

Form 3.2-1 Administrative Topics Outline

Facility: <u>PVNGS</u>		Date of Examination: <u>4/29/24</u>
Examination Level: RO ☒ SRO ☐		Operating Test Number: <u>2024</u>
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations (A1) K/A: 2.1.4 IR: 3.3	JPM Description: Determine the active status of an RO license and whether or not the shift can be taken over the next few days. (PV Bank)	D, R
Conduct of Operations (A2) K/A: 2.1.20 IR: 4.6	JPM Description: Perform a void check calculation for the 'A' Essential Chilled Water System per 40OP-9EC01, Essential Chilled Water Train A. (modified from 2018 NRC A1)	M, R
Equipment Control (A3) K/A: 2.2.15 IR: 3.9	JPM Description: Calculate the expected level change in the RWT following an RCS drain down evolution per 40OP-9ZZ16, RCS Drain Operations. (modified from 2017 PV Annual Exam JPM 25)	M, R
Radiation Control K/A: IR:	JPM Description:	
Emergency Procedures/ Plan (A4) K/A: 2.4.47 IR: 4.2	JPM Description: Determine the current RCS leak rate per 40AO-9ZZ02, Excessive RCS Leakrate, Appendix A, 15 Minute Leakrate Calculation. (modified from 2017 PV Annual Exam JPM 28)	M, R

Instructions for completing Form 3.2-1, "Administrative Topics Outline"

1. For each license level, determine the number of administrative job performance measures (JPMs) and topic areas as follows:

Topic	Number of JPMs	
	RO*	SRO and RO Retakes
Conduct of Operations	1 (or 2) 2	2
Equipment Control	1 (or 0) 1	1
Radiation Control	1 (or 0) 0	1
Emergency Plan	1 (or 0) 1	1
Total	4	5

*Reactor operators (RO) applicants do not need to be evaluated on every topic (i.e., "Equipment Control", "Radiation Control", or "Emergency Plan" can be omitted by doubling up on "Conduct of Operations"), unless the applicant is taking only the administrative topics part of the operating test (with a waiver or excusal of the other portions).

2. Enter the associated knowledge and abilities (K/A) statement and summarize the administrative activities for each JPM.

3. For each JPM, specify the type codes for location and source as follows:

Location:

(C)ontrol Room, (S)imulator, or Class(R)oom

Source and Source Criteria:

(P)revious two NRC exams (no more than one JPM that is **randomly selected** from last two NRC exams)

(D)irect from bank (no more than three for ROs, no more than four for senior reactor operators (SROs) and RO retakes)

(N)ew of Significantly (M)odified from bank (no fewer than one)

A1: The applicant will be directed to determine whether or not a licensed RO is current in training and eligible to take the shift on December 31 and January 1 based on current LOCT cycle training status and watches stood in the 4th quarter of the current year. This is a bank JPM covering the Conduct of Operations KA category.

A2: The applicant will be directed to determine the void volume in the 'A' Essential Chilled Water System per 40OP-9EC01, Essential Chilled Water Train A. The applicant will be provided with initial and final readings for the void calculation and perform the associated portion of the procedure to calculate the changes in system levels, volumes and pressures to determine the total void volume in the system. This is a modified bank JPM covering the Conduct of Operations KA category.

A3: The applicant will be directed to determine the expected level change in the RWT following an RCS drain down evolution per 40OP-9ZZ16, RCS Drain Operations, Appendix F, Determination of Volume to be Drained. The applicant will be provided a starting point and ending point for the drain down, then will determine the initial and final volumes, convert the volume of water to be drained and determine the level change in the RWT (in % tank volume). This is a modified bank JPM covering the Equipment Control KA category.

A4: The applicant will be directed to perform a 15 minute leakrate calculation per 40AO-9ZZ02, Excessive RCS Leakrate, Appendix A, 15 Minute Leakrate Calculation. The applicant will be provided plant data (initial and 15 minutes later) and convert parameter changes into increases and decreases in RCS volume, then determine the total volume change over 15 minutes and convert into a gpm leakrate value. This is a modified bank JPM covering the Emergency Procedures / Plan KA category.

Form 3.2-1 Administrative Topics Outline

Facility: <u>PVNGS</u>		Date of Examination: <u>4/29/24</u>
Examination Level: RO ☐ SRO ☒		Operating Test Number: <u>2024</u>
Administrative Topic (Step 1)	Activity and Associated K/A (Step 2)	Type Code (Step 3)
Conduct of Operations (A5) K/A: 2.1.5 IR: 3.9	JPM Description: Determine if minimum shift manning is met per 40DP-9OP02, Conduct of Operations. (PV Bank)	D, R
Conduct of Operations (A6) K/A: 2.1.39 IR: 4.3	JPM Description: Perform an online risk evaluation per 02DP-0RS01. (modified from 2019 NRC A5)	M, R
Equipment Control (A7) K/A: 2.2.37 IR: 4.6	JPM Description: Evaluate the impact of an inadvertent Train A AFAS-1 on LCO 3.7.5, Auxiliary Feedwater System.	N, R
Radiation Control (A8) K/A: 2.3.14 IR: 3.8	JPM Description: Determine the impacts and required actions following a loss of power to RU-145, Fuel Building Ventilation Exhaust Radiation Monitor, while conducting a fuel offload.	N, R
Emergency Procedures/ Plan (A9) K/A: 2.4.41 IR: 4.6	JPM Description: Complete EP-0541, Palo Verde NAN Emergency Message Form. (2019 NRC A9)	D, R

Instructions for completing Form 3.2-1, "Administrative Topics Outline"

1. For each license level, determine the number of administrative job performance measures (JPMs) and topic areas as follows:

Topic	Number of JPMs	
	RO*	SRO and RO Retakes
Conduct of Operations	1 (or 2)	2
Equipment Control	1 (or 0)	1
Radiation Control	1 (or 0)	1
Emergency Plan	1 (or 0)	1
Total	4	5

*Reactor operators (RO) applicants do not need to be evaluated on every topic (i.e., "Equipment Control", "Radiation Control", or "Emergency Plan" can be omitted by doubling up on "Conduct of Operations"), unless the applicant is taking only the administrative topics part of the operating test (with a waiver or excusal of the other portions).

2. Enter the associated knowledge and abilities (K/A) statement and summarize the administrative activities for each JPM.

3. For each JPM, specify the type codes for location and source as follows:

Location:

(C)ontrol Room, (S)imulator, or Class(R)oom

Source and Source Criteria:

(P)revious two NRC exams (no more than one JPM that is **randomly selected** from last two NRC exams)

(D)irect from bank (no more than three for ROs, no more than four for senior reactor operators (SROs) and RO retakes)

(N)ew of Significantly (M)odified from bank (no fewer than one)

A5: The applicant will be directed to determine if each unit is meeting minimum manning requirements. The applicant will be provided a complete manning sheet and unit conditions for each unit, then determine which unit(s) is(are) meeting or not meeting minimum manning requirements, and if not, explain why each unit is not meeting the requirements. This is a bank JPM covering the Conduct of Operations KA category.

A6: The applicant will be directed to determine the operational risk classification for an Essential Cooling Water Pump bearing replacement. The applicant will be informed that the 'B' EW Pump wiped a bearing during an IST 6 hours ago. Bearing replacement, and return to operable, is estimated by maintenance to have a 90% chance of being done in the next 30-48 hours, with a 10% chance it could take 48-60 hours. The applicant will determine the operational risk of this evolution using the applicable tables and notes contained in 02DP-0RS01, Online Integrated Risk, based on TS completion times and likelihood of exceeding 50% or 75% of said completion time. This is a modified bank JPM covering the Conduct of Operations KA category.

A7: The applicant will be directed to evaluate the impacts to LCO 3.7.5, Auxiliary Feedwater System, following an inadvertent Train 'A' AFAS-1 actuation and immediate operator actions taken in response to the actuation. The applicant will be provided a completed table of equipment which actuated (or failed to actuate) as well as the as-left condition for each component. Based on this information, the applicant will determine which condition(s) is(are) not met for LCO 3.7.5. This is a new JPM covering the Equipment Control KA category.

A8: The applicant will be directed to determine the impacts of a loss of power to RU-145, Fuel Building Ventilation Exhaust Radiation Monitor, while conducting a fuel offload. The applicant will refer to the Offsite Dose Calculation Manual and the TRM to determine whether or not the fuel offload may continue and what actions are required in response to the failure. This is a new JPM covering the Radiation Control KA category.

A9: The applicant will be directed to complete EP-0541, Palo Verde NAN Emergency Message Form, following the declaration of an ALERT EAL. The applicant will be provided with a screenshot of the meteorological data sheet and will have to determine which values are to be used for the NAN Message, as well as determine from the information in the cue that a release is in progress and whether or not the release is exceeding federal limits. This is a bank JPM covering the Emergency Procedure / Plan KA category.

JPM

A1

2024 PVNGS NRC Initial Exam JPM A1

JPM INFORMATION

TASK:	12980020301 – Conduct Shift Operations					
TASK STANDARD:	The applicant determined that they ARE current in training, ARE able to assume RO duties on December 31, and ARE NOT able to assume RO duties on January 1.					
K/A:	G 2.1.4	RATING:	RO:	3.3	SRO	
POSITION(S):	RO	VALIDATION TIME:	10 minutes			
REFERENCES:	40DP-9OP02, Conduct of Operations					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/29/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

**TECH
REVIEW:** N/A

**OPERATIONS
APPROVAL:** N/A

**E-PLAN
REVIEW:** N/A

**TRAINING
APPROVAL:** N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

2024 PVNGS NRC Initial Exam JPM A1

PROCEDURES/MATERIALS:

- 40DP-9OP02, Conduct of Operations
- This JPM was written using Rev 77 of 40DP-9OP02.

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- You are a licensed Reactor Operator at PVNGS
- You have been assigned to Work Control for the past 4 months
- You attended Cycle 5 of LOCT Training November 8-11 but did not take the written exam
- You are scheduled to take the missed exam on January 4
- Cycle 5 of LOCT training was completed on Friday, December 2
- Today is December 27
- You have been asked to work the dayshift as an RO in Unit 1 on December 31 and January 1
- You met all license maintenance requirements in the 3rd quarter
- Below is a list of all shifts you covered this quarter:

Completed Shifts in the 4 th Quarter	
October 15 th	12-hour shift as BOP
October 16 th	10-hour shift as OATC (relieved operator who got sick)
November 24 th	12-hour shift as BOP
December 11 th	12-hour shift as OATC
December 25 th	6-hour shift as BOP (split the shift with another operator so both could celebrate Christmas)

INITIATING CUE:

- Determine if you:
 - Are current in training
 - Currently meet the requirements to be the Unit 1 RO on December 31
 - Assuming the 12-hour RO watch on December 31 is completed, will meet the requirements to be the Unit 1 RO on January 1

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (from 4.8.4.D.1)	Determine if the operator is current in training
Standard:	Determined the operator IS current in training Answer Explanation: From 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, then makeup training shall be completed no later than 6 weeks from the end of the training cycle containing the missed LOCT material. If the operator failed to make up the classroom training and simulator training within 6 weeks of the end of the training cycle, then the operator shall be removed from license duties until the makeup training is completed. Although the operator’s training week was > 6 weeks ago, since the cycle itself ended < 6 weeks ago, the operator is still considered current in training.
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 2 * (from 4.8.4.E)	Determine if the operator can be the Unit 1 RO on December 31
Standard:	Determined that the operator CAN be the Unit 1 RO on December 31 Answer Explanation: Since the operator is current in training and all license maintenance requirements were met in the 3rd quarter, the operator can be the Unit 1 RO on December 31.
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM A1

JPM Step: 3 * (from 4.8.4.E)	Determine if the operator can be the Unit 1 RO on January 1
Standard:	Determined that the operator CAN NOT be the Unit 1 RO on January 1 Answer Explanation: Although the operator will have stood 64 hours in an RO position in the 4th quarter, which exceeds the total hours required (5 12-hour shifts = 60 hours), in order for those hours to be credited for license maintenance, each of the shifts must be a full 12 hours, which was not the case.
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	6/3/2015	6	JPM created
1	11/29/2023	6	Minor editorial revisions, updated to current rev of 40DP-9OP02

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE**INITIAL CONDITIONS:**

- You are a licensed Reactor Operator at PVNGS
- You have been assigned to Work Control for the past 4 months
- You attended Cycle 5 of LOCT Training November 8-11 but did not take the written exam
- You are scheduled to take the missed exam on January 4
- Cycle 5 of LOCT training was completed on Friday, December 2
- Today is December 27
- You have been asked to work the dayshift as an RO in Unit 1 on December 31 and January 1
- You met all license maintenance requirements in the 3rd quarter
- Below is a list of all shifts you covered this quarter:

Completed Shifts in the 4 th Quarter	
October 15 th	12-hour shift as BOP
October 16 th	10-hour shift as OATC (relieved operator who got sick)
November 24 th	12-hour shift as BOP
December 11 th	12-hour shift as OATC
December 25 th	6-hour shift as BOP (split the shift with another operator so both could celebrate Christmas)

INITIATING CUE:

- Determine if you:
 - Are current in training
 - Currently meet the requirements to be the Unit 1 RO on December 31
 - Assuming the 12-hour RO watch on December 31 is completed, will meet the requirements to be the Unit 1 RO on January 1

Current in training? YES / NO

Can stand RO on Dec 31? YES / NO

Can stand RO on Jan 1? YES / NO

EXAMINEE

JPM

A2

2024 PVNGS NRC Initial Exam JPM A2

JPM INFORMATION

TASK:	0430010501 – Manually startup the Essential Chilled Water System					
TASK STANDARD:	The applicant determined the final void volume to be 0.959 ft ³ (acceptable range is 0.95 – 0.98 ft ³ based on rounding up and down on every answer)					
K/A:	G 2.1.20	RATING:	RO:	4.6	SRO	
POSITION(S):	RO	VALIDATION TIME:	20 minutes			
REFERENCES:	40OP-9EC01, Essential Chilled Water Train A					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/29/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

2024 PVNGS NRC Initial Exam JPM A2

PROCEDURES/MATERIALS:

- 40OP-9EC01, Essential Chilled Water Train A
- This JPM was written using Rev 32 of 40OP-9EC01

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is performing a void check on the Train 'A' Essential Chilled Water System per 40OP-9EC01, Essential Chilled Water Train A, Section 6.16, Void Checking Essential Chilled Water System Train A
- Section 6.16.4 is complete through step M

INITIATING CUE:

- The CRS directs you to complete Step 6.16.4.N to determine the final void volume of the Train 'A' Essential Chilled Water System
- Round all steps to THREE decimal places (x.xxx)
- Document your answer below

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

Procedure Note:	Variables are as follows: • L1 = initial tank level in inches (Step 6.16.4.F) • L2 = final tank level in inches (Step 6.16.4.J) • V1 = initial volume per level change in ft³ • P1 = initial tank pressure in psig (Step 6.16.4.G) • P2 = initial tank pressure in psia • P3 = final tank pressure in psig (Step 6.16.4.K) • P4 = final tank pressure in psia • V2 = volume at initial pressure in ft³ • V_f = final void volume in ft³	
JPM Step: 1 * (from 6.16.4.N.1)	Perform the following to calculate entrained gas volume: • Calculate the change in tank level (L2 – L1)	
Standard:	Calculated a change in tank level of 1” Answer Explanation: $L2 - L1 = 26'' - 25'' = 1''$ NOTE: Although the initial tank level in Section 6.16.4 is 22”, the formula specifically directs using the tank level in Step 6.16.4.F for the L1 value	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A2

JPM Step: 2 * (from 6.16.4.N.2)	Perform the following to calculate entrained gas volume: Calculate the change in tank volume (V1)
Standard:	Calculated a change in tank volume of 0.251 ft ³ (acceptable range 0.25-0.26) Answer Explanation: V1 = (L2 – L1) x 0.251 ft³/in V1 = (26” – 25”) x 0.251 ft³/in = 0.251 ft³
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 3 * (from 6.16.4.N.3)	Perform the following to calculate entrained gas volume: Calculate the initial tank pressure in absolute pressure at the mean elevation of the gas voids (P2)
Standard:	Calculated an initial tank pressure of 41.7 psia Answer Explanation: P2 = P1 + 1.7 P2 = 40 psig + 1.7 = 41.7 psia
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A2

JPM Step: 4 * (from 6.16.4.N.4)	Perform the following to calculate entrained gas volume: Calculate the final tank pressure in absolute pressure at the mean elevation of the gas voids (P4)
Standard:	Calculated a final tank pressure of 29.7 psia Answer Explanation: $P_4 = P_3 + 1.7$ $P_4 = 28 \text{ psig} + 1.7 = 29.7 \text{ psia}$
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 5 * (from 6.16.4.N.5)	Perform the following to calculate entrained gas volume: Calculate gas volume at initial pressure (V2)
Standard:	Calculated a gas volume at initial pressure of 0.621225 ft³ (acceptable range 0.62 – 0.63) Answer Explanation: $V_2 = (P_4 \times V_1) / (P_2 - P_4)$ $V_2 = 29.7 \text{ psia} \times 0.251 \text{ ft}^3 / (41.7 \text{ psia} - 29.7 \text{ psia})$ $V_2 = (7.4547 \text{ psia-ft}^3) / (12 \text{ psia})$ $V_2 = 0.621225 \text{ ft}^3$
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM A2

JPM Step: 6 * (from 6.16.4.N.6)	Perform the following to calculate entrained gas volume: Calculate gas volume (final void volume) at 27 psia (V_f)
Standard:	Calculated a final void volume of 0.9594475 ft ³ (acceptable range 0.95 – 0.98) Answer Explanation: $V_f = (P_2 \times V_2) / 27 \text{ psia}$ $V_f = 25.9050825 \text{ psia-ft}^3 / 27 \text{ psia}$ $V_f = 0.9594475 \text{ ft}^3$
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A2

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	2/6/2017	6	JPM created
1	11/29/2023	6	Modified values for use on 2024 NRC Initial Exam and updated to Rev 32 of 40OP-9EC01

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is performing a void check on the Train 'A' Essential Chilled Water System per 40OP-9EC01, Essential Chilled Water Train A, Section 6.16, Void Checking Essential Chilled Water System Train A
- Section 6.16.4 is complete through step M

INITIATING CUE:

- The CRS directs you to complete Step 6.16.4.N to determine the final void volume of the Train 'A' Essential Chilled Water System
- Round all steps to THREE decimal places (x.xxx)
- Document your answer below

Final Void Volume: _____

EXAMINEE

JPM

A3

2024 PVNGS NRC Initial Exam JPM A3

JPM INFORMATION

TASK:	2701300401 – Implement Reactor Coolant System draining operations					
TASK STANDARD:	The applicant determined the final expected level in the RWT to be 93% (acceptable range 93.0 – 93.1%) and the final expected level in the HUT to be 6.5 feet (acceptable range 6.5 – 6.6 feet)					
K/A:	G 2.2.15	RATING:	RO:	3.9	SRO	
POSITION(S):	RO	VALIDATION TIME:	10 minutes			
REFERENCES:	40OP-9ZZ16, RCS Drain Operations					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/29/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

PROCEDURES/MATERIALS:

- 40OP-9ZZ16, RCS Drain Operations
- This JPM was written using Rev 85 of 40OP-9ZZ16

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is preparing to drain the RCS to a Reduced Inventory condition per 40OP-9ZZ16, RCS Drain Operations
- Pressurizer level is currently 50%
- The drain down evolution will be done in two parts
 - From 50% PZR level to 10% PZR level, the RCS will be drained to the RWT
 - From 10% PZR level to 111 ft WR (by RWLIS), the RCS will be drained to the HUT
- Current RWT level is 92.3%
- Current HUT level is 5.4 feet

INITIATING CUE:

- The CRS directs you to determine the FINAL expected levels in the RWT and the HUT as a result of draining the RCS to Reduced Inventory per 40OP-9ZZ16, RCS Drain Operations, Appendix F, Determination of Volume to Be Drained
- Document your answers below

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (from 40OP-9ZZ16, App F)	Determine the volume change in the RCS from 50% to 10% PZR level
Standard:	Determined the volume to be drained from 50% to 10% PZR level is 5,400 gallons Answer Explanation: @ 50%, total volume is 106,100 gallons @ 10%, total volume is 100,700 gallons 106,100 – 100,700 = 5,400 gallons
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 2 * (from 40OP-9ZZ16, App F)	Determine the level change in the RWT as a result of draining the RCS from 50% to 10% PZR level
Standard:	Determined that RWT level will rise 0.7% (acceptable range 0.7% - 0.8%) Answer Explanation: 5,400 gallons / 7,538 gallons/% RWT level = .716%
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A3

JPM Step: 3 * (from 40OP-9ZZ16, App F)	Determine the final expected level in the RWT as a result of draining the RCS from 50% to 10% PZR level
Standard:	Determined that final RWT level is expected to be 93% (acceptable range 93.0% - 93.1%) Answer Explanation: 92.3% + 0.7% = 93%
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 4 * (from 40OP-9ZZ16, App F)	Determine the volume change in the RCS from 10% PZR level to 111' WR by RWLIS
Standard:	Determined the volume to be drained from 10% PZR level to 111' WR by RWLIS is 14,700 gallons Answer Explanation: @ 10%, total volume is 100,700 gallons @ 111' WR by RWLIS total volume is 86,000 gallons 100,700 – 86,000 = 14,700 gallons
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A3

JPM Step: 5 * (from 40OP-9ZZ16, App F)	Determine the level change in the HUT as a result of draining the RCS from 10% PZR level to 111' WR by RWLIS
Standard:	Determined that HUT level will rise by 1.1 feet (acceptable range 1.1 feet -1.2 feet) Answer Explanation: 14,700 gallons / 12,704 gallons/foot HUT level = 1.157 feet
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 6 * (from 40OP-9ZZ16, App F)	Determine the final expected level in the HUT as a result of draining the RCS from 10% PZR level to 111' WR by RWLIS
Standard:	Determined that final HUT level is expected to be 6.5 feet (acceptable range 6.5 feet – 6.6 feet) Answer Explanation: 5.4 feet + 1.1 feet = 6.5 feet
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A3

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	6/28/2012	6	JPM created
1	6/4/2015	6	JPM modified for use on 2017 Annual Exam
2	11/29/2023	6	JPM modified for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is preparing to drain the RCS to a Reduced Inventory condition per 40OP-9ZZ16, RCS Drain Operations
- Pressurizer level is currently 50%
- The drain down evolution will be done in two parts
 - From 50% PZR level to 10% PZR level, the RCS will be drained to the RWT
 - From 10% PZR level to 111 ft WR (by RWLIS), the RCS will be drained to the HUT
- Current RWT level is 92.3%
- Current HUT level is 5.4 feet

INITIATING CUE:

- The CRS directs you to determine the FINAL expected levels in the RWT and the HUT as a result of draining the RCS to Reduced Inventory per 40OP-9ZZ16, RCS Drain Operations, Appendix F, Determination of Volume to Be Drained
- Document your answers below

Final Expected RWT Level: _____

Final Expected HUT Level: _____

EXAMINEE

JPM

A4

2024 PVNGS NRC Initial Exam JPM A4

JPM INFORMATION

TASK:	1250140201 – Respond to excessive RCS leakage					
TASK STANDARD:	The applicant calculated an RCS leakrate of 22.7 gpm (acceptable range 22.6 – 22.8 gpm)					
K/A:	G 2.4.47	RATING:	RO:	4.2	SRO	
POSITION(S):	RO	VALIDATION TIME:	10 minutes			
REFERENCES:	40AO-9ZZ02, Excessive RCS Leakrate, Appendix A, 15 Minute Leakrate Calculation, Attachment A-1, Leakrate Data Sheet					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/29/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

PROCEDURES/MATERIALS:

- 40AO-9ZZ02, Excessive RCS Leakrate
- This JPM was written using Rev 21 of 40AO-9ZZ02

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit is operating at 100% power
- An RCS leak exists inside Containment
- Steps 1-10 of Appendix A, 15 Minute Leakrate Calculation, have been completed
- Plant Data:
 - At 1000:
 - PZR Level: 52.2%
 - VCT Level: 48.3%
 - Tavg: 580.9°F
 - At 1015:
 - PZR Level 50.9%
 - VCT Level: 41.7%
 - Tavg: 580.8°F

INITIATING CUE:

- The CRS directs you to calculate the RCS leakrate per 40AO-9ZZ02, Excessive RCS Leakrate, Appendix A, 15 Minute Leakrate Calculation, Attachment A-1, Leakrate Data Sheet
- Document your answer below

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (from Attach. A-1)	Calculate the change in PZR level	
Standard:	Calculated a change in PZR level of 1.3% Answer Explanation: Initial PZR level: 52.2% Final PZR level: 50.9% $52.2\% - 50.9\% = 1.3\%$	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 * (from Attach. A-1)	Calculate the change in VCT level	
Standard:	Calculated a change in VCT level of 6.6% Answer Explanation: Initial VCT level: 48.3% Final VCT level: 41.7% $48.3\% - 41.7\% = 6.6\%$	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A4

JPM Step: 3 * (from Attach. A-1)	Calculate the change in Tavg
Standard:	Calculated a change in Tavg of 0.1°F Answer Explanation: Initial Tavg: 580.9°F Final Tavg: 580.8°F 580.9°F – 580.8°F = 0.1°F
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 4 * (from Attach. A-1)	Calculate the change in gallons based on the change in PZR level
Standard:	Calculated a change of 86.4 gallons based on the change in PZR level (acceptable range 86-87 gallons) Answer Explanation: 1.3% x 66.49 gal/% = 86.4 gallons
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A4

JPM Step: 5 * (from Attach. A-1)	Calculate the change in gallons based on the change in VCT level
Standard:	Calculated a change of 266.2 gallons based on the change in VCT level (acceptable range 266-267 gallons) Answer Explanation: $6.6\% \times 40.34 \text{ gal/\%} = 266.2 \text{ gallons}$
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 6 * (from Attach. A-1)	Calculate the change in gallons based on the change in Tav _g
Standard:	Calculated a change of 12.3 gallons based on the change in Tav_g (acceptable range 12-13 gallons) Answer Explanation: $0.1^{\circ}\text{F} \times 123 \text{ gal/}^{\circ}\text{F} = 12.3 \text{ gallons}$
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A4

JPM Step: 7 * (from Attach. A-1)	Calculated the estimated RCS leakrate	
Standard:	Calculated an estimated RCS leakrate of 22.7 gpm (acceptable range 22-23 gpm) Answer Explanation: Leakrate = (Change in gallons (PZR) + Change in gallons (VCT) – Change in gallons (Tavg)) / 15 minutes Leakrate = (86.4 gallons + 266.2 gallons – 12.3 gallons) / 15 minutes Leakrate = 22.7 gpm	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A4

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/30/2005	6	New JPM
1	8/25/2008	6	Procedure revision and new JPM format
2	1/4/2011	6	New JPM format
3	6/3/2015	6	New JPM format
4	9/12/2017	6	Modified for use on 2017 Annual Exam
5	11/29/2023	6	Modified for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit is operating at 100% power
- An RCS leak exists inside Containment
- Steps 1-10 of Appendix A, 15 Minute Leakrate Calculation, have been completed
- Plant Data:
 - **At 1000:**
 - PZR Level: 52.2%
 - VCT Level: 48.3%
 - Tavg: 580.9°F
 - **At 1015:**
 - PZR Level 50.9%
 - VCT Level: 41.7%
 - Tavg: 580.8°F

INITIATING CUE:

- The CRS directs you to calculate the RCS leakrate per 40AO-9ZZ02, Excessive RCS Leakrate, Appendix A, 15 Minute Leakrate Calculation, Attachment A-1, Leakrate Data Sheet
- Document your answer below

Estimated RCS Leakrate: _____

EXAMINEE

JPM

A5

2024 PVNGS NRC Initial Exam JPM A5

JPM INFORMATION

TASK:	1290020301 – Conduct Shift Operations					
TASK STANDARD:	The applicant determined that Units 1 does NOT meet minimum manning requirements due to not having an Outside Area Operator, Unit 2 DOES meet minimum manning requirements, and Unit 3 does NOT meet minimum manning requirements due to only having 2 AOs within the unit.					
K/A:	G 2.1.5	RATING:	RO:		SRO	3.9
POSITION(S):	SRO	VALIDATION TIME:	15 minutes			
REFERENCES:	40DP-90P02, Conduct of Operations					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/29/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

2024 PVNGS NRC Initial Exam JPM A5

PROCEDURES/MATERIALS:

- 40DP-9OP02, Conduct of Operations
- This JPM was written using Rev 77 of 40DP-9OP02

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- It is currently 1900. All unit crews turned over 30 minutes ago. The status of each unit is as follows:
(Assume personnel cannot be shared between units, unless otherwise stated)

Unit 1: 100% power. Current staffing:

- Shift Manager
- Control Room Supervisor (is leaving now to respond to an emergency at home). An SRO has been called out but will not arrive until 2045
- 3 Reactor Operators in the Control Room (one is designated as Site Fire Team Advisor)
- Shift Technical Advisor (not licensed)
- 4 AOs covering Turbine Lower, Turbine Upper, Control Building, and Aux Building
- Radwaste Operator (assigned Units 2 and 3)
- Demin Operator performing resin regeneration

Unit 2: Refueling outage. The core is offloaded. Current staffing:

- Shift Manager
- Control Room Supervisor
- 1 Reactor Operator in the Control Room
- 1 Reactor Operator attending a briefing in the Unit 2 Ops Support Building
- 3 Reactor Operators being utilized as Outage Coordinators
- Shift Technical Advisor (not licensed)
- Primary Log Taking AO
- Secondary Log Taking AO
- 5 additional AOs for outage support
- Radwaste Operator (Evaporator is running)
- Demin Operator offloading resin from Service Vessel F to a poly container

Unit 3: Short notice outage due to a Main Turbine Lube Oil problem. Currently in MODE 5 awaiting parts. Current staffing:

- Shift Manager
- Control Room Supervisor
- 2 Reactor Operators in the Control Room
- Shift Technical Advisor (not licensed)
- Primary Log taking AO (fully qualified AO)
- Second Log taking AO (fully qualified AO)

INITIATING CUE:

- Determine if current staffing in each unit meets station minimum manning requirements
- Evaluate unit staffing based on where personnel are CURRENTLY ASSIGNED

2024 PVNGS NRC Initial Exam JPM A5

- If any unit(s) fail(s) to meet station minimum manning requirements, annotate the reason(s) why in the space provided below

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (Proc step 4.8.1)	Determine if Unit 1 meets minimum manning requirements, and if not, explain why not	
Standard:	Determined that Unit 1 is NOT meeting minimum manning requirements due to not having an Outside Area operator (Unit 1 requirement only per 40DP-9OP02, Conduct of Operations, Step 4.8.1). NOTE: Although the CRS will be absent, this is allowed provided a replacement is called and will arrive within 2 hours. This would NOT be a correct reason for stating that Unit 1 is not meeting minimum manning requirements.	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 * (Proc step 4.8.5)	Determine if Unit 2 meets minimum manning requirements, and if not, explain why not	
Standard:	Determined that Unit 2 IS meeting minimum manning requirements. NOTE: Although there is only 1 Reactor Operator in the Control Room, this is allowed per 40DP-9OP02, Conduct of Operations	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 * (Proc step 4.8.5)	Determine if Unit 3 meets minimum manning requirements, and if not, explain why not	
Standard:	Determined that Unit 3 is NOT meeting minimum manning requirements due to only having 2 AOs “within the unit” (requirement is to have 3 within the unit per 40DP-9OP02, Conduct of Operations, Step 4.8.5).	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A5

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	7/3/2018	6	JPM created for 2018 NRC Re-Exam
1	1/30/2019	3	New procedure revision
2	8/12/2020	3	New procedure revision
3	9/8/2021	3	New procedure revision
4	8/25/2022	3	New procedure revision
5	11/30/2023	6	Updated for 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- It is currently 1900. All unit crews turned over 30 minutes ago. The status of each unit is as follows:
(Assume personnel cannot be shared between units, unless otherwise stated)

Unit 1: 100% power. Current staffing:

- Shift Manager
- Control Room Supervisor (is leaving now to respond to an emergency at home). An SRO has been called out but will not arrive until 2045
- 3 Reactor Operators in the Control Room (one is designated as Site Fire Team Advisor)
- Shift Technical Advisor (not licensed)
- 4 AOs covering Turbine Lower, Turbine Upper, Control Building, and Aux Building
- Radwaste Operator (assigned Units 2 and 3)
- Demin Operator performing resin regeneration

Unit 2: Refueling outage. The core is offloaded. Current staffing:

- Shift Manager
- Control Room Supervisor
- 1 Reactor Operator in the Control Room
- 1 Reactor Operator attending a briefing in the Unit 2 Ops Support Building
- 3 Reactor Operators being utilized as Outage Coordinators
- Shift Technical Advisor (not licensed)
- Primary Log Taking AO
- Secondary Log Taking AO
- 5 additional AOs for outage support
- Radwaste Operator (Evaporator is running)
- Demin Operator offloading resin from Service Vessel F to a poly container

Unit 3: Short notice outage due to a Main Turbine Lube Oil problem. Currently in MODE 5 awaiting parts. Current staffing:

- Shift Manager
- Control Room Supervisor
- 2 Reactor Operators in the Control Room
- Shift Technical Advisor (not licensed)
- Primary Log taking AO (fully qualified AO)
- Second Log taking AO (fully qualified AO)

INITIATING CUE:

- Determine if current staffing in each unit meets station minimum manning requirements
- Evaluate unit staffing based on where personnel are CURRENTLY ASSIGNED
- If any unit(s) fail(s) to meet station minimum manning requirements, annotate the reason(s) why in the space provided below

EXAMINEE

EXAMINEE

Answer Sheet (circle the correct answer for each Unit):

Unit 1 DOES / DOES NOT meet minimum manning requirements

Unit 2 DOES / DOES NOT meet minimum manning requirements

Unit 3 DOES / DOES NOT meet minimum manning requirements

**If any of the Units are NOT meeting minimum manning requirements,
explain why below:**

EXAMINEE

JPM

A6

2024 PVNGS NRC Initial Exam JPM A6

JPM INFORMATION

TASK:	1290620302 – Assess risk for performance of unplanned maintenance					
TASK STANDARD:	The applicant determined that the Nuclear Consequence Rank is 4, the Operational Consequence Rank is 3, Nuclear Risk Classification is 4 (LOW), Operational Consequence Risk Classification is 3 (HIGH)					
K/A:	G 2.1.39	RATING:	RO:		SRO	4.3
POSITION(S):	SRO	VALIDATION TIME:	20 minutes			
REFERENCES:	02DP-0RS01, Online Integrated Risk, PVNGS Event Reporting Manual					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 1/10/2024

VALIDATED BY: John Rodgers **DATE:** 1/19/2024

**TECH
REVIEW:** N/A

**OPERATIONS
APPROVAL:** N/A

**E-PLAN
REVIEW:** N/A

**TRAINING
APPROVAL:** N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

PROCEDURES/MATERIALS:

- 02DP-0RS01, Online Integrated Risk
- This JPM was written using Rev 12 of 02DP-0RS01

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- You are the Work Control SRO
- Maintenance is preparing to commence on-line troubleshooting of fluctuating voltages on PBB-S04
- Work group consensus estimates a 10% chance that the troubleshooting will result in a LOP on PBB-S04
- Spent Fuel Pool Cooling is aligned to Train 'A'
- No clearance will be used during the troubleshooting evolution

INITIATING CUE:

- The CRS directs you to determine the Nuclear Risk AND the Operational (Regulatory) Risk Classifications per 02DP-0RS01, Online Integrated Risk, Appendices B, C, and D, the PVNGS Event Reporting Manual, and PVNGS Emergency Plan, as appropriate
- For the purpose of this JPM, you can assume that there are no potential risk elevating or risk lowering factors associated with this work
- **NOTE: If a LOP occurs on PBB-S04, another operator will perform a separate risk evaluation regarding any potential LCO impacts**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (from App B)	Determine the applicable Consequence Rankings for the evolution
Standard:	Determined that the Nuclear Consequence Rank is 4 and the Operational Consequence Rank is 3. Answer Explanation: A LOP on PBB-S04 would require entry into 40AO-9ZZ12, Degraded Electrical Power, and entry into an AOP is a Nuclear Consequence Rank of 4. A LOP on PBB-S04 would result in a valid actuation of the 'B' EDG which requires an 8 hour report per 10CFR50.72 resulting in an Operational Consequence Rank of 3
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 2 (from App C)	Determine the Probability Ranking of each Consequence Rank
Standard:	Determined that the Probability Ranking for Nuclear and Operational Risk is 1 (10% chance of a LOP on PBB-S04)
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A6

JPM Step: 3 * (from App D)	Determine the Risk Classification for the evolution
Standard:	Determined that the Nuclear Risk Classification is LOW (score of 4) and the Operational Risk Classification is HIGH (score of 3, however any operational risk of 3 is considered HIGH risk, regardless of probability ranking) Answer Explanation: Risk Classification Score is determined by multiplying Consequence by Probability. Nuclear = 4 x 1, Operation = 3 x 1 (with an automatic elevation to HIGH risk due to an operational consequence score of 3)
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	5/2/2019	6	JPM created
1	1/10/2024	6	JPM modified for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- You are the Work Control SRO
- Maintenance is preparing to commence on-line troubleshooting of fluctuating voltages on PBB-S04
- Work group consensus estimates a 10% chance that the troubleshooting will result in a LOP on PBB-S04
- Spent Fuel Pool Cooling is aligned to Train 'A'
- No clearance will be used during the troubleshooting evolution

INITIATING CUE:

- The CRS directs you to determine the Nuclear Risk AND the Operational (Regulatory) Risk Classifications per 02DP-0RS01, Online Integrated Risk, Appendices B, C, and D, the PVNGS Event Reporting Manual, and PVNGS Emergency Plan, as appropriate
- For the purpose of this JPM, you can assume that there are no potential risk elevating or risk lowering factors associated with this work
- **NOTE: If a LOP occurs on PBB-S04, another operator will perform a separate risk evaluation regarding any potential LCO impacts**

