G.2.2</p> <p>It is recommended to gradually reduce load.</p> <p>Expected Action: RO acknowledges Instruction.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 1Event Description: **Unload and Shutdown Diesel Generator "B"**

Time	Position	Applicant's Actions or Behavior																								
	RO	<p>Instruction G.2.3</p> <p>Observe MW loading and duration per the Table before lowering to the next increment:</p> <table><tr><th>Design Load %</th><th>MW</th><th>MW Allowable Range</th><th>Minimum Duration</th></tr><tr><td>110</td><td>6.05</td><td>5.775 - 6.05</td><td>none</td></tr><tr><td>103</td><td>5.4</td><td>5.0 - 5.5</td><td>210 minutes * 10 minutes</td></tr><tr><td>75</td><td>4.0</td><td>3.6 - 4.4</td><td>5 minutes</td></tr><tr><td>50</td><td>2.7</td><td>2.3 - 3.1</td><td>5 minutes</td></tr><tr><td>25</td><td>1.4</td><td>1.0 - 1.8</td><td>5 minutes</td></tr></table> <p>* 210 minutes is the recommended cumulative run time at 100% of design load. If the Diesel Generator was operated at greater than 100% of design load, it should be operated for a minimum of 10 minutes at 100% of design load before additional load reduction.</p> <p>Expected Action: RO reduces MW load by taking PEB-SC-02, DIESEL GENERATOR B SPEED switch, to "LOWER."</p> <p>Examiner Note: The RO will start with load at approximately 5.2 MW. He/she will then reduce load slowly to between 3.6 and 4.4 MW, wait 5 minutes, and then slowly reduce load to between 2.3 and 3.1 MW. When DG B load reaches 3.3 MW, CUE the driver to trip DG B per Event One.</p>	Design Load %	MW	MW Allowable Range	Minimum Duration	110	6.05	5.775 - 6.05	none	103	5.4	5.0 - 5.5	210 minutes * 10 minutes	75	4.0	3.6 - 4.4	5 minutes	50	2.7	2.3 - 3.1	5 minutes	25	1.4	1.0 - 1.8	5 minutes
Design Load %	MW	MW Allowable Range	Minimum Duration																							
110	6.05	5.775 - 6.05	none																							
103	5.4	5.0 - 5.5	210 minutes * 10 minutes																							
75	4.0	3.6 - 4.4	5 minutes																							
50	2.7	2.3 - 3.1	5 minutes																							
25	1.4	1.0 - 1.8	5 minutes																							

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 1Event Description: **Unload and Shutdown Diesel Generator "B"**

Time	Position	Applicant's Actions or Behavior
40AL-9RK1C, Window 1C16A, DG B TRIP (Actions for other annunciators are similar)		
	CRS	<p style="text-align: center;">NOTE</p> <p>Response to this condition may affect Technical Specifications LCOs 3.8.1 AC Sources – Operating or 3.8.2 AC Sources – Shutdown.</p> <p>Expected Action: CRS determines that DG B is Inoperable and enters LCO 3.8.1, Condition B. Condition B requires the crew to perform SR 3.8.1.1 within 1 hour.</p> <p>Examiner Note: Since a normal shift complement contains 3 ROs, the 3rd RO would perform the surveillance (41ST-1ZZ02, Inoperable Power Sources Action Statement). When the CRS briefs the SM on the need for the surveillance, the SM will inform the CRS that he will assign the task to another operator.</p>
	RO	<p>Operator Action 1</p> <p>Confirm alarm by observing ANY of the following:</p> <ul style="list-style-type: none"> • Diesel Generator B STOP light ON at DGB-HS-2, Diesel Generator B Start/Stop switch • PBB-S04B TRIP light ON at PEB-HS-S04B <p>Expected Action: RO observes STOP light is ON at DGB-HS-2.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 1

Event Description: **Unload and Shutdown Diesel Generator "B"**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Operator Action 2, 2.1, & 2.2</p> <p>Direct operator to perform the following:</p> <p>Determine cause of trip at DGB-B01, Diesel Generator B engine control cabinet.</p> <p>Perform 40AL-9DG02, Diesel Generator B Alarm Panel Responses.</p> <p>Expected Action: Crew sends AO to investigate.</p> <p>AO Report:</p> <ul style="list-style-type: none"> Significant oil leak on the lube oil expansion joint at the discharge of the Lube Oil Strainers. Oil pressure alarms on the local panel. <p>If asked for additional details, AO reports the following:</p> <ul style="list-style-type: none"> Annunciator DGB01A (LUBE OIL LOW PRESSURE ENGINE) Annunciator DGB02A (LUBE OIL LOW PRESSURE TURBO) Annunciator DGB01D (LUBE OIL LOW PRESSURE ENGINE) Annunciator DGB02D (LUBE OIL LOW PRESSURE TURBO) DGN-PI-2, Engine Lube Oil Pressure (DGB-B01), reads 22 psig DGN-PI-80, Lube Oil Pressure at Engine (Panel NW side of diesel), reads 18 psig. <p>If asked to report Crankcase lube oil level, report that lube oil level is 3 inches.</p> <p>Expected Action: CRS/RO may direct AO to secure lube oil pumps and heaters. CRS may protect DG "A" and SBOGs. RO/CRS may contact Fire Department concerning lube oil spill.</p> <p>RO may dispatch AO to investigate inverter trouble alarms. After the AO reports, he will likely direct the AO to reset the out of sync.</p> <p>AO Report: Wait 2 minutes and report that both inverters have a red, "Inverter Out of Sync" light.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 1

Event Description: **Unload and Shutdown Diesel Generator “B”**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: Once the CRS briefs the crew on entry into LCO 3.8.1, Condition B, or at the discretion of the Lead Examiner, the next event may be initiated.

Op-Test No.: **2015 NRC** Scenario No.: **4** Event No.: **2**Event Description: **FT-1112Y, Total Feedwater Flow (SG1) Transmitter Fails LOW**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Receives and acknowledges alarm. Operators are alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 6A06A (FWCS PROCESS TRBL) • 0 FEED indicated on SG1 OVERVIEW screen on DFCS1 <p>BOP implements 40AL-9RK6A for annunciator 6A06A, Group A due to a SG 1 Feedwater Flow 8% Deviation (FWCSA:B12).</p>

40AL-9RK6A for annunciator 6A06A, Group A due to a SG 1 Feedwater Flow 8% Deviation (FWCSA:B12).