Nuclear Consequence Rank: _____

Nuclear Risk Classification (score and classification): _____

Operational Consequence Rank: _____

Operational Risk Classification (score and classification): _____

EXAMINEE

JPM

A7

2024 PVNGS NRC Initial Exam JPM A7

JPM INFORMATION

TASK:	392710 – Comply with the requirements of a Technical Specification Limiting Condition of Operation					
TASK STANDARD:	The applicant determined that LCO 3.7.5 Conditions A is NOT met (restore affected equipment to OPERABLE status within 7 days or IAW RICT) and Condition B is NOT met (restore AFW train to OPERABLE status within 72 hours or IAW RICT)					
K/A:	G 2.2.37	RATING:	RO:		SRO	4.6
POSITION(S):	RO	VALIDATION TIME:	15 minutes			
REFERENCES:	40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, Technical Specifications, Technical Specifications Bases					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/30/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

PROCEDURES/MATERIALS:

- 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations
- Technical Specifications
- Technical Specifications Bases

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- An inadvertent Train 'A' AFAS-1 (Leg 1-3 and Leg 2-4) occurred 10 minutes ago
- The CRS has entered 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations
- Steps 1-9 of Section 3.0, AFAS, and Attachment C-1, AFAS-1 Train A, have been completed
- The BOP documented the post-actuation pre-operator action equipment status in the "In Actuated Condition" column, and the post-operator action equipment status in the "As Left Condition" column of Attachment C-1
- The inadvertent AFAS will not be reset until I&C can perform troubleshooting on the system and determine the cause of the actuation

INITIATING CUE:

- The SM directs you to determine the impact of the actuation and equipment manipulations on LCO 3.7.5, Auxiliary Feedwater System
- Document the impact(s), if any, on the table below

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (from)	Determine the impacts of the AFAS-1 and associated operator actions on LCO 3.7.5
Standard:	Determined that LCO 3.7.5, Condition A, is NOT met due to the failure of one steam supply valve (SGA-UV-134) failing to go to its actuated position (as indicated on Attachment C-1)
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 2 * (from)	Determine the impacts of the AFAS-1 and associated operator actions on LCO 3.7.5
Standard:	Determined that LCO 3.7.5, Condition B, is NOT met due to overriding and closing AFC-UV-36, AFW to SG 1 Downstream Valve Answer Explanation: AFC-UV-36 and AFA-HV-32 are valves in series between AFA-P01 and SG #1. Closure of either of these valves prior to the AFAS actuation being reset rendering AFA-P01 inoperable. Although AFA-P01 is already inoperable due to the failure of a steam supply valve, the pump inoperability for both reasons results in failing to meet LCO 3.7.5 Conditions A and B. The applicant may incorrectly determine that Condition B is MET since AFA-HV-32 is operable (actuated and has not been overridden) or since AFA-P01 was already inoperable due to not meeting Condition A.
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A7

JPM Step: 3 * (from)	Determine the impacts of the AFAS-1 and associated operator actions on LCO 3.7.5
Standard:	Determined that LCO 3.7.5, Condition C, is MET NOTE: Although AFN-P01 is a Train 'A' powered AFW Pump, the Train 'A' AFAS-1 actuation does not result in any component repositioning nor does it require any operator actions which will result in the inoperability of AFN-P01 (which would result in Condition C being NOT met).
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A7

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	11/30/2023	6	JPM created for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE**INITIAL CONDITIONS:**

- Unit 1 is operating at 100% power
- An inadvertent Train 'A' AFAS-1 (Leg 1-3 and Leg 2-4) occurred 10 minutes ago
- The CRS has entered 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations
- Steps 1-9 of Section 3.0, AFAS, and Attachment C-1, AFAS-1 Train A, have been completed
- The BOP documented the post-actuation pre-operator action equipment status in the "In Actuated Condition" column, and the post-operator action equipment status in the "As Left Condition" column of Attachment C-1
- The inadvertent AFAS will not be reset until I&C can perform troubleshooting on the system and determine the cause of the actuation

INITIATING CUE:

- The SM directs you to determine the impact of the actuation and equipment manipulations on LCO 3.7.5, Auxiliary Feedwater System
- Document the impact(s), if any, on the table below

LCO 3.7.5, Auxiliary Feedwater System, impacts	
Condition(s) NOT met	Required Action(s) and Completion Time(s)

EXAMINEE

JPM

A8

2024 PVNGS NRC Initial Exam JPM A8

JPM INFORMATION

TASK:	1290530102 – Ensure compliance with the operational and surveillance requirements of the ODCM					
TASK STANDARD:	The applicant determined that the core offload MAY continue, the ODCM requires Actions 36, 37, 40, and 41 to be performed, and all applicable TLCOs remain MET					
K/A:	G 2.3.14	RATING:	RO:		SRO	3.8
POSITION(S):	SRO	VALIDATION TIME:	15 minutes			
REFERENCES:	Offsite Dose Calculation Manual, Technical Requirements Manual					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/30/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

PROCEDURES/MATERIALS:

- Offsite Dose Calculation Manual
- This JPM was written using Rev 30 of the ODCM

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is in MODE 6
- Core offload is in progress
- The feeder breaker for Fuel Building Radiation Monitor SQB-RE-145, PHB-M3837, has just tripped on 86 lockout

INITIATING CUE:

- The SM directs you to:
 - Determine if the core offload may continue or if it must be terminated
 - Determine any ODCM/Technical Specification/Technical Requirements Manual required actions as a result of the loss of RU-145, if any (and completion times if applicable)

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (from)	Determine if the core offload may continue or if it must be terminated
Standard:	Determined that the core offload MAY continue Answer Explanation: Required actions in response to the loss of RU-145 are contained in both the ODCM and the TRM. The ODCM says to comply with TLCO 3.3.108 on a loss of RU-145. TLCO 3.3.108 only requires one channel of FBEVAS to be functional so no action is required (RU-31 is not affected by the failure so TLCO 3.3.108 is still met – although the applicant may annotate that TLCO 3.3.108 would be tracked). Applicant may also discuss validating the functionality of RU-31 and possibly protecting RU-31, both of which would be good operating practices, however neither is required by the ODCM or Technical Specifications.
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A8

JPM Step: 2 * (from)	Determine any Technical Specification/Technical Requirements Manual required actions as a result of the loss of RU-145, if any (and completion times if applicable)
Standard:	Determined that the ODCM requires the following actions to be taken: • Action 36 – With the number of channel FUNCTIONAL less than required by the Minimum Channels FUNCTIONAL requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours • Action 37 – With the number of channel FUNCTIONAL less than required by the Minimum Channels FUNCTIONAL requirement, effluent releases via this pathway may continue provided the actions of (a) or (b) or (c) are performed: a) Initiate the Preplanned Alternate Sampling Program to monitor the appropriate parameter(s) b) Place moveable air monitors in line c) Either take grab samples at least once per 12 hours, OR obtain gas channel monitor readings locally at least once per 12 hours if the channel is functional locally but nonfunctional due to loss of communication with the minicomputer. The surveillance requirements of Section 2.1.1 must be performed at the required frequencies for the channel to be functional locally • Action 40 – With the number of channels FUNCTIONAL less than requirement by the Minimum Channels FUNCTIONAL requirement, effluent releases via the affected pathway may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 3-1 within one hour after the channel has been declared nonfunctional. • Action 41 – With the number of channels FUNCTIONAL less than required by the Minimum Channels FUNCTIONAL requirements, comply with Technical Requirements Manual TLCO 3.3.108. Determined that NO actions are required per the Technical Requirements Manual. Answer Explanation: As discussed in Step 1, only one channel of FBEVAS actuation is required per TLCO 3.3.108. TLCO 3.9.104 requires two trains of FBEVAS to be functional, however since either train actuating will result in a cross-train actuation, both FBEVAS trains are still functional following the loss of power to RU-145
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A8

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	11/30/2023	6	JPM created for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is in MODE 6
- Core offload is in progress
- The feeder breaker for Fuel Building Radiation Monitor SQB-RE-145, PHB-M3837, has just tripped on 86 lockout

INITIATING CUE:

- The SM directs you to:
 - Determine if the core offload may continue or if it must be terminated
 - Determine any ODCM/Technical Specification/Technical Requirements Manual required actions as a result of the loss of RU-145, if any (and completion times if applicable)

The core offload MAY CONTINUE / MUST BE TERMINATED

Required actions (if any):

EXAMINEE

JPM

A9

2024 PVNGS NRC Initial Exam JPM A9

JPM INFORMATION

TASK:	1240100302 – Direct an emergency response as the emergency coordinator					
TASK STANDARD:	Completed the provided EP-0451 within 15 minutes of the start of the JPM with the following information: Checked ALERT classification, Time: ~ 3 minutes prior to JPM start time, Date: actual date of the JPM, EAL: FA1.1, Wind Speed: 6.9 mph, Wind Direction: 157 degrees, Authenticator Code: DELTA BRAVO, and checked “A release is occurring which does NOT exceed federally approved limits” and “There are NO PROTECTIVE ACTIONS required”					
K/A:	G 2.4.41	RATING:	RO:		SRO	4.6
POSITION(S):	RO	VALIDATION TIME:	7 minutes			
REFERENCES:	EP-0541, Palo Verde NAN Emergency Message Form, EP-0804, Release Evaluation Flowchart					
LOCATION:	SIMULATOR		PLANT		CLASSROOM	X

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 11/30/2023

VALIDATED BY: John Rodgers **DATE:** 12/1/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

*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.

2024 PVNGS NRC Initial Exam JPM A9

PROCEDURES/MATERIALS:

- EP-0902, Notifications
- EP-0804, Release Evaluation Flowchart
- Form EP-0541, Palo Verde NAN Emergency Message Form

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 was tripped from 100% power due to a Steam Generator Tube Rupture on SG #1
- On the trip, a loss of offsite power occurred
- SIAS and CIAS both automatically actuated due to low Pressurizer pressure
- An ALERT, FA1.1, was declared 3 minutes ago
- RMS trends for Containment High Range and Effluent radiation monitors are attached
- Dose projections at the site boundary are projected to be available in ~ 60 minutes
- The RFAT team reports that air sample and rad survey results should be available in ~ 45 minutes
- The Effluent Tech estimates grab sample results will be available in ~ 30 minutes
- The Met Data page is attached
- The authenticator code is DELTA BRAVO

INITIATING CUE:

- You are directed to complete the Palo Verde NAN Emergency Message Form, EP-0541, Steps 1 through 6
- **THIS IS A TIME CRITICAL JPM**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 (from EP-0541)	Check box for “This is a drill” or “This is an actual event” on Step 1	
Standard:	Checked box for “This is a drill” on Step 1	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 * (from EP-0541)	Check box for the appropriate classification level on Step 2	
Standard:	Checked the ALERT box on Step 2	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 * (from EP-0541)	Enter the event declaration time for the event in progress on Step 2	
Standard:	Entered a time on Step 2 (approximate 2 minutes later than the JPM start time) NOTE: Actual time entered is not critical, but entering a time here is critical	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A9

JPM Step: 4 * (from EP-0541)	Enter the date of the event declaration on Step 2	
Standard:	Entered the current date on Step 2	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 5 * (from EP-0541)	Enter the EAL classification on Step 2	
Standard:	Entered FA1.1 in the EAL box on Step 2	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 6 * (from EP-0541)	Enter the 35 foot elevation – 15 min average wind speed on Step 3	
Standard:	Entered a wind speed of 6.9 mph on Step 3 (information on the Met Data Sheet)	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 7 * (from EP-0541)	Enter the 35 foot elevation – 15 min average wind direction on Step 3	
Standard:	Entered a wind direction of 157 degrees on Step 3 (information on the Met Data Sheet)	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A9

JPM Step: 8 * (from EP-0541)	Enter the Authenticator Code on Step 3
Standard:	Entered "BRAVO DELTA" as the Authenticator Code on Step 3
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 9 * (from EP-0541)	Check the box describing the release status on Step 4
Standard:	Checked the "A radioactive release is occurring which does NOT exceed federally approved limits due to this event" on Step 4 Answer Explanation: The event in progress is a SGTR, which means there is radioactivity in the secondary. The loss of offsite power will require the use of either SBCS Valves 1007 or 1008 (which release to atmosphere) or ADVs (which also release to atmosphere). ODP-31, Operations Emergency Plan Implementation, provides clarification for this situation, "IF there is a steam release from operation of an ADV, SBCV, or Terry Turbine from a SG experiencing a SGTR, then this would be considered a release in progress"
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 10 * (from EP-0541)	Check the box describing the recommended protective action on Step 5
Standard:	Checked the "There are NO PROTECTIVE ACTIONS required" box on Step 5.
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM A9

JPM Step: 11 * (from EP-0541)	Sign and date the Approval line on Step 6	
Standard:	Signed and dated the Approval line on Step 6	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM A9

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	7/18/2018	6	JPM created
1	11/30/2023		JPM updated for use on the 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 was tripped from 100% power due to a Steam Generator Tube Rupture on SG #1
- On the trip, a loss of offsite power occurred
- SIAS and CIAS both automatically actuated due to low Pressurizer pressure
- An ALERT, FA1.1, was declared 3 minutes ago
- RMS trends for Containment High Range and Effluent radiation monitors are attached
- Dose projections at the site boundary are projected to be available in ~ 60 minutes
- The RFAT team reports that air sample and rad survey results should be available in ~ 45 minutes
- The Effluent Tech estimates grab sample results will be available in ~ 30 minutes
- The Met Data page is attached
- The authenticator code is DELTA BRAVO

INITIATING CUE:

- You are directed to complete the Palo Verde NAN Emergency Message Form, EP-0541, Steps 1 through 6
- **THIS IS A TIME CRITICAL JPM**

EXAMINEE

Form 3.2-2 Control Room-Plant Systems Outline

Facility: <u>PVNGS</u>		Date of Examination: <u>4/29/24</u>	
		Operating Test Number: <u>2024</u>	
Exam Level: ☒ RO ☒ SRO-I ☒ SRO-U			
System / JPM Type		Type Code	Safety Function
Control Room Systems			
S1	014 A2.04	Reset CEA positions following slipped CEA per 40AO-9ZZ11, CEA Malfunctions, Appendix D (done on Ovation system in Sim A) – (2022 NRC S1 – but different control system due to plant modification, therefore modified)	M, S 1
S2 (RO Only)	013 A4.02	Reset SIAS actuation per Appendix 24, SIAS Check/Reset, Attachment 24-C, Resetting and Restoring SIAS	EN, L, N, S 2
S3	035 A2.01	Lower SG #1 level per Appendix 33, SG 1 Level Reduction Checklist (2020 NRC S4)	A, D, L 4P
S4	045 A2.02	Stabilize the unit following a MFP trip per 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump)	A, N, S 4S
S5	062 A4.07	Transfer NAN-S02 to MAN-X02 per 40OP-9NA03, 13.8kV Electrical System (2018 NRC S6 – different failure mechanism and success path)	A, M, S 6
S6	015 A4.02	Insert BD constants following inadvertent 'A' SIAS per 40OP-9SG03, Operating the SG Blowdown System	N, S 7
S7	008 A4.01	Cross-Tie NC-EW per 40AO-9ZZ03, Loss of Cooling Water (2018 NRC S8 – different failure mechanism from 2018)	A, M, S 8
S8	050 A4.01	Verification of CRVIAS per 40AO-9ZZ26, Toxic Gas (2019 NRC S8)	D, EN, S 9
In-Plant Systems			
P1	062 A2.21	Energize PNA-D25 per Appendix 92, Energize PNA-D25 (2015 PVNGS Annual Exam)	D, E, L 6
P2	026 A2.03	Perform Steps 19-22.1 of 40AO-9ZZ19, Control Room Fire, Appendix G, Upper Auxiliary Building Actions	A, E, L, N, R 5
P3	041 A4.02	Locally operate SBCV 1008 per Appendix 116, Operation of SBCS Valves, Attachment 116-D, Local Operation of SBCS 1008	E, N 4S

SRO-U (shaded in gray): S3 / S4 / S8 / P1 / P2

RO-Only: S2

Form 3.2-2 Instructions for Control Room-Plant Systems Outline

1. Determine the number of control room system and in-plant systems job performance measures (JPMs) to develop using the following table:

License Level	Control Room	In-Plant	Total
Reactor Operator (RO)	8	3	11
Senior Reactor Operator-Instant (SRO-I)	7	3	10
Senior Reactor Operator-Upgrade (SRO-U)	2 or 3	3 or 2	5

2. Select safety functions and system for each JPM as follows:

Refer to Section 1.9 of the applicable knowledge and abilities (K/A) catalog for the plant systems organized by safety function. For pressurized-water reactor operating tests, the primary and secondary systems listed under Safety Function 4, "Heat Removal from Reactor Core", in Section 1.9 of NUREG-1122 or NUREG-2103 may be treated as separate safety functions (i.e., two systems, one primary and one secondary, may be selected from Safety Function 4).

From the safety function groupings identified in the K/A catalog, select the appropriate number of plant systems by safety functions to be evaluated based on the applicant's license level (see the table in step 1).

The emergency and abnormal plant evolutions listed in Section 1.10 of the applicable K/A catalog may also be used to evaluate the applicable safety function (as specified for each emergency and abnormal plant evolution in the first tier of the written examination outlines in ES-4.1, "Preparing Written Examination Outlines").

For RO/SRO-I applicants: Each of the control room systems JPMs and, separately, each of the in-plant systems JPMs must evaluate a different safety function, and the same system or evolution cannot be used to evaluate more than one safety function in each location. One of the control room systems JPMs must be an engineered safety feature.

For the SRO-U applicants: Evaluate SRO-U applicants on five different safety functions. One of the control room systems JPMs must be an engineered safety feature, and the same system or evolution cannot be used to evaluate more than one safety function.

3. Select a task for each JPM that supports, either directly or indirectly and in a meaningful way, the successful fulfillment of the associated safety function. Select the task from the applicable K/A catalog or the facility licensee's site-specific task list. If this task has an associated K/A, the K/A should have an importance rating of at least 2.5 in the RO column. K/As that have importance ratings of less than 2.5 may be used if justified based on plant priorities; inform the NRC chief examiner if selecting K/As with an importance rating less than 2.5.

The selected tasks must be different from the events and evolutions conducted during the simulator operating test and tasks tested on the written examination. A task that is similar to a simulator scenario event may be acceptable if the actions required to complete the task are significantly different from those required in response to the scenario event.

Apply the following specific task selection criteria:

- At least one of the tasks shall be related to a shutdown or low-power condition.
- Four to six of the tasks for RO and SRO-I applicants shall require execution of alternative paths within the facility licensee's operating procedures. Two to three of the tasks for SRO-U applicants shall require execution of alternative paths within the facility licensee's operating procedures.
- At least one alternate path JPM must be new or modified from the bank.
- At least one of the tasks conducted in the plant shall require the applicant to enter the radiologically controlled area. This provides an excellent opportunity for the applicant to discuss or demonstrate radiation control administrative subjects.

If it is not possible to develop or locate a suitable task for a selected system, return to step 2 and select a different system

4. For each JPM, specify the codes for type, source, and location:

Code	License Level Criteria					
	RO		SRO-I		SRO-U	
(A)lternate path	4-6	5	4-6	5	2-3	3
(C)ontrol room						
(D)irect from bank	≤ 9	3	≤ 8	3	≤ 4	3
(E)mergency or abnormal in-plant	≥ 1	3	≥ 1	3	≥ 1	2
(EN)gineered safety feature (for control room system)	≥ 1	2	≥ 1	1	≥ 1	1
(L)ow power/shutdown	≥ 1	4	≥ 1	3	≥ 1	3
(N)ew or (M)odified from bank (must apply to at least one alternate path JPM)	≥ 2	8 (4A)	≥ 2	7 (4A)	≥ 1	2 (2A)
(P)revious two exams (randomly selected)	≤ 3	0	≤ 3	0	≤ 2	0
(R)adiologically Controlled Area	≥ 1	1	≥ 1	1	≥ 1	1
(S)imulator						

S1: The applicant will be directed to reset CEA positions in Ovation following a slipped CEA per 40AO-9ZZ11, CEA Malfunctions, Appendix D, Resetting COLSS and PMS CEA Positions. This is a modified bank JPM covering Safety Function 1. **THIS JPM MUST BE PERFORMED IN SIMULATOR A (only one with Ovation Rod Control installed)**

S2: The applicant will be directed to reset the SIAS actuation (following an ESD which has been isolated) per Appendix 24, SIAS Check/Reset, Attachment 24-C, Resetting and Restoring SIAS. This is a new JPM covering Safety Function 2. This JPM will be performed only by the RO applicants.

S3: The applicant will be directed to reduce level in SG #1 to the normal post-trip band following a SGTR per Appendix 33, Steam Generator 1 Level Reduction Checklist. This is a bank alternate path JPM covering Safety Function 4P.

S4: The applicant will be directed to perform steps 14-20 from 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump) following a trip of the 'A' MFP. The applicant will take RPCB out of service, re-establish control of the Main Turbine using the Load Limit Potentiometer, and place CEDMCS in Manual Sequential. When CEDMCS is in Manual Sequential, both Stator Cooling Water HXs will clog resulting in Stator Cooling Water alarms. The Main Turbine will trip 70 seconds later and due to a SBCS failure, RCS pressure will rise past the Reactor trip setpoint. The Reactor will fail to trip and the applicant must recognize this failure and manually trip the Reactor. This is a new alternate path JPM covering safety function 4S.

S5: The applicant will be directed to transfer 13.8kV Bus NAN-S02 from 13.8kV Bus NAN-S04 to Unit Aux Transformer MAN-X02 per 40OP-9NA03, 13.8kV Electrical System. Following the parallel with the alternate source, the running breaker will fail to auto trip or manually trip and the applicant will address the ARP and manually open the incoming breaker prior to an automatic Main Turbine trip due to overheating. This is a modified alternate path JPM covering Safety Function 6.

S6: The applicant will be directed to insert zero blowdown constants in the Plant Computer (PC) and Core Monitoring Computer (CMC) per 40OP-9SG03, Operating the Steam Generator Blowdown System, following an inadvertent 'A' SIAS. This is a new JPM covering Safety Function 7.

S7: The applicant will be directed to cross-tie Nuclear Cooling Water with Train 'A' Essential Cooling Water following a loss of all Nuclear Cooling Water per 40AO-9ZZ03, Loss of Cooling Water, Appendix A, Cross-connect EW to NC. When aligning the cross-tie, NCN-UV-99, Nuclear Cooling Water Containment Header Return Valve will seize right after indicating mid-position (valve is required to be fully closed - ~ 20 second stroke time - before proceeding with the cross-tie to prevent an uncontrolled transfer of water between NC and EW) making completion of the cross-tie undoable. The applicant should recognize that since cooling water cannot be restored to the RCPs within 10 minutes of the loss of NC that the Reactor must be tripped, RCPs stopped, and RCP Bleedoff isolated. This is a modified alternate path JPM covering Safety Function 8.

S8: The applicant will be directed to respond to a toxic gas condition in the Control Building per 40AO-9ZZ26, Toxic Gas. The applicant will manually initiate a Control Room Ventilation Isolation Actuation Signal (CRVIAS) and ensure all components are in their actuated condition. A K-Relay failure will prevent some of the dampers from auto closing and will take action to manually isolate the Control Room Ventilation System. This is a bank JPM covering Safety Function 9.

P1: The applicant will be directed to simulate energizing Class 120 VAC Instrument Bus, PNA-D25 from Class 125 VDC Control Power Bus, PKA-M41, per Appendix 92, Energize PNA-D25. This is a bank JPM covering Safety Function 6.

P2: The applicant will be directed to complete 40AO-9ZZ19, Control Room Fire, Appendix G, Upper Auxiliary Building Actions. The steps to simulate will complete the isolation of the Upper Aux Building RCS Hot Leg sample path, then ensure the CS Header Isolation Valves are closed. The cue will indicate that the Control Room was evacuated due to a fire in the PPS Cabinet which resulted in spurious actuations. The 'B' CS Header Isolation Valve will be found open and will not be able to be closed locally, requiring alternate local isolation of the 'B' CS Header. This is a new alternate path JPM covering Safety Function 5.

P3: The applicant will be directed to locally open SBCS Valve 1008 per Appendix 116, Operations of SBCS Valves 1007 and 1008, Attachment 116-D, Local Operation of SGN-PV-1008. The applicant will simulate isolating IA to the valve, then removing and reinstalling the clevis on the actuator shaft to facilitate local valve operation. This is a new JPM covering Safety Function 4S.

JPM

P1

2024 PVNGS NRC Initial Exam JPM P1

JPM INFORMATION

TASK:	1240029001 – Energize PNA-D25					
TASK STANDARD:	The applicant simulated re-energizing PNA-D25 by simulating the following: • Opened the Inverter Output Breaker • Opened the DC Input Breaker • Closed PKA-M4106 • Pressed the Inverter Pre-Charge pushbutton • Closed the DC Input Breaker • Closed the Inverter Output Breaker • Pressed the Inverter To Load pushbutton					
K/A:	062 A2.21	RATING:	RO:	4.0	SRO:	4.3
POSITION(S):	RO / SRO	VALIDATION TIME:	7 minutes			
REFERENCES:	Appendix 92, Energize PNA-D25					
LOCATION:	SIMULATOR		PLANT	X	CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: Brian Garrettson **DATE:** 1/26/2024

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

PROCEDURES/MATERIALS:

- Appendix 92, Energize PNA-D25

INFORMATION PRESENTED TO EXAMINEE:

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.

IN-PLANT JPMS ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY**. **DO NOT** operate any equipment.
- Notify the **Shift Manager** when in-plant JPMs are being performed.
- 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.

INITIAL CONDITIONS:

- Following a Reactor trip, PKA-M41 was de-energized due to a fault on the battery bank
- The fault has been isolated and the 'A' Battery Charger has been placed in service on PKA-M41 using Appendix 94, Energize PKA-M41 from a Battery Charger

INITIATING CUE:

- The CRS directs you to energize PNA-D25 from Inverter PNA-N11 per Appendix 92, Energize PNA-D25
- Step 1 of Appendix 92 has been completed
- Start on Step 2 of Appendix 92

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: Ensure that the INVERTER OUTPUT breaker is OFF (Inverter PNA-N11)
Standard:	Simulated placing the INVERTER OUTPUT breaker in the OFF position by simulating moving the breaker handswitch to the down position
Examiner Cue:	When examinee has simulated placing the breaker handswitch in OFF: “The breaker handswitch is in the down position”
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 2* (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: Ensure that the DC INPUT breaker is OFF (Inverter PNA-N11)
Standard:	Simulated placing the DC INPUT breaker in the OFF position by moving the breaker handswitch to the down position
Examiner Cue:	When examinee has simulated placing the breaker in OFF: “The breaker handswitch is in the down position”
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM P1

JPM Step: 3 * (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: Close breaker PKA-M4106, INVERTER A E-PNA-N11
Standard:	Simulated closing breaker PKA-M4106 by simulating rotating to breaker handswitch 90° clockwise from the 9 o'clock OFF position to the 12 o'clock ON position
Examiner Cue:	When the examinee locates PKA-M4106: “The breaker handswitch is in the horizontal position pointing to the left” When the examinee simulates closing PKA-M4106: “The breaker handswitch is in the vertical position”
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 4 * (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: - Perform the following: - Press and hold the Inverter PRE-CHARGE pushbutton - Check that DC INPUT VOLTAGE rises to DC bus voltage - Release the Inverter PRE-CHARGE pushbutton
Standard:	Simulated pressing and holding the Inverter PRE-CHARGE pushbutton, checked DC INPUT VOLTAGE has risen to DC bus voltage, then simulated releasing the PRE-CHARGE pushbutton
Examiner Cue:	Upon arrival at the panel, DC INPUT VOLTAGE should be 0 VDC (may have to indicate with a pen) When the examinee has simulated depressing the PRE-CHARGE pushbutton: “The button has been depressed”, then use a pen to indicate DC INPUT VOLTAGE rising from 0 VDC to ~ 135 VDC
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM P1

JPM Step: 5 * (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: Place the DC INPUT breaker in ON
Standard:	Simulated placing the DC INPUT breaker handswitch to ON
Examiner Cue:	Although examinee simulated opening this breaker earlier in the JPM, may need to inform that the breaker handswitch is in the DOWN position When the examinee has simulated placing the DC INPUT breaker to ON: “The breaker handswitch is in the UP position”
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 6 * (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: Place the INVERTER OUTPUT breaker in ON
Standard:	Simulated placing the INVERTER OUTPUT breaker handswitch to ON
Examiner Cue:	Although examinee simulated opening this breaker earlier in the JPM, may need to inform that the breaker handswitch is in the DOWN position When the examinee has simulated placing the INVERTER OUTPUT breaker to ON: “The breaker handswitch is in the UP position”
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P1

JPM Step: 7 * (step)	IF PNA-D25 is to be energized by Inverter PNA-N11, THEN perform the following: • Ensure the MANUAL BYPASS SWITCH in the NORMAL OPERATION position • Press the INVERTER TO LOAD pushbutton • Check that the INVERTER SUPPLYING LOAD green light is lit
Standard:	Verified the MANUAL BYPASS SWITCH is in the NORMAL OPERATION position, simulated pressing the INVERTER TO LOAD pushbutton, and checked that the INVERTER SUPPLYING LOAD green light is lit
Examiner Cue:	When the examinee verifies the position of the MANUAL BYPASS SWITCH: “The switch is as you see it” IF the examinee checks the INVERTER SUPPLYING LOAD green light BEFORE simulating pressing the INVERTER TO LOAD pushbutton: “The green light is extinguished” When the examinee has simulated pressing the INVERTER TO LOAD pushbutton: “The pushbutton has been depressed, the green light is lit. This JPM is complete”
Comments (required for UNSAT):	
SAT UNSAT	

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM P1

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	10/17/2014	6	JPM created
1	9/8/2017	6	JPM format updated
2	11/8/2017	6	Updated for procedure revision
3	12/13/2023	6	Updated to current procedure for 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Following a Reactor trip, PKA-M41 was de-energized due to a fault on the battery bank
- The fault has been isolated and the 'A' Battery Charger has been placed in service on PKA-M41 using Appendix 94, Energize PKA-M41 from a Battery Charger

INITIATING CUE:

- The CRS directs you to energize PNA-D25 from Inverter PNA-N11 per Appendix 92, Energize PNA-D25
- Step 1 of Appendix 92 has been completed
- Start on Step 2 of Appendix 92

EXAMINEE

JPM

P2

2024 PVNGS NRC Initial Exam JPM P2

JPM INFORMATION

TASK:	1250440201 – Respond to an event requiring entry into the Control Room Fire AOP					
TASK STANDARD:	The applicant simulated the following steps from 40AO-9ZZ19, Appendix G: • Closed NC-V050/052/053/051 • Opened NC-V049/054 and located NC-FI-55 • Placed SSA-HS-203A-2 in LOCAL and opened SSA-UV-203 • Opened PHB-M3612 (for SIB-UV-671) • Placed the disconnect for SIB-HV-693 in LOCAL and closed SIB-HV-693 • Placed the disconnect for SIB-HV-695 in LOCAL and closed SIB-HV-695					
K/A:	026 A2.03	RATING:	RO:	3.9	SRO:	4.1
POSITION(S):	RO / SRO	VALIDATION TIME:	25 minutes			
REFERENCES:	40AO-9ZZ19, Control Room Fire, Appendix G, Upper Aux Building Actions					
LOCATION:	SIMULATOR		PLANT	X	CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 1/10/2024

VALIDATED BY: Brian Garrettson **DATE:** 1/26/2024

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

PROCEDURES/MATERIALS:

- 40AO-9ZZ19, Control Room Fire, Appendix G, Upper Auxiliary Building Actions
- This JPM was written using Rev 42 of ZZ19

INFORMATION PRESENTED TO EXAMINEE:

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.

IN-PLANT JPMS ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY**. **DO NOT** operate any equipment.
- Notify the **Shift Manager** when in-plant JPMS are being performed.
- 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.

INITIAL CONDITIONS:

- The Control Room was evacuated due to a fire in the 'B' ESFAS Cabinet in the Control Room hallway
- The CRS has entered 40AO-9ZZ19, Control Room Fire
- Appendix G, Upper Auxiliary Building Actions, is in progress
- The operator performing Appendix G is coordinating with another operator to complete Appendix G, step 16

INITIATING CUE:

- The CRS directs you to complete Appendix G, starting on step 17

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (step 17)	Ensure ALL of the following valves are closed (140 ft Northwest Hallway): • NC-V050, Sample Cooler AX-11 Inlet • NC-V052, Sample Cooler AX-12 Inlet • NC-V053, Sample Cooler AX-13 Inlet • NC-V051, Sample Cooler AX-10 Inlet
Standard:	Simulated closing NC-V050/052/053/051 by simulating rotating all of the handwheels in the clockwise direction
Examiner Cue:	The 140' NW Hallway around the corner from the RCA entry (basically in the hallway where the RCA is exited). There are two horizontal rows of valves, these four are in the top row (~ eye level) When the examinee has simulated rotating each valve in the clockwise direction: “The valve has been rotated to the fully clockwise position and has stopped rotating” When the all 4 Sample Cooler inlet valves have been simulated closed: “The AO performing Appendix H reports that the EW-NC cross-tie has been completed”
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P2

JPM Step: 2 * (step 18.a)	WHEN the operator performing Appendix H, Lower Auxiliary Building Actions, has cross-connected EW and NC, THEN perform the following (140 ft Northwest Hallway): • Ensure BOTH of the following valves are open: ○ NC-V049, Sample Cooler AX-9 Inlet ○ NC-V054, Sample Cooler AX-9 Outlet	
Standard:	Simulated opening NC-V049 and NC-V054 by simulating rotating both valve handwheels in the counter-clockwise direction	
Examiner Cue:	V049 is in the top row of valves, V054 is in the bottom row When the examinee has simulated rotating each valve in the counter-clockwise direction: “The valves have been rotated to the fully counter-clockwise position and has stopped rotating”	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 * (step 18.b)	WHEN the operator performing Appendix H, Lower Auxiliary Building Actions, has cross-connected EW and NC, THEN perform the following (140 ft Northwest Hallway): • Monitor RC Sample Cooler AX-9 cooling flow on NC-FI-55 while the operator performing Appendix H, Lower Auxiliary Building Actions, throttles EWB-HCV-54, SDHX B Outlet Isolation, until flow is 16 gpm or HCV-54 is closed	
Standard:	Located NC-FI-55 and simulated contacting the AO performing Appendix H and informed them that the examinee is ready for throttling of EWB-HCV-54	
Examiner Cue:	NC-FI-55 is a small flow gage located behind NC-V049. A picture is included to aid in the administration of the JPM. The “as-found” flowrate during validations was 18 gpm, however at this point in this procedure, the gage should read 0 gpm so a cue to that effect may be required. When examinee simulates contacting AO performing Appendix H, acknowledge, indicate 0 gpm on NC-FI-55, and slowly raise indicated GPM until examinee informs the AO to stop (should be ~ 16 gpm)	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P2

JPM Step: 4 * (step 19.a)	On panel SSA-J04, perform the following (120 ft W Elec Pen Room): Place SSA-HS-203A-2, in LOCAL
Standard:	Simulated placing SSA-HS-203A-2 in LOCAL
Examiner Cue:	To get to the 120' W Elec Pen, examinee should take the elevator to the 120', go through the door straight ahead on the left, then go left around the corner to the Junction Box 2E-SSA-J04 mounted on the wall When the examinee simulates placing SSA-HS-203A-2 in LOCAL (counter-clockwise from the 2 o'clock position to the vertical position): "The handswitch is in the vertical position"
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 5 * (step 19.b)	On panel SSA-J04, perform the following (120 ft W Elec Pen Room): Open SSA-UV-203, Hot Leg Sample Containment Isolation Valve, using SSA-HS-203A-1
Standard:	Simulated opening SSA-UV-203 using SSA-HS-203A-1 by placing the handswitch to OPEN
Examiner Cue:	The handswitch for SSA-UV-203 is a spring return to normal handswitch. Placing momentarily in OPEN will open the valve When the examinee simulates placing the handswitch in OPEN: "The red light is ON, green light is OFF"
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P2

JPM Step: 6 (step 20)	Inform the CRS of BOTH of the following: • All RCP Seal Injection Valves are failed open • The Upper Aux Building portion of the RCS Hot Leg Sample Path is aligned
Standard:	Simulated informing the CRS
Examiner Cue:	When the examinee simulates informing the CRS, acknowledge the report
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 7 (step 21)	Ensure that SIA-UV-672, Train A Containment Spray Header Isolation, is closed (80 ft West Wrap Upper Level)
Standard:	Verified SIA-UV-672 is closed
Examiner Cue:	SIA-UV-672 is closed. This can be verified by the local VPI indicating 0% open, or by the valve stem (on top of the valve) being inserted (not visible) When the examinee locates SIA-UV-672: “The valve position is as you see it”
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P2

Examiner Note:	The following steps represent the alternate path portion of the JPM	
JPM Step: 8 (step 22)	Ensure that SIB-UV-671, Train B Containment Spray Header Isolation, is closed (80 ft East Wrap Upper Level)	
Standard:	Checked the status of SIB-UV-671, determined that the valve is open, and attempted to close the valve by simulating pulling the clutch down and rotating the valve handwheel in the clockwise direction	
Examiner Cue:	When the examinee looks at the VPI, indicate 100% on the VPI. If examinee looks for the valve stem on top of the valve, inform them that the valve stem is fully extended. When the examinee attempts simulating closing the valve: “The valve handwheel will not move”	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 9 * (step 22.1.a)	IF SIB-UV-671, Train B Containment Spray Header Isolation, can NOT be closed, THEN perform the following: • Ensure PHB-M3612, Train B Containment Spray Header Isolation, SIB-UV-671, is open	
Standard:	Simulated opening PHB-M3612 by rotating the breaker handswitch 90° CCW from the 12 o'clock ON position to the 9 o'clock OFF position	
Examiner Cue:	PHB-M3612 breaker cubicle is behind the double doors. The breaker itself is on the top right inside the doors. The as found position of PHB-M3612 would have the handswitch in the ON position with the red light ON, green light OFF When the examinee simulates opening PHB-M3612 (by rotating to the horizontal position): “The breaker handswitch is in the horizontal position pointing left, the green light is ON, red light is OFF”	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P2

JPM Step: 10 * (step 22.1.b.1)	IF SIB-UV-671, Train B Containment Spray Header Isolation, can NOT be closed, THEN perform the following: Place the disconnect switch for Train B Containment Spray Shutdown Heat Exchanger Bypass, SIB-HV-693, at PHB-M3416, to LOCAL	
Standard:	Simulated placing the disconnect switch for SIB-HV-693 to LOCAL	
Examiner Cue:	There are 4 disconnect switches on PHB-M3416, however none of them are explicitly labeled for their associated component by noun name. The disconnects are labeled using the breaker number for their associated component. The breaker for SIB-HV-693 is PHB-M3413, therefore the correct disconnect switch is labeled as “2-E-PHB-M3413 CONT ROOM CKTS DISCONNECT (bottom left disconnect switch)” When the examinee simulates placing the disconnect switch for SIB-HV-693 to LOCAL (by rotating the switch counter-clockwise to the vertical position): “The handswitch is in the vertical position”	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 11 * (step 22.1.b.2)	IF SIB-UV-671, Train B Containment Spray Header Isolation, can NOT be closed, THEN perform the following: Close SIB-HV-693, Train B Containment Spray Shutdown Heat Exchanger Bypass at PHB-3413	
Standard:	Simulated closing SIB-HV-693 using by simulating rotating the handswitch at PHB-3413 90° from the 12 o’clock position to the 9 o’clock position	
Examiner Cue:	When the examinee simulates closing SIB-HV-693 at PBH-3413: “The handswitch is horizontal facing left, the red light is off, the green light is on”	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P2

JPM Step: 12 * (step 22.1.c.1)	Perform the following at PHB-M3810: Place the disconnect switch for Train B Containment Spray Isolation Valve, SIB-HV-695, to LOCAL
Standard:	Simulated placing the disconnect switch in the LOCAL position
Examiner Cue:	The disconnect for SIB-HV-695 is on the breaker cubicle itself. When the exam simulates rotating the switch CCW to the LOCAL position: “The handswitch is in the vertical position”
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 13 * (step 22.1.c.2)	Perform the following at PHB-M3810: Close SIB-HV-695, Train B Containment Spray Isolation Valve
Standard:	Simulated closing SIB-HV-695 using by simulating rotating the handswitch at PHB-3810 90° from the 12 o’clock position to the 9 o’clock position
Examiner Cue:	When the examinee simulates closing SIB-HV-695 at PBH-3810: “The handswitch is horizontal facing left, the red light is off, the green light is on. Another operator will complete Appendix G. This JPM is complete”
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	1/10/2024	6	JPM created

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- The Control Room was evacuated due to a fire in the 'B' ESFAS Cabinet in the Control Room hallway
- The CRS has entered 40AO-9ZZ19, Control Room Fire
- Appendix G, Upper Auxiliary Building Actions, is in progress
- The operator performing Appendix G is coordinating with another operator to complete Appendix G, step 16

INITIATING CUE:

- The CRS directs you to complete Appendix G, starting on step 17

EXAMINEE

JPM

P3

2024 PVNGS NRC Initial Exam JPM P3

JPM INFORMATION

TASK:	SF006 - Place/remove SBCS valves to/from service					
TASK STANDARD:	The applicant simulated local operation of SBCS Valve 1008 by simulating the following: • Closed IAN-V423 • Selected MANUAL on the Bailey Positioner • Removed the clevis from the actuator stem • Rotated the handwheel clockwise to expose the alignment slot on the shaft • Installed the clevis • Rotated the handwheel CCW 19 turns					
K/A:	041 A4.02	RATING:	RO:	3.6	SRO:	3.6
POSITION(S):	RO / SRO	VALIDATION TIME:	10 minutes			
REFERENCES:	Appendix 116, Operation of SBCS Valves 1007 and 1008					
LOCATION:	SIMULATOR		PLANT	X	CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 1/10/2024

VALIDATED BY: Brian Garrettson **DATE:** 1/26/2024

TECH REVIEW: N/A **OPERATIONS APPROVAL:** N/A

E-PLAN REVIEW: N/A **TRAINING APPROVAL:** N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

PROCEDURES/MATERIALS:

- Appendix 116, Operation of SBCS Valves 1007 and 1008
- This JPM was developed using Rev 1 of Appendix 116

INFORMATION PRESENTED TO EXAMINEE:

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.

IN-PLANT JPMS ONLY:

- Operation of in-plant equipment is to be **SIMULATED ONLY**. **DO NOT** operate any equipment.
- Notify the **Shift Manager** when in-plant JPMS are being performed.
- 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.

INITIAL CONDITIONS:

- The unit was tripped from 100% power due to a series of electrical malfunctions
- The ADVs cannot be operated from the Control Room
- The CRS has determined that heat removal will be performed using local operation of SBCS Valve 1008

INITIATING CUE:

- The CRS directs you to prepare SBCS Valve 1008 for local operation per Appendix 116, Operation of SBCS Valves 1007 and 1008, Attachment 116-D, Local Operation of SGN-PV-1008
- Notify the Control Room when SGN-PV-1008 is ready for local operation

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (step 1)	Ensure IAN-V423, Instrument Air to Steam Bypass Control Valve SGN-PV-1008, is closed (Turbine Building 140 ft)	
Standard:	Simulated closing IAN-V423	
Examiner Cue:	(Valve is located below the grate of the 1st platform) When the examinee simulates closing IAN-V423 (by rotating the handwheel clockwise): “The valve handwheel has rotated to the fully clockwise position and stopped moving”	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 (step 2)	Request the Control Room to perform the following: - Place SGN-PIK-1008, To Atmosphere Valve 8, controller in MANUAL - Place SGN-HS-1008, Valve 8 Mode Select Switch, in MANUAL	
Standard:	Simulated requesting the Control Room to place the controller and mode select switch in MANUAL	
Examiner Cue:	When the examinee simulates contacting the Control Room: “SGN-PIK-1008 and SGN-HS-1008 are in MANUAL”	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P3

JPM Step: 3 * (step 3)	Select MANUAL on the local Bailey Positioner, REFER TO Attachment 116-E, SBCS Figure 1
Standard:	Simulated selecting MANUAL on the local Bailey Positioner
Examiner Cue:	When the examinee simulates selecting MANUAL on the positioner (by rotating the lever/switch in the counter-clockwise direction from the 12 o'clock position to the horizontal 9 o'clock position): “The switch is in the horizontal position pointing to the left”
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 4 * (step 4)	Unscrew and remove the clevis from the manual override shaft
Standard:	Simulated unscrewing and removing the clevis from the manual override shaft
Examiner Cue:	The clevis (blue U-shaped device) is located on top of the override shaft (~ eye level when on the top platform) When the examinee simulates unscrewing and removing the clevis: “The clevis has been removed from the override shaft”
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM P3

Proc Caution	Using excessive force to turn the handwheel in the closed direction after the manual override shaft has been fully lowered may cause severe damage to the Steam Bypass Valve or the Steam Bypass Valve Actuator Without the clevis installed, the actuator shell cap assembly can be damaged if the manual override shaft is lowered below the engagement slot for the clevis to the point of over travel (bottoming out the actuator). If the manual override shaft is over traveled, the actuator shell cap can be unseated and un-thread, when attempting to raise the override shaft	
JPM Step: 5 * (step 5)	Operate the handwheel for SGN-PV-1008 in the clockwise direction until the Actuator Shaft is exposed. REFER TO Attachment 116-E, SBCS Figure 1	
Standard:	Simulated rotating the handwheel for SGN-PV-1008 in the clockwise direction	
Examiner Cue:	The handwheel is not labeled, however it is the only handwheel, located just past the railing of the top platform. When the examinee simulates rotating SGN-PV-1008 in the clockwise direction: “The valve has been rotated in the clockwise direction and the Actuator Shaft is exposed”	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 6 * (step 6)	Stop lowering of the jack shaft as soon as the clevis alignment slot in the actuator is aligned for inserting the clevis	
Standard:	Verbalizes (asks) if the alignment slot is visible and aligned for inserting the clevis, then stops simulating lowering the jack shaft	
Examiner Cue:	When the examinee demonstrates that he is waiting (and looking) for the alignment slot for the clevis: “The alignment slot in the actuator is aligned for inserting the clevis”	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P3

JPM Step: 7 * (step 7)	Slide the Clevis onto the Actuator Shaft	
Standard:	Simulated sliding the clevis onto the actuator shaft	
Examiner Cue:	When the examinee describes sliding the clevis onto the actuator shaft: “The clevis is on the actuator shaft”	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 8 (step 8)	Engage the Clevis by allowing the Clevis to reach the end of the Clevis Slot	
Standard:	Simulated engaging the clevis	
Examiner Cue:	This step is no different than the previous step, it is just to ensure the operator fully engages the clevis in the alignment slot When the examinee simulates fully engaging the clevis: “The clevis has been slid onto the alignment slot as far as it can go”	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P3

Procedure Note	The pilot seat opening stroke travel requires only minimal manual force on the handwheel. If binding resistance is encountered after the pilot seat is opened, then the main plug assembly piston rings may not be seated properly. The manual actuator is not designed to open the main valve plug assembly without the bonnet pressure first being ventilated by the pilot valve. If this conditions develops, contact Systems Engineering for resolution. 19 complete turns of the handwheel = 10% valve position	
Proc Caution	Using excessive force to turn the handwheel in the closed direction after the manual override shaft has been fully lowered may cause severe damage to the Steam Bypass Valve Actuator. With the clevis installed, excessive counter clockwise (opening) rotation of the handwheel can cause fracture of the manual actuator mounting flange plate.	
JPM Step: 9 (step 9)	Inform the responsible operator that SGN-PV-1008 is ready for local operation	
Standard:	Simulated informing the Control Room that SGN-PV-1008 is ready for local operation	
Examiner Cue:	When the examinee simulates contacting the Control Room: “The Control Room acknowledges directs you to slowly open SGN-PV-1008 10% open”	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM P3

JPM Step: 10 * (step 10)	WHEN directed by the responsible operator, THEN operate SGN-PV-1008 by performing ANY of the following: • Rotate the handwheel counter-clockwise to open the valve • Rotate the handwheel clockwise to close the valve	
Standard:	Simulated throttling SGN-PV-1008 open by rotating the handwheel counter-clockwise	
Examiner Cue:	The examinee should identify the note in the procedure that indicates 19 turns of the handwheel = 10% valve position and verbalize that they are rotating the handwheel 19 turns in the counter-clockwise direction. When the examinee simulates rotating the handwheel in the counter-clockwise direction: “This JPM is complete”	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	1/10/2024	6	JPM created

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- The unit was tripped from 100% power due to a series of electrical malfunctions
- The ADVs cannot be operated from the Control Room
- The CRS has determined that heat removal will be performed using local operation of SBCS Valve 1008

INITIATING CUE:

- The CRS directs you to prepare SBCS Valve 1008 for local operation per Appendix 116, Operation of SBCS Valves 1007 and 1008, Attachment 116-D, Local Operation of SGN-PV-1008
- Notify the Control Room when SGN-PV-1008 is ready for local operation

EXAMINEE

JPM

S1

2024 PVNGS NRC Initial Exam JPM S1

JPM INFORMATION

TASK:	R-SJ-165001 – Operate the Ovation system						
TASK STANDARD:	The applicant reset the pulse counter CEA position for CEA 66 to 120” on BOTH the PC (via Ovation) and CMC consoles The applicant’s actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.						
K/A:	014 A2.04	RATING:		RO:	3.9	SRO:	3.9
POSITION(S):	RO / SRO	VALIDATION TIME:		15 minutes			
REFERENCES:	40AO-9ZZ11, CEA Malfunctions, Appendix D, Resetting COLSS and PMS CEA Positions						
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM		

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

SIMULATOR SETUP:

- IC: 20 (or IC-601)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfRD02I f:20	Slip CEA 66 to 120" withdrawn

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert malfunction above
- Ensure all CPC displays are set to MODE 1 Steady State prior to each JPM
- Ensure COLSS is set to SCHEDULED on the PC and CMC computers
- Ensure the PC and CMC computers are BOTH on their home screens
- Acknowledge alarms
- GO TO FREEZE

REQUIRED CONDITIONS:

- All CPC displays indicating MODE 1 Steady State
- COLSS set to SCHEDULED on the PC and CMC computers
- PC and CMC computers both on the home screen

PROCEDURES/MATERIALS:

- 40AO-9ZZ11, CEA Malfunctions, Appendix D, Resetting COLSS and PMS CEA Positions

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is operating in MODE 1
- CEA 66 has slipped part way into the core
- The crew is mitigating the event per 40AO-9ZZ11, CEA Malfunctions

INITIATING CUE:

- The CRS directs you to perform 40AO-9ZZ11, CEA Malfunctions, Appendix D, Resetting COLSS and PMS CEA Positions, to reset CEA 66 position in BOTH the Plant Computer and Core Monitoring Computer
- The CRS has waived peer checking requirements for the purpose of this JPM

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 (Proc Step 1)	Enter appendix entry time and date	
Standard:	Entered appendix entry time and date	
Comments (required for UNSAT):		SAT UNSAT

Proc Caution:	Resetting CEA position on more than one computer at a time may cause COLSS to become out of service	
JPM Step: 2 (Proc Step 2)	Check that the affected CEA(s) pulse counting system indication matches the actual CEA position on BOTH of the following: - Plant Computer - Core Monitoring Computer	
Standard:	Verified that the PC and CMC position indication does NOT match actual CEA position	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 (Proc Step 2.1)	Unit 2 ONLY: IF the CEA(s) position...	
Standard:	Marked N/A since the JPM is for Unit 1	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S1

JPM Step: 4 (Proc Step 2.2)	Unit 1 and Unit 3 ONLY: IF the CEA(s) pulse counter requires updating, THEN PERFORM Attachment D-4, Resetting CEA Positions (Unit 1 and Unit 3 ONLY), at any Ovation Workstation in Control Room	
Standard:	Recognized that the JPM is for Unit 1 and proceeded to Attachment D-4	
Comments (required for UNSAT):		SAT UNSAT

Procedure Note:	In Unit 1 and Unit 3 Pulse Count CEA positions are generated in Ovation and sent to the Plant Computer (PC)	
JPM Step: 5 * (Att D-4 Step 1)	IF CEA pulse counter required updating in Ovation, THEN navigate to the PULSE COUNT ADJUSTMENT screen	
Standard:	Navigated to the PULSE COUNT ADJUSTMENT screen by (from the Main Menu) clicking Rod Control and Position Menu, then select Pulse Count Adjustment	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 6 * (Att D-4 Step 2.a)	IF updating pulse counts for Individual CEAs, THEN perform the following: Press CEA XX Tile button for the CEA to be updated	
Standard:	Pressed the CEA 66 tile button	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 7 (Att D-4 Step 2.b)	IF updating pulse counts for Individual CEAs, THEN perform the following: Ensure PULSE COUNT CEA XX pop-up box appears	
Standard:	Verified the Pulse Count CEA 66 pop up box appeared	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S1

JPM Step: 8 * (Att D-4 Step 2.c)	IF updating pulse counts for Individual CEAs, THEN perform the following: Press PULSE COUNT XX box	
Standard:	Pressed the Pulse Count CEA 66 box (on the top of the pop up window)	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 9 (Att D-4 Step 2.d)	IF updating pulse counts for Individual CEAs, THEN perform the following: Ensure the boundary around the PULSE COUNT CEA XX box is highlighted	
Standard:	Verified the pop box is highlighted	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 10 * (Att D-4 Step 2.e)	IF updating pulse counts for Individual CEAs, THEN perform the following: Place the cursor in the white box	
Standard:	Clicked in the white box	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 11 * (Att D-4 Step 2.f)	IF updating pulse counts for Individual CEAs, THEN perform the following: Enter the desired new CEA position using the number pad	
Standard:	Entered 120" as the desired new CEA position	
	NOTE: Actual rod position can be determined from CEAPDS or CPCs	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S1

JPM Step: 12 * (Att D-4 Step 2.g)	IF updating pulse counts for Individual CEAs, THEN perform the following: Press ENTER button	
Standard:	Pressed the ENTER button	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 13 (Att D-4 Step 2.h)	IF updating pulse counts for Individual CEAs, THEN perform the following: Check ENTERED CEA POSITION updates to new value	
Standard:	Verified ENTERED CEA 66 position updated to 120"	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 14 * (Att D-4 Step 2.i)	IF updating pulse counts for Individual CEAs, THEN perform the following: Press APPLY button	
Standard:	Pressed the APPLY button	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 15 (Att D-4 Step 2.j)	IF updating pulse counts for Individual CEAs, THEN perform the following: Check CURRENT CEA POSITION updates to new value	
Standard:	Verified CURRENT CEA 66 position updated to 120"	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S1

JPM Step: 16 * (Att D-4 Step 4.a)	IF resetting pulse counters in CMC, THEN perform the following: • Enter CEA at any screen with NO input field selected
Standard:	Typed CEA (brings up a pop up window that says “CEA”). NOTE: When enter is pressed, a screen with all CEAs appear
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 17 * (Att D-4 Step 4.b)	IF resetting pulse counters in CMC, THEN perform the following: • Select INIT TO A VALUE
Standard:	Depressed INIT TO A VALUE (box at top right of the screen)
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 18 * (Att D-4 Steps 4.c.1.a and b)	IF resetting pulse counters in CMC, THEN perform the following: • Perform the following to update CEA positions: ○ IF updating individual CEA positions, THEN perform the following: ▪ Enter the CEA position value in inches withdrawn as determined from the CEACs (For example, the position for CEA76 is “115.0”) into the gray box to the right of the individual CEA being updated and press ENTER
Standard:	Entered 120” in the gray box to the right of CEA 66 and depressed ENTER
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S1

JPM Step: 19 * (Att D-4 Step 4.c.4)	IF resetting pulse counters in CMC, THEN perform the following: Select COMMIT/SAVE	
Standard:	Selected COMMIT/SAVE	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM S1

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	5/19/2017	6	JPM created
1	11/3/2021	6	Updated to current procedure revision
2	12/13/2023	6	Updated for use with Ovation for the 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is operating in MODE 1
- CEA 66 has slipped part way into the core
- The crew is mitigating the event per 40AO-9ZZ11, CEA Malfunctions

INITIATING CUE:

- The CRS directs you to perform 40AO-9ZZ11, CEA Malfunctions, Appendix D, Resetting COLSS and PMS CEA Positions, to reset CEA 66 position in BOTH the Plant Computer and Core Monitoring Computer
- The CRS has waived peer checking requirements for the purpose of this JPM

EXAMINEE

JPM

S2

2024 PVNGS NRC Initial Exam JPM S2

JPM INFORMATION

TASK:	1240022201 – Perform SIAS check/reset					
TASK STANDARD:	The applicant obtained the PPS initiation reset key, placed the keylock switch in the UNLK position, depressed the Trip Path Reset pushbutton on each PPS channel, and depressed at least one of the LOCKOUT RESET pushbuttons for SIAS on the A and B ESFAS Aux Relay Cabinets. The applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	013 A4.02	RATING:	RO:	3.9	SRO:	3.9
POSITION(S):	RO / SRO	VALIDATION TIME:	15 minutes			
REFERENCES:	Appendix 24, SIAS Check/Reset					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A **OPERATIONS APPROVAL:** N/A

E-PLAN REVIEW: N/A **TRAINING APPROVAL:** N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

SIMULATOR SETUP:

- IC: 20 (or IC-602)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfMS07	ESD on common header

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert malfunction listed above
- Allow Reactor to automatically trip and SIAS/CIAS/MSIS to automatically actuate
- Trip one RCP in each loop
- Open one ADV on each SG to ~ 15% open
- Feed both SGs with AFB-P01 at ~ 400 gpm
- When Pressurizer pressure > 2000 psia, then override and stop both HPSI Pumps, override and close all HPSI (8) and LPSI (4) Injection Valves
- Acknowledge alarms
- GO TO FREEZE

REQUIRED CONDITIONS:

- Setup complete
- PPS initiation reset key available

PROCEDURES/MATERIALS:

- Appendix 24, SIAS Check/Reset

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 tripped due to an ESD outside Containment
- SPTAs have been completed and the ESD was isolated by the MSIS

INITIATING CUE:

- The CRS directs you to reset the SIAS actuation per Appendix 24, SIAS Check/Reset, Attachment 24-C, Resetting and Restoring SIAS

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 (Proc Step 1)	Press the RESET pushbutton for PPS Channel A, B, C, and D (B05)
Standard:	Pressed the RESET pushbutton for PPS Channels A, B, C, and D
Comments (required for UNSAT):	SAT UNSAT

Examiner Note:	The keys for each initiation reset are labeled A, B, C, and D, however (as in the units), the keys are the same and can be used interchangeably)
JPM Step: 2 * (Proc Step 2.a)	Perform the following for PPS Channel A, B, C, and D: Obtain the PPS initiation reset key
Standard:	Obtained the PPS initiation reset key from the CRS desk
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 3 * (Proc Step 2.b)	Perform the following for PPS Channel A, B, C, and D: Place the keylock switch in the UNLK position (PPS cabinets)
Standard:	Placed the keylock switch in the UNLK position at each PPS cabinet
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 4 * (Proc Step 2.c)	Perform the following for PPS Channel A, B, C, and D: Press the Trip Path Reset pushbutton for SIAS
Standard:	Pressed the Trip Path Reset pushbutton for SIAS at each PPS cabinet (must be done on all four channels)
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S2

JPM Step: 5 (Proc Step 2.d)	Perform the following for PPS Channel A, B, C, and D: Place the keylock switch in the LK position
Standard:	Placed the keylock switch in the LK position at each PPS cabinet
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 6 (Proc Step 2.e)	Perform the following for PPS Channel A, B, C, and D: Remove the PPS initiation reset key
Standard:	Removed the PPS initiation reset key
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 7 (Proc Step 3)	Check that the SIAS Initiation Signal light is lit on PPS Channel A, B, C, and D (on status panels above PPS cabinets)
Standard:	Verified that the SIAS initiation signal light is lit on PPS Channels A, B, C, and D above the PPS cabinets
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 8 * (Proc Step 4.a and b)	Perform the following at the ESFAS AUXILIARY RELAY CABINET – TRAIN A: (SAAC01 Bay 6 & 7) - Press at least one of the LOCKOUT RESET pushbuttons for SIAS - Check that BOTH of the ON INDICATION lights are lit for SIAS
Standard:	Pressed at least one of the LOCKOUT RESET pushbuttons for SIAS (critical portion of the step) and verified that the ON INDICATION lights are lit for SIAS on Train A
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM S2

JPM Step: 9 * (Proc Step 5.a and b)	Perform the following at the ESFAS AUXILIARY RELAY CABINET – TRAIN B: (SABC01 Bay 6 & 7) - Press at least one of the LOCKOUT RESET pushbuttons for SIAS - Check that BOTH of the ON INDICATION lights are lit for SIAS
Standard:	Pressed at least one of the LOCKOUT RESET pushbuttons for SIAS (critical portion of the step) and verified that the ON INDICATION lights are lit for SIAS on Train B
Examiner Cue:	When the lockout reset pushbutton has been depressed on the Train A and B ESFAS cabinets: “This JPM is complete”
Comments (required for UNSAT):	SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	12/13/2023	6	JPM created

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 tripped due to an ESD outside Containment
- SPTAs have been completed and the ESD was isolated by the MSIS

INITIATING CUE:

- The CRS directs you to reset the SIAS actuation per Appendix 24, SIAS Check/Reset, Attachment 24-C, Resetting and Restoring SIAS

EXAMINEE

JPM

S3

2024 PVNGS NRC Initial Exam JPM S3

JPM INFORMATION

TASK:	0010030401 – Perform a SG 1(2) high rate blowdown to the main condenser					
TASK STANDARD:	The applicant placed the Blowdown Path Selector to OFF, opened SGA-UV-500P, directed an AO to open the SG Blowdown Isolation Valve (500Q) bypass valves, opened SGB-UV-500Q, directed opening SCN-V088, SCN-V099, SCN-V071, and SCN-V072, placed the Blowdown Rate Selector in HIGH RATE, and commenced SG blowdown to the condenser. The applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	035 A2.01	RATING:	RO:	4.6	SRO:	4.4
POSITION(S):	RO / SRO	VALIDATION TIME:	10 minutes			
REFERENCES:	Appendix 33, SG 1 Level Reduction Checklist					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

SIMULATOR SETUP:

- IC: 20 (or IC-603)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfTH06A f:50	
rfWD29 f:OPEN	
rfWD30 f:OPEN	

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert the listed malfunction/remote functions
- Close all 4 Blowdown Containment Isolation Valves
- Trip the Reactor
- Initiate SIAS/CIAS
- Stop one RCP in each loop
- Lower Thot to < 540°F and isolate SG #1 per Appendix 113
- Use Aux Feed to raise level in SG #1 to 70-75% NR
- When SG #1 NR level is 70% NR, modify mfTH06A to f:5
- Acknowledge alarms
- GO TO FREEZE

REQUIRED CONDITIONS:

- Set up complete

PROCEDURES/MATERIALS:

- Appendix 33, SG 1 Level Reduction Checklist

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 was tripped due to a SGTR on SG #1
- SIAS and CIAS have actuated
- SG #1 has been isolated
- SG #1 NR level is approximately 75%

INITIATING CUE:

- The CRS directs you to reduce SG #1 level to 50-55% Narrow Range using Appendix 33, Steam Generator 1 Level Reduction Checklist

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (Proc Step 1)	Place SCN-HS-1, SG 1 Blowdown Path Selector in OFF	
Standard:	Placed SCN-HS-1, SG 1 Blowdown Path Selector in OFF	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 * (Proc Step 2)	Ensure SGA-UV-500P, SG 1 Common Upstream Isolation, is open	
Standard:	Opened SGA-UV-500P by placing the handswitch in CLOSE (to override the valve closure signal), then OPEN	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 * (Proc Step 3)	Ensure SGE-HV-47, SG 1 Downcomer Blowdown Isolation, is closed	
Standard:	Closed SGE-HV-47	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S3

JPM Step: 4 * (Proc Step 4)	Ensure that ONE of the following valves is open: • SGE-HV-43, SG 1 Hot Leg Isolation • SGE-HV-41, SG 1 Cold Leg Isolation
Standard:	Opened either SGE-HV-43 and SGE-HV-41
Examiner Note:	It takes ~ 2 minutes for these valves to open
Examiner Cue:	If CRS is asked which valve to use: “What do you recommend?” then concur with whichever valve they recommend.
Comments (required for UNSAT):	
SAT UNSAT	

Proc Caution:	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
Examiner Note:	The following steps represent the alternate path portion of the JPM
JPM Step: 5 * (Proc Step 5)	Check that SGB-UV-500Q, SG 1 Common Downstream Isolation, is open
Standard:	Determined that SGB-UV-500Q is NOT open and proceeded to the Contingency Actions
Examiner Note:	Opening SBG-UV-500Q prior to the bypass valves being opened is a safety hazard in the Turbine Building and constitutes a failure of the JPM
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 6 * (Proc Steps 5.1.a.1)	Perform the following to open SGB-UV-500Q: • Direct an operator to perform the following (100’ MSSS NW Corner): ○ Unlock and open SGE-V293
Standard:	Directed an AO to open SGE-V293
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM S3

JPM Step: 7 * (Proc Steps 5.1.a.2)	Perform the following to open SGB-UV-500Q: • Direct an operator to perform the following (100' MSSS NW Corner): ○ Open SGE-V267	
Standard:	Directed an AO to open SGE-V267	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 8 * (Proc Steps 5.1.a.3)	Perform the following to open SGB-UV-500Q: • Direct an operator to perform the following (100' MSSS NW Corner): ○ Slowly open SGE-VA33	
Standard:	Directed an AO to open SGE-VA33	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 9 * (Proc Steps 5.1.b)	Perform the following to open SGB-UV-500Q: • Open SGB-UV-500Q, SG 1 Common Downstream Isolation	
Standard:	Opened SGB-UV-500Q	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 10 (Proc Steps 5.1.c)	Perform the following to open SGB-UV-500Q: • Direct an operator to close ALL of the following valves: ○ SGE-V293 ○ SGE-V267 ○ SGE-VA33	
Standard:	Directed an AO to close SGE-V293, SGE-V267, and SGE-VA33	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S3

JPM Step: 11 * (Proc Step 6)	Direct an operator to open ALL of the following valves: • SCN-V088 • SCN-V099 • SCN-V071 • SCN-V072	
Standard:	Directed an AO to open SCN-V088, -V099, -V071, and -V072	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 12 * (Proc Step 7)	Place SCN-HS-18, SG 1 Blowdown Rate Selector in HIGH RATE	
Standard:	Placed SCN-HS-18 in HIGH RATE	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 13 * (Proc Steps 8.a and b)	Maintain SG level by performing the following: • Place SCN-HS-1, SG 1 Blowdown Path Selector, in COND • WHEN SG 1 reaches the desired level, THEN place SCN-HS-1, SG 1 Blowdown Path Selector, in OFF	
Standard:	Placed SCN-HS-1 in COND and monitored SG 1 level	
Examiner Cue:	Once level begins to lower in SG #1: “This JPM is complete”	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	4/14/09	6	New JPM
1	8/10/10	6	Revised for Audit
2	8/28/10	6	Changed JPM number
3	10/25/16	6	JPM Format Change
4	8/15/2020	6	Updated to current procedure rev
5	12/13/2023	6	Updated formatting and to current procedure revision

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 was tripped due to a SGTR on SG #1
- SIAS and CIAS have actuated
- SG #1 has been isolated
- SG #1 NR level is approximately 75%

INITIATING CUE:

- The CRS directs you to reduce SG #1 level to 50-55% Narrow Range using Appendix 33, Steam Generator 1 Level Reduction Checklist

EXAMINEE

JPM

S4

2024 PVNGS NRC Initial Exam JPM S4

JPM INFORMATION

TASK:	1250430201 – Respond to an event requiring entry into the Loss of MFWP AOP					
TASK STANDARD:	The applicant removed RPCB from service by depressing the AUTO ACTUATE OUT OF SERVICE and TEST RESET pushbuttons, placed the Load Limit Potentiometer in control of Main Turbine load, placed CEDMCS in Manual Sequential, then tripped the Reactor within 1 minute of the valid Reactor trip signal (ATWS) The applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	045 A2.02	RATING:	RO:	3.4	SRO:	3.6
POSITION(S):	RO / SRO	VALIDATION TIME:	10 minutes			
REFERENCES:	40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump), B06 ARP Window					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A **OPERATIONS APPROVAL:** N/A

E-PLAN REVIEW: N/A **TRAINING APPROVAL:** N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

SIMULATOR SETUP:

- IC: 20 (or IC-604)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
cmCNMS19SGNPIC1010_1 k:1 f:0	SBCS Master Controller Output Fails to 0%
cmHXTTP01CENE01A_3 k:1 f:100 d:5	‘A’ Stator Water Cooling HX Clogging
cmHXTTP01CENE01B_3 k:1 f:100 d:5	‘B’ Stator Water Cooling HX Clogging
cmBSRP02BSSPSA_1	SPS Channel A Fails As-IS
cmBSRP02BSSPSB_1	SPS Channel B Fails As-IS
cmBSRP02BSSPSC_1	SPS Channel C Fails As-IS
cmBSRP02BSSPSD_1	SPS Channel D Fails As-IS
cmSRRP01ARRPSK1_2	RPS Fails to Actuate Channel A
cmSRRP01ARRPSK2_2	RPS Fails to Actuate Channel B
cmSRRP01ARRPSK3_2	RPS Fails to Actuate Channel C
cmSRRP01ARRPSK4_2	RPS Fails to Actuate Channel D

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert malfunctions above
- Trip the ‘B’ MFP
- Perform steps 1-13 of 40AO-9ZZ09
- Acknowledge alarms
- GO TO FREEZE

REQUIRED CONDITIONS:

- Setup complete

PROCEDURES/MATERIALS:

- 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump)

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 was operating at 100% power when the 'A' Main Feedwater Pump tripped
- Steps 1-13 of 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump), have been completed

INITIATING CUE:

- The CRS directs you to perform steps 14-20 of 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump)

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (Proc Step 14)	IF reactor power is 70% or less and stable, THEN perform the following: • 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	
Standard:	Depressed the AUTO ACTUATE OUT OF SERVICE and TEST RESET pushbuttons at the RPCB control panel	
Comments (required for UNSAT):		SAT UNSAT

Procedure Note:	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	
JPM Step: 2 (Proc Step 15)	Perform a lamp test to ensure the LOAD LIMIT LIMITING light illuminates	
Standard:	Depressed the LAMP TEST pushbutton on B06 and checked that the LOAD LIMIT LIMITING light illuminated	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S4

JPM Step: 3 * (Proc Step 16)	Lower LOAD LIMIT SET potentiometer setpoint to establish Main Turbine Control on Load Limit Potentiometer as indicated by ANY of the following: - LOAD LIMIT LIMITING light is on - Load Limit Potentiometer is in control as indicated by ANY of the following: - Analog Megawatt Meter - Turbine First Stage Pressure - RJ alarm point MTYS61, Load Limit Limiting - Main Turbine Control Valve position
Standard:	Lowered the potentiometer until confirmation that the Load Limit Potentiometer is in control (most likely the LOAD LIMIT LIMITING light on)
Comments (required for UNSAT):	SAT UNSAT

Procedure Note:	When the CEAs are placed in Manual Sequential (MS), the RCS temperature will begin to slowly drop due to the buildup 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 32. This is where the Reg Group CEA overlap is restored which will help to restore the RCS temperature
JPM Step: 4 * (Proc Step 17)	IF a RPCB has dropped CEA subgroups, AND BOTH of the following conditions are met: - CEA motion is only required to compensate for Xenon buildup - Main Turbine load limiting light is on THEN place CEDMCS in Manual Sequential (MS)
Standard:	Placed CEDMCS in Manual Sequential
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S4

Driver Action:	When the applicant has placed CEDMCS in Manual Sequential, INSERT KEY 1, Stator Water Cooling HX Fouling	
Examiner Note:	The applicant should refer to ARP Window 6B07B. The ARP directs starting the standby pump, which will not clear the alarm. The applicant will likely look through the ARP or call an AO to investigate (or may recommend tripping the Main Turbine), however the Main Turbine will automatically trip 70 seconds after the alarm is received, followed by ~ 15 seconds by a high pressure reactor trip signal (and ATWS). The following steps are from Window 6B07B ARP and represent the start of the alternate path portion of the JPM:	
JPM Step: 5 (ARP Step 1)	IF CEN-P01A, Stator Cooling Water Pump A, is in standby, THEN take CEN-HS-30, STATOR COOLING WATER PUMP A P01, to START	
Standard:	Started the 'A' Stator Cooling Water Pump	
Comments (required for UNSAT):		SAT UNSAT

Examiner Note:	The valid trip signal meets the entry conditions for Standard Post Trip Actions. The following steps are from Standard Post Trip Actions:	
JPM Step: 6 (SPTA step 2.a)	Check that Reactor power is dropping	
Standard:	Determined that the Reactor has not tripped and thus, Reactor power is NOT dropping	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S4

JPM Step: 7 * (SPTA step 2.a.1)	Manually trip the Reactor	
Standard:	Manually tripped the Reactor by depressing the RTCB trip pushbuttons on B05 (or by alternate means) within 1 minute of a valid Reactor trip signal NOTE: The first valid Reactor trip signals should be from HI PZR PRESS, LO DNBR, and HI LPD (all come in simultaneously on B05 ~ 30 seconds after the Main Turbine trips)	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	12/13/2023	6	JPM created

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 was operating at 100% power when the 'A' Main Feedwater Pump tripped
- Steps 1-13 of 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump), have been completed

INITIATING CUE:

- The CRS directs you to perform steps 14-20 of 40AO-9ZZ09, Reactor Power Cutback (Loss of Feedpump)

EXAMINEE

JPM

S5

2024 PVNGS NRC Initial Exam JPM S5

JPM INFORMATION

TASK:	0780031301 – Transfer 13.8 kV Bus S02 from 13.8 kV Bus S43 to Unit Aux XFMR MAN-X02					
TASK STANDARD:	The applicant paralleled NAN-S02 and NAN-S04, attempted to open NAN-S04B, then opened NAN-S02A prior to an automatic Main Turbine trip The applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	062 A4.07	RATING:	RO:	3.7	SRO:	3.7
POSITION(S):	RO / SRO	VALIDATION TIME:	5 minutes			
REFERENCES:	40OP-9NA03, 13.8 kV Electrical System, B01A Alarm Response, Window 1A18B					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

SIMULATOR SETUP:

- IC: 20 (or IC-601)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
cmBKED05NANS04B_3	NAN-S04B Breaker Seized closed

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Transfer NAN-S02 to NAN-S04 per 40OP-9NA03
- Acknowledge alarms
- Insert malfunction listed above
- GO TO FREEZE

REQUIRED CONDITIONS:

- NAN-S02 being powered from NAN-S04

PROCEDURES/MATERIALS:

- 40OP-9NA03, 13.8kV Electrical System, Section 6.13

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- NAN-S02 is currently being powered from NAN-S04
- Start-Up Transformer NAN-X02 has been experiencing intermittent high temperature alarms
- No EDGs in any unit are in parallel with offsite power

INITIATING CUE:

- The CRS directs you to transfer NAN-S02 to the Unit Aux Transformer, MAN-X02, per 40OP-9NA03, 13.8kV Electrical System, Section 6.13, Transferring NAN-S02 Bus to the Unit Auxiliary Transformer
- Steps 6.13.1 through 6.13.5 have been completed
- Start on Step 6.13.6