	BOP	<p>NOTE</p> <p>The steam flow deviation alarm is an expected alarm during Main Turbine stop valve testing.</p>
	BOP	<p>Auto Action 1</p> <p>The DFWCS will select Single Element Control.</p>
	BOP	<p>NOTE</p> <p>If the deviation is due to an MSIV closing at power, then maintaining the affected DFWCS in single element control will enable the DFWCS to control Steam Generator level during the steam flow fluctuations and when the MSIV is reopened.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 2Event Description: **FT-1112Y, Total Feedwater Flow (SG1) Transmitter Fails LOW**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>First Priority Operator Action 1</p> <p>IF the Steam Flow 50% Deviation is because of a MSIV going closed, THEN perform the following:</p> <p>Maintain the affected DFWCS in single element control.</p> <p>REFER TO 40OP-9SG01 to re-open the MSIV.</p> <p>Expected Action: N/A. MSIVs are open.</p>
	BOP	<p>First Priority Operator Action 2</p> <p>Determine if a transmitter is faulty.</p> <p>Expected Action: BOP determines that FT-1112Y has failed LOW..</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 2Event Description: **FT-1112Y, Total Feedwater Flow (SG1) Transmitter Fails LOW**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>First Priority Operator Action 3 through 3.4</p> <p>IF the Deviation is because of a faulty transmitter, THEN perform the following:</p> <p>Place the faulty transmitter in the maintenance mode.</p> <p>Adjust the affected SG level setpoint to match the actual affected SG level.</p> <p>Remove the Three Element Lockout.</p> <p>GO TO the Process Alarm page to clear the alarm.</p> <p>Expected Action: BOP places FT-1112Y in the maintenance mode by pressing the "2Maintenance" Button on the Transmitter page. BOP adjusts SG 1 level setpoint to actual SG 1 level by adjusting the Setpoint to the current level (if needed). Removes SG 1 Three Element Lockout by clicking on the "3 ELEM LO" button. Clears the alarm by pressing the "ACK Page" and "CLEAR Page" buttons on the alarm page.</p>
	BOP	<p style="text-align: center;">NOTE</p> <p>Failure of a feedwater flow transmitter will cause JSCALOR to be unavailable.</p>
	BOP	<p style="text-align: center;">NOTE</p> <p>Failure of a steam flow transmitter may cause the JSCALOR indication to be inaccurate.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 2Event Description: **FT-1112Y, Total Feedwater Flow (SG1) Transmitter Fails LOW**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Second Priority Operator Action 1</p> <p>IF the Deviation is the result of a failed transmitter, THEN Evaluate the impact to the COLSS.</p> <p>Expected Action: CRS determines there is no effect due to UFM in service.</p>
	CRS	<p>Second Priority Operator Action 2</p> <p>Contact I&C to troubleshoot problem with transmitter.</p> <p>Expected Action: CRS briefs SM on need to contact I&C.</p>
	BOP	<p>Second Priority Operator Action 3</p> <p>IF the Steam Flow 50% Deviation is because of Main Turbine stop valve testing, AND stop valve testing is complete, THEN remove the Three Element Lockout.</p> <p>Expected Action: N/A. <i>Not</i> due to stop valve testing.</p>
	CRS	<p>Second Priority Operator Action 4</p> <p>WHEN the condition causing the alarm has been corrected, THEN ensure all DFWCS transmitters are in their proper selection for current conditions. (average selected, greater than selected as appropriate)</p> <p>Expected Action: CRS defers this Action until transmitter is repaired.</p>
<p>Examiner Note: Once the CRS briefs the SM, OR at the discretion of the Lead Examiner, the next event may be initiated.</p>		

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciator 4A08A (CEDMCS TRBL) • Annunciator 4A09B (CWP (CEA WITHDRAWAL PROHIBIT)) • Annunciator 5A13B (CPC/CEAC TRBL) • Annunciator 5B01D (COLSS PC ALARM) • Annunciator 5B01C (COLSS CMC ALARM) • CEA CRT indicates a Group 5 rod partially inserted, along with a CEA DEVIATION alarm • CEA DEV alarms on the DNBR/LPD Calculator Panels • No indicating lights for CEA 15 on the CEA AUTO/CONTROL STATUS panel on B04 • Computer alarm point SBYS76 (CEAC 1A DEVIATION (HI)) (several other similar alarms) • Computer alarm point SBYS20 (CROSS CH COMPARISON FAIL) • Computer alarm point RJALM2 (COLSS CPC AZTILT ALM) <p>Alarm response procedures 40AL-9RK4A and 41AL-1RK5A, and 40AL-9RK5B are referenced for operator response.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
41AL-1RK5A, window 5A13B, Group I, Point ID SBYS76 (several other similar IDs), CEAC 1A Deviation		
	BOP	<p>First Priority Operator Action 1</p> <p>Confirm CEA deviation alarm by observing ALL of the following:</p> <ul style="list-style-type: none"> • CPC Operators Module for RSPT indication and target CPC anomalies • CEDMCs Operator Module • CEA Pulse counter indications <p>Expected Action: BOP observes the following:</p> <ul style="list-style-type: none"> • CEA CRT indicates a Group 5 rod partially inserted, along with a CEA DEVIATION alarm • CEA DEV alarms on the DNBR/LPD Calculator Panels • No indicating lights for CEA 15 on the CEA AUTO/CONTROL STATUS panel on B04
	BOP	<p>First Priority Operator Actions 2 and 2.1</p> <p>IF an inadvertent CEA withdrawal is the source of the CEA deviation, THEN perform BOTH of the following:</p> <p>Place the CEDMCS operators module mode select switch in "STANDBY"</p> <p>Expected Action: BOP rotates the MODE SELECT switch to "SB."</p>
	BOP	<p>First Priority Operator Action 2.2</p> <p>PERFORM 40AO-9ZZ11, CEA Malfunctions.</p> <p>Expected Action: BOP prompts CRS to perform 40AO-9ZZ11.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	BOP	First Priority Operator Action 3 IF the CEA continues to withdraw, THEN perform BOTH of the following: Expected Action: N/A. CEA is <i>not</i> withdrawing.
	BOP	First Priority Operator Action 4 Determine the deviating CEA(s). Expected Action: BOP determines that CEA 15 is deviating.