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 * (Proc Step 6.13.6)	Place Synch Switch NAN-SS-S02A, 13.8 KVIF BUS S02 SUPPLY, in ON	
Standard:	Placed NAN-SS-S02A, in ON	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 (Proc Step 6.13.7)	Check for proper synchronization by observing the synchroscope needle in approximately the 12 o'clock position	
Standard:	Checked that the synchroscope is at ~ 12 o'clock	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 * (Proc Step 6.13.8)	Take handswitch NAN-HS-S02A, 13.8 KV BUS S02 SUPPLY, to CLOSE	
Standard:	Took handswitch NAN-HS-S02A, to CLOSE	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S5

JPM Step: 4 * (Proc Step 6.13.9)	Release handswitch NAN-HS-S02A, 13.8 KV BUS S02 SUPPLY
Standard:	Released handswitch NAN-HS-S02A
Examiner Note:	When NAN-S02A is closed, the indicating lights for NAN-S04B will extinguish (this is correct per the electrical prints). The operator may believe that there is a burned out light bulb and recommend replacing it. If the applicant recommends replacing the light bulbs, concur with the recommendation. When the applicant locates the light bulbs and returns to B01, inform them that the bulbs have been replaced. The “clock” should continue to run during this time as it pertains to the time critical nature of the JPM
Comments (required for UNSAT):	
SAT UNSAT	

Examiner Note:	The following steps constitute the alternate path portion of the JPM
JPM Step: 5 * (Proc Step 6.13.10)	IF NAN-S04B, 13.8kV Bus S04-S02 Tie is NOT open, THEN perform the following: • OPEN NAN-S04B • Initiate a Condition Report for troubleshooting
Standard:	Attempted to open NAN-S04B, recognized that the breaker will not open, and referred to the ARP (ARP is NOT critical, however the actions contained in the ARP are – see following steps)
Comments (required for UNSAT):	
SAT UNSAT	

JPM Step: 6 (1A18B Step 1)	Confirm bus transfer in progress
Standard:	Confirmed bus transfer is in progress
Comments (required for UNSAT):	
SAT UNSAT	

2024 PVNGS NRC Initial Exam JPM S5

JPM Step: 7 (1A18B Step 2.1)	If transferring NAN-S01 or NAN-S02, 13.8 kV Non-Class 1E Switchgear Buses, THEN perform the following: • Ensure incoming breaker control switch is in normal	
Standard:	Checked that the incoming breaker control switch, NAN-HS-S02A, is in normal	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 8 (1A18B Step 2.2)	If transferring NAN-S01 or NAN-S02, 13.8 kV Non-Class 1E Switchgear Buses, THEN perform the following: • Ensure running breaker is tripped	
Standard:	Attempted (if not already attempted) to open NAN-S04B	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 9 * (1A18B Step 2.3)	If transferring NAN-S01 or NAN-S02, 13.8 kV Non-Class 1E Switchgear Buses, THEN perform the following: • IF the running breaker can NOT be tripped, THEN trip incoming breaker	
Standard:	Opened the incoming breaker, NAN-S02A, 13.8 KV BUS S02 SUPPLY	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM S5

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	8/12/2008	6	JPM created
1	11/8/2013	6	New JPM format
2	5/27/2015	6	Modified to transfer one bus instead of two
3	5/23/2017	6	Updated due to procedure revision
4	12/13/2023	6	Modified for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- NAN-S02 is currently being powered from NAN-S04
- Start-Up Transformer NAN-X02 has been experiencing intermittent high temperature alarms
- No EDGs in any unit are in parallel with offsite power

INITIATING CUE:

- The CRS directs you to transfer NAN-S02 to the Unit Aux Transformer, MAN-X02, per 40OP-9NA03, 13.8kV Electrical System, Section 6.13, Transferring NAN-S02 Bus to the Unit Auxiliary Transformer
- Steps 6.13.1 through 6.13.5 have been completed
- Start on Step 6.13.6

EXAMINEE

JPM

S6

2024 PVNGS NRC Initial Exam JPM S6

JPM INFORMATION

TASK:	L142128 – Respond to an event requiring entry into the Inadvertent PPS-ESFAS Actuations AOP					
TASK STANDARD:	The applicant selected and confirmed SG Blowdown Isolated on BOTH SGs for BOTH the PC and CMC. The applicant's actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	015 A4.02	RATING:	RO:	3.6	SRO:	3.6
POSITION(S):	RO / SRO	VALIDATION TIME:	10 minutes			
REFERENCES:	40OP-9SG03, Operating the Steam Generator Blowdown System					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

2024 PVNGS NRC Initial Exam JPM S6

SIMULATOR SETUP:

- IC: 20 (or IC-601)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
mfRP06C1	Train 'A' SIAS Leg 1-3 Fuse Blown

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert malfunction listed above
- Place all Charging Pumps in Pull to Lock
- Place LIC-110 in MANUAL and lower output to 0%
- Close CHB-HV-255, Seal Injection Isolation Valve
- Acknowledge alarms
- GO TO FREEZE

REQUIRED CONDITIONS:

- SG Blowdown isolated on both SGs

PROCEDURES/MATERIALS:

- 40OP-9SG03, Operating the Steam Generator Blowdown System, Appendices O and P

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- An inadvertent Train 'A' Leg 1-3 SIAS actuation occurred 10 minutes ago

INITIATING CUE:

- The CRS directs you to update SG Blowdown Constants for SG #1 and SG #2 in the CMC and PC per 40OP-9SG03, Operating the Steam Generator Blowdown System, Appendix O, Inserting Blowdown Constants with the CMC, and Appendix P, Inserting Blowdown Constants with the PC
- For the purposes of this JPM, concurrent verifications are NOT required

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

Examiner Note:	Since both SGs had blowdown isolated, the applicant will have to ensure that they update the blowdown constants for BOTH SGs on BOTH computer systems. Steps 1-4 will be performed twice, as will steps 6-9 for a sat performance of the JPM	
JPM Step: 1 * (App O, Step 1.1)	From the CMC Operations Menu: Select the desired Steam Generator Blowdown button	
Standard:	Clicked the SG 1(2) Blowdown Isolated button	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 * (App O, Step 1.2)	From the CMC Operations Menu: Select the set button for the desired blowdown flowpath	
Standard:	Clicked on the SET button for the previously selected flowpath	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 * (App O, Step 1.3)	From the CMC Operations Menu: WHEN the pop up window asks to confirm the selected flowpath, THEN select the appropriate response	
Standard:	Confirmed the selected flowpath	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S6

JPM Step: 4 (App O, Step 1.4)	From the CMC Operations Menu: • Check BOTH of the following: ○ The correct constant has been inserted in the center box ○ The selected blowdown path turns red	
Standard:	Checked that desired SG Blowdown Isolated has been inserted and that the selected flowpath turned red	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 5 (App O, Step 1.5)	From the CMC Operations Menu: • GO TO the previous step in the body of the procedure to record the verification signatures	
Standard:		
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 6 * (App P, Step 1.1)	From the PC Operations Menu: • Select the desired Steam Generator Blowdown button	
Standard:	Clicked the SG 1(2) Blowdown Isolated button	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 7 * (App P, Step 1.2)	From the PC Operations Menu: • Select the set button for the desired blowdown flowpath	
Standard:	Clicked on the SET button for the previously selected flowpath	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S6

JPM Step: 8 * (App P, Step 1.3)	From the PC Operations Menu: • WHEN the pop up window asks to confirm the selected flowpath, THEN select the appropriate response	
Standard:	Confirmed the selected flowpath	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 9 (App P, Step 1.4)	From the PC Operations Menu: • Check BOTH of the following: ○ The correct constant has been inserted in the center box ○ The selected blowdown path turns red	
Standard:	Checked that desired SG Blowdown Isolated has been inserted and that the selected flowpath turned red	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 10 (App P, Step 1.5)	From the PC Operations Menu: • GO TO the previous step in the body of the procedure to record the verification signatures	
Standard:		
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- An inadvertent Train 'A' Leg 1-3 SIAS actuation occurred 10 minutes ago

INITIATING CUE:

- The CRS directs you to update SG Blowdown Constants for SG #1 and SG #2 in the CMC and PC per 40OP-9SG03, Operating the Steam Generator Blowdown System, Appendix O, Inserting Blowdown Constants with the CMC, and Appendix P, Inserting Blowdown Constants with the PC
- For the purposes of this JPM, concurrent verifications are NOT required

EXAMINEE

JPM

S7

2024 PVNGS NRC Initial Exam JPM S7

JPM INFORMATION

TASK:	1250030401 – Respond to a loss of Nuclear Cooling Water					
TASK STANDARD:	The applicant started the ‘A’ Spray Pond Pump and ‘A’ Essential Cooling Water Pump, attempted to close NCN-UV-99, recognized that NCN-UV-99 did NOT go closed PRIOR TO opening either EWA-UV-145 or EWA-UV-65, then tripped the Reactor, stopped all four RCPs, and isolated controlled bleedoff within 11 minutes of the start of the JPM The applicant’s actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	008 A4.01	RATING:	RO:	3.7	SRO:	3.7
POSITION(S):	RO / SRO	VALIDATION TIME:	8 minutes			
REFERENCES:	40AO-9ZZ03, Loss of Cooling Water					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A

OPERATIONS APPROVAL: N/A

E-PLAN REVIEW: N/A

TRAINING APPROVAL: N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

SIMULATOR SETUP:

- IC: 20 (or IC-607)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
cmMVCC02NCNUV99_6 e:UV99 d:3	NCN-UV-99 Seized (Event Trigger UV99 will act to seize the valve 3 seconds after taking the handswitch to CLOSE so the valve will be stuck mid-position)
mfCC01A	86LO 'A' NC Pump
mfCC01B	86LO 'B' NC Pump

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert malfunctions listed above
- Acknowledge alarms
- GO TO FREEZE

REQUIRED CONDITIONS:

- Setup as described above

PROCEDURES/MATERIALS:

- 40AO-9ZZ03, Loss of Cooling Water

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- Both NC Pumps tripped 1 minute ago
- The CRS has entered 40AO-9ZZ03, Loss of Cooling Water

INITIATING CUE:

- The CRS directs you to cross-tie Train 'A' EW to NC per 40AO-9ZZ03, Loss of Cooling Water, Appendix A, Cross-Connect EW to NC
- **THIS IS A TIME CRITICAL JPM**

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 (Proc Step 1)	Enter Appendix Entry Time and Date	
Standard:	Entered appendix entry time and date	
Comments (required for UNSAT):		SAT UNSAT

Procedure Note:	Cross-connecting EW and NC renders the EW Train inoperable per LCO 3.7.7, Essential Cooling Water System. Refer to 40ST-9EC03 and 40DP-9OP37 for impacts on supported system operability. 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.	
JPM Step: 2 * (Proc Step 2)	IF cross-connecting Train A EW to NC, THEN ensure BOTH of the following pumps are operating: - Spray Pond Pump A - Essential Cooling Water Pump A	
Standard:	Started the 'A' Spray Pond Pump and the 'A' Essential Cooling Water Pump	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 (Proc Step 3)	If cross-connecting Train B EW...	
Standard:	Marked step N/A	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S7

JPM Step: 4 (Proc Step 4)	Ensure that both Nuclear Cooling Water pump handswitches are in PULL TO LOCK	
Standard:	Placed BOTH NC Pumps in PULL TO LOCK	
Comments (required for UNSAT):		SAT UNSAT

Procedure Note:	NCN-UV-99 must be fully closed before opening the EW cross-tie to NC valve in Step 6 or Step 7. If NCN-UV-99 is NOT fully closed, an uncontrollable transfer of water will occur between NC and EW	
Examiner Note:	UV-99 will seize mid-position and will not be able to be opened or closed fully following the seizure. The following steps are the alternate path portion of the JPM:	
JPM Step: 5 * (Proc Step 5)	Close NCN-UV-99, Nuclear Cooling Water Containment Header Return Valve	
Standard:	Took NCN-UV-99 handswitch to CLOSE and recognized that NCN-UV-99 did NOT go fully closed PRIOR TO opening either EWA-UV-145 or EWA-UV-65	
Examiner Note:	If the applicant fails to recognize that NCN-UV-99 failed to fully close, they will continue with the cross-tie evolution. The steps for the cross-tie are JPM steps 6-8. If the applicant DOES recognize that NCN-UV-99 failed to fully close, they should take contingency actions from the AOP. The contingency actions are JPM steps 9-11.	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 6 (Proc Step 6)	If cross-connecting Train A EW to NC, THEN open BOTH of the following valves: • Ensure that NO more than one Normal Chiller NC outlet valve is open	
Standard:	Placed ONE of the Normal Chiller handswitches to STOP	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S7

JPM Step: 7 (Proc Step 6)	If cross-connecting Train A EW to NC, THEN open BOTH of the following valves: - EWA-UV-145, Cross-Tie Valve to Nuclear Cooling Water - EWA-UV-65, Cross-Tie Valve to Nuclear Cooling Water	
Standard:	Opened cross-tie valves EWA-UV-145 and EWA-UV-65	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 8 (Proc Step 8)	IF cross-connecting Train A EW to NC, THEN direct an operator to unlock and throttle closed EWA-HCV-53, SDCHX A OUTLET ISOLATION, until ONE of the following conditions exists: - All of the RCP low NC flow alarms are clear - EW system flow lowers to 8500 gpm on EWN-FI-13	
Standard:	Directed the area operator to throttle closed on EWA-HCV-53 until the RCP LO NC FLOW alarms are clear on B04	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 9 * (Main Body Step 3.a)	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: Ensure the reactor is tripped	
Standard:	Manually tripped the reactor	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S7

JPM Step: 10 * (Main Body Step 3.b)	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: • Stop all four RCPs	
Standard:	Stopped all four RCPs	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 11 * (Main Body Step 3.c)	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: • Isolate controlled bleedoff	
Standard:	Isolated controlled bleedoff by closing RCN-HS-430, 431, 432, and 433	
Examiner Note:	This step must be completed within 11 minutes of the start of the JPM to meet the time critical aspect of the JPM	
Examiner Cue:	When bleedoff has been isolated from all four RCPs: “This JPM is complete”	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	5/24/2017	6	JPM created
1	12/13/2023	6	JPM modified for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- Both NC Pumps tripped 1 minute ago
- The CRS has entered 40AO-9ZZ03, Loss of Cooling Water

INITIATING CUE:

- The CRS directs you to cross-tie Train 'A' EW to NC per 40AO-9ZZ03, Loss of Cooling Water, Appendix A, Cross-Connect EW to NC
- **THIS IS A TIME CRITICAL JPM**

EXAMINEE

JPM

S8

2024 PVNGS NRC Initial Exam JPM S8

JPM INFORMATION

TASK:	L499451 – Respond to an event requiring entry into the Toxic Gas AOP					
TASK STANDARD:	The applicant manually actuated ‘A’ and ‘B’ CRVIAS, and ensured ALL Train ‘A’ CRVIAS actuated components are in their actuated state The applicant’s actions did not degrade the condition of the plant beyond that introduced by the JPM as developed.					
K/A:	050 A4.01	RATING:	RO:	3.8	SRO:	3.8
POSITION(S):	RO / SRO	VALIDATION TIME:	10 minutes			
REFERENCES:	40AO-9ZZ26, Toxic Gas					
LOCATION:	SIMULATOR	X	PLANT		CLASSROOM	

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

APPROVALS

DEVELOPED/REVISED BY: John Rodgers **DATE:** 12/13/2023

VALIDATED BY: John Rodgers **DATE:** 12/18/2023

TECH REVIEW: N/A **OPERATIONS APPROVAL:** N/A

E-PLAN REVIEW: N/A **TRAINING APPROVAL:** N/A

Only required for E-Plan JPMs

EVALUATION

EXAMINEE: _____ **DATE:** _____

EVALUATOR: _____ **GRADE (circle):** SAT / UNSAT*

START: _____ **STOP:** _____ **TOTAL TIME:** _____ minutes

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

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.

2024 PVNGS NRC Initial Exam JPM S8

SIMULATOR SETUP:

- IC: 20 (or IC-608)
- SIMULATOR SCENARIO FILES, MALFUNCTIONS, REMOTE FUNCTIONS, ETC. FOR SETUP:

COMMAND	DESCRIPTION
cmSRRP15BRAK206_2	'A' CRVIAS Relay K-206 Fails As-Is

INSTRUCTIONS FOR SETUP:

- Reset to IC-20
- GO TO RUN
- Insert malfunction listed above
- GO TO FREEZE

REQUIRED CONDITIONS:

- Malfunction inserted

PROCEDURES/MATERIALS:

- 40AO-9ZZ26, Toxic Gas

INFORMATION PRESENTED TO EXAMINEE:

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.

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- A toxic gas spill has occurred which has the potential to impact the Control Room
- The CRS has entered 40AO-9ZZ26, Toxic Gas

INITIATING CUE:

- The CRS directs you to perform 40AO-9ZZ26, Toxic Gas, Appendix A, Manually Initiating CRVIAS

INFORMATION FOR EVALUATOR USE:

- An **asterisk (*)** denotes a Critical Step. Failure of a Critical Step will result in an **UNSAT** evaluation.
- 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.

JPM START TIME:

JPM Step: 1 (Proc Step 1)	Enter Appendix Entry Time and Date	
Standard:	Entered appendix entry time and date	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 2 * (Proc Step 2)	Manually initiate CRVIAS using BOTH of the following (B05): - SAA-HS-31, CRVIAS ACTUATION - SAB-HS-32, CRVIAS ACTUATION	
Standard:	Manually initiated CRVIAS by placing BOTH CRVIAS ACTUATION handswitches to the CRVIAS INITIATE position	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 3 (Proc Step 3)	Check all of the equipment in the following table is in the Actuated Condition: CTA-HS-15, Condensate Transfer Pump A – START	
Standard:	Verified the 'A' Condensate Transfer Pump is running	
Comments (required for UNSAT):		SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S8

JPM Step: 4 * (Proc Step 3 and 3.1)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-36, Cont Rm Ess AHU A OSA Intake Damper M02 – CLOSED
Standard:	Determined that the 'B' CR Ess AHU Intake Damper M02 failed to auto close and closed the AHU Intake Damper M02 by placing handswitch HJA-HS-26 to CLOSE
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 5 * (Proc Step 3 and 3.1)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-37, Cont Rm Ess AHU B OSA Intake Damper M03 – CLOSED
Standard:	Determined that the 'B' CR Ess AHU Intake Damper M02 failed to auto close and closed AHU Intake Damper M03 by placing handswitch HJA-HS-37 to CLOSE
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 6 * (Proc Step 3 and 3.1)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-10, Comm Eqpt Room Isol Dampers M58/M59 - CLOSED
Standard:	Determined that the Comm Equipment Room Isolation Dampers M58/M59 failed to auto close and closed Comm Equip Room Dampers M58/M59 by placing handswitch HJA-HS-10 to CLOSE
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S8

JPM Step: 7 (Proc Step 3)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-39, Cont Room Smoke Isol Dampers M56/M57 – CLOSED
Standard:	Verified Control Room Smoke Isolation Dampers M56/M57 are closed
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 8 * (Proc Step 3 and 3.1)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-41, CR Kitchen/Toilet Exh Fan Isol Dmprs M15/M16 - CLOSED
Standard:	Determined that the CR Kitchen/Toilet Exh Fan Isol Dampers M15/M16 failed to auto close and closed CR Kitchen/Toilet Exh Fan Isol Dampers M15/M16 by placing handswitch HJA-HS-41 to CLOSE
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 9 * (Proc Step 3 and 3.1)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-7, Cont Rm Norm AHU Isol Dmprs M01/M52 – CLOSED
Standard:	Determined that the Control Room Normal AHU Isol Dampers M01/M52 failed to auto close and closed the Control Room Normal AHU Isol Dampers M01/M52 by placing handswitch HJA-HS-7 to CLOSE
Comments (required for UNSAT):	SAT UNSAT

JPM Step: 10 (Proc Step 3)	Check all of the equipment in the following table is in the Actuated Condition: HJA-HS-28, CR Essential AHU Fan A F04 – START
Standard:	Verified CR Essential AHU Fan A F04 is running
Comments (required for UNSAT):	SAT UNSAT

2024 PVNGS NRC Initial Exam JPM S8

JPM Step: 11 (Proc Step 3)	Check all of the equipment in the following table is in the Actuated Condition: EWA-HA-1, Essential Cooling Water Pump A – START	
Standard:	Verified Essential Cooling Water Pump A is running	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 12 *	Check all of the equipment in the following table is in the Actuated Condition: SPA-HS-1, Essential Spray Pond Pump A – START	
Standard:	Verified Essential Spray Pond Pump A is running	
Comments (required for UNSAT):		SAT UNSAT

JPM Step: 13 *	Check all of the equipment in the following table is in the Actuated Condition: ECA-HS-1A, Essential Chiller A – START	
Standard:	Verified Essential Chiller A is running	
Examiner Cue:	When the ‘A’ Essential Chiller has been verified to be running: “Another operator will verify Train ‘B’ equipment actuated. This JPM is complete”	
Comments (required for UNSAT):		SAT UNSAT

JPM STOP TIME:

2024 PVNGS NRC Initial Exam JPM S8

RECORD OF REVISIONS

REVISION #	REVISION DATE	REASON	COMMENTS
0	2/12/2019	6	JPM created
1	12/13/2023	6	JPM updated for use on 2024 NRC Exam

REASON REVISED Enter the numbers corresponding to the reason revised in the Reason Revised column and brief description of changes in Comments Column. Comments are to be numbered consecutively in each revision.

1. Vendor reference document upgrade
2. Plant modification (include number)
3. Procedure upgrade
4. Internal or External Agency Commitment (indicate item number)
5. Technical Specification Change (indicate amendment number)
6. Other (explain in comments)

EXAMINEE

INITIAL CONDITIONS:

- Unit 1 is operating at 100% power
- A toxic gas spill has occurred which has the potential to impact the Control Room
- The CRS has entered 40AO-9ZZ26, Toxic Gas

INITIATING CUE:

- The CRS directs you to perform 40AO-9ZZ26, Toxic Gas, Appendix A, Manually Initiating CRVIAS

EXAMINEE

Facility: PVNGS Scenario: 1 Test: 2024 NRC Exam

Examiners:

Operators:

Initial Conditions: 100% power, MOC

Turnover: Shift from 'B' EHC Pump to 'A' EHC Pump per 40OP-9CO01, Electro-Hydraulic Control System, Section 6.7, Shifting from Hydraulic Fluid Pump B to Hydraulic Fluid Pump A

Event Number	Event Type*			Event Description
	CRS	OATC	BOP	
1	N		N	Shift running EHC Pumps
2	I	I, MC		RCP 1A Seal Injection Flow Controller, CHN-FIC-241, Output Fails High (30 second ramp)
3	C		C, MC	'A' Condenser Air Removal Pump Trip, 'D' FTAS
4	I, TS	I, MC		Pressurizer Pressure Transmitter PT-100X Fails Low / Class Pressurizer Heater Trip
5	I	I	I	RRS Thot Transmitter, TT-121X, Fails Low
6	C, TS			'D' Battery Charger Trip
7	C		C	Degraded Main Condenser Vacuum (complete loss)
8	C	C		Stuck CEAs on Reactor Trip / CHN-FIC-210Y, Boric Acid Flow Controller, output fails low on trip
9	M	M	M	Loss of PKA-M41 / AFA-P01 Overspeed / AFB-P01 Sheared Shaft (Loss of All Feedwater)
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control				

Actual	Target Quantitative Attributes
5	Malfunctions after EOP entry (1-2)
5	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
0	Entry into a contingency EOP with substantive actions (1 per scenario set)
2	Pre-identified CTs (2 or more)

2024 NRC Exam Scenario #1 Overview	
Event 1	Upon taking the shift, the crew will shift from 'B' EHC Pump running to 'A' EHC Pump running per 40OP-9CO01, Electro-Hydraulic Control System, Section 6.7, Shifting from Hydraulic Fluid Pump B to Hydraulic Fluid Pump B.
Event 2	After the pump shift is complete, output on CHN-FIC-241, RCP 1A Seal Injection Flow Controller, will fail high (30 second ramp). The OATC will address the ARP and take manual control of the Seal Injection Flow Controller to return seal injection flow to RCP 1A back to the normal control band.
Event 3	When seal injection flow has been restored, the 'A' Condenser Air Removal Pump will trip. The BOP will address the ARP and will manually start the 'D' Condenser Air Removal Pump.
Event 4	When the 'D' Air Removal Pump has been started, the controlling Pressurizer pressure control channel, PT-100X, will fail low. 15 seconds after the failure, the Train 'A' Class Pressurizer Heater bank supply breaker will trip. The OATC will address the ARP and select the unaffected pressure control channel to restore Pressurizer pressure. The CRS will address Technical Specifications due to the loss of the required heater bank.
Event 5	After control of Pressurizer pressure has been restored and the CRS has addressed Technical Specifications, Loop 2 Thot transmitter, TT-121X, will fail low. The CRS will enter 40AO-9ZZ16, RRS Malfunctions, and direct the OATC to take manual control of Pressurizer Level Control, and direct the BOP to determine the failed channel and select the unaffected Loop Tave at the RRS Cabinet.
Event 6	When the crew has selected the unaffected Tavg channel on the RRS cabinet, the 'D' Battery Charger will trip. The CRS will address Technical Specifications for the loss of the battery charger.
Event 7	When the CRS has addressed Technical Specifications, the 'A' Shell of the Main Condenser will develop an air leak. The CRS will enter 40AO-9ZZ07, Loss of Condenser Vacuum, and the crew will dispatch AOs to look for the source of the air in-leakage. The BOP will ensure all Air Removal Pumps are running and align to all condenser shells. The CRS will likely direct a Turbine load reduction, however the loss of vacuum will be unrecoverable and a Reactor trip will be required regardless of the initial decision by the CRS.
Event 8	On the Reactor trip, two full strength CEAs will fail to insert, requiring the OATC to commence an emergency boration per Appendix 103, RCS Makeup / Emergency Boration. Boric Acid Flow Controller, FIC-210Y, output will fail low on the trip requiring the OATC to establish the boration lineup via an alternate path, most likely using CHN-HV-536 per Appendix 103, Attachment 103-D.

Event 9	A loss of Train 'A' Class 125 VDC Control Power Bus, PKA-M41, will also occur on the Reactor trip. This will require the crew to shift control power for the (soon to be) only available feed pump in order to restore feed (AFN-P01 will be the only available feed pump). Turbine-driven AFW Pump AFA-P01 cannot be started from the Control Room due to the loss of PKA-M41. If the crew attempts to start the pump locally, it will trip on overspeed. The CRS will transition to 40EP-9EO06, Loss of All Feedwater, following SPTAs, and direct the crew to pursue feed restoration paths. The CRS will likely pursue restoration of AFN-P01 first, either by transferring control power, or if the crew feels uncertain about the status of the 'A' Battery Charger following the loss of PKA-M41, they may opt to locally close the feeder breaker for AFN-P01. Both of these paths are contained in Appendix 41, Local Operation of AFN-P01. In this appendix, an AO will be dispatched to transfer control power for AFN-P01 to the alternate source, and the BOP will be able to start the pump and restore feed (or the AO will be directed to close the breaker locally and the BOP will align feed from the Control Room). The crew may also attempt to use turbine-drive AFW Pump, AFA-P01, although this is less likely and would ultimately be unsuccessful. When feed has been restored, the scenario may be terminated.

Critical Task # 1: Commence borating to the RCS at a rate of ≥ 26 gpm within 15 minutes of the Reactor trip due to less than all full-strength CEAs being fully inserted

Safety Significance: Per the Time Critical Action Program, commence emergency boration (MODES 3 – 5) within 15 minutes due to minimum shutdown margin less than limit in COLR. With less than all full strength CEAs fully inserted, the SDM is assumed to be less than minimum required. Justification for the 15 minutes is from 40DP-9ZZ04, Time Critical Action Program. Justification for the 26 gpm limit is from Technical Specification Bases for LCO 3.1.1, SDM – Reactor Trip Breakers Open.

Initiating Cue: The crew will have indication of the stuck CEAs from the Rod Bottom Light for the CEA failing to illuminate on the trip as well as the CPDS (CEA Position Display System) indicating two CEAs failed to insert on the reactor trip. Step 2.c of SPTAs directs performing an emergency boration if less than all CEAs fully insert into the core.

Performance Feedback: When the crew has aligned a boration flowpath and has at least one Charging Pump running, confirmation that the boration is in progress can be seen using the CVCS System Diagram on any ERFDADS display, as well as monitoring a trend in RWT level (should be slowly lowering as water is pumped into the RCS).

Success Path: The success path for a post-trip emergency boration is using Appendix 103, RCS Makeup / Emergency Boration. In this case, the crew will likely perform Attachment 103-D, CHE-HV-536 / RWT > 73% / No PC Cleanup.

Measurable Performance Standard: The OATC will commence a boration by performing the following:

- Ensure CHE-HV-532 is OPEN
- Ensure at least one Charging Pump is running
- Place CHN-HS-527 in CLOSE
- Ensure CHN-FIC-210X is in MANUAL with 0% output
- Place CHN-HS-210 in MANUAL
- Open CHE-HV-536
- Close CHN-UV-501

Critical Task # 2: Operate Auxiliary Spray, ADVs, and/or SBCS as needed, and restore feedwater to at least one SG to prevent lifting a Primary Safety Valve

Safety Significance: If operator action is not taken to restore the loss of the RCS Heat Removal safety function, the RCS will heat up and pressure will rise until a primary safety valve lifts, essentially creating a self-imposed LOCA and challenging RCS inventory control to compound the loss of heat removal.

Initiating Cue: The crew will have indication of a loss of Main Feedwater when both MFP trip lights are light (due to the loss of Main Condenser vacuum), then they will have indication of no discharge pressure from AFB-P01 and lower than normal amperage when started (sheared shaft), the AFA-P01 overspeed light will illuminate when it trips on overspeed, and no control power will be (initially) available to AFN-P01 due to the loss of PKA-M41 (alarm on B01). Procedurally, SPTAs directs restoration of maintenance of SG level at 45-60% NR, and 40EP-9EO06, Loss of All Feedwater, directs restoration of feedwater using an applicable appendix, in this case, Appendix 41, Local Operation of AFN-P01.

Performance Feedback:**IF THE CREW ALIGNS ALTERNATE CONTROL POWER:**

- When the crew has restored control power to AFN-P01, the green and red breaker indicating lights will be on (as appropriate) in the Control Room, and when feed has been aligned to at least one SG, feed flow can be read on any ERFDADS terminal in the Control Room. Verification that a Primary Safety Valve did NOT lift during the recovery can be verified by viewing a Primary Safety Valve position trend on any ERFDADS terminal.

IF THE CREW CLOSES THE AFN-P01 BREAKER LOCALLY:

- When the AO closes the breaker for AFN-P01, the green breaker indicating light will be on (as appropriate) in the Control Room, and when feed has been aligned to at least one SG, feed flow can be read on any ERFDADS terminal in the Control Room. Verification that a Primary Safety Valve did NOT lift during the recovery can be verified by viewing a Primary Safety Valve position trend on any ERFDADS terminal.

Success Path: The success path for restoring feed per Appendix 41, Local Operation of AFN-P01 will be to open suction valves CTA-HV-1 and CTA-HV-4 from the Control Room, then dispatching an AO to transfer control power to the alternate source and starting AFN-P01 from the Control Room, or to have the AO start AFN-P01 from the field by locally closing the breaker. Once AFN-P01 is started, the BOP will open at least one Downcomer Control Valve to commence feeding at least one SG.

Measurable Performance Standard: Successful completion of this Critical Task can be confirmed by restoring feed to at least one SG prior to a Primary Safety Valve lifting. This may be accomplished by using any combination of Auxiliary Spray, ADVs, SBCS, and ultimately the restoration of feedwater to at least one SG.

NOTE: (Per NUREG-1021) If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a Critical Task identified in the post-scenario review

Form 3-3.1

Driver Set-Up Instructions
NRC Exam Scenario #1

Driver Setup Instructions	
	Reset to IC-611
	Run scenario file "2024 NRC Scn #1"

Scenario File

IMF mfRD03D

IMF mfRD03F

IMF mfED16A e:RPSCHC d:5

IMF cmCNCV08CHNFIC210Y_1 e:rpschc r:1 f:0.0

IMF cmCPFW07AFBP01_1

IMF cmCNCV04CHNFIC241_2 k:2 r:30 f:100.0

IMF cmDPMC03ARNP01D_5 k:3

IMF cmDPMC03ARNP01A_6 k:3 d:5

IMF cmTRRC03RCNPT100X_1 k:4 r:1 i:2247.89 f:1500

IMF cmBKRC09RCEB01_6 k:4 d:20

IMF cmTRRX05RCNTT121X_1 k:5 r:1 i:616.151 f:500

IMF mfED15D k:6

IMF mfMC01A k:7 r:60 f:1.8

IMF cmAVMC01CDNHV45A_1 k:17

IRF rfFW60A k:21 f:0

IRF crMVMS13SGAUV134_9 k:22 f:100

IRF crMVMS13SGAUV138_9 k:23 f:100

IMF mfFW22 k:9

IRF crB2FW07AFNP01_3 k:32 f:CLOSE

IRF rfFW91 k:31 f:ALT

Plant Conditions:

- Unit 1 is operating at 100% power, MOC

Equipment Out of Service:

- None

Planned Shift Activities:

- Shift from 'B' EHC Pump to 'A' EHC Pump per 40OP-9CO01, Electro-Hydraulic Control System, Section 6.7, Shifting from Hydraulic Fluid Pump B to Hydraulic Fluid Pump A
- Turbine Lower Level is standing by at the EHC Pumps and the area is clear of other personnel

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	1	Page 9 of 22
Event Description:	Shift from 'B' to 'A' EHC Pump Running					
Time	Position	Step	Applicant Actions			

Examiner Note: The following steps are from 40OP-9CO01, Electro-Hydraulic Control System, Section 6.7, Shifting From Hydraulic Fluid Pump B to Hydraulic Fluid Pump A			
Driver Cue: If TBLL called to verify a good start of EHC Pump A, report that you have a good start locally			
	BOP	6.7.1	Ensure EHC System is in operation with Hydraulic Fluid Pump B operating Hydraulic Fluid Pump A in standby
Procedure Caution: If EHC fluid pressure drops to 1100 psig, Main Turbine will trip			
	BOP	6.7.2	Take handswitch CON-HS-4, HYDRAULIC FLUID PUMP A P01A, to START
	BOP	6.7.3	Check ALL of the following for Hydraulic Fluid Pump A: - Red START light at CON-HS-4, HYDRAULIC FLUID PUMP A P01A, is on - Motor amps are less than 219 amps - Pump discharge pressure is between 1500 psig and 1750 psig, as indicated on CON-PI-007, A CO Pump Local Disch Press Indicator
	BOP	6.7.4.A 6.7.4.B	Perform the following for Hydraulic Fluid Pump B: - Take handswitch CON-HS-5, HYDRAULIC FLUID PUMP B P01B, to STOP - Check CON-HS-5, HYDRAULIC FLUID PUMP B P01B, green STOP light is on
Examiner Note: When the 'B' EHC Pump has been stopped, or at lead evaluator's discretion, proceed to Event 2, Seal Injection Flow Controller, CHN-FIC-241, Output Fails High			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	2	Page 10 of 22
Event Description:	RCP 1A Seal Injection Flow Controller, CHN-FIC-241, Output Fails High in Auto					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 2, CHN-FIC-241, Output Fails High In Auto			
Indications Available: • 3A11B RCP SEAL INJ FLOW HI-HI OR LO • 3A11A RCP SEAL SYS TRBL • Output on CHN-FIC-241 at 100%			
Driver Cue: If AO is asked to check filter DP, wait 30 seconds and inform them that filter DP is normal			
Examiner Note: 100% output on the controller closes the associated flow control valve			
The following steps are from B03 ARP, Window 3A11B:			
	OATC	1	Check ALL of the following flow controllers: • CHN-FIC-241, Seal Inj to Reac Clt Pmp 1A • CHN-FIC-242, Seal Inj to Reac Clt Pmp 1B • CHN-FIC-243, Seal Inj to Reac Clt Pmp 2A • CHN-FIC-244, Seal Inj to Reac Clt Pmp 2B
		2	IF BOTH of the following: (No reason for the CRS to direct this) • SM/CRS directs • Power is available to CHB-HV-0255, Seal Injection Containment Isolation THEN close CHB-HV-0255, Seal Injection Containment Isolation, using CHB-HS-255, RCP SEAL INJ SPLY HDR ISOL VLV
	OATC	5.1 5.2	Perform the following for the alarming seal injection controller: • Place the alarming seal injection controller in MANUAL • Adjust the alarming seal injection controller to establish seal injection flow between 6 gpm and 7.5 gpm (preferred flow of 6.6 gpm)
Examiner Note: When CHN-FIC-241 has been placed in MANUAL and flow has been restored, or at lead evaluator’s discretion, proceed to Event 3, ‘A’ Condenser Air Removal Pump Trip / ‘D’ Fails to Auto Start			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	3	Page 11 of 22
Event Description:	'A' Condenser Air Removal Pump Trips / 'D' Condenser Air Removal Pump Fails to Auto Start					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 3, 'A' Condenser Air Removal Pump Trip / 'D' Fails to Auto Start

Driver Cue: When AO is dispatched to investigate the trip, wait 1 minute and report:

"The breaker for the 'A' Air Removal Pump, NGN-L02C4, is open with an 86 lockout trip"

If AO is asked about a "good start" on 'D' Air Removal Pump, report that you have a good start

Indications Available:

- 7A01A AIR REM SYS TRBL
- Green STOP light lit on 'A' Air Removal Pump handswitch

Examiner Note: The following steps are from B07 ARP, Window 7A01A:

	BOP	1	Determine the affected Air Removal Pump using ALL of the hand switch indicator lights on panel B07: • ARN-HS-25, Cond Air Removal Pmp A • ARN-HS-26, Cond Air Removal Pmp B • ARN-HS-27, Cond Air Removal Pmp C • ARN-HS-28, Cond Air Removal Pmp D
	BOP	2	IF ANY of the following conditions exist: • ARN-P01A, A Air Removal Vacuum Pump, is stopped • ARN-P01B, B Air Removal Vacuum Pump, is stopped • ARN-P01C, C Air Removal Vacuum Pump, is stopped THEN perform the following: • Ensure AFN-P01D, D Air Removal Vacuum Pump, is running
	BOP	2.1	
	BOP	2.2	Open ONE Condenser suction valve as directed by SM/CRS: • ARN-UV-014, using ARN-HS-014, Cond A Air Removal Suction Vlv • ARN-UV-015, using ARN-HS-015, Cond B Air Removal Suction Vlv • ARN-UV-016, using ARN-HS-016, Cond C Air Removal Suction Vlv
	BOP	3	Direct an Auxiliary Operator to investigate the cause of the trip

Examiner Note: When the 'D' Condenser Air Removal Pump has been started and a condenser suction valve has been opened, or at lead evaluator's discretion, proceed to Event 4, PT-100X Fails Low / Class Pressurizer Heater Trip

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	4	Page 12 of 22
Event Description:	Pressurizer Pressure Transmitter, PT-100X, Fails Low / Class Backup Heater Trip					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 4, PT-100X Fails Low / Class BU Heater Trip			
Indications Available: • 4A01B PZR PRESS HI-LO • 4A01A PZR TRBL • All Pressurizer heaters energized			
Examiner Note: Although the transmitter has failed low, the OATC should refer to PZR PRESS HI since actual pressure is rising			
The following steps are from B04 ARP, Window 4A01B:			
	OATC	2	Check BOTH of the following: • RCN-PR-100, L) Pressure PT-100X • RCN-PR-100, R) Pressure PT-100Y
	OATC	3	IF ONE of the following controlling channels is failed: • 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 unaffected channel
	OATC	9	IF ANY of the following Pressurizer proportional heater handswitches indicate that the breaker is open: • 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: • RCN-HS-100-1, Proportional Heaters Bank • RCN-HS-100-2, Proportional Heaters Bank
Technical Specifications: (due to the ‘A’ Class Backup Heater trip ~ 20 seconds after the transmitter failure) • LCO 3.4.9, Pressurizer, Condition B ○ Restore required group of pressurizer heaters to OPERABLE status within 72 hours			
Examiner Note: When RCN-HS-100 has been selected to Channel Y, Proportional Heaters have been reset, and the CRS has addressed Technical Specification, or at lead evaluator’s discretion, proceed to Event 5, TT-121X Fails Low			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	5	Page 13 of 22
Event Description:	TT-121X Fails Low					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 5, TT-121X Fails Low			
Indications Available: • 4A08B T AVG – T REF HI-LO • 4A01A PZR TRBL • 4A10B AMI (AUTOMATIC MOTION INHIBIT)			
Examiner Note: The following steps are from 40AO-9ZZ16, RRS Malfunctions:			
	OATC	2	Ensure that CEDMCS is NOT in Auto Sequential
	OATC	3.1.a 3.1.b 3.1.c 3.1.d 3.1.e	Check that pressurizer level is trending to the proper setpoint for reactor power Contingency Actions: • IF RCN-LIC-110, Pressurizer Level Control, is in Remote Auto, THEN transfer RCN-LIC-110 to MANUAL • Ensure RCN-LIC-110 is in ONE of the following: ○ Local Auto ○ Manual • Maintain pressurizer level 33 to 53% • Ensure adequate charging flow for present plant conditions • IF letdown isolates, THEN PERFORM 40AO-9ZZ05, Loss of Charging or Letdown
	OATC	4	Determine the failed instrument by observing ALL of the following: • RCN-TT-111Y • RCN-TT-121Y • RCN-TT-111X • RCN-TT-121X • RCN-TR-100
	BOP	5	If BOTH of the following: • ALL of the following are NOT identified as failed instruments: ○ RCN-TT-111Y ○ RCN-TT-121Y ○ RCN-TT-111X ○ RCN-TT-121X • RCN-TR-100 indicates a failed instrument in the Tav_g circuit THEN perform Attachment C-2, Determining the Failed Tav _g Instrument
Examiner Note: The following steps are from Attachment C-2:			
	BOP	2	Press the TEST PROBE pushbutton
	BOP	3	Check the DVM voltage indicates zero volts
	BOP	4	Press the DVM pushbutton that corresponds to Tav _{g1}
	BOP	5	Record the indicated voltage
	BOP	6	Press the TEST PROBE pushbutton
	BOP	7	Check that DVM voltage indicates zero volts
	BOP	8	Press the DVM pushbutton that corresponds to Tav _{g2}
	BOP	9	Record the indicated voltage

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	5	Page 14 of 22
Event Description:	TT-121X Fails Low					
Time	Position	Step	Applicant Actions			

	BOP	10	Press the TEST PROBE pushbutton
	BOP	11	Check that DVM voltage indicates zero volts
	BOP	12	Press the DVM pushbutton that corresponds to average Tav _g
	BOP	13	Record the indicated voltage
	BOP	14	Press the TEST PROBE pushbutton
	BOP	15	Check that DVM voltage indicates zero volts
	BOP	16	Record the indicated voltage
	BOP	17	Determine the failed instrument based on recorded voltages
	BOP	18	Notify the SM/CRS of the failed instrument

Examiner Note: The following steps are the continuation of the main body:

	CRS	6	Determine the impact of the failure
	OATC		IF RRS is selected to ONE of the following: • Average • The affected instrument THEN perform the following: 7.a • IF RCN-LIC-110 is in Remote Auto, THEN transfer RCN-LIC-110 to MANUAL 7.b • Ensure RCN-LIC-110 is in ONE of the following: ○ Local Auto ○ Manual 7.c • Perform Appendix C, Operation of the Reactor Regulating System, to select the unaffected instrument at the RRS Test Panel

Examiner Note: The following steps are from Appendix C:

	BOP		IF a temperature instrument has failed, THEN perform the following: 1.b • Press the TEST PROBE pushbutton 1.c • Check that DVM voltage indicates zero volts 1.d • Press the DVM pushbutton that corresponds to the Tav_g to be selected 1.e • Record voltage indicated on the DVM for the selected Tav_g 1.f • Check that DVM voltage recorded represents the normal Tav_g for the current power level 1.g • WHEN evaluation of DVM voltage is complete, THEN press the TEST PROBE pushbutton to disconnect the DVM from the input 1.h • Place the Tav_g input selector switch to the selected input 1.i • Inform the CRS of the status of the RRS panel

Examiner Note: The following steps are the continuation of the main body:

	OATC	8	Check that Tav _g /Tref mismatch is 3°F or less
	OATC	9	Place CEDMCS in the desired mode of operation

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	5	Page 15 of 22
Event Description:	TT-121X Fails Low					
Time	Position	Step	Applicant Actions			

	OATC		IF Remote Automatic operation of the PLCS is desired, THEN perform the following:
		10.a	• Ensure RCN-LIC-110, Pressurizer Level Control, is in MANUAL
		10.b	• Transfer RCN-LIC-110, Pressurizer Level Control, to Remote Automatic
Examiner Note: When the crew has selected the unaffected Tavg at the RRS cabinet, returned PLCS to Remote/Auto, and returned CEDMCS to AUTO SEQUENTIAL, or at lead evaluator's discretion, proceed to Event 6, 'D' Battery Charger Trip			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	1	Event #	6	Page 16 of 22
Event Description:	'D' Battery Charger Trip					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 6, ‘D’ Battery Charger Trip			
Indications Available: • 1A05C 125V 1E CC M44 CHGR D PNL D24 TRBL • ‘D’ Class Battery Charger output 0 amps			
Examiner Note: The following steps are from B01A ARP Window 1A05C:			
Procedure Note: Battery Charger current is limited to less than 300 amps. Normal Bus voltage is 129 – 138 VDC			
	OATC	1	Confirm alarm by observing ALL of the following: • PKD-EI-M44, 125 VDC Bus D, voltmeter • PKD-II-M4404, Battery Charger D, ammeter • PKD-M3301, 125 VDC Relaying and Metering Cubicle, ground indication
	OATC	3	Direct an Auxiliary Operator to investigate for cause of alarm
Driver Cue: When an AO is dispatched to investigate, wait 2 minutes and report:			
“The ‘D’ Class Battery Charger input breaker is tripped”			
Procedure Note: Technical Specification LCO 3.8.4 Action A has a 2 hour time limit			
	CRS	4	IF BOTH of the following: • PKD-H14, Battery Charger D, is inoperable • PKD-H14, Battery Charger D, is required to satisfy LCO 3.8.5 THEN notify Electrical Maintenance to perform 32ST-9PK01, 31-Day Surveillance Test or Station Batteries, within 2 hours
Technical Specifications: • LCO 3.8.4, DC Sources – Operating, Condition A ○ Restore battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours AND verify battery float current ≤ 2 amps once per 12 hours AND restore battery charger to OPERABLE status within 72 hours or IAW RICT program			
Examiner Note: When the CRS has addressed Technical Specifications, or at lead evaluator’s discretion, proceed to Event 7, Degraded Condenser Vacuum			

Driver Action: When directed, INITIATE KEY 7, Degraded Main Condenser Vacuum			
Indications Available: • 6A16D COND VAC LO • Degrading Main Condenser Vacuum			
Driver Cue: When dispatched to look for sources of air in-leakage, acknowledge the direction but do not report back			
Examiner Note: The following steps are from 40AO-9ZZ07, Loss of Condenser Vacuum:			
	BOP	2	Check for ANY of the following possible causes of the loss of vacuum: • Loss of Cooling Tower Fans • Circ Water Pump trip
	BOP	3.a 3.c 3.d	Direct an operator to perform the following: • Ensure water seal on BOTH of the following: ○ Vacuum Breakers ○ Steam Packing Exhauster Condenser drain • Check for ANY of the following possible causes of the loss of vacuum: ○ Air in leakage at Condenser Expansion Joints ○ Air in leakage at Condenser Shells ○ Improper operation of the Air Removal Pumps ○ Improper operation of the Gland Seal Regulators ○ Condensate Demin valve misalignment to TDS sump ○ Clogged Circ Water Pump intake screens • IF leakage is suspected at any Condenser Expansion Joint(s), THEN establish water seal on the affected expansion joint(s) using any of the following: ○ 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
	BOP	4	Ensure that all available Air Removal Pumps are in operation and aligned to the affected condenser shells
	BOP	5	IF vacuum is degrading in one condenser shell, THEN place ALL of the following Air Removal Pump D Condenser Suction Valves in the OPEN position: • ARN-UV-14 • ARN-UV-15 • ARN-UV-16
Driver Action: When the 'D' Air Removal Pump is aligned to all three Condenser shells, INITIATE KEY 17, Complete Loss of Vacuum ('A' Vacuum Breaker Opens)			
Examiner Note: The vacuum breaker opening will result in a Main Turbine and Reactor trip. The following steps are from 40EP-9EO01, Standard Post Trip Actions:			
	BOP	2.a 2.b 2.c 2.c.1 2.d	Determine that Reactivity Control acceptance criteria are met: • Check that reactor power is dropping • Check that startup rate is negative • Check that full strength CEAs are inserted • (CA) Borate the RCS until adequate SDM is established using Appendix 103, RCS Makeup/Emergency Boration • Check that the Main Turbine is tripped

Examiner Note: The output on Boric Acid Flow Controller will fail to 0% requiring the OATC to re-initiate a boration via path other than the normal boration path (103-A). During validations, crews used 103-D. The following steps are from Appendix 103, RCS Makeup / Emergency Boration, Attachment 103-D:

	OATC	1	Ensure that CHE-HV-532, RWT to Boric Acid Makeup Pumps, is open
	OATC	2	Ensure at least one Charging Pump is running
	OATC	3	Place CHN-HS-527, VCT Bypass, in the CLOSE position
	OATC	4	Ensure CHN-FIC-210X, Reactor Makeup Water to VCT Flow Control, is in MANUAL with 0% output
	OATC	5	Place CHN-HS-210, Makeup Mode Select Switch, in MANUAL
	OATC	6	Ensure the BAMPs are stopped
	OATC	7	Open CHE-HV-536, RWT to Charging Pumps
	OATC	8	Close CHN-UV-501, Volume Control Tank Outlet
	OATC	9.a 9.b	IF one Charging Pump is running, AND the second pump will be started, THEN perform the following: • Ensure at least 20 seconds since last pump start or suction valve manipulation • Start the second Charging Pump
	OATC	10	Ensure at least one of the running Charging Pumps is operating with handswitch in AFTER START

Critical Task # 1: Commence borating to the RCS at a rate of ≥ 26 gpm within 15 minutes of the Reactor trip due to less than all full-strength CEAs being fully inserted

Measurable Performance Standard: The OATC will commence a boration by performing the following:

- Ensure CHE-HV-532 is OPEN
- Ensure at least one Charging Pump is running
- Place CHN-HS-527 in CLOSE
- Ensure CHN-FIC-210X is in MANUAL with 0% output
- Place CHN-HS-210 in MANUAL
- Open CHE-HV-536
- Close CHN-UV-501

Examiner Note: The following steps are the continuation of SPTAs:

	BOP	3.a 3.b	Determine the Maintenance of Vital Auxiliaries acceptance criteria are met: • Check 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: • All vital and non-vital AC buses are powered • All vital and non-vital DC buses are powered
	BOP	4.a 4.b 4.c	Determine that RCS Inventory Control acceptance criteria are met: • Check that pressurizer level meets BOTH of the following: • 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: • Seal injection • Nuclear Cooling Water

	BOP	5	Determine that RCS Pressure Control acceptance criteria are met: - Pressurizer pressure is 1837-2285 psia - Pressurizer pressure is trending as expected to 2225-2275 psia
	BOP	6	Determine that Core Heat Removal acceptance criteria is met: - At least one RCP is operating - Loop delta-T is less than 10°F - RCS is 24°F or more subcooled
	BOP	7.a 7.a.1 7.b 7.b.1.1 7.b.1.2 7.b.2.1 7.b.2.2 7.b.2.3 7.b.2.4 7.b.2.5 7.c	Determine that RCS Heat Removal acceptance criteria are met: - Check that at least one SG meets BOTH of the following: - Level is 35% WR or more - Feedwater is restoring or maintaining level 45-60% NR (CA) Restore and maintain level in at least one SG 45-60% NR - Check that Tc is 560-570°F (CA) IF Tc is greater than 570°F, THEN perform the following: - Ensure that feedwater is being restored to at least one SG - Restore Tc to 560-570°F using SBCS or ADVs (CA) IF Tc is less than 560°F, THEN perform the following: - Ensure feed flow is NOT excessive - Ensure SG Blowdown is isolated - Restore Tc to 560-570°F using SBCS or ADVs - IF MSIS has actuated AND the cooldown terminates, THEN stabilize Tc using ADVs - IF AFAS has actuated AND at least one SG level is 10% WR or more, THEN override and throttle Auxiliary Feedwater to maintain Tc 560-570°F - Check that SG pressure is 1140-1200 psia
	OATC	8.a 8.b	Determine that Containment Isolation acceptance criteria are met: - Check that containment pressure is less than 2.5 psig - Check BOTH of the following conditions: - No abnormal containment area activity - No abnormal steam plant activity
	OATC	9.a 9.b	Determine that Containment Temperature and Pressure Control acceptance criteria are met: - Check that containment temperature is less than 117°F - Check that containment pressure is less than 2.5 psig
	CRS	11	Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS should diagnose a Loss of All Feedwater event in progress and transition to 40EP-9EO06, Loss of All Feedwater. The following steps are from 40EP-9EO06:			
	CRS	1.a	Monitor SFSCs by performing the following: Check that the Safety Function Status Check acceptance criteria are satisfied
	CRS	1.b	Direct Chemistry to perform, 74DP-9ZZ05, Abnormal Occurrence Checklist
	CRS	2	Ensure the event is being classified
	CRS	3	Open the Placekeeper and enter the EOP Entry Time

	OATC	4	Stop all RCPs
	BOP	5.a 5.b	Conserve Steam Generator inventory by performing the following: • Close the Blowdown Containment Isolation Valves • Close the Steam Generator Sample Valves
	BOP	6	Restore feed to at least one Steam Generator using ANY of the following: AUXILARY FEEDWATER • 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 • Appendix 112: Manual Operation of AFA-P01 During a Security Event MAIN FEEDWATER • Appendix 43: Restarting MFPs
Examiner Note: The CRS may opt to pursue both Appendix 40, Local Operation of AFA-P01 and Appendix 41, Local Operation of AFN-P01. If Appendix 40 is performed, AFA-P01 will trip on overspeed when started, making AFN-P01 the clear success path to pursue.			
The following steps are from Appendix 40 (followed by the steps from Appendix 41):			
	BOP	1	Direct an operator to perform Attachment 40-A, Local Operation of AFA-P01
Examiner Note: The following steps are from Attachment 40-A, Local Operation of AFA-P01:			
NOTE: Steps 1-4 are field actions, then coordination between the AO and CR			
DRIVER ACTION: If directed to perform Attachment 40-A, wait 15 seconds and INITIATE KEY 21, then report that steps 1-5 of Attachment 40-A are complete			
		5	Inform the responsible operator that AFA-P01 is ready for local operation
		6	WHEN directed by the responsible operator, THEN open ANY of the Aux Feed Pump A Steam Supply Valves: • SGA-UV-134, SG #1 Steam Supply to AFA-P01 • SGA-UV-138, SG #2 Steam Supply to AFA-P01
DRIVER ACTION: • IF directed to open UV-134, INITIATE KEY 22 • IF directed to open UV-138, INITIATE KEY 23 Then report that the directed valve is open			
		7	WHEN directed by the responsible operator, THEN manually open the appropriate valves: SG 1 • AFC-UV-36, AFA-P01 Feed Isolation Valve to SG #1 • AFA-HV-32, AFA-P01 Flow Control Valve to SG #1 SG 2 • AFA-UV-37, AFA-P01 Feed Isolation Valve to SG #2 • AFC-HV-33, AFA-P01 Flow Control Valve to SG #2

DRIVER ACTION (commands are NOT in the scenario file, must manually pull up): • IF directed to open AFC-UV-36, INSERT crMVFW08AFCUV36_9 f:100 • IF directed to throttle open AFA-HV-32, INSERT crMVFW08AFAHV32_9 f: (as directed) • IF directed to open AFA-UV-37, INSERT crMVFW08AFAUV37_9 f:100 • IF directed to throttle open AFC-HV-33, INSERT crMVFWAFCHV33_9 f: (as directed)			
		8	WHEN directed by the responsible operator, THEN manually throttle open AFA-HV-54, AFA-P01 Trip & Throttle Valve, until the responsible operator indicates that feed flow rates are adequate
DRIVER ACTION: If directed to throttle AFA-HV-54, MODIFY rFW60A to a final of 35, then INITIATE KEY 9 (AFA-P01 overspeed trip) and report that when HV-54 was throttled, AFA-P01 tripped and overspeed and the trip linkage was severely bent. Resetting the overspeed trip does not appear possible.			
Examiner Note: The following steps are from Appendix 41:			
	BOP	2	Open BOTH of the following Start-Up Aux Feed Pump Suction Valves: • CTA-HV-1 • CTA-HV-4
	BOP	3.a 3.b	IF it is desired to use the Downcomer Control Valve(s) to feed the Steam Generator(s), THEN perform the following: • Place the appropriate Downcomer Control Valve in MANUAL and close the valve: ○ SG 1 ▪ SGN-FV-1113 ○ SG 2 ▪ SGN-FV-1123 • Open the appropriate SG Downcomer Block Valve: ○ SG 1 ▪ SGN-HV-1142 ○ SG 2 ▪ SGN-HV-1144
	BOP	4.a 4.b	IF it is desired to use the Downcomer Bypass Valve(s) to feed the Steam Generator(s), THEN perform the following: • Close the appropriate SG Downcomer Bypass Valve: ○ SG 1 ▪ SGN-HV-1143 ○ SG 2 ▪ SGN-HV-1145 • Ensure the appropriate SG Downcomer Block Valve(s) are closed: ○ SG 1 ▪ SGN-HV-1142 ○ SG 2 ▪ SGN-HV-1144
	BOP	5	Ensure the appropriate SG Downcomer Isolation Valves are open: ▪ SG 1 ○ SGA-UV-172 ○ SGV-UV-130 ▪ SG 2 ○ SGA-UV-175 ○ SGB-UV-135
	BOP	6	Check that at least one of the breaker status indicating lights for the Start-Up Aux Feed Pump is on (won't be on due to the loss of PKA-M41)

	BOP	6.1.a	Perform the following: (to transfer control power to the alternate source for AFN-P01) IF Battery Charger A is available, THEN direct an operator to place PBA-U01, CONTROL POWER TRANSFER SWITCH FOR N AF PUMP to the ALTERNATE FEED FROM PKA-H11
Examiner Note: The crew will have indication of input voltage on the 'A' Battery Charger which indicates that alternate control power for AFN-P01 is available, however since the crew may not know what caused the loss of PKA-M41, they may opt to have an AO locally close the breaker for AFN-P01 per Attachment 41-A (all field actions) instead of transferring control power. DRIVER ACTION: IF an AO is directed to transfer control power for AFN-P01, wait 30 seconds and INITIATE KEY 31, and report that control power has been transferred to the alternate source DRIVER ACTION: IF an AO is directed to close the AFN-P01 feeder breaker per Attachment 41-A, wait 30 seconds and INITIATE KEY 32, and report that the feeder breaker for AFN-P01 is closed			
	BOP	7	WHEN ANY of the following conditions are met: - Control power is available to the Start-Up Aux Feed Pump - Attachment 41-A has been completed THEN ensure the Start-Up Aux Feed Pump is running
	BOP	8	Monitor for adequate feed flow using ANY of the following: - Indicated feed flow - SG Level 45-60% NR and stable - RCS temperature dropping or stable
	BOP	9.a 9.b	IF both Steam Generators have indicated level, THEN perform the following: - Ensure ALL of the appropriate isolation valves are open - Throttle the appropriate feed valves to obtain an adequate flow rate to at least one Steam Generator
Critical Task # 2: Operate Auxiliary Spray, ADVs, and/or SBCS as needed, and restore feedwater to at least one SG to prevent lifting a Primary Safety Valve Measurable Performance Standard: Successful completion of this Critical Task can be confirmed by restoring feed to at least one SG prior to a Primary Safety Valve lifting. This may be accomplished by using any combination of Auxiliary Spray, ADVs, SBCS, and ultimately the restoration of feedwater to at least one SG. Examiner Note: When the crew has restored feedwater to at least one SG, or at lead evaluator's discretion, the scenario may be terminated			

Facility: PVNGS	Scenario: 2	Test: 2024 NRC Exam
Examiners: _____	Operators: _____	
_____	_____	
_____	_____	
Initial Conditions: 100% power, MOC		
Turnover: Shift from 'A' and 'C' Reactor Cavity fans running to 'B' and 'D' Reactor Cavity Fans running per 40OP-9HC01, Containment HVAC, Section 6.3, Reactor Cavity HVAC Startup and Shifting		

Event Number	Event Type*			Event Description
	CRS	OATC	BOP	
1	N		N	Shift running Reactor Cavity Fans
2	C	C		RCP 2A Oil Reservoir Level Low
3	TS			'A' CS Header Isolation Valve, SIA-UV-672, Blown Fuse
4	I	I	I	Control Channel NI #2 Fails Low
5	I, TS		I	Train 'B' Loss of Power Relays 727-3 and 727-7 Fail
6	C, TS	C		SGTL SG #2 (final 75, 4 minute ramp)
7	M	M	M	SGTR SG #2
8	C	C, MC		Train 'A' Sequencer Failure / 'B' HPSI Pump Degraded
9	I		I, MC	RRS Tavg Fails High
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control				

Actual	Target Quantitative Attributes
3	Malfunctions after EOP entry (1-2)
4	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
0	Entry into a contingency EOP with substantive actions (1 per scenario set)
2	Pre-identified CTs (2 or more)

2024 NRC Exam Scenario #2 Overview	
Event 1	Upon taking the shift, the BOP will shift from 'A' and 'C' Reactor Cavity Fans running to 'B' and 'D' Reactor Cavity Fans running per 40OP-9HC01, Containment HVAC, Section 6.3, Reactor Cavity HVAC Startup and Shifting.
Event 2	When the 'B' and 'D' fans are running, 4A15A, RCP COMM TRBL, will annunciate due to low oil level in the 2A RCP oil reservoir. The OATC will address the ARP and commence raising level in the oil reservoir.
Event 3	When level has been restored in oil reservoir, the fuses for the 'A' CS Header Isolation Valve, SIA-UV-672, will blow. The CRS will address Technical Specifications for the inoperable valve.
Event 4	When the CRS has addressed Technical Specifications, Control Channel NI #2 will fail low. The CRS will enter 40AO-9ZZ16, RRS Malfunctions, and direct the crew to take action to stabilize the plant, and select the unaffected Control Channel NI at the RRS Cabinet.
Event 5	When Control Channel NI #1 has been selected at the RRS cabinet, a failure of the Train 'B' LOP-3 channel will occur. The OATC will address the alarm response for the failed LOP relay and the CRS will address Technical Specifications. To comply with the required actions of the impacted LCO, the BOP will bypass the failed LOP relay at the BOP-ESFAS cabinet.
Event 6	When the LOP relay has been bypassed, a SGTL will develop on SG #2. The CRS will enter 40AO-9ZZ02, Excessive RCS Leakrate, and direct the OATC to start all available Charging Pumps and isolate letdown.
Event 7	When the 'E' Charging Pump is started the SGTL will degrade into a SGTR. The OATC will isolate letdown (if not already done) and determine a manual Reactor trip is required. The crew should trip the Reactor and initiate SIAS and CIAS.
Event 8	The 'A' Sequencer will stall, requiring the crew to manually start the Train 'A' SIAS actuated equipment, and must start the 'A' HPSI Pump to establish adequate SI flow since the 'B' HPSI Pump is degraded.
Event 9	RRS Tavg will also fail high on the Reactor trip, resulting in maximum main feed flow to both SGs. The BOP will have to take manual control of feed to ensure level does not rise to 91% which would actuate an MSIS on high SG level. Following SPTAs, the CRS will transition to 40EP-9EO04, Steam Generator Tube Rupture, and direct the crew to commence a controlled cooldown to lower Thot to < 540°F and isolate SG #2. When SG #2 has been isolated, the scenario may be terminated.

Critical Task # 1: Establish adequate SI flow to meet Appendix 2, Figures, flow requirements within 15 minutes of RCS pressure lowering below 1600 psia

Safety Significance: The lack of SI flow during a break in the RCS could lead to core uncover, and ultimately, fuel damage.

Initiating Cue: The crew will have indication SIAS having actuated on each ERFDADS terminal in the Control Room as well as a red SIAS alarm on the upper section of B05. 40EP-9EO04, Steam Generator Tube Rupture, Steps 5.a and 5.b directs checking the HPSI Pumps have started and that SI flow is adequate per Appendix 2, Figures. The crew can see that the 'B' HPSI Pump is running however it is not producing any discharge pressure (degraded discharge head) and the 'A' HPSI Pump did not start due to the failure of the 'A' Sequencer.

Performance Feedback: When the crew starts the 'A' HPSI Pump, the crew can verify SI flow on either B02 or on any ERFDADS terminal in the Control Room. The flow can be compared to Appendix 2, Figures, (located on the vertical section of B02), and determine flow is adequate based on current RCS pressure.

Success Path: 40EP-9EO04, Steam Generator Tube Rupture, Step 5.a, Contingency Action a.1, directs starting idle HPSI and LPSI Pumps as necessary. Starting the 'A' HPSI Pump will establish adequate SI flow for current plant conditions.

Measurable Performance Standard: In order to start the 'A' HPSI Pump, the crew will:

- Place SIA-HS-1, HPSI Pump A, to START

A laminated copy of Appendix 2, Figures, is on the vertical section of B02 where the crew can compare SI flow to minimum required flow to ensure successful restoration of the inventory control safety function.

Critical Task # 2: Prevent MSIS and ADV opening by resetting MSIS setpoints and controlling the overfeeding condition to prevent an unnecessary release to the environment

Safety Significance: With a SGTR in progress, the crew should be focused on preventing an unnecessary radioactive release to the environment. In this scenario, the crew can reset MSIS setpoints (to prevent actuation) and control SG level (also to prevent MSIS actuation) in order to ensure the SGs steam to the Main Condenser instead of through the ADVs into the environment.

Initiating Cue: Preventing MSIS during a SGTR is necessary to prevent a release to the environment. MSIS can actuate on either high SG level (91% NR – not adjustable) or low SG pressure (960 psia – variable). Level control is directed in SPTAs (maintain 45-60% NR) and the SPTA pressure band is 1140-1200 psia. In the SGTR EOP, direction is provided to reset MSIS setpoints as needed (performed at B05 in the Control Room) during the controlled cooldown. The cooldown to a Thot < 540°F is performed as a prerequisite to isolate the ruptured SG.

Performance Feedback: Control of SG level can be monitored on any ERFDADS terminal in the Control Room. SG pressure can be monitored on any ERFDADS terminal and the MSIS setpoint can be monitored on B05 on any of the four SG pressure instruments (to confirm reset of the MSIS setpoint). Actuation (or preventing the actuation) of MSIS can be monitored by the presence or absence of the MSIS alarm on B05.

Success Path: SG level control (due to the overfeeding event) can be accomplished by taking manual control of the Downcomer valves on the DFCWS screen and controlling the feedrate manually. SG pressure will lower as the cooldown to < 540°F is conducted. Resetting the MSIS setpoints is performed by depressing each of the four LO SG PRESS SETPOINT RESET pushbuttons on B05 (each time a button is depressed, the MSIS setpoint lowers to 200 psia below current SG pressure). This will be required in order to prevent a MSIS actuation and unnecessary release to the environment.

Measurable Performance Standard: Successful completion of the Critical Task can be confirmed by the absence of an MSIS signal as indicated by the MSIS alarm on B05, as well as the position of MSIS actuated components, specifically the MSIVs. The crew must also refrain from opening an ADV voluntarily through misoperation or misdiagnosis in order to successfully meet this CT.

NOTE: (Per NUREG-1021) If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a Critical Task identified in the post-scenario review

Form 3-3.1

Driver Set-Up Instructions
NRC Exam Scenario #2

Driver Setup Instructions

Reset to IC-612

Run scenario file "2024 NRC Scn #2"

Scenario File

IMF mfRP07A e:RPSCHC

IMF cmCPSI01SIBP02_3 f:90

IMF mfRX01 e:RPSCHC d:30 f:100

IMF mfRC03C k:2 f:10

IMF cmMVRH03SIAUV672_1 k:3

IMF mfNI02C k:4 r:1 f:0

IOR doED_ZLS047273DS_W1 k:5 f:OFF

IOR doED_ZLS047277DS_W1 k:5 f:OFF

IMF mfAN_1C18D3 k:5 f:Alarm_ON

IOR doRP_ZLSABC02BLOP3_W1 k:5 f:ON

IMF mfTH06B k:6 r:4:00 f:75

Plant Conditions:

- Unit 1 is operating at 100% power, MOC

Equipment Out of Service:

- None

Planned Shift Activities:

- Shift from 'A' and 'C' Reactor Cavity fans running to 'B' and 'D' Reactor Cavity Fans running per 40OP-9HC01, Containment HVAC, Section 6.3, Reactor Cavity HVAC Startup and Shifting

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	1	Page 8 of 20
Event Description:	Shift Reactor Cavity Fans from A/C to B/D					
Time	Position	Step	Applicant Actions			

Examiner Note: The following steps are from 40OP-9HC01:			
	BOP	6.3.5.A 6.3.5.B 6.3.5.C 6.3.5.D 6.3.5.E	IF HCN-A03B, Ctmt Bldg Reactor Cavity Normal Cooling Fan, will be placed in service, THEN perform the following: • Ensure HCN-HS-58, REAC CAVITY CLG FAN A A30A, is in STOP • Place HCN-HS-59, REAC CAVITY CLG FAN B A03B, to START • WHEN HCN-A03B, Ctmt Bldg Reactor Cavity Normal Cooling Fan, is running, THEN place HCN-HS-58, REAC CAVITY CLG FAN A A03A, to AUTO • Check HCN-M02B, Ctmt Bldg Cav Supply Duct Iso Damper, open indicating light (red) at MCC breaker NHN-M1010 is ON • Check HCN-M02A, Ctmt Bldg Cav Supply Duct Iso Damper, closed indicating light (green) at MCC breaker NHN-M1509 is ON
	BOP	6.3.7.A 6.3.7.B 6.3.7.C 6.3.7.D 6.3.7.E	IF HCN-A03D, Ctmt Bldg Reactor Cavity Normal Cooling Fan, will be placed in service, THEN perform the following: • Ensure HCN-HS-60, REAC CAVITY CLG FAN A A30C, is in STOP • Place HCN-HS-61, REAC CAVITY CLG FAN B A03D, to START • WHEN HCN-A03D, Ctmt Bldg Reactor Cavity Normal Cooling Fan, is running, THEN place HCN-HS-60, REAC CAVITY CLG FAN C A03C, to AUTO • Check HCN-M02D, Ctmt Bldg Cav Supply Duct Iso Damper, open indicating light (red) at MCC breaker NHN-M1533 is ON • Check HCN-M02C, Ctmt Bldg Cav Supply Duct Iso Damper, closed indicating light (green) at MCC breaker NHN-M1341 is ON
Examiner Note: When the B and D Reactor Cavity Fans are running, or at lead evaluator's discretion, proceed to Event 2, RCP 2A Oil Reservoir Level Low			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	2	Page 9 of 20
Event Description:	RCP 2A Oil Reservoir Level Low					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 2, RCP 2A Oil Reservoir Level Low			
Indications Available: 4A15A RCP COMM TRBL			
Examiner Note: The following steps are from B04A ARP Window 4A15A:			
	OATC	1	Check point in alarm on PMS or ERFDADS to confirm current RCP Thrust Bearing Oil Reservoir level
	OATC	4.1 4.2	IF RCP 2A Thrust Bearing Oil Reservoir level is less than 64%, THEN perform the following: - Start RCP 2A lift pump to fill RCP Thrust Bearing Oil Reservoir per 40OP-9RC01, Reactor Coolant Pump Operation - Monitor PMS point RCL151, RCP 2A Oil Lift Tank Level, for indication of leakage from affected RCP Thrust Bearing Oil Reservoir
Examiner Note: The following steps are from 40OP-9RC01:			
Procedure Note: Upper thrust bearing oil reservoir target level is 78%			
	OATC	6.17.2.A 6.17.2.B 6.17.2.C	IF starting RCN-P02C, RCP Lift Oil Pump P02C, to fill upper thrust bearing oil reservoir when RCP 2A is running, THEN perform the following: - Check computer point RCL151, RCP 2A Oil Lift Tank Level, indicates greater than 0% - Take AND hold RCN-HS-30, RCP 2A Oil Lift Pump P02C, in START - Monitor RCP 2A Bearing Oil reservoir level using ONE of the following: - ERFDADS point RCL127P, RCP 2A BRG OIL RESVR Level - Plant Computer Point RCL127, RCP 2A BRG OIL RESVR Level
	OATC	6.17.2.D	WHEN RCP 2A upper thrust bearing oil reservoir level is between 64% and 85%, THEN release RCN-HS-30, RCP 2A Oil Lift Pump P02C, to AUTO
Examiner Note: When RCP 2A oil reservoir level is < 66% (alarm clears), or at lead evaluator's discretion, proceed to Event 3, 'A' CS Header Isolation Valve, SIA, UV-672, Blown Fuse			

Form 3-3.2	Required Operator Actions	

Operating Test:		NRC	Scenario #	2	Event #	3	Page 10 of 20
Event Description:		'A' CS Header Isolation Valve, SIA-UV-672, Blown Fuse					
Time	Position	Step	Applicant Actions				