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: center;">NOTE</p> <p>A CEAC penalty factor (PF) is assigned to the affected CEA or associated subgroup. These PFs are sent to all channels of CPCs.</p> <p>The magnitude of the penalty factors generated is dependant upon several factors:</p> <ul style="list-style-type: none"> • Magnitude of the CEA deviation within the sub-group (less than nine inches vs greater than nine inches) • The type of CEA (4 or 12 figured) • The direction of the CEA deviation (inward or outward, with outward most severe) • CEA configuration and associated sub-group • Length of time the CEA is deviated (Xenon redistribution PF ramps up over six hours) <p>Any CEA with outward deviation greater than 9 inches results in large PF and reactor trip. (provided the lowest deviating CEA is below the CEAC deadband of 139.26")</p> <p>An inward deviation 'seen' by any CEAC equal to or greater than nine inches (in the case of the 12 fingered CEA) will result in a PF sufficient to cause a reactor trip at full power. (provided the lowest deviating CEA is below the CEAC deadband of 139.26")</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS/BOP	<p>First Priority Operator Action 5</p> <p>Determine the cause of the CEA deviation; possible causes for indicated deviation include:</p> <ul style="list-style-type: none"> • Stuck/slipped/dropped CEA • Faulty Reed Switch Position Transmitter • Faulty CEDM <p>Expected Action: BOP determines CEA 15 has <i>slipped</i>.</p>
	BOP	<p>First Priority Operator Action 6</p> <p>IF the CEA is determined to be an Immovable CEA, THEN PERFORM 40ST-9ZZ23, CEA Position Data Log.</p> <p>Expected Action: N/A. CEA has <i>not</i> been determined immovable.</p>
	BOP/CRS	<p>First Priority Operator Action 7</p> <p>IF the CEA is determined to be a Dropped or Slipped CEA, THEN PERFORM 40AO-9ZZ11, CEA Malfunctions.</p> <p>Expected Action: BOP prompts CRS to perform 40AO-9ZZ11.</p>
40AO-9ZZ11, CEA Malfunctions, Section 3.0, Dropped or Slipped CEA MODE 1 or 2		
	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 2</p> <p>Check that at least one CEA is deviating from its group by greater than 6.6 inches.</p> <p>Expected Action: BOP observes that CEA 15 is deviating by <i>more than</i> 6.6 inches.</p>
	CRS	<p>Instruction 3</p> <p>IF the Reactor was NOT critical prior to the CEA deviation, THEN GO TO Appendix F, CEA Deviation Prior To Criticality.</p> <p>Expected Action: N/A. Reactor <i>is</i> critical.</p>
	CRS	<p>NOTE</p> <p>Step 4 is NOT applicable if LCO 3.1.10, Special Test Exception, has been invoked during low power physics testing.</p>
	CRS	<p>Instruction 4</p> <p>IF one CEA is deviating from its group by greater than 6.6 inches, AND any CEA Reg Group is below the Transient Insertion Limit, THEN perform the following:...</p> <p>Expected Action: N/A. All Reg groups are above the Transient Insertion Limit.</p>
	CRS	<p>Instruction 5</p> <p>IF two or more CEAs are deviating by greater than 9.9 inches from their associated group, THEN perform the following:...</p> <p>Expected Action: N/A. Only 1 CEA is deviating.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 6</p> <p>IF Reactor power was less than 1% prior to the CEA deviation, THEN GO TO Appendix G, CEA Deviation Prior To 1% Power.</p> <p>Expected Action: N/A. Reactor power was greater than 1%.</p>
	BOP	<p>Instruction 7</p> <p>Ensure CEDMCS is in "STANDBY".</p> <p>Expected Action: BOP rotates the MODE SELECT switch to "SB."</p>
	CRS	<p>Instruction 8</p> <p>Direct an operator to perform Appendix E, Initial Actions.</p> <p>Expected Action: CRS directs a board operator to perform Appendix E. See Page 22.</p>
	CRS	<p>Instruction 9</p> <p>Record BOTH of the following:</p> <ul style="list-style-type: none"> CEA deviation time _____ (time) Initial (pre-deviation) power level. _____ % <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>NOTE</p> <p>If the reason for the CEA deviation is known (e.g. ACTM actuation), an attempt to realign the CEA can be made. However due to the time limitations for a power reduction, continuing with the procedure is required until the CEA deviation is less than 6.6 inches.</p>
	CRS	<p>Instruction 10</p> <p>IF the CEA deviation is less than 9.9 inches, AND it can be realigned quickly without requiring troubleshooting, THEN concurrently perform BOTH of the following:...</p> <p>Expected Action: N/A. Deviation is <i>greater than</i> 9.9 inches.</p>
	CRS	<p>Instruction 11</p> <p>IF reactor power is 35% or less, THEN GO TO step 26.</p> <p>Expected Action: N/A. Reactor power is <i>greater than</i> 35%.</p>
	CRS	<p>NOTE</p> <p>The intent of step 12 is to not require a power reduction if only one CEA has slipped and remains in the top ten inches of the core. If this is the case, the conditions in step 12 are required to be met continuously throughout the event.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 12</p> <p>IF only ONE CEA is misaligned from its group by greater than 6.6 inches, AND ALL of the following conditions are continuously met from the time of deviation:</p> <ul style="list-style-type: none"> • All CEAs remain above 142.5" withdrawn by pulse counter • All CEAs remain above 140.1" withdrawn by RSPT indication • Reactor Power is above 95% • COLSS is in service • All CEACs in service • COLSS Azimuthal Power Tilt is less than 3.0% <p>Expected Action: N/A. All CEAs are <i>not</i> above 142.5" withdrawn by pulse counter and COLSS is <i>out of service</i> since it does not know the position on CEA 15.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>The effects of a boration to the RCS may take 4 to 6 minutes to be seen, therefore initiating a boration (step 17.) should be done as soon as possible.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS/BOP	<p>Instruction 13</p> <p>Perform the following to start a power reduction within 10 minutes of the initial CEA deviation:</p> <ol style="list-style-type: none"> Log the start time for power reduction. _____ (time) Lower the turbine load to raise Tave 3°F greater than Tref. <p>Expected Action: CRS provides a Reactivity Brief. CRS logs time. BOP rotates the LOAD LIMIT SET potentiometer CCW to lower turbine load until Tave is 3°F greater than Tref.</p>
Critical Task: Crew begins power reduction within 10 minutes of slipped CEA.		SAT / UNSAT
	CRS	<p>Instruction 14</p> <p>Determine the required power reduction based on initial power:</p> <ul style="list-style-type: none"> Greater than 80% - requires a 20% power reduction Greater than 70% to 80% - requires a 15% power reduction Greater than 45% to 70% - requires a 10% power reduction Greater than 35% to 45% - requires a 5% power reduction <p>Required reduction = _____%</p> <p>Expected Action: Since initial Reactor power was 75%, CRS determines that the required power reduction is 10%.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 15</p> <p>Calculate the number of gallons of boric acid needed (STA reactivity worksheet) for the downpower:</p> <p>____% X ____ gal/% = ____ gal (step 14.)</p> <p>Expected Action: 15% X 59-60 gal/% = 885-900 gallons.</p>
	BOP	<p>Instruction 16</p> <p>Lower the turbine load to maintain Tave 3°F greater than Tref.</p> <p>Expected Action: BOP gradually rotates the LOAD LIMIT SET potentiometer CCW to lower turbine load, while maintaining Tave 3°F greater than Tref.</p>
	RO	<p>Instruction 17</p> <p>Commence borating to the charging pump suction using BOTH of the following criteria:</p> <ul style="list-style-type: none"> • Minimum rate of 35 gpm. • Amount determined in step15. <p>Expected Action: RO borates at approximately 40 gpm for a total of 885-900 gallons.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 18</p> <p>Reduce reactor power to comply with the power reduction requirements of Appendix B, Core Power Reduction After a CEA Deviation.</p> <p>Expected Action: CRS refers to Appendix B.</p>
	CRS	<p>Instruction 19</p> <p>WHEN the requirements of Appendix B, Core Power Reduction After a CEA Deviation allow temperature to be lowered, THEN adjust turbine load to maintain Tave/Tref mismatch +/- 3°F.</p> <p>Expected Action: N/A. Power reduction still in progress.</p>
	CRS	<p>Instruction 20</p> <p>WHEN CEA realignment can occur, THEN perform Appendix I, CEA Realignment.</p> <p>Expected Action: N/A. CEA realignment not possible at this time.</p>
	CRS	<p>NOTE</p> <p>Appendix J, LCO Required Action Tracker, is reference use, and may be performed by the CRS, but should be provided to the SM or STA to be used as a guide to the LCO required actions.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 21</p> <p>Initiate Appendix J, LCO Required Action Tracker.</p> <p>Expected Action: CRS may refer to Appendix J. CRS enters LCO 3.1.5 Condition A, due to one CEA trippable and misaligned from it group by > 9.9 inches. The Required Action is to reduce THERMAL POWER in accordance with the limits in the COLR within 1 hour AND restore CEA alignment within 2 hours.</p>
	CRS	<p>Instruction 22</p> <p>Notify ECC of the power reduction.</p> <p>Expected Action: As directed.</p>