Driver Action: When directed, INITIATE KEY 3, SIA-UV-672 Blown Fuse			
Indications Available: - SEIS Alarm 15I CS PMP A DISCH VLV UV-672 - VPI for SIA-UV-672 extinguished on B02			
Examiner Note: The following steps are from 'A' SEIS Alarm Response Window 15I:			
	OATC	2	IF SIA-UV-672 valve position indicating light(s) at handswitch SIA-HS-672, Cntmt Spray A Dsch to Spray Hdr 1 Vlv are out, THEN check MCC Breaker PHA-M3511, Ctmt Spray Control Train A Vlv, SIA-UV-672, closed
Driver Cue: If an AO is sent to the breaker, wait 30 seconds and report that the PHA-M3511 is closed			
	CRS	2.1	IF MCC breaker PHA-M3511, Ctmt Spray Control Train A Vlv, SIA-UV-672, was closed, THEN direct Electrical Maintenance to check MCC Breaker PHA-M3511 control power fuses
Driver Cue: If Electrical Maintenance is called to check control power fuses, wait 1 minute and report that the fuses are blown			
	CRS	3	Ensure compliance with ANY of the following as appropriate for plant conditions: - LCO 3.6.6, Containment Spray System - LCO 3.6.3, Containment Isolation Valves
Technical Specifications: - LCO 3.6.6, Containment Spray System, Condition A - Restore containment spray train to OPERABLE status within 72 hours OR in accordance with RICT NOTE: LCO 3.6.3, Containment Isolation Valves, could either be considered met (or conservatively NOT met since control power was lost) since SIA-UV-672 is closed. Although it is a Containment Isolation Valve covered by LCO 3.6.3, since it is a “dual function” valve and is required to be open during accident conditions, if it failed closed, LCO 3.6.3 can be considered met, however LCO 3.6.6 is NOT met. If the CRS determines that LCO 3.6.3 is NOT met, a follow up question as to why LCO 3.6.3 was declared NOT met would be warranted.			
Examiner Note: When the CRS has addressed Technical Specifications, or at lead evaluator's discretion, proceed to Event 4, Control Channel NI #2 Fails Low			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	4	Page 11 of 20
Event Description:	Control Channel NI #2 Fails Low					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 4, Control Channel NI #2 Fails Low			
Indications Available:			
4A10B AMI (AUTO MOTION INHIBIT) - Control Channel #2 indication on B04 reading ~ 50% power			
Examiner Note: The following steps are from 40AO-9ZZ16, RRS Malfunctions:			
	OATC	2	Ensure that CEDMCS is NOT in Auto Sequential
	OATC	3	Determine the failed instrument by comparing Control Channel 1 and Control Channel 2 indications on SEN-JI-7 or SEN-JR-5
	BOP	5	IF RRS is selected to ONE of the following: - Average - The affected instrument THEN perform Appendix C, Operation of the Reactor Regulating System, to select the unaffected instrument at the RRS Test Panel
Examiner Note: The following steps are from Appendix C:			
	BOP	3.b 3.c 3.d 3.e 3.f 3.g 3.h 3.i	IF a Control Channel NI has failed, THEN perform the following: - Press the TEST PROBE pushbutton - Check that DVM voltage indicates zero volts - Press the DVM pushbutton that corresponds to the ϕN to be selected - Record voltage indicated on the DVM for the selected ϕN - Check that DVM voltage recorded represents the normal ϕN for the current power level - WHEN evaluation of DVM voltage is complete, THEN press the TEST PROBE pushbutton to disconnect the DVM from the input - Place the ϕN input selector switch to the selected input - Inform the CRS of the status of the RRS panel
Examiner Note: The following steps are the continuation of the main body of the procedure:			
		6.1.a 6.1.b 6.1.c	Check that Tavg/Tref mismatch is 3°F or less Contingency Actions: - Perform ANY of the following as needed to match Tavg and Tref: - Adjust turbine load - Insert or withdraw CEAs - Adjust RCS boron concentration
	OATC	7	Place CEDMCS in the desired mode of operation
	BOP	8	Ensure the required actions for placing a failed control channel in maintenance have been performed per 40AL-9RK6A, Window 6A06A, FWCS PROCESS TRBL
Examiner Note: The following steps are from ARP 6A06A (placing the failed channel in maint):			
	BOP	1	Determine the faulty transmitter
	BOP	2	Place the faulted Reactor Power signal in Maintenance
	BOP	3	Remove the DFWCS ATUNE Lockout
	BOP	4	Reset the DFWCS alarm on the Process Alarm page

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	4	Page 12 of 20
Event Description:	Control Channel NI #2 Fails Low					
Time	Position	Step	Applicant Actions			

Examiner Note: When Control Channel #1 has been selected at the RRS Cabinet, CEDMCS is returned to Auto Sequential, and Control Channel #2 has been placed in maintenance on DFWCS, or at lead evaluator's discretion, proceed to Event 5, Train 'B' LOP Relays Fail

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	5	Page 13 of 20
Event Description:	Train 'B' Loss of Power Relays 727-3 and 727-7 Fail					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 5, Train 'B' LOP Relays Fail			
Indications Available: 727-3 and 727-7 lights on B01 extinguish 1C18D UNDV B CH TRIP alarm			
Examiner Note: The following steps are from B01C ARP Window 1C18D:			
	OATC	1	Confirm the alarm by ONE of the following: - Bus PBB-S04 load sheds and Diesel Generator B starts 4.16 kV Bus S04 Potential Indication undervoltage lights are off
	OATC	3.1 3.2 3.3	IF one undervoltage relay is actuated, THEN perform the following: - Determine alarm to be valid using ALL of the following indicators: - PEN-EI-G02, Diesel Generator B voltage - PBB-EI-S04, 4.16 kV Bus S04 - PBB-EI-S04L, 4.16 kV S04 Normal Supply - PBB-EI-S04K, 4.16 kV Bus S04 Alternate Supply - Determine actuated undervoltage relay using the white relay lights on B01 - IF the undervoltage relay has malfunctioned, THEN bypass the malfunctioned undervoltage relay per 40OP-9SA01, BOP ESFAS Modules Operation
	CRS	5	REFER TO ALL of the following LCOs: 3.3.7, Diesel Generator (DG) – Loss of Voltage Start (LOVS) 3.8.1, AC Sources – Operating 3.8.2, AC Sources – Shutdown
Technical Specifications: - LCO 3.3.7, Diesel Generator – Loss of Voltage Signal, Condition A - Place channel in bypass or trip within 1 hour AND restore channel to OPERABLE status prior to entering MODE 2 following next MODE 5 entry			
Examiner Note: The following steps are from 40OP-9SA01, BOP ESFAS Modules Operation:			
	CRS	6.8.2.A	Ensure all applicable LCOs are reviewed for compensatory action requirements
	BOP	6.8.2.B	Obtain the BOP ESFAS door key
	BOP	6.8.2.C	Obtain the BOP ESFAS bypass key
	BOP	6.8.2.E	Obtain permission from SM/CRS to place BOP ESFAS module(s) in bypass
	BOP	6.8.4	Perform a lamp test on the affected BOP ESFAS cabinet
	BOP	6.8.7	Select the module(s), trip circuit(s), or UV relay channel(s) to be placed in bypass by placing a check mark next to the device (Train B UV-3 727-3 and 727-7)
	BOP	6.8.10	IF a LOP/LS module will be bypassed, THEN perform the following: - Ensure compliance with affected LCOs - Confirm the LOP/LS module in the opposite train is NOT in bypass

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	5	Page 14 of 20
Event Description:	Train 'B' Loss of Power Relays 727-3 and 727-7 Fail					
Time	Position	Step	Applicant Actions			

	BOP	6.8.11.A 6.8.11.B	Perform the following to bypass the module/trip circuit/UV relay channel: - Insert the bypass key in the slot for the selected module - Turn the bypass key clockwise $\frac{1}{4}$ turn or until the bypass light comes on
	BOP	6.8.13	Confirm that all module(s), trip circuit(s), or UV relay channel(s) selected in Step 6.8.7 are placed in bypass
	OATC	6.8.14	Perform Independent Verification that all module(s), trip circuit(s), or UV relay channel(s) selected in Step 6.8.7 are placed in bypass
	BOP	6.8.16	Ensure BOP ESFAS door keys are returned to the proper storage location
Examiner Note: When the 'C' LOP relays are placed in bypass, or at lead evaluator's discretion, proceed to Event 6, SGTL SG #2			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	6,7,8,9	Page 15 of 20
Event Description:	SGTL SG #2 / SGTR SG #2 / 'A' Sequencer Failure / 'B' HPSI Degraded / RRS Tavq Fails High					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 6, SGTL SG #2			
Indications Available: • RMS alarms on Main Steam lines • Lowering letdown flow • Lowering Pressurizer level and pressure			
Examiner Note: The SGTR will ramp in over 4 minutes, therefore any Technical Specification call may not be done in real time, but could be covering in a follow up question.			
The following steps are from 40AO-9ZZ02, Excessive RCS Leakrate:			
	OATC	2	IF pressurizer level is lowering, AND additional makeup is required, THEN ensure all available Charging Pumps are running
	OATC	3	IF all available Charging Pumps are running, AND pressurizer level is lowering, THEN isolate letdown
	OATC	4	IF ALL of the following conditions exist: • All available Charging Pumps are operating • Letdown is isolated • Pressurizer level is lowering THEN perform the following: • Ensure that the Reactor is tripped • GO TO 40EP-9EO01, Standard Post Trip Actions
	BOP CRS	4.a 4.b	
	CRS	5	Ensure the event is being classified
	CRS	6	Initiate Appendix I, LCO Required Action Tracker
	CRS	7	IF the unit is in MODE 1-4, THEN ensure compliance with the following: • LCO 3.4.14, RCS Operational Leakage • LCO 3.4.18, SG Tube Integrity
Technical Specifications: • LCO 3.4.14, RCS Operational Leakage, Condition B ○ Be in MODE 3 within 6 hours AND be in MODE 5 within 36 hours • LCO 3.4.18, SG Tube Integrity, Condition B ○ Be in MODE 3 within 6 hours, AND be in MODE 5 within 36 hours			
Examiner Note: When the leak exceeds the capacity of the Charging Pumps with letdown isolated, the crew will trip the Reactor. The following steps are from 40EP-9EO01, Standard Post Trip Actions:			
	BOP	2.a 2.b 2.c 2.d	Determine that Reactivity Control acceptance criteria are met: • Check that reactor power is dropping • Check that startup rate is negative • Check that full strength CEAs are inserted • Check that the Main Turbine is tripped

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	6,7,8,9	Page 16 of 20
Event Description:	SGTL SG #2 / SGTR SG #2 / 'A' Sequencer Failure / 'B' HPSI Degraded / RRS Tavq Fails High					
Time	Position	Step	Applicant Actions			

	OATC	3.a 3.b	Determine the Maintenance of Vital Auxiliaries acceptance criteria are met: - Check 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: - All vital and non-vital AC buses are powered - All vital and non-vital DC buses are powered
	OATC	4.a 4.a.1 4.b 4.b.1 4.c	Determine that RCS Inventory Control acceptance criteria are met: - Check that pressurizer level meets BOTH of the following: 10-65% - Trending as expected to 33-53% (CA) Restore and maintain pressurizer level to 33-53% by any of the following: - Operation of PLCS - Manual operation of Charging Pumps and Letdown Control Valves - Check that the RCS is 24°F or more subcooled (CA) IF the RCS is less than 24F subcooled, THEN stop all RCPs - Check that BOTH of the following are in service to all RCPs: - Seal injection - Nuclear Cooling Water
	OATC	5.1 5.2 5.3 5.4	Determine that RCS Pressure Control acceptance criteria are met: - Pressurizer pressure is 1837-2285 psia - Pressurizer pressure is trending as expected to 2225-2275 psia (CA) Restore and maintain pressurizer pressure to the normal control band by ANY of the following: - Operation of PPCS - Manual operation of pressurizer heaters and spray valves (CA) IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated (CA) IF pressurizer pressure remains below the SIAS setpoint, THEN stop ONE RCP in each loop (CA) IF pressurizer pressure drops below the RCP NPSH limits, THEN stop all RCPs. REFER TO Appendix 2, Figures
	OATC	6	Determine that Core Heat Removal acceptance criteria is met: - At least one RCP is operating - Loop delta-T is less than 10°F - RCS is 24°F or more subcooled
	BOP	7.a 7.b 7.c	Determine that RCS Heat Removal acceptance criteria are met: - Check that at least one SG meets BOTH of the following: - Level is 35% WR or more - Feedwater is restoring or maintaining level 45-60% NR - Check that Tc is 560-570°F - Check that SG pressure is 1140-1200 psia

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	6,7,8,9	Page 17 of 20
Event Description:	SGTL SG #2 / SGTR SG #2 / 'A' Sequencer Failure / 'B' HPSI Degraded / RRS Tavv Fails High					
Time	Position	Step	Applicant Actions			

	OATC	8.a 8.b	Determine that Containment Isolation acceptance criteria are met: - Check that containment pressure is less than 2.5 psig - Check BOTH of the following conditions: - No abnormal containment area activity - No abnormal steam plant activity
	OATC	9.a 9.b	Determine that Containment Temperature and Pressure Control acceptance criteria are met: - Check that containment temperature is less than 117°F - Check that containment pressure is less than 2.5 psig
	CRS	11	Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS should diagnose a Steam Generator Tube Rupture is in progress and transition to 40EP-9EO04, Steam Generator Tube Rupture. The following steps are from 40EP-9EO04, Steam Generator Tube Rupture:			
	CRS	1.a 1.b 1.c	Monitor SFSCs by performing the following: - 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.
	CRS	2	Ensure the event is being classified.
	CRS	3	Open the Placekeeper and enter the EOP Entry Time.
	OATC	4	If pressurizer pressure drops to the SIAS setpoint, THEN check that SIAS is actuated.
	OATC	5.a 5.b	IF SIAS has actuated, THEN perform the following: - Check that the HPSI and LPSI Pumps have started - Check that safety injection flow is adequate. Refer to Appendix 2, Figures
Critical Task # 1: Establish adequate SI flow to meet Appendix 2, Figures, flow requirements within 15 minutes of RCS pressure lowering below 1600 psia			
Measurable Performance Standard: In order to start the 'A' HPSI Pump, the crew will: Place SIA-HS-1, HPSI Pump A, to START A laminated copy of Appendix 2, Figures, is on the vertical section of B02 where the crew can compare SI flow to minimum required flow to ensure successful restoration of the inventory control safety function.			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	6,7,8,9	Page 18 of 20
Event Description:	SGTL SG #2 / SGTR SG #2 / 'A' Sequencer Failure / 'B' HPSI Degraded / RRS Tavq Fails High					
Time	Position	Step	Applicant Actions			

	OATC	6.a	IF SIAS has actuated, THEN perform the following: - 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: - Appendix 10, Charging Pump Alternate Suction to the RWT / Restoration - Appendix 11, Charging Pump Alternate Suction to the SFP / Restoration
		6.b	IF RWT level is above 73%, AND it is desired to align charging pump suction through CHE-HV-536 or CHN-UV-514, THEN PERFORM Appendix 103, RCS Makeup / Emergency Boration
	OATC	7.a 7.b	IF pressurizer pressure remains below the SIAS setpoint, THEN perform the following: - Ensure ONE RCP is stopped in each loop. - IF RCS subcooling is less than 24°F, THEN ensure all RCPs are stopped.
	OATC	8	IF ANY RCPs are operating, THEN perform Appendix 16, RCP Trip Criteria and check the RCP operating limits satisfied.
	BOP	9.a 9.b 9.c	Perform the following to prepare for RCS cooldown: - Ensure ARN-HS-19, Post Filter Mode Select Switch, is in the "THRU FILTER MODE." - Select "OFF" on BOTH of the following switches: - SGN-HS-1007, Valve 7 Mode Select - SGN-HS-1008, Valve 8 Mode Select - Initiate Appendix 5, RCS and Pressurizer Cooldown Log.
	BOP	10	Commence an RCS cooldown to a T _h of less than 540°F using SBGS.
	BOP	11	IF a controlled cooldown is in progress, AND MSIS or SIAS has NOT actuated, THEN lower or bypass the automatic initiation setpoint(s) as the cooldown and depressurization proceed for ANY of the following: - MSIS - SIAS
	OATC	12.a 12.b 12.c 12.d.1 12.d.2	Depressurize the RCS by performing the following: - Maintain pressurizer pressure within ALL of the following criteria: - Less than 1135# - Approximately equal to the pressure of the steam generator with tube rupture (± 50 psi) - Within the P/T Limits. REFER TO Appendix 2, Figures - Within RCP NPSH Limits. REFER TO Appendix 2, Figures - Operate main or auxiliary pressurizer spray. - IF Main Spray is being used with fewer than four RCPs running, OR Auxiliary Spray is being used, AND THEN PERFORM Appendix 6, Spray Valve Actuation Data Sheet. - IF Safety Injection throttle criteria are met, THEN perform the following: - Control charging and letdown flow. - Throttle HPSI flow.

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	6,7,8,9	Page 19 of 20
Event Description:	SGTL SG #2 / SGTR SG #2 / 'A' Sequencer Failure / 'B' HPSI Degraded / RRS Tavp Fails High					
Time	Position	Step	Applicant Actions			

	CRS	13	IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.
	BOP	14	IF CW flow to the Main Condenser is lost, THEN actuate MSIS.
	ALL	15	Determine the most affected Steam Generator by considering ALL of the following: • Steam Generator activities • Main steam line activities • Steam Generator level change without feed • Steam Generator blowdown activities • One Steam Generator level rising faster than the other with feed and steaming rates similar in both Steam Generators • Feed flow mismatch between Steam Generators • Steam flow-feed flow mismatch in a Steam Generator prior to the trip
	BOP	16	WHEN T _h is less than 540°F, THEN isolate the most affected Steam Generator by performing ONE of the following: • Appendix 113, Steam Generator 1 Isolation • Appendix 114, Steam Generator 2 Isolation
Examiner Note: The following steps are from Appendix 114, Steam Generator 2 Isolation:			
	BOP	1	Close BOTH ADVs on SG 2: • SGB-HV-185 • SGA-HV-179
	BOP	2	Close BOTH MSIVs on SG 2: • SGE-UV-171 • SGE-UV-181
	BOP	3	Ensure SGE-UV-183, SG 2 MSIV Bypass Valve, is closed
	BOP	4	Close BOTH SG 2 Economizer FIWVs: • SGA-UV-177 • SGB-UV-137
	BOP	5	Close BOTH SG 2 Downcomer Isolation Valves: • SGA-UV-175 • SGB-UV-135
	BOP	6	Close BOTH SG 2 Blowdown Containment Isolation Valves: • SGA-UV-500S • SGB-UV-500R
	BOP	7	Close BOTH of the following steam trap isolation valves: • SGA-UV-1134, Steam Trap M24 Isolation • SGB-UV-1136A/1136B, Steam Trap M03/M04 Isolations
	BOP	8	Check that the Steam Generator Safety Valves are closed
	BOP	9	Ensure BOTH Aux Feed Pump A Steam Supply Valves are closed: • SGA-UV-138, SG 2 Steam Supply to Aux Feed Pump A • SGA-UV-138A, SG 2 Steam Supply to Aux Feed Pump A Bypass

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	2	Event #	6,7,8.9	Page 20 of 20
Event Description:	SGTL SG #2 / SGTR SG #2 / 'A' Sequencer Failure / 'B' HPSI Degraded / RRS Tavg Fails High					
Time	Position	Step	Applicant Actions			

	BOP	10	Ensure BOTH Aux Feedwater Isolation Valves are closed: - AFA-UV-37, Aux Feedwater to SG 2 Downstream Valve - AFB-UV-35, Aux Feedwater to SG 2 Downstream Valve
Critical Task # 2: Prevent MSIS and ADV opening by resetting MSIS setpoints and controlling the overfeeding condition to prevent an unnecessary release to the environment			
Measurable Performance Standard: Successful completion of the Critical Task can be confirmed by the absence of an MSIS signal as indicated by the MSIS alarm on B05, as well as the position of MSIS actuated components, specifically the MSIVs. The crew must also refrain from opening an ADV voluntarily through misoperation or misdiagnosis in order to successfully meet this CT.			
Examiner Note: When SG #2 has been isolated, or at lead evaluator's discretion, the scenario may be terminated.			

Facility: PVNGS	Scenario: 3	Test: 2024 NRC Exam
Examiners: _____	Operators: _____	
_____	_____	
_____	_____	
Initial Conditions: 50% power, MOC		
Turnover: Remove Train 'A' CPIAS module from bypass per 40OP-9SA01, BOP ESFAS Modules Operation, Section 6.9, Removing BOP ESFAS Modules from Bypass		

Event Number	Event Type*			Event Description
	CRS	OATC	BOP	
1	N		N	Remove 'A' CPIAS Module from Bypass
2	C	C, MC		Pressurizer Level Controller, RCN-LIC-110, Output Fails High (1 minute ramp)
3	I, TS		I	RCS Pressure Transmitter, RCC-PI-101C, Fails Low
4	C	C, MC		'A' Charging Pump Trip, 'E' Charging Pump FTAS
5	C		C, MC	'B' Plant Cooling Water Pump Sheared Shaft, 'A' FTAS
6	I, TS	I	I	Inadvertent 'B' CSAS Leg 1-3
7	I	I		VCT Level Transmitter, LT-227, Fails Low
8	M	M	M	ESD from SG #1 Inside Containment
9	I		I, MC	AFAS Fails to Auto Actuate
10	C	C		'A' CS Header Isolation Valve Seized / 'B' CS Pump Sheared Shaft
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control				

Actual	Target Quantitative Attributes
3	Malfunctions after EOP entry (1-2)
6	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
1	Entry into a contingency EOP with substantive actions (1 per scenario set)
3	Pre-identified CTs (2 or more)

2024 NRC Exam Scenario #3 Overview	
Event 1	Upon taking the shift, the BOP will remove the 'A' CPIAS BOP-ESFAS module from bypass per 40OP-9SA01, BOP ESFAS Modules Operation, Section 6.9, Removing BOP ESFAS Modules from Bypass.
Event 2	When the 'A' CPIAS module is removed from bypass, Pressurizer Level Controller, RCN-LIC-110, output will fail high (1 minute ramp). The OATC will address the ARP and take manual control of the output to restore letdown flow to the appropriate flow for current plant conditions.
Event 3	When letdown flow has been returned to normal, RCS pressure transmitter, RCC-PI-101C, will fail low. The CRS will address Technical Specifications and direct the BOP to bypass the appropriate bistables at the PPS cabinet.
Event 4	When the BOP has bypassed the affected bistables, the 'A' Charging Pump will trip. The OATC will address the ARP and will change the order of running Charging Pumps in order to start the 'E' Charging Pump. If the 'E' Charging Pump is not manually started within ~ 2 minutes of the loss of 'A' Charging Pump, letdown will isolate on high temperature.
Event 5	When the 'E' Charging Pump has been started, the 'B' Plant Cooling Water Pump shaft will shear. The 'A' Plant Cooling Water Pump will fail to auto start. The BOP will address the ARP and the CRS may enter 40AO-9ZZ03, Loss of Cooling Water, and the BOP will start the 'B' Plant Cooling Water Pump.
Event 6	When the 'B' Plant Cooling Water Pump has been started, an inadvertent Train 'B' CSAS (Leg 1-3) will occur. The CRS will enter 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations, and direct the crew to override equipment as needed and will address Technical Specifications.
Event 7	When Technical Specifications have been addressed, VCT Level Transmitter, LT-227, will fail low. This will cause an automatic boration to commence. The OATC will address the ARP and coordinate with field operators to reposition equipment in the control room and open breakers in the field to override automatic equipment repositioning due to the transmitter failure (in order to stop the boration).
Event 8	When the boration has been stopped, an ESD will occur on SG #1 inside Containment. The Reactor will either be manually tripped or will automatically trip on high containment pressure or low pressurizer pressure.
Event 9	AFAS will fail to actuate, which will require the BOP to manually align an AFW source to restore feedwater to the intact SG.
Event 10	The 'A' CS Header Isolation will be seized and the 'B' CS Pump will have a sheared shaft, requiring the CRS to transition to the Functional Recovery procedure in order to align the 'B' LPSI Pump to the CS header to provide CS flow into Containment. When CS flow has been established, the scenario may be terminated.

Critical Task # 1: Secure all 4 RCPs within 30 minutes of the unrecoverable loss of cooling water to the RCPs

Safety Significance: Engineering analysis shows that RCPs can only run for 30 minutes with no cooling water supplied to the seals until seal breakthrough will occur. This would create a new, preventable, unisolable LOCA inside Containment. The CSAS will close the NC Containment Isolation Valves which will cause a loss of cooling water the RCPs.

Initiating Cue: A CSAS actuation will isolate cooling water to the RCPs. CSAS will actuate when Containment pressure exceeded 8.5 psig, which will happen in the first few minutes post-ESD. The loss of cooling water to the RCPs is also cued by the RCP LO NCW FLOW alarms on B04. Securing the RCPs is procedurally directed in SPTAs (step actually says to isolate controlled bleedoff from ANY RCP which does not have Nuclear Cooling Water supplied to it and bleedoff is interlocked with each RCP such that the pump must be stopped in order to secure bleedoff).

Performance Feedback: The crew can confirm the RCPs were stopped by the GREEN light being illuminated and the RED light being off for each RCP breaker position indication after each pump is secured.

Success Path: When CSAS actuates and the crew has indication of the loss of cooling water to the RCPs, a member of the crew will have to take each of the 4 RCP handswitches to the OFF position within 30 minutes to prevent RCS leakage via seal degradation.

Measurable Performance Standard: Successful completion of this Critical Task can be verified by each of the four RCP handswitches being taken to the OFF position prior to 30 minutes elapsing from the initiation of CSAS (either manual actuation or automatic actuation, whichever happens first).

Critical Task # 2: Restore feed to at least one SG prior to lifting a Primary Safety Valve

Safety Significance: Main Feedwater will be lost to both SGs due to the ESD inside Containment causing an automatic MSIS. AFAS failing to actuate requires operator action to restore feed flow to the intact SG in order to restore the RCS Heat Removal safety function. Without restoration of RCS heat removal, compounded by the injection into the RCS without a concurrent loss of inventory, RCS pressure will rise and without restoration of feedwater to the intact SG, a primary safety valve will lift resulting in the preventable loss of reactor coolant into the Containment.

Initiating Cue: The crew will have indication of 0 gpm feed flow on any ERFDADS terminal in the Control Room. When SG #2 level lowers to 25% WR, the crew will also have indication that AFAS failed to auto actuate. There is also procedural direction both in SPTAs and the Functional Recovery procedure to ensure at least one SG has feed flow with levels trending towards or being maintained in the prescribed control band.

Performance Feedback: When feed has been restored to SG #2, the crew will have flow indications and level trend indication on B06 as well as any ERFDADS terminal in the Control Room.

Success Path: All 3 AFW Pumps are available for feed. However, the SIAS which will actuate due to the ESD will start AFB-P01. Given that this pump is already running, feed can (and should) be established to SG #2 by opening the following valves:

- Aux FW to SG2 Downstream Valve, AFB-UV-35 (**OPEN**)
- Aux FW to SG2 Upstream Valve, AFV-UV-31 (**Throttled open to control flow**)

Measurable Performance Standard: The crew will have to establish feed flow to SG #2 in order to recover the RCS heat removal safety function and provide adequate feed water (and steaming from SG #2) in order to ensure all Primary Safety Valves remain closed (which can be verified using any ERFDADS terminal to trend the status of the safeties, as well as the PSV indicating lights on B04).

Critical Task # 3: Establish CS flow within 30 minutes of exceeding 8.5 psig inside Containment

Safety Significance: Potential degradation of any barrier (in this case, the Containment Barrier) to fission product release. Failure to restore the containment temperature and pressure control safety function may challenge containment integrity.

Initiating Cue: CSAS actuates when Containment pressure exceeds 8.5 psig. The crew has indication of CS header flow on any ERFDADS terminal in the Control Room. Due to the 'A' CS Header Isolation Valve being seized closed and the 'B' CS Pump sheared shaft, both trains of CS will indicate 0 gpm flow. The failure to meet the Containment Temperature and Pressure Control safety function will cue the CRS to transition to the Functional Recovery procedure and identify the success path for recover of the CTPC safety function (aligning 'B' LPSI for CS).

Performance Feedback: When LPSI is providing CS flow, the normal CS flow indication is not available on ERFDADS, however the crew can trend Containment pressure as well as the change in RWT level to indicate that the LPSI to CS lineup was successful in establishing CS flow.

Success Path: The Functional Recovery procedure will provide a list of options to recover the CTPC safety function based on plant conditions and available plant equipment. The CRS should go to CTPC-2, Containment Spray, and since the 'A' CS Header Isolation Valve is seized closed, should identify 'B' LPSI through the 'B' CS Header Isolation Valve is the correct path to recover the safety function.

Measurable Performance Standard: To align 'B' LPSI for CS flow, the OATC will:

- Ensure the 'B' LPSI Pump is running
- Ensure SIB-HV-307 is CLOSED
- Ensure SIB-HV-695 is OPEN
- Ensure SIB-671 is OPEN
- Ensure SIB-HV-694 is OPEN

Once LPSI has been aligned for CS flow, the crew can verify success by monitoring Containment pressure on any control board Containment pressure transmitter or on any ERFDADS terminal (CS header flow indication does not indicate CS flow when using LPSI due to the location of the flow detector and the LPSI to CS flowpath)

NOTE: (Per NUREG-1021) If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a Critical Task identified in the post-scenario review

Form 3-3.1

Driver Set-Up Instructions
NRC Exam Scenario #3

Driver Setup Instructions	
	Reset to IC-613
	Run scenario file "2024 NRC Scn #3"

Scenario File

IMF cmMVRH03SIAUV672_6 e:RPSCHC

IMF cmCPRH05SIBP03_1

IMF cmBSRP01BSSG2LVLLDT_1

IMF cmBSRP01BSSG2LVLLCT_1

IMF cmBSRP01BSSG2LVLLBT_1

IMF cmBSRP01BSSG2LVLLAT_1

IMF cmBSRP01BSSG1LVLLDT_1

IMF cmBSRP01BSSG1LVLLCT_1

IMF cmBSRP01BSSG1LVLLBT_1

IMF cmBSRP01BSSG1LVLLAT_1

IMF cmCNCV19RCNLIC110_2 k:2 r:60 i:39 f:100

IMF cmTRRX06RCCPT101C_1 k:3 r:1 i:2253.35 f:1500

IMF cmDPCV06CHAP01_6 k:4

IMF cmCPSW01PWNP01A_5 k:5

IMF cmCPSW01PWNP01B_1 k:5 d:5

IMF mfRP06H1 k:6

IMF cmTRCV05CHNLT227_1 k:7 r:1 i:52.646 f:0

IRF crB4CV05CHNUV501_1 k:11 f:OPEN

IRF crB4CV08CHNUV514_1 k:12 f:OPEN

IRF crB4CV08CHEHV536_1 k:13 f:OPEN

IMF mfMS01A k:8 r:120 f:20

Plant Conditions:

- Unit 1 is operating at 50% power, MOC

Equipment Out of Service:

- None

Planned Shift Activities:

- Remove Train 'A' CPIAS module from bypass per 40OP-9SA01, BOP ESFAS Modules Operation, Section 6.9, Removing BOP ESFAS Modules from Bypass

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	1	Page 9 of 24
Event Description:	Remove 'A' CPIAS Module From Bypass					
Time	Position	Step	Applicant Actions			

Examiner Note: The following steps are from 40OP-9SA01, BOP ESFAS Modules Operation:			
	BOP	6.9.5	Obtain the BOP ESFAS door key
Procedure Note: Alarm window BOP ESFAS IN TEST (5A02D) may activate when the BOP ESFAS cabinet door is opened			
	BOP	6.9.6	Perform a lamp test on the affected BOP ESFAS cabinet
Procedure Note: Blank portions of ALL of the following lamps will be off during the lamp test:			
• DG RUN • DG BKR • FBEVAS			
	BOP	6.9.7	IF all the affected BOP ESFAS cabinet lamps are on, THEN GO TO Step 6.9.9
	BOP	6.9.9.A	Observe the Radiation Monitoring System computer for ANY of the following radiation monitor inputs that would trip the affected module when the bypass is removed: • RU-29 for CREFAS A • RU-30 for CREFAS B • RU-31 for FBEVAS A • RU-145 for FBEVAS B • RU-37 for CPIAS A • RU-38 for CPIAS B
	BOP	6.9.9.B	IF the affected BOP ESFAS module is NOT tripped, THEN GO TO Step 6.9.9.E
	BOP	6.9.9.E.1	Observe BOTH of the following on the BOP ESFAS module to be removed from bypass: • BYPASS light is on • All other lights are off
	BOP	6.9.9.E.2	Turn the affected module bypass key ¼ turn counterclockwise
	BOP	6.9.9.E.3	Remove the bypass key
	BOP	6.9.9.E.4	Confirm BYPASS light is off
	OATC	6.9.9.E.5	Perform Independent Verification that the affected BOP ESFAS module has been removed from bypass
	BOP	6.9.9.G	Ensure bypass keys are returned to the proper storage location
	BOP	6.9.9.H	Ensure BOP ESFAS door keys are returned to the proper storage location
Examiner Note: When the 'A' CPIAS module has been removed from BYPASS, or at lead evaluator's discretion, proceed to Event 2, RCN-LIC-110 Output Fails High			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	2	Page 10 of 24
Event Description:	Pressurizer Level Controller, RCN-LIC-110, Output Fails High					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 2, RCN-LIC-110 Output Fails High			
Indications Available: - Lowering Pressurizer level - Rising letdown flow 4A02B PZR LVL HI-LO (eventually)			
Examiner Note: Although this condition won't immediately bring in an alarm, the crew should address the PZR LVL HI-LO alarm in anticipation of low level due to rising letdown flow. Additionally, although the output on the controller is failed high, there is a limiter in the controller which stops output at a maximum of ~ 75% which correlates to a letdown flow limit of ~ 132 gpm.			
The following steps are from B04A ARP Window 4A02B:			
	OATC	1	Check BOTH of the following level indications: - RCA-LI-110X - RCB-LI-110Y
	OATC	2	IF ONE of the following level control channels has failed... (neither is failed)
	OATC	3.1	IF automatic control is NOT able to restore Pressurizer level, THEN perform the following: Place RCN-LIC-110, PRESSURIZER LEVEL CONTROL, in MANUAL
		3.2	Lower RCN-LIC-110, PRESSURIZER LEVEL CONTROL, output to lower letdown flow
	OATC	3.3	IF BOTH of the following conditions exist: - SM/CRS has determined additional charging flow is required to restore Pressurizer level - At least one Charging Pump is available THEN start additional charging pumps per 40OP-9CH01, CVCS Normal Operations
Examiner Note: When the crew has taken manual control of RCN-LIC-110 and has control of Pressurizer level, or at lead evaluator's discretion, proceed to Event 3, RCS Pressure Transmitter, RCC-PI-101C, Fails Low			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	3	Page 11 of 24
Event Description:	RCS Pressure Transmitter, RCC-PI-101C, Fails Low					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 3, RCC-LI-101C Fails Low			
Indications Available: • 5A13C LO DNBR CH TRIP • 5A14C HI LPD CH TRIP • 5B02D PPS TRBL/GND			
Examiner Note: The following steps are from B05A ARP Window 5A13C:			
	BOP	4.5	IF the LO DNBR Channel Trip alarm is valid, THEN perform the following: • Check ALL of the following for Low Pressurizer Pressure as the cause of the alarm: ○ RCA-PI-101A ○ RCB-PI-101B ○ RCC-PI-101C (failed low) ○ RCD-PI-101D
	BOP	5.1	IF the alarm is confirmed to be invalid, THEN perform the following: • Place ANY affected channel in BYPASS at the associated PPS cabinet
Examiner Note: The following steps are from 40OP-9SB02, PPS Bypass Operations:			
	BOP	6.1.2	Select the channel to be placed in bypass (Channel C)
	BOP	6.1.3	Select the parameter(s) to be placed in bypass (Parameters 3 – HI LOCAL POWER, 4 – LOW DNBR, and 5 – HI PZR PRESS)
	BOP	6.1.4	Request the SM/CRS enter and log the appropriate LCO required actions
Technical Specifications: • LCO 3.3.1, RPS Instrumentation - Operating, Condition A (for Functions 3, 14, and 15) ○ Place channel in bypass or trip AND restore channel to OPERABLE status within 1 hour			
	BOP	6.1.6	Place the selected parameters in bypass (Bistables 3, 4, and 5)
Examiner Note: When the affected bistables have been placed in bypass and the CRS has addressed Technical Specifications, or at lead evaluator's discretion, proceed to Event 4, 'A' Charging Pump Trip / 'E' Charging Pump Fails to Auto Start			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	4	Page 12 of 24
Event Description:	'A' Charging Pump Trip, 'E' Charging Pump Fails to Auto Start					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 4, 'A' Charging Pump Trip			
Indications Available: • 3A08A CHG HDR SYS TRBL • 3A11B RCP SEAL INJ FLOW HI-HI OR LO • 3A11A RCP SEAL SYS TRBL			
Examiner Note: When the 'A' Charging Pump trips, the crew will have ~ 2 minutes to start the 'E' Charging Pump or letdown will isolate.			
The following steps are from B03A ARP Window 3A08A:			
	OATC	1	Place CHN-HS-4, CHARGING PUMP MODE SELECTOR, in the position to place the alarming Charging Pump in the standby position (switch is in 1-2-3 and should be placed in 2-3-1 to place the 'A' Charging Pump in the standby position)
Examiner Note: When the crew has started the 'E' Charging Pump, proceed to Event 5, 'B' Plant Cooling Water Pump Trip / 'A' Fails to Auto Start			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	5	Page 13 of 24
Event Description:	'B' Plant Cooling Water Pump Shaft Shear, 'A' Fails to Auto Start					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 5, 'B' Plant Cooling Water Pump Shaft Shear			
Indications Available: 7A05A PCW SYS TRBL 7A05B PCW DSCH PRESS HI-LO			
Examiner Note: The following steps are from 40AO-9ZZ03, Loss of Cooling Water:			
	BOP	2.a 2.b	IF NO Plant Cooling Water Pumps are running, THEN perform the following: - IF at least one Plant Cooling Water Pump is available, THEN start the Plant Cooling Water Pump - IF electrical power must be restored to start a Plant Cooling Water Pump...(N/A)
	BOP	3.a 3.b 3.c	IF at least one Plant Cooling Water pump is running, AND supply pressure is 40 psig or less, THEN perform the following: - Start the standby pump - Direct an operator to walkdown PW system piping to check that NO leaks exist - Direct an operator to check the suction screen for the operating pump is NOT clogged
	BOP	4	IF the PW system has been restored, THEN GO TO the appropriate procedure for current plant conditions
Examiner Note: When the 'A' PW Pump has been started, or at lead evaluator's discretion, proceed to Event 6, Inadvertent 'B' CSAS Leg 1-3			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	6	Page 14 of 24
Event Description:	Inadvertent 'B' CSAS Leg 1-3					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 6, Inadvertent 'B' CSAS Leg 1-3			
Indications Available: 5B05B LEG 1-3 CSAS B - RCP LO NCW FLOW ALARMS			
Examiner Note: The following steps are from 40AO-9ZZ17, Inadvertent PPS-ESFAS Actuations:			
	OATC	3	IF BOTH of the following: - Any Containment Spray Pump is running - The running Containment Spray Pump is NOT being used for SDC THEN perform the following: - IF SIAS has NOT actuated, THEN place the Containment Spray Pump hand switch in STOP to anti-pump the CS Pump - IF SIAS has actuated, THEN override and stop the Containment Spray Pump
	OATC	4	Override and close all open Containment Spray Header Isolation Valves
	BOP	5	Open ANY of the following as needed to restore Nuclear Cooling Water to Containment: - 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
		7.a 7.b 7.c	IF BOTH of the following: - Seal Injection is in service - Cooling water is NOT restore to ANY operating RCP within 10 minutes of the initial loss: THEN perform the following: - Ensure the reactor is tripped - Stop all of the RCPs - Isolate controlled bleedoff
		9.a 9.b	IF letdown is isolated, THEN perform the following: - Ensure no more than one Charging Pump is running - PERFORM 40AO-9ZZ05, Loss of Charging or Letdown
	OATC	11	IF BOTH of the following: - Any Control Room Essential AHUs started - It is desired to stop the running Control Room Essential AHUs THEN override and stop the running fans
	OATC	12	IF RCP Seal Bleedoff isolated to the VCT, THEN override and open the closed RCP Seal Bleedoff Isolation Valves
	CRS	16	Ensure compliance with BOTH of the following: - LCO 3.3.5, ESFAS Instrumentation - LCO 3.3.6, ESFAS Logic & Manual Trip