40AO-9ZZ11, Appendix E, Initial Actions

		<p>Instruction 1</p> <p>Enter Appendix Entry Time and Date:</p> <p>Expected Action: As directed.</p>
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Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<p>Instruction 2</p> <p>Direct an operator to go to the CEDM Control Room and perform the following:</p> <ol style="list-style-type: none"> Report all abnormal indications on the CEDM Control Cabinets. PERFORM 40AL-9SF01, Local Alarm Panel J-SFNC01D Responses for existing alarms. Report all abnormal indications on the M/G set control panels. <p>Expected Action: RO/BOP directs an AO to investigate.</p> <p>AO Report: Wait 2 minutes and report that there is a CWP alarm and no breakers are open.</p>
	RO/BOP	<p>Instruction 3</p> <p>IF the affected control rod is a twelve fingered CEA (REFER TO Appendix A, Twelve Finger CEAs), THEN perform the following:</p> <ol style="list-style-type: none"> Monitor the CPC DNBR and LPD margins to trip by using ANY of the following: <ul style="list-style-type: none"> Pt IDs 0107 & 0172 Group Display (Dropped/Slipped CEA) Inform the CRS if a trip value is being approached. <p>Expected Action: N/A. CEA 15 is not listed in Appendix A; therefore, it is a Four Fingered CEA</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 4</p> <p>Inform ALL of the following of the CEA malfunction and obtain assistance as needed:</p> <ul style="list-style-type: none"> • I&C Maintenance • Reactor Engineering • SM <p>Expected Action: CRS briefs SM.</p>
	RO/BOP	<p>NOTE</p> <p>The starting point for the subsequent maneuvering plan will be the end point of the COLR driven power reduction (for example, the subsequent downpower plan would start at 80% for a CEA misalignment occurring at full power).</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<p>Instruction 5</p> <p>Request from Reactor Engineering situation-specific maneuvering plan(s) to perform a subsequent power reduction required in the event the CEA can not be restored. The plan(s) will encompass ALL of the following:</p> <ul style="list-style-type: none">• The subsequent power reduction will commence no later than 2 hours from the initial CEA misalignment.• IF the subsequent power reduction begins above 50%, THEN power reduction rate will be a minimum of 15% per hour to 50% power.• WHEN power level is less than 50%, THEN power reduction rate will be a minimum of 10% per hour to 20% power. <p>Expected Action: CRS briefs SM.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<p>Instruction 6</p> <p>IF reactor power is greater than 35%, AND a downpower will be performed, THEN initiate pressurizer boron equalization:</p> <ol style="list-style-type: none"> Override and energize all pressurizer backup heaters. Lower the setpoint on RCN-PIC-100, Pressurizer Pressure Controller to 2220 psia. <p>Expected Action: RO energizes all B/U heaters with the following handswitches:</p> <ul style="list-style-type: none"> • RCA-HS-100-4 • RCB-HS-100-5 • RCN-HS-100-6 • RCN-HS-100-7 • RCN-HS-100-8 • RCN-HS-100-9 <p>RO uses the manual thumbwheel on RCN-PIC-100 to lower the setpoint to 2220 psia.</p>
	CRS	<p>Instruction 7</p> <p>IF the affected control rod is a Reg Group CEA, THEN perform section 8.4 (PDIL Alarm Circuit) of 40ST-9ZZ23, CEA Position Data Log within 1 hour.</p> <p>Expected Action: CRS notes need to perform 40ST-9ZZ23. Briefs SM.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 3

Event Description: **CEA 15 (Reg Group 5) slips half way into the core**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: Once the ECC is notified, **OR** at the discretion of the Lead Examiner, the next event may be initiated.

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Alarms are received and acknowledged. The crew is alerted by the following:</p> <ul style="list-style-type: none"> • Annunciators: <ul style="list-style-type: none"> ○ 5C04A (CSAS) ○ 5B05B (LEG 1-3 CSAS B LEG 2-4) • All RCP XX LO NCW FLOW annunciators on RKN-UA-4D&E • All RCP XX TRBL annunciators on RKN-UA-4A • Computer alarms: <ul style="list-style-type: none"> ○ SAYS67 ○ SAYS68 <p>Expected Action: Crew implements 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 5.0, CSAS.</p>

40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Section 5.0, CSAS

	CRS	<p>Instruction 1</p> <p>Enter AOP Entry Time and Date:</p> <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 2</p> <p>Record the time of the CSAS Actuation.</p> <p>Expected Action: As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: center;">NOTE</p> <p>Overriding or antipumping equipment disables automatic operation of the equipment on a valid PPS-ESFAS actuation. Depending on plant conditions, this action may make the equipment inoperable.</p>
	RO	<p>Instruction 3</p> <p>IF ANY Containment Spray Pump is running, AND BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • Containment Spray Pump is NOT being used for SDC • SIAS has NOT actuated THEN place the Containment Spray Pump hand switch in "STOP" to anti-pump the CS Pump. <p>Expected Action: RO places SIB-HS-6, Containment Spray Pump B P03, in "STOP."</p>
	CRS	<p>Instruction 4</p> <p>IF ANY Containment Spray Pump is running, AND BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • Containment Spray Pump is NOT being used for SDC • SIAS has actuated THEN override and stop the Containment Spray Pump. <p>Expected Action: N/A. SIAS has <i>not</i> actuated.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: center;">CAUTION</p> <p>Attempting to close the Containment Spray Header Isolation Valves while the valves are stroking to their actuated position may trip the valve breaker on overload and allow continued spray flow by gravity drain.</p>
	RO	<p>Instruction 5</p> <p>Override and close all open Containment Spray Header Isolation Valves.</p> <p>Expected Action: RO inserts key in SIB-HS-671, momentarily places switch in "JOG OPEN," then hold switch in "JOG CLOSE" until the green indicator light is lit and the red light is off.</p>
	CRS	<p style="text-align: center;">NOTE</p> <p>Opening the NC Containment Supply Isolation Valve prior to opening the NC Containment Return Isolation Valves may result in lifting the NC reliefs in Containment.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 6</p> <p>Open ANY of the following as needed to restore Nuclear Cooling Water to Containment:</p> <ul style="list-style-type: none">• NCA-UV-402, NCW Containment Downstream Return Isolation Valve• NCB-UV-403, NCW Containment Upstream Return Isolation Valve• NCB-UV-401, NCW Containment Upstream Supply Isolation Valve <p>Expected Action: RO observes that NCA-UV-402 is already open. Opens NCB-UV-403 by placing NCB-HS-403 in CLOSE, then momentarily placing the hand switch in OPEN. Attempts to open NCB-UV-401 by placing NCB-HS-401 in CLOSE, then momentarily placing the hand switch in OPEN. Observes that the green light is still lit and the red light is still off. Notifies CRS that NCB-UV-401 did not open.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 7</p> <p>IF seal injection is NOT in service, AND cooling water is NOT restored to ANY operating RCP within three minutes of the initial loss, THEN perform the following:</p> <ul style="list-style-type: none">a. Ensure the reactor is tripped.b. Stop all of the RCPs.c. Isolate controlled bleedoff. <p>Expected Action: N/A. Seal injection is in service at this point.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 8</p> <p>IF seal injection is in service, AND cooling water is NOT restored to ANY operating RCP within 10 minutes of the initial loss, THEN perform the following:</p> <ol style="list-style-type: none"> Ensure the reactor is tripped. Stop all of the RCPs. Isolate controlled bleedoff. <p>Expected Action: BOP inserts a manual Reactor trip by depressing at least 2 of 4 of the following pushbuttons:</p> <ul style="list-style-type: none"> SBA-HS-1, MANUAL REACTOR TRIP SBB-HS-2, MANUAL REACTOR TRIP SBC-HS-3, MANUAL REACTOR TRIP SBD-HS-4, MANUAL REACTOR TRIP <p>RO secures all 4 RCPs.</p> <p>RO closes the following:</p> <ul style="list-style-type: none"> HV-430, SEAL BLEEDOFF from RCP 1A (RCN-HS-430) HV-431, SEAL BLEEDOFF from RCP 1B (RCN-HS-431) HV-432, SEAL BLEEDOFF from RCP 2A (RCN-HS-432) HV-433, SEAL BLEEDOFF from RCP 2B (RCN-HS-433) <p>CRS implements 40EP-9EO01, Standard Post Trip Actions.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
40EP-9EO01, Standard Post Trip Actions		
	CRS	<p>Instruction 1</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>Determine that Reactivity Control acceptance criteria are met by the following:</p> <ul style="list-style-type: none"> a. Check that reactor power is dropping b. Check that start-up rate is negative c. Check that ALL full strength CEAs are inserted <p>Expected Action: As directed.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 3</p> <p>Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following:</p> <ol style="list-style-type: none">Check that the Main Turbine is trippedCheck that the Main Generator output breakers are openCheck that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met:<ul style="list-style-type: none">All vital and non-vital AC buses are poweredAll vital and non vital DC buses are powered <p>Expected Action: RO reports all vital and non-vital AC & DC buses are powered from off-site. BOP reports Main Turbine has tripped and Main Generator output breakers are open.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 4</p> <p>Determine that RCS Inventory Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that pressurizer level meets BOTH of the following: <ul style="list-style-type: none"> 10-65% Trending as expected to 33-53% Check that the RCS is 24°F or more subcooled Check that BOTH of the following are in service to all RCPs <ul style="list-style-type: none"> Seal injection Nuclear Cooling Water <p>Expected Action: RO observes PZR level is trending to 33-53% and subcooling is greater than 24°F. RO observes seal injection, but not NCW, is in service to all RCPs.</p>
	CRS/RO	<p>Instruction 5</p> <p>Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> Pressurizer pressure is 1837-2285 psia Pressurizer pressure is trending as expected to 2225-2275 psia <p>Expected Action: RO reports that Pressurizer pressure is trending to 2225-2275 psia and heaters are available.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 6</p> <p>Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>Expected Action: RO reports that no RCPs are operating, loop ΔT is less than 10°F, and that subcooling is greater than 24°F.</p>
	CRS/BOP	<p>Instruction 7</p> <p>Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that at least one Steam Generator meets BOTH of the following conditions: <ul style="list-style-type: none"> • Level is 35% WR or more • Feedwater is restoring or maintaining level 45-60% NR Check that T_C is 560-570°F Check that steam generator pressure is 1140-1200 psia <p>Expected Action: BOP reports that both SGs WR level is greater than 35%, DFWCS is restoring levels to 45-60% NR in the RTO mode, and that the SBCS is controlling T_c 560-570°F and SG pressures 1140-1200 psia in automatic.</p>

Op-Test No.: **2015 NRC** Scenario No.: 4 Event No.: 4

Event Description: **Inadvertent Train B CSAS, NCW Return from Containment Fails to Reopen (Trip Initiator)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 8</p> <p>Determine that Containment Isolation acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that Containment pressure is <2.5 psig REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> No valid containment area radiation monitor alarms or unexplained rise in activity No valid steam plant activity monitor alarms or unexplained rise in activity <p>Expected Action: RO/BOP observes that Containment pressure is less than 2.5 psig. BOP reports no unexplained rise in activity on containment or steam plant monitors.</p>

Examiner NOTE: Once the BOP reports the status of radiation monitors, **OR** at the discretion of the Lead Examiner, the next event may be initiated.

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5

Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
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Examiner Note: The CRS may elect to start over with the SPTAs. SPTAs are repeated here because some of the Expected Actions are different due to the LOOP.

40EP-9EO01, Standard Post Trip Actions

	CRS	<p>Instruction 1</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>
	RO	<p>Instruction 2</p> <p>Determine that Reactivity Control acceptance criteria are met by the following:</p> <ul style="list-style-type: none"> a. Check that reactor power is dropping b. Check that start-up rate is negative c. Check that ALL full strength CEAs are inserted <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 3</p> <p>Determine that Maintenance of Vital Auxiliaries acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that the Main Turbine is tripped Check that the Main Generator output breakers are open Check that station loads have transferred to offsite electrical power such that BOTH of the following conditions are met: <ul style="list-style-type: none"> All vital and non-vital AC buses are powered All vital and non vital DC buses are powered <p>Expected Action: RO reports all vital and non-vital AC buses are <i>deenergized</i>, except PBA-S03, which is being powered from DG "A." Also reports that Spray Pond Pump "A" is running to support DG "A." RO reports DC buses are powered. BOP reports Main Turbine has tripped and Main Generator output breakers are open.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 4</p> <p>Determine that RCS Inventory Control acceptance criteria are met by the following:</p> <p>Check that pressurizer level meets BOTH of the following:</p> <ul style="list-style-type: none"> • 10-65% • Trending as expected to 33-53% <p>Check that the RCS is 24°F or more subcooled</p> <p>Check that BOTH of the following are in service to all RCPs</p> <ul style="list-style-type: none"> • Seal injection • Nuclear Cooling Water <p>Expected Action: RO reports PZR level is <i>not</i> trending to 33-53% and subcooling is greater than 24 °F. RO reports <i>no</i> seal injection and <i>no</i> NCW to RCPs.</p>
	RO	<p>Contingency Action 4.a.1</p> <p>Restore and maintain pressurizer level to 33 - 53% by ANY of the following:</p> <ul style="list-style-type: none"> • Operation of PLCS • Manual operation of Charging Pumps and Letdown Control Valves <p>Expected Action: RO starts Charging Pump A.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Contingency Action 4.c.1</p> <p>Isolate controlled bleedoff from ANY RCP(s) as appropriate. REFER TO 40AO-9ZZ04, Reactor Coolant Pump Emergencies, Appendix E, Control Board B04 Label.</p> <p>Expected Action: N/A. Controlled bleedoff was isolated in Event 4.</p>
	CRS/RO	<p>Instruction 5</p> <p>Determine that RCS Pressure Control acceptance criteria are met by BOTH of the following:</p> <ul style="list-style-type: none"> • Pressurizer pressure is 1837-2285 psia • Pressurizer pressure is trending as expected to 2225-2275 psia <p>Expected Action: RO observes that Pressurizer pressure is trending to 2225-2275 psia.</p>
	RO	<p>Instruction 6</p> <p>Determine that Core Heat Removal acceptance criteria are met by ALL of the following:</p> <ul style="list-style-type: none"> • At least one RCP is operating • Loop ΔT is less than 10°F • RCS is 24°F or more subcooled <p>Expected Action: RO reports that <i>no</i> RCPs are operating and that subcooling is greater than 24 °F.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	CRS/BOP	<p>Instruction 7</p> <p>Determine that RCS Heat Removal acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that at least one Steam Generator meets BOTH of the following conditions: <ul style="list-style-type: none"> Level is 35% WR or more Feedwater is restoring or maintaining level 45-60% NR Check that T_C is 560-570°F Check that steam generator pressure is 1140-1200 psia <p>Expected Action: BOP reports that both SGs WR level is greater than 35%. Auxiliary Feedwater Pump A (or AFN-P01) is restoring levels to 45-60% NR, and that ADVs are controlling T_c 560-570°F and SG pressures 1140-1200 psia.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Instruction 8</p> <p>Determine that Containment Isolation acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that Containment pressure is <2.5 psig REFER TO Appendix 7, List of EOP Radiation Monitors and check BOTH of the following conditions: <ul style="list-style-type: none"> No valid containment area radiation monitor alarms or unexplained rise in activity No valid steam plant activity monitor alarms or unexplained rise in activity <p>Expected Action: RO/BOP observes that Containment pressure is less than 2.5 psig. BOP reports no unexplained rise in activity on containment or steam plant monitors.</p>
	RO	<p>Instruction 9</p> <p>Determine that Containment Temperature, Pressure, and Combustible Gas Control acceptance criteria are met by the following:</p> <ol style="list-style-type: none"> Check that containment temperature is <117°F Check that containment pressure is <2.5 psig <p>Expected Action: RO reports that Containment temperature is less than 117°F and that Containment pressure is less than 2.5 psig.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 10</p> <p>IF all acceptance criteria are met, AND no contingency actions were performed, THEN GO TO 40EP-9EO02, Reactor Trip.</p> <p>Expected Action: CRS determines that <i>some</i> contingency actions were taken.</p>
		<p>Instruction 11</p> <p>IF any acceptance criteria are NOT met, OR ANY contingency action was taken, THEN GO TO Section 4.0, Diagnostic Actions to diagnose the event.</p> <p>Expected Action: CRS determines that that there is a Loss of Offsite Power in progress and then transitions to 40EP-9EO07, Loss of Offsite Power/Loss of Forced Circulation.</p>