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	6	Page 15 of 24
Event Description:	Inadvertent 'B' CSAS Leg 1-3					
Time	Position	Step	Applicant Actions			

Technical Specifications:

Due to the inadvertent CSAS:

- LCO 3.3.6, ESFAS Logic and Manual Trip, Condition D
 - Restore inoperable channel to OPERABLE status within 48 hours

Due to overriding CSAS actuated containment isolation valves:

- LCO 3.6.3, Containment Isolation Valves, Condition A
 - Isolate the affected penetration flowpath by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured AND verify the affected penetration flowpath is isolated within 4 hours

Due to overriding and stopping the CS Pump:

- LCO 3.6.6, Containment Spray System, Condition A
 - Restore containment spray train to OPERABLE status within 72 hours

NOTE: The following TS may also apply due to decisions/actions by the crew:

IF the Control Room Essential AHU is overridden and stopped:

- LCO 3.7.11, Control Room Essential Filtration, Condition A
- LCO 3.7.12, Control Room Emergency Air, Condition A

IF the 'B' LPSI Pump is overridden and stopped:

- LCO 3.5.3, ECCS – Operating, Condition A

IF the 'B' HPSI Pump is overridden and stopped:

- LCO 3.5.3, ECCS – Operating, Condition B

Examiner Note: When the crew has stopped the 'B' CS Pump, restored NC flow to Containment, and restored RCP Seal Bleedoff, and the CRS has addressed Technical Specifications, or at lead evaluator's discretion, proceed to Event 7, VCT Level Transmitter LT-227 Fails Low

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	7	Page 16 of 24
Event Description:	VCT Level Transmitter, LT-227, Fails Low					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 7, LT-227 Fails Low			
Indications Available:			
• 3A08B VCT LVL LO-LO alarm • Automatic boration to the RCS			
Examiner Note: The following steps are from B03A ARP Window 3A08B:			
	OATC	1	Check BOTH of the following: • CHN-LI-226, Volume Control Tank Level • ERFDADS or PC point CHL227
	OATC	2	IF the SM/CRS directs operating with one Charging Pump, THEN place one Charging Pump in operation per 40OP-9CH01, CVCS Normal Operations
	OATC	3.1 3.2 3.3 3.3.1 3.3.2 3.3.3 3.3.4 3.3.5	If ALL of the following (validates CHN-LT-227 failure): • CHN-LI-226, Volume Control Tank Level, indicates greater than or equal to 34% • CHN-PI-225, Volume Control Tank pressure, is stable or rising (Pumping from RWT with BAMP will raise VCT level) • CHN-LT-227 has been determined to have failed low THEN perform the following to maintain Charging Pump suction aligned to the VCT: • Hold open CHN-HS-501, VOLUME CONTROL TANK OUTLET VLV • WHEN CHN-HS-501, VOLUME CONTROL TANK OUTLET VLV, indicates CHN-UV-501 is open THEN hold closed CHN-HS-514, BORIC ACID MAKE-UP TO CHRG PMPS VLV • IF ANY of the following: ○ CHN-UV-501, VCT Outlet, begins to stroke closed ○ CHN-UV-514, BORIC ACID MAKE-UP CHRG PMPS VLV, begins to stroke open THEN perform the following: • Release CHN-HS-514, BORIC ACID MAKE-UP TO CHRG PMPS VLV • Check CHN-HS-514, BORIC ACID MAKE-UP TO CHRG PMPS VLV indicates open • Release CHN-HS-501, VOLUME CONTROL TANK OUTLET VLV • Check CHN-HS-501, VOLUME CONTROL TANK OUTLET VLV indicates closed • GO TO Step 3.1
Examiner Note: If the crew is slow to take actions to stop the boration, the crew will subsequently need to lower turbine load to raise RCS temperature			
	BOP	3.4	Direct a Nuclear Operator(s) to BOTH of the following MCCs: • MCC NHN-M72, 480V Non-Class 1E MCC (120 ft Aux Bldg corridor east end) • MCC NHN-M15, 480V Non-Class 1E MCC (100 ft Aux Bldg west Elect Pen Room)

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	7	Page 17 of 24
Event Description:	VCT Level Transmitter, LT-227, Fails Low					
Time	Position	Step	Applicant Actions			

Driver Cue: The CR will send the Auxiliary Building Operator AND the Radwaste Operator to the MCCs. When contacted as the Auxiliary Building Operator and the Radwaste Operator to report to NHN-M72 and M15 wait 1 minute and inform the CR:

- “This is the Aux Building Operator, I am at NHN-M72(15)”
- “This is the Radwaste Operator, I am at NHN-M72(15)”

	BOP	3.5	Compare trends on ERFDADS for all of the following: • CHL226 • CHL227 • CHP225

Driver Action: When directed to open breakers for UV-501, 514, and 536, insert the following keys associated with each valve:

- CHN-UV-501 (NHN-M7208) – Key 11
- CHN-UV-514 (NHN-M1528) – Key 12
- CHE-HV-536 (NHN-M7209) – Key 13

	BOP		IF ALL of the following: • The cause of the VCT lo-lo level alarm is CHN-LT-227 failure • The SM/CRS directs de-energizing CHE-HV536, Gravity Feed to Charging Pumps Suction • The SM/CRS directs de-energizing CHN-UV-501, VCT Outlet • The SM/CRS directs de-energizing CHN-UV-514, Boric Acid Make-up to Charging Pumps Suction Isolation Valve THEN perform the following: • Direct a Nuclear Operator to open MCC Breaker NHN-M7209, Cktbkr for Charging Pump Suct Valve CHE-HV-536
		4.1	WHEN the CHN-UV-501, VCT Outlet is open, THEN perform the following: • Direct a Nuclear Operator to open the MCC Breaker NHN-M7208, Cktbkr for Volume Control Tk Outlet Vlv CHN-UV-501
		4.2.1	
		4.2.2	• WHEN the Nuclear Operator confirms Step 4.2.1 is complete, THEN release CHN-HS-501, VOLUME CONTROL TANK OUTLET VLV
			WHEN CHN-UV-514, Boric Acid Make-up to Charging Pump's Suction Isolation Valve, is closed, THEN perform the following: • Direct a Nuclear Operator to open MCC Breaker NHN-M1528, Cktbkr for Mkup Bypass to Chg PP Vlv CHN-UV-514
		4.3.1	
		4.3.2	• WHEN the Nuclear Operator confirms Step 4.3.1 is complete, THEN release CHN-HS-514, BORIC ACID MAKE-UP TO CHRg PMPS VLV
		4.4	Station a Nuclear Operator in the vicinity of ALL of the following breakers as a compensatory action if the Control Room directs their closure: • MCC Breaker NHN-M7209 for HV-536 • MCC Breaker NHN-M7208 for UV-501 • MCC Breaker NHN-M1528 for UV-514

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	7	Page 18 of 24
Event Description:	VCT Level Transmitter, LT-227, Fails Low					
Time	Position	Step	Applicant Actions			

Examiner Note: When the crew has stopped the inadvertent boration, or at lead evaluator's discretion, proceed to Event 8, ESD from SG #1 Inside Containment

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	8, 9	Page 19 of 24
Event Description:	ESD From SG #1 Inside Containment / 'A' CS Header Isolation Valve Seized / 'B' CS Pump Seized Shaft					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 8, ESD on SG #1 Inside Containment			
Indications Available: • RCS Temp lowering • Reactor Power rising • Containment Pressure rising			
Examiner Note: The following steps are from 40EP-9EO01, Standard Post Trip Actions:			
	BOP	2.a 2.b 2.c 2.d	Determine that Reactivity Control acceptance criteria are met: • Check that reactor power is dropping • Check that startup rate is negative • Check that full strength CEAs are inserted • Check that the Main Turbine is tripped
	OATC	3.a 3.b	Determine the Maintenance of Vital Auxiliaries acceptance criteria are met: • Check 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: • All vital and non-vital AC buses are powered • All vital and non-vital DC buses are powered
	OATC	4.a.1 4.b.1 4.c.1	Determine that RCS Inventory Control acceptance criteria are met: • Check that pressurizer level meets BOTH of the following: • 10-65% • Trending as expected to 33-53% • (CA) Restore and maintain pressurizer level to 33-53% by any of the following: • Operation of PLCS • Manual operation of Charging Pumps and Letdown Control Valves • Check that the RCS is 24°F or more subcooled • (CA) IF the RCS is less than 24F subcooled, THEN stop all RCPs • Check that BOTH of the following are in service to all RCPs: • Seal injection • Nuclear Cooling Water • (CA) Isolate controlled bleedoff from ANY RCP(s) as appropriate. REFER TO 40AO-9ZZ04, RCP Emergencies, Appendix E, Control Board B04 Label
Critical Task # 1: Secure all 4 RCPs within 30 minutes of the unrecoverable loss of cooling water to the RCPs			
Measurable Performance Standard: Successful completion of this Critical Task can be verified by each of the four RCP handswitches being taken to the OFF position prior to 30 minutes elapsing from the initiation of CSAS (either manual actuation or automatic actuation, whichever happens first).			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	8, 9	Page 20 of 24
Event Description:	ESD From SG #1 Inside Containment / 'A' CS Header Isolation Valve Seized / 'B' CS Pump Seized Shaft					
Time	Position	Step	Applicant Actions			

	OATC	5.1	Determine that RCS Pressure Control acceptance criteria are met: - Pressurizer pressure is 1837-2285 psia - Pressurizer pressure is trending as expected to 2225-2275 psia (CA) Restore and maintain pressurizer pressure to the normal control band by ANY of the following: - Operation of PPCS - Manual operation of pressurizer heaters and spray valves (CA) IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated (CA) IF pressurizer pressure remains below the SIAS setpoint, THEN stop ONE RCP in each loop (CA) IF pressurizer pressure drops below the RCP NPSH limits, THEN stop all RCPs. REFER TO Appendix 2, Figures
		5.2	
		5.3	
		5.4	
	OATC	6	Determine that Core Heat Removal acceptance criteria is met: - At least one RCP is operating - Loop delta-T is less than 10°F - RCS is 24°F or more subcooled
Examiner Note: During validations, rebound occurred on SG #1 at ~ 425°F Tcold. This would correspond to a SG pressure of ~ 335 psia. The CRS should give a SG pressure band on SG #2 of ~ 25 psia above and below saturation pressure for the identified rebound temp. In this case, the pressure band for SG #2 would be ~ 300-350 psia.			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	8, 9	Page 21 of 24
Event Description:	ESD From SG #1 Inside Containment / 'A' CS Header Isolation Valve Seized / 'B' CS Pump Seized Shaft					
Time	Position	Step	Applicant Actions			

	BOP		Determine that RCS Heat Removal acceptance criteria are met: - Check that at least one SG meets BOTH of the following: - Level is 35% WR or more - Feedwater is restoring or maintaining level 45-60% NR (CA) Restore and maintain level in at least one SG 45-60% NR - Check that Tc is 560-570°F (CA) IF Tc is greater than 570°F, THEN perform the following: - Ensure that feedwater is being restored to at least one SG - Restore Tc to 560-570°F using SBCS or ADVs (CA) IF Tc is less than 560°F, THEN perform the following: - Ensure feed flow is NOT excessive - Ensure SG Blowdown is isolated - Restore Tc to 560-570°F using SBCS or ADVs - IF MSIS has actuated AND the cooldown terminates, THEN stabilize Tc using ADVs - IF AFAS has actuated AND at least one SG level is 10% WR or more, THEN override and throttle Auxiliary Feedwater to maintain Tc 560-570°F - Check that SG pressure is 1140-1200 psia (CA) IF SG pressure drops to the MSIS setpoint, THEN ensure MSIS has actuated (CA) IF SG pressure is less than 1140 psia, THEN perform the following: - Ensure the SBCS valves are closed - Ensure the ADVs are closed (CA) IF SG pressure is greater than 1200 psia, THEN restore and maintain SG pressure to less than 1200 psia using SBCS or ADVs
Critical Task # 2: Restore feed to at least one SG prior to lifting a Primary Safety Valve Measurable Performance Standard: The crew will have to establish feed flow to SG #2 in order to recover the RCS heat removal safety function and provide adequate feed water (and steaming from SG #2) in order to ensure all Primary Safety Valves remain closed (which can be verified using any ERFDADS terminal to trend the status of the safeties, as well as the PSV indicating lights on B04).			
	OATC	8.a.1	Determine that Containment Isolation acceptance criteria are met: - Check that containment pressure is less than 2.5 psig (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated - Check BOTH of the following conditions: - No abnormal containment area activity - No abnormal steam plant activity

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	8, 9	Page 22 of 24
Event Description:	ESD From SG #1 Inside Containment / 'A' CS Header Isolation Valve Seized / 'B' CS Pump Seized Shaft					
Time	Position	Step	Applicant Actions			

	OATC	9.a	Determine that Containment Temperature and Pressure Control acceptance criteria are met:
		9.b.1	- Check that containment temperature is less than 117°F - Check that containment pressure is less than 2.5 psig (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated (CA) IF containment pressure is 8.5 psig or more, THEN perform the following: - Ensure CSAS is actuated - Ensure at least one Containment Spray header flow is greater than 4350 gpm - Stop all of the operating RCPs - Ensure RCP controlled bleedoff is isolated
		9.b.2.1	
		9.b.2.2	
		9.b.2.3	
		9.b.2.4	
Critical Task...			
	CRS	11	Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS should diagnose that there is an ESD inside Containment, however since there is no CS flow, transition to the Functional Recovery EOP is required. Given the seized CS isolation valve on Train 'A' and the sheared shaft on the 'B' CS Pump, the CRS should direct the crew to align the 'B' LPSI Pump to provide CS flow through the 'B' CS Header Isolation Valve and establish CS flow. The following steps are from 40EP-9EO09, Functional Recovery:			
	CRS	1	Ensure the event is being classified
	CRS	2	Enter the EOP entry time
	OATC	3.a	IF Pressurizer pressure remains below the SIAS setpoint, THEN perform the following:
		3.b	- Ensure ONE RCP is stopped in each loop - IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped
	OATC	4	IF any RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria, and check the RCP operating limits satisfied
	BOP	5.a	Perform the following:
		5.b	- Ensure that the Steam Generator Sample Valves are open - Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist
	OATC	6	Perform Appendix 117, Placing Hydrogen Analyzers in Service
Examiner Note: The following steps are from Appendix 117, Placing Hydrogen Analyzers in Service:			
	OATC	1.a	Perform the following to place Hydrogen Analyzer Train A in service:
		1.b	- Open HPA-UV-1, Containment Isolation Valve - Open HPA-HV-7A/7B, Containment Isolation Valves - Place handswitch HPA-HS-9A, Power/Control, in the ANALYZE position
		1.c	

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	8, 9	Page 23 of 24
Event Description:	ESD From SG #1 Inside Containment / 'A' CS Header Isolation Valve Seized / 'B' CS Pump Seized Shaft					
Time	Position	Step	Applicant Actions			

	OATC	2.a 2.b 2.c	Perform the following to place Hydrogen Analyzer Train B in service: • Open HPA-UV-2, Containment Isolation Valve • Open HPA-HV-8A/8B, Containment Isolation Valves • Place handswitch HPA-HS-10A, Power/Control, in the ANALYZE position
Examiner Note: The following steps are the continuation of the Functional Recovery:			
	CRS	7	Identify the success path(s) to be used to satisfy each safety function. REFER TO BOTH of the following: • Section 4.0, Safety Function Tracking • Section 6.0, Resource Assessment Trees
	CRS	8	Perform Section 5.0, Safety Function Status Check, for those success paths in use
	CRS	9	Perform ALL of the following in the order listed: • 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
Examiner Note: The CRS should direct the crew to perform CTPC-2, Containment Spray, to recover the Containment Temperature and Pressure Control Safety Function. The following steps are from CTPC-2:			
	BOP	2	If containment pressure is 8.5 psig or more, THEN check that CSAS is actuated
	OATC	3	IF CSAS actuated, THEN check at least one CS header is delivering 4350 gpm or more (neither train is, should proceed to the contingency actions)
	OATC	3.2.a 3.2.b 3.2.c 3.2.d 3.2.e 3.2.f	IF it is desired to use LPSI Pump B to supply CS B train, AND LPSI Pump B is NOT needed to support any RC, IC, or HR success path, THEN perform the following: • Ensure that LPSI Pump B is running • Ensure that SIB-HV-307, LPSI Shutdown Cooling Heat Exchanger B Bypass Valve, is closed • Ensure that SIB-HV-695, LPSI-Containment Spray From Shutdown Heat Exchanger B Cross-Tie Valve, is open • Ensure that SIB-UV-671, Containment Spray B Discharger to Spray Header 2 Valve, is open • Ensure SIB-HV-694, LPSI-Containment Spray to Shutdown Heat Exchanger B Cross-Tie Valve, is open • Check that the LPSI Pump is running at less than 60 amps

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	3	Event #	8, 9	Page 24 of 24
Event Description:	ESD From SG #1 Inside Containment / 'A' CS Header Isolation Valve Seized / 'B' CS Pump Seized Shaft					
Time	Position	Step	Applicant Actions			

Critical Task # 3: Establish CS flow within 30 minutes of exceeding 8.5 psig inside Containment

Measurable Performance Standard: To align 'B' LPSI for CS flow, the OATC will:

- Ensure the 'B' LPSI Pump is running
- Ensure SIB-HV-307 is CLOSED
- Ensure SIB-HV-695 is OPEN
- Ensure SIB-671 is OPEN
- Ensure SIB-HV-694 is OPEN

Once LPSI has been aligned for CS flow, the crew can verify success by monitoring Containment pressure on any control board Containment pressure transmitter or on any ERFDADS terminal (CS header flow indication does not indicate CS flow when using LPSI due to the location of the flow detector and the LPSI to CS flowpath)

Examiner Note: When the crew has aligned the 'B' LPSI Pump for CS flow, or at lead evaluator's discretion, the scenario may be terminated

Facility: PVNGS	Scenario: 4	Test: 2024 NRC Exam
Examiners: _____	Operators: _____	
_____	_____	
_____	_____	
Initial Conditions: 50% power, MOC		
Turnover: Maintain 50% power		

Event Number	Event Type*			Event Description
	CRS	OATC	BOP	
1	I		I, MC	SG #1 NR Level Transmitter, LT-1111, Fails to 55%
2	C	C, MC		'A' Reactor Makeup Water Trip, 'B' FTAS
3	I, TS		I	'D' RWT Level Transmitter, CHD-LI-203D, Fails Low
4	C	C	C	Partial Load Rejection
5	I	I	I	Turbine Load Index #2 Fails High
6	C, TS	C, MC	C	Train 'A' Class 4kV Bus Supply Transformer, NBN-X03, Fault / 'A' EDG Output Breaker Fails to Auto Close
7	M	M	M	Loss of Offsite Power / Large Break Loss of Coolant Accident
8	C		C, MC	CSAS Fails to Auto Actuate
9	C	C		'A' Spray Pond Pump Trip (Rx Trip + 2 min) / 'B' HPSI Sheared Shaft / 'B' LPSI Degraded Discharge Head
*(N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor, (TS) Tech Spec, (MC) Manual Control				

Actual	Target Quantitative Attributes
4	Malfunctions after EOP entry (1-2)
5	Abnormal events (2-4)
1	Major transients (1-2)
1	EOPs entered/requiring substantive actions (1-2)
1	Entry into a contingency EOP with substantive actions (1 per scenario set)
2	Pre-identified CTs (2 or more)

2024 NRC Exam Scenario #4 Overview	
Event 1	After taking the shift, SG #1 NR level transmitter, LT-1111, will fail to 55%. The BOP will address the ARP and place the faulted transmitter in maintenance to stabilize and restore SG #1 level to setpoint.
Event 2	When LT-1111 has been placed in maintenance, the 'A' Reactor Makeup Water Pump will trip and the 'B' Pump will fail to auto start. The OATC will address the ARP and start the 'B' Reactor Makeup Water Pump.
Event 3	When the 'B' Reactor Makeup Water Pump has been started, the 'D' RWT Level Transmitter, CHD-LI-203D, will fail low. The CRS will address Technical Specifications direct the BOP to bypass the affected bistable as the PPS cabinet.
Event 4	When the affected bistable has been bypassed, the Main Turbine will have a partial load rejection. The CRS will enter 40AO-9ZZ08, Load Rejection, and direct the BOP to take action to place the Load Limit Potentiometer back in control of Main Turbine load and direct the OATC to place the Pressurizer in boron equalization to stabilize RCS pressure.
Event 5	When the load limit potentiometer is back in control of turbine load, Turbine Load Index #2 will fail high. The CRS will enter 40AO-9ZZ16, RRS Malfunctions, and direct the BOP to select TLI #1 at the RRS cabinet.
Event 6	When TLI #1 has been selected, Train 'A' Class 4kV Bus PBA-S03 Supply Transformer, NBN-X03, will relay causing a loss of power to the bus. The CRS will enter 40AO-9ZZ12, Degraded Electrical Power, as a result of the transformer fault. The 'A' EDG Output Breaker will also fail to auto close, requiring the crew to manually close the breaker to re-energize the bus. As a result, Charging flow will go from 88 gpm to 44 gpm, leaving the crew ~ 2 minutes to start another Charging Pump or letdown will auto isolate. If letdown isolates, the CRS will also enter 40AO-9ZZ05, Loss of Charging or Letdown to either setup for extended operations with letdown isolated or to restore letdown. The CRS will also address Technical Specifications for the failure of the transformer and the EDG output breaker.
Event 7	When Technical Specifications have been addressed, a large break LOCA will occur resulting in a Reactor trip, and a SIAS, CIAS, and MSIS actuations.
Event 8	CSAS will fail to automatically actuate and the BOP will manually actuate CSAS from B05 to establish CS flow.
Event 9	Two minutes after the Reactor trip, the 'A' Spray Pond will trip requiring the OATC to dispatch an AO to trip the 'A' EDG locally. The 'B' HPSI Pump will also trip, resulting in no HPSI flow. The CRS will have to transition to the Functional Recovery procedure and direct the crew to align offsite power via the 'B' Class 4kV Bus to the 'A' Class 4kV bus in order to start the 'A' HPSI Pump and establish HPSI flow. When SI flow has been established, the scenario may be terminated.

Critical Task # 1: Establish CS flow within 15 minutes of exceeding 8.5 psig inside Containment

Safety Significance: Potential degradation of any barrier (in this case, the Containment Barrier) to fission product release. Failure to restore the containment temperature and pressure control safety function may challenge containment integrity.

Initiating Cue: The crew will have indication of Containment pressure on any ERFDADS terminal in the Control Room as well as multiple Containment pressure indications on the control boards. SPTA Step 9.b.2 contains contingency actions to ensure CSAS is actuated if Containment pressure is 8.5 psig or more.

Performance Feedback: When the crew takes at least two channels of CSAS to the CSAS INITIATE position, CSAS will actuate. The crew can further confirm CSAS was successfully actuated by observing the CS Header Isolation Valve positions, and CS flow on any ERFDADS terminal in the Control Room.

Success Path: When the need for a CSAS actuation is recognized by the crew, manual actuation of CSAS can be performed by placing at least two of the CSAS handswitches on B05 to the CSAS INITIATE position.

Measurable Performance Standard: Successful completion of this Critical Task can be confirmed by the red CSAS alarm on the upper section of B05 and CS flow of > 4350 gpm on each train of CS as confirmed on any ERFDADS terminal. In order to actuate CSAS, a member of the crew must take at least two of the CSAS actuation handswitches on B05 to the CSAS INITIATE position.

Critical Task # 2: Establish adequate SI flow per Appendix 2, Figures, within 30 minutes of RCS pressure lowering below 1600 psia

Safety Significance: The lack of SI flow during a break in the RCS could lead to core uncover, and ultimately, fuel damage.

Initiating Cue: The crew will have indication SIAS having actuated on each ERFDADS terminal in the Control Room as well as a red SIAS alarm on the upper section of B05. 40EP-9EO03, Loss of Coolant Accident, Step 5.a and 5.b, directs checking the HPSI Pumps have started and that SI flow is adequate per Appendix 2, Figures. The loss of power on Train 'A' and the indications of a sheared shaft on the 'B' HPSI Pump will alert the crew that in order to achieve adequate SI flow, Train 'A' power must be restored, which is done in the Functional Recovery procedure.

Performance Feedback: The crew will have indication that power has been restored to Train 'A' Class 4kV power by voltage indication on the control boards as well as on all ERFDADS terminals in the Control Room. When the 'A' HPSI Pump is started, SI flow indications will be available on B02 as well as on all ERFDADS terminals.

Success Path: 40EP-9EO09, Functional Recovery, provides steps in MVAC-1, Offsite Power, to restore power to PBA-S03, then both MVAC-1 and IC-2, SI, provide direction to ensure equipment needed to restore safety functions is started, in this case, 'A' HPSI Pump.

Measurable Performance Standard: In order to restore power to PBA-S03, the crew will:

- Place PBA-SS-S03K to ON
- Close PBA-S03K

In order to start the 'A' HPSI Pump, the crew will:

- Place SIA-HS-1, HPSI Pump A, to START

A laminated copy of Appendix 2, Figures, is on the vertical section of B02 where the crew can compare SI flow to minimum required flow to ensure successful restoration of the inventory control safety function.

NOTE: (Per NUREG-1021) If an operator or the Crew significantly deviates from or fails to follow procedures that affect the maintenance of basic safety functions, those actions may form the basis of a Critical Task identified in the post-scenario review

Form 3-3.1

Driver Set-Up Instructions
NRC Exam Scenario #4

Driver Setup Instructions	
	Reset to IC-614
	Run scenario file "2024 NRC Scn #4"

Scenario File

imf cmBSRP01BSCNTPRHHAT_1
imf cmBSRP01BSCNTPRHHBT_1
imf cmBSRP01BSCNTPRHHCT_1
imf cmBSRP01BSCNTPRHHDT_1

IMF cmCPSI01SIBP02_1
IMF cmCPRH05SIBP01_3 f:100.0

IMF cmCPCC08SPAP01_6 e:RPSCHC d:120

IMF cmTRFW04SGNLT1111_1 k:1 r:01:00 f:55

IMF cmCPCV10CHNP03B_5 k:2
MMF cmCPCV10CHNP03A_2 k:2 d:5

IMF cmTRCV07CHDLT203D_1 k:3 r:1 i:94.9399 f:0

IMF mfTC11 k:4 f:30

IMF cmTRMS03MTNPT11B_1 k:5 r:1 i:334.444 f:839

IMF cmBKEG02PBAS03B_2 k:6
IMF mfED10A k:6 d:5

IMF mfED02 k:7
IMF mfTH01A k:7 f:10 d:10

IRF rfEG04 k:31 f:STOP

Plant Conditions:

- Unit 1 is operating at 50% power, MOC

Equipment Out of Service:

- None

Planned Shift Activities:

- Maintain 50% power

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	1	Page 8 of 26
Event Description:	SG #1 NR Level Transmitter, LT-1111, Fails to 55%					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 1, LT-1111 Fails to 55%			
Indications Available: - Lowering level SG #1 6A06A FWCS PROCESS TRBL			
Examiner Note: The following steps are from B06A ARP Window 6A06A:			
	BOP	1	Check BOTH of the following for SG 1 at DFWCS to validate the alarm: - LT1111, SG 1 Level Transmitter - LT1112, SG 1 Level Transmitter
	BOP	2	Check BOTH of the following for SG 2 at DFWCS to validate the alarm: - LT1121, SG 2 Level Transmitter - LT1122, SG 2 Level Transmitter
	BOP	5	Place the faulty level transmitter in Maintenance (LT-1111)
	BOP	6	Reset the DFWCS alarm on the Process Alarm page
Examiner Note: When the BOP has placed LT-1111 in maintenance, or at lead evaluator's discretion, proceed to Event 2, 'A' RMW Pump Trip			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	2	Page 9 of 26
Event Description:	'A' Reactor Makeup Water Pump Trip / 'B' Fails to Auto Start					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 2, 'A' RMW Pump Trip			
Indications Available: 3A03A RMW TRBL			
Driver Cue: When an AO is dispatched locally to the breaker, wait 30 seconds and report that NHN-M1513 breaker has an 86 lockout			
Examiner Note: The following steps are from B03A ARP Window 3A03A:			
	OATC	1	Start the standby Reactor Makeup Water Pump using ONE of the following: - CHN-P03A using CHN-HS-10, REACTOR MAKEUP WATER PUMP A - CHN-P03B using CHN-HS-11, REACTOR MAKEUP WATER PUMP B
	OATC	2	Direct a Nuclear Operator to determine the cause of the trip by checking ANY of the following: - Improper valve alignment - Mechanical malfunction - MCC breaker NHN-M1513, Cktbrk for Reactor Makeup Water Pump CHN-P03A, for loss of power
Examiner Note: When the OATC has started the 'A' RMW Pump, or at lead evaluator's discretion, proceed to Event 3, 'D' RWT Level Transmitter CHD-LI-203D Fails Low			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	3	Page 10 of 26
Event Description:	'D' Refueling Water Tank Transmitter, CHD-LI-203D, Fails Low					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 3, CHD-LI-203D Fails Low			
Indications Available: • 5B06C LO RWT LVL CH TRIP • LI-203D red bar failed low (on B02)			
Examiner Note: The following steps are from B05B ARP Window 5B06C:			
	OATC	1	Check ALL of the following to validate the alarm: • CHA-LI-203A, Refueling Water Tank Level • CHA-LI-203B, Refueling Water Tank Level • CHA-LI-203C, Refueling Water Tank Level • CHA-LI-203D, Refueling Water Tank Level
Procedure Note: The following Technical Specifications may be impacted: • LCO 3.3.5, ESFAS Instrumentation (Only applicable LCO listed) • LCO 3.3.6, ESFAS Logic and Manual Trip • LCO 3.3.10, PAM Instrumentation • LCO 3.3.11, Remote Shutdown System • TLCO 3.3.105, Post Accident Monitoring Instrumentation			
	BOP	3.1 3.3 3.4	IF three or more RWT level channels indicated greater than 9.4%, THEN perform the following at the direction of the SM/CRS: • Bypass the alarming channel at the PPS cabinet • Determine the cause of the alarm • Initiate a condition report for I&C to investigate and correct the failure
Examiner Note: The CRS should direct the BOP to bypass the failed instrument per 400P-9SB02, Plant Protection System Bypass Operations:			
	BOP	6.1.2	Select the channel to be placed in bypass (Channel D)
	BOP	6.1.3	Select the parameter(s) to be placed in bypass (Parameter 20)
	BOP	6.1.4	Request the SM/CRS enter and log the appropriate LCO/TLCO required actions
	BOP	6.1.6	Place the selected parameter(s) in bypass
Technical Specifications: • LCO 3.3.5, ESFAS Instrumentation, Condition A (Function 5) ○ Place channel in bypass or trip within 1 hour AND restore channel to OPERABLE status prior to entering MODE 2 following next MODE 5 entry			
Examiner Note: When the BOP has placed the affected parameter in bypass and the CRS has addressed Technical Specifications, or at lead evaluator's discretion, proceed to Event 4, Partial Turbine Load Rejection			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	4	Page 11 of 26
Event Description:	Partial Turbine Load Rejection					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 4, Partial Turbine Load Rejection			
Indications Available:			
• CEAs begin inserting • 4A01B PZR PRESS HI-LO • 4A12B TURB BYP DEMAND			
Examiner Note: The following steps are from 40AO-9ZZ08, Load Rejection:			
	ALL	2	Check that both of the following are being maintained in automatic: • RRS is adjusting CEAs to restore Tave/Tref $\pm 3^{\circ}\text{F}$ • SBCS opens if required to control main steam pressure at setpoint
	CRS	3	Initiate Appendix J, LCO Required Action Tracker.
		4	IF the Main Generator frequency is stable, AND the CRS directs, THEN PERFORM Appendix I, Placing Main Turbine in Standby.
Examiner Note: The CRS may or may not opt to place the Main Turbine in Standby. If they do, the steps from Appendix I are at the end of this section of the scenario guide			
	BOP	5	IF the turbine EHC controls are NOT in “STANDBY”, THEN reduce the load limit potentiometer until the “LOAD LIMITING” light is “ON”.
	CRS	11	Direct the STA to PERFORM Appendix F, Status Check Load Rejection.
		12	IF a SBCS Condenser Interlock has actuated, AND BOTH of the following conditions exist: • Main Condenser vacuum has recovered to 5 inches HgA or less in all condenser shells • SBCS valves 1001 thru 1006 have a zero output signal (Manual or Auto) THEN reset the SBCS Condenser Interlock.
		13	IF steaming to atmosphere, THEN inform Radiation Protection and the RMS Technician.
	BOP	14	Restore and maintain SG levels 45-60% NR.
	OATC	17	Monitor CPC Pt ID 0187 CPC ASI - Aux Trip.
	OATC	18.a 18.b	IF ALL of the following conditions are met, • CPC Pt ID 0187 indicates greater than + 0.45 • CPC Pt ID 0187 is trending to + 0.50 • CPC Aux Trip on ASI is still possible (above the Rule of 45) on Pt ID 0125 THEN perform the following: • Trip the Reactor. • GO TO 40EP-9EO01, Standard Post Trip Actions.
	OATC	19.a 19.b	Start boron equalization of the pressurizer by performing the following: • Energize pressurizer backup heaters as necessary. • Lower the setpoint on RCN-PIC-100, Pressurizer Pressure Controller to 2220 psia.
Examiner Note: The following steps are from Appendix H, Placing the Main Turbine in Standby (if applicable):			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	4	Page 12 of 26
Event Description:	Partial Turbine Load Rejection					
Time	Position	Step	Applicant Actions			

	OATC	2.a	Remove the Reactor Power Cutback System from service by performing the following: - Push the "AUTO ACTUATE OUT-OF-SERVICE" button and check that the button illuminates. - Press the "TEST/RESET" button and check that the button illuminates.
		2.b	
	BOP	3	Check that the "Standby Tripped" light in the Standby Signal Match group is off.
	BOP	4	Raise or lower the Standby Load Set by turning the potentiometer knob until the "PRIMARY" and "STANDBY" signals on the "CV SIGNAL" meter are approximately matched.
	BOP	5	Adjust the potentiometer until the "CV SIG MATCHED" light comes on.
	BOP	6	Press the "ON" pushbutton in the Standby Signal Match group and check BOTH of the following: - The "ON" light is on and the "OFF" light is off - The "IN STANDBY" light is on at the Operating Mode group
	BOP	7	Stabilize the turbine load.
Examiner Note: When the Load Limit Potentiometer is back in control of Main Turbine load and the Pressurizer is in boron equalization, or at lead evaluator's discretion, proceed to Event 5, TLI #2 Fails High			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	5	Page 13 of 26
Event Description:	Turbine Load Index #2 Fails High					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 5, TLI #2 Fails High			
Indications Available: 4A10B AMI (AUTOMATIC MOTION INHIBIT) 4A12B TURB BYP DEMAND			
Examiner Note: The following steps are from 40AO-9ZZ16, RRS Malfunctions:			
	OATC	2	Ensure that CEDMCS is NOT in Auto Sequential
	BOP	3.a	IF SBCS has responded to the instrument failure, OR the CRS directs removing SBCS from Remote Automatic, THEN perform BOTH of the following: - Place SBCS in ANY of the following modes: - EMERGENCY OFF - LOCAL AUTO - MANUAL - Restore SG pressure to the desired operating band as needed
		3.b	
	BOP	4	Perform Attachment C-1, Determining the Failed TLI Instrument, to determine the failed instrument
Examiner Note: The following steps are from Attachment C-1:			
	BOP	2	Press the TEST PROBE pushbutton
	BOP	3	Check the DVM voltage indicates zero volts
	BOP	4	Press the DVM pushbutton that corresponds to TLI1
	BOP	5	Record the indicated voltage
	BOP	6	Press the TEST PROBE pushbutton
	BOP	7	Check that DVM voltage indicates zero volts
	BOP	8	Press the DVM pushbutton that corresponds to TLI2
	BOP	9	Record the indicated voltage
	BOP	10	Press the TEST PROBE pushbutton
	BOP	11	Check that DVM voltage indicates zero volts
	BOP	12	Press the DVM pushbutton that corresponds to average TLI
	BOP	13	Record the indicated voltage
	BOP	14	Press the TEST PROBE pushbutton
	BOP	15	Check that DVM voltage indicates zero volts
	BOP	16	Record the indicated voltage
	BOP	17	Determine the failed instrument based on recorded voltages
	BOP	18	Notify the SM/CRS of the failed instrument
Examiner Note: The following steps are the continuation of the main body:			
	ALL	5	Determine the impact of the failure

Form 3-3.2		Required Operator Actions				

Operating Test:		NRC	Scenario #	4	Event #	5	Page 14 of 26
Event Description:		Turbine Load Index #2 Fails High					
Time	Position	Step	Applicant Actions				