40EP-9EO07, Loss of Offsite Power/Loss of Forced Circulation

		<p>Instruction 1</p> <p>Confirm the diagnosis of a LOOP/LOFC by performing the following:</p> <ol style="list-style-type: none"> Check that the Safety Function Status Check acceptance criteria are satisfied. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. <p>Expected Action: CRS directs STA to perform the Safety Function Status Check and informs Chemistry.</p>
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Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	CRS	Instruction 2 Ensure the event is being classified. Expected Action: CRS prompts SM to classify the event.
	CRS	Instruction 3 Open the Placekeeper and enter the EOP Entry Time. Expected Action: As directed.
	CRS	Instruction 4 IF a LOOP has occurred, THEN ensure loads have sequenced on at least one 4.16 kV AC vital bus. Expected Action: RO observes that the following Train A equipment has sequenced on: <ul style="list-style-type: none">• Control Room Essential Ventilation• Essential Battery Chargers• Containment Normal AHU• CEDM Normal AHU• Essential Cooling Water Pump• Essential Spray Pond Pump• DG Room Essential Ventilation• Essential Chiller

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	CRS	NOTE KEY OPERATOR ACTION - Perfect performance of the following step will significantly reduce plant risk.
	CRS	CAUTION Starting a Charging Pump without first isolating seal injection will likely cause seal damage due to rapid cooldown of the seals.

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 5</p> <p>IF a LOOP has occurred, THEN perform the following:</p> <ol style="list-style-type: none"> IF no charging pumps are running, THEN isolate seal injection. IF seal injection is isolated, THEN isolate controlled bleedoff. Reset the anti pump condition on the always running Charging Pump by placing the handswitch in the "STOP" position. IF seal injection is isolated, AND a charging pump is running, <p>THEN perform the following:</p> <ol style="list-style-type: none"> 1) Close the Seal Injection Flow Controllers. 2) Ensure BOTH of the following valves are open: <ul style="list-style-type: none"> • CHN-UV-231P, Seal Injection Heat Exchanger Inlet Valve. • CHB-HV-255, RCP Seal Injection Header Supply Valve. 3) Throttle open the Seal Injection Flow Controllers until RCP seal 1 outlet temperatures start dropping. 4) WHEN temperatures have stabilized at approximately charging line temperature, THEN adjust the Seal Injection Flow Controllers to desired flow. <p>Expected Action: The RO restarted a charging pump during SPTAs.</p>
	BOP	<p>Instruction 6</p> <p>IF CW flow to Main Condenser is lost, THEN actuate MSIS.</p> <p>Expected Action: BOP takes all four MSIS ACTUATION switches on B05 to "MSIS INITIATE."</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 7</p> <p>IF BOTH of the following conditions exist:</p> <ul style="list-style-type: none"> • MSIS has actuated • Condenser Reheat Tray level is in the indicating range locally (CDN-LG-88 & 89) <p>THEN override and open the Steam Trap Isolation Valve on the unaffected Steam Generator:</p> <ul style="list-style-type: none"> • SGA-HS-1133, Steam Trap SGNM23 Inlet Isolation Valve UV-1133 • SGA-HS-1134, Steam Trap SGNM24 Inlet Isolation Valve UV-1134 <p>Expected Action: BOP directs AO to report Condenser Reheat Tray levels.</p> <p>AO Report: Condenser Reheat Tray level is in the indicating range.</p> <p>Expected Action: BOP overrides and opens UV-1133 and UV-1134.</p>
	BOP	<p>Instruction 8</p> <p>Check that Tc is being maintained less than 570°F by using ANY of the following:</p> <ul style="list-style-type: none"> • Steam Bypass Control System • Atmospheric Dump Valves from the Control Room <p>Expected Action: BOP uses ADVs to maintain Tc less than 570°F</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 5Event Description: **Loss of Offsite Power**

Time	Position	Applicant's Actions or Behavior
		<p>Instruction 9</p> <p>IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.</p> <p>Expected Action: As directed.</p>
		<p>Instruction 10</p> <p>Ensure at least one Steam Generator has level being maintained within or being restored to 45 - 60% NR.</p> <p>Expected Action: BOP reports that AFA is being used to restore SG levels to 45-60% NR. Jogs open HV-32, AFW TO SG1 UPSTREAM VALVE, and HV-33, AFW TO SG2 UPSTREAM VALVE, as necessary to establish level.</p>
<p>Examiner Note: Once the BOP reports status of SG levels, OR at the discretion of the Lead Examiner, the next event may be initiated.</p>		

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	CREW	<p>Operators are alerted by the following:</p> <ul style="list-style-type: none"> Annunciators: <ul style="list-style-type: none"> 1A01A (DG A TRIP) 1A01B (DG A GEN DIFF TRIP) Loss of Control Room lighting Extensive loss of various indications Equipment "Loss of Power" alarms Tripped breaker indications on the 13.8 and 4.16kV buses Extensive loss of component power available indications <p>Expected Action: CRS implements 40EP-9EO08, Blackout. RO may direct an AO to investigate at DG "A."</p> <p>AO Report: If dispatched, wait 3 minutes and report the following:</p> <ul style="list-style-type: none"> Generator Differential Lockout Relay 86D, Lockout Relay Reset white light is off Differential 87, orange Relay Tripped light is on DG A is NOT running

40EP-9EO08, Blackout

	CRS	<p style="text-align: center;">NOTE</p> <p>Harsh conditions are containment temperature greater than 170°F or containment radiation level greater than 10⁸ mR/hr. Harsh containment values are placed in brackets next to the normal setpoint or band.</p>
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Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p style="text-align: center;">NOTE</p> <p>During Blackout conditions inadequate lighting may exist in access areas and equipment rooms. Local operation of equipment may require the use of portable lighting.</p>
	CRS	<p>Instruction 1</p> <p>Confirm the diagnosis of a Blackout by performing the following:</p> <ul style="list-style-type: none"> a. Determine the Safety Function Status Check acceptance criteria are satisfied. b. Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist. <p>Expected Action: CRS directs STA to conduct the Safety Function Status Check and inform Chemistry.</p>
	CRS	<p>Instruction 2</p> <p>Ensure the event is being classified.</p> <p>Expected Action: CRS prompts SM to classify the event.</p>
	CRS	<p>Instruction 3</p> <p>Open the Placekeeper and enter the EOP Entry Time.</p> <p>Expected Action: As directed.</p>
	CRS	<p>Instruction 4</p> <p>Actuate MSIS.</p> <p>Expected Action: N/A. MSIS is already actuated in LOOOP/LOFC procedure.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	CRS	Instruction 5 Inform the Energy Control Center of the Blackout. Expected Action: As directed.
	CRS	<p style="text-align: center;">NOTE</p> All operations involving the SBOGs and notification to Security will be coordinated through Unit 1.
	CRS	Instruction 6 IF the Unit 1 Outside Area Operator is located in the Protected Area (PA) or the Security Owner Controlled Area (SOCA), THEN notify CAS (ext 6470) of the following: <ul style="list-style-type: none"> a. A unit blackout is in progress (operations emergency) b. Request a Security Mobile to meet the Unit 1 Outside Area Operator at the WRF SOCA gate (near the SBOG) Expected Action: As directed.

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 7</p> <p>IF the Unit 1 Outside Area Operator is located in the PA or SOCA, AND a Security Officer has been dispatched to open the WRF SOCA gate, THEN direct the Unit 1 Outside Area Operator to perform the following:</p> <ol style="list-style-type: none"> Meet a Security Officer at the WRF SOCA gate (for SBOG access). Start a SBOG per 40EP-9EO10, Appendix 111, Station Blackout Generator Operation. Energize NAN-S07. <p>Expected Action: As directed.</p> <p>NOTE: Directing the AO to start an SBOG is directly related to a PRA cutset. Refer to Event ID AGT-FAILSTRT-2HR, CR Operators Fail to Direct WRF Operator to Start GTGs.</p>
	RO	<p>Instruction 8</p> <p>Place all of the Charging Pump handswitches in "PULL TO LOCK."</p> <p>Expected Action: RO places the following handswitches in PTL:</p> <ul style="list-style-type: none"> CHA-HS-216, CHARGING PUMP 1 P01 CHA-HS-218A, CHARGING PUMP 3 P01 CHA-HS-218B, CHARGING PUMP 3 P01 CHA-HS-217, CHARGING PUMP 2 P01

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO/BOP	<p>Instruction 9</p> <p>Minimize RCS leakage by performing the following:</p> <ol style="list-style-type: none"> Ensure letdown is isolated. Ensure RCP controlled bleedoff flow is isolated. Ensure all RCS Sample Isolation Valves are closed. <p>Expected Action: If not already isolated, RO isolates Letdown by closing one, or both, of the following:</p> <ul style="list-style-type: none"> UV-515, LETDOWN TO HX ISOL VLV (CHB-HS-515) UV-516, LETDOWN TO HX ISOL VLV (CHA-HS-516) <p>Controlled bleedoff was previously isolated in Event 4.</p> <p>BOP ensures the following valves are closed on B07 (MISC VALVES section):</p> <ul style="list-style-type: none"> UV-203, HOT LEG SAMPLE CNTMT ISOL VLV (SSA-HS-203A) UV-200, HOT LEG SAMPLE CNTMT ISOL VLV (SSB-HS-200A) UV-204, PZR SURGE LINE SAMPLE CNTMT ISOL VLV (SSA-HS-204A) UV-201, PZR SURGE LINE SAMPLE CNTMT ISOL VLV (SSB-HS-201A) UV-205, PZR STEAM SPACE SAMPLE CNTMT ISOL VLV (SSA-HS-205A) UV-202, PZR STEAM SPACE SAMPLE CNTMT ISOL VLV (SSB-HS-202A)

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 10</p> <p>Maintain RCS Tc less than 570°F using the Atmospheric Dump Valves from the Control Room.</p> <p>Expected Action: BOP uses the manual thumbwheels on ADVs to open/close ADVs as necessary.</p>
	CRS	<p>Instruction 11</p> <p>Inform Radiation Protection and the RMS Technician of steaming to atmosphere.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 12</p> <p>Ensure that at least one Steam Generator has level being maintained within or being restored to 45 - 60% NR [45 - 60% NR].</p> <p>Expected Action: BOP reports that AFA is being used to restore SG levels to 45-60% NR. Jogs open HV-32, AFW TO SG1 UPSTREAM VALVE, and/or HV-33, AFW TO SG2 UPSTREAM VALVE, as necessary to establish level.</p>
	CRS	<p>NOTE</p> <p>In order to be successful in energizing a vital bus from a SBOG within one hour of the start of the event, Appendix 80, Align SBOG to PBA-S03 (BO), Attachment 80-A, Disable PBA-S03 Breakers, (or Appendix 81, Align SBOG to PBB-S04 (BO), Attachment 81-A, Disable PBB-S04 Breakers,) must be started as soon as possible, and performed concurrently with Standard Appendix 53.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 13</p> <p>IF at least one vital 4.16 kV AC bus is NOT expected to be energized within one hour of the start of the event from EITHER of the following:</p> <ul style="list-style-type: none"> • Offsite power • Diesel Generator <p>THEN PERFORM Appendix 80, Align SBOG to PBA-S03 (BO).</p> <p>Expected Action: CRS directs the RO to perform Appendix 80. See Page 63</p>
	CRS	<p>NOTE</p> <p>Appendix 51, Electric Plant Single Line Diagram, is available as a reference when restoring the electric plant.</p>
	CRS	<p>Instruction 14</p> <p>PERFORM Appendix 53, Align Deenergized Buses.</p> <p>Expected Action: CRS directs the RO to perform Appendix 53. See below.</p>

Appendix 53, Align De-energized Buses

	RO	<p>NOTE</p> <p>The decision to inspect de-energized buses should be based on the event in progress.</p>
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Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	CRS	<p>Instruction 1</p> <p>IF inspection of de-energized buses is warranted, THEN direct an operator to perform the following for ANY deenergized buses:</p> <ol style="list-style-type: none"> Check for protective relay targets. Evaluate and reset the targets. REFER TO 40DP-00P02, Relay Resetting. <p>Expected Action: CRS discusses with SM.</p>
	RO	<p>Instruction 2</p> <p>Unit 1 only - IF NAN-S05 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> NAN-S05G (NAN-HS-S05G) NAN-S05F (NAN-HS-S05F) NAN-S05J (NGN-HS-S05J) NAN-S05D (NAN-HS-S05D) NAN-S05B (NAN-HS-S05B) Direct an operator to open 1-E-NAN-S05K, "UPS BLDG LOAD BR SW A-E-NAN-WO/UPS" <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 3</p> <p>Unit 1 only - IF NAN-S06 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S06C (NAN-HS-S06C) • NAN-S06D (NAN-HS-S06D) • NAN-S06J (NAN-HS-S06J) • NAN-S06B (NGN-HS-S06B) • NAN-S06F (NAN-HS-S06F) • NAN-S06H (NAN-HS-S06H) <p>Expected Action: As directed.</p>
	RO	<p>Instruction 4</p> <p>Unit 2 or 3 only - IF NAN-S05 is de-energized, THEN open BOTH of the following breakers:...</p> <p>Expected Action: N/A. This is Unit 1.</p>
	RO	<p>Instruction 5</p> <p>Unit 2 or 3 only - IF NAN-S06 is de-energized, THEN open BOTH of the following breakers:...</p> <p>Expected Action: N/A. This is Unit 1.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 6</p> <p>IF NAN-S03 is de-energized THEN open BOTH of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S03A (NBN-HS-S03A) • NAN-S03B (NAN-HS-S03B) <p>Expected Action: As directed.</p>
	RO	<p>Instruction 7</p> <p>IF NAN-S04 is de-energized THEN open BOTH of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S04B (NAN-HS-S04B) • NAN-S04A (NBN-HS-S04A) <p>Expected Action: As directed.</p>
	RO	<p>Instruction 8</p> <p>IF NAN-S01 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S01A (NAN-HS-S01A) • NAN-S01N (NBN-HS-S01N) • NAN-S01F (NGN-HS-S01F) • NAN-S01E (NGN-HS-S01E) • NAN-S01D (NGN-HS-S01D) • NAN-S01G (NGN-HS-S01G) • NAN-S01H (NGN-HS-S01H) <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG “A” Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 9</p> <p>IF NAN-S02 is de-energized, THEN open ALL of the following breakers:</p> <ul style="list-style-type: none"> • NAN-S02G (NGN-HS-S02G) • NAN-S02H (NGN-HS-S02H) • NAN-S02D (NGN-HS-S02D) • NAN-S02E (NGN-HS-S02E) • NAN-S02F (NGN-HS-S02F) • NAN-S02N (NBN-HS-S02N) • NAN-S02A (NAN-HS-S02A) <p>Expected Action: As directed.</p>
	RO	<p style="text-align: center;">NOTE</p> <p>Appendix 80 or 81 may be performed concurrently with this Appendix. Progression through Appendix 80 or 81 may be at a point that one of the breakers identified in step 10 or step 11 below may be closed and the board is energized.</p>
	RO	<p>Instruction 10</p> <p>IF PBA-S03 is de-energized, THEN ensure that BOTH of the following breakers are open:</p> <ul style="list-style-type: none"> • PBA-S03K (PBA-HS-S03K) • PBA-S03L (PBA-HS-S03L) <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG “A” Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 11</p> <p>IF PBB-S04 is de-energized, THEN ensure that BOTH of the following breakers are open:</p> <ul style="list-style-type: none"> • PBB-S04L (PBB-HS-S04L) • PBB-S04K (PBB-HS-S04K) <p>Expected Action: As directed.</p>
	RO	<p>Instruction 12</p> <p>Ensure that all RCP breakers are open with handswitches in the green flag after stop position.</p> <p>Expected Action: RO checks the following handswitches in the green flag after stop position.</p> <ul style="list-style-type: none"> • RCN-HS-1, PUMP 1A P01A • RCN-HS-2, PUMP 1B P01A • RCN-HS-3, PUMP 2A P01A • RCN-HS-4, PUMP 2B P01A