	BOP		IF RRS is selected to ONE of the following: • Average • The affected instrument THEN perform the following: • Ensure SBCS is in ONE of the following: ○ Emergency Off ○ Local Automatic ○ Manual • Perform Appendix C, Operation of the Reactor Regulating System, to select the unaffected instrument at the RRS Test Panel
		6.a	
		6.b	
Examiner Note: The following steps are from Appendix C:			
	BOP		IF a Turbine Load Index instrument has failed, THEN perform the following:
		2.b	• Press the TEST PROBE pushbutton
		2.c	• Check that DVM voltage indicates zero volts
		2.d	• Press the DVM pushbutton that corresponds to the TLI to be selected
		2.e	• Record voltage indicated on the DVM for the selected TLI
		2.f	• Check that DVM voltage recorded represents the normal TLI for the current power level
		2.g	• WHEN evaluation of DVM voltage is complete, THEN press the TEST PROBE pushbutton to disconnect the DVM from the input
		2.h	• Place the TLI input selector switch to the selected input
		2.i	• Inform the CRS of the status of the RRS panel
Examiner Note: The following steps are the continuation of the main body:			
	OATC	7	Check that Tavg/Tref mismatch is 3°F or less
	OATC	8	Place CEDMCS in the desired mode of operation
	BOP	9	IF Remote Automatic operation of SBCS is desired, THEN place SBCS in REMOTE AUTO
Examiner Note: When the crew has selected TLI #1 at the RRS cabinet, returned CEDMCS to Auto Sequential, and returned SBCS to Remote/Auto, or at lead evaluator's discretion, proceed to Event 6, Train 'A' 4kV Supply Transformer Fault			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	6	Page 15 of 26
Event Description:	Train 'A' 4kV Bus Supply Transformer Fault / 'A' EDG Output Breaker Fails to Auto Close					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 6, Train ‘A’ 4kV Bus Supply Transformer Fault			
Indications Available: • 0 VAC on PBA-S03 • ‘A’ EDG Running • LOP alarm on B05			
Examiner Note: The following steps are from 40AO-9ZZ12, Degraded Electrical Power:			
	OATC	1	IF the Diesel Generator is running with its output breaker open, THEN PERFORM Appendix M, DG A Running with the Output Breaker Open.
Examiner Note: The following steps are from Appendix M:			
	OATC	2	Check that BOTH of the following criteria are met for Diesel Generator A: • Frequency between 59.9 – 60.5 Hz • Voltage between 4080 – 4300V
	OATC	3	Ensure that BOTH of the following breakers are open: • PBA-S03L, PBA-S03 Normal Supply Breaker • PBA-S03K, PBA-S03 Alternate Supply Breaker
	OATC	4	Check that the 86 relays are NOT actuated for BOTH of the following breakers: • PBA-S03L, PBA-S03 Normal Supply Breaker • PBA-S03K, PBA-S03 Alternate Supply Breaker
	OATC	5	Check that PBA-S03B, DG Output Breaker 86 relay is NOT actuated.
	OATC	6.a 6.b 6.c	IF the breaker closure criteria in Step 2 through Step 5 are met, AND the breaker is NOT closed, THEN perform the following: • Place synchronizing switch PEA-SS-S03B, Diesel Generator A 4.16 kV Breaker to “ON”. • Close PBA-S03B, Diesel Generator A 4.16 kV Breaker. • Place synchronizing switch PEA-SS-S03B to “OFF”.
Procedure Note: Safe operating time periods with no spray pond cooling are 15 minutes unloaded and 2.6 minutes fully loaded			
		7	IF Spray Pond Pump A is NOT running, THEN start Spray Pond Pump A.
Examiner Note: The following steps are the continuation of the main body:			
	OATC	2	Check that BOTH of the following are energized: • NNN-D11 • NNN-D15
	OATC	3	Check that BOTH of the following are energized: • NNN-D25 • NNN-D27
Examiner Note: The crew will likely start the ‘E’ Charging Pump using prompt and prudent action (to prevent isolation of letdown). Letdown will isolate in ~ 2 minutes if the ‘E’ Charging Pump is not started. If letdown isolated, the crew will perform 40AO-9ZZ05, Loss of Charging or Letdown. The steps from ZZ05 are at the end of this section of the scenario guide			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	6	Page 16 of 26
Event Description:	Train 'A' 4kV Bus Supply Transformer Fault / 'A' EDG Output Breaker Fails to Auto Close					
Time	Position	Step	Applicant Actions			

	BOP OR OATC	4.a 4.b	IF additional charging pumps need to be started, THEN perform the following as appropriate: - IF letdown is isolated, OR CHN-PIC-201, Letdown Backpressure Control, setpoint is 220 psig or less, THEN start additional charging pumps as needed - IF letdown is in service, AND CHN-PIC-201 setpoint is greater than 220 psig, THEN PERFORM Appendix O, Starting Additional Charging Pumps
	BOP	5	Ensure adequate CTMT Normal cooling for present plant conditions
	BOP	6	Ensure adequate CEDM Normal cooling for present plant conditions
	BOP	7	IF Feedwater Bypass Valves, SGN-HV-1143 or 1145 are being used for SG feeding, THEN direct an operator to operate the valves as needed.
		8.a 8.b	Perform the following: - Direct the Effluent Tech to transfer the RMS Server to its alternate power supply. - Transfer power on the Control Room RMS Work Station by moving its power cord to the receptacle on the plant north side of the console (powered from QAN-D09C-01)
		9	IF PCA-P01, Spent Fuel Cooling Pump, was running, THEN direct an operator to PERFORM 40OP-9PC01, Fuel Pool Cooling, to start PCB-P01.
	CRS	10	IF the Unit is in Mode 1 - 4, THEN PERFORM BOTH of the following: 40ST-9ZZ37, Inoperable Power Sources Action Statement 40ST-9EC03, Essential Chilled Water & Ventilation Systems Inoperable Action Surveillance

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	6	Page 17 of 26
Event Description:	Train 'A' 4kV Bus Supply Transformer Fault / 'A' EDG Output Breaker Fails to Auto Close					
Time	Position	Step	Applicant Actions			

Technical Specifications:

- **LCO 3.8.1, AC Sources – Operating, Conditions A, B, and D**
 - **Condition A – Perform SR 3.8.1.1 for required OPERABLE offsite circuit within 1 hour and once per 8 hours thereafter, AND declare required feature(s) with no offsite power available inoperable when its redundant required feature(s) is inoperable within 24 hours from discovery of no offsite power to one train concurrent with inoperability of redundant required feature(s), AND restore required offsite circuit to OPERABLE status within 72 hours**
 - **Condition B – Perform SR 3.8.1.1 for the OPERABLE required offsite circuit(s) within 1 hour and once per 8 hours thereafter, AND declare required feature(s) supported by the inoperable DG inoperable when its redundant required feature(s) is inoperable within 4 hours from discovery of Condition B concurrent with inoperability of redundant required feature(s), AND determine OPERABLE DG is not inoperable due to common cause failure within 24 hours, OR Perform SR 3.8.1.2 for OPERABLE DG within 24 hours AND restore DG to OPERABLE status within 10 days**
 - **Condition D – Restore required offsite circuits to OPERABLE status within 12 hours OR restore DG to OPERABLE status within 12 hours**
- **LCO 3.8.4, DC Sources – Operating, Conditions A and B**
 - **Condition A – Restore battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours, AND verify battery float current ≤ 2 amps once per 12 hours, AND restore battery charger to OPERABLE status within 72 hours**
 - **Condition B - Restore DC electrical power subsystem to OPERABLE status within 2 hours**
- **LCO 3.8.9, Distribution Systems – Operating, Condition A**
 - **Restore AC electrical power distribution subsystem to OPERABLE status within 8 hours**

NOTE: LCO 3.8.4 and LCO 3.8.9 will be met when the 'A' EDG output breaker has been closed by the crew so the duration of not meeting these LCOs will likely be ~ 5 minutes. It is possible that these specs will not be announced by the CRS since the focus will be on the LCOs still not met at the time of the crew brief.

Examiner Note: In the event letdown isolated, the following steps are from 40AO-9ZZ05, Loss of Charging or Letdown:

		2	IF BOTH of the following occur at any time during this procedure: • Pressurizer level lowers to 33% • Restoration of charging is NOT impending THEN trip the Reactor and PERFORM 40EP-9EO01, Standard Post Trip Actions
	OATC	7	Place RCN-LIC-110, PLCS Master Controller, in MANUAL with 0% output
	OATC	8	Check that letdown backpressure is less than setpoint
	OATC	9	IF pressurizer level is 33% or more and rising, THEN ensure no more than one Charging Pump is running

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	6	Page 18 of 26
Event Description:	Train 'A' 4kV Bus Supply Transformer Fault / 'A' EDG Output Breaker Fails to Auto Close					
Time	Position	Step	Applicant Actions			

	OATC		IF ANY of the following: - Pressurizer level is 56% or more and rising - Pressurizer level is 27% or less and lowering THEN perform the following: - Ensure LCO 3.4.9, Pressurizer, has been declared not met, AND condition A has been entered - Initiate actions to place the unit in MODE 3 with Reactor trip circuit breakers open within 6 hours - Initiate actions to place the unit in MODE 4 within 12 hours
	OATC		IF letdown can be restored, THEN perform Appendix A, Restoration of Letdown With a Pressurizer Steam Bubble
Examiner Note: Since the unit is at 50% power, the CRS will likely direct restoration of letdown. The following steps are from Appendix A:			
	OATC	2	Ensure at least ONE of the following valves are closed: - CHB-UV-515, Letdown to Regen HX Isolation Valve - CHA-UV-516, Letdown to Regen HX Outlet Isolation Valve - CHB-UV-523, Regen HX Outlet Isolation Valve
	OATC	3	Ensure BOTH of the following Letdown Control Valves are closed: - CHE-LV-110P, Letdown Control Valve - CHE-LV-110Q, Letdown Control Valve
	OATC	4	Ensure BOTH of the following ERFDADS points associated with letdown are set to alarm at the appropriate setpoint: - CHT221, Regen HX Outlet Temperature, at a high alarm of 380°F - CHP210, Letdown Intermediate Press / Backpressure, at a low alarm of 205 psig
	OATC	5	Perform the following: - Place CH-PIC-201, Letdown Backpressure Controller, in MAN - Open the selected Letdown Backpressure Valve(s) to 60% output
	OATC		IF ANY of the following: - NO Charging Pumps are running - ONLY one Charging Pump is available THEN perform the following: - Ensure controlled bleedoff is isolated on all standby RCPs prior to Seal 2 Outlet Temperature exceeding 250°F - Isolate RCP seal injection by closing ONE of the following: - Seal Injection Flow Control Valves - CHB-HV-255, Seal Injection Supply Header Isolation Valve - Ensure CHN-HS-240, Charging Line to RC Loop 2A VLV PDV-240, is in OPEN MOD - IF NO Charging Pump is running, THEN start one Charging Pump

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	6	Page 19 of 26
Event Description:	Train 'A' 4kV Bus Supply Transformer Fault / 'A' EDG Output Breaker Fails to Auto Close					
Time	Position	Step	Applicant Actions			

	OATC	7	WHEN the selected Letdown Control Valve(s) is closed, THEN ensure ALL of the following isolation valves are open: • CHB-UV-523, Regen HX Outlet Isolation Valve • CHB-UV-515, Letdown to Regen HX Isolation Valve • CHA-UV-516, Letdown to Regen HX Isolation Valve
	OATC	10	Slowly adjust the Letdown Control Valve(s) AND Backpressure Control Valve(s) to establish ALL of the following: • Letdown flow approximately 25-35 gpm • Letdown backpressure 220 to 300 psig • Regen HX Letdown Temperature less than saturation temperature for the existing backpressure as indicated on CHN-TI-221, Regen HX Letdown Temperature
	OATC	11	WHEN letdown flow is indicated, THEN maintain Letdown HX Outlet Temperature less than 135°F
	OATC	13	IF a second charging WILL be started, THEN ensure ALL of the following are in MANUAL: • RCN-LIC-110, PLCS Master Controller • CHN-PDIC-240, Charging Header Backpressure Control Valve • CHN-PIC-201, Letdown Backpressure Control
	OATC	14	Ensure CHN-PIC-201 is adjusted to maintain 220 to 300 psig and as close to 220 psig as possible
	OATC	15	Start the second Charging Pump
	OATC	16.a 16.b 16.c	Perform the following: • Slowly adjust RCN-LIC-110 to establish ALL of the following: ○ Appropriate letdown flow for two charging pumps ○ Letdown flow less than 150 gpm ○ Letdown HX temperature less than 135°F • IF CHT221 reaches 380°F or more, THEN reduce the letdown flow to drop temperature to less than 380°F • Slowly adjust CHN-PIC-201 to maintain backpressure 220 to 300 psig
	OATC	17.a 17.b	IF a third charging pump will NOT be started, THEN perform the following: • Slowly adjust RCN-LIC-110 to establish ALL of the following: ○ The desired pressurizer level ○ Letdown flow less than 150 gpm ○ Letdown HX temperature less than 135°F • Slowly adjust CHN-PIC-201 to maintain backpressure 220 to 300 psig

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	6	Page 20 of 26
Event Description:	Train 'A' 4kV Bus Supply Transformer Fault / 'A' EDG Output Breaker Fails to Auto Close					
Time	Position	Step	Applicant Actions			

	OATC	19.a	Perform the following: - Slowly adjust RCN-LIC-110 to establish ALL of the following: - Appropriate letdown flow for three charging pumps - Letdown flow less than 150 gpm - Letdown HX temperature less than 135°F - IF CHT221 reaches 380°F or more, THEN reduce the letdown flow to drop temperature to less than 380°F - Slowly adjust CHN-PIC-201 to maintain backpressure 220 to 300 psig
		19.b	
		19.c	
	OATC	20.a 20.b	WHEN pressurizer level is at the desired setpoint, THEN perform the following: - Ensure RCN-LIC-110 is in MANUAL - Transfer RCN-LIC-110 to ONE of the following: - Remote Automatic - Local Automatic
	OATC	24	IF the PLCS is automatically controlling pressurizer level, THEN ensure ALL available Charging Pumps are green flagged for automatic control
	OATC	26	IF RCP Seal Injection is in operation, THEN ensure flow is 6.0 to 7.5 gpm
	OATC	27	IF ALL of the following: - RCP seal injection is isolated - Seal injection is desired - At least two charging pumps are available THEN PERFORM Appendix D, Restoring RCP Seal Injection
Examiner Note: When the crew has started the 'E' Charging Pump (or performed Loss of Letdown steps), re-energized PBA-S03 with the 'A' EDG, and the CRS has addressed Technical Specifications, or at lead evaluator's discretion, proceed to Event 7, Loss of Offsite Power			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	7, 8, 9	Page 21 of 26
Event Description:	Loss of Offsite Power / LB LOCA / CSAS FTAA / 'A' Spray Pond Pump Trip / 'B' HPSI Sheared Shaft					
Time	Position	Step	Applicant Actions			

Driver Action: When directed, INITIATE KEY 7, Loss of Offsite Power			
Indications Available: • Multiple loss of power alarms on B01 • Automatic Reactor trip • Loss of forced circulation			
Examiner Note: The following steps are from 40EP-9EO01, Standard Post Trip Actions:			
	BOP	2.a 2.b 2.c 2.d	Determine that Reactivity Control acceptance criteria are met: • Check that reactor power is dropping • Check that startup rate is negative • Check that full strength CEAs are inserted • Check that the Main Turbine is tripped
	OATC	3.a 3.b 3.b.1.1 3.b.1.2 3.b.1.3 3.b.1.3.a 3.b.1.3.b 3.b.1.3.c 3.b.2.1 3.b.2.2	Determine the Maintenance of Vital Auxiliaries acceptance criteria are met: • Check 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: • All vital and non-vital AC buses are powered • All vital and non-vital DC buses are powered • (CA) IF PBA-S03 or PBB-S04 is NOT powered from offsite, THEN perform the following: • Ensure that the associated DG has started • Ensure that the associated DG output breaker is closed. REFER TO Supplemental SPTA Actions (DG Running With Output Breaker Open) • IF the associated DG is NOT at rated speed and voltage, THEN perform the following: • Place DG handswitch to START to override the DG • Adjust DG frequency to maintain 59.9 to 60.5 Hz • Adjust DG voltage to maintain 4080 to 4300V • (CA) IF a DG is running, THEN perform the following: • IF the associated Spray Pond Pump is NOT running, THEN start the associated Spray Pond Pump • IF the associated Spray Pond Pump can NOT be started, THEN direct an operator to emergency stop the DG
Driver Action: When directed to emergency stop the ‘A’ EDG, wait 15 seconds and INITIATE KEY 31, then report that the ‘A’ EDG has been emergency stopped			

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	7, 8, 9	Page 22 of 26
Event Description:	Loss of Offsite Power / LB LOCA / CSAS FTAA / 'A' Spray Pond Pump Trip / 'B' HPSI Sheared Shaft					
Time	Position	Step	Applicant Actions			

	OATC	4.a.1 4.b.1 4.c.1	Determine that RCS Inventory Control acceptance criteria are met: - Check that pressurizer level meets BOTH of the following: 10-65% - Trending as expected to 33-53% (CA) Restore and maintain pressurizer level to 33-53% by any of the following: - Operation of PLCS - Manual operation of Charging Pumps and Letdown Control Valves - Check that the RCS is 24°F or more subcooled (CA) IF the RCS is less than 24F subcooled, THEN stop all RCPs - Check that BOTH of the following are in service to all RCPs: - Seal injection - Nuclear Cooling Water (CA) Isolate controlled bleedoff from ANY RCP(s) as appropriate. REFER TO 40AO-9ZZ04, RCP Emergencies, Appendix E, Control Board B04 Label
	OATC	5.1 5.2 5.3 5.4	Determine that RCS Pressure Control acceptance criteria are met: - Pressurizer pressure is 1837-2285 psia - Pressurizer pressure is trending as expected to 2225-2275 psia (CA) Restore and maintain pressurizer pressure to the normal control band by ANY of the following: - Operation of PPCS - Manual operation of pressurizer heaters and spray valves (CA) IF pressurizer pressure drops to the SIAS setpoint, THEN ensure that SIAS is actuated (CA) IF pressurizer pressure remains below the SIAS setpoint, THEN stop ONE RCP in each loop (CA) IF pressurizer pressure drops below the RCP NPSH limits, THEN stop all RCPs. REFER TO Appendix 2, Figures
	OATC	6	Determine that Core Heat Removal acceptance criteria is met: - At least one RCP is operating - Loop delta-T is less than 10°F - RCS is 24°F or more subcooled

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	7, 8, 9	Page 23 of 26
Event Description:	Loss of Offsite Power / LB LOCA / CSAS FTAA / 'A' Spray Pond Pump Trip / 'B' HPSI Sheared Shaft					
Time	Position	Step	Applicant Actions			

	BOP	Determine that RCS Heat Removal acceptance criteria are met: - Check that at least one SG meets BOTH of the following: - Level is 35% WR or more - Feedwater is restoring or maintaining level 45-60% NR (CA) Restore and maintain level in at least one SG 45-60% NR - Check that Tc is 560-570°F (CA) IF Tc is less than 560°F, THEN perform the following: - Ensure feed flow is NOT excessive - Ensure SG Blowdown is isolated - Restore Tc to 560-570°F using SBCS or ADVs - IF MSIS has actuated AND the cooldown terminates, THEN stabilize Tc using ADVs - IF AFAS has actuated AND at least one SG level is 10% WR or more, THEN override and throttle Auxiliary Feedwater to maintain Tc 560-570°F - Check that SG pressure is 1140-1200 psia (CA) IF SG pressure drops to the MSIS setpoint, THEN ensure MSIS has actuated (CA) IF SG pressure is less than 1140 psia, THEN perform the following: - Ensure the SBCS valves are closed - Ensure the ADVs are closed (CA) IF SG pressure is greater than 1200 psia, THEN restore and maintain SG pressure to less than 1200 psia using SBCS or ADVs
	OATC	Determine that Containment Isolation acceptance criteria are met: - Check that containment pressure is less than 2.5 psig (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated - Check BOTH of the following conditions: - No abnormal containment area activity - No abnormal steam plant activity

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	7, 8, 9	Page 24 of 26
Event Description:	Loss of Offsite Power / LB LOCA / CSAS FTAA / 'A' Spray Pond Pump Trip / 'B' HPSI Sheared Shaft					
Time	Position	Step	Applicant Actions			

	OATC		Determine that Containment Temperature and Pressure Control acceptance criteria are met: - Check that containment temperature is less than 117°F (CA) 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: - Containment Normal ACUs - CEDM ACUs - Reactor Cavity Fans - PZR Cooling Fans - Check that containment pressure is less than 2.5 psig (CA) IF containment pressure is 3 psig or more, THEN ensure that CIAS has been initiated (CA) IF containment pressure is 8.5 psig or more, THEN perform the following: - Ensure CSAS is actuated - Ensure at least one Containment Spray header flow is greater than 4350 gpm - Stop all of the operating RCPs - Ensure RCP controlled bleedoff is isolated
		9.a.1	
		9.b.1	
		9.b.2.1	
		9.b.2.2	
		9.b.2.3	
		9.b.2.4	
Critical Task # 1: Establish CS flow within 15 minutes of exceeding 8.5 psig inside Containment			
Measurable Performance Standard: Successful completion of this Critical Task can be confirmed by the red CSAS alarm on the upper section of B05 and CS flow of > 4350 gpm on each train of CS as confirmed on any ERFDADS terminal. In order to actuate CSAS, a member of the crew must take at least two of the CSAS actuation handswitches on B05 to the CSAS INITIATE position.			
	CRS	11	Diagnose the event(s) in progress and GO TO the appropriate procedure
Examiner Note: The CRS should diagnose a LOCA is in progress and that insufficient HPSI flow exists for current plant conditions. The CRS should transition to the Functional Recovery procedure and direct the crew to re-energize PBA-S03 using the 'B' EDG and restore HPSI flow using the 'A' HPSI Pump. The following steps are from 40EP-9EO09, Functional Recovery:			
	CRS	1	Ensure the event is being classified
	CRS	2	Enter the EOP entry time
	OATC		IF Pressurizer pressure remains below the SIAS setpoint, THEN perform the following: - Ensure ONE RCP is stopped in each loop - IF RCS subcooling is less than 24°F [44°F], THEN ensure all RCPs are stopped
		3.a	
		3.b	
	OATC	4	IF any RCPs are operating, THEN PERFORM Appendix 16, RCP Trip Criteria, and check the RCP operating limits satisfied
	BOP		Perform the following: - Ensure that the Steam Generator Sample Valves are open - Direct Chemistry to PERFORM 74DP-9ZZ05, Abnormal Occurrence Checklist
		5.a	
		5.b	

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	7, 8, 9	Page 25 of 26
Event Description:	Loss of Offsite Power / LB LOCA / CSAS FTAA / 'A' Spray Pond Pump Trip / 'B' HPSI Sheared Shaft					
Time	Position	Step	Applicant Actions			

	OATC	6	Perform Appendix 117, Placing Hydrogen Analyzers in Service
Examiner Note: The following steps are from Appendix 117 (Train 'B' only):			
	OATC	2.a 2.b 2.c	Perform the following to place Hydrogen Analyzer Train B in service: - Open HPA-UV-2, Containment Isolation Valve - Open HPA-HV-8A/8B, Containment Isolation Valves - Place handswitch HPA-HS-10A, Power/Control, in the ANALYZE position
Examiner Note: The following steps are the continuation of the main body:			
	CRS	7	Identify the success path(s) to be used to satisfy each safety function. REFER TO BOTH of the following: - Section 4.0, Safety Function Tracking - Section 6.0, Resource Assessment Trees
	CRS	8	Perform Section 5.0, Safety Function Status Check, for those success paths in use
	CRS	9	Perform ALL of the following in the order listed: - 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
Examiner Note: The CRS should determine that the success path to pursue first is MVAC-2, Diesel Generators, in order to re-energize PBA-S03 with the 'B' EDG to restore HPSI flow. The following steps are from MVAC-2:			
	OATC	3	IF one vital 4.16 kV AC bus is energized from a Diesel Generator, AND the equipment needed to maintain Safety Functions is NOT available on the energized bus, GO TO step 11
	OATC	11	(step 11) IF on vital 4.16 kV AC bus is energized by its Diesel Generator, AND vital AC powered equipment needed to maintain Safety Functions is NOT available on the energized bus, THEN PERFORM ONE of the following: - Appendix 58, Cross-Tie DG B to PBA-S03 (yes) - Appendix 59, Cross-Tie DG A to PBB-S04
Examiner Note: The following steps are from Appendix 58:			
	OATC	1	Direct an operator to PERFORM Attachment 58-A, Disable PBA-S03 Breakers
	OATC	2	Ensure that ALL of the following breakers are open: - NAN-S03A (NBN-HS-S03A) - PBA-S03K - PBA-S03L - NAN-S04A (NBN-HS-S04A) - PBB-S04L - PBB-S04K
	OATC	3	Ensure that PBA-S03B, Diesel Generator A 4.16 kV Breaker, is open

Form 3-3.2	Required Operator Actions	

Operating Test:	NRC	Scenario #	4	Event #	7, 8, 9	Page 26 of 26
Event Description:	Loss of Offsite Power / LB LOCA / CSAS FTAA / 'A' Spray Pond Pump Trip / 'B' HPSI Sheared Shaft					
Time	Position	Step	Applicant Actions			

	OATC	4	Place ALL of the following in PULL TO LOCK: - Train A Containment Normal ACUs - Train A CEDM ACUs
	OATC	5.a 5.b 5.c	Perform the following: - Place synchronizing switch PBB-SS-S04K, 4.16 kV Bus S04 Normal Supply, to ON - Close breaker PBB-S04K, 4.16 kV Bus S04 Normal Supply - Place synchronizing switch PBB-SS-S04K to OFF
	OATC	6.a 6.b 6.c	WHEN informed by the area operator that PBA-S03 breakers are disabled, THEN perform the following to close PBA-S03K from the Control Room: - Place synchronizing switch PBA-SS-S03K, 4.16 kV Bus S03 Alternate Supply, to ON - Close breaker PBA-S03K, 4.16 kV Bus S03 Alternate Supply - Place synchronizing switch PBA-SS-S03K to OFF
	OATC	7	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
	OATC	8.a 8.b	Perform the following: - Stop any non-essential loads on PBB-S04 - Reset and start loads on PBA-S03 as required (This should be the 'A' HPSI Pump to establish HPSI flow)
Critical Task # 2: Establish adequate SI flow per Appendix 2, Figures, within 30 minutes of RCS pressure lowering below 1600 psia Measurable Performance Standard: In order to restore power to PBA-S03, the crew will: - Place PBA-SS-S03K to ON - Close PBA-S03K In order to start the 'A' HPSI Pump, the crew will: - Place SIA-HS-1, HPSI Pump A, to START A laminated copy of Appendix 2, Figures, is on the vertical section of B02 where the crew can compare SI flow to minimum required flow to ensure successful restoration of the inventory control safety function.			
Examiner Note: When the crew has established SI flow to the RCS, or at lead evaluator's discretion, the scenario may be terminated			

Form 3.4-1 Events and Evolutions Checklist - Crew A

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024				
A P P L I C A N T	E V E N T T Y P E	Scenarios																
		1			2			3			4			T O T A L	M I N I M U M R O S R O-I S R O-U			
		POSITION			POSITION			POSITION			POSITION							
		S	A	B	S	A	B	S	A	B	S	A	B					
		R	T	O	R	T	O	R	T	O	R	T	O					
U1	RX														0	1	1	0
	NOR	1													1	1	1	1
	I/C	2,3,4,5,6,7,8										1,2,3,4,5,6,8,9			15	4	4	2
	MAJ	9										7			2	2	2	1
	Man. Ctrl.														0	1	1	0
	16	TS	4,6										3,6			4	0	2
R1	RX														0	1	1	0
	NOR														0	1	1	1
	I/C		2,4,5,8										1,3,4,5,6,8		10	4	4	2
	MAJ		9										7		2	2	2	1
	Man. Ctrl.		2,4										1,8		4	1	1	0
	10	TS													0	0	2	2
R2	RX														0	1	1	0
	NOR			1											1	1	1	1
	I/C			3,5,7									2,4,5,6,9		8	4	4	2
	MAJ			9									7		2	2	2	1
	Man. Ctrl.			3									2,6		3	1	1	0
	9	TS													0	0	2	2

Form 3.4-1 Events and Evolutions Checklist - Crew B

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024				
A P P L I C A N T	E V E N T T Y P E	Scenarios																
		1			2			3			4			T O T A L	M I N I M U M R O S R O-I S R O-U			
		POSITION			POSITION			POSITION			POSITION							
		S	A	B	S	A	B	S	A	B	S	A	B					
		R	T	O	R	T	O	R	T	O	R	T	O					
U2	RX														0	1	1	0
	NOR	1													1	1	1	1
	I/C	2,3,4,5,6,7,8										1,2,3,4,5,6,8,9			15	4	4	2
	MAJ	9										7			2	2	2	1
	Man. Ctrl.														0	1	1	0
	TS	4,6										3,6			4	0	2	2
R3	RX														0	1	1	0
	NOR														0	1	1	1
	I/C		2,4,5,8										1,3,4,5,6,8		10	4	4	2
	MAJ		9										7		2	2	2	1
	Man. Ctrl.		2,4										1,8		4	1	1	0
	TS														0	0	2	2
R4	RX														0	1	1	0
	NOR			1											1	1	1	1
	I/C			3,5,7									2,4,5,6,9		8	4	4	2
	MAJ			9									7		2	2	2	1
	Man. Ctrl.			3									2,6		3	1	1	0
	TS														0	0	2	2

Form 3.4-1 Events and Evolutions Checklist - Crew C

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024			
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M		
		1			2			3			4				R O	S R O - I	S R O - U
		P O S I T I O N			P O S I T I O N			P O S I T I O N			P O S I T I O N						
		S	A	B	S	A	B	S	A	B	S	A	B				
		R	T	O	R	T	O	R	T	O	R	T	O				
U3 RX+NOR +I/C	RX													0	1	1	0
	NOR	1												1	1	1	1
	I/C	2,3,4,5 6,7,8									1,2,3,4 5,6,8, 9			15	4	4	2
	MAJ	9									7			2	2	2	1
	Man. Ctrl.													0	1	1	0
	16	TS	4,6									3,6			4	0	2
R5 RX+NOR +I/C	RX													0	1	1	0
	NOR													0	1	1	1
	I/C		2,4,5,8									1,3,4,5 6,8		10	4	4	2
	MAJ		9									7		2	2	2	1
	Man. Ctrl.		2,4									1,8		4	1	1	0
	10	TS													0	0	2
R6 RX+NOR +I/C	RX													0	1	1	0
	NOR			1										1	1	1	1
	I/C			3,5,7								2,4,5,6 9		8	4	4	2
	MAJ			9								7		2	2	2	1
	Man. Ctrl.			3								2,6		3	1	1	0
	9	TS													0	0	2

Form 3.4-1 Events and Evolutions Checklist - Crew D

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024			
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M		
		1			2			3			4				R O	S R O - I	S R O - U
		P O S I T I O N			P O S I T I O N			P O S I T I O N			P O S I T I O N						
		S	A	B	S	A	B	S	A	B	S	A	B				
		R	T	O	R	T	O	R	T	O	R	T	O				
U4 RX+NOR +I/C	RX													0	1	1	0
	NOR	1												1	1	1	1
	I/C	2,3,4,5 6,7,8									1,2,3,4 5,6,8, 9			15	4	4	2
	MAJ	9									7			2	2	2	1
	Man. Ctrl.													0	1	1	0
	16	TS	4,6									3,6			4	0	2
R7 RX+NOR +I/C	RX													0	1	1	0
	NOR													0	1	1	1
	I/C		2,4,5,8									1,3,4,5 6,8		10	4	4	2
	MAJ		9									7		2	2	2	1
	Man. Ctrl.		2,4									1,8		4	1	1	0
	10	TS													0	0	2
R8 RX+NOR +I/C	RX													0	1	1	0
	NOR			1										1	1	1	1
	I/C			3,5,7								2,4,5,6 9		8	4	4	2
	MAJ			9								7		2	2	2	1
	Man. Ctrl.			3								2,6		3	1	1	0
	9	TS													0	0	2

Form 3.4-1 Events and Evolutions Checklist - Crew E

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024			
A P P L I C A N T	E V E N T T Y P E	Scenarios												T O T A L	M I N I M U M		
		1			2			3			4						
		POSITION			POSITION			POSITION			POSITION						
		S	A	B	S	A	B	S	A	B	S	A	B				
		R	T	O	R	T	O	R	T	O	R	T	O				
O	C	P	O	C	P	O	C	P	O	C	P	RO	SRO-I	SRO-U			
I1 RX+NOR +I/C	RX												0	1	1	0	
	NOR	1											1	1	1	1	
	I/C	2,3,4,5 6,7,8										1,3,4,5 6,8	13	4	4	2	
	MAJ	9										7	2	2	2	1	
	Man. Ctrl.											1,8	2	1	1	0	
	14 TS	4,6											2	0	2	2	
I2 RX+NOR +I/C	RX												0	1	1	0	
	NOR												0	1	1	1	
	I/C		2,4,5,8							1,2,3,4 5,6,8, 9			12	4	4	2	
	MAJ		9								7		2	2	2	1	
	Man. Ctrl.		2,4										2	1	1	0	
	12 TS										3,6		2	0	2	2	
R9 RX+NOR +I/C	RX												0	1	1	0	
	NOR			1									1	1	1	1	
	I/C			3,5,7								2,4,5,6 9	8	4	4	2	
	MAJ			9								7	2	2	2	1	
	Man. Ctrl.			3								2,6	3	1	1	0	
	9 TS												0	0	2	2	

Form 3.4-1 Events and Evolutions Checklist - Crew F

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024			
A P P L I C A N T	E V E N T T Y P E	Scenarios															
		1			2			3			4			T O T A L	M I N I M U M R O S R O-I S R O-U		
		POSITION			POSITION			POSITION			POSITION						
		S	A	B	S	A	B	S	A	B	S	A	B				
		R	T	O	R	T	O	R	T	O	R	T	O				
		O	C	P	O	C	P	O	C	P	O	C	P				
I3 RX+NOR +I/C 14	RX													0	1	1	0
	NOR	1												1	1	1	1
	I/C	2,3,4,5,6,7,8											1,3,4,5,6,8	13	4	4	2
	MAJ	9											7	2	2	2	1
	Man. Ctrl.												1,8	2	1	1	0
	TS	4,6												2	0	2	2
I4 RX+NOR +I/C 12	RX													0	1	1	0
	NOR													0	1	1	1
	I/C		2,4,5,8									1,2,3,4,5,6,8,9		12	4	4	2
	MAJ		9									7		2	2	2	1
	Man. Ctrl.		2,4											2	1	1	0
	TS											3,6		2	0	2	2
R10 RX+NOR +I/C 9	RX													0	1	1	0
	NOR			1										1	1	1	1
	I/C			3,5,7									2,4,5,6,9	8	4	4	2
	MAJ			9								7		2	2	2	1
	Man. Ctrl.			3								2,6		3	1	1	0
	TS													0	0	2	2

Form 3.4-1 Events and Evolutions Checklist - Crew G

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024				
A P P L I C A N T	E V E N T T Y P E	Scenarios																
		1			2			3			4			T O T A L	M I N I M U M R O S R O-I S R O-U			
		POSITION			POSITION			POSITION			POSITION							
		S	A	B	S	A	B	S	A	B	S	A	B					
		R	T	O	R	T	O	R	T	O	R	T	O					
		O	C	P	O	C	P	O	C	P	O	C	P					
I5 RX+NOR +I/C	RX														0	1	1	0
	NOR	1													1	1	1	1
	I/C	2,3,4,5 6,7,8							2,4,6,7 .0			1,2,3,4 5,6,8, 9			20	4	4	2
	MAJ	9							8			7			3	2	2	1
	Man. Ctrl.								2,4						2	1	1	0
	21	TS	4,6									3,6			4	0	2	2
R11 RX+NOR +I/C	RX														0	1	1	0
	NOR									1					1	1	1	1
	I/C		2,4,5,8							3,5,6,9			1,3,4,5 6,8		14	4	4	2
	MAJ		9							8			7		3	2	2	1
	Man. Ctrl.		2,4							5,9			1,8		6	1	1	0
	15	TS													0	0	2	2
R12 RX+NOR +I/C	RX														0	1	1	0
	NOR			1											1	1	1	1
	I/C			3,5,7								2,4,5,6 9			8	4	4	2
	MAJ			9								7			2	2	2	1
	Man. Ctrl.			3								2,6			3	1	1	0
	9	TS													0	0	2	2

Form 3.4-1 Events and Evolutions Checklist - Crew H

Facility: PVNGS		Date of Exam: 4/29/2024												Operating Test Number: 2024				
A P P L I C A N T	E V E N T T Y P E	Scenarios																
		1			2			3			4			T O T A L	M I N I M U M R O S R O-I S R O-U			
		POSITION			POSITION			POSITION			POSITION							
		S	A	B	S	A	B	S	A	B	S	A	B					
		R	T	O	R	T	O	R	T	O	R	T	O					
		O	C	P	O	C	P	O	C	P	O	C	P					
I6	RX														0	1	1	0
	NOR	1													1	1	1	1
	I/C	2,3,4,5,6,7,8							2,4,6,7,0			1,2,3,4,5,6,8,0			20	4	4	2
	MAJ	9							8			7			3	2	2	1
	Man. Ctrl.								2,4						2	1	1	0
	21	TS	4,6									3,6			4	0	2	2
R13	RX														0	1	1	0
	NOR									1					1	1	1	1
	I/C		2,4,5,8							3,5,6,9			1,3,4,5,6,8		14	4	4	2
	MAJ		9							8			7		3	2	2	1
	Man. Ctrl.		2,4							5,9			1,8		6	1	1	0
	15	TS													0	0	2	2
R14	RX														0	1	1	0
	NOR			1											1	1	1	1
	I/C			3,5,7									2,4,5,6,9		8	4	4	2
	MAJ			9								7			2	2	2	1
	Man. Ctrl.			3								2,6			3	1	1	0
	9	TS													0	0	2	2