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 13</p> <p>Ensure that all Circulating Water Pump breakers are open with handswitches in the green flag after stop position.</p> <p>Expected Action: BOP places the following handswitches in the green flag after stop position.</p> <ul style="list-style-type: none"> • CWN-HS-1A, CIRCULATING WTR PUMP A P01A • CWN-HS-1B, CIRCULATING WTR PUMP B P01A • CWN-HS-1C, CIRCULATING WTR PUMP C P01A • CWN-HS-1D, CIRCULATING WTR PUMP D P01A

Appendix 80, Align SBOG to PBA-S03 (BO)

	RO	<p>Instruction 1</p> <p>Direct an operator to PERFORM Attachment 80-A, Disable PBA-S03 Breakers.</p> <p>Expected Action: As directed.</p>
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Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG “A” Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 2</p> <p>Ensure that ALL of the following breakers are open:</p> <ul style="list-style-type: none"> • PBA-S03B, Diesel Generator 4.16 KV Breaker to PBA-S03 • PBA-S03K, Alternate Supply Breaker to PBA-S03 • PBA-S03L, Normal Supply Breaker to PBA-S03 • NAN-S03A, 13.8 Kv Swgr Cubicle to ESF Xfmr NBN-X03 (NBN-HS-S03A) • PBB-S04L, Alternate Supply Breaker to PBB-S04 <p>Expected Action: As directed.</p>
	RO	<p>Instruction 3</p> <p>Direct an operator to close NAN-S03AB, “13.8KV SUPPLY FROM GTG”.</p> <p>Expected Action: As directed.</p>
	BOP	<p>Instruction 4</p> <p>Place ALL of the following in “PULL TO LOCK”:</p> <ul style="list-style-type: none"> • Train A Containment Normal ACUs • Train A CEDM ACUs <p>Expected Action: BOP places the following handswitches in PTL:</p> <ul style="list-style-type: none"> • HCA-HS-11, CNTMT NORMAL ACU FAN A A01A • HCA-HS-13, CNTMT NORMAL ACU FAN C A01C • HCA-HS-49, CEDM ACU FANS A/C A02A/A02C
	RO	<p style="text-align: center;">NOTE</p> <p>The telephone number for the SBOG Control Room is 1159.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 5</p> <p>WHEN ALL of the following exist:</p> <ul style="list-style-type: none"> • SBOG is running, • NAN-S07 is energized, • NAN-S03AB is closed, <p>THEN direct the SBOG operator to close ONE of the following unit supply breakers:</p> <ul style="list-style-type: none"> • Unit 1 only - NAN-S07D <p>Expected Action: As directed.</p>
	RO	<p>Instruction 6</p> <p>WHEN informed that the 4.16 kV breakers are disabled (per Attachment 80-A), AND the unit supply breaker on NAN-S07 is closed, THEN perform the following:</p> <ol style="list-style-type: none"> Place synchronizing switch PBA-SS-S03L, 4.16 KV Bus S03 Normal Supply, to "ON". Close breaker PBA-S03L, 4.16 kV Bus S03 Normal Supply. Place synchronizing switch PBA-SS-S03L to "OFF". <p>Expected Action: As directed.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG “A” Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	RO	<p>Instruction 7</p> <p>WHEN PBA-S03 is energized, THEN direct an operator to ensure that ANY of the breakers for the battery chargers that were initially aligned to the Train A 125 VDC buses are “ON” and that the main contactors are closed:</p> <p>BATTERY CHARGER A</p> <ul style="list-style-type: none"> • PHA-M3523, “BATTERY CHARGER “A” E-PKA-H11” <p>Expected Action: RO directs AO to check Battery Charger A.</p> <p>AO Report: Wait 2 minutes and report that PHA-M3523 is closed and the main contactors on PHA-M3523 are also closed (lights are lit on the breaker).</p>
	RO	<p>Instruction 8</p> <p>WHEN informed that Attachment 80-A, Disable PBA-S03 Breakers, is complete, THEN continue this Appendix.</p> <p>Expected Action: RO continues when AO reports Att. 80-A complete.</p>
	RO	<p>NOTE</p> <p>The maximum loading on a SBOG is dependent on maintaining the T5 Avg temperature less than 1340°F.</p>

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>Instruction 9</p> <p>Check that the Train A Aux Feed Pump is being used to maintain or restore at least one Steam Generator to 45 - 60% NR.</p> <p>Expected Action: BOP reports that AFA is being used to restore SG levels to 45-60% NR. Jogs open HV-32, AFW TO SG1 UPSTREAM VALVE, and/or HV-33, AFW TO SG2 UPSTREAM VALVE, as necessary to establish level.</p>
	RO	<p>Instruction 10</p> <p>WHEN an auxiliary feed water pump is running, THEN coordinate with the SBOG operator to reset and start ALL of the following:</p> <ul style="list-style-type: none"> • Spray Pond Pump A • Essential Cooling Water Pump A • Essential Chiller A <p>Expected Action: RO contacts SBOG operator to start equipment as required.</p>
	RO	<p>Instruction 11</p> <p>IF HPSI Pump A is needed, AND AFA-P01 is being used to supply feed water, THEN coordinate with the SBOG operator to start HPSI Pump A.</p> <p>Expected Action: N/A. HPSI is <i>not</i> needed.</p>
Critical Task: Restore power to at least one vital AC bus within one hour of the Blackout.		SAT / UNSAT

Op-Test No.: 2015 NRC Scenario No.: 4 Event No.: 6

Event Description: **DG "A" Trips – Loss of All AC Power (Blackout)**

Time	Position	Applicant's Actions or Behavior
Examiner Note: Scenario may be terminated when power is restored to PBA-S03 via the SBOG, OR at the discretion of the Lead Examiner.